PROCEEDINGS & TRANSACTIONS

OF THE

CROYDON

NATURAL HISTORY AND SCIENTIFIC

SOCIETY.

FEBRUARY 19, 1901, TO JANUARY 21, 1902.

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PROCEEDINGS

OF

THE CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

1901–1902.

Thirty-second Annual Meeting,

Held at the Public Hall, Croydon, January 21st, 1902.

JAMES EPPS, Jun., F.L.S., in the chair.

The Statement of the Accounts for 1901 was approved.

The following gentlemen were elected the Officers of the Society for the ensuing year, this being the first election under the New Rules:—

President.—JAS. EPPS, Jun., F.L.S.
Vice-Presidents.—EDWARD LOVETT; HENRY T. MENNELL, F.L.S.; WILLIAM WHITAKER, B.A., F.R.S., F.G.S.
Hon. Curator of Museum.—N. F. ROBARTS, F.G.S.
Hon. Lanternist.—J. H. BALDOCK, F.C.S.
Hon. Librarian.—ALFRED ROODS.
Hon. Treasurer.—F. J. TOWNEND, 11, Park Hill Rise, Croydon.
Council.—W. BRUCE BANNERMAN, F.S.A., F.G.S.; J. EDMUND CLARK, B.A., B.Sc., F.G.S.; H. D. GOWER; J. M. HOBSON, M.D., B.Sc.; E. A. MARTIN, F.G.S.; J. WATSON SLACK; W. W. TOPLEY.
Hon. Secretary.—GEORGE W. MOORE, 15, Dornton Road, South Croydon.

Anthropological & Archæological Committee.—H. C. Collyer, Breakhurst, Beddington; J. M. Hobson, M.D., B.Sc., Morland Road; A. J. Hogg, 5, Cargreen Road, South Norwood; E. Lovett, West Burton, Outram Road; J. O. Pelton, 26, Friends' Road; N. F. Robarts, F.G.S., 23, Oliver Grove, South Norwood; J. Watson Slack, 27, Birdhurst Road; G. Clinch, F.G.S. (Secretary), 22, Nicholson Road.

Botanical Committee.—J. Edmund Clark, B.A., B.Sc., F.G.S., Lile Garth, Ashburton Road; A. Fitzgerald, 93, Addiscombe Road; W. Murton Holmes, Glenside, St. Peter's Road; Miss Klaassen (Secretary), Aberfeldy, Campden Road; H. T. Mennell, F.L.S., Park Hill Rise; H. Franklin Parsons, M.D., F.G.S., Park Hill Rise; Mrs. Parsons, Park Hill Rise; C. E. Salmon, Clevelands, Wray, Reigate; E. Straker, Wallington.

Geological Committee.—W. Bruce Bannerman, F.S.A., F.G.S., Sydenham Road; G. J. Hinde, Ph. D., F.R.S., F.G.S., Avondale Road; A. J. Hogg, 5, Cargreen Road, South Norwood; W. Murton Holmes, Glenside, St. Peter's Road; G. W. Moore, Bryndhurst, Dornton Road; H. Franklin Parsons, M.D., F.G.S., Park Hill Rise; N. F. Robarts, F.G.S. (Secretary), 23, Oliver Grove, South Norwood; W. W. Topley, 3, Marlborough Road, South Croydon; Thos. Walker, C.E., Warrington Road; W. Whitaker, B.A., F.R.S., F.G.S., Freda, Campden Road.

Meteorological Committee.— F. Campbell-Bayard, LL.M., F.R. Met. Soc. (Secretary), Cotswold, Wallington; J. Edmund Clark, B.A., B.Sc., F.G.S., Lile Garth, Ashburton Road; Thos. Cushing, F.R.A.S., Chepstow Road; Baldwin Latham, M.I.C.E., Duppas House.

Microscopical Committee. — Rev. R. K. Corser, 27, Park Hill Road; T. A. Dukes, M.B., B.Sc., 16, Wellesley Road; E. Lovett, West Burton, Outram Road; W. Murton Holmes, Glenside, St. Peter's Road.

Museum Committee.—J. M. Hobson, M.D., B.Sc., Morland Road; E. Lovett, West Burton, Outram Road; H. T. Mennell, F.L.S., Park Hill Rise; H. Franklin Parsons, M.D., F.G.S., Park Hill Rise; N. F. Robarts, F.G.S. (Secretary), 23, Oliver Grove, South Norwood; F. Thompson, Lynton, Haling Park Road; W. Whitaker, B.A., F.R.S., F.G.S., Freda, Campden Road.

Photographic Committee. — J. H. Baldock, F.C.S. (Lanternist and Recorder), Overdale, St. Leonard's Road; H. D. Gower (Portfolio Secretary), 55, Benson Road; R. F. Grundy, 8, Havelock Road; A. Roods, 67, Thornhill Road; A. J. Weightman, Endsleigh, 11, Chepstow Road; C. L. Faunthorpe (Secretary), 25, Derby Road.

Zoological Committee.—J. H. Baldock, F.C.S., Overdale, St. Leonard's Road; J. C. Crowley, 16, Chatsworth Road; R. A. Crowley, 4, High Street; H. D. Gower, 55, Benson Road; E. A. Martin, F.G.S. (Secretary), 23, Campbell Road; Alfred Roods, 67, Thornhill Road; C. Thorpe, Selborne, Chatsworth Road.

Address of the President,

James Epps, Jun.

Ladies and Gentlemen,

It has been the custom, I believe, in past years for the President to give a *résumé* of the work of the Club during the past year. I will not take upon myself the responsibility of entirely breaking this old custom, but will, in the briefest possible way, run through the past year's work, after which I will, with your permission, read my paper, entitled "The Life of Thomas Edward; the Great Scotch Naturalist."

I now realize the difficulties of a President on such an occasion as this. It appears to me that he must not confine his remarks to any one subject, or he may be looked upon as favouring his special and pet subject at the expense of others; so to get over this difficulty I think the best way is to take a general subject, which I hope will be of interest to the majority.

We all started the year, I am sure, with the very best intentions—when is the time when we do not? What those good intentions have led us to accomplish, you will be better able to judge for yourselves a little later in the evening.

At our first meeting, in January, your late and able President, Mr. Whitaker, retired, which I am sure we all regretted—not without first, thanks to him, clearing up the house and putting everything into shape.

On February 19th I had the honour of taking the Presidential chair. On the same evening Mr. J. P. Johnson read a paper on neolithic stones found on the North Downs near Sutton. From his paper one could see he had been a most enthusiastic and successful hunter after these prizes. He exhibited numerous specimens.

Mr. Bayard, as Secretary of the Meteorological Section, read his Annual Report (see Transactions, p. 1), followed by the Report of the Secretary of the Botanical Section, read by Dr. Parsons in the absence of Mr. Mennell. The Report appears later in our Proceedings.

On March 19th Professor Garwood, M.A., F.G.S., read a most interesting and instructive paper, entitled "A Trip round Kanchenjinga." The lecture was illustrated by a most beautiful series of photographic and telephotographic slides. The clear and detailed description given by the lecturer, as the slides passed slowly in panoramic order through the lantern, of the exquisite ranges of snow-clad peaks, ranging from 20,000 to 28,000 ft. above sea-level, the awful avalanches, the wonderful virgin forest covering the lower slopes, and passes with their mountain torrents wearing their way through them as if anxious to arrive at the lower lands, was most fascinating, and made us almost feel we were part of his touring party. Those members who failed to attend lost more than they were aware of. Prof. Garwood was accompanied on the tour by Signor Sella, whose photos cannot be too highly praised.

At the monthly meeting on April 13th, Professor Haddon, M.A., B. Sc., gave the members a most interesting paper entitled "Pagan Survivals in Modern Britain," illustrated by a fine series of lantern slides. Owing to what Professor Haddon termed the glaciation of England and parts of Scotland by the Anglo-Saxon race, with more prosaic and less imaginative natures than the Celtic peoples, it is necessary to look for the relics of Paganism in the folk-lore or learning of the lower order of people of the British Isles, and chiefly in Ireland. There are different grades of mankind, which for the purposes of his lecture Professor Haddon termed savages, barbarians, and civilized; and amongst the last the lowest orders, at least in primitive places, are analogous to the savages, and are termed "folk." Many of the customs still found prevalent among them and their lore or learning are simply survivals of old pagan customs and legends which, though Christian meanings have in some instances become associated with them, naturally retain much of their original forms and significations. This is owing to the fact that, whereas Christianity has existed nearly two thousand years, the much longer prevalence of pagan customs, prior to the introduction of Christianity and under forms of comparatively high civilization, has necessarily influenced the minds and characters of the people. Examples in many forms and from many countries rendered the subject very interesting; and the lecture was well illustrated by lantern slides.

At the ordinary monthly meeting held on May 21st, before the paper of the evening was read, the Secretary stated that a petition, signed by over two hundred burgesses of Croydon, chiefly in the Norwood Ward, had been presented to the Croydon Town Council, requesting them to consider the Club's suggestions for making a Public Museum in the mansion standing in the newly purchased estate at Grange Wood, and that following the presentation of the petition a deputation, consisting of the President, Mr. Whitaker, Dr. Parsons, Dr. Hobson, and Mr.

Moore, had waited on the Roads Committee, who had this matter before them, and had placed their wishes before them. They had been very graciously received, and had been promised by the chairman that the suggestions of the Club should have their careful consideration.

The President then suggested that the Secretaries of the respective sections should approach the members of their sections with the object of ascertaining what objects would be forthcoming for the Museum should they obtain the rooms asked for, and in order that a rough estimate might be made of the cost of the necessary cases.

Mr. L. A. G. Filon, M.A., then read his paper, entitled "Astronomy without a Telescope, with special reference to the study of Meteors and Shooting Stars." The lecturer deplored the fact that the want of telescopes and appliances discouraged so many who would otherwise become eager students of astronomy. A large field, however, still remained for naked eye observations. Thus the study of magnitudes, which in many cases can be and is pursued with the naked eye, has led in recent years to some of the most startling discoveries in stellar astronomy.

Passing next to the investigation of meteors, which are almost entirely studied with the naked eye, the principal characteristics of their appearance were pointed out, and a classification into shooting stars, fireballs, and aërolites was attempted. The radiant point corresponding to each shower was defined, and the peculiarities of some of the best known yearly showers were pointed out.

Some of the applications of meteor observations—such as the testing of certain nebular theories, the influence of the distribution of meteor orbits on the meteor theory of the sun's heat, and the determination of the height of the atmosphere by simultaneous observations of a meteor at different places—were then discussed.

The lecture was a very interesting one, and was illustrated by a few lantern slides, and concluded with a description of the practical method of recording observations which has been used by the lecturer in his work at Cambridge Observatory.

The first meeting of the Autumn and Winter Session of the Club was held on Tuesday, September 17th. A very fair number of exhibits was shown. As usual on this occasion, no paper was read.

At the monthly meeting held on the 15th October the new Rules of the Club were presented by the Council to the members for their acceptance, but as it was thought that sufficient time could not be spared for a full discussion of them, it was proposed by Dr. Hinde, and seconded by Mr. Holmes, and resolved that a Special Meeting be called for that day week for the purpose.

Mr. J. Edmund Clark then read his paper entitled "The Ancient British Village near Glastonbury, called the Avalon Village." In order to explain the conditions existing when this lake village was built, Mr. Clark gave a short sketch of the geology of the surrounding country. The greater part of the whole region is less than twenty feet above the sea, part being actually under high water mark. The village of Avalon is about one mile from Glastonbury, between that town and Godney. Attention was first called to it in 1892 by Mr. Arthur Bulleid, who noticed some mounds rising from the low tract of land, which on examination proved to be the site of the ancient British village, comprising sixty to seventy hut circles surrounded by a palisade.

The land was, by the generosity of the owner, given to the Glastonbury Antiquarian Society, who undertook the interesting work of excavation. Mr. Clark described in detail the construction of the foundations, and showed by numerous photographs the wood piles, *in situ*, upon which the village was formed, and he suggested what the upper portion most probably resembled.

He also showed, by means of lantern slides, numerous objects discovered, including bronze bowls, plain and ornamented; pottery with designs that indicate Belgic origin; implements of iron, as weapons, billhooks, files, saws, and gouges; spindle whorls and bone combs for weaving, many of which were ornamented. Glassware, in beads and rings, amber and jet ornaments, were also found. These objects are now to be seen in the Museum at Glastonbury.

There were but few human bones, the bones found being principally those of wild and domestic animals.

A hearty vote of thanks was given to Mr. Clark for his very interesting paper.

At the adjourned ordinary meeting held on October 22nd, a very fair number of members were present, and the Rules were fully discussed, and notice was given that they would be presented for acceptance at the November meeting.

At the November ordinary meeting held on the 19th, the new and revised Rules of the Club were formally approved of and passed, and notice was given that they would take effect on the 1st January, 1902. Dr. Hobson then read his paper entitled "Is Photography a Fine Art?" Dr. Hobson claimed for photography that it was not an art dependent on mechanical process, but that the photographer could so identify himself with his work that the result could be ranked amongst high artistic productions, and that by delicacy of manipulation, careful and artistic choice of views and other subjects, there is in photography as much of the essentials of a fine art as in a drawing or painting, which depends on the delicacy and accuracy of the eye and hand of the draughtsman or painter, and upon his perception and observation and sense of beauty. Dr. Hobson had some very beautiful lantern slides thrown on the screen to illustrate his subject, and pointed out the artistic merits of the various pictures.

A discussion followed, led by Mr. Baldock and several other members, the general consensus of opinion being that photography should rank as a mechanical rather than a fine art, however good the results obtained. Dr. Hobson replied to the effect that, notwithstanding the generally expressed adverse opinion, he considered that he had made out his case in the affirmative.

On Tuesday, December 17th, Dr. Hobson presented to Masters Epps and Croft the prizes given by him for the best pictures in the Juvenile Photographic Competition.

Mr. Edward Lovett then exhibited and described a collection of objects from a settlement of the late Stone age, on the north coast of Ireland, which was very much appreciated by all the members present.

The four sections showing the greatest activity during the last twelve months were the Photographic, the Geological, the Botanical, and the Meteorological; these have all done good work. I very much regret to find that the other sections are dormant at the present time; it may be that this is the winter of their discontent, and we must trust that this discontent may soon be made glorious summer by the rising of some fresh and active members.

The Reports of our Sectional Committees will be found in the forthcoming Transactions of the Society.

Three local occurrences have taken place this year which interest the Society—first, the purchase of Croham Hurst; second, the purchase of Grange Wood Park by the Croydon Corporation, the latter having been opened to the public as a recreation ground; and third, the discovery at Thornton Heath Railway Station, by Mr. Towse, the contractor's engineer, of a fine collection of mammalian remains, consisting of bones and teeth of the *Elephas antiquus, E. primigenius* (mammoth), and horse, *Equus caballus*. The find is remarkable, as being the first time that any remains of *Elephas antiquus* are recorded to have been discovered in the neighbourhood of Croydon.

Returning for a moment to the subject of Grange Wood Park, as you are all doubtless aware, in the grounds of this beautiful estate stands a fine mansion, and I was in hopes that before this a Public Museum would have been formed there under the superintendence of our Society; but I regret to say that those hopes, now I hear that the Corporation of Croydon is unable to find the small sum of two hundred pounds for cases, have been blighted, and I fear this scheme is therefore at an end.

There is no doubt that the time has arrived when this Society must rouse itself. It has slept too long. Without its own Lecture Hall and Museum it is severely handicapped.

My opinion is our Society is unable to offer sufficient attractions and comforts to encourage would-be members.

The Club at the present time numbers only two hundred and twenty members, and I regret to say that we seldom see more than sixty or seventy of these at our monthly meetings, and I am sure—I am very sorry to have to say it—that there are not more than thirty members who work hard for the Society, and they do it because they love Natural Science, and would do their utmost, I know, to make such a Society as this successful.

I have a scheme in my mind which, on a future occasion, if I receive any supporters, I shall be pleased to put before you.

I think our members have too long been satisfied with our out-of-date surroundings, and should severely reproach themselves for having allowed the most valuable and beautiful collection of our late friend Mr. Philip Crowley to have been lost to them. I have in my mind not the slightest doubt that had we had a suitable museum our late friend would have passed part, if not all, of his collection to us.

We have been justly punished, and I ask, are we going to be wise and take a lesson by this reprimand, and take some immediate steps to be prepared in the future for any collections that may be within our reach?

Again, what an incentive it would be to members to have something to work for. I can quite understand a man not offering his valuable collection to a Society that had no suitable museum, and he is perfectly justified in not doing so. If we love our Natural Science, we should be prepared to make a sacrifice of either time or money for it.

I trust you will seriously consider this matter, which is urgent, and decide whether it is to be, or not to be.

Excursions during the summer months were made, as in previous years, and were on the whole well attended.

I am pleased to say that the Council was this year in a position to hold a Soirée, and I personally hope that it may in future be held regularly, as not only has it a great tendency to bring about a friendly and sociable feeling amongst its members, but it allows the Borough of Croydon to know that this long established Natural History and Scientific Society exists, and is willing to enrol new members.

Our Balance Sheet, which our Hon. Treasurer has put before us, is in a way satisfactory—*i.e.* the debit balance of the past ten years has been changed into a credit balance, which, if small, leaves us in a sound position.

Our members this year number 206; we have, I regret to say, lost by death 5, resigned 14, and 6 struck off. On the other hand, 24 new members were elected.

The Life of Thomas Edward.

As members and fellow-workers of a Natural History Society, I think a very fair and reasonable question to ask one's self is—To whom are we to be grateful for the immense amount of knowledge of Natural History that has been handed down to us and published at different periods? Who have those great workers been who have spent their lives in research and study? These are some of the great men—Edward, White, St. John, Ray.

How thankful ought we to be as business men, whom circumstances have thrown into a different channel of life,—a life far too civilized and far too unnatural to be in a position to study Nature's ways for ourselves. How deep in darkness should we be at the present time had it not been for these great workers! For instance, what is the average routine life of a City man of the present day? This is about it:—Rise at 9, breakfast on reaching the dining-room, with newspaper in front of him. 9.15, just three minutes to catch the train. Newspaper to town office at 10. Leave at 6, train home, dinner, evening paper, smoke, and then to bed. To-morrow, and week after week, the same. What a comparison to the life of a White, an Edward, or a St. John.

What a charming, quiet, and ideal life is that of the naturalist compared to that of the rushing life of the citizen. Of course, it would never do for all men to think alike, or for all men to be naturalists; but at the same time City men might cease to live at this high pressure system as at present, and they might interest themselves more about the natural laws that are paramount on this planet.

There is no doubt that the people of the present day have far greater opportunities for studying Natural History in all its branches than the people of fifty years ago. Look for a moment at the large numbers of fine museums, both in this and other countries; but I fear it is excitement only that interests the masses of to-day.

It was my intention to entitle this paper "The Lives of our Great Naturalists," but I soon found time would prevent my doing more than to deal with the life of one of these great men. I have therefore chosen Thomas Edward, as the least well known.

A naturalist is not made, but born. The naturalist may be a man in the humblest station of life, or he may be in the highest. Thomas Edward was of the former class. He was born in the year 1814, of parents not wealthy, his father before marriage being in the militia; after marriage he became a handloom cotton-weaver.

Edward at a very early age commenced to show the latent love for animals which was to be the ruling passion of the man's life. Where animal life existed, there Edward was in his glory. In his infantile days he was found catching flies, afterwards making the acquaintance of all the cocks, hens, and pigs in the village.

His great delight, as he advanced in age, was roaming away, by way of Dee-side, Ferryside, and the Inches, in search of tadpoles, horse-leeches, rats, or any other living thing; the prizes obtained on such occasions being carefully conveyed to his parents' house, which often brought him into trouble with his parents or their neighbours.

Although I admire Edward to the highest degree, I must allow he was not an obedient child; it may have been owing to the want of proper parental influence, or to the too frequent failing of parents in relying too much on corporal punishment.

Edward appears to have led for many years of his boyhood an absolutely wild life; off early in the morning and home late at night, none saw him in the interim; very often he was alone, sometimes with other boys, bird-nesting, rat-catching, crab-hunting, but on his return always laden with many trophies. His mother endeavoured to check his ardour by throwing his animals and birds' nests away, and he was strictly forbidden to bring any more home. His failing to comply with these instructions often brought him into contact with his father, who was not backward at punishing his son with the strap. Flogging failing to cool the ardour of their son, locking him up was tried; this to young Edward was a much greater punishment, but he even then often evaded his parent's efforts, and on one occasion he even went off with only a piece of his mother's skirt tied round him, his own clothes having been taken away from him. I am sorry to hear the boy was found to be thoroughly incorrigible; he was self-willed and stubborn, and one might call him a young ne'er-do-well.

An amusing little incident, showing the determined character of the lad, I should like to mention. One day, whilst Edward was out on one of his excursions with some other lads, one of the party sighted a "byke" (a wasps' nest) on a tree. A byke was looked upon as a great trophy. Young Edward mounted the tree (on being left by his companions, who had run away on being attacked by the wasps); he soon reached the nest, but he was now puzzled as to how he could remove this great prize without damaging it. A thought at last struck him, that his shirt was available; so he soon disrobed himself, and again approached the nest. He soon removed the byke, not without first being badly stung, and, having placed it in his shirt and securely tied it up, made for home. He smuggled it into the house, and went to bed; his brother, however, noticing his nudity on getting into bed, gave him away by calling the attention of his mother to Tom's loss of his shirt. This brought his father forward, who bid him say what had become of his shirt, and made him produce it with the wasps' nest carefully tied up in it. Tom for his trouble got the strap, and the bykes' nest was destroyed.

At last, at the age of four years, Edward was sent to school; this, however, did not prevent him from continuing his country rambles, and he was constantly playing truant; sometimes he would carry his birds, rats, and leeches with him to school; these during the morning often escaped, and caused much distraction from lessons, so that he was constantly being flogged, and he was expelled for the same reason from three schools.

One day on one of his excursions he picked up a live adder, taking it for an eel, and conveyed it home, having on his way to strip and wade across a stream, with his clothes in one hand and the adder in the other. On arriving home he caused great consternation, and was advised by an elder to take it up to Dr. Fergusson, who was also a chemist and collector. This he did, and the beast was put into a bottle of spirit, and Edward received a small remuneration.

After his expulsion from his third and last school, he went to work at a tobacco spinner's; he got on fairly well with his employer, he being of a similar turn of mind to Edward, and giving his attention to bird-breeding. Edward kept him well supplied with nests and young and old birds; in return for these favours he was allowed to keep rabbits. Tom remained in this situation for about two years, and was then anxious to better his position, his wages here being only four-pence a week.

He next went to a factory at Grandholm, about two miles from Aberdeen. Edward was charmed with the surroundings of his new situation; it stood in a beautiful valley teeming with nature and natural objects, and contained such quantities of birds, insects, and plants. He appears to have been very much struck with the wonderful note of the sedge warbler—also called the English mocking-bird and the Scottish nightingale—and wondered how such a wee thing could imitate so closely almost any bird.

At the sight of his first Kingfisher, how charmed he was. He says:—"What a beautiful bird, what a sparkling gem of Nature, resplendent in plumage and gorgeous in colour, from the bright turquoise-blue to the deepest green and darker shades of copper and gold! I was greatly taken with its extraordinary beauty, and much excited by seeing it dive into the stream. I thought it would drown itself, and that its feathers would eventually become so clogged with water that it would not be able to fly. Had this happened, which of course it did not, my intention was to have plunged into the rescue, when, as a matter of course, I would have claimed the prize as my reward." How feeling and how boylike!

After two years his father apprenticed his elder brother to a baker, and Tom to a shoemaker. Tom's life during his apprenticeship was an unhappy one. He in his spare time collected butterflies, eggs, &c., and, if at any time his master came across any of Tom's collection, he threw them away. His master being a drunkard, and having no sympathy with Tom's ambition, he even went so far as to cruelly ill-use the lad. Tom at last ran away; he was anxious to go to sea, but he could not obtain his parents' consent; so he made a determined tramp to reach the Kettle, which is about one hundred miles from Aberdeen, to find his uncle. The reception he met on arriving there did not at all meet his expectations. The boy soon found he was not welcome, and felt anxious to return home.

In 1831 Edward enlisted in the Aberdeenshire Militia. His Natural History enthusiasm led him into a most awkward and dangerous position, for he was one day, whilst drilling, led to follow a brown fritillary butterfly that at the time was passing. This naturally was a great breach of discipline, and had not some lady friends of the captain, who were present, interceded, he would doubtless have been severely punished.

At the age of twenty-three years he married, and took up his quarters at Banff. He had a happy home, and a good wife, who was in no way opposed to his Natural History work, but who rather encouraged him, and he determined to make a collection.

Now, to his sorrow, did he feel the loss of a sound education; he possessed no works on Natural History, and was consequently severely handicapped. He made regular nocturnal excursions with his gun, bottles, and botanical book, and was taken by his neighbours to be mad. For about fifteen years Edward continued these nocturnal excursions, covering a large area of ground. During the long winter nights he made cases, and arranged his objects.

After four years he had collected some nine hundred insects, and, on visiting his collection one day, he found his cases were all empty. His wife, on seeing the empty cases, asked him what he was to do next. "Well," said he, "it's an awful disappointment; but I think the best thing is to set to work and fill them again." That statement was, I consider, philosophical, and shows a man with a most wonderful power of perseverance and determination. How many men out of a dozen would have made such a noble statement, and carried it into effect?

After a lapse of eight years his collection of Natural History objects had become considerable; he had some three hundred cases, all made by himself, and filled with birds, quadrupeds, insects, &c., and the next thing was, what was to be done with them?

He was never satisfied with his business, and he was anxious to raise money, in order that he might further his researches in Natural History. About that time a fair was held annually at Brandon, and Edward determined to publicly exhibit his collection. His first exhibit was in May, 1845. This exhibition turned out a success, and encouraged him to exhibit the following year.

Led on by success, he deemed his collection sufficiently large and complete to remove it to a more important place, and he chose the City of Aberdeen. He set about and overhauled his cases, and, where necessary, made additions; and, to please the public taste, arranged a few dramatic effects, such as "The Death of Cock Robin," "The Babes in the Wood," "Pussy from Home," &c. When the collection was deemed complete, he set out with a light and cheerful heart for the City of Aberdeen with the brightest expectations. His collection was now such a large one that it took six carrier's carts to convey it. With it he took his wife and five children. Edward chose the finest street in Aberdeen, and the man, when he had got all ready, must have proudly looked upon his exhibition as one the public would visit and admire.

What a disappointment was in store for the poor fellow; how innocent he must have been of the life of the citizen! When the exhibition opened there was no rush; the few who called were more interested in selling specimens to Edward than in admiring his collection; some came to consult him about their pets, as if he were a veterinary surgeon; the remaining few knew nothing of Natural History; and as to the metamorphosis of the caterpillar, few understood or cared. The only consolation Edward got was a few kind words from Dr. Macgillivray; he was very much pleased with the collection, but truly said, "The people of Aberdeen were not yet prepared for an exhibition of this kind." Edward, finding the attendance very small, thought it possible the admission was too high, so he reduced it to a penny; but the million never came.

Things were coming to a crisis. The rent of the shop had to be paid, but he had no money to meet it. After three weeks he was deep in debt, and knowing this was agonizing to him. By the end of the fourth week he had completely lost hope; no one came to his collection; what could he do? No man could ever have been in greater trouble. He had his four weeks' rent to pay, his wife and five children to support, and nowhere to remove his collection to. To take his life was the thought that struck him—a cruel one, too, as it meant only the transmission of the trouble on to others—and he made for the sea. On reaching the beach he even went so far as to remove his hat and coat, and was on the point of making the fatal plunge, when a flocks of sanderlings lit upon the sands near him. This took his attention, and he was struck by seeing a larger and darker plumaged bird of different habits to the others. His curiosity was at once aroused, and he for the moment ceased to think of the reason of his visit to that spot. The bird rose, and he followed, stopped at last by reaching the mouth of the Don. The birds disappeared, and he became a sane man, and no longer had a wish to carry out his purpose. He retraced his steps, and wended his way homeward.

Only one course remained open to him, and that was to sell his collection for what it would fetch. It was another big blow for the poor fellow, and he had at last to part with his fine collection for £20 10s.

I cannot do better than quote from the 'Life of Thomas Edward,' the following:—"Edward had left Banff on the 31st of July, full of hope; after six weeks he returned to it full of despair. He had gone to Aberdeen with his collection, accompanied by his wife and family; he returned from it alone and on foot, without a single specimen of his collection, and without a penny in his pocket." What must that poor fellow's feelings have been?

Time heals our troubles, and so it did Edward's; and after a short time we see him once again at Banff under a roof with his wife and bairns.

It was not long before his ruling passion again reigned supreme, and we find him again starting on his nocturnal excursions. His wife must have understood her husband's nature exactly, and, instead of opposing him as many wives might well have done, and been excused for so doing when a large family of bairns are dependent upon a husband, she appears to have been his greatest help, and went so far as to spend her earnings in buying bottles for his insects, and powder and shot for his gun.

This system, that had grown on him, of stopping out all night in all weathers, at last told its tale, and Edward was subjected to attacks of cold and rheumatism.

During one of his outings with his gun he had a very serious fall over a precipitous rock, and, falling on his gun, smashed it to pieces; this, although unfortunate, may have saved his life. This fall incapacitated him for a few weeks, and compelled him to sell a considerable portion of his newly formed collection.

His old and esteemed friend, the Rev. J. Smith, at this time came forward with some good advice, telling Edward to note down facts which came under his observation, in order that they might be published, and so might benefit others, at the same time giving him some works on Natural History. The good advice of his friend was after a time carried out, and he sent his observations to the 'Banffshire Journal.' Edward, being an uneducated man, no doubt felt backward at writing articles to the scientific journals, as his friend advised him; but after a time he consented to his observations being sent to 'The Zoologist,' on their first being looked over and corrected by his friend.

Edward, at the instigation of his friend the Rev. W. Boyd, afterwards published "The Birds of Strathbeg." This was published in the 'Naturalist,' and was one of the first papers to which Edward attached his name.

In 1855 Edward had again to sell his collection of birds, being again pressed for money to meet the growing demands made upon him by his family; but three years afterwards we again hear of his having accumulated another fine collection.

He was now forty-four years of age, but, instead of being in the prime of his life, these nocturnal habits, and serious falls which at times he had sustained, were telling their tale on his system, and his health at last gave way, and he had an attack of rheumatic fever, which caused him to take to his bed for many weeks. The doctor had to be called in, and he censured him, and impressed upon him the fact that if he did not give up those night excursions he would not hold himself responsible for the result. Doctors, like lawyers, come expensive, and again Edward had to sell forty cases of birds and plants to cover the expenses of his illness.

This illness made him more careful respecting his health, and he now gave his attention to the Natural History of the sea-shore. It was in this branch of science that he gathered his most distinguished laurels. Edward was severely handicapped at first, for he had no boat and no dredges; but he found means of making traps, which he sunk along the coast, and which he periodically visited; he also found that the large fish were the best of fishers, and, by obtaining the stomachs of the cod and other large fish, he was able to procure the rarest of the testaceans and crustaceans. His daughters assisted him in this work by daily visiting the neighbouring fishing village, and twice a week they went to Macduff; one daughter was sent to Gardenstown, where she lived, and sent per carrier the cods' stomachs twice a week.

Edward now had a large family, consisting of his wife and eleven children, and as science had not done, and appeared unlikely to do, anything for him, he determined to return to his cobbler's stool.

Time will not allow of my touching on numerous other incidents connected with this great naturalist's life that I should very much liked to have done, but must sum up my remarks by saying, Edward was a poor, sober, industrious, determined, and enthusiastic lover of nature. The love of nature was so engrounded into his soul that he was compelled to study her ways at all costs. Like many great men that have lived, he did not receive a fair share of praise or reward for the immense amount of work that he did—I fear, chiefly because he was a poor man; and, secondly, for the reason that he lacked a sound education, which prevented him from corresponding freely with those in a higher position in life; who, had they known of this indefatigable worker, might have pecuniarily assisted him; or it may have been that Scotch people are very reticent. They rarely speak of love or affection; it is all understood. It is said that a Scotchman will never tell his wife that he loves her until he is dying; therefore it may be that the Scotchman would not tell Edward that he loved and admired his life's work until he died.

I regret to find Edward did not think that his labours had been properly recognized, and this vexed him. I entirely agree and sympathize with him.

In conclusion, I will give his few last touching remarks from Smiles's 'Life of Edward.' He says:—"I had often been promised aid in the shape of books, but no such aid ever came. All my honours have come from a distance. I have kept the museum of the Banff Institution for about twenty-one years for I may say almost nothing (it was, I think, £2 a year), and, though the Linnean Society thought me worthy of being elected an Associate, the people here did not think me worthy of being an honorary member of their Society; so finally (1875) I betook myself to my old and time-honoured friend—a friend of fifty years' standing, who has never yet forsaken me, or refused help to my body when weary, nor rest to my limbs when tired—my well-worn cobbler's stool."

Not only was Edward's life a most interesting one, showing his ardent love for Natural History, and his great power of determination and perseverance; but he also added materially to our knowledge of the British sessile-eyed crustaceans. He collected over one hundred and fifty species in the Moray Firth, twenty of these being new species; and it is only necessary for those interested to read Bate and Westwood's 'History of the

British Sessile-eyed Crustacea' to see what practical and important help was given by Edward.

In the Linnean Society's 'Journal,' vol. ix. pp. 143–7, will be found "Stray Notes on some of the smaller Crustaceans," by Edward; he also sent many articles to 'The Zoologist' on various subjects from time to time. Edward also completed "The Birds of Strathbeg," which appeared in the 'Naturalist' at the instigation of his friend Mr. Boyd. Several new species found by Edward have, in honour to the great naturalist, been named after him.

On the 5th of April, 1866, Edward was unanimously elected an Associate of the Linnean Society, at the suggestion of Mr. Couch and Mr. Spence Bate, as an appreciation of the great help he had given them. Soon after Edward was made a member of the Aberdeen Natural History Society, and the following year he was presented with a diploma of the Glasgow Natural History Society.

He died on the 27th of April, 1886, in the seventy-second year of his age.

Summary of Proceedings, extracted from the Minutes.

At the meeting held 19th March, 1901, it was resolved that the Honorary Lanternist and Recorder be *ex officio* a member of the Council.

It was further resolved that the thanks of the Society be tendered to the Mayor and County Council of Croydon for their action in purchasing, and thus preserving to the public, Croham Hurst.

At the meeting of the 15th October a draft of the proposed new Rules of the Club was submitted, but its full consideration was postponed to an adjourned meeting to be held 22nd October.

At the adjourned meeting, 22nd October, the new Rules were fully discussed and approved, and notice given that they would be formally submitted to the meeting in November.

At the meeting held on the 19th November they were formally approved and adopted, and notice given that they would take effect on the 1st January, 1902.

The title of the Society, known originally as the "Croydon Microscopical Club" when it was founded in March, 1870, was subsequently changed to that of the "Croydon Microscopical and Natural History Club," and it has now been altered to that of the "Croydon Natural History and Scientific Society," the alteration to take effect, as stated above, from the 1st January, 1902.

The new rules, which were framed with the desire of making the work of the Society as comprehensive as possible, will be found appended (Proc. p. cvii).

At the meeting held 17th December, notice was given that the Annual Meeting would take place on the 21st January.

Messrs. Corcoran and Weightman were appointed auditors of the accounts for the past year.

Excursions.

The following Excursions have taken place during the year, *viz.*:—

April 13*th.* — Visit to the Natural History Museum, South Kensington, of which Mr. G. W. Moore furnishes the following report:—

"A good number of members and a few friends met on Saturday afternoon, 13th April, with the object of seeing the Zoological Galleries and Whale House. Dr. Bowdler Sharp was unable to conduct the party, as had been arranged, but was represented by Mr. W. Pyecraft, to whom the Club is much indebted for the interesting manner in which he conducted the party through the galleries, explaining the arrangement of the specimens, and the objects for they were exhibited.

"Attention was first directed to the cases in the Central Hall, illustrating the theory of evolution, of mimicry, and change of colour in animals due to season and habitat.

"The whale-house was next visited, and attention called in passing to a model designed to illustrate the colouring of marine animals and fishes, *i.e.* dark on the back, and light, or almost white, on the ventral portions of their bodies. The whale-house contains a splendid exhibition of the Cetacea, from the common porpoise (fam. Delphinidæ) to the cachalot or sperm whale, and the whalebone whale (*Balæna mysticetus*). The different structures were carefully indicated, and attention specially drawn to the atrophied rudiments representing the lower limbs in the terrestrial Mammalia, also to the number of the bones in the paddles corresponding to that in the human arm and hand.

"Mr. Pyecraft then conducted the party through the Bird Gallery, arranged to illustrate as exactly as it is possible to do the habits of the birds under natural conditions."

April 27*th.*—Excursion to Grove Park and Chislehurst, in connection with the Geologists' Association, to examine the sections in the Lower London Tertiaries opened up on the widening of this portion of the South Eastern Railway. Conductor, Mr. William Whitaker.

May 11*th.* — Rock Pit, Elmstead Lane, Chislehurst. Conductor, Dr. H. Franklin Parsons, who sends the following notes of the excursion:—

"On May 11th an excursion took place, under the guidance of Dr. Parsons, to Sundridge Park and Chislehurst. This was mainly of geological interest. The party, some of whom went by train and others cycled, met at the Rock Pit, Elmstead Lane. This is a large excavation in the beds of the Oldhaven series; here consisting of current-bedded layers of sand and pebble-gravel, with masses of shelly conglomerate. Fossils are numerous, especially the large oyster (*Ostrea bellovacina*), the shells of which are well preserved, those of other species being mostly so perished that they can scarcely be removed from the matrix. Some good photographs of the section were obtained.

"About a quarter of a mile distant a heap of sandy material was examined, which had been brought up by a shaft from the new tunnel of the South Eastern Railway. In this material, coming from a greater depth, and probably from beneath a protective capping of London Clay, the fossils were better preserved than those at the Rock Pit, especially the shell *Pectunculus plumsteadiensis*, which was extremely abundant, and often in perfect condition, with the two valves in place. Specimens were not unfrequent which were perforated by a round hole made by some whelk or similar predatory gasteropod.

"From Elmstead the party went on to Chislehurst, and visited the 'caves' near the station. These caves are branching galleries driven into the hill-side in the chalk inlier, which here appears in the valley. They were doubtless made in former times for the purpose of getting chalk. The thin roof of chalk has in places given way, allowing the looser superjacent Thanet sand to fall into the tunnel beneath. When the fall is only partial, the result is a conical mound of *débris* on the floor of the tunnel, beneath a lofty dome-shaped roof formed by the Thanet sand; but ultimately the overlying mass completely falls in and blocks up the tunnel, the site of the fall being marked by a deep conical pit in the ground above. The wood over the caves is full of such pits. Tea at the 'Bickley Arms' concluded the day's proceedings."

May 27th (Whit-Monday).—Hever to Tonbridge. Conductor, the President. (See Report of the Botanical Committee.)

June 8th.—Cheam and Epsom, in connection with the Geologists' Association. The route taken was first to the Cheam Brick Works, where sections of the Woolwich and Reading beds are seen; thence through Nonsuch Park, passing the scanty remains of Nonsuch Palace, built by King Henry VIII. as a rival to Wolsey's Palace at Hampton Court, to the brickfields of

Messrs. Stone's at Ewell, where there are interesting sections in the Thanet Sands and Woolwich and Reading beds; continuing the walk past the springs of the Hog's Mill Brook, a large brick-field north-east of Epsom, showing Woolwich and Reading beds, was visited.

June 15*th.* — Excursion in connection with the Geologists' Association to Orpington for further examination of the Tertiary beds exposed in the widening of the South Eastern Railway.

June 22*nd.* — Excursion to Woldingham and Oxted. Conductors: Mr. H. T. Mennell (Botanical); Mr. N. F. Robarts (Geological). For botanical notes of the excursion, see Report of the Botanical Committee.

Geological.—Sections of clay with flints were seen between Woldingham Station and the chalk escarpment. Above Oxted chalk-pits is an outlier of Blackheath pebbles at a height of 868 ft. above Ordnance Datum. The walk was continued along the escarpment to the top of Titsey Hill, where "Plateau implements" have been found at 860 ft. above Ord. Dat. Retracing the road, Oxted chalk-pits (Lower Chalk) were visited, and the route thence passed over the firestone (Upper Greensand) and gault to Oxted.

July 6*th.*—Excursion to Keston Common and Holwood Park. Conductor, Dr. H. F. Parsons. (See Report of Botanical Committee.)

August 5*th* (Bank Holiday). — Excursion to Guildford and neighbourhood. Conductor, Mr. Baldock.

"This being a Bank Holiday, and a whole-day excursion, combined with lovely weather, a good muster of members, including several ladies, put in an appearance. The route followed was in exact accordance with Walker Miles's little book, Series 8, p. 267, which provided a truly beautiful walk of between seven and eight miles.

"On arriving at Guildford the party had dinner, which had been ordered beforehand, and then proceeded to view the old Castle and grounds; continuing, high ground was reached, from which a view was obtained of Hindhead and Blackdown, together with the Charterhouse Schools. Presently the Pilgrim's Way was reached, which leads up to the little chapel of St. Martha's at the summit of the hill, and from here a most beautiful panoramic view is obtained over the valley of Chilworth in front, and of Holmbury and Leith Hill on the right, and the North Downs on the left. Continuing on, a view of the clump of beeches is observed, indicating the situation of the well-known view point, Newland Corner; and a little later the Irvingite church of Albury is passed, and the path followed direct to Shere, where tea was obtained at the well-known 'White Horse.' From there to the station was the only bit of high road traversed; all the rest was through paths, lanes, fields, and woods, making altogether as charming a walk as anyone could wish for."

September 14*th*.—Fungus hunt to Croham Hurst. Conductor, Dr. H. F. Parsons. (See Report of Botanical Committee.)

Reports of Sections for 1901.

Anthropological and Archæological Committee.

During the year 1901 there were four meetings of the Committee and four meetings of the Section. The following gentlemen have exhibited objects at the meeting: Messrs. H. C. Collyer, A. J. Hogg, E. Lovett, N. F. Robarts, and G. Clinch (Hon. Sec.).

A successful excursion to Croham Hurst, in order to inspect the sites of Neolithic dwellings there, was made on Saturday, March 16th, under the guidance of Mr. Clinch, and about forty members attended.

In addition to the ordinary exhibition and discussion of objects illustrative of local anthropology and archæology at the evening meetings, the chief piece of work which has been attempted during the year is the compilation of a list of all local discoveries bearing on the subjects with which the Committee deals. Little more than preliminary work has been accomplished at present, but it is proposed to continue the task as quickly as may be found compatible with that accuracy and precision of detail which alone will make the list permanently valuable. The assistance of any member of the Society who may be able to give precise facts of unrecorded discoveries will be gratefully welcomed. The Council has kindly made a small grant for the purchase of maps, upon which it is proposed to mark the sites of the various discoveries, and the periods to which they belong.

Now that the scope of the Committee has been so widened as to include the subject of archæology, it is hoped that the attendances at our sectional meetings and general interest in our work will appreciably increase.—George Clinch, *Hon. Sec.*

Botanical Committee.

During 1901 the Botanical Committee have continued the investigation of the flora of the commons and wild tracts in the neighbourhood of Croydon, and the number of species recorded has greatly increased. The commons under investigation are (the figures refer to the number of species recorded for 1900 and 1901):—

	1900.	*1901.*	*Recorders.*
Shirley Hills		166	J. Edmund Clark, B.A., B.Sc., and
Croham Hurst ..	213	226	H. T. Mennell, F.L.S.
Mitcham Common	107	461	Arthur Bennett, F.L.S.
Riddlesdown	129	167	A. Fitzgerald and C. E. Salmon.
Hayes and West Wickham Commons	125	281	Dr. H. Franklin Parsons.
Keston Common..	100	231	Dr. H. Franklin Parsons.
Duppas Hill		69	W. Murton Holmes.

Among the excursions of the Club of botanical interest may be mentioned those of:—

May 27th (Whit-Monday). To Hever and Tonbridge. Conductor, the President.

June 22nd. To Woldingham and Oxted. Botanical conductor, Mr. H. T. Mennell, F.L.S.

July 6th. To Keston Common and Holwood Park. Conductor, Dr. H. Franklin Parsons.

Sept. 14th. To Croham Hurst; fungus foray. Conductor, Dr. H. Franklin Parsons.

Botanical notes on these excursions will be found under the heading "Excursions" (Trans., p.).

Evening botanical rambles have been made on:—

May 16th. To Croham Hurst. Conductors, Mr. J. Edmund Clark, B.A., B.Sc., and Mr. H. T. Mennell, F.L.S.

June 20th. To Hayes Common. Conductor, Dr. H. Franklin Parsons.

July 18th. To Riddlesdown. Conductor, Mr. C. E. Salmon.

Notes on the Club Excursion on May 27th, to Hever, Penshurst, and Tonbridge. (By Dr. H. Franklin Parsons.)—The first part of the walk from Hever to Penshurst lay mostly over the Wadhurst clay, and the flora, though rich in species, presented few special features. In one hedge the two forms of *Pyrus Malus* were observed, viz. *acerba*, the wild crab, smooth, with small leaves and spreading, almost spiny branches; and *mitis*, an escape from the cultivated apple, with larger and paler green leaves, downy underneath, as are also the young branches. Other plants observed were *Carex pendula* and *Sedum Telephium* and *reflexum;* the two last on the Tunbridge Wells sandstone.

From Penshurst to Tonbridge the route lay for a good part of the way through alluvial meadows and damp copses by the river Medway, and here several interesting plants were found. The bitter-cress, *Cardamine amara*, found last year at Cowden, was plentiful in many wet places, and *Hottonia palustris*, the "water violet,"—really more nearly allied to the primrose,—was found in several pools. This plant has a habit of growth shared among British plants only by the bladder-wort (*Utricularia*); the stem bears at its upper part a whorl of branches spreading like the spokes of a wheel; these float in the water and form a kind of raft supporting the peduncle, which rises from the centre of the whorl high out of the water. Unlike many submerged aquatic plants, both *Hottonia* and *Utricularia* have showy flowers, adapted for insect fertilization, and this mode of growth carries the flowers well above the surface of the water, so that flying insects can gain access to them.

Willows were plentiful by the margin of the river and ditches, among them being observed the male of the common tree willow, the crack willow (*Salix fragilis*). Even without the catkins, the male of the crack willow is easily distinguished by its foliage, the leaves being much broader than those of the female, darker green and shining; it is, however, readily recognizable as belonging to the same species by the twigs, when bent, snapping off with a straight fracture where they join the parent branch, a character peculiar to this species of willow. The male of this willow and of the allied species, *Salix alba*, is much less common than the female; the long rows of pollard willow trees by the sides of streams and watercourses which form so prominent a feature in the landscape in many low-lying districts generally consisting of female trees. Hence the ripe fruit and cottony seeds are more rarely seen on these willows than on other species, as the sallows, *Salix cinerea* and *caprea* (in which the male catkins, the well-known "palms," are of frequent occurrence), or on the osiers and the creeping willow, *Salix repens*. *Orchis Morio*, *Scirpus sylvaticus*, *Ranunculus hederaceus*, and the yellow water lily were also found.

Notes on the Club Excursion on June 22nd to Woldingham and Oxted. (By Mr. H. T. Mennell, F.L.S.)—This excursion was well attended, being attractive to both geologists and botanists: the former, under the leadership of Mr. Robarts, and the botanists under that of Mr. Mennell. Many plants of interest were gathered, including all the usual representatives of the chalk flora. Orchises were, of course, abundant, including the bee (*Ophrys apifera*), the butterfly (*Habenaria chloroleucà*), the large helleborine (*Cephalanthera grandiflora*), *Orchis pyramidalis*, *O. maculata*, and *Listera ovata*, *Atropa Belladonna* (the deadly nightshade), *Chlora perfoliata*, *Erythræa Centaurium*, *Verbascum nigrum*, *Cynoglossum officinale*, *Scrophularia aquatica*, *Echium vulgare*, may also be mentioned; but the most interesting plants gathered were *Myosotis sylvatica* and the rare *Euphorbia Esula*, which has been previously recorded from the same locality.

Excursion on July 6th to Keston Common and Holwood Park, conducted by Dr. H. Franklin Parsons, who reports:—"By the kind permission of the Earl of Derby, the party—unfortunately not a very large one—had an opportunity of seeing parts of this beautiful and historic park not ordinarily open to the public. The park is undulating and well wooded, and the fine velvety turf contains a varied assortment of wild plants, among them being noticed some species, such as the rock rose and the bee orchis, more usually met with upon chalk downs than on gravelly soils, such as that in Holwood Park. Several notable trees were seen, as Wilberforce's Oak, an ancient oak, under which, as the philanthropist records in a passage of his journal, which is engraved on a neighbouring stone seat, he formed the intention to move for the abolition of the slave trade; another fine oak, called Pitt's Oak; and a large beech tree, called the Twelve Apostles, with twelve stems joined at the base. But the most remarkable of all is a tree formed of a yew and an oak, of which the trunks have completely coalesced, each, however, sending out its own branches, those of the yew spreading wide, and those of the oak rising high above them. In a deep wooded valley a chain of ponds has been formed, which are full of interesting aquatic plants, while ferns and a variety of exotic shrubs grow luxuriantly around their borders."

Fungus Foray on Sept. 14th to Croham Hurst, conducted by Dr. H. Franklin Parsons, who reports:—" At the fungus hunt at Croham Hurst on Sept. 14th some twenty-six species of fungi were observed, chiefly of common kinds. Specimens were more numerous than they have been in the dry seasons of several preceding years. The fungi collected were exhibited and described at the meeting of the Club on Sept. 17th."

[" Later in the autumn, owing to the rain which fell in October, fungi became much more abundant until checked by the frosts of November. Mushrooms were exceptionally plentiful. A specimen of *Agaricus arvensis* more than a foot in diameter grew in the garden of Mr. E. A. Martin at West Croydon, and a gigantic specimen, 2½ ft. high, of what seems to have been the same species found at Beddington Lane is shown in an illustration by Mr. W. M. Duckworth in 'Country Life' of Nov. 9th, 1901."]

The ramble to Croham Hurst on May 16th, under the leadership of Mr. J. Edmund Clark, B.A., B.Sc., and Mr. H. T. Mennell, F.L.S., and favoured by a beautiful evening, was largely attended and much enjoyed by all present. A very large number of plants (about one hundred and fifty in all) were observed and recorded, though none of special interest or rarity. The whortleberry is, as is known, abundant, and the lily of the valley also, but the latter very rarely flowers on Croham Hurst.

On June 20th an evening ramble on Hayes Common was made under the leadership of Dr. Parsons, the part explored being the northern border of the common nearest the village. Some seventy species of plants were recorded. On a piece of sandy ground covered with short turf near the approach from the railway station were found a number of dwarf annual plants, among them being *Trifolium striatum* and *Festuca ambigua*. In a shallow pond, among the aquatics, was *Peplis Portula*. In a large disused gravel-pit *Sedum acre* and *Geranium pyrenaicum* were found, and rubbish-heaps in other pits yielded a number of casuals and weeds of cultivation, as *Papaver somniferum*, *Dipsacus sylvestris*, *Hesperis matronalis*, and *Coronopus Ruellii*.

On July 18th an evening ramble on Riddlesdown was made under the leadership of Mr. C. E. Salmon, who reports that the most interesting plants noticed were *Torilis nodosa*, *Marrubium vulgare*, *Festuca rigida*, and *Hordeum secalinum*.

Among plants of special interest recorded during 1901 are:—

Lactuca Scariola	found at	Greenhithe.
Dipsacus pilosus	,, ,,	Bedlestead, near Chelsham.
Euphorbia Lathyris	,, ,,	Copse at Keston.
Mentha Pulegium	,, ,,	Earlswood Common.
Senecio viscosus	,, ,,	Gravel-pit near Hayes Station.

Owing to the severe frosts in November, which were very destructive to garden flowers, especially to the summer blooming kinds, the number of species and varieties of flowers shown at the Club's Soirée on November 27th was less than in any previous year, being only thirty-two, whereas in previous years the number has ranged from forty-four in 1881 (the first year in which a collection was shown), to one hundred and seventy in the mild autumn of 1897.

The contrast between the late autumn of 1901 and 1900 in its climatic conditions has been most marked. On October 20th Mr. Mennell records ninety species and varieties of plants and flowers in his garden, but a very large number of these were cut off by the sharp night frost of October 24th, and the still more severe one of Nov. 1st completed the destruction, so that the gardens during November and December have been almost completely denuded of flowers. On Christmas Day Mr. Mennell only noted the common primrose in his garden, as compared with over twenty species in the previous year. Of wild flowers on Christmas Day only three or four species were noted: *Lamium album, Calluna vulgaris*, groundsel, and chickweed.

The Committee would again call the attention of the members to the collection of Surrey plants in the Club's possession. An excellent beginning was made with this collection, but it has not been much used or kept up to date during the past two or three years. If one of our members with sufficient leisure would constitute himself curator, and really look after it, large additions could be made to the collection, and several of our botanical members would contribute liberally, if they knew the collection was properly looked after. We fear, however, it may have to wait until the dream of a museum with an efficient curator is realised.—E. F. Klaassen, *Hon. Sec.*

Geological Committee.

The Committee of the Geological Section beg to report that during the year there have been held eight Committee meetings, eight sectional meetings, and three excursions. The average attendance at the Committees has been five, and at sectional meetings nine, including visitors.

The album containing photographs of interesting sections has been kept up.

Entries have been made upon the six-inch Ordnance Map of Croydon belonging to the Club of all sections which have been recorded in the book kept for that purpose.

The Committee have co-operated with the Honorary Secretary of the University Extension Lectures in obtaining subscribers to Mr. F. W. Rudler's lectures upon the scenery of the British Isles.

The following excursions have been organised by the Committee:—

June 11th.—To the pits worked in the middle beds of the London Clay at Thornton Heath brickfields. Conductor, W. Whitaker, Esq., F.R.S., &c. Although there were found numerous septaria, no fossils were discovered, but selenite crystals were fairly abundant. The cutting at Thornton Heath station, showing the junction of the London Clay with the sands of the Oldhaven beds, was also visited. The sands showed slight current-bedding with a few pebbles at the junction with the clay.

June 29th.—To Swanscombe. Conductor, N. F. Robarts, Esq., F.E.S. The Upper Terrace gravels were examined, and a considerable number of palæolithic implements secured. The party were conducted over the pits by Mr. A. C. Hinton, who explained that the gravel shown lying upon the Chalk was that known as the high Terrace of the Thames valley, being 90 to 100 ft. above O.D. The implements found or obtained from the workmen were almost all sharp and unrolled. In the sands and gravel of an adjoining pit forming part of the same terrace, a large number of *Neritina fluviatilis* and *Corbicula fluminalis*, with other shells, were found.

October 12*th.*—To Thornton Heath railway cutting. Conductor, W. Whitaker, Esq., F.R.S., &c. The party, numbering about fifteen, met at 5, Bulganak Road, where Mr. Towse showed mammalian remains found in gravel in the cutting about one hundred and fifty yards north of Brigstock Road, and at a depth of about 20 ft. The remains consisted of molars, some rolled and some unrolled, of *Elephas antiquus*, *E. primigenius*, bones of *Elephas*, and a tooth of *Equus caballus*. The gravel abuts on the London Clay escarpment, and, following the line to the north, gradually rises to the surface, being in some places interstratified with, and in others covered by a wash of clay in which are tertiary pebbles.

The Committee have to report that an interesting section has been opened at Thornton Heath, and further discoveries of mammalian bones have taken place there since the visit of the Section.

The following four photographs of sections have been sent to the British Association Committee on geological photographs:—Elmstead Pit, Sandridge Park (two), by Mr. E. Pierce; Elmstead Pit, Sandridge Park (two), by Mr. J. H. Baldock.—N. F. Robarts, *Hon. Sec.*

Photographic Committee.

The Photographic Section have held their usual weekly meetings during the past year. There has been no sign of any falling off in the number of members attending the meetings.

Among the principal lectures, &c., given before the members of the section during the past year have been:—

Two very interesting lectures by Mr. Baldock explaining the use of the many different kinds of printing papers recently introduced. These two papers have been fully reported in the photographic press.

A lecture by Mr. Baldock on the making of lantern-slides.

A lecture on the work of the late Mr. Rejlander, the pioneer of artistic photography.

A lecture on hand camera work, and one on lantern-slide making, by Mr. A. Horsley Hinton.

A lecture on English Gothic architecture by Mr. Mann.

Sets of lantern-slides illustrating the scenery of Canada and of Pennsylvania have been shown.

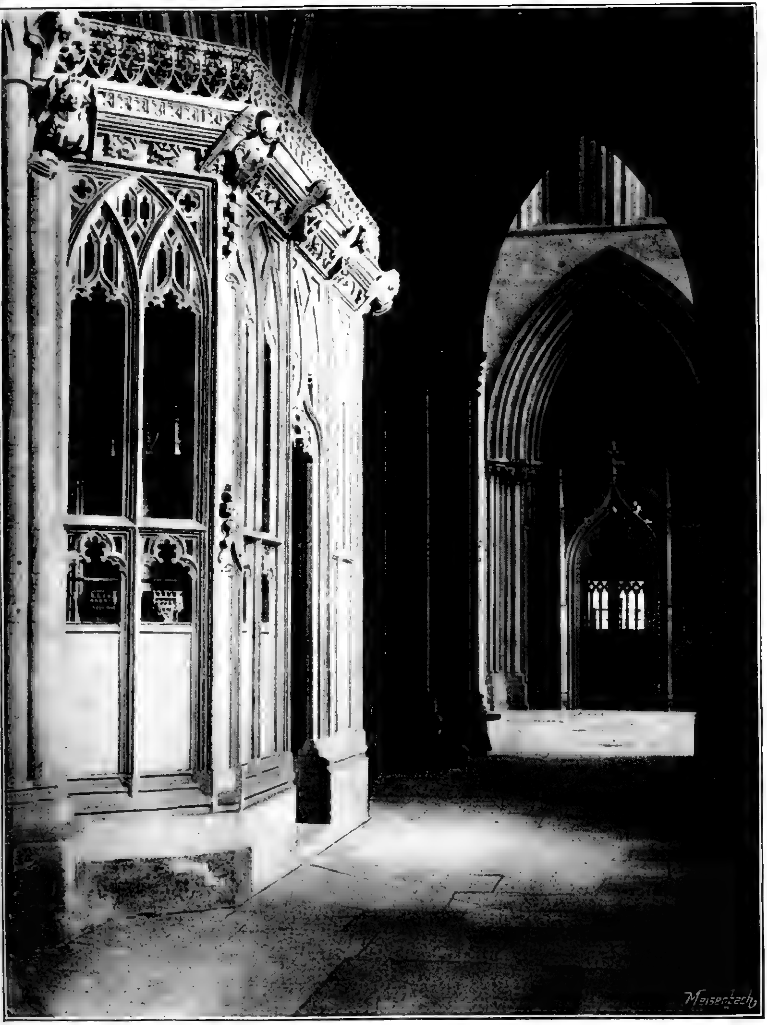
An exhibition of prints and lantern-slides by members of the Club was held in February, and a very good collection of pictures by members was shown at the Soirée in November.

A competition was held, at the suggestion of the President, for the selection of three pictures to be reproduced in the Society's 'Transactions.' The prizes were awarded to Miss A. E. Whitley for a "Cottage at Selworthy, Somerset"; to Dr. Hobson for "The Mole, from Betchworth Bridge"; and to our President for an "Interior of Wells Cathedral." These have been reproduced in "half tone," and will be found in the 'Transactions.'

A COTTAGE, SELWORTHY, SOMERSET

MISS A. E. WHITLEY

THE MOLE FROM BETCHWORTH BRIDGE DR. HOBSON



WELLS CATHEDRAL JAMES EPPS, JUNR.

Another competition has been held amongst junior members for two prizes given by Dr. Hobson.

A completely fitted enlarging apparatus, with an 8½ inch condenser, has been fitted up in the dark room, and can now be used by any member who wishes to make enlargements from his negatives. The want of an enlarging apparatus of this kind has been much felt by the Section in the past, and I am very glad to be able to report that by the kindness of Mr. Epps, who has presented the condenser to the Section, the want no longer exists. The thanks of the Section are due to Mr. Epps for his kindness in thus providing it with a valuable condenser, and for his offer to defray the expense of reproduction of the three best pictures of the year in the 'Transactions' of the Society.

Thanks are also due to Mr. Baldock for his lectures and for his admirable management of the lantern during the past year.—E. Pierce, *Hon. Sec.*

Museum Committee.

The Museum Committee beg to report to the Council that they have met twice during the year.

As instructed by the Council, the Committee have been in communication with the Croydon County Council respecting the formation of a Municipal Museum at Grange Wood, but the Roads Committee, not having adopted the proposal of the Council to fit up a room and supply a caretaker, conditionally upon the Club undertaking the scientific management of a local collection, and bearing the cost of arrangement and any necessary salary to a paid assistant curator for, at all events, the first year, and to further assist the County Council if it commenced the nucleus of a general collection, the proposal has so far fallen through.

The Committee have to report that the number of specimens in the Loan Museum at the Town Hall has grown steadily during the year, about fifty additional specimens having been temporarily lent or given to the Club. The Committee have principally to thank the members of the Geological Section for furnishing contributions, and would particularly point out the need of increased loans of archæological and zoological objects.

The constant opening and shutting of the drawers of the case is causing considerable wear, and it may be necessary to make the drawers run on metal slides if the wear continues.

The objects exhibited still attract much attention from visitors to the Library, and the Museum therefore seems to be fulfilling its purpose.

Arrangements have been made to specially display objects which would from time to time be of particular interest to geological students attending the University Extension lectures.

The Committee have to offer their thanks to the following members of the Club:—Messrs. F. Churchill, J. E. Clark, F.G.S., George Clinch, F.G.S., H. C. Collier, E. A. Martin, F.G.S., H. F. Parsons, M.D., F.G.S., N. F. Robarts, F.G.S., W. Whitaker, B.A., F.R.S., F.G.S., &c.; and to Miss Johnston, Messrs. J. P. Johnson, Garraway Rice, F.S.A., and H. Perry (who are not members), for loans and donations; also to those members and others whose loans have been previously acknowledged, who have allowed their specimens to remain on view during the current year.

Zoological Committee.

During the past year a start has been made towards the resuscitation of this Section, which had unfortunately languished for so long. The honorary secretaryship has been temporarily filled by Mr. E. A. Martin, F.G.S., and it is hoped that during the coming year members of the Society will render all the assistance to this branch that is in their power. It has been arranged that future meetings will be held on the fourth Tuesday in each month.

Members Elected, 1901.

February 19*th.*—Miss Alice Livingston, Miss Emma Livingston, Mr. J. H. Gulianette, Mr. Robert Gilling, Mr. L. N. G. Filon, M.A. Juniors—Miss Dorothy Walker, Miss Norah Thompson.

March 19*th.*—Mrs. Linton Neligan, Dr. Joseph Neligan, Mr. O. G. C. Drury, Mr. G. Phare. Juniors—Miss B. M. Epps, Master James Epps, Master Francis James Linton.

April 16*th.*—Master Carlton Topley.

May 21*st.*—None.

September 17*th.*—Major-General Bedford, R.E., Mr. W. J. Day, Mr. Alfred Thompson.

October 15*th.*—Mr. Edwin Freshfield, LL.D., Mr. Frank Churchill, Mr. J. Cyril Crowley.

November 19*th.*—Miss Edith Waterall.

December 17*th.*—Dr. Edward H. Willock.

January 21*st*, 1902.—Mr. Reginald A. Crowley.

Donations to the Library, 1901.

From Individuals.—Guide to the Geology of London; Nature Notes—Mr. W. Whitaker. Miller's Elements of Chemistry—Mr. Baldock. Notes on *Limonium lychnidifolium*—Mr. C. E. Salmon. The Naturalist's Directory—Mr. E. A. Martin. Upper Chalk Radiolaria from Coulsdon—Mr. Murton Holmes. Knowledge—Mr. Roods.

From Societies.—The Rochester Naturalist; Journal of the Royal Microscopical Society; Transactions of the Eastbourne Natural History Society; History of the Berwickshire Natural History Club, and the Session Book of Bunkle and Preston; Report of the British Association (Bradford) Meeting, 1900; Journal of the Manchester Geographical Society; Proceedings of the Academy of Natural Sciences, Philadelphia; Journal of the Belgian Microscopical Society; Proceedings of the Reading Literary and Scientific Society; Meteorological Report of the Fernley Observatory, Southport; Journal of the Northamptonshire Natural History Society; Proceedings of the Société Royale Malacologique of Belgium; Transactions of the Norfolk and Norwich Naturalists' Society; Journal of the Geological Institution of the University of Upsala; The Twelfth Report of the Missouri Botanical Gardens; Journal of the Quekett Microscopical Club; Proceedings of the South London Entomological and Natural History Society; Bulletin of the Lloyd Library of Cincinnati; The South Eastern Naturalist.

From Publishers. — The British Journal of Photography; The Amateur Photographer; Photography; The Photographic News; The Magic Lantern Journal.

Croydon Natural History and Scientific Society.—Balance-sheet for the Year ending 31st December, 1902.

Receipts.

1901. December 31.	£	s.	d.	£	s.	d.
Subscriptions, 1899 and 1900 ...	6	0	0			
,, 1901, received in 1900	6	12	6			
,, 1901, ,, 1901	101	5	0			
				113	17	6
Donations—F. C.-Bayard, Esq. ...	5	0	0			
,, Exors. of P. Crowley, Esq.	5	0	0			
,, Baldwin Latham, Esq.	5	0	0			
,, Dr. G. Bower	0	5	0			
,, T. G. Brownsmith, Esq.	0	5	0			
,, Sutton Waterworks Co.	0	5	0			
				15	15	0
Sales of Transactions				0	6	0
Donations from Members of Council for Repairs to Books				2	5	6
				£132	4	0

Payments.

1901. January 1.	£	s.	d.	£	s.	d.
By Balance due Treasurer				10	6	4
Rent of Club Room				10	0	0
Hire of Rooms for Meetings				4	10	0
Printing Transactions				27	3	2
Fire Insurance—Paid County Fire Office				1	13	9
Meteorol. Committ.—Printing Rainfall Returns, Dec. 1900, to Nov. 1901				24	7	0
Photographic Committee—						
Rent of Dark Room	10	0	0			
Hire of Rooms for Meetings ...	0	10	0			
Portfolio, Postages, &c.	1	5	2			
Gas for Lectures, Postages, &c. ...	5	0	9			
Subscrip. to Royal Photogr. Society	1	1	0			
				17	16	11
Printing Monthly Circulars, Postages on same, and on Transactions ...				12	19	9
Geological Committee, Postages, &c.				2	5	4
Botanical Committee, Postages ...				0	3	1
Stationery, and Printing Expenses *re* New Rules				7	15	0
Cost of Re-binding Books sent to Public Library				1	17	6
Secretary's and Treasurer's Postage and Stationery Account				3	12	2
Subscription to South-Eastern Union of Scientific Societies				0	5	0
Assistant Secretary				5	0	0
Gratuities				1	6	0
Balance				1	3	0
				£132	4	0

SPECIAL FUND ACCOUNT.

£186 9s. 0d. CONSOLS.

	£	s.	d.		£	s.	d.
1901.				1901.			
January 1.				December 31.			
Balance	26	3	6	County Fire Office for Insurance on Museum Case	0	2	6
Dividend, January	1	4	4	Cost of Trays and extra Locks	1	8	7
,, April	1	4	4	Repairs to Cyclostyle	0	12	0
,, July	1	4	2	Cost of Photographic Enlarging Lantern ...	2	0	0
,, September	1	4	2	Poles for Lantern Sheet	0	12	0
				Balance	26	5	5
	£31	0	6		£31	0	6

BALANCE SHEET.

	£	s.	d.		£	s.	d.
1902.				1902.			
January 1.				January 1.			
Balance of General Account	1	3	0	Balance at Bank	31	8	5
,, Special Account	26	5	5				
Subscriptions for 1902, received in advance ...	4	0	0				
	£31	8	5		£31	8	5

We, the undersigned, having examined the above Accounts and the Vouchers relating thereto, hereby certify that they are correct according to the Vouchers and the Banker's Pass Book.

BRYAN CORCORAN.
W. A. WEIGHTMAN.

7th January, 1902.

RULES

OF THE

Croydon Natural History and Scientific Society.

Title and Object.

1.—The Croydon Microscopical and Natural History Club shall in future be called "The Croydon Natural History and Scientific Society," and shall have for its objects the study of Science, and especially of the Natural History of the neighbourhood of Croydon and of the County of Surrey, and the practice of Microscopy and Photography.

Management and Officers.

2.—The Officers of the Society shall consist of a President, Vice-Presidents, Honorary Treasurer, Secretary, Librarian, Lanternist, and Museum Curator. The business of the Society shall be conducted by a Council consisting of the Officers of the Society, who shall be *ex officio* members thereof, and of seven ordinary members.

3.—At all meetings of the Council four members shall form a quorum.

Election of Officers.

4.—The Officers of the Society and other Members of the Council shall be elected at the Annual Meeting. The President shall not hold office more than two years in succession. The Vice-Presidents shall not exceed three in number. Two of the retiring ordinary members shall not be eligible for re-election. Such members shall be (*a*) the one who has attended the smallest number of Council Meetings during the past year; (*b*) the one who has served upon the Council the longest. If two or more ordinary members have attended an equal number of Council Meetings, that member shall be eligible who has served the longest. If two or more members have served an equal length of time, that member shall be ineligible who has attended the Council least during the past year. In the event of any vacancy occurring in the Council during the year, the election to fill the vacancy shall take place at the next ordinary meeting but one, the election being conducted in the same manner as at the annual meeting.

Membership.

5.—Both Ladies and Gentlemen shall be eligible for membership.

Junior Members.

6.—Persons under 18 years of age may be elected, in the usual manner, Junior Members of the Society, and shall be entitled to all the privileges of Members, except that they shall not be entitled to vote on any question. They will become Full Members, without further election, on the 1st January of the year after that in which they have become 18 years of age, subject to the payment of the usual subscription.

Candidates.

7.—Every candidate for membership shall be proposed by two or more members, who shall sign a certificate of recommendation. One, at least, of the proposers shall have a personal knowledge of the candidate. The certificate shall be read from the chair at an ordinary meeting, and the candidate recommended shall be ballotted for at the following ordinary meeting. One black ball in five to exclude. If two or more candidates are ballotted for together, and any black ball be found in the box, the ballot shall be taken for each candidate separately.

Subscriptions. — Life Members.

8.—The Annual Subscription for members shall be 10s., and for Junior members 2s. 6d. Such subscription shall be payable in advance on the 1st January (or on election, if previous to December), and no person, whose subscription is unpaid, shall be entitled to the privileges of the Society. Any member desirous of compounding for his or her future subscription may do so at any time by payment of ten pounds; all such sums shall be duly invested in such manner as the Council shall think fit.

Hon. Members.

9.—Distinguished persons may be elected Honorary Members of the Society, but such Honorary Members shall have no vote in its affairs.

Resignation.

10.—No member shall be considered to have withdrawn from the Society until that member shall have paid up all arrears and have given a written notice to the Secretary of his or her intention to resign; and any member more than one year in arrear may be removed from the list of members by the Council.

Expulsion.

11.—If it shall be thought desirable to expel any member from the Society, and a resolution of the Council be passed to that effect, the same shall be read at the next ordinary meeting; and at the following meeting a ballot shall take place with respect to the proposition, when, if two-thirds of the members present shall confirm such resolution, the same shall thereupon take effect.

Visitors.

12.—Any member may introduce two Visitors at an ordinary meeting. Such Visitors shall write their names, and that of the member by whom they are introduced, in a book kept for that purpose.

Ordinary Meetings.

13.—The ordinary meetings of the Society shall be held on the third Tuesday in every month, except in the months of June, July, and August; the chair shall be taken at Eight p.m., or at such other time as the Council may appoint. The room shall be open for the reception and inspection of objects of interest at 7 p.m.

14.—The ordinary course of proceeding shall be as follows:—

1.—The Minutes of the previous meeting shall be read and submitted for confirmation.

2.—Donations to the Library and Museum shall be announced.

3.—The certificates of Candidates for membership shall be read, the ballot for election of Members shall take place, and any other business shall be transacted.

4.—The exhibits shall be explained and scientific communications shall be read and discussed.

15.—At any meeting, in the absence of the President, or Vice-Presidents, the members present shall elect a Chairman for that meeting.

Papers.

16.—No paper shall be read which has not received the sanction of the Council; and whenever it is possible, early notice of the subjects of the papers to be read shall be given by the Secretary to the members. The papers shall be deposited with the Hon. Secretary for publication at the discretion of the Council.

Accounts.

17.—The Accounts of the Society shall be audited by two members appointed at the ordinary meeting in December. No member of the Council shall be eligible as an auditor.

Annual Meeting.

18.—At the ordinary meeting in December, notice of the Annual Meeting in January shall be given from the chair.

Proceedings at Annual Meeting.

19.—The Annual Meeting of the Society shall be held after the ordinary meeting, in January, when the election of the Council and Committees for the year ensuing shall take place, and the Balance Sheet for the past year, duly signed by the Auditors, shall be read by the Treasurer, after which the President shall deliver his address.

Appointment of Officers.

20.—The Officers of the Society and other members of the Council shall be nominated in writing, and such nominations shall be sent to the Hon. Secretary at least seven clear days before the Annual Meeting. In the event of the number of nominations exceeding the number of officers or members of the Council respectively to be elected, a printed list of the nominations shall be circulated at the Annual Meeting, and the members present shall vote by striking out the names of those for whom they do not desire to vote, and placing the lists in an urn upon the table. Scrutineers shall be appointed at the meeting, and the votes shall be counted during the course of the evening.

Sectional Committees.

21.—At the Annual Meeting Sectional Committees shall be appointed for Anthropology, Archæology, Botany, Geology, Meteorology, Microscopy, Photography, and Zoology, or such of these or other subjects as may at any time seem desirable; also a Museum Committee, which shall have the general management of the Society's Museum.

22.—Each Committee shall appoint its own Chairman and Secretary.

Sectional Committee Meetings.

23.—Each Sectional Committee shall present a report to the Council by the 31st December of each year, informing the Council what work has been done by the Section during the year. The meetings of the Committees shall be held on such dates and at such times as the Committees shall appoint.

Extraordinary Meeting.

24.—An Extraordinary Meeting of the Society may be called at any time by the Council, or at the written request of ten or more members. Such request shall be delivered to the Council, who shall summon such meeting to be held within 28 days of the receipt of such notice. Seven days' notice of any extraordinary meeting, with particulars of the business to be transacted, shall be given to each member by circular.

Alteration in Rules.

25.—No permanent alteration of these rules shall be made except at one of the ordinary meetings of the Society, and notice of any proposed permanent alteration or addition must be given in writing at or before the preceding ordinary meeting, and read aloud, and included in the circular convening the meeting, at which it shall be brought forward for consideration.

LIBRARY.

1.—Application for the loan of books or lantern or microscopical slides in the custody of the Hon. Librarian shall be made to him, the borrower to sign a receipt, which will be cancelled on the return of the book or slides borrowed.

2.—No member may borrow more than one book or set of slides at one time.

3.—No book or set of slides may be retained longer than one month, but the same may be again borrowed provided there be no other applicant for it. Any member not complying with this rule will incur a fine of 1s. for each month after the first that the object is retained.

4.—The borrower shall make good all damage which any book, &c., may receive while under his or her charge; such damage to be assessed by the Council.

5.—Books marked "R" (reference), and unbound pamphlets are not to be removed from the reading room.

6.—No member shall be entitled to the privileges of the Library who has not paid such fines as he or she may have incurred.

7.—The Society's books in the charge of the Librarian at the Town Hall may be borrowed upon the same terms as those in the charge of the Hon. Librarian. The applicant shall, if so required by the Librarian, produce the receipt for the current year's subscription as evidence of membership.

TRANSACTIONS

OF

THE CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

1901–1902.

1.—Report of the Meteorological Committee, 1901.

Prepared by the Hon. Sec., Francis Campbell-Bayard, F.R.Met.Soc.

The same arrangements, under which the daily rainfall of the district around Croydon has been observed and tabulated, have been continued throughout the year 1901. On entering into the first year of the second decade, according to the rules of the Royal Meteorological Society, of the Society's operations, it is perhaps unnecessary to emphasize the great value of continuing the same plan as laid down originally, for in all statistical observations the value of continuity is considered of first-rate importance.

The number of stations in the printed list is 83, and there are two additional stations—*viz.* Redhill (Linkfield Road), and Benhilton, the records of which are practically complete for the whole year, and which will be found at the end of this Report. These 85 stations are under the superintendence of 66 observers. The only change during the year in the observers is at Beckenham, which change was mentioned in the March sheet. The Committee desire to congratulate the Society on the absence of any further change.

Appendix I. to this Report contains a list of the observers, with particulars relating to the stations and gauges, and also the monthly tables of daily rainfall, of which a sufficient number have from month to month been pulled for the use of the Society.

These printed tables contain the records of all observers, with the exceptions already mentioned, reporting to the Committee.

Appendix II. contains a record of all falls of rain of 1·00 in. and upwards, extracted from the monthly tables in Appendix I. It will be noticed that there is only one fall exceeding 2·00 in.—*viz.* 2·07 on October 1st at Harp's Oak Cottage—and that there are no less than eleven days on which there were falls of 1·00 in. and upwards, as against only six days in the previous years.

The year's rainfall must be described as a short one. In order, if possible, to find out the deficiency, the year's rainfall has been compared with the 10 years' averages given in last year's report. In that report the averages for 48 stations were given, and of these stations 45 may be considered as continuous. Of course, it must be recollected that a 10 years' average is not an absolute one, in fact, some of the greatest rainfall authorities

TABLE A.

Rainfall Deficits in 1901 as compared with the Averages 1891–1900.

Stations.	Height ab. sea-level.	Deficit.	Stations.	Height ab. sea-level.	Deficit.
	FT.	IN.		FT.	IN.
Sevenoaks	380	7·23	Croydon (Duppas H.)	158	2·76
Richmond	109	5·80	Addington (Park Farm)	268	2·74
Raynes Park	47	5·77	Dorking (Denbies)	610	2·72
D'Abernon Chase	280	5·38	Nunhead	176	2·72
Wimbledon Hill*	162	5·30	Orpington	220	2·53
Kingston	25	5·24	Banstead	488	2·34
Surbiton	25	5·10	Caterham	610	2·31
Knockholt	785	4·79	Croydon (Brim. Bn.)	130	2·25
New Maldon	45	4·72	,, (Waddon N. Rd.)	146	2·09
Wimbledon (Sew. Wks.)	58	4·56	Addington (Pump Sta.)	331	2·03
Oxshott	212	4·35	Wallington	140	2·01
Abinger (The Hall)	320	4·26	Bickley	295	1·91
Forest Hill (Newf. Ho.)	220	3·50	Deptford	20	1·91
,, (S. & V. W. C.)	344	3·39	Greenwich	155	1·90
W. Norwood	220	3·34	Sidcup	160	1·82
Farningham Hill	300	3·20	Leatherhead	250	1·80
Reigate Hill	440	3·18	Croydon (Whitgift)	191	1·73
Redhill	300	3·14	Nutfield	468	1·64
Wilmington	25	3·09	Brixton	77	1·37
Esher	40	3·08	Beckenham*	155	1·32
Beddington	120	2·91	Addington Hills	473	1·07
South Norwood	125	2·87	Battersea	21	0·93
Sutton*	110	2·78			

* The stations marked * are different from those from which the averages are calculated, but are in the near neighbourhood.

consider that an average of 100 years is not long enough; but still, with all its disadvantages, a 10 years' average affords a certain guide with which to compare an individual year, more especially when the stations are practically the same. On these lines Table A has been framed. The stations have been arranged in order of deficiency irrespective of height above sea-level, and, where two or more stations have the same amount of deficiency, in alphabetical order. The table is well worth very careful study, but it appears to your Committee that, in looking over it, careful reference should be made to Appendix II., "Falls of 1 in. and upwards." The differences in the deficiency of rainfall are very large. In a district of about four hundred square miles we have between the greatest and least no less than 6·30 inches. Why there should be this great difference is inexplicable with our present knowledge, seeing that both stations are compared with their own 10 years' averages. As showing the differences between long and short averages, your Committee desire to mention that, with respect to Greenwich, if the year 1901 is compared with the 85 years' average (1816–1900), the deficiency is 4·46 in., but if with the 10 years' average (1891–1900), the deficiency is only 1·90 in. Again, take Surbiton: if the year 1901 is compared with the 45 years' average (1856–1900), the deficiency is 6·58 in., but if with the 10 years' average (1891–1900) it is 5·10 in.

With respect to the average rainfall of the different months, the monthly notes give all the particulars, but the Committee wish particularly to refer to the months of November and December, in which months we have the smallest and greatest rainfall in the respective months for many years past. It is a very rare occurrence to have two months so exactly opposite to one another following one another in succession.

The greatest daily rainfall was at Harp's Oak Cottage, on October 1st, and this was the only one over 2·00 inches. The number of days in which 1 inch or more fell in the district was eleven, a number which is nearly double of the number of last year.

In conclusion, the Committee desire to tender their thanks to those who have helped the Society by their donations to this great work, which is yearly becoming of greater value to the Society, and also to the district served by it.

HURSTLEIGH, LINKFIELD ROAD, REDHILL, SURREY.

Observer—MRS. STEPHENSON. Gauge 5 in. in diameter.

Height of gauge above ground, 1 ft.
Height of station above sea-level, 350 ft.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN. 1·62	IN. 1·63	IN. 2·24	IN. 2·26	IN. 1·25	IN. 1·78	IN. 1·98	IN. 2·17	IN. 1·67	IN. 3·62	IN. 0·82	IN. 4·79	IN. 25·83

ELMSLEIGH, LONDON ROAD, BENHILTON, SURREY.

Observer—J. C. M. STANTON. Gauge 5 in. in diameter.

Height of gauge above ground, 15 in.
Height of station above sea-level, 125 ft.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN. 0·86	IN. 0·91	IN. 2·62	IN. 1·92	IN. 0·70	IN. 1·38	IN. 3·03	IN. 1·88	IN. 1·51	IN. 2·75	IN. 0·51	IN. 3·75	IN. 21·82

APPENDIX I.

CROYDON MICROSCOPICAL AND NATURAL HISTORY CLUB

(Meteorological Committee.)

No.	Stations.	Observers.	Size of Gauge.	Height above Ground.		Height of Statn. ab. Sea-level.
			IN.	FT.	IN.	FT.
	Abinger (The Hall)	The Lord Farrer	8	2	0	320
	Abinger (The Rectory)	Miss Brodie-Hall	5	1	0	381
	Dorking (Denbies)	J. Beesley	5	0	6	610
	Redhill (Oxford Road)	W. H. Tyndall	8	1	0	300
5	Nutfield (The Priory)	J. Moffatt	8	1	2	468
	Nutfield (The Priory) 2nd gauge	J. Moffatt	8	1	2	331
	Buckland (Hartswood)	R. W. Clutton	5	1	0½	174
	Reigate Hill (Nutwood Lodge)	H. E. Gurney	5	1	0	440
	Upper Gatton (The Park)	F. Druce	5	1	0	600
10	Merstham (Rockshaw)	W. Gardiner	5	1	0	475
	Harp's Oak Cottage	R. C. Grant	5	1	0	454
	Chipstead (Shabden Park)	J. Crerar	5	1	0	550
	Chaldon (The Rectory)	Rev. G. E. Belcher	5	1	0	542
	Caterham (Metropolitan Asylum)	G. S. Elliott	5	1	0	610
15	Westerham (Hill Estate)	W. Morris	5	1	0	539
	Westerham (The Town)	W. Morris	5	1	0	380
	Knockholt Beeches (Field Gauge)	W. Morris	5	1	0	785
	Knockholt Beeches (Tower Gauge)	W. Morris	5	24	6	812
	Chevening (The Park)	C. Sutton	5	1	0	360
20	Sevenoaks (St. Johns Hill)	W. W. Wagstaffe	5	1	10	380
	Chelsham (Fairchildes)	A. S. Daniell	8	1	0	600
	Warlingham (Egremont)	H. Rogers	5	1	0	614
	Kenley (Hazelea)	Mrs. Carr-Dyer	5	1	0	282
	Sanderstead (The Red House)	Capt. Carpenter, R.N.	5	1	0	320
25	Burgh Heath (The Reservoir)	J. D. Grant	5	1	0	580
	Leatherhead (Downside)	A. Tate	5	1	0	250
	D'Abernon Chase	Sir W. Vincent, Bart.	5	1	0	280
	Oxshott (Beverstone)	W. H. Dines	5	1	0	212
	Banstead (The Larches)	Rev. C. J. Taylor	8	1	0	488
30	Sutton (Sutton Water Co.)	J. D. Grant	5	1	0	110
	Carshalton (Sewage Works)	W. W. Gale	5	1	0	118
	Wallington (Maldon Road)	F. Campbell-Bayard	5	4	1	140
	Beddington (Riverside)	S. Rostron	5	1	0	120
	Croydon (Brimstone Barn)	Croydon Corporation	5	1	0	130
35	Croydon (Waddon New Road)	Croydon Corporation	5	1	0	146
	Croydon (Duppas House)	Baldwin Latham	8	1	0	158
	Croydon (Whitgift)	A. E. Watson	5	1	0	191

No.	Stations.	Observers.	Size of Gauge.	Height above Ground.		Height of Statn. ab. Sea-level.
			IN.	FT.	IN.	FT.
	Croydon (Woburn Road)........	M. L. Craven	5	1	1	178
	Croydon (Windmill Road)	A. Malden	5	1	6	174
40	Croydon (Park Hill Rise)	H. F. Parsons, M.D.	5	1	0	250
	Croydon (Ashburton Road)......	J. E. Clark	5	1	0	188
	Addington Hills (The Reservoir)..	Croydon Corporation	8	0	9	473
	Addington (Park Farm)	W. Whalley	5	1	0	268
	Addington (Pumping Station)....	Croydon Corporation	8	1	0	331
45	West Wickham (Wickham Court)	Sir H. F. Lennard, Bt.	5	1	2	300
	Farnborough (Feniton)	Miss Percy	5	1	0	376
	Orpington (Kent Water Co.)	W. Morris	5	1	0	220
	Farningham Hill (Hill House) ..	A. J. Waring	5	3	0	300
	Southfleet (Kent Water Co.)	W. Morris	5	1	0	82
50	Chislehurst (Hawkwood)	Miss Edlmann	5	1	0	300
	Bickley (The High Field)	J. Batten	5	1	2	295
	Bromley (The Palace)	Coles Child	5	1	0	187
	Bromley Common (Elmfield)	Rev. J. P. Faunthorpe	5	0	9	240
	Beckenham (Oakwood Avenue) ..	H. Dolling-Smith ..	5	1	0	184
55	South Norwood (Apsley Road) ..	W. H. Cullis........	5	1	0	125
	Morden (Steel Hayes)	Miss R. Hames......	5	5	2	100
	Wimbledon (Sewage Works)	C. H. Cooper	5	1	0	58
	Wimbledon (The Downs)	Francis Fox	5	1	1	162
	Raynes Park (Pumping Station)..	C. H. Cooper	5	1	0	47
60	New Malden (Sewage Works)	T. V. H. Davison....	5	1	0	45
	Worcester Park (Manor Lodge)..	F. D. Outram	5	1	9	120
	Esher (Sewage Works)..........	A. J. Henderson	5	1	0	40
	West Molesey (Chelsea W. Co.)..	R. Hack............	5	1	0	32
	Surbiton (Seething Wells)	R. Hack............	10	0	6	25
65	Kingston (Sewage Works)	T. Stevens..........	5	1	0	25
	Richmond (The Terrace)	J. H. Brierley	8	1	6	109
	Putney Heath (The Reservoirs)..	R. Hack............	5	1	0	180
	Wandsworth Com. (Patten Road)	F. J. Brodie	5	1	0	100
	Clapham Park (New Park Road)	D. W. Horner	5	1	3	128
70	Streatham (Woodfield Avenue)...	F. Jordan	5	1	0	120
	West Norwood (Thornlaw Road)..	W. Marriott	5	1	0	220
	Up. Norwood (Dulwich-wood Park)	J. P. Caldicott	5	1	2	276
	Forest Hill (Dartmouth Road) ...	L. W. F. Behrens ..	5	1	0	220
	Forest Hill (S. & V. Water Co.)..	J. W. Restler	5	1	0	344
75	Sidcup (Hatherley Road)	Lionel Burrell, M.D.	5	1	2	160
	Wilmington (Kent Water Co.)....	W. Morris..........	5	1	0	25
	Dartford (West Hill House)	Lieut-Col. C. N. Kidd	5	1	3	100
	Eltham (High Street)	W. Morris..........	5	1	0	245
	Greenwich (Royal Observatory)..	Astronomer Royal ..	8	0	5	155
80	Deptford (Kent Water Co.)	W. Morris	5	1	0	20
	Nunhead (S. & V. Water Co.)....	J. W. Restler	5	4	0	176
	Brixton (Acre Lane)............	F. Gaster	8	1	0	77
	Battersea (S. & V. Water Co.) ...	J. W. Restler	5	3	0	21

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·08	·08	·02	·03	·02	·03	·02	·01	·01	·02	·02	..	..	·02	..			..	·02		·02	·02	·02		·05
2	..	..	..	..	·01	·01	·01	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
3	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..			..	..		..	..	..		..
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5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
6	·04	..	..	·04	·05	·05	..	·02	·04	·05	..	..	..	·04	..	..			·07	·04		..	·12	·02		..
7	..	..	·14	·12	·12	·11	·13	·09	·11	·11	·12	·12	·12	·13	·05	·07			·12	·04		·13	·08	·01		·16
8	·29	·31	·24	·40	·29	·23	·39	·32	·30	·20	·23	·26	·20	·18	·11	·07			·05	·08		·12	·12	·09		·32
9	..	..	..	·03	..	·02	..	·01	..	..	..	..	..	·08	·02	·12			..	·01		..	·02	·01		..
10	..	..	..	..	·01	·01	..	..	..	..	..	·02	..	..	..	..			..	..		..	..	..		..
11	..	·01	..	·01	..	·01	..	..	..	..	·01	..	..	..	..	..			..	·02		..	..	..		..
12	..	..	..	..	..	..	..	·01	·01	..	..	·01	·01	..	..	..			..	..		..	..	..		·05
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
15	..	..	..	..	·02	·01	..	..	..	..	..	..	·05	..	..	..			..	..		·02	..	..		..
16	·21	·14	·14	·09	·06	·07	·08	·08	·10	·07	·08	·09	·03	·09	·08	..	MONTHLY GAUGE.	MONTHLY GAUGE.	·05	·05	MONTHLY GAUGE.	·07	·08	·04	MONTHLY GAUGE.	·11
17	..	..	..	..	·01	·01	..	·01	..	..	·02	..	·10	..	..	..			..	..		..	..	..		..
18	·18	·24	·11	·06	·09	·11	·11	·05	·10	·10	·12	·10	·13	·10	·03	..			·07	·10		·10	..	·06		·06
19	·28	·25	·37	·28	·14	·23	·20	·26	·23	·22	·19	·24	·13	·29	·30	·30			·25	·11		·24	·29	·20		·34
20	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..			·01	·02		..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..	..	·05	·03	..	..			..	..		..	..	..		..
22	..	..	..	..	·01	·01	..	..	..	..	·01	..	·07	..	..	..			..	..		..	..	..		..
23	..	..	..	·02	·01	·01	·01	·02	·02	·01	·07	·02	·07	·02	..	..			..	·01		·01	..	..		..
24	·05	·08	·07	·05	·04	·04	·05	·04	·06	·04	·05	·06	·06	·08	·05	·11			·02	·04		·08	·05	·04		·06
25	·05	·04	·06	·05	·06	·06	·05	·04	·04	·04	..	·04	·07	·05	·04	·13			·07	·03		·05	·06	·02		·04
26	·04	·05	·04	·01	·01	·01	·01	·02	·01	·01	·01	·01	..	·02	..	..			·01	..		..	..	..		·02
27	·02	·01	·10	·14	·13	·13	·03	·09	·11	·05	·04	·04	·07	·05	·07	..			·17	·22		·08	·13	·11		·10
28	·11	..	·15	·20	·19	·20	·16	·21	·15	·20	·21	·18	·08	·21	·14	·11			·14	·10		·10	·13	·08		·16
29	..	..	..	..	..	..	..	..	..	..	..	·01	·06	..	..	..			..	..		..	..	..		..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
31	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..			..	..		..	..	..		..
*	1·36	1·21	1·50	1·52	1·28	1·35	1·26	1·32	1·30	1·12	1·18	1·22	1·30	1·37	·91	·91	·97	·51	1·03	·89	1·04	1·02	1·10	·70	1·39	1·47
†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for January is 1·87 in.* **January, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Farnborough	Orpington	Farningham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·05	·02	·02	·02	·02	·01	·01	·01	·02	·02	·03	·04	·01	..	·02	·03	·03	·02	·02	·03	·02	..	·04	·02	·02
2	..	..	·01	..	..	..	..	..	..	·01	..	..	..	·01	..	..	..	·01	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
6	..	·02	·03	·01	·04	·04	·03	·04	·05	·03	·05	·04	·03	·01	..	·06	..	·06	..	·08	..	·15	·17	..	·09	·08
7	·06	·11	·12	·06	·06	·10	·09	·08	·10	·09	·10	·10	·07	·12	·12	·10	..	·08	..	·07	·18	·09	·09	·16	·10	·05
8	·39	·21	·37	·13	·07	·12	·11	·09	·08	·07	·15	·10	·09	·09	·20	·12	·26	·13	·16	·05	·05	·07	·04	·04	·05	·05
9	·02	·01	·01	·05	·02	..	·03	..	..	·03	..	..	..	·01	..	·01	..	..	·08	..	..	..	..	..	..	·01
10	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·04	..	..	..	..	·01	..	..	·01	..	·01	..	..	·01	·01	·01	..	·01	..	·01	..	..	..	..	..	..
12	..	..	·01	..	..	·01	..	..	..	·01	..	..	..	..	..	·01	·02	..	..	..	..	..	..	..	·01	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·01	..	·02	..	..	·01	..	..	..	·01	·01	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..
16	..	·07	·08	·03	·03	·03	·05	·03	·04	·04	·04	·03	·03	·05	·04	·03	·04	·04	·07	·04	·02	·02	..	..	·04	·03
17	·02	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	·02	..	..	..
18	·18	·10	·10	·07	·08	·07	·07	·05	·09	·06	·06	·04	·03	·05	·03	·07	·04	·06	·05	·04	·02	·03	·05	..	·04	·04
19	·14	·18	·29	·22	·15	·20	·20	·18	·17	·18	·20	·19	·14	·16	·19	·19	·24	·22	·21	·19	·18	·14	·08	·19	·15	·12
20	..	..	..	..	·01	..	..	..	..	..	..	·01	..	·01	..	..	·01	..	..	..	..	..	·01	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·01	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..	..	..
23	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..
24	·06	·06	·05	·05	·07	·05	·05	·05	·05	·05	·04	·05	·05	·03	·04	·07	·06	·06	·06	·06	·04	·05	·01	·03	·04	·04
25	·04	·03	·04	·02	·02	·02	·02	·02	·02	·01	·02	·03	..	·01	·02	·02	·03	·03	·01	·02	..	·01	·03	..	·02	·02
26	..	·03	·01	·01	·01	..	·01	..	..	..	..	·01	·03	·01	·01	·01	..	..	..	·01	·01	..	..	..	..	..
27	·09	·06	·05	·11	·06	·09	·07	·05	·07	·05	·07	·08	·07	·06	·08	·06	·06	·08	·07	·07	·08	·09	·05	·07	·07	·08
28	·14	·12	·14	·09	·11	·11	·12	·11	·12	·14	·13	·14	·10	·12	·15	·10	·19	·12	·15	·09	·08	·07	·03	..	·02	·04
29	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..
31	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
*	1·24	1·05	1·38	·87	·75	·88	·86	·71	·81	·82	·90	·85	·69	·77	·89	·92	·98	·96	·88	·76	·69	·75	·58	·53	·65	·58
†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·03	·03	·02	·01	·03	·03	·03	·02	·03	·04	·02	·03	·02	·03	·03	·01	·03	..	·03	·02	·02	·04	..	..	·03
2	..	..	..	..	·01	..	..	..	..	·02	..	..	·01	..	..	..	..	·01	..	..	..	·01	..	..	..	..
3	..	..	..	..	..	..	·01	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	·15	·08	·15	..	·03	..	·04	..	·04	·05	·04	·01	..	..	·01	·03	..	·03	·03	·04	·03	..	·08	·14	..	·07
7	·04	·08	·08	..	·08	..	·10	·12	·14	·10	·09	·12	·11	..	·08	·06	·14	·09	·12	..	·06	·07	·10	·06	..	·11
8	·06	·09	·09	·75	·08	·29	·15	·26	·38	·28	·20	·43	·30	·45	·09	·07	·06	·04	·09	·04	·13	·06	·04	·02	·26	·06
9	..	..	..	..	..	..	·01	·01	..	·01	..	·01	..	..	·03	·02	..	·01	..	..	..	·01	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	·01	..	..	..	..	..	·01	..	..
11	..	·01	..	·02	·01	..	·02	·04	·02	·01	..	·01	·02	·02	·03	·02	..	·01	·01	..	..	·01	·02	·02	..	..
12	..	..	·07	..	..	..	·01	..	·01	·01	..	..	..	..	·01	..	..	..	..	·14	·02	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	·01	..	..	·01	..	..	..	..	·01	..	..	·03	·01	..	..	..	·02	..	..	..
16	·04	..	·03	·02	·04	·04	·04	·02	·06	·03	·08	·02	·02	·02	·03	·04	·01	·06	·02	·01	..	·02	·02	·01	..	·01
17	..	·01	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	·06	..	·06	·06	·08	·09	·07	·11	·10	·09	·08	·09	·11	·08	·07	·07	·06	·07	·08	·08	·13	·07	·03	·03	·04
19	·19	·17	·15	·15	·04	·01	·12	·05	·12	·14	·10	·11	·08	·04	·08	·10	·10	·09	·15	·10	·11	·10	·15	·10	·12	·10
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..	·01	·01	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
23	..	..	..	..	..	..	·01	..	..	..	..	..	·01	..	..	..	..	·01	..	..	..	..	..	..	..	..
24	·05	..	·05	·02	·08	·08	·08	·05	·08	·08	·11	·11	·10	·13	·11	·11	·08	·08	·07	·07	·08	·07	·06	·01	·03	·06
25	·02	·06	..	..	·02	·02	·02	..	·02	·02	·02	·01	·02	·04	·04	·05	·02	·03	·02	·03	·03	·03	·02	·01	..	·02
26	..	..	..	..	..	·01	·02	..	·01	·03	·02	..	·01	·01	·01	·01	·01	·01	·01	..	·01	·01	·01	..	..	·01
27	·06	·10	·06	·08	·07	·07	·08	·05	·09	·10	·09	·10	·07	·04	·11	·07	·09	·08	·10	·11	·12	·14	·10	·06	·10	·08
28	·05	·04	·02	..	·03	·09	·13	·10	·08	·11	·10	·06	·09	·02	·03	·03	·01	·03	·03	..	·03	·03	·05	·01	..	·03
29	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	·02	..	·01	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·69	·73	·73	1·12	·57	·75	·98	·80	1·18	1·18	·98	1·09	·96	·92	·79	·73	·60	·72	·74	·65	·72	·72	·78	·49	·55	·62
†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

* The figures in this row give the totals for the month. † The totals from January 1st.

January, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	·02	·02	·04	·01	·02
2	·01	..	·02	..	..
3	..	..	..	..	..
4	..	..	..	..	..
5	..	..	..	..	..
6	·07	·06	..	·03	..
7	·11	·08	·03	·08	..
8	·05	·05	·03	·05	·01
9	..	..	..	·02	..
10	..	..	..	..	..
11	..	..	..	..	..
12	..	..	..	..	..
13	..	..	..	..	..
14	..	..	..	..	..
15	..	..	..	..	..
16	·05	·03	·02	·01	·01
17	..	..	..	..	..
18	·08	·07	..	·08	·07
19	·10	·08	·14	·11	·03
20	..	..	..	..	..
21	..	..	..	..	..
22	..	..	..	..	..
23	..	..	..	..	..
24	·10	·09	..	·10	·10
25	·07	·05	·07	·06	·05
26	..	·01	..	..	..
27	·07	·11	·04	·18	·07
28	·03	·02	·02	·02	·01
29	..	..	..	..	..
30	..	..	..	..	..
31	..	..	..	..	..
*	·76	·67	·41	·75	·37
†	..	..	..	..	..

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(January, 1901.)

The month may be divided into three parts—the first ten days being very cold, with snow on the 6th, 7th, and 8th; then followed a period of mild sunny weather; and then came the last week with severe stormy weather, and a great gale on the 28th, which did some damage. Measles and whooping cough seem to have occurred in a mild form throughout the district, but the scarlet fever epidemic is dying out, and there are only a few cases of diphtheria. The rainfall was about an inch below the average, but owing generally to the damp very little work could be done in the fields. A lunar halo was seen at Upper Gatton and Beddington on the 2nd. The night of the 9th was exceedingly cold, the shade thermometer going down to 17° in many places. At Nutfield primroses were in flower on the 18th, and snowdrops on the 23rd. The mean temperature of the month was about 1° above the average, and was at Croydon (Whitgift) 38·6°, at Wallington 38·2°, at Worcester Park 38°, at Redhill 37·2°, at Chipstead 37°, and at Warlingham 34·7°. There were recorded at Wallington 50·1 hours of sunlight, which is three per cent. above the January mean of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	·01	..	..	..	..	..	..	..	..
2	·10	·13	..	·01	..	·01	..	·01	·02	·02	·01	..	·03
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	1·01	1·05	1·20	·72	·93	·63	1·03	·64	·73	·75	·65	·80	·60
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	·04	·01	·01	..	·01	..	..	·01	..	..
9	..	..	..	..	..	..	..	..	·01	..	·01	·01	..
10	·02	·02	..	..	..	..	·01	·02	·01	..	·01	..	..
11	..	·01	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	·01	·01	..	..	..	·02	·01	..	..
13	·02	..	..	..	·01	..	..	·01	·01	·03	·01	·02	·01
14	·01	·02	·03	·03	..	·01	..	·01	·01	..	·01	·01	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·01	·02	..	·03	·10	·08	·05	·07	·06	·08	·09	·08	·06
17	·02	..	..	·01	·01	·01	..	·02	·02	·02	·02	·03	·02
18	..	..	..	·01	·01	·01	..	·01	·01	..	·01	..	..
19	·10	·02	·08	·03	·02	·02	..	·02	·03	·03	·02	·05	·04
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·12	·24	·11	·10	·12	·12	·09	·10	·09	·15	·10	·09	·16
22	..	..	..	·01	..	..	·01	..	..	..	..	..	..
23	..	..	..	·02	·01	·01	·01	·01	·01	..	·01	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	·01	..	..	·01	·01	..	..	..	..	..	·01	..
26	·45	·41	·47	·29	·25	·29	·30	·27	·31	·31	·30	·43	·39
27	..	..	..	·03	·02	·04	·05	·04	..	..	·01	·03	..
28	·65	·54	·70	·37	·32	·38	·36	·37	·42	·39	·43	·49	·40
*	2·51	2·47	2·59	1·75	1·84	1·64	1·91	1·61	1·74	1·80	1·71	2·05	1·71
†	3·87	3·68	4·09	3·27	3·12	2·99	3·17	2·93	3·04	2·92	2·89	3·27	3·01

Day of Mo.	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..			..	..		..	·01	..		..
2	·03	..	..			·01	..		·01	·01	·01		·03
3	..	..	..			..	..		..	..	..		..
4	·60	·56	·30			·27	·29		·40	·61	·51		·71
5	..	..	..			..	..		..	..	..		..
6	..	..	..			..	..		..	..	..		..
7	..	..	..			..	..		..	..	..		..
8	..	..	..			..	..		..	..	..		..
9	·04	..	..			..	·02		..	..	·01		..
10	..	..	..			..	..		..	..	..		..
11	..	..	..			..	..		..	..	..		..
12	..	..	..			..	..		·01	..	..		..
13	·04	..	..			·03	·01		·01	·03	·01		·02
14	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	·02	MONTHLY GAUGE.	..	..	..	MONTHLY GAUGE.	·02
15	..	..	..			..	..		..	..	..		..
16	·06	·07	..			·07	·06		·05	·08	·05		·05
17	·04	..	..			·02	·02		·02	·02	..		..
18	..	..	..			..	·02		·01	..	·02		·02
19	·04	·04	..			·07	·01		·03	·03	·03		·06
20	..	..	..			..	·01		..	..	..		..
21	·20	·25	·20			·20	·19		·14	·14	·11		·10
22	..	..	..			..	·01		..	..	..		..
23	·02	..	..			..	..		..	..	..		·03
24	..	..	..			..	..		..	..	..		..
25	..	..	..			..	..		..	..	..		..
26	·35	·26	·48			·36	·27		·41	·43	·39		·27
27	..	·02	..			·05	·03		..	..	·02		..
28	·46	·33	·31			·37	·32		·43	·46	·45		·25
*	1·88	1·53	1·29	1·36	·79	1·45	1·28	1·80	1·52	1·85	1·61	1·56	1·56
†	3·25	2·44	2·20	2·33	1·30	2·48	2·17	2·84	2·54	2·95	2·31	2·95	3·03

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for February is 1·60 in.* **February, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Woh. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	·01	..	..	..	..	..	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	·01	..	..	..	·01	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	·57	·56	1·29	·41	·34	·47	·48	·45	·56	·36	·35	·40	·46	·40	·55	·65	·52	·49	·75	·51	·46	·47	·33	·45	·61	·53
5	..	..	·01	..	..	·02	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	·01	..	..	·01	·01	..	·02	·01	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	·01	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	·01	..	..	·01	..	..	·01	·01	·01	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..
13	..	·02	·02	·01	..	..	..	..	·01	·01	·01	..	..	..	..	·01	..	·02	..	·02	..	·03	..	..	..	..
14	..	·01	·01	..	·02	·01	·01	·01	·01	·01	·02	·03	·02	·01	·01	..	..	..	..	..	..	·02	·03	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
16	·04	·01	·05	·07	·05	·07	·07	·08	·04	·06	·04	·06	·08	·04	·04	·04	·06	·04	·05	·05	..	·03	·01	..	·06	·04
17	..	·02	·02	..	·03	·04	·03	·03	·04	·02	·06	·03	·02	·02	·03	·01	..	·01	·01	·01	..	·01	·02	·04	·03	·04
18	..	..	·01	·03	·01	·01	..	..	·01	·01	·01	..	..	·01	..	..	..	..	..	·01	..	·01	·01	..	·01	..
19	..	·05	·04	·03	·02	·02	·02	..	·02	·02	·03	·04	..	·01	·03	·02	·05	·04	·02	·04	·11	·05	·06	·08	·04	·05
20	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	·01	..	..	·01	..	..	..
21	·16	·07	·09	·07	·06	·07	·09	·11	·09	·09	·10	·10	·12	·07	·09	·11	·16	·15	·19	·15	·12	·16	·11	·26	·14	·15
22	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	·02	..	..	..
23	·02	·03	·01	·01	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	·01	..	..	..	·01	..	..	·01	..	·01	..	·01	·01	·01	..	..	..	..	..	..	..	..	·01	..
26	·35	·33	·44	·32	·26	·34	·36	·30	·38	·37	·35	·30	·33	·23	·28	·36	·38	·41	·41	·30	·32	·27	·20	·24	·27	·30
27	·03	·01	·01	·01	·01	·03	·01	·04	..	·02	·03	·04	..	·03	·08	·03	·07	·01	·01	·02	..	·01	·02	·01	·03	·04
28	·36	·33	·57	·46	·36	·41	·39	·34	·46	·40	·41	·37	·37	·31	·35	·43	·41	·45	·50	·45	·44	·36	·27	·35	·33	·31
*	1·53	1·44	2·62	1·42	1·16	1·51	1·50	1·36	1·68	1·41	1·43	1·39	1·43	1·16	1·49	1·70	1·65	1·63	1·94	1·57	1·45	1·43	1·10	1·43	1·53	1·46
†	2·77	2·49	4·00	2·29	1·91	2·39	2·36	2·07	2·49	2·23	2·33	2·24	2·12	1·93	2·38	2·62	2·63	2·59	2·82	2·33	2·14	2·18	1·68	1·96	2·18	2·04

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	·01	..	..	..	·01	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	·47	·53	·25	1·23	·33	·48	·44	·30	·59	·41	·52	·48	·43	·49	·31	·39	·50	·70	·48	·53	·48	·15	·46	·27	·27	·37
5	..	..	..	·02	·01	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	·02	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	·04	..	·01	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	·01	..	·01	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	·01	..	..
14	..	..	·03	·03	·01	·02	·02	·01	·02	·01	..	·01	·01	..	·02	·01	·01	·02	·02	·01	..	·02	..	..	..	·01
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	·05	·06	·02	·04	·05	·05	·03	·03	·02	·03	·03	·02	·05	·04	·08	·04	·05	·04	·02	·03	·02	·06	·04	·04	·03
17	..	·01	..	..	·02	·01	·03	..	·02	..	·01	·01	..	·01	·02	·03	·01	·04	·03	·02	·07	·02	·01	·02	..	·02
18	..	..	..	..	·01	..	·02	..	..	·01	·01	..	·01	..	·01	·01	..	·01	..	..	..	..	·05	·01	..	..
19	·12	·05	·04	..	·02	·04	·04	·06	·05	·05	·06	·04	·05	·05	·03	·02	..	·02	·03	..	..	·03	·03	·05	·09	·06
20	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·13	·11	·09	·10	·05	·07	·08	·06	·08	·07	·05	·06	·06	·08	·06	·06	·05	·06	·07	·12	·12	·08	·16	·11	·10	·11
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	·01	..	..
23	..	..	..	·01	..	..	·01	..	·01	·01	·02	..	..	..	..	·01	..	·01	..	..	..	·01	·02	·01	·02	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·02	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
26	·28	·32	·26	·20	·13	·18	·18	·20	·24	·35	·40	·27	·34	·31	·21	·17	·14	·11	·16	·15	·18	·20	·23	·19	·20	·20
27	·03	·02	..	..	..	..	·01	..	..	·01	·01	..	..	..	..	..	·01	·01	..	·01	..	..	·03	·01	·02	..
28	·35	·29	·25	·23	·13	·18	·21	·15	·28	·21	·20	·21	·23	·15	·16	·16	·17	·13	·22	·16	·20	·19	·27	·27	·23	·21
*	1·40	1·38	·99	1·87	·76	1·05	1·13	·81	1·32	1·16	1·32	1·11	1·16	1·14	·86	·94	·93	1·19	1·06	1·07	1·08	·74	1·32	1·00	·97	1·02
†	2·09	2·11	1·72	2·99	1·33	1·80	2·11	1·61	2·50	2·34	2·30	2·20	2·12	2·06	1·65	1·67	1·53	1·91	1·80	1·72	1·80	1·46	2·10	1·49	1·52	1·64

* The figures in this row give the totals for the month. † The totals from January 1st.

February, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..
2	..	..	·01	..	..
3	..	..	..	..	..
4	·46	·41	·22	·42	·16
5	..	..	..	..	..
6	..	..	..	..	..
7	..	..	..	..	..
8	..	..	..	..	..
9	..	..	·01	..	..
10	..	..	..	·01	..
11	..	..	..	..	..
12	..	..	..	..	..
13	..	..	..	..	..
14	..	·02	·01	·03	..
15	..	..	..	..	..
16	·03	·03	..	·05	·03
17	·01	·02	..	·04	·01
18	·01	·01	..	·01	..
19	·04	·04	..	·03	·02
20	..	..	..	..	..
21	·09	·06	·05	·07	·03
22	..	..	..	..	..
23	·01	..	..	..	..
24	..	..	..	..	..
25	..	..	..	..	..
26	·19	·16	·11	·16	·16
27	·01	..	·02	..	..
28	·19	·15	·17	·16	·13
*	1·04	·90	·60	·98	·54
†	1·80	1·57	1·01	1·73	·91

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.). and Sevenoaks (10 a.m.).

NOTES.

(February, 1901.)

The month has been exceedingly cold. It is the coldest February since 1895, and in the last fifteen years there have only been three colder Februaries. The swift alternations of warmth and cold have proved most unhealthy, and catarrhal and respiratory disorders have been very prevalent. The naval guns on the 2nd inst. on the occasion of Her late Majesty's funeral were distinctly heard in several parts of the district, including Croydon, Kenley, Norwood, and Wallington. Everything is extremely backward, and at Nutfield crocuses only appeared on the 27th, and blue and white hepaticas on the 13th. The farmers have had a good season with the sheep, and the market gardeners with vegetables, but the ground, as a rule, has been too wet to work. The snow on the 4th was particularly heavy in some parts, and yielded a large amount of water, notably at Dorking, Banstead, and Morden. Slight snow fell also on many other days. Very little fog occurred during the month. A solar halo was seen at Wallington on the 28th, and a lunar one on the 1st at Upper Gatton, Beddington, and Sidcup. The rainfall is about half an inch below the average. The mean temperature of the month is between three and four degrees below the average, and was at Croydon (Whitgift) 36°. Croydon (Duppas House) 35·8°, Wallington 35·6°, Worcester Park 35·3°, Redhill 34·5°, Chipstead 34·2°, and Warlingham 31·1°. There were recorded at Wallington 40·7 hours of sunlight, which is seven per cent. below the February mean of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·04	·02	·04	·03	·04	·04	·03	·05	·03	·03	·03	·04	·05	·02	·01	MONTHLY GAUGE.	MONTHLY GAUGE.	·06	·07	MONTHLY GAUGE.	..	·03	·03	MONTHLY GAUGE.	·10
2	·16	·24	·22	·16	·14	·16	·19	·17	·12	·07	·19	·18	·53	·18	·16	·21			·10	·09		·20	·24	·23		·21
3	·04	·07	·04	·01	·04	·04	·02	·01	·05	·05	·04	·02	·10	·04	·04	..			·14	·13		·07	·03	·03		·06
4	·10	·13	·11	·15	·16	·18	·17	·14	·20	·32	·24	·22	·18	·26	·33	·19			·28	·26		·27	·24	·19		·11
5	·03	·04	·05	·11	·04	·05	·03	·10	·07	·06	·08	·09	·03	·11	·08	·13			·05	·04		·07	·04	·05		·03
6	·25	·13	·30	·15	·15	·15	·20	·11	·12	·15	·15	·18	·13	·16	·14	·05			·29	·27		·19	·20	·19		·18
7	·25	·15	·20	·23	·22	·22	·11	·29	·25	·37	·34	·33	·24	·23	·23	·19			·21	·19		·26	·21	·18		·22
8	·12	·10	·12	·22	·22	·22	·19	·25	·17	·23	·22	·17	·23	·26	·35	·20			·14	·14		·22	·26	·25		·12
9	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..			..	..		..	..	..		..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
11	..	·01	..	..	..	..	..	..	..	..	..	..	..	·02	..	..			..	..		..	..	..		..
12	..	..	..	..	..	..	·01	..	..	..	·01	..	..	..	..	..			..	..		..	..	..		..
13	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..			..	..		..	..	..		..
15	·10	·19	·13	·15	·16	·16	·14	·12	·13	·13	·12	·11	·15	·18	·23	·21			·20	·21		·15	·15	·15		·12
16	..	..	..	·01	..	..	·01	·01	..	..	·01	..	..	..	..	..			..	..		..	..	..		..
17	..	..	..	..	..	..	..	..	..	·02	..	..	..	·13	·01	..			..	·01		..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..			..	..		..	..	..		..
19	·25	·16	·15	·16	·17	·17	·12	·18	·21	·24	·18	·18	·17	·23	·26	·18			·47	·21		·24	·27	·32		·16
20	·11	·10	·11	·13	·13	·13	·13	·15	·17	·16	·18	·21	·26	·22	·25	·16			·25	·20		·23	·28	·31		·22
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
24	·01	..	..	..	..	..	..	..	·02	..	..	..	..	·02	..	..			..	·02		..	..	·03		..
25	·03	·03	·05	·01	·02	·02	..	·03	·02	·04	·02	·04	·02	·02	·04	..			·07	·04		·04	·06	·03		·04
26	..	..	..	..	..	..	..	..	..	..	..	..	·02	·05	..	..			·02	·01		..	·01	·02		..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..			..	..		..	..	..		..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
29	·22	·15	·45	·14	·16	·15	·16	·11	·15	·16	·16	·25	·39	·22	·16	·40			·36	·17		·27	·27	·31		·26
30	·59	·67	·30	·59	·50	·61	·75	·57	·59	·58	·61	·63	·45	·65	·58	·37			·64	·61		·68	·64	·57		·57
31	·06	·06	·05	·06	·03	·05	·04	·06	·04	·05	·02	·04	..	·08	·05	..			·06	·02		·04	·03	·03		·05
*	2·35	2·28	2·30	2·32	2·17	2·35	2·31	2·33	2·36	2·66	2·60	2·69	2·94	3·15	2·95	2·33	2·88	1·91	3·34	2·69	2·90	2·93	2·96	2·92	2·67	2·45
†	6·22	5·96	6·39	5·59	5·29	5·34	5·48	5·26	5·40	5·58	5·49	5·96	5·95	6·40	5·39	4·53	5·21	3·21	5·82	4·86	5·74	5·47	5·91	5·23	5·62	5·48

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall.

The 85 years (1816–1900) mean at Greenwich for March is 1·54 in.

March, 1901.

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·11	·20	·09	·14	·09	·11	·10	·12	·07	·08	·09	·13	·12
2	·15	·08	·22	·20	·18	·21	·20	·20	·24	·22	·24	·22	·20
3	·03	·01	·09	·06	·10	·07	·07	·05	·08	·06	·09	·08	·08
4	·11	·13	·18	·16	·14	·17	·17	·15	·16	·15	·16	·15	·12
5	·04	·03	·03	·03	·03	·04	·03	·03	·04	·03	·04	·06	·05
6	·15	·16	·21	·20	·23	·27	·27	·26	·26	·23	·27	·21	·20
7	·12	·23	·28	·11	·10	·11	·09	·10	·11	·11	·13	·14	·14
8	..	·04	·15	·11	·16	·17	·15	·14	·14	·14	·16	·15	·15
9	..	..	..	·01	..	..	..	..	..	..	..	·01	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·12	·12	·11	·12	·13	·14	·14	·15	·16	·16	·17	·13	·12
16	..	..	..	..	·01	..	..	..	..	..	..	·01	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·14	·15	·21	·20	·23	·26	·28	·30	·34	·30	·30	·29	·35
20	·14	·15	·23	·21	·22	·28	·26	·25	·28	·26	·23	·24	·21
21	..	..	..	..	..	..	..	..	..	..	..	·01	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	·01	·02	·03	·03	·02	·01	..	·01	·03	·02	..	·01
25	·05	·05	·02	·02	·02	·02	·02	·10	·02	·03	·08	·03	·03
26	..	..	·01	·02	·02	·03	·03	·01	·01	·01	·01	·02	..
27	..	·02	..	..	..	..	..	..	..	..	·01	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·11	·13	·34	·30	·22	·34	·33	·25	·34	·33	·35	·39	·30
30	·50	·55	·55	·41	·38	·49	·48	·44	·50	·48	·48	·43	·42
31	·02	·02	·05	·05	·05	·04	·04	·03	..	·03	·05	·04	·03
*	1·79	2·08	2·79	2·38	2·34	2·77	2·67	2·58	2·76	2·65	2·88	2·74	2·53
†	4·56	4·57	6·79	4·67	4·25	5·16	5·03	4·65	5·25	4·88	5·21	4·98	4·65

Day of Mo.	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·05	·06	·06	·04	·02	·02	·01	·01	·01	..	·05	·07	·07
2	·22	·21	·21	·22	·19	·21	·19	·23	·18	·13	·20	·19	·05
3	·09	·06	·05	·04	·04	·09	·06	·10	·04	·01	·04	·05	·19
4	·15	·13	·17	·16	·20	·20	·15	·16	·14	·10	·14	·14	·16
5	·04	·09	·05	·12	·06	·04	·08	·06	·08	·06	·06	·05	·06
6	·15	·23	·21	·20	·21	·25	·16	·20	·16	·13	·16	·18	·19
7	·13	·14	·12	·19	·13	·10	·13	·18	·23	·16	·16	·13	·16
8	·15	·23	·23	·25	·20	·23	·17	·11	·20	..	·20	·19	·20
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	·01	..	·01	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·14	·15	·21	·15	·17	·11	·09	·04	·11	·14	·08	·09	·10
16	..	..	..	..	..	..	·01	·02	·01	..	..	..	..
17	..	..	·01	..	..	..	..	..	·01	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·28	·33	·29	·30	·30	·47	·33	·39	·35	·21	·37	·45	·43
20	·18	·29	·27	·33	·31	·36	·30	·28	·31	·22	·27	·28	·27
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·01	·01	·02	..	·02	..	·03	..	..	..	..	·02	·03
25	·01	·04	·05	·07	·03	·04	·03	·04	·07	·05	..	·02	·04
26	..	..	·01	..	·01	..	..	..	·01	·01	..	·02	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·34	·29	·31	·29	·31	·35	·25	·31	·22	·12	·27	·24	·23
30	·44	·43	·54	·61	·59	·53	·49	·59	·54	·34	·44	·40	·40
31	·02	·08	·02	·06	·04	·04	·06	·06	·03	·03	..	·02	·02
*	2·41	2·77	2·84	3·03	2·83	3·04	2·54	2·78	2·70	1·71	2·44	2·54	2·60
†	4·34	5·15	5·46	5·66	5·42	5·86	4·87	4·92	4·88	3·39	4·40	4·72	4·64

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall.

The 85 years (1816–1900) mean at Greenwich

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·02	·08	·11	·03	·02	..	·04	·01	·03	·03	·02	·02	·02	·01	·03	·02	·02	·03	·03	·05	·06	·03	·11	·02	..	·08
2	·22	·21	·12	·27	·17	·22	·22	·15	·23	·23	·21	·22	·21	·17	·19	·23	·16	·17	·18	·14	·16	·15	·17	·16	·17	·17
3	·07	·04	·03	·03	·02	·04	·03	·02	·08	·08	·03	·05	·01	·02	·02	·04	·09	·06	·06	·08	·11	·05	·05	·02	·02	·02
4	·16	·15	·14	·18	·12	·11	·17	·12	·14	·14	·15	·13	·16	·11	·14	·18	·16	·16	·17	·14	·17	·14	·17	·14	·18	·19
5	·06	·06	·04	·03	·03	·05	·04	·02	·03	·03	·03	·02	·03	·04	·03	·03	·02	·04	·05	·05	·04	·04	·06	·06	·06	·05
6	·16	·20	·18	·19	·17	·21	·21	·15	·19	·19	·21	·19	·18	·14	·19	·23	·21	·13	·15	·15	·17	·18	·16	·14	·24	·29
7	·14	·17	·17	·15	·17	·16	·20	·20	·20	·12	·10	·22	·15	·11	·13	·13	·12	·12	·13	·16	·16	·17	·25	·06	·15	·19
8	·08	·22	·16	·09	·08	·07	·09	·05	·08	·07	·08	·07	·07	·07	·09	·11	·08	·10	·13	·12	·11	·11	·18	·11	·09	·18
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·09	·08	..	·12	·09	·13	·12	·12	·11	·09	·11	·10	·12	·14	·11	·07	·06	·09	·07	·04	·08	·07	·10	·12	·13	·07
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·02	..	..	..	·01	·01	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·38	·39	·38	·20	·29	·28	·28	·22	·21	·12	·19	·23	·25	·25	·28	·28	·35	·30	·35	·35	·34	·28	·32	·22	·20	·30
20	·28	·25	·20	·20	·20	·20	·22	·20	·19	·15	·19	·18	·23	·24	·19	·17	·17	·17	·20	·20	·16	·13	·18	·18	·15	·14
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	·03	..	..	·02	..	·03	..	..	..	·03	·02	·02	..	·01	·01	..	·02	·02	·02	·03	·02	..	·01	..	·03
25	·06	·02	·01	·01	..	·04	·04	·03	·05	·01	·01	·03	·02	·04	·02	·02	·02	·02	·03	·02	..	·02	·06	·03	..	·03
26	..	..	..	·03	..	·01	·02	..	·02	..	..	·01	·02	..	..	..	..	..	..	..	..	..	·01	..	·03	·01
27	..	..	..	·01	·01	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	·01	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·25	·30	..	·13	·06	·09	·10	·04	·13	·09	·08	·08	·09	·07	·06	·07	·07	·09	·13	·10	·16	·14	·19	·20	·17	·18
30	·45	·40	·58	·33	·40	·42	·42	·30	·48	·54	·46	·43	·55	·44	·43	·52	·41	·42	·42	·33	·37	·38	·34	·36	·33	·31
31	·04	·03	..	..	·03	·06	·05	·03	·03	·04	·01	·04	..	·02	·06	·01	·03	·05	·04	·05	·02	·06	·02	·02	·02	·03
*	2·46	2·64	2·12	2·01	1·88	2·09	2·28	1·66	2·20	1·94	1·93	2·04	2·13	1·87	1·98	2·13	1·97	2·00	2·16	2·00	2·14	1·98	2·38	1·85	1·94	2·27
†	4·55	4·77	3·84	5·00	3·21	3·89	4·39	3·27	4·70	4·28	4·23	4·24	4·25	3·93	3·63	3·80	3·50	3·91	3·96	3·72	3·94	3·44	4·48	3·34	3·46	3·91

* The figures in this row give the totals for the month. † The totals from January 1st.

March, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	·03	·03	·03	·02	..
2	·15	·13	·12	·20	·17
3	·02	·01	·03	·04	·04
4	·20	·18	·15	·18	·13
5	·08	·05	·01	·04	·03
6	·20	·15	·15	·22	·15
7	·14	·15	·13	·16	·17
8	·11	·10	·10	·10	·06
9	..	..	..	..	..
10	..	..	..	..	..
11	..	..	..	..	..
12	..	..	..	..	..
13	..	..	..	..	..
14	..	..	..	..	..
15	·09	·09	·06	·06	·04
16	·01	..	..	..	..
17	..	..	..	..	..
18	..	..	..	..	..
19	·23	·24	·22	·33	·16
20	·08	·08	·14	·14	·05
21	..	..	..	..	..
22	..	..	..	..	..
23	..	..	..	..	..
24	·01	·01	..	..	..
25	·01	·02	..	·03	·01
26	..	..	..	..	..
27	..	..	..	..	..
28	..	..	..	..	..
29	·13	·11	·10	·08	·03
30	·46	·39	·31	·39	·32
31	·04	·06	·03	·08	·03
*	1·99	1·80	1·58	2·07	1·39
†	3·79	3·37	2·59	3·80	2·30

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

Note.—As the observer at Beckenham, Mr. H. Dolling-Smith, has left Oakwood Avenue, this station has been replaced by one at 52, Wickham Road (height above sea-level, 155 ft.), under the care of Mr. Edward Scovell, whose observations are complete from January 1st.

NOTES.

(March, 1901.)

The month may be divided into four parts, *viz.*: from 1st to 8th, wet; 9th to 24th, dull and cold; 25th to 29th, fine and very cold; 30th and 31st, wet and stormy. The absolute maximum in the shade is the lowest for a great many years past. Hail fell at several places in the district on the 1st, 6th, and 20th; and on the 1st thunder was heard at Upper Gatton, Croydon, Beddington, Morden, Sidcup, and Wallington, and on the 7th at Croydon, Sidcup, and Beddington. Slight snow showers fell on many days between the 19th and 29th. The observer at Sanderstead reports that on the 1st there was a fine double rainbow at 1.35 p.m., with a secondary bow and a reversed primary bow below the primary one. At Sevenoaks the birds were checked in building their nests. The wet weather greatly hindered all field work. The almond bloomed at Beddington on the 11th, and at Sidcup and Wallington on the 12th. The month has been a healthy one, except that colds have been somewhat prevalent. A solar halo was seen at Upper Gatton on the 21st; and lunar ones on the 1st at Nutfield, Beddington on the 29th, and Upper Gatton on the 31st. The rainfall is rather over three-quarters of an inch above the average. The mean temperature of the month is nearly two and a half degrees below the average, and was at Croydon (Duppas House) 40·1°, at Croydon (Whitgift) 39·6°, at Worcester Park 39·5°, at Redhill 37·9°, at Warlingham 36·9°, and at Chipstead 36·7°. There were recorded at Wallington 63·2 hours of sunlight, which is 14 per cent. below the March mean of the 15 years 1886–1900.

F. Campbell Bayard, F.R.Met.Soc., Hon. Sec.

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	·01	..	..	..	..	..	..
2	·14	·16	·17	·11	·07	·10	·08	·10	·15	·11	·12	·14	·13
3	·61	·68	·65	·72	·65	·71	·74	·78	·81	·73	·79	·73	·63
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	·10	·05	·03	..	·05	·10	·04	·02	·05	·04	·04	·02	·05
6	·07	·12	·11	·18	·12	·15	·14	·13	·12	·14	·14	·15	·12
7	·06	·05	·05	·02	·02	·02	·02	·03	·03	·03	·02	·04	..
8	..	·02	·05	·05	·03	·04	·06	·08	·03	·02	·07	·03	·09
9	·11	·10	·10	·05	·04	·05	·05	·04	·07	·01	·07	·07	·07
10	·43	·51	·40	·20	·21	·22	·28	·25	·35	·31	·29	·38	·33
11	·24	·28	·26	·27	·18	·21	·26	·27	·23	·20	·30	·26	·15
12	·01	·02	..	·02	·01	·01	·03	·02	·03	·01	·01	·01	·08
13	·26	·31	·28	·22	·23	·23	·17	·23	·28	·30	·31	·24	·15
14	·01	·03	·02	·01	·01	·01	·01	·01	·01	·01	·01	·03	·08
15	·06	·06	·16	·15	·13	·12	·15	·18	·12	·21	·14	·14	·06
16	·07	·06	·04	·13	·16	·16	·04	·14	·12	·17	·15	·15	·03
17	..	..	..	..	..	..	..	..	..	..	..	..	·10
18	..	..	..	..	..	..	..	..	..	..	..	..	·02
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	·01	..	..	·01	·01	·01	·04	·01	·01	..
27	·02	·01	..	..	·01	·01	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	2·19	2·46	2·32	2·14	1·92	2·14	2·09	2·29	2·41	2·33	2·47	2·40	2·09
†	8·41	8·42	8·71	7·73	7·21	7·48	7·57	7·55	7·81	7·91	7·96	8·36	8·04

Day of Mo.	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..			..	..		..	..	·01		..
2	·13	·10	·08			·11	·09		·14	·12	·10		·13
3	·79	·67	·65			·75	·59		·74	·58	·49		·58
4	..	..	..			..	..		..	..	..		..
5	·05	·01	..			..	·12		·05	·05	·02		..
6	·21	·21	·22			·22	·07		·15	·11	·08		·13
7	..	·07	..			·07	·08		·03	·04	·02		·06
8	·05	·10	·08			·10	·08		·03	·06	·05		·05
9	·06	·06	..			·07	·11		·06	·08	·05		·10
10	·20	·32	·20			·29	·34		·32	·34	·28		·40
11	·28	·15	·30			·26	·12		·28	·27	·25		·22
12	·03	·04	·14			·05	·04		·03	·02	·02		..
13	·25	·25	·16			·21	·16		·22	·16	·11		·14
14	·04	·03	..			·04	·02		·03	·04	·03		·03
15	·12	·16	·13			·22	·19		·13	·14	·14		·14
16	·10	·25	·27	MONTHLY GAUGE.	MONTHLY GAUGE.	·17	·10	MONTHLY GAUGE.	·13	·15	·19	MONTHLY GAUGE.	·08
17	..	..	..			..	..		..	..	..		..
18	..	..	..			..	..		..	..	..		..
19	..	..	..			..	..		..	..	..		..
20	..	..	..			..	..		..	..	..		..
21	..	..	..			..	..		..	..	..		..
22	..	..	..			..	..		..	..	..		..
23	..	..	..			..	..		..	..	..		..
24	..	..	..			..	..		..	..	..		..
25	..	..	..			..	..		..	..	..		..
26	·02	..	..			..	..		..	·02	·02		..
27	·10	..	..			..	..		·03	·14	·05		·02
28	..	..	..			..	..		..	..	..		..
29	..	..	..			..	..		..	..	..		..
30	..	..	..			..	..		..	..	..		..
*	2·43	2·42	2·23	2·41	1·53	2·56	2·11	1·82	2·37	2·32	1·91	2·26	2·08
†	8·83	7·81	6·76	7·62	4·74	8·38	6·97	7·56	7·84	8·23	7·14	7·88	7·56

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farnborough	Orpington	Farningham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	·02	·01	..	..	·01	·02	..	..	..	..	·01	·02	..	..	..
2	·06	·05	·18	·08	·05	·10	·12	·08	·09	·10	·10	·10	·09	·05	·08	·09	·10	·11	·08	·08	·09	·10	·05	·02	·05	·06
3	·49	·52	·54	·52	·50	·54	·53	·54	·54	·50	·53	·52	·53	·44	·51	·52	·62	·61	·61	·48	·57	·54	·44	·59	·59	·57
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	·04	·02	·03	·02	..	·03	·02	..	..	·02	·03	·01	..	·02	·09	·03	..	·03	..	·02	..	..	..	..	..	·05
6	·06	·09	·09	·09	·11	·09	·09	·12	·11	·09	·09	·11	·11	·08	·02	·06	·10	·08	·07	·07	·08	·11	·11	·12	·13	·12
7	·08	·07	·04	·03	·03	·03	·03	..	·02	·03	·03	·03	..	·03	·08	·02	·04	·04	·03	·03	·02	·03	·02	..	..	·03
8	·08	·07	·05	·09	·14	·04	·05	·06	·04	·05	·06	·05	·08	·07	·04	·06	·07	·05	·04	·04	·06	·10	·06	·03	·05	·05
9	·04	·03	·06	·03	·04	·05	·02	..	·02	·03	·01	·03	..	·02	·02	·04	·04	·06	·03	·02	·01	·04	·01	..	·02	·02
10	·18	·26	·31	·27	·23	·27	·24	·24	·25	·25	·27	·24	·21	·27	·30	·30	·29	·30	·30	·18	·19	·19	·12	·23	·22	·25
11	·28	·28	·43	·31	·25	·38	·38	·40	·42	·38	·39	·39	·37	·23	·16	·19	·28	·24	·22	·15	·15	·17	·15	·13	·14	·16
12	..	..	·07	·03	·03	..	·01	·02	·02	·01	·03	·02	·02	·01	·02	·03	·06	·04	·04	·03	·05	·04	·04	..	·05	·05
13	·16	·16	·18	·15	·13	·14	·13	·13	·12	·13	·15	·14	·13	·13	·12	·12	·15	·13	·12	·10	·10	·13	·08	..	·13	·13
14	·04	·03	·02	·02	·02	·02	·02	..	·02	·02	·03	·02	·02	·02	·02	·02	·02	·02	..	·02	..	·04	·13	..	·04	·04
15	·13	·13	·14	·17	·18	·17	·18	·21	·20	·19	·20	·17	·13	·15	·14	·19	·23	·23	·21	·13	·13	·16	·07	..	·11	·14
16	·05	·03	·12	·14	·15	·13	·19	·22	·22	·20	·26	·24	·23	·22	·21	·23	·23	·23	·22	·06	·04	·14	·08	..	·04	·12
17	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	·01	·01	·01	..	..	·02	·02	..	·01	·01	·01	..	·01	·01	..	·01	·01
27	·03	·02	..	..	..	·02	·06	·09	·06	·05	·07	·07	·08	·09	·14	·09	·04	·03	·01	..	..	..	·07	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·72	1·76	2·26	1·95	1·86	2·01	2·07	2·11	2·13	2·07	2·26	2·18	2·01	1·83	1·97	2·02	2·29	2·21	1·99	1·42	1·49	1·81	1·46	1·12	1·58	1·80
†	6·28	6·33	9·05	6·62	6·11	7·17	7·10	6·76	7·38	6·95	7·47	7·16	6·66	6·17	7·12	7·48	7·95	7·63	7·85	6·29	6·41	6·69	4·85	5·52	6·30	6·44

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	..	..	·02	..	..	..	..	..	·01	..	..	..
2	·07	·07	·06	·05	·01	·02	·03	·01	·04	·04	·02	·02	·01
3	·53	·54	·49	·56	·47	·51	·51	·42	·55	·56	·50	·52	·56
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	·02	·04	·01	·13	·03	..	·03	·03	·04	·05	·04	·04	·02
6	·08	·09	·10	..	·08	·12	·11	·08	·10	·10	·10	·08	·12
7	·03	..	..	·04	·04	·06	·05	·04	·05	·11	·08	·10	·10
8	·04	·08	..	·10	·08	·11	·11	·07	·06	·06	·03	·05	·03
9	·13	·02	·07	·02	·03	·04	·04	·05	·01	·08	·08	·06	·09
10	·21	·26	·22	·16	·19	·23	·22	·23	·19	·28	·32	·28	·35
11	·12	·15	·29	·37	·33	·28	·30	·28	·25	·27	·29	·27	·25
12	·06	·06	·03	·05	·06	·02	·03	·01	..	·02	·01	..	..
13	·13	·15	·11	·16	·15	·15	·15	·11	·14	·16	·16	·15	·17
14	·03	·03	·01	·02	·03	·03	·02	·01	·01	·02	·02	·01	·01
15	·14	·12	·12	·12	·16	·10	·11	·11	·18	·20	·15	·11	·15
16	·06	·10	·19	·19	·19	·16	·18	·20	·11	·05	·07	·12	·18
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	·01	·01	..	..	..	..	..	..	..	..	..	..
27	·01	·02	·06	..	..	..	..	·03	..	·05	·02	·03	·08
28	..	..	·01	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·69	1·74	1·78	1·99	1·85	1·83	1·89	1·68	1·73	2·06	1·89	1·84	2·12
†	6·24	6·51	5·62	6·99	5·06	5·72	6·28	4·95	6·43	6·34	6·12	6·08	6·37

Day of Mo.	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·02	·02	·01	·01	·02	·04	·02	·04	·03	·06	·04	·03	·03
3	·49	·53	·57	·51	·50	·55	·43	·48	·54	·59	·46	·51	·51
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	·05	·01	·01	·05	·04	..	..	·03	·05	·01	..	·01
6	·14	·10	·14	·12	·07	·08	·11	·13	·10	·14	·14	·23	·16
7	·08	·08	·05	·04	·04	·02	·05	..	·04	·03	·02	..	·01
8	·03	·05	·12	·03	·05	·09	·11	·19	·14	·04	·08	·07	·04
9	·08	·08	·05	..	·02	·02	·04	·04	·03	·03	..	·02	..
10	·32	·24	·27	·21	·14	·18	·17	·20	·19	·19	·10	·09	·25
11	·23	·42	·26	·24	·24	·18	·17	·15	·13	·14	·11	·18	·14
12	·01	·01	·02	..	·01	·02	·02	·04	·04	·07	·02	·03	·05
13	·19	·17	·20	·19	·16	·16	·16	·19	·17	·18	·08	·13	·13
14	·03	·05	·04	·01	·03	·04	·01	·05	·08	·09	·15	·14	·14
15	·11	·12	·11	·15	·15	·15	·14	·15	·14	·15	·14	·14	·13
16	·12	·15	·13	·13	·11	·12	·18	·06	·05	·10	·07	·10	·07
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	·01	..	·02	·01	·01	..	..	..
27	·06	..	·01	..	·01	·03	·06	·04	·02	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	·01	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·91	2·07	1·99	1·65	1·60	1·73	1·67	1·78	1·74	1·88	1·42	1·67	1·67
†	5·84	5·70	5·79	5·15	5·51	5·69	5·39	5·72	5·18	6·36	4·76	5·13	5·58

* The figures in this row give the totals for the month. † The totals from January 1st.

April, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..
2	·02	·01	..	·01	..
3	·60	·54	·46	·62	·50
4	..	..	..	..	..
5	·01	·01	·01	..	..
6	·12	·11	·10	·16	·10
7	·03	·03	..	·05	·04
8	·12	·10	·06	·09	·04
9	·03	·02	..	·01	·05
10	·23	·22	·21	·25	·23
11	·11	·10	·14	·25	·20
12	·06	·06	..	..	..
13	·16	·12	·13	·16	·13
14	·08	·09	·08	·06	·07
15	·14	·10	·11	·12	·10
16	·08	·06	·02	·12	·08
17	..	..	..	..	..
18	..	..	..	..	..
19	..	..	..	..	..
20	..	..	..	..	..
21	..	..	..	..	..
22	..	..	..	..	..
23	..	..	..	..	..
24	..	..	..	..	..
25	..	..	..	..	..
26	·02	·01	..	..	..
27	..	·01	..	..	..
28	..	..	..	..	..
29	..	..	..	..	..
30	..	..	..	..	..
*	1·81	1·59	1·32	1·90	1·54
†	5·60	4·96	3·91	5·70	3·84

NOTE—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8·30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(April, 1901.)

The month may be divided: the first half being wet and cold, and the latter half dry, and, with the exception of the last four days, very warm. Vegetation made no progress during the first half. At Croydon the chestnut came into leaf on the 1st, the oak and beech on the 17th, and the ash on the 28th; at Sidcup the apricot flowered on the 3rd, the plum on the 15th, the cherry on the 21st, and the pear on the 25th; whilst at Nutfield, *Ribes* flowered on the 21st, blue squill on the 25th, and the wild cherry on the 27th. The wryneck and swallow were seen on the 8th at Nutfield; the swallow only at Morden on the 13th, at Sanderstead on the 18th, at Upper Gatton on the 19th, and at Abinger and Beddington on the 20th. The cuckoo was heard at Morden on the 7th, at Sanderstead on the 9th, at Abinger on the 14th, at Upper Gatton on the 18th, at Nutfield on the 19th, and Beddington on the 22nd; whilst the nightingale was heard at Sevenoaks on the 17th, at Upper Gatton on the 21st, at Beddington on the 22nd, and at Abinger and Nutfield on the 23rd. Rain was much wanted on the heavy lands at the end of the month. Solar halos were seen at Greenwich on the 2nd, 5th, 10th, 16th, 18th, 23rd, 24th, and 25th, at Upper Gatton on the 2nd, 18th, and 24th, and at Wallington on the 24th and 25th; and lunar halos were seen at Greenwich on the 4th and 24th, and at Upper Gatton, Sanderstead, and Beddington on the 4th. There was hail at Morden on the 2nd, at Raynes Park on the 12th, 15th, and 16th, at Nutfield on the 13th, 15th, and 16th, and at Upper Gatton and Greenwich on the 15th and 16th; and snow on the 16th at Greenwich, Upper Gatton and Raynes Park. At Sanderstead a sulphur butterfly was seen on the 7th, and a tortoiseshell butterfly and a yellow one on the 18th. The rainfall is nearly a quarter of an inch above the average. The month has been somewhat unhealthy, whooping cough being very prevalent, whilst there are cases of measles, diphtheria, and scarlet fever in some parts. The mean temperature of the month is about one degree above the average, and was at Worcester Park 48·7°, at Croydon (Whitgift) 48·4°, at Wallington 48·°2, at Croydon (Duppas House) 48°, at Chipstead 47·9°, and at Warlingham 47·4°. There were recorded at Wallington 196·4 hours of sunlight, which is 9 per cent. above the April mean of the fifteen years 1886–1900.

F. CAMPBELL-BAYARD, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	·02		..	..	..		..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
6	·02	·04	·03	·04	·05	·05	·02	·04	·05	·04	·06	·04	·06	·07	·10	·17			·09	·15		·05	·07	·07		·03
7	..	·01	..	·01	·08	·08	·01	..	..	·02	..	..	·01	·02	·04	..			·12	·13		·04	·02	·02		..
8	·05	·04	·04	·18	·17	·18	·17	·10	·09	·19	·12	·09	·15	·15	·14	·10			·14	·11		·20	·26	·24		·04
9	·12	·15	·11	·84	·96	1·01	·59	·71	·69	1·15	·92	·63	1·09	1·26	·34	·32			·23	·23		1·24	1·18	1·22		·15
10	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	·04			·16	·04		..	·01	·01		..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..	MONTHLY GAUGE.	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
25	·01	·01	..	..	..	..	..	..	·01	..	..	..	..	..	..	..			..	·01		·01	·01	·01		·01
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
29	·05	·05	·04	·05	·14	·15	·05	·04	·07	·11	·07	·06	·09	·15	·04	..			..	·03		·27	·12	·14		..
30	·23	·26	·22	·19	·18	·19	·18	·02	·22	·17	·20	·20	·20	·23	·15	·07			·18	·13		·20	·17	·14		·18
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
*	·48	·56	·44	1·31	1·58	1·66	1·02	·91	1·13	1·68	1·37	1·03	1·60	1·88	·81	·70	·75	·74	·92	·85	1·79	2·01	1·84	1·85	·83	·41
†	8·89	8·98	9·15	9·04	8·79	9·14	8·59	8·46	8·94	9·59	9·33	9·39	9·64	10·71	8·62	7·46	8·37	5·48	9·30	7·82	9·35	9·85	10·07	8·99	8·71	7·97

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall.

The 85 years (1816–1900) mean at Greenwich for May is 1·97 in.

May, 1901.

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	·01	..	..	..	..
2	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	·01	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	·04	·03	·09	·04	·03	·06	·05	·04	·05	·06	·05	·05	·04	·19	·05	·08	·08	·07	·07	·04	·02	·06	·05	·03	·05	·06
7	..	..	..	..	·01	..	..	..	·01	·01	·02	·03	·02	·02	·04	·03	·09	·06	·07	·11	·14	·33	·33	·25	·20	·13
8	·02	·01	·07	·08	·07	·05	·05	·06	·06	·06	·09	·07	·05	·08	·09	·20	·18	·18	·15	·18	·20	·08	·11	·23	·19	·19
9	·14	·13	·55	·55	·49	·69	·79	·74	·84	·88	·92	·96	·98	1·03	1·16	1·24	1·11	1·10	1·28	·36	·39	·50	·48	·89	1·25	·90
10	..	..	·01	·02	·01	·02	·01	..	..	..	..	·02	..	·01	..	·01	..	·01	..	·01	·03	·05	·01	·02	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·01	·01	·01	·01	..	·01	..	..	..	..	..	·01	..	·01	..	·02	..	·01	..	·01	..	·01	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·03	·01	·06	·03	·03	·06	·05	·09	·09	·10	·12	·13	·12	·16	·16	·14	·25	·20	·25	·07	·06	·02	·03	·09	·15	·33
30	·09	·08	·17	·09	·08	·11	·10	·06	·09	·11	·12	·10	·09	·07	·09	·12	·14	·16	·12	·12	·10	·11	·05	·06	·06	·07
31	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·33	·27	·97	·82	·72	1·00	1·05	·99	1·14	1·22	1·32	1·38	1·30	1·59	1·59	1·85	1·85	1·79	1·94	·90	·94	1·18	1·06	1·57	1·90	1·68
†	6·61	6·60	10·02	7·44	6·83	8·17	8·15	7·75	8·52	8·17	8·79	8·54	7·96	7·76	8·71	9·33	9·80	9·42	9·79	7·19	7·35	7·87	5·91	7·09	8·20	8·12

* [illegible] the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..
6	·07	·05	·04	·04	·06	·05	·05	·05	·03	·05	·04	·05	·05	·06	·05	·04	·05	·05	·05	·05	·05	·06	·07	·07	·05	·02
7	·10	·10	·06	..	·02	..	..	..	..	..	·02	..	·03	·03	·07	·07	·09	·07	·10	·09	·10	·11	·32	·30	·45	·34
8	·20	·24	·08	·05	·05	·07	·07	·07	·03	·03	·02	·07	·13	·04	·09	·06	·09	·13	·05	·13	·14	·18	·24	·14	·15	·22
9	1·12	·93	1·02	·43	·27	·26	·26	·15	·16	·09	·08	·14	·18	·20	·26	·32	·45	·42	·59	·78	·84	·83	·59	·48	·60	·88
10	·02	·01	·01	·03	..	..	·01	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·04	·10	·05	·02
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	·01	·01	·02	..	·02	·02	·03	·01	..	·01	·01	..	..	·01	..	..	..	·02	..	·01	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·13	·25	·25	·03	·03	·02	·03	·03	·02	·04	·04	·02	·02	·04	·02	·02	·09	·07	·07	·13	·18	·18	·08	·01	·02	·15
30	·08	·07	·06	·05	·02	·03	·04	·03	·05	·07	·05	·05	·05	·05	·03	·03	·03	·04	·06	·05	·06	·06	·06	·03	·02	·03
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·72	1·66	1·53	·65	·45	·45	·48	·36	·30	·28	·26	·34	·46	·42	·53	·55	·80	·78	·94	1·23	1·39	1·42	1·42	1·13	1·34	1·66
†	7·96	8·17	7·15	7·64	5·51	6·17	6·76	5·31	6·73	6·62	6·38	6·42	6·83	6·26	6·23	6·34	5·95	6·29	6·63	6·62	7·11	6·60	7·78	5·89	6·47	7·24

* The figures in this row give the totals for the month. † The totals from January 1st.

May, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..
2	..	..	..	..	..
3	..	..	..	..	..
4	..	..	..	..	..
5	..	..	..	..	..
6	·05	·05	..	·03	·03
7	·29	·23	·24	·09	·06
8	·27	·26	·12	·07	·08
9	·95	·95	·80	·42	·25
10	..	..	..	..	..
11	..	..	..	..	..
12	..	..	..	..	..
13	..	..	..	..	..
14	..	..	..	..	..
15	..	..	..	..	..
16	..	..	..	..	..
17	..	..	..	..	..
18	..	..	..	..	..
19	..	..	..	..	..
20	..	..	..	..	..
21	..	..	..	..	..
22	..	..	..	..	..
23	..	..	..	..	..
24	..	..	..	..	..
25	..	..	..	..	..
26	..	..	..	..	..
27	..	..	..	..	..
28	..	..	..	..	..
29	·20	·17	·20	·07	·02
30	·03	·03	·06	·04	·02
31	..	..	..	..	..
*	1·79	1·69	1·43	·72	·46
†	7·39	6·65	5·34	6·42	4·30

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(May, 1901.)

The month, as a whole, has been somewhat cold, and in parts exceedingly dry. The thunderstorm on the 9th, though general throughout the district, was exceedingly variable as to its rainfall, the amounts varying from ·11 in. at Denbies, Dorking, to 1·26 in. at Caterham. There was also a slight thunderstorm on the 29th. Fogs occurred at Greenwich on the 1st, 3rd, and 6th; at Morden on the 2nd and 26th; and Clapham Park on the 8th. Hail occurred on the 8th and 9th throughout the district. In the thunderstorm on the 9th a house was struck with lightning at Canning Road, Croydon. A solar halo was seen at Greenwich, Clapham Park, and Upper Gatton on the 28th; and a lunar one at Greenwich, Beddington, and Upper Gatton on the same evening. The month has not been a very healthy one, diphtheria occurring in several places, and measles and whooping cough being prevalent in the district. The want of rain during the latter half of the month has been disastrous. There is practically no hay crop, and round Nutfield the turnip fly is working havoc. At Nutfield cherries and plums look well, but apples are a failure. A swift was seen at Wallington on the 15th. At Croydon the hawthorn flowered on the 15th; at Wallington the purple lilac and the white lilac flowered on the 13th, the white chestnut and the red chestnut on the 14th, and the laburnum on the 21st; at Nutfield the pink thorn and the white thorn flowered on the 28th; and at Sanderstead roses and honeysuckle were out on the 28th. The rainfall is very variable, but, as a rule, below the average. The mean temperature of the month is slightly over the average, and was at Croydon (Duppas House) 54·8°, at Worcester Park 53·5°, at Croydon (Whitgift) 53·3°, at Chipstead 52·9°, at Wallington 52·7°, and at Warlingham 51·4°. There were recorded at Wallington 243·7 hours of sunlight, which is 8 per cent. above the May mean of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·05	·05	·04	·05	·05	·05	·05	·06	·06	·06	·06	·06	·06	·08	·08	..			·09	·08		·06	·06	·04		·05
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
3	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..			..	..		..	·06	·05		..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
12	·42	·54	·35	·22	·25	·27	·34	·18	·13	·11	·12	·12	·12	·21	·12	·27			·04	·11		·08	·09	·06		·11
13	·04	·04	·04	·04	·03	·03	·03	·04	·04	·04	·04	·05	·03	·05	·03	·07			·01	·03		·03	·05	·05		·03
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
16	·10	·08	·05	·11	·09	·09	·04	·12	·06	·03	·04	·03	·03	·03	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	·03	·01	MONTHLY GAUGE.	..	..	·01	MONTHLY GAUGE.	·02
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
19	·09	·10	·10	·10	·09	·09	·10	·09	·10	·06	·08	·07	·08	·11	·07	·07			·07	·06		·07	·07	·02		·07
20	·02	·02	..	·01	·01	·01	·01	·01	·02	·02	·02	·02	·01	·03	..	..			·03	·01		..	·01	..		·01
21	·42	·33	·40	·76	·73	·73	·69	·66	·64	·78	·71	·50	·95	·77	·90	·43			·41	·15		·77	·80	·67		·58
22	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			..	..		..	·01	..		..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
24	..	..	..	..	..	..	..	..	·02	·01	..	..	..	..	..	..			..	..		..	..	..		..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
29	1·03	·86	·75	·15	·16	·14	·29	·15	·29	·12	·18	·18	·16	·12	·09	·30			·11	·18		·10	·17	·09		·41
30	·27	·24	·28	·22	·22	·22	·16	·23	·31	·35	·37	·41	·41	·44	·50	·34			1·00	1·19		·47	·47	·53		·42
*	2·44	2·26	2·01	1·66	1·63	1·63	1·72	1·54	1·69	1·58	1·62	1·44	1·85	1·84	1·79	1·48	1·65	1·73	1·79	1·92	1·75	1·58	1·79	1·52	1·36	1·70
†	11·33	11·24	11·16	10·70	10·42	10·77	10·31	10·00	10·63	11·17	10·95	10·83	11·49	12·55	10·41	8·94	10·02	7·21	11·09	9·74	11·10	11·43	11·86	10·51	10·07	9·67

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for June is 1·95 in.* **June, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·06	·08	·05	·04	·04	·04	·04	·04	·04	·04	·05	·05	·04	·04	·04	·05	·07	·06	·05	·08	·05	·08	·06	·06	·06	·07
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	·07	·10	·04	·21	·17	·21	·17	·20	·28	·27	·31	·23	·20	·23	·24	·15	·06	·02	·01	..	..	..	..	·06	·09	·11
4	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·08	·08	·08	·08	·09	·09	·10	·09	·09	·10	·09	·11	·13	·09	·11	·09	·09	·09	·08	·09	·11	·14	·06	·13	·12	·12
13	·05	·05	·05	·05	·05	·05	·05	·05	·04	·03	·04	·05	·04	·03	·04	·04	·05	·06	·04	·04	·02	·03	·03	·03	·03	·04
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·04	·02	·01	..	·01	..	·01	..	·01	·01	·02	·03	·01	·02	·03	·01	·12	·01	·01	·01	·01	..	..	..	·01	·02
17	..	..	..	..	..	..	..	..	·01	·01	·01	·01	·02	·01	..	·02	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·07	·06	·08	·04	·05	·04	·06	·05	·05	·06	·05	·06	·05	·05	·07	·06	..	·07	·06	·05	·04	·06	·05	·06	·05	·06
20	·01	·01	·01	..	·01	·01	..	..	..	·01	..	..	..	·01	..	·01	..	·01	..	·01	·01	·02	·01	..	..	·02
21	·37	·30	·43	·35	·37	·33	·31	·32	·35	·35	·35	·34	·32	·38	·47	·67	·83	·76	·73	·81	·69	·56	·38	·61	·72	·72
22	..	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..
29	·37	·39	·23	·32	·39	·23	·12	·10	·08	·09	·09	·09	·08	·07	·09	·08	·07	·11	..	·05	·03	·08	·05	·06	·05	·08
30	·32	·31	·41	·49	·50	·56	·50	·56	·50	·54	·60	·62	·60	·60	·65	·58	·68	·59	·90	1·04	·98	·23	·03	·70	·86	1·03
*	1·44	1·40	1·40	1·59	1·69	1·56	1·36	1·41	1·45	1·51	1·61	1·60	1·49	1·54	1·74	1·76	1·87	1·78	1·88	2·18	1·94	1·20	·68	1·71	1·99	2·27
†	8·05	8·00	11·42	9·03	8·52	9·73	9·51	9·16	9·97	9·68	10·40	10·14	9·45	9·30	10·45	11·09	11·67	11·20	11·67	9·37	9·29	9·07	6·59	8·80	10·19	10·39

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·06	·05	·04	·03	·03	·05	·05	·04	·03	·03	·02	·02	·03	·03	·03	·04	·03	·04	·04	·03	·05	·04	·08	·06	·09	·05
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	·04	·15	·29	·15	·03	·08	·13	·23	·19	·14	·13	·20	·08	·05	·03	·02	·04	·08	·10	·09	·06	·03	·07	..	..	·17
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·14	·12	·08	·14	·09	·17	·16	·06	·06	·06	·06	·05	·10	·11	·12	·09	·11	·10	·11	·14	·14	·12	·13	·04	·07	·08
13	·03	·05	·05	·05	·04	·05	·05	·04	·03	·04	·03	·03	·04	·03	·04	..	·04	·04	·05	·05	·05	·04	·05	·03	·04	·03
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	·02	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·02	·02	..	·01	·03	·01	·02	..	..	·01	..	..	..	·04	·04	·04	·04	·04	·05	·03	·05	·04	·02	..	·02	..
17	..	·01	..	..	·02	..	..	..	..	..	..	..	..	·01	·01	..	..	·01	·01	·09	..	..	..	..	·01	..
18	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·05	·06	·08	·04	·07	·06	·05	·04	·04	·06	·06	·04	·05	·06	·06	·06	·05	·06	·08	·05	·10	·07	·07	·03	·06	·07
20	·02	·01	..	·01	..	..	·01	..	·01	·02	·01	..	..	·02	·01	..	..	·01	·01	·01	..	·01	·01	..	..	·01
21	·72	·54	·46	·53	·35	·36	·41	·33	·41	·22	·12	·20	·23	·18	·26	·53	·47	·50	·45	·38	·37	·37	·65	·67	·83	·56
22	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	·05	·02	..	..	·01	·02	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·06	·12	·09	·39	·32	·44	·46	·44	·46	·42	·38	·48	·38	·32	·26	·75	·16	·22	·08	·22	·10	·08	·09	·13	·16	·07
30	·96	·93	·67	·52	·61	·48	·50	·52	·42	·39	·37	·40	·52	·48	·68	·30	·77	·84	·86	·93	·87	·79	·30	·26	·10	·43
*	2·10	2·06	1·76	1·87	1·59	1·70	1·84	1·75	1·67	1·40	1·19	1·43	1·45	1·33	1·54	1·83	1·71	1·94	1·86	2·02	1·79	1·59	1·47	1·22	1·40	1·47
†	10·06	10·23	8·91	9·51	7·10	7·87	8·60	7·06	8·40	8·02	7·57	7·85	8·28	7·59	7·77	8·17	7·66	8·23	8·49	8·64	8·90	8·19	9·25	7·11	7·87	8·71

The figures in this row give the totals for the month. † The totals from January 1st.

June, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	·04	·03	..	·03	·02
2	..	..	..	..	..
3	·03	..	..	..	..
4	..	..	..	..	..
5	..	..	..	..	..
6	..	..	..	..	..
7	..	..	..	..	..
8	..	..	..	..	..
9	..	..	..	..	..
10	..	..	..	..	..
11	..	..	..	..	..
12	·07	·07	·09	·16	·09
13	·03	·02	·02	·04	·01
14	..	..	..	..	..
15	..	..	..	..	..
16	·01	·01	·01	·03	·02
17	..	..	..	..	..
18	..	..	..	..	..
19	·07	·05	·05	·06	·04
20	..	..	..	..	..
21	·35	·36	·43	·42	·38
22	..	..	..	..	..
23	..	..	..	..	..
24	..	..	..	..	..
25	..	..	..	..	..
26	..	..	..	..	..
27	..	..	..	..	..
28	..	..	..	..	..
29	·29	·12	·08	·25	·18
30	·64	·61	·70	·84	·85
*	1·53	1·27	1·38	1·83	1·59
†	8·92	7·92	6·72	8·25	5·89

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

Note.—As Mr. J. D. Grant is no longer in the employment of the Sutton District Water Company, the observations at Burgh Heath and Sutton are now under the control, as observer, of Mr. P. Anderson, the Secretary of the Company.

NOTES.

(June, 1901.)

The month has been cold and, until the last two days, dry. The maximum thermometer in the shade touched 80° only once, whilst on the 19th there was a frost on the grass both at Croydon and Nutfield, and possibly in other parts of the district. The dry weather has been most prejudicial, for there is no hay crop, and the apples and pears have been falling from the trees. Strawberries were fine and good. The health of the district has been good. A somewhat severe thunderstorm occurred on the night of the 29th–30th, but there has been no damage reported. Solar halos were observed at Greenwich on the 7th, 9th, 19th, 21st, 28th, and 29th; at Upper Gatton on the 7th, 19th, and 29th; at Clapham Park on the 7th and 19th; and at Croydon on the 7th, where also a very fine sun-bar was seen after sunset on the 26th. The rainfall is very nearly half an inch below the average. The mean temperature of the month varies between one degree to half a degree below the average, and was at Chipstead 59·6°, at Croydon (Duppas House) 59·2°, at Worcester Park 59°, at Croydon (Whitgift) 58·6°, at Wallington 58·4°, at Redhill 58·3°, and at Warlingham 56·8°. There were recorded at Wallington 234·8 hours of sunlight, which is five per cent. above the June mean of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	·03	..	..	..	..			..	..		..	·01	..		..
2	·63	·59	·59	·74	·75	·68	·54	·77	·58	·52	·53	·34	·27	·32	·40	..			·25	·30		·22	·17	·14		·81
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..			·02	..		..	..	..		..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	·15		..	..	..		..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..	MONTHLY GAUGE.	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
22	·02	·05	·03	..	..	..	·04	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
23	·10	·13	·07	·05	·03	·03	·05	·04	·07	·04	·05	·05	·05	·07	·06	..			..	·02		·04	·04	·02		·03
24	·24	·26	·25	·32	·25	·25	·33	·32	·38	·27	·33	·38	·30	·25	·15	·04			·07	·06		·17	·23	·17		·18
25	·14	·17	1·04	·18	·36	·43	·01	·29	·11	·21	·65	·08	·52	·09	·03	..			·47	·03		·02	·15	·17		·09
26	·34	·37	·40	·48	·75	·75	·29	·46	·46	·43	·54	·51	·57	·50	1·35	·76			·36	·43		·37	·32	·41		·49
27	·12	·13	·11	·20	·24	·25	·16	·20	·27	·22	·39	·31	·05	·12	·04	..			·11	·08		·14	·24	·25		·14
28	·18	·55	·10	..	·07	·13	·01	·01	·01	·06	·02	..	..	..	·10	..			·21	·16		..	..	·01		..
29	..	..	..	..	..	..	..	..	·06	..	·01	·37	..	·04	..	..			..	..		·02	·05	..		..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
*	1·77	2·25	2·59	1·97	2·45	2·52	1·43	2·09	1·94	1·75	2·52	2·07	1·76	1·40	2·13	·80	1·90	1·19	1·49	1·23	·83	·98	1·21	1·17	1·81	1·74
†	13·10	13·49	13·75	12·67	12·87	13·29	11·74	12·09	12·57	12·92	13·47	12·90	13·25	13·95	12·54	9·74	11·92	8·40	12·58	10·97	11·93	12·41	13·07	11·68	11·88	11·41

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for July is 2·30 in.* **July, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..
2	·22	·20	·19	·16	·17	·16	·20	·30	·30	·29	·34	·33	·34	·30	·32	·16	·20	·12	·30	·33	·45	·21	·09	·24	·25	·25
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	·13	·08	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·06	·09	..	·09	..	·02	·03
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·14	·19	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	·04	·03	·06	..	..	..	..	..	..	..	..	·01	·01	·01	..	..	..	..	..	..	..	·26	·08	..	..
23	·02	·13	·03	·14	·02	·03	·02	·03	·02	·03	·03	·03	·03	·03	·02	·02	·02	·01	..	·05	·02	..	..	..	·03	·01
24	·13	·11	·27	·08	·28	·26	·21	·20	·17	·19	·19	·18	·19	·12	·13	·14	·04	·06	·05	·06	·04	·03	·05	·06	·05	·06
25	·30	·75	·32	1·28	·70	·32	·18	·21	·17	·19	·24	·22	·25	·20	·18	·21	·13	·52	·03	·04	·06	·10	·09	·30	·05	·04
26	·46	·35	·52	·52	·67	·51	·48	·45	·43	·44	·44	·52	·54	·47	·55	·55	·57	·53	·60	·73	·86	·70	·88	1·01	·80	·75
27	·38	·02	·09	·28	·14	·19	·18	·29	·32	·36	·53	·53	·49	·35	·18	·21	·13	·13	·09	·05	·03	·06	·08	·04	·07	·09
28	..	..	..	·02	·01	·01	..	..	..	..	..	..	..	..	..	·06	·03	·09	·03	·18	·17	·06	·03	·06	·11	·15
29	..	..	·28	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	·03	..	..	..	..	..	·02	..
*	1·51	1·60	1·73	2·67	2·08	1·49	1·27	1·48	1·41	1·50	1·77	1·81	1·85	1·48	1·39	1·36	1·12	1·47	1·13	1·51	1·72	1·32	1·76	1·79	1·40	1·38
†	9·56	9·60	13·15	11·70	10·60	11·22	10·78	10·64	11·38	11·18	12·17	11·95	11·30	10·78	11·84	12·45	12·79	12·67	12·80	10·88	11·01	10·39	8·35	10·59	11·59	11·77

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	·01	..	..	·01	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
2	·35	·26	·31	·33	·20	·24	·27	·38	·14	·17	·29	·20	·34	·23	·22	·30	·24	·23	·22	·22	·21	·21	·09	·08	·08	·12
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·08	..	..	·05	·02	·09	·10	·01	·09	..	..	..	..	..	..	·03	..	..	..	..	..	..	·12	·04	..	..
13	·01	·03	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·05	·11	·13	·02
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	·02	..	..	·04	..	·06	..	·03	..	·02	..	..	..	·05	..	·01	·05	·05	·05	·01	·01	..	..	·03	..
23	·04	..	..	·08	·03	·08	·03	·04	·01	..	·04	·04	·02	·03	·03	·06	·03	·03	·05	·06	·03	·03	·04	..	..	·03
24	·07	·06	·25	·30	·16	·14	·13	·12	·11	·15	·13	·14	·17	·16	·15	·23	·27	·27	·28	·18	·15	·15	·07	·01	·03	·07
25	·02	·08	·20	1·16	·32	·29	·43	·13	·09	·35	·81	·16	·21	·36	·22	·38	·90	·82	·35	·27	·28	·31	·03	·03	·06	·03
26	·66	·61	·56	·75	·83	·82	·87	·63	·69	·47	·37	·35	·53	·41	·65	·64	·69	1·00	·65	·53	·43	·44	·84	·95	·90	·89
27	·09	·11	·13	·33	·19	·14	·15	·30	·15	·58	·40	·47	1·25	·34	·33	·21	·37	·28	·41	·14	·07	·07	·10	·02	·02	·10
28	·12	·02	..	·01	..	..	..	..	..	·78	·49	·12	..	..	..	..	·04	·08	·13	·16	·16	·10	·91	·39	·15	·15
29	..	..	..	·01	..	..	..	..	..	..	..	..	..	·01	·02	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·07	..	..	..
*	1·44	1·19	1·47	2·95	1·79	1·80	2·05	1·61	1·31	2·51	2·55	1·48	2·52	1·54	1·67	1·85	2·55	2·76	2·16	1·61	1·34	1·32	2·32	1·63	1·40	1·41
†	11·50	11·42	10·38	12·46	8·89	9·67	10·65	8·67	9·71	10·53	10·12	9·33	10·80	9·13	9·44	10·02	10·21	10·99	10·65	10·25	10·24	9·51	11·57	8·74	9·27	10·12

* The figures in this row give the totals for the month. † The totals from January 1st.

July, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..
2	·11	·11	·19	·22	·14
3	..	..	..	..	..
4	..	..	..	..	..
5	..	..	..	..	..
6	..	..	..	..	..
7	..	..	..	..	..
8	..	..	..	..	..
9	..	..	..	..	..
10	..	..	..	..	..
11	..	..	..	..	..
12	..	..	..	..	..
13	..	..	..	..	..
14	..	..	..	..	..
15	..	..	..	..	..
16	..	..	..	..	..
17	..	..	..	..	..
18	..	..	..	..	..
19	..	..	..	..	..
20	..	..	..	..	..
21	..	..	..	..	..
22	·01	..	·02	..	·05
23	·01	·02	·01	·05	·05
24	·12	·17	·03	·27	·21
25	·05	·19	·45	·92	1·78
26	·87	·57	·40	·45	·52
27	·24	·15	·06	1·29	·84
28	·28	·08	·13	·01	..
29	..	..	..	..	·02
30	..	..	..	..	..
31	..	..	..	..	..
*	1·69	1·29	1·29	3·21	3·61
†	10·61	9·21	8·01	11·46	9·50

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(July, 1901.)

The month has been one of about average temperature, but with a rainfall of, in most places, about half an inch below the average. There was an absolute drought after the 2nd of between nineteen and twenty days in many places, and a partial drought in others. Though the thunderstorm on the 25th seems to have been general throughout the district, the rain that accompanied it varied very greatly in amount, being 1·78 in. at Battersea, and ·01 in. at Buckland. Lightning was seen and thunder heard on several days. The month has been fairly healthy, though scarlet fever has been somewhat prevalent. Fog occurred on several days after the 10th. Solar halos were seen at Greenwich on the 3rd, at Upper Gatton on the 3rd and 19th, and Wallington on the 19th. In most places the 19th seemed to have been the warmest day. The mean temperature of the month is about the average, and was at Worcester Park 65·2°, at Croydon (Whitgift) 65·1°, at Chipstead and Wallington 64·5°, at Warlingham 63·9°, and at Redhill 63·8°. Limes flowered at Sidcup on the 4th. There were recorded at Wallington 250·4 hours of sunlight, which is nine per cent. above the July mean of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			·03	..		..	..	..		..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
4	·01	·01	..	·01	·01	·01	·01	·01	..	·01	..	..	..	..	..	..			·01	·02		..	·01	..		..
5	·03	·03	·06	·07	·07	·07	·06	·07	·06	·08	·07	·07	·09	·10	·09	·11			·08	·09		·08	·07	·05		..
6	·01	·01	..	..	..	..	..	·01	..	·01	..	..	..	·01	..	..			·04	..		·01	·02	·01		..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
11	·12	·16	·15	·32	·13	·14	·25	·22	·29	·13	·20	·27	·14	·10	·14	·20			·22	·15		·09	·17	·11		·08
12	·01	·02	·02	·01	..	..	·01	·01	·02	·02	·01	·05	..	..	·11	·11			..	·11		..	·04	·01		..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
14	·25	·36	·29	·36	·35	·36	·34	·33	·36	·36	·35	·35	·39	·36	·24	·27			·34	·28		·29	·32	·26		·23
15	·14	·27	..	·06	·03	·03	·08	·07	·03	·02	·03	·09	..	·03	..	..			..	..		·07	·18	..		·03
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..	MONTHLY GAUGE.	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
25	·37	·51	·43	·37	·37	·41	·31	·42	·53	·41	·46	·42	·40	·40	·38	·26			·30	·25		·33	·46	·37		·39
26	·10	·07	·11	·13	·15	·16	·05	·08	·08	·09	·07	·06	..	·04	·04	·08			·14	·05		·09	·05	·05		·10
27	·60	·61	·68	·69	·74	·78	·71	·73	·92	·78	·90	·84	·72	·89	·87	·98			·75	·81		·89	·81	·75		·70
28	·01	..	..	..	..	..	..	·03	..	..	..	·04	·22	..	..	..			..	..		..	·04	..		..
29	·01	..	..	·02	·02	·02	·01	..	·03	·03	·04	..	..	·05	..	·04			·09	..		·03	..	·02		..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
31	·10	·01	·16	·15	·17	·18	·10	·17	·22	·21	·22	·25	·29	·27	·25	·25			·25	·21		·30	·30	·33		·24
*	1·76	2·06	1·90	2·19	2·04	2·16	1·93	2·15	2·54	2·15	2·35	2·44	2·25	2·25	2·12	2·30	2·03	1·96	2·25	1·97	1·99	2·18	2·47	1·96	1·87	1·77
†	14·86	15·55	15·65	14·86	14·91	15·45	13·67	14·24	15·11	15·07	15·82	15·34	15·50	16·20	14·66	12·04	13·95	10·36	14·83	12·94	13·92	14·59	15·54	13·64	13·75	13·18

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for August is 2·30 in.* **August, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	·04	·02	·11	·30	·16	·25	·19	·08	..	..	·15	·31	·31
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	·01	·01	..	..	..	..	..	·01	..	..	·02	·01	·01	..	..	..	..	..	..	..	..	..	·01
5	·08	·08	·07	·06	·06	·07	·08	·08	·07	·07	·05	·08	·06	·08	·08	·07	·08	·07	·09	·09	·08	·07	·06	·06	·07	·09
6	..	..	..	·01	..	·02	·01	·02	·01	·01	·03	..	..	·01	..	·01	..	·02	..	·01	..	..	·02	..	·01	..
7	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	·01
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·09	·10	·13	·07	·07	·18	·17	·09	·08	·08	·08	·15	·07	·10	·08	·07	·09	·12	·10	·02	·07	·05	·07	·13	·12	·11
12	..	..	·03	·01	..	·01	·02	..	·01	..	·01	·02	..	..	..	·02	·03	·01	..	·06	·01	·05	·02	..	..	·01
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·20	·22	·29	·23	·25	·22	·23	·25	·24	·25	·23	·25	·25	·27	·24	·24	·22	·22	·20	·17	·17	·22	·22	·17	·22	·23
15	..	·02	·01	·06	·02	·04	·08	·06	·09	·07	·10	·05	·02	..	·03	·08	·15	..	·02	..	..	·18	..	·03	·09	·04
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·39	·40	·33	·23	·20	·25	·25	·26	·24	·26	·30	·26	·26	·27	·31	·44	·35	·34	·34	·30	·33	·36	·32	·22	·27	·28
26	..	·07	·03	·04	·08	·08	·19	·19	·20	·18	·25	·21	·12	·23	·29	·11	·12	·08	·13	·15	·17	·19	·15	·16	·13	·15
27	·80	·77	·71	·79	·70	·82	·76	·76	·70	·75	·78	·75	·74	·71	·71	·71	·71	·74	·77	·68	·66	·61	·46	·58	·58	·60
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	·01	..	..	..	..	..	..	·01	..	..	..	·01	·01	·02	..	·01	·01	·01	..	..	..	..	..	·01
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	·32	·32	·32	·36	·38	·38	·37	·38	·36	·36	·42	·40	·40	·35	·38	·33	·35	·34	·36	·31	·27	·32	·28	·28	·31	·32
*	1·88	1·98	1·93	1·87	1·77	2·08	2·16	2·09	2·00	2·04	2·26	2·17	1·92	2·09	2·16	2·24	2·40	2·11	2·27	2·00	1·84	2·05	1·60	1·78	2·11	2·17
†	11·44	11·58	15·08	13·57	12·37	13·30	12·94	12·73	13·38	13·22	14·43	14·12	13·22	12·87	14·00	14·69	15·19	14·78	15·07	12·88	12·85	12·44	9·95	12·37	13·70	13·94

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·21	·09	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	·02	·01	..	·01	..	..	·01	..	..	..	·01	..	..
5	·27	·08	·08	·08	·09	·08	·08	·06	·07	·06	·07	·06	·08
6	·01	·02	..	·02	..	·01	·01	..	..	·01	·01	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·15	·09	·09	·07	·08	·07	·07	·04	·03	·06	·10	·05	·05
12	·02	·02	..	·02	..	·01	·02	..	·01	·03	·02	·01	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·13	·22	·23	·33	·38	·34	·33	·30	·32	·24	·20	·32	·33
15	·02	..	..	·02	..	..	..	..	·03	·06	·01	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·24	·37	·30	·33	·31	·33	·30	·34	·33	·24	·27	·31	·38
26	·19	·13	·15	·08	·12	·14	·14	·15	·03	·05	·14	·14	·12
27	·62	·60	·65	·57	·55	·55	·60	·63	·63	·66	·68	·63	·71
28	..	·01	·04	..	..	·01	..	..	..	..	..	..	..
29	·02	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
31	·31	·33	·34	·40	·37	·40	·40	·34	·39	·33	·41	·40	·43
*	2·21	1·97	1·88	1·93	1·90	1·94	1·96	1·86	1·84	1·74	1·92	1·92	2·10
†	13·71	13·39	12·26	14·39	10·79	11·61	12·61	10·53	11·55	12·27	12·04	11·25	12·90

Day of Mo.	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	·01	..	..	..	..	..	..	..
2	..	..	..	·01	..	..	..	·02	·02	·04	..	..	·03
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	·01	..	..	..	..	·01	..	·01	..	..	..	·02	..
5	·09	·08	·08	·09	·09	·08	·08	·05	·07	·08	·06	·06	·05
6	·01	..	·01	..	·01	·01	..	·03	·01	·01	·01	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·05	·02	·08	·15	·13	·14	·10	·10	·09	·05	·06	·07	·19
12	·01	·01	·01	..	·01	·02	..	..	..	..	·02	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·30	·35	·40	·44	·40	·36	·34	·36	·37	·22	·16	·08	·29
15	..	..	·02	..	..	·02	..	·03	..	·01	·02	..	·03
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·24	·31	·36	·33	·31	·30	·17	·33	·30	·26	·20	·25	·27
26	·11	·17	·20	·16	·13	·18	·16	·18	·21	·19	·13	·07	·23
27	·55	·55	·55	·51	·54	·53	·52	·49	·48	·53	·46	·46	·45
28	..	..	·01	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
31	·43	·40	·39	·33	·35	·36	·34	·34	·33	·34	·30	·32	·37
*	1·80	1·89	2·11	2·02	1·97	2·02	1·71	1·94	1·88	1·73	1·42	1·33	1·91
†	10·93	11·33	12·13	12·23	12·96	12·67	11·96	12·18	11·39	13·30	10·16	10·60	12·03

* The figures in this row give the totals for the month. † The totals from January 1st.

August, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..
2	·10	·10	·03	·01	·01
3	..	..	..	..	..
4	·01	..	..	·01	..
5	·05	·06	·05	·06	·06
6	·02	·01	..	·01	..
7	..	..	..	..	..
8	..	..	..	..	..
9	..	..	..	..	..
10	..	..	..	..	..
11	·04	·06	·07	·17	·08
12	..	..	..	..	..
13	..	..	..	..	..
14	·39	·37	·39	·45	·38
15	·06	·08	·02	..	..
16	..	..	..	..	..
17	..	..	..	..	..
18	..	..	..	..	..
19	..	..	..	..	..
20	..	..	..	..	..
21	..	..	..	..	..
22	..	..	..	..	..
23	..	..	..	..	..
24	..	..	..	..	..
25	·31	·28	·24	·46	·28
26	·26	·17	·19	·19	·13
27	·44	·40	·42	·50	·45
28	..	..	..	..	..
29	..	..	..	..	..
30	..	..	..	..	..
31	·35	·36	·31	·34	·34
*	2·03	1·89	1·72	2·20	1·73
†	12·64	11·10	9·73	13·66	11·23

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(August, 1901.)

The month has been warm, though somewhat variable in temperature. The first three weeks were warm and fairly dry, whilst the last week was very cold and wet. The month has been rather unhealthy, diarrhœa being very prevalent. A thunderstorm with lightning and hail was experienced in most parts of the district on the 26th. Fog occurred generally throughout the district in the early mornings of the 22nd, 23rd, and 24th, and also at Greenwich on the 25th. The harvest is practically finished, and is somewhat variable, the crops on heavy soil being good, whilst those on the light lands are deficient. There is no disease in the potatoes about here. Thunder was heard at Upper Gatton on the 26th and 29th, at Wallington on the 12th and 26th, and at Greenwich, Clapham Park, and Croydon on the 26th. Solar halos were observed at Greenwich on the 3rd, 17th, 19th, and 29th, at Upper Gatton on the 17th and 19th, at Croydon on the 17th, and Clapham Park on the 17th, 19th, and 29th; and a lunar halo was seen at Greenwich on the 30th. The rainfall is about one-third of an inch below the average. The mean temperature of the month is rather variable, but is about a degree above the average, and was at Croydon (Duppas House) 63·3°, at Chipstead 62·8°, at Croydon (Whitgift) and Worcester Park 62·7°, at Wallington 62·4°, and at Warlingham 61·8°. There were recorded at Wallington 232·7 hours of sunlight, which is eight per cent. above the August average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	..		..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	..		..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
8	·27	·31	·36	·20	·19	·19	·20	·21	·21	·19	·21	·20	·20	·21	·23	·20			·26	·26		·20	·20	·18		·30
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
10	..	..	..	·01	..	..	·01	..	..	..	..	..	..	..	..	..			..	..		..	·01	..		..
11	·07	·07	·07	·07	·07	·08	..	·07	·07	·06	·06	·06	·05	·06	·05	·05			·07	·06		·05	·05	·06		·08
12	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
16	1·18	1·10	1·00	1·07	1·07	1·10	1·09	·96	1·09	1·09	1·00	1·07	1·16	1·15	·96	·85	MONTHLY GAUGE.	MONTHLY GAUGE.	·91	·90	MONTHLY GAUGE.	·95	·82	·73	MONTHLY GAUGE.	·74
17	·14	·18	·14	·14	·11	·10	·08	·21	·27	·24	·22	·23	·12	·22	·23	·13			·15	·02		·30	·13	·09		·22
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..			..	..		..	..	..		..
19	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	·01		..	..	..		..
20	·75	·50	·55	·29	·35	·40	·23	·24	·22	·36	·25	·22	·33	·38	·39	·21			·13	·03		·42	·34	·26		·42
21	·16	·13	·18	·03	·02	·02	..	·04	·03	·04	·03	·03	·05	·06	·12	..			·08	·03		·06	·05	·01		·36
22	·01	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
23	·01	..	·03	..	·01	..	·03	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	·01		..	..	·01		..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
28	..	..	..	..	·01	·01	..	..	·01	..	..	..	..	..	..	..			..	..		..	..	..		..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..		..
*	2·62	2·29	2·33	1·81	1·83	1·90	1·65	1·73	1·90	1·98	1·77	1·81	1·91	2·08	1·99	1·44	1·52	1·31	1·60	1·32	1·73	1·98	1·62	1·34	1·72	2·12
†	17·48	17·84	17·98	16·67	16·74	17·35	15·32	15·97	17·01	17·05	17·59	17·15	17·41	18·28	16·65	13·48	15·47	11·67	16·43	14·26	15·65	16·57	17·16	14·98	15·47	15·30

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for September is 2·30 in.* **September, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..
8	·22	·18	·28	·29	·27	·20	·20	·19	·18	·19	·20	·20	·17	·17	·19	·17	·19	·19	·20	·20	·20	·22	·18	·19	·18	·15
9	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·07	·09	·05	·03	·05	·05	·06	·06	·06	·07	·07	·06	·06	·05	·06	·06	·08	·06	·07	·04	·03	·06	·06	·05	..	·04
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·57	·52	·88	·60	·55	·69	·64	·56	·60	·64	·63	·62	·60	·57	·59	·66	·64	·77	·53	·74	·68	·72	·65	·54	·59	·56
17	·07	·09	·10	·07	·05	·09	·07	·04	·04	·05	·05	·05	·04	·04	·06	·07	·11	·11	·29	·07	·03	·08	·03	·07	·04	·07
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	·40	·37	·46	·45	·36	·39	·27	·20	·18	·20	·20	·19	·20	·20	·20	·25	·37	·39	·45	·41	·30	·10	·02	·50	·35	·31
21	·14	·17	·07	·04	·02	·02	·08	·03	·02	·02	·01	·01	·01	·02	·02	·03	·05	·09	·04	·05	·07	·04	·04	·04	·03	·04
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	·01	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..
*	1·47	1·42	1·86	1·48	1·30	1·44	1·32	1·10	1·08	1·17	1·16	1·13	1·08	1·05	1·13	1·27	1·44	1·61	1·58	1·51	1·31	1·25	·99	1·39	1·19	1·18
†	12·91	13·00	16·94	15·05	13·67	14·74	14·26	13·83	14·46	14·39	15·59	15·25	14·30	13·92	15·13	15·96	16·63	16·39	16·65	14·39	14·16	13·69	10·94	13·76	14·89	15·12

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·18	·19	·17	·30	·38	·32	·31	·20	·28	·15	·18	·19	·17	·13	·24	·36	·30	·28	·25	·20	·23	·21	·23	·20	·20	·19
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·04	·05	·06	·03	·06	·04	·04	·02	·02	·05	·03	·02	·02	·04	·04	·04	·03	..	·05	·06	·07	·06	·06	·07	·07	·05
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·56	·59	·49	·54	·47	·55	·50	·56	·53	·49	·43	·55	·58	·46	·56	·57	·59	·57	·62	·66	·63	·70	·58	·60	·65	·63
17	·04	·05	·03	·04	·09	·09	·09	·06	·06	·05	·09	·02	·07	·17	·11	·13	·10	·08	·10	·10	·07	·08	·03	·01	·06	·06
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
20	·33	·26	·19	·39	·42	·35	·36	·34	·40	·37	·25	·34	·42	·54	·32	·57	·29	·25	·30	·29	·25	·27	·34	·14	·22	·29
21	·04	·02	·01	·04	·03	..	·02	·12	·14	·07	·02	·12	·12	·12	·10	..	..	·02	·04	..	·02	·02	·05	·02	·05	·01
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	·09
*	1·20	1·16	·95	1·34	1·45	1·35	1·32	1·30	1·43	1·18	1·00	1·24	1·38	1·46	1·37	1·67	1·31	1·21	1·37	1·31	1·27	1·35	1·29	1·05	1·25	1·32
†	14·91	14·55	13·21	15·73	12·24	12·96	13·93	11·83	12·98	13·45	13·04	12·49	14·28	12·39	12·70	13·80	13·54	14·17	14·04	13·27	13·45	12·74	14·59	11·21	11·85	13·35

* The figures in this row give the totals for the month. † The totals from January 1st.

September, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..
2	..	..	..	..	..
3	..	..	..	..	..
4	..	..	..	..	..
5	..	..	..	..	..
6	..	..	..	..	..
7	..	..	..	..	..
8	·21	·20	·19	·31	·36
9	..	..	..	..	..
10	..	..	..	..	..
11	·04	·03	·03	·04	·03
12	..	..	..	..	..
13	..	..	..	..	..
14	..	..	..	..	..
15	..	..	..	..	..
16	·73	·68	·70	·59	·51
17	·11	·13	·09	·15	·14
18	..	..	..	..	..
19	..	..	..	..	..
20	·25	·23	·29	·33	·39
21	·01	..	·01	·01	·02
22	..	..	..	..	..
23	..	..	..	..	..
24	..	..	..	..	..
25	..	..	..	..	..
26	..	..	..	..	..
27	..	..	..	..	..
28	..	..	..	..	..
29	..	..	..	..	..
30	..	..	..	..	..
*	1·35	1·27	1·31	1·43	1·45
†	13·99	12·37	11·04	15·09	12·68

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(September, 1901.)

The month has been warm and dry, with but little rain except on the 8th, 16th, and 20th. It has been an unhealthy one, diphtheria and scarlet fever being prevalent. All garden crops have done well, and there seems very little disease amongst the potatoes. Wasps have been very numerous, especially about Nutfield. Many plants are in flower, such as roses, cornflower, wallflower, and dahlias, and are looking well. Dews were numerous and very heavy. Solar halos were seen at Greenwich on the 2nd, 7th, 22nd, and 24th, at Nutfield on the 10th, 17th, and 21st, at Upper Gatton on the 2nd and 13th, and at Beddington on the 30th. Fogs occurred at Greenwich on the 10th, 16th, 25th, 26th, 29th, and 30th, at Clapham Park on the 16th, 25th, and 30th, and also in other places. The rainfall is about an inch below the average. The mean temperature of the month is about a degree above the average, and was at Croydon (Duppas House) 58·8°, at Worcester Park 58·5°, at Chipstead, Wallington, and Croydon (Whitgift) 58·0°, at Warlingham 57·4°, and at Redhill 55·7°. There were recorded at Wallington 153·3 hours of sunlight, which is three per cent. below the September average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·18	..	·10	·73	1·47	1·05	·18	·84	1·22	·80	2·07	·99	1·28
2	·01	·05	·19	·07	·01	..	..	·28	·34	·08	·73	·62	1·15
3	·09	·02	·07	·03	·08	·09	·06	·06	·07	·08	·06	·05	..
4	·59	·72	·50	·68	·56	·58	·61	·58	·56	·53	·52	·64	·43
5	·03	·03	..	·02	·03	·02	·01	·02	·02	·09	·02	..	..
6	·12	..	·15	·04	·07	·07	·03	·05	·05	·06	·09	·12	·14
7	·01	·02	..	..	..	..	..	..	..	..	..	..	..
8	·05	·06	·07	·04	·04	·04	·04	·05	·04	·05	·04	·04	·02
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·16	·11	·10	·06	·08	·09	·07	·03	·09	·08	·09	·06	·10
16	·47	·48	·55	·33	·23	·24	·56	·41	·43	·40	·32	·56	·46
17	·14	·13	·08	·28	·30	·32	·26	·19	·14	·28	·18	·10	·37
18	·46	·71	·63	·68	·70	·75	·62	·56	·56	·69	·60	·54	·76
19	..	..	..	·01	·02	·02	..	·09	..	..	·02	..	..
20	·02	·02	·03	..	..	..	·03	..	·01	..	..	..	..
21	·02	·04	·08	·05	·08	·09	·03	·04	·05	·06	·04	·06	·03
22	·06	·04	·05	·06	·01	·01	..	·05	·01	·01	..	..	..
23	..	..	..	..	..	..	·01	..	..	..	..	..	..
24	·08	·13	·09	·07	·07	·07	·16	·08	·11	·08	·10	·12	·16
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·01	..	..	..	·01	·01	..	..	..	..	..	..	..
27	..	..	..	·01	..	..	..	..	..	..	..	..	..
28	..	·02	..	..	·05	·05	·02	..	·01	..	·01	·01	..
29	..	..	·05	·04	..	..	..	·05	·09	·10	·08	·09	·09
30	..	..	..	..	..	..	·01	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	2·50	2·58	2·74	3·20	3·81	3·50	2·70	3·38	3·80	3·39	4·97	4·00	4·99
†	19·98	20·42	20·72	19·87	20·55	20·85	18·02	19·35	20·81	20·44	22·56	21·15	22·40

Day of Mo.	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·73	·40	·45			·37	·45		·25	1·18	·26		·09
2	·10	..	..			·08	·16		·30	·03	·67		·08
3	·08	·03	..			..	·08		·07	·09	·07		·07
4	·50	·44	·62			·43	·42		·46	·50	·48		·44
5	..	·01	..			..	·03		·02	·02	·01		..
6	·20	·19	·10			·23	·20		·11	·11	·12		·04
7	..	..	..			..	·01		..	..	..		..
8	..	..	..			·05	·04		·04	·04	·03		·02
9	..	..	..			..	..		..	..	..		..
10	..	..	..			..	..		..	..	..		..
11	..	..	..			..	..		..	..	..		..
12	..	..	..			..	..		..	..	..		..
13	..	..	..			..	..		..	..	..		..
14	..	..	..			..	..		..	..	..		..
15	·11	·31	·30			·08	·05		·17	·02	·09		..
16	·63	·15	·17			·29	·15		·36	·54	·70		·56
17	·36	·23	·20	MONTHLY GAUGE.	MONTHLY GAUGE.	·24	·24	MONTHLY GAUGE.	·33	·20	·12	MONTHLY GAUGE.	·09
18	·78	·54	·45			·61	·57		·70	·67	·60		·62
19	..	·02	..			·02	·02		·02	..	·01		..
20	..	..	..			..	..		..	..	..		..
21	·10	·06	·21			·09	·12		·05	·05	·03		·10
22	..	..	..			..	..		..	..	·01		·06
23	..	..	..			..	..		..	..	..		..
24	·11	·09	..			·10	·10		·10	·10	·08		·08
25	..	..	..			..	..		..	..	..		..
26	..	..	..			..	..		..	..	..		..
27	..	..	..			..	..		..	..	..		..
28	..	..	..			..	..		..	..	..		..
29	·14	·13	·08			·18	·08		·16	·12	·10		·05
30	..	..	..			..	..		..	..	..		..
31	..	..	..			..	..		..	..	..		..
*	3·84	2·60	2·58	2·59	2·80	2·77	2·72	2·75	3·14	3·67	3·38	2·93	2·30
†	22·12	19·25	16·06	18·06	14·47	19·20	16·98	18·40	19·71	20·83	18·36	18·40	17·60

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for October is 2·77 in.* **October, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·22	·20	·31	·26	·41	·52	·43	·25	·30	·26	·26	·17	·22
2	..	·03	·11	·11	·10	·36	·20	·24	·24	·31	·34	·35	·22
3	·11	·11	·11	·09	·11	·08	·07	·07	·07	·07	·07	·07	·10
4	·42	·40	·51	·47	·42	·48	·44	·40	·38	·43	·43	·45	·40
5	·02	·02	·02	..	·02	..	..	..	·03	..	·02	·01	·02
6	·03	·03	·08	·12	·10	·09	·15	·16	·18	·19	·19	·20	·15
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·03	·02	·03	·02	·03	·02	·03	·03	·03	·02	·04	·04	·03
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·08	·06	·07	·06	·07	·10	·08	·06	·07	·08	·07	·07	·07
16	·45	·41	·41	·44	·37	·46	·48	·56	·50	·51	·53	·54	·47
17	·08	·05	·06	·02	·02	·03	·04	·03	·04	·04	·14	·04	·03
18	·38	·30	·83	·84	·77	·66	·63	·60	·64	·62	·64	·58	·63
19	·02	·01	·01	·03	·02	·14	·19	·21	·20	·16	·18	·19	·15
20	·05	·04	·01	..	..	..	..	..	..	..	..	..	..
21	..	·03	·03	·01	·04	·04	·02	..	·01	·02	·02	·02	·02
22	·05	·06	·02	..	·01	·01	·01	..	·01	·01	·01	·01	..
23	·08	..	..	..	..	·01	·01	..	·01	·01	·01	·02	..
24	·05	·01	·10	·04	·03	·05	·06	·06	·06	·06	·06	·04	·05
25	·04	..	·01	..	·01	..	..	..	..	..	..	..	..
26	..	..	·01	..	..	..	..	..	..	..	·01	..	..
27	..	..	..	..	..	..	..	..	·01	·01	..	..	..
28	..	..	·01	..	..	..	..	..	..	..	..	..	..
29	·06	·03	·08	·04	·04	·06	·06	..	·06	·06	·06	·05	·06
30	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	2·17	1·81	2·82	2·55	2·57	3·11	2·90	2·67	2·84	2·86	3·08	2·85	2·62
†	15·08	14·81	19·76	17·60	16·24	17·85	17·16	16·50	17·30	17·25	18·67	18·10	16·92

Day of Mo.	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·20	·10	·16	·21	·22	·20	·31	·24	·55	·52	·22	·20	·20
2	·47	·49	1·09	·31	·35	·14	·07	·21	·04	·15	·20	·24	·06
3	·07	·03	·08	·04	·09	·09	·07	·07	·06	·05	·10	·10	·09
4	·45	·50	·46	·59	·51	·53	·37	·42	·56	·49	·40	·51	·45
5	·01	·01	·02	·02	..	..	·01	..	..	..	·19	·01	·02
6	·18	·20	·19	·18	·18	·18	·12	·15	·30	·16	·17	·20	·15
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·03	·03	·03	·03	·02	·02	·02	·01	·04	·02	·03	·03	·05
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	·01	..	·02	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·11	·05	·14	·04	·22	·25	·18	·30	·06	·04	·43	·26	·23
16	·60	·78	·58	·48	·34	·33	·34	·21	·15	·07	·19	·40	·44
17	·04	·04	·15	·27	·33	·32	·33	·21	·16	·15	·09	·14	·15
18	·49	·58	·66	·68	·70	·68	·52	·54	·46	·43	·56	·66	·56
19	·08	·08	·03	..	..	..	..	..	·01	·02	..	·03	·06
20	..	..	·01	..	..	..	..	..	..	..	..	..	..
21	·02	·02	·03	..	·04	·03	·04	·05	·18	·04	·03	·03	·03
22	·02	·03	·02	..	·02	..	·02	·03	..	·02	·04	·01	·01
23	·01	..	·02	..	..	·01	·01	..	·03	..	..	..	..
24	·04	·06	·07	·14	·10	·07	·08	·08	·10	·03	·04	·06	·06
25	..	..	..	..	·01	..	..	..	..	..	..	..	..
26	·01	..	·01	..	..	..	..	..	·01	..	..	..	..
27	..	..	..	..	..	·01	..	..	..	·01	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	·01	·01
29	·07	·08	·08	·11	·11	·11	·13	·13	·17	·14	·12	·11	·12
30	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	2·90	3·08	3·83	3·10	3·24	2·97	2·63	2·65	2·90	2·34	2·81	3·00	2·69
†	16·82	18·21	19·79	19·73	19·63	19·62	17·02	16·81	16·59	13·28	16·57	17·89	17·81

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·21	·20	·26	1·00	·57	·34	·26	·19	·31	·26	·14	·14	·22
2	·07	·09	·25	·10	·16	·03	·09	·04	·02	·03	·02	·02	·03
3	·07	·09	..	·20	·15	·16	·12	·20	·11	·21	·16	·18	·22
4	·40	·48	·50	·33	·34	·33	·33	·33	·36	·27	·29	·30	·31
5	·02	·03	..	..	..	·01	·01	·02	·01	·01	..	·01	·02
6	·11	·13	·15	·50	·09	·10	·11	·10	·09	·07	·08	·08	·13
7	·01	..	..	·01	..	..	·01	..	..	..	..	..	..
8	·03	·04	·05	·03	·03	·03	·03	·01	·02	·02	·02	..	·03
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·29	·21	·10	·04	·04	·04	·05	·05	·04	·05	·05	·06	·05
16	·28	·25	·59	·47	·41	·24	·29	·26	·24	·29	·34	·31	·38
17	·14	·11	·03	·05	·04	·04	·05	·01	·08	·04	·02	·04	·04
18	·60	·59	·55	·63	·31	·33	·36	·27	·36	·25	·23	·24	·26
19	·02	·08	·13	·02	·02	·01	..	..	..	..	·01	..	·03
20	·03	..	..	..	..	..	..	..	..	·02	·01	..	..
21	·02	·03	·04	..	·03	·04	·05	·08	·06	·04	·03	·07	·09
22	..	·02	·01	·07	·06	·08	·09	·06	·05	·08	·07	·05	·06
23	·01	..	..	..	·01	..	..	..	..	·03	..	..	..
24	·05	·05	·03	·03	·01	·03	·03	·01	·03	·04	·05	·02	·03
25	..	..	..	..	·01	..	·01	..	..	..	..	..	·01
26	..	..	..	..	..	..	·01	..	..	..	..	..	..
27	·01	..	..	..	..	..	·01	..	..	..	..	..	..
28	..	·01	..	..	..	..	..	..	..	..	..	..	..
29	·09	·08	·08	·04	·02	·03	·02	·01	·02	·01	·02	·01	·01
30	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	2·46	2·49	2·77	3·52	2·30	1·84	1·93	1·64	1·80	1·72	1·52	1·53	1·92
†	17·37	17·04	15·98	19·25	14·54	14·80	15·86	13·47	14·78	15·17	14·56	14·02	16·20

Day of Mo.	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·24	·28	·13	·45	·61	·21	·13	·20	·16	·24	·51	·50	·22
2	·05	·08	·47	·15	·13	·14	·22	·13	·17	·24	·02	·03	·60
3	·24	·12	·20	·10	·18	·14	·12	..	·13	·11	·10	·09	·26
4	·27	·40	·33	·39	·35	·38	·41	·39	·41	·38	·50	·53	·27
5	..	·02	·03	·01	·01	·02	·04	..	·02	·02	·02	..	·01
6	·06	·09	·10	·16	·10	·14	·14	·23	·19	·22	·18	·21	·19
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·04	·05	·04	·03	·05	·05	·05	·04	·03	·02	·01	·01	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	·05	·05	·06	·09	·07	·07	·05	·10	·24	·09	·27	·11
16	·36	·23	·45	·40	·40	·35	·64	·62	·57	·42	·14	·24	·49
17	·04	·01	·03	·02	·03	·03	·02	·03	·03	·11	·16	..	·12
18	·28	·29	·32	·65	·54	·75	·54	·49	·58	·54	·44	·37	·55
19	..	·02	·07	·01	·01	..	·08	·07	·03	·05	..	..	·03
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·09	·03	·02	·01	·02	·01	·02	·02	·01	·06	·20	..	..
22	·09	·05	·04	..	·04	·02	·02	·04	·02	·02	..	·17	·03
23	·01	·01	·01	·02	·01	..	..	..	..	..	..	..	..
24	·05	·03	·02	·01	·03	·04	·03	·03	·03	·05	·03	·03	·02
25	..	..	..	..	·01	..	..	..	·01	..	..	..	..
26	..	..	..	..	·01	·01	..	..	..	·01	..	..	..
27	..	·01	..	..	..	..	..	..	·01	..	..	..	..
28	..	..	..	..	..	..	..	..	..	·01	..	..	..
29	·02	·02	·01	·02	·02	·04	·04	·05	·02	·08	·07	·06	·05
30	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·84	1·79	2·32	2·49	2·64	2·40	2·57	2·39	2·52	2·82	2·47	2·51	2·95
†	14·23	14·49	16·12	16·03	16·81	16·44	15·84	15·84	15·26	17·41	13·68	14·36	16·30

* The figures in this row give the totals for the month. † The totals from January 1st.

October, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	·17	·16	·15	·15	·44
2	·56	·44	·14	·36	·16
3	·14	·10	·03	·05	·16
4	·38	·37	·35	·45	·29
5	·01	·01	..	·01	..
6	·16	·17	·14	·25	·17
7	..	..	..	..	..
8	·03	·02	..	·02	·01
9	..	..	..	..	..
10	..	..	..	..	..
11	..	..	..	..	..
12	..	..	..	..	..
13	..	..	..	..	..
14	..	..	..	..	..
15	·12	·10	·09	·05	·04
16	·42	·50	·56	·44	·37
17	·03	·02	..	·04	..
18	·53	·48	·63	·64	·30
19	..	·01	..	·15	·05
20	..	..	..	..	·01
21	..	·01	..	·01	·01
22	·01	·02	..	..	..
23	..	·01	..	..	..
24	·02	·01	..	·02	..
25	..	..	..	..	..
26	..	..	..	..	..
27	..	..	..	..	..
28	..	..	..	..	..
29	·02	·02	..	..	..
30	..	..	..	..	..
31	..	..	..	..	..
*	2·60	2·45	2·09	2·64	2·01
†	16·59	14·82	13·13	17·73	14·69

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(October, 1901.)

The month has been somewhat wet and fairly warm. It is difficult to say whether, taking the district as a whole, the rainfall is above or below the average, but probably it is slightly below. The rainfall on the 1st and 2nd is remarkable, more especially at Harp's Oak Cottage and Chaldon. The month, again, has been unhealthy, there being many cases of diphtheria and scarlet fever. The small-pox does not appear to have penetrated beyond the London area. The frost on the night of the 26th–27th was the most severe one in October since 1895, and all tender plants were cut off. Lightning was seen in parts of the district on the 1st, 6th, 7th, 8th, and 19th. At Clapham Park the thermometer on the 27th rose from 33·8° at 9 a.m. to 54·2° at noon. Solar halos were seen at Greenwich on the 1st, 13th, and 23rd, at Upper Gatton on the 13th, at Beddington on the 14th, and at Nutfield on the 19th and 21st. Lunar halos were seen at Greenwich, Wallington, Beddington, and Clapham Park on the 23rd, and at Nutfield on the 20th and 23rd. Thunder was heard at Greenwich and Sidcup on the 19th, on which day there was much hail at Wallington and Beddington. Fog occurred on many days, but on the 26th the observer at Sanderstead remarks that there was thick fog, but objects were visible at fifty yards. The mean temperature of the month is about one degree above the average, and was at Chipstead 51·3°, at Croydon (Duppas House and Whitgift) 50·9°, at Wallington 50·3°, at Worcester Park 50·1°, and at Warlingham 49·5°. There were recorded at Wallington 108·9 hours of sunlight, which is three per cent. above the October average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	·01	..	..	..	..	..	..	..
4	·01	·04	..	..	..	·01	..	..	·01	..	..	·01	..
5	·01	..	..	..	..	..	..	..	..	..	..	·01	..
6	·02	..	..	..	·01	·01	..	..	..	..	·01	·01	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	·03	..	..	·05	·02	·04	·05	·03	·03	..
12	·17	·24	·22	·20	·22	·24	·18	·17	·20	·20	·19	·16	·26
13	·52	·43	·33	·38	·32	·32	·35	·44	·40	·50	·37	·36	·25
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	·01	..	..
17	..	..	..	..	·01	·01	..	..	..	..	..	..	..
18	..	..	..	·01	..	..	..	..	..	..	..	·03	..
19	·02	..	..	·01	·01	..	·01	·02	·02	·02	..	..	..
20	..	..	..	..	..	..	..	..	·01	..	·02	·01	·08
21	·03	·13	·05	·05	·05	·04	·04	·04	·04	·05	·06	·04	·09
22	·08	·06	·08	·06	·07	·07	·06	·06	·07	..	·07	·10	·16
23	..	..	..	..	·01	·01	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·03	..	..	·02	·01	·01	..	·02	..	..	·02	·02	..
26	..	·03	..	·01	·01	·01	..	·01	..	..	..	·01	..
27	..	..	..	..	..	..	..	..	..	..	·01	..	·05
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	·01	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·89	·93	·68	·78	·72	·74	·69	·78	·79	·82	·79	·79	·89
†	20·87	21·35	21·46	20·65	21·27	21·59	18·71	20·13	21·60	21·26	23·35	21·94	23·29

Day of Mo.	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..			..	..		..	..	..		..
2	..	..	..			..	..		..	..	..		..
3	..	..	..			..	..		..	..	..		..
4	..	..	..			..	·02		..	..	·02		·03
5	..	..	..			..	·02		..	·02	·02		·01
6	..	..	..			..	·02		..	·01	·01		·01
7	..	..	..			..	·01		..	..	..		..
8	..	..	..			..	..		..	..	..		..
9	..	..	..			..	..		..	..	..		..
10	..	..	..			..	..		..	..	..		..
11	·06	..	..			·07	·04		·04	·03	·04		..
12	·22	·29	·14			·27	·26		·24	·15	·12		·15
13	·39	·36	·43			·41	·25		·31	·26	·23		·34
14	..	..	..			..	..		..	..	..		..
15	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..	MONTHLY GAUGE.	..
16	..	..	..			..	..		..	..	·02		..
17	..	..	..			..	..		..	..	..		..
18	·02	..	..			..	·02		..	·01	..		..
19	·02	·03	·07			·05	·02		·04	·03	·03		·03
20	..	..	..			..	..		·02	..	..		..
21	·04	·09	·14			·10	·07		·05	·06	·05		·04
22	..	..	..			·13	·08		·12	..	·14		·08
23	..	..	..			..	..		..	..	..		..
24	..	..	..			..	..		..	..	..		..
25	·11	·14	..			..	·02		·04	..	·03		..
26	..	..	..			..	..		..	..	·01		..
27	..	..	..			..	..		..	..	..		..
28	..	..	..			..	..		..	..	..		..
29	..	..	..			..	..		..	..	..		..
30	..	..	..			..	..		..	..	..		..
*	·86	·91	·78	·86	·48	1·03	·83	·83	·86	·57	·72	·65	·69
†	22·98	20·16	16·84	18·92	14·95	20·23	17·81	19·23	20·57	21·40	19·08	19·05	18·29

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for November is 2·35 in.* **November, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	·01	..	..
3	..	..	·01	..	·01	..	..	..	..	·01	·01	..	·01
4	..	·01	·02	·02	·02	·02	..	·02	·02	·01	·01	·01	..
5	..	..	·01	..	·01	·01	..	..	·01	·01	·01	·01	..
6	..	·01	·01	·01	·01	·01	·02	..	·01	·01	·01	..	·01
7	..	·01	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	·02	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	·02	·01	..	·01	·02	..	·01	·02	·02	·03	·02
12	·10	·08	·15	·06	·05	·09	·09	·10	·07	·08	·10	·08	·08
13	·25	·28	·24	·21	·21	·21	·25	·18	·27	·27	·30	·30	·30
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	·02	..	..	..	..
17	..	..	·01	..	·01	·01	..	..	..	..	·01	..	..
18	·02	..	..	..	..	..	..	..	..	..	..	..	..
19	·03	..	·02	·02	·02	·02	·03	·04	·03	·02	·03	·03	·03
20	..	..	·01	..	·01	..	·01	..	·01	·01	·02	·01	..
21	·04	·06	·05	·04	·04	·04	·05	·10	·04	·05	·05	·06	·06
22	·09	·10	·12	·13	·11	·13	·12	·18	·14	·14	·14	·14	·16
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	·01	..	..	..	..	..	..	..	..	..	..
25	·03	·01	·03	·04	·03	·03	·03	..	·05	·03	·01	·01	..
26	..	·01	..	..	·01	·01	..	..	..	·01	·01	·01	·03
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·02	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·58	·57	·71	·54	·54	·59	·62	·64	·68	·67	·74	·69	·70
†	15·75	15·38	20·47	18·14	16·78	18·44	17·78	17·14	17·98	17·92	19·41	18·79	17·62

Day of Mo.	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	·01	..	..	..	..	..	..	..	..	..	..
3	·01	·01	·01	..	·01	..	·01	..	..	..	..	..	..
4	·01	·01	·02	..	·01	..	·01	..	·02	..	..	·01	..
5	·02	·01	·02	..	·01	·03	..	..	·02	..	·02	..	·02
6	..	·01	·01	..	·01	..	..	..	..	..	..	..	·01
7	..	·01	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·02	..	·02	·05	·03	·01	..	..	..	..	·03	..	·02
12	·07	·10	·11	·14	·16	·10	·12	·17	·22	·06	·08	·11	·04
13	·26	·36	·24	·27	·20	·32	·30	·35	·26	·13	·36	·35	·33
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	·01	..	..	..	..	..	..	..	..	..	..
17	·01	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·03	·05	·04	·05	·04	·05	·05	·03	·06	·05	·06	·06	·06
20	·01	..	·01	·02	·01	·01	·02	..	..	..	..	..	·01
21	·05	·06	·06	·06	·07	·06	·07	·07	·09	·08	·10	·09	·10
22	·14	·18	·15	·15	·16	·10	·13	·12	·20	·21	..	·16	·17
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	·02	..	..	..	..	..	..	..	..
25	·02	·01	·02	·09	·01	·05	·04	·02	..	·02	·17	·04	·02
26	·01	·02	·02	..	·01	·02	·01	..	..	..	·02	..	·03
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·66	·83	·75	·83	·75	·75	·78	·76	·87	·55	·84	·82	·81
†	17·48	19·04	20·54	20·56	20·38	20·37	17·80	17·57	17·46	13·83	17·41	18·71	18·62

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	·01	..	·02	..	..	..	..	..	..
4	..	..	..	·03	·01	..	·01	..	..	..	·02	·01	·03
5	..	..	..	..	·01	..	·01	..	..	·01	..	..	..
6	..	..	..	·02	·01	..	·01	..	..	·01	..	..	·02
7	..	..	..	..	·01	..	..	..	..	·01	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·06	·02	·04	..	·01	·02	..	..	..	·01	..	..	..
12	·08	·09	·05	·04	·01	·04	·05	·03	·06	·04	·04	·05	·03
13	·32	·33	·36	·23	·25	·26	·27	·24	·21	·20	·24	·20	·22
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	·01	..	..	..	..	..	..
16	..	..	..	..	..	..	·01	..	..	..	..	..	..
17	..	..	..	..	·01	·02	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·05	·03	·04	·01	..	·02	·01	..	·01	·01	..	..	..
20	·02	..	..	..	..	..	..	..	..	..	..	..	..
21	·07	·08	·08	·05	·09	·05	·06	·01	·03	·03	·05	·03	·06
22	·13	·15	·14	·10	·12	·07	·09	·06	·23	·09	·09	·12	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·02	..	..	..	·01	..	·02	..	..	..	..	..	..
25	..	·01	..	·02	·01	..	·01	·01	..	·01	..	..	..
26	·04	·02	..	..	..	..	·03	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	·04	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	·01	..	..
*	·79	·73	·71	·50	·56	·48	·61	·35	·58	·42	·45	·41	·36
†	18·16	17·77	16·69	19·75	15·10	15·28	16·47	13·82	15·36	15·59	15·01	14·43	16·56

Day of Mo.	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	·01	..	·01	..	..	..	..	·01	..	..	..
3	..	..	..	..	·01	·01	..	..	·01	·01	..	..	..
4	..	..	..	..	..	·01	..	..	·01	·02	..	..	..
5	..	..	·01	..	..	·01	..	·01	·01	·02	·01	..	..
6	..	..	..	·01	·01	·01	..	..	·01	·01	..	..	..
7	..	..	..	..	..	·01	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	·01	·01	..	·02	·02	..	..	·02	·03	·01	..	·01
12	·03	·02	·02	·04	·04	·04	..	·06	·03	·07	·10	·10	·03
13	·22	·25	·24	·26	·26	·30	·35	·33	·31	·33	·17	·19	·37
14	..	..	..	..	..	·01	..	..	..	..	..	..	..
15	..	..	..	..	·01	..	..	..	..	·01	..	..	..
16	..	..	..	..	·02	..	..	..	·03	·01	..	..	..
17	..	..	..	..	..	·01	..	..	..	..	..	..	..
18	..	..	·01	..	..	..	..	..	..	..	·01	..	..
19	..	..	..	·01	·02	·02	..	·03	·02	·06	·04	·06	..
20	..	..	..	..	..	..	..	..	..	·01	·01	..	..
21	·06	·08	·09	·08	·08	·09	·11	·09	·10	·09	·07	·09	·10
22	·09	·09	·15	·16	·12	·17	·20	·13	·14	·20	·26	·25	·15
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	·01	·01	..	..
25	..	·01	..	·01	..	·02	..	..	·03	..	·01	..	..
26	..	..	·02	..	·03	·01	·06	..	·02	·03	·02	..	·02
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·40	·46	·56	·57	·63	·74	·72	·65	·74	·92	·72	·69	·68
†	14·63	14·95	16·68	16·60	17·44	17·20	16·56	16·49	16·00	18·33	14·40	15·05	16·98

* The figures in this row give the totals for the month. † The totals from January 1st.

November, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..
2	..	..	..	·01	..
3	..	..	..	..	..
4	..	..	..	..	..
5	..	..	..	..	..
6	..	..	..	..	..
7	..	..	..	..	..
8	..	..	..	..	..
9	..	..	..	..	..
10	..	..	..	..	..
11	·01	·01	..	·01	..
12	·03	·02	..	·02	..
13	·35	·40	·29	·30	·25
14	..	..	..	..	..
15	..	..	..	..	..
16	..	..	..	..	..
17	..	..	..	..	..
18	..	..	..	·01	..
19	·01	·01	..	..	..
20	..	..	..	..	..
21	·08	·08	·09	·09	·05
22	·16	·17	·10	·18	·09
23	..	..	..	..	..
24	..	..	..	..	..
25	·02	·02	..	·02	..
26	·01	·01	..	·01	..
27	..	..	..	..	..
28	..	..	..	..	..
29	..	..	..	..	..
30	..	..	..	..	..
*	·67	·72	·48	·65	·39
†	17·26	15·54	13·61	18·38	15·08

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(November, 1901.)

A remarkably cold dry month. In the long record of Greenwich there are only four Novembers with a smaller rainfall, *viz.* in the years 1851, 1858, 1867, and 1871; in the Surbiton record, commencing in 1855, there are only two such years, *viz.* 1867 and 1871, and in the Wimbledon record, commencing in 1854, there are no such years. The mean temperature of the month is about 3° below the average. The mean temperature of the 16th was only 25° at Wallington. There was a little snow on the 13th and 14th. There was much fog on many days, and on the 22nd there was a remarkable darkness about Nutfield, Redhill, and Upper Gatton from 0.50 to 1.20 p.m. The observer at Reigate Hill says that on the 21st a very perfect rainbow was seen in the north at 8·15 a.m. A solar halo was seen at Greenwich on the 6th, and a lunar one at Greenwich and Upper Gatton on the 20th. The month has been somewhat unhealthy, colds being especially prevalent, whilst there were many cases of diphtheria and scarlet fever and a few cases of small-pox. Vegetables are good and plentiful. The mean temperature of the month was at Croydon (Whitgift) 40°·8, at Croydon (Duppas House) and Warlingham 40°·4, at Wallington 39°·6, at Worcester Park 39°·3, and at Chipstead 36°·8. There were recorded at Wallington 34·4 hours of sunlight, which is 16·9 hours or six per cent. below the November mean of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Abinger (The Hall)	Abinger (Rectory)	Dorking (Denbies)	Redhill	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..
5	·06	·08	·06	·04	·04	·05	·04	·04	..	·15	·04	·03
6	..	..	..	·01	·02	·01	·01	·01	·06	·01	·02	·01
7	·21	·32	·26	·15	·19	·22	·24	·12	·24	·24	·23	·16
8	·04	·06	·12	·26	·14	·11	·04	·26	·13	·18	·15	·10
9	·27	..	·25	·20	·19	·19	·16	·20	·23	·15	·24	·25
10	..	..	..	..	..	..	..	..	·01	..	..	..
11	·23	·56	·12	·07	·13	·11	·15	·05	·10	·13	·11	·10
12	1·48	1·35	1·82	1·43	1·13	1·29	1·52	1·39	1·37	1·32	1·40	1·48
13	·20	·10	·13	·12	·15	·17	·15	·12	·13	·16	·13	·18
14	·03	..	·02	·02	·02	·02	·02	·03	·03	..	·02	·02
15	·02	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	·01	·01	·01	..	·01	..	..	·09	..
17	·02	·19	·11	·14	·14	·15	·12	·12	·13	·16	·02	·14
18	..	..	..	·02	..	·01	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	·01	..
21	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	·02	·02	..	..	..	..	..	..
23	·61	..	·45	·28	·22	·25	·32	·29	·29	·26	·27	·35
24	·67	1·03	·63	·65	·64	·66	·71	·70	·72	·67	·67	·73
25	..	..	·10	..	·01	..	..	..	·02	..	..	·02
26	..	..	..	·01	·01	·01	..	..	..	..	..	..
27	·06	..	·04	·01	·02	·02	·02	·01	·03	·02	·02	·03
28	·90	1·00	1·03	·64	·49	·57	·65	·63	·66	·55	·64	·71
29	·32	·45	·38	·32	·34	·34	·39	·30	·45	·40	·46	·45
30	·06	·20	·11	·30	·20	·20	·24	·18	·22	·25	·22	·15
31	·17	·26	·21	·15	·11	·11	·12	·13	·23	·15	·22	·19
*	5·35	5·60	5·84	4·83	4·22	4·52	4·90	4·59	5·05	4·80	4·96	5·10
†	26·22	26·95	27·30	25·48	25·49	26·11	23·61	24·72	26·65	26·06	28·31	27·04

Day of Mo.	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead	Burgh Heath	Leather-head
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..	MONTHLY GAUGE.	..
2	·13	..	..	..			..	..		..	..	..		..
3	..	..	..	..			..	..		..	..	..		..
4	..	..	..	..			..	..		..	..	..		..
5	·04	·40	..	..			·02	·03		·04	·17	·02		..
6	·02	·20	..	..			·04	·02		·02	·02	·01		..
7	·24	·19	·34	·21			·36	·15		·20	·15	·10		·07
8	·09	·10	·13	·30			·06	·13		·06	·05	·05		·11
9	·25	·11	·24	·23			·28	·20		·15	·24	·22		·20
10	·29	..	..	..			..	..		..	·02	..		..
11	·05	·29	·11	..			·08	·21		·20	·22	·12		·15
12	1·30	1·42	1·44	1·21			1·65	1·21		1·55	1·50	1·53		1·78
13	·14	·15	·29	·15			·28	·28		·18	·20	·24		·22
14	..	·20	·03	..			·04	·06		..	·01	·01		·03
15	·02	..	..	..			·01	·02		..	..	..		·07
16	..	..	..	..			..	..		..	..	..		..
17	·03	..	·17	·20			·19	·16		·10	·09	·10		·02
18	..	..	..	..			..	..		..	..	..		..
19	..	..	..	..			..	..		..	..	..		..
20	..	..	..	..			..	..		..	..	..		..
21	..	..	..	..			..	..		..	..	..		..
22	..	..	..	..			..	..		..	..	..		..
23	·03	·31	·23	..			..	·25		·33	..	·31		·40
24	1·14	·71	·69	1·00			·97	·65		·69	·97	·72		·74
25	..	..	·01	..			..	·01		..	..	·03		..
26	..	..	..	..			..	..		..	..	..		..
27	..	·20	..	..			..	·01		·03	·04	·02		·05
28	·64	·57	·49	..			·50	·36		·60	·58	·56		·73
29	·52	·47	·45	..			·42	·56		·47	·42	·33		·30
30	·09	·26	·29	..			·29	·15		·28	·11	·05		·04
31	..	..	·15	·90			·15	·09		·23	·21	·12		·13
*	5·02	5·58	5·06	4·20	5·30	3·33	5·34	4·55	4·87	5·13	5·00	4·54	4·67	5·14
†	28·31	28·56	25·22	21·04	24·22	18·28	25·57	22·36	24·10	25·70	26·40	23·62	23·72	23·43

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for December is 1·95 in.* **December, 1901.**

Day of Mo.	D'Abernon Chase	Oxshott	Banstead	Sutton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Farn-borough	Orpington	Farning-ham Hill	Southfleet	Chislehurst	Bickley	Bromley
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	·04	..	..	..	..	·01	..	..	..	..	..	..	·02	..	..	..	..	..	..
5	·02	·01	·01	·01	..	·01	·01	·01	·02	·01	·01	·02	·01	·02	·01	·02	..	·02	..	..	..	..	..	..	..	·01
6	..	..	·01	..	..	..	..	..	..	..	..	..	..	·01	..	..	·01	..	..	·01	..	..	..	..	·02	·02
7	·11	·10	·12	·10	·09	·09	·10	·07	·08	·08	·09	·08	·08	·06	·03	·10	·10	·13	·14	·12	·09	·15	·11	·08	·07	·09
8	·06	·05	·05	·07	·03	·06	·06	·03	·05	·03	·05	·04	·02	·03	·04	·06	·09	·05	·05	·05	·05	·07	·13	·08	·07	·05
9	·18	·20	·25	·21	·21	·21	·23	·25	·24	·19	·26	·29	·28	·19	·31	·25	·25	·23	·33	·28	·25	·24	·15	·31	·36	·26
10	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	·05	..	..	..	..	·01
11	·12	·10	·12	·08	·10	·08	·10	·08	·12	·10	·10	·05	·09	·07	·05	·10	·07	·11	·07	·09	·10	·09	·08	·10	·09	·09
12	1·32	1·14	1·67	1·21	1·10	1·38	1·23	1·13	1·20	1·24	1·33	1·25	1·15	·99	1·26	1·34	1·30	1·53	1·45	1·65	1·61	1·31	1·30	1·00	1·16	1·03
13	·17	·20	·16	·17	·16	·19	·19	·20	·22	·21	·23	·21	·22	·16	·25	·22	·20	·18	·21	·21	·22	·27	·25	·23	·23	·24
14	·02	..	·01	·02	·02	·01	·01	..	·02	·02	·03	·02	·01	·01	·01	·01	..	..	..	·01	·01	·02	·03	..	..	·01
15	..	·02	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·08	·07	·13	·10	·10	·10	·10	·11	·12	·10	·11	·12	·10	·12	·12	·12	..	·11	·09	·13	·12	·12	·11	·13	·10	·11
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	·30	·28	·39	·33	..	·36	·35	·32	·38	·32	·34	·30	·34	·27	·34	·26	·43	·32	·37	·30	·32	·28	·25	·21	·29	·26
24	·68	·62	·74	·67	·89	·75	·68	·26	·76	·72	·68	·70	·69	·63	·74	·69	·73	·72	·71	·69	·68	·68	·62	·67	·70	·67
25	·03	·04	·01	·03	..	·01	·02	·02	..	·01	·02	·03	·02	·01	·04	·03	·03	·03	·05	·01	·01	·02	·01	·03	·03	·03
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
27	·03	·02	·04	..	..	·01	·01	..	·03	·03	·02	·01	·02	·03	..	·02	..	·02	·02	..	..	..	..	..	..	·02
28	·53	·45	·79	·57	·59	·56	·58	·52	·60	·57	·58	·52	·48	·35	·51	·51	·50	·56	·55	·59	·50	·42	·32	·42	·47	·39
29	·30	·29	·33	·28	·26	·29	·29	·26	·32	·30	·29	·28	·28	·21	·25	·30	·33	·37	·36	·26	·29	·26	·27	·27	·29	·28
30	·02	·02	·05	·02	·02	·02	·02	·02	·02	·01	·02	·03	·01	·03	·05	·05	·13	·12	·06	·11	·10	·06	·05	·04	·03	·04
31	·09	·05	·14	·08	·06	·09	·09	·08	·10	·08	·10	·11	·08	·11	·12	·13	·19	·16	·16	·11	·12	·09	·08	·14	·12	·11
*	4·06	3·66	5·04	3·95	3·63	4·25	4·07	3·40	4·28	4·02	4·26	4·06	3·89	3·30	4·13	4·22	4·36	4·66	4·62	4·65	4·52	4·08	3·76	3·71	4·03	3·72
†	19·81	19·04	25·51	22·09	20·41	22·69	21·85	20·54	22·26	21·94	23·67	22·85	21·51	20·78	23·17	24·76	24·92	25·04	24·99	22·45	22·09	21·54	17·59	21·12	22·74	22·34

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..
5	·02	·02	·05	..	·01	·03	·02	..	·01	..	·01	·04	·02	·02	·01	..	·01	·01	·02	·04	·02	·02	·03	..	..	·01
6	·01	..	·01	·02	..	·01	..	..	·01	..	..	..	·01	..	..	·01	..	·01	..	·01	..	·01	..	·01	·05	..
7	·09	·09	·07	·07	·05	·06	·08	·06	·08	·09	·08	·08	·07	·06	·06	·05	·05	·07	·08	·08	..	·08	·10	·11	·11	·10
8	·03	·05	·02	·04	·10	·04	·06	·01	·02	·04	·02	·03	·03	·07	·10	·11	·13	·10	·08	·09	·20	·14	·11	·12	·20	·23
9	·32	·28	·28	·18	·30	·28	·26	·25	·20	·18	·22	·21	·26	·19	·26	·19	·28	·22	·30	·30	·24	·23	·20	·15	·11	·16
10	..	..	..	·07	..	..	..	..	..	..	..	..	..	..	..	·02	·01	..	..	..	..	..	..	·01	..	..
11	·09	·08	·06	·03	·06	·08	·08	·07	·10	·10	·06	·07	·09	·10	·07	·06	·09	·09	·07	·05	·13	·05	·08	·08	·12	·06
12	1·09	·96	·88	·95	·55	·74	·82	·59	1·08	·88	·75	·90	·93	·75	·66	·73	·68	·72	·81	·72	·74	·64	1·10	·98	·94	·83
13	·20	·22	·20	·15	·11	·12	·13	·15	·15	·08	·08	·11	·09	·09	·12	·14	·15	·15	·15	·15	·14	·13	·17	·20	·17	·24
14	·02	·01	..	·03	..	·02	·02	..	·02	..	..	·01	·01	·02	·02	·01	·01	·02	·02	·02	·03	·02	·02	·01	..	·01
15	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·11	·13	·11	·09	·09	·09	·11	·10	·10	·07	·07	·08	·09	·08	·09	·08	·13	·09	·11	·12	·11	·10	·11	·11	·14	·12
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·03	..	..	..	..	..	..	..	..
19	..	..	..	..	·01	..	·01	..	..	·01	..	..	..	..	..	..	..	·01	..	..	..	·01	..	..	..	..
20	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	·30	·29	·27	·29	·13	·17	·20	·15	·26	·17	·18	·20	·23	·13	·13	·13	·16	·15	·21	·14	·20	·16	·19	·20	·25	·17
24	·60	·69	·60	·65	·54	·65	·60	·55	·64	·55	·59	·59	·60	·62	·56	·55	·60	·57	·62	·66	·63	·58	·69	·62	·57	·61
25	·03	·02	·02	..	..	·01	·06	..	·03	·04	·08	·05	·09	..	·09	·09	·04	·02	·03	..	·01	·05	·02	·03	·10	·01
26	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	·01
27	..	·01	·02	·02	·01	..	·02	·02	·03	·02	·04	·01	·05	..	·03	·02	·01	·02	..	·02	..	·01	..	·01	..	..
28	·47	·40	·30	·39	·27	·35	·37	·28	·41	·39	·37	·39	·36	·37	·33	·35	·30	·39	·35	·26	·32	·31	·36	·35	·30	·26
29	·30	·28	·22	·28	·28	·29	·30	·23	·32	·30	·34	·32	·33	·29	·30	·30	·30	·04	·31	·27	·32	·33	·33	·27	·29	·38
30	·08	·03	·02	·02	·05	·04	·05	·02	·02	·06	·09	·03	·05	·07	·08	·12	·07	·05	·06	·05	·04	·09	·04	·05	·04	·06
31	·10	·09	·08	·06	·01	·04	·05	·03	·05	·05	·07	·03	·02	·05	·03	·17	·03	·12	·05	·05	·05	·07	·08	·11	·05	·07
*	3·86	3·65	3·21	3·36	2·57	3·02	3·26	2·51	3·53	3·05	3·05	3·15	3·33	2·91	2·94	3·13	3·05	2·90	3·27	3·03	3·18	3·06	3·63	3·42	3·44	3·33
†	22·02	21·42	19·90	23·11	17·67	18·30	19·73	16·33	18·89	18·64	18·06	17·58	19·89	17·54	17·89	19·81	19·65	20·34	20·47	19·59	19·67	19·06	21·96	17·82	18·49	20·31

* The figures in this row give the totals for the month. † The totals from January 1st.

December, 1901.

Day of Mo.	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..
2	..	..	..	..	..
3	..	..	..	..	..
4	..	·01	..	..	..
5	·01	·01	..	..	..
6	..	..	..	·01	..
7	·09	·07	·01	·06	·05
8	·24	·23	·17	·13	·23
9	·13	·18	·16	·21	·18
10	..	..	..	·02	..
11	·05	·04	·03	·03	·03
12	·76	·65	·56	·76	·57
13	·12	·10	·10	·13	·11
14	·01	·01	..	·02	..
15	..	..	..	..	..
16	..	..	..	..	..
17	·07	·06	..	·09	·06
18	..	..	..	..	..
19	..	..	..	..	..
20	..	..	..	..	..
21	..	..	..	..	..
22	..	..	..	..	..
23	·16	·13	·19	·17	·10
24	·65	·58	·53	·57	·48
25	..	·05	·04	·07	·02
26	..	..	..	..	..
27	·01	..	..	..	..
28	·29	·26	·23	·30	·10
29	·33	·29	·26	·37	·44
30	·08	·07	·03	·11	·05
31	·05	·03	..	·05	·04
*	3·05	2·77	2·31	3·10	2·46
†	20·31	18·31	15·92	21·48	17·54

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(December, 1901.)

This month is the exact opposite of November, which was the driest November for many years, whilst this month is one of the wettest Decembers at Greenwich since 1886, with the single exception of December, 1896, when the rainfall in December was the same as the present year. In the district generally we have to go back to December, 1876, for a greater December rainfall. Snow showers occurred on several days. Changes in temperature have been very frequent, and consequently the month may be considered as unhealthy. Scarlet fever and diphtheria have been prevalent, and influenza was increasing at the end of the month, and there were in several districts cases of small-pox. Colds have been very prevalent. Lightning was seen at Nutfield on the 9th; and the observer there says "that our first *Anemone fulgens* opened in the rock garden on the 27th, and there are plenty of primroses." At Abinger Hall the observer says "the birds are full of song." Solar halos were seen at Greenwich on the 10th, 23rd, and 29th, and at Upper Gatton on the 10th; whilst a parhelion was seen at Greenwich on the 16th, and a lunar corona at Wallington on the 26th. At Chipstead the observer says: "The meteor on the 4th was a fine sight. It appeared at twenty minutes to six for two seconds. I could see all objects near me quite distinctly. In about eight seconds it disappeared." The mean temperature of the month is about the average, and was at Croydon (Whitgift) 39°·6, at Wallington 39°·4, at Croydon (Duppas House) 39°·2, at Worcester Park 39°·1, at Warlingham 38°·1, and at Chipstead 37°·9. There were recorded at Wallington 55·6 hours of sunlight, which is 16·7 hours or seven per cent. above the December average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc., *Hon. Sec.*

APPENDIX II.

Falls of 1·00 in. and upwards.

FEBRUARY 4TH.—Banstead 1·29 in.; Morden 1·23 in.; Dorking (Denbies) 1·20 in.; Abinger (The Rectory) 1·05 in.; Buckland 1·03 in.; Abinger (The Hall) 1·01 in.

MAY 9TH.—West Wickham 1·28 in.; Caterham 1·26 in.; Bickley 1·25 in.; Warlingham and Addington Hills 1·24 in.; Sanderstead 1·22 in.; Kenley 1·18 in.; Croydon (Ashburton Road) 1·16 in.; Merstham 1·15 in.; Bromley Common 1·12 in.; Addington (Park Farm) 1·11 in.; Addington (Pumping Station) 1·10 in.; Chaldon 1·09; Croydon (Park Hill) 1·03 in.; South Norwood 1·02 in.; Nutfield (new gauge) 1·01 in.

JULY 25TH.—Battersea 1·78 in.; Sutton 1·28 in.; Morden 1·16 in.; Dorking (Denbies) 1·04 in.

JULY 26TH.—Westerham (Hill Estate) 1·35 in.; Chislehurst 1·01 in; Streatham 1·00 in.

JULY 27TH.—Brixton 1·29 in.; Kingston 1·25 in.

SEPTEMBER 16TH.—Abinger (The Hall) 1·18 in.; Chaldon 1·16 in.; Caterham 1·15 in.; Abinger (The Rectory) and Nutfield (new gauge) 1·10 in.; Buckland, Upper Gatton and Merstham 1·09 in.; Redhill, Nutfield (old gauge), and Chipstead 1·07 in.; Dorking (Denbies), and Harp's Oak Cottage 1·00.

OCTOBER 1ST.—Harp's Oak Cottage 2·07 in.; Nutfield (old gauge) 1·47 in.; Chaldon 1·28 in.; Upper Gatton 1·22 in.; Kenley 1·18 in.; Nutfield (new gauge) 1·05 in.; Morden 1·00 in.

OCTOBER 2ND.—Chaldon 1·15 in.; Addington Hills 1·09 in.

DECEMBER 12TH.—Dorking (Denbies) 1·82 in.; Leatherhead 1·78 in.; Banstead 1·67 in.; Chevening Park and Farnborough 1·65 in.; Orpington 1·61 in.; Warlingham 1·55 in.; Sanderstead and Addington (Pumping Station) 1·53 in.; Buckland 1·52 in.; Kenley 1·50 in.; Abinger (The Hall) and Chipstead 1·48 in.; West Wickham 1·45 in.; Westerham (Hill Estate) 1·44 in.; Redhill 1·43 in.; Caterham 1·42 in.; Harp's Oak Cottage 1·40 in.; Reigate Hill 1·39 in.; Wallington 1·38 in.; Upper Gatton 1·37 in.; Abinger (The Rectory) 1·35 in.; Addington Hills 1·34 in.; Croydon (Whitgift) 1·33 in.; Merstham and D'Abernon Chase 1·32 in.; Farningham Hill 1·31 in.; Chaldon, Addington (Park Farm), and Southfleet 1·30 in.; Nutfield (new gauge) 1·29 in.; Croydon (Ashburton Road) 1·26 in.; Croydon (Woburn Road)

1·25 in.; Croydon (Duppas House) 1·24 in.; Beddington 1·23 in.; Westerham (The Town), Sevenoaks, and Sutton 1·21 in.; Croydon (Waddon New Road) 1·20 in.; Bickley 1·16 in.; Croydon (Windmill Road) 1·15 in.; Oxshott 1·14 in.; Nutfield (old gauge) and Croydon (Brimstone Barn) 1·13 in.; Carshalton and Sidcup 1·10 in.; Bromley Common 1·09 in.; Worcester Park 1·08 in.; Bromley 1·03 in.; Chislehurst 1·00 in.

December 24th.—Chaldon 1·14 in.; Abinger (The Rectory) 1·03 in.

December 28th.—Dorking (Denbies) 1·03 in.; Abinger (The Rectory) 1·00 in.

CONTENTS.

PROCEEDINGS.

Croydon Natural History and Scientific Society.

OFFICERS FOR 1902.

PRINTED BY WEST, NEWMAN AND CO., HATTON GARDEN, LONDON.

PROCEEDINGS & TRANSACTIONS

OF THE

CROYDON

NATURAL HISTORY AND SCIENTIFIC

SOCIETY.

FEBRUARY 18, 1902, TO JANUARY 20, 1903.

CROYDON:

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—

1903.

PROCEEDINGS

OF

THE CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

1902—1903.

Thirty-third Annual Meeting.

Held at the Public Hall, Croydon, January 20th, 1903.

The President, JAMES EPPS, Jun., F.L.S., in the chair.

The Statement of the Accounts for 1902 was approved.

The following gentlemen were elected Officers of the Society for the ensuing year:—

President.—F. CAMPBELL-BAYARD, LL.M., F.R.Met.Soc.

Vice-Presidents.—JAS. EPPS, Jun., F.L.S.; HENRY T. MENNELL, F.L.S.; WILLIAM WHITAKER, B.A., F.R.S., F.G.S.

Hon. Curator of Museum.—N. F. ROBARTS, F.G.S.

Hon. Lanternist.—J. H. BALDOCK, F.C.S.

Hon. Librarian.—ALFRED ROODS.

Hon. Treasurer.—F. J. TOWNEND, 11, Park Hill Rise.

Council.—J. EDMUND CLARK, B.A., B.Sc., F.G.S.; C. L. FAUNTHORPE; W. MURTON HOLMES; E. A. MARTIN, F.G.S.; H. D. GOWER; E. LOVETT; W. W. TOPLEY.

Hon. Secretary.—GEORGE W. MOORE, 15, Dornton Road, South Croydon, to whom all communications should be addressed.

Anthropological & Archæological Committee.—H. C. Collyer, Breakhurst, Beddington; J. M. Hobson, M.D., B.Sc., Morland Road; A. J. Hogg, 5, Cargreen Road, South Norwood; E. Lovett, West Burton, Outram Road; N. F. Robarts, F.G.S., 23, Oliver Grove, South Norwood; J. Watson Slack, 27, Birdhurst Road; G. Clinch, F.G.S. (Secretary), 22, Nicholson Road; A. Tarver, 7, Stuart Road, Thornton Heath.

Botanical Committee.—J. Edmund Clark, B.A., B.Sc., F.G.S., Lile Garth, Ashburton Road; Miss E. N. Gwatkin, Grove Cottage, Addiscombe Grove; W. Murton Holmes, Glenside, St. Peter's Road; Miss Klaassen (Secretary), Aberfeldy, Campden Road; H. T. Mennell, F.L.S., 31, Park Hill Rise; H. Franklin Parsons, M.D., F.G.S., 4, Park Hill Rise; Mrs. Parsons, Park Hill Rise; C. E. Salmon, Clevelands, Wray Park, Reigate; E. Straker, Park Lane Mansions.

Geological Committee.—W. Bruce Bannerman, F.S.A., F.G.S., Sydenham Road; G. J. Hinde, Ph. D., F.R.S., F.G.S., Avondale Road; A. J. Hogg, 5, Cargreen Road, South Norwood; W. Murton Holmes, Glenside, St. Peter's Road; G. W. Moore, Bryndhurst, Dornton Road; T. K. F. Page, 9, Rosemount, Wallington; H. Franklin Parsons, M.D., F.G.S., Park Hill Rise; N. F. Robarts, F.G.S. (Secretary), 23, Oliver Grove, South Norwood; W. W. Topley, Friends Road; Thos. Walker, C.E., Warrington Road; W. Whitaker, B.A., F.R.S., F.G.S., Freda, Campden Road.

Meteorological Committee. — F. Campbell-Bayard, LL.M., F.R. Met. Soc. (Secretary), Cotswold, Wallington; J. Edmund Clark, B.A., B.Sc., F.G.S., Lile Garth, Ashburton Road; Thos. Cushing, F.R.A.S., Chepstow Road; Baldwin Latham, M.I.C.E., Duppas House.

Microscopical Committee. — Rev. R. K. Corser, 57, Park Hill Road; T. A. Dukes, M.B., B.Sc., 16, Wellesley Road; Mrs. H. Hall, Colleendene, Addiscombe Grove; E. Lovett, West Burton, Outram Road; W. Murton Holmes, Glenside, St. Peter's Road; L. Reed, F.C.S., Hyrst Hof, South Park Hill; Miss C. Ward (Secretary), 42, Temple Road.

Museum Committee.—J. M. Hobson, M.D., B.Sc., Morland Road; E. Lovett, West Burton, Outram Road; H. T. Mennell, F.L.S., Park Hill Rise; H. Franklin Parsons, M.D., F.G.S., Park Hill Rise; N. F. Robarts, F.G.S. (Secretary), 23, Oliver Grove, South Norwood; F. Thompson, Lynton, Haling Park Road; W. Whitaker, B.A., F.R.S., F.G.S., Freda, Campden Road.

Photographic Committee. — J. H. Baldock, F.C.S. (Lanternist and Recorder), Overdale, St. Leonard's Road; H. D. Gower (Portfolio Secretary), 55, Benson Road; R. F. Grundy, 8, Havelock Road; A. Roods, 67, Thornhill Road; A. J. Weightman, Endsleigh, 11, Chepstow Road; C. L. Faunthorpe (Secretary), 60, Selsdon Road.

Zoological Committee.—J. H. Baldock, F.C.S., Overdale, St. Leonard's Road; R. A. Crowley, 4, High Street; H. D. Gower, 55, Benson Road; W. Murton Holmes, Glenside, St. Peter's Road; E. A. Martin, F.G.S., 23, Campbell Road; Alfred Roods, 67, Thornhill Road; A. Tarver (Secretary), 7, Stuart Road, Thornton Heath.

The President's Address.

Ladies and Gentlemen,

It is once again a pleasure reserved to me to take a perspective view of the work accomplished by our Society during the last twelve months. Owing to my absence from the country in February and March, I regret that I missed the first two papers of this year.

Mr. Marriott of the Meteorological Society, I understand, on February 18th, addressed the Society on "Rainfall." His remarks on the atmospheric conditions necessary for the formation of rain, and its modified distribution over our island depending on the altitude or peculiarities of localities, were very interesting. Mr. Marriott exhibited a numerous and instructive series of lantern-slides illustrating his address.

At our meeting on March 18th, Dr. Vaughan Cornish, F.R.S., being unfortunately, through illness, unable to give his paper, entitled "Waves in Water, Sand and Snow," Mr. Fawcett kindly volunteered and gave the members an exhibition of lantern-slides of Alpine scenery.

On April 15th Mr. Pelton read an exceedingly entertaining paper entitled "The Japanese Sword-blade, its History and Legends." After treating of the history and legends, Mr. Pelton drew attention to the care taken in the manufacture; he stated that both iron and steel were used, one blade being formed of bars of iron and steel alternately welded so as to produce a hard cutting edge and a softer tough back. In very ancient times the sword was straight, but later a curved blade was used, in each case, however, with a single edge. Since about 1877 the wearing of swords generally by the nobility has been abolished, and consequently many were acquired by curio hunters, but much care and experience were necessary to recognize a good blade. Mr. Pelton exhibited a case of excellent specimens, one of which dated back to the thirteenth century. Amongst them was a lady's dagger, also a dummy in wood sometimes worn as a substitute.

On May 27th Mr. W. Murton Holmes read a very interesting paper on "Foraminifera from the Gault at Merstham," illustrated by some beautifully prepared lantern-slides by Mr. Baldock from drawings made by Mr. Holmes. Mr. Holmes went into details on the distribution of the multitudinous varieties of

Foraminifera and the best means for their extraction from their surroundings.

The first meeting of the autumn and winter session of the Society was held on Tuesday, Sept. 16th. A very creditable number of exhibits were shown; as usual on this occasion no paper was read.

At our monthly meeting held on the 21st of October, Mr. Clinch read his very interesting paper entitled "The Recent Discoveries at Waddon."

At the ordinary meeting on November 8th, Mr. W. F. Stanley gave a paper entitled "Examples of perfect Flint Implements of the First Dynasty of Egypt"; and also drew attention to two early mirrors in copper found in recent excavations at Abydos. Some beautifully fine and perfect specimens of flint implements were shown. On a spear-head shown by Mr. Stanley there were fine sharp cutting teeth equally spaced along the edges of only the fiftieth of an inch apart, and the blade of flint of seven inches in length was only one-sixth of an inch in thickness at its centre. Mr. Stanley described one mirror as being made from native copper, presumably before the art of casting this metal was known, and this had been set in a handle of fossil hippopotamus tooth, so that, being imperishable, the handle was perfectly preserved. Another mirror was also shown, but less ancient, found on the breast of a mummy, upon which the mummy-cloth was preserved by being saturated with the corroded copper.

Dr. Parsons was then called upon to give his two short papers, entitled respectively "The Flora of Hayes Common" and "Some Notes on the Flora of the Eastern Border of Dartmoor"; the former being a most valuable record of the plants of Hayes Common.

On December 16th I gave a paper entitled "A Trip to the West Indies," being a short account of the enjoyable holiday I had had last winter to the West Indies; it was illustrated by lantern-slides and specimens.

The following evening, December 17th, Mr. Speyer kindly gave the Society a grand treat with his most interesting lecture entitled "Round about the Matterhorn." The Large Hall was engaged on this occasion, and the public invited to attend. The lecturer cannot be too highly praised for his grand series of slides, which are direct from nature, and have in no way been "faked," and are his own work. Mr. Speyer is proud of being an amateur, and, as an amateur, one must be excused for being envious of him.

Mr. Alderman Page, by desire, kindly acted as chairman on this occasion.

On January 13th, Dr. Tempest Anderson gave the Society, in the Small Public Hall, a most interesting paper on the recent volcanic eruption in the West Indies. He dealt, firstly, with the eruptions in the island of St. Vincent, giving a fine series of lantern-slides showing very clearly the great devastation caused over the northern part of the island. He drew attention to the fact that on the leeward side of Mount Souffrière the negroes, being warned by the reports and dense smoke issuing from the crater, had time to make good their escape, but on the windward they were overcome by the burning ashes and sulphurous acid fumes, and on trying to flee from the spot were completely cut off by a river of boiling water from the mountain. In places the laval dust was lying to a depth of 80 feet, under which for weeks was smouldering the once luxuriant vegetation.

The doctor then drew attention to the French island of Martinique, showing a fine series of photographs of Mount Pelée and the ruined city of St. Pierre, of which only a few bare walls remained.

The exact number of lives lost can never be known, but it is estimated that two to three thousand perished in St. Vincent, and perhaps forty thousand in Martinique. It was indeed a woeful day, and only those that were in the islands on that day can realize the awfulness of it.

Our members now number 213,—197 seniors and 16 juniors. I regret to say that we have lost one member by death this year. We have had 13 members resign, 12 seniors and 1 junior; and 5 seniors struck off for non-payment of subscriptions. Against this loss we have during the twelve months elected 16 senior and 5 junior members.

The Balance Sheet which our Honorary Treasurer has placed before us this evening is in no way satisfactory, showing, as it does, a deficit of £1 5*s*. 8*d*. This is explained away by our Treasurer by the fact that about eight pounds worth of subscriptions for 1902 are still outstanding.

I find on comparison with the Balance Sheet of ten years ago that our finance does not do us credit. This is all the more to be deplored after the increased activity of the Council in providing this year three special and capital papers and a Soirée. Members are greatly to blame for this; there is not the activity and enthusiasm amongst them that there should be to make it a flourishing society. I do implore members to take more interest in their Society, and the least they can do is that, when a special paper is given, they should influence their friends to take tickets, and often they might persuade them to become members.

Mr. Lovett, at the end of 1892, on his retiring from his Presidency, left a satisfactory balance of £51 11*s.* 4*d.*

At the end of the following year (1893), after Dr. Parsons's first year of Presidency, the Club had a balance of £59 10*s.* 3*d.*

At the end of 1894, Dr. Parsons's second year of Presidency, the Club had a balance of £30 2*s.* 4*d.*

In 1895, during Mr. Murton Holmes's Presidency, the Club had a balance of £10 19*s.* 10*d.*

In 1896, during Mr. Holmes's second year, the Club had a balance of £6 0*s.* 9*d.*

In 1897, during Dr. Hobson's first year of office, the Club at the end of the year showed a deficiency of £10 17*s.* 5*d.*

In 1898, during Dr. Hobson's second year, the Club at the end of the year had a deficiency of £9 8*s.*

In 1899, during Mr. Whitaker's first year of Presidency, the deficiency was £17 1*s.* 2*d.*

In 1900, during Mr. Whitaker's second year, the Club was short by £10 6*s.* 4*d.*

In 1901, the first year of my Presidency, we had the very small balance of £1 3*s.*; and last year, 1902, we had again, I very much regret to say, a deficiency of £1 5*s.* 8*d.*

By these figures it will be seen that for the last nine years the Society financially has had a downward tendency, and the various Councils during that period I contend have not taken the active steps to remedy it that they should have done. There is no doubt that the balance sheet of a society or business is like a barometer; it is the indicator of its surrounding conditions. An old society or business wants very careful attention, and whenever a falling off in its receipts is noticed, measures should at once be taken to check it. There is no whipping up a dead horse, and therefore we must not let the horse die. I would suggest that the Council request the Honorary Treasurer to place before it, at each meeting, a statement of account.

I am pleased to say that the work done by the Sections, during the past twelve months, has been good.

The Geological Section has been most pleasingly active, and I think is entitled to be placed first; then comes the Photographic, also very active and doing good and useful work.

The Scientific Portfolio, I am pleased to say, is now placed before the respective Sectional Committees, and any picture of local interest is reserved and placed before the Council for its final consideration as to its worth for reproduction in the 'Transactions.' This is as it should be, and I hope the Council will see its way to reproduce many valuable records which at the present time are overlooked. It will also add considerably to the interest taken in the 'Transactions.'

The Anthropological Section has also been holding most interesting conversational meetings, which have been fairly well attended.

The Zoological Section has, I am pleased to say, made a start, and it is holding its meetings regularly, and Mr. Gower has very kindly presented a case of local butterflies, moths, &c., and will shortly present the Society with a second case. I hope this good example will be followed by other members. These cases form a nice nucleus for a larger collection. If all members would work for the Society in this spirit, we should soon have a Society which would be a credit to Croydon.

The Botanical Section has been fairly active, more especially so during the summer months. The afternoon and evening botanical rambles in the neighbourhood during the summer months were very successful, and I hope will be renewed during the coming summer.

The Meteorological Section, owing to the unflagging energy of Mr. Campbell-Bayard, has kept well up to date.

Our only weak Section now is the Microscopical, and perhaps, under the circumstances, it is as well that the title of our Society has been altered, or we should have soon been the laughing-stock of the town.

Our summer excursions were all well attended, and very enjoyable days were spent. Particulars of these will be found in the 'Transactions.'

Many of our lectures are now dependent on our lantern, and I think the Society is very much indebted to Mr. Baldock for his kindness, readiness, and skill in handling the lantern for us, which during twelve months entails a great deal of work and responsibility.

A most interesting local discovery has been made this year, namely, three subterranean caves, on the Waddon House estate. Many may not know that this estate, up to within two years ago, was held by our most respected member, the late Mr. Philip Crowley, and had he during his occupation known that such relics were there he would have been delighted to have had them thoroughly opened up and investigated. Your Society, however, lost no time in thoroughly searching these caves, but unfortunately treasures were scarce, and only a few bones, not human, and a number of flint flakes and cores made of green-coated flints were found, but nothing to make it possible to put any definite date on the caves. Some pieces of Roman pottery were found not far from the caves, also an old English spur about Elizabeth's time, and a silver half groat coin; but these finds were of course only supplementary, and in no way assisted in settling the age of the caves. Mr. Clinch thoroughly studied and examined this interesting find, and his interesting paper, entitled "Recent Discoveries at Waddon," was read at our ordinary meeting in October, and will be found published in the Society's 'Transactions.'

Since our last annual meeting, a Society has been formed in Croydon with a title of "The Photographic Survey and Record of Surrey." This Society is in no way antagonistic to ours; at the same time I personally am of opinion that, had our Society been active and doing its duty in Surrey, and had it been collecting and recording everything of interest, as it should have been doing, such a survey would not have been called for. Now that the Survey has been formed, I am in no way opposed to it; at the same time, considering so many of our members have joined it, I fear it shows that at the present time there is an amount of restlessness even with our own members, and a desire to fly to something new. I must say that I think our Society should have been quite capable of doing all that the Surrey Survey and Record is prepared to do. No man can serve two masters, and if our members who have joined the Surrey Survey and Record are working for it, they cannot be working for the Natural History and Scientific Society, as a man has but a limited time for recreation.

One other matter I should like to draw attention to—that is, our 'Transactions.' I must allow I was exceedingly disappointed with our last year's volume. It, I regret to find, contained not a single paper read during the twelve months at the Society's meetings. Had it not been for the Meteorological Section, which supplied two-thirds of its contents, it would have indeed been a pitiable volume. As far as I can see, there is no reason for this, and if the Society goes to the expense of spending £24 on its 'Transactions,' independently of the Meteorological Section's printed matter, it should have the benefit of having all the papers read at its meetings placed before it.

This wants the Council's careful consideration. I think also that the members should not be kept waiting six months before receiving their copies.

Having roughly outlined the work of the Society for the past year, I should like to take this opportunity of drawing the attention more especially of newly elected members to the past history of our Society.

The Croydon Natural History and Scientific Society has now been established thirty-two years. It was in 1870 that the Croydon Microscopical Club originated in this way:—

A gentleman, who I am pleased to say still resides in the town, and who is yet a member of the Society, Mr. Henry Long, of 132, High Street, was in 1870 a member of the Quekett Microscopical Club, and, finding so much time was occupied in going to town to attend meetings of that Society at Gower Street, conceived it possible that a similar Club might be formed in Croydon. He therefore inserted an advertisement in the 'Croydon Chronicle,' addressed to microscopists and others, requesting gentlemen who were desirous of joining such a Club to send in their names to him at his residence. The response exceeded the most sanguine expectations, and as so large a number intimated their wish to enrol, it was felt that steps should at once be taken to form the Club.

Knowing that Mr. Henry Lee, of The Waldrons, was a member of the Royal Microscopical Society, and greatly interested in scientific and natural history work, Mr. Long wrote him asking him for his support, which, after going into particulars, he readily gave, and further promised to do all in his power to advance the welfare of the Club.

Subsequently a preliminary meeting was held at Mr. Lee's house, to draw up the rules and appoint the Officers and Committee, with the result that Mr. Lee was unanimously elected the first President, Mr. John Wakham Flower and Mr. H. Long being appointed Treasurer and Hon. Secretary respectively. The Inaugural Meeting was held at the Public Hall on April 6th, 1870; and it is perhaps not too much to say that never has a provincial society received at its outset such support and encouragement as did ours on that occasion. There were present, amongst others, the Rev. J. B. Reade, F.R.S. (President of the Royal Microscopic Society), Dr. Bowerbank, F.R.S. (one of the founders and an early President of that Society), James Glaisher, Esq., F.R.S., Professor Rolleston, F.R.S., Frank Buckland, Esq. (Her Majesty's Inspector of Fisheries), Robt. Hudson, Esq., F.R.S., Rev. Thos. Wiltshire, F.L.S., Dr. Millar, F.L.S., and Captain Tyler. Mr. Lee occupied the chair, and gave an outline of the foundation and aims of the Club. He stated that it commenced with upwards of eighty members, including several fellows of the leading scientific societies—three of the Royal, four of the Linnean, three of the Geological, several of the Royal Microscopical, besides members of the "Quekett," and he considered it one of the most gratifying honours to have been elected first President of this hopeful band of workers.

On the 23rd November, 1870, the first Soirée of the Club was held at the Public Hall. This brilliantly successful affair was attended by the principal families of Croydon and by several persons of distinction, including the Japanese Ambassador, members of the Royal and Linnean Societies, Quekett Club, and "Old Change Microscopic Society." On this occasion tables were reserved for makers of optical instruments, of whom a large number greatly contributed to the success of the Soirée by the exhibition of about seventy-five microscopes. Mr. Lee, in referring to this event at the first Annual General Meeting, said:—"Our Soirée on the 23rd November last was, as the Committee has reported to you, a great success, as showing what our Club could do for itself, and the sympathy it enjoyed of older societies and scientific friends in London. It met with universal commendation, and raised the Club greatly in public estimation"; and, as you know, this function has ever since been regarded as one of the most important and interesting fixtures of the Club. As will be seen from the following, it steadily grew in public esteem:—In 1874, 172 microscopes were exhibited, and 625 persons were present. In 1876, there were 168 microscopes shown, and 783 persons present, 281 tickets being sold. In 1878, the ninth Soirée, the members still increased, 173 microscopes were exhibited, and 795 visitors being present. During the next eight years (1877 to 1886) the number of visitors was still maintained, the largest on record being 893 in 1885, when 137 microscopes were displayed.

Since 1886, the numbers, both of microscopes and visitors, have shown a decrease, although for the succeeding seven years the number of visitors varied between 567 and 690.

There can be but one opinion, that much of the early success of the Club was due to the very efficient manner in which Mr. Lee filled the presidential chair, the unflagging zeal he manifested in its welfare and the tact he displayed, coupled with the fact of his intimate acquaintance with eminent men of science, whom he made use of to further the interests of the Club.

At the same time, we must not forget that fashion has great weight in the public mind, and at the time our Society was formed the microscope was popular, and was to numbers a sort of scientific play-toy, in the same way that the camera and the phonogram are holding the field of to-day. Drawbacks it had, and these, after a few years, exerted themselves to such an extent that, as a popular toy, the decline soon set in. Firstly, it was an expensive toy, and, secondly, it was one that could afford pleasure to only a limited number at one time, then only under certain conditions. At the present time the microscope is used only where microscopic research and delicate examinations have to be made.

It was chiefly owing to the popularity of the microscope at that time that our Society was founded. In those early days, at our monthly meetings, eight or ten microscopes were constantly to be seen, and at our popular November Soirées 150 to 175 were to be found. Where are they now?

It cannot be said that Nature's work has become so coarse and uninteresting and so thoroughly well known that it is no longer interesting to study her beauties.

Look for one moment at the most charming, I think, of all beauties, the *Volvox globator*, and watch the easy and graceful movements of these little gems of nature as they force their way through their watery surroundings, and that idea is soon expelled. How these charming little globes of matter gliding about call to one's mind the planets in the ethereal space!

This change is owing, I fear, to man's fickle, unstable, and changeable nature.

Look at the worlds of life and exquisite beauty revealed to us by the microscope. Look at the work that is before man and woman if they are prepared to investigate and learn. Look at the beautiful results, at present very little known, that can be arrived at under the head of micro-photography, by which these beauties can be permanently recorded. There is no doubt a truly scientific man and lover of nature leads a double life; he sees beauty in everything, he admires everything, and his seeing leads him on a road without an end. The unscientific man simply kicks these object of beauty with his foot from his path, and seeks only the artificial life of his race. Again, these scientific and unscientific natures have their respective influences on the rising generation, either for good, which favours all forms of life beneath them, or for bad, which is detrimental to all forms of life below them. What can be sadder than to see boys cruelly torturing or ill-treating animals, pulling down and damaging trees, robbing birds' nests; this is all brought about for the reason that their parents, owing to their ignorance of natural history, have never been able to interest the young ones in the welfare of all forms of life. I feel sure that were the Board Schools, in fact all schools, to teach children to love and admire all living things around them, and to teach them respecting their individual lives, we should see far less cruelty and destructiveness.

That admirable society, "the Society for Prevention of Cruelty to Animals," has done wonderfully good work, and deserves all credit; at the same time it has had to do it by force of the law, instead of by the education of the masses to respect and love all living things.

I personally fear the advances of science have been, within the last twenty years, far too rapid; invention has followed invention like the thunder peals follow one another during a storm. The children of the present day become so hardened to these continued new inventions and discoveries that they do not even trouble themselves about them, and are not taught anything of the science of the invention.

Look back only thirty-two years, the age of our Society, and we have since that time the Röntgen rays; how few know more about them than that by means of their rays you can see the bones in a human being, or some coins in a box or purse? Look at the absurd comments and suggestions that were made when they were first publicly shown, "that it would before long be possible to see through a nine-inch brick-wall," and other equally absurd observations. The masses do not trouble to ask themselves why it is so, or what it is.

Look, again, at the telephone, or, more wonderful still perhaps, the phonograph: what would the world have said thirty years ago had anyone been bold enough to prophesy such an invention? Think of the wonderful results achieved by Professor Dewar in the liquefaction of the gases; also the discovery of the new elements helium and argon by Lord Rayleigh.

Consider the scientific knowledge required to carry a bridge across the Firth of Forth. Look at the strides made in advancement of our knowledge of electricity, both as a means of light and motive power. This boon to civilization could only be thoroughly appreciated by us by its being removed from us for a short time that we might judge by comparison. Look at the advances made in astromony. Then lately we have the Marconi wireless telegraphy, which is still in its infancy. If in the future I could only see it effectually ridding us of the most horrible of horribles—I mean the unsightly telegraph-poles that at the present time disfigure every beautiful English country road and village—I could not speak too highly in its praise.

So time brings about changes, and those very rapidly; and it behoves those who do not wish to be left in the background to commence running.

A Society like our own is to the masses at large a great benefit, and it is truly puzzling why so few persons avail themselves of the benefits afforded. For a city man has but little time to spare, and he wants in that time to combine outdoor exercise with a certain scientific knowledge. In a Society like our own he is not forced to study any one subject. At the present our science is covered by seven sections, and even these before long may have to be increased, for we have no astronomical or chemical sections.

But to conclude. I should like to say that in these days even men of science love comfort. A man is in his happiest frame of mind when his surroundings are comfortable, and it is then he is prepared to do his best work.

A Society like ours should have a suitable suite of rooms; and where a Society has a number of sections, it is to my mind absolutely necessary that each should have its own room for work.

Our Society, like many others, has had to ride out many storms, and she is now having to fight a heavy sea; and it will not do to disguise the fact; but it is my sincerest hope that she will keep some good pilot at her helm, and active officers to support him; they must be bold without being rash, they must drive the good ship forward, and not allow her head to turn away from the harbour she is fighting for.

We want new and comfortable premises; also we must increase our members; this would follow as a result. Every business man and woman must know that a Society cannot be carried on without money, and the question then arises, Are there two hundred members in our Society, having, I presume, joined with the object of studying science, who are so lukewarm in their scientific enthusiasm that they will not find the funds necessary to carry out a scheme that they must see is absolutely necessary for the existence of their Society?

I personally cannot think that is so. If I am mistaken, I see our end cannot be long delayed. This would indeed be a misfortune after such a long and honourable career as our Society has had, and I can only hope that, if such a sad fate awaits us, I shall not be one of the responsible officers of the Society.

I should like to take this opportunity of passing my heartiest thanks to Mr. Moore for his great assistance during my two years of office. A more earnest and hard-working Secretary I think our Society has never before had, and I hope for our Society's sake he will continue long to hold the office of Hon. Secretary. I also tender my thanks to all the individual members of Council for the kind and sympathetic way they have always met me.

I have now only one duty to perform, and that is to vacate this chair, and to call upon our new President, Mr. Bayard, to accept it.

Summary of Proceedings.

Excursions.

April 19th.—This excursion was well attended. Five ladies and nine gentlemen met at South Croydon station, and walked over the top of Croham Hurst to Selsdon Road and by the footpath to Sanderstead Church, where some good photographs were obtained. Walked by the disputed footpath (since closed) over Purley Downs to Purley Oaks, where, by the kind permission of Mr. Chandler, we were allowed to photograph some of the fine old pollard oaks.

May 10th.—To Leatherhead, Fetcham, *viâ* Norbury Park and Mickleham, to Burford Bridge. Only three members attended.

The route was almost entirely by footpaths as set out in one of Walker Miles's series, and was much enjoyed by those present. It was not very successful photographically, owing to the weather.

May 31*st.*—To Keston. For an account of this excursion, see Anthropological Section.

June 14*th.*—To join the Geologists' Association to the Valley of the Mole, Brockham, Reigate, and Redhill.

June 26*th.*—To Ashdown Forest. As it was expected that this day would be a holiday, on account of the Coronation, a whole-day excursion was arranged for the western part of Ashdown Forest.

Twenty-six members and their friends went in all, two or three cycling to East Grinstead. Unfortunately five or six were not with the main party, which had to take an earlier train than expected, on very short warning, from the dislocation of the usual time-table, due to the expected Coronation.

We alighted at West Hoathly, intending to work round to Forest Row, and thence on to take tea at the Railway Hotel, East Grinstead. The day proved gloriously fine, an east wind tempering the sun's power.

Proceeding eastwards to the cross-roads, a mile from Wych Cross, nearly all the party made a detour southwards across the common, past the house being erected by Major Darwin. Here a deep but waterless well in the Hastings sands was inspected. Proceeding on, a visit was made to Divall's Farm in Birchgrove. In the well there, is a beautiful growth of ferns, including *Lastrea Filix-mas*, *L. dilatata*, *Asplenium Trichomanes*, *A. Adiantum-nigrum*, and *Scolopendrium vulgare*, with var. *multifidum*. The other ferns found during the day are included in the subjoined list, nine in all. *Lastrea spinulosa*, also, was obtained this year close to the route followed, and also *Lycopodium Selago*. The latter was searched for unsuccessfully, the young shoots of heather rendering it very inconspicuous. *L. clavatum* was seen growing more luxuriantly than any of us had previously seen it in the southern counties, covering several yards of ground. For the subjoined list we are indebted mainly to Dr. Franklin Parsons. Perhaps the most interesting occurrence is that of *Wahlenbergia hederacea*, the ivy-leaved campanula, though with flower-buds unopened. Mr. Harry D. Gower has also supplied the following list of insects of special interest :—

Odonata or Dragonflies :—*P. depressa*, *C. virgo*, *A. puella*, *A. mercuriale* (captured by Mr. Nash and handed to me), *P. minimum*, *P. vulgatum*. Butterflies :—*A. selene*, *E. cardamines*.

Working our way past Press Ridge Warren (part of the extensive property of D. W. Freshfield, Esq., to whom we were indebted for special and free permission to explore where we wished), we had an acceptable halt for lunch under the Scotch fir clump, between the road-fork at Wych Cross. After this the Forest Row road was followed a short way to the fine quarry (Hastings sand) in the Hindleap Warren estate, said to produce the finest building stone in Sussex. A long and charming ramble through this and the Kidbrooke estate brought us near Forest Row. Most branched off here to Brambletye Hall, the ruins of an early seventeenth century castellated building. The chief part left is the fine gateway. This party walked on to East Grinstead, having traversed some eleven miles in all. Here twenty-four of us took tea together. Afterwards the interesting timbered buildings of the town were inspected, and the fine old college, also of the seventeenth century. Close by here the Cowden road passes through a picturesque cutting in the Tunbridge Wells sandstones. Our train finally brought us back to Croydon soon after eight, or nearly twelve hours from the time we had left in the morning.—J. Edmund Clark.

Plants observed at West Hoathly, Ashdown Forest, Brambletye, and East Grinstead, June 26th, 1902. (Dr. Franklin Parsons's list, with one or two additions):—

Ranunculus peltatus, *R. Lenormandi*, *R. sardous* = *hirsutus*, *Nymphæa lutea*, *Polygala depressa* ? = *serpyllacea*, *Hypericum humifusum*, *H. elodes*, *Genista anglica*, *Lathyrus Nissolia*, *Rubus plicatus*, *Galium Witheringii*, *Hieracium murorum*, *Wahlenbergia hederacea*, *Symphytum officinale*, *Salix ambigua* = *repens* × *aurita*, *Habenaria bifolia*, *Allium ursinum*, *Carex vulpina*, *C. flava*, *C. fulva*, *C. vesicaria*, *Polypodium vulgare*, *Lomaria spicant*, *Asplenium Trichomanes*, *A. Adiantum-nigrum*, *Athyrium Filix-fœmina*, *Scolopendrium vulgare*, *Lastrea Filix-mas*, *L. Oreopteris*, *L. dilatata*, *Equisetum limosum*, *Lycopodium clavatum*, *Agaricus* on *Sphagnum*, *Boletus elegans*, *Polyporus betulinus*, *Æcidium Tragopogonis*.

Noted in district last April:—*Lastrea spinulosa*, *Lycopodium Selago*.

July 5th.—The party went by the 2.36 train from East Croydon to Betchworth, and in the enforced absence of Mr. Salmon, who was to have been the conductor, the lead was taken by Mr. Whitaker, who happened to have brought the six-inch map. A change was made in the proposed route, and the walk was taken along the foot of the great Chalk escarpment. About a quarter of a mile northward of Betchworth station a pit was seen in the bottom beds of the Chalk through to the Upper Greensand, the firestone of the latter being worked in a gallery; but the junction of the two formations was not seen.

North-eastward the pit at Buckland Lime Works was seen, with the junction of the Middle and Lower Chalk.

The chief botanical occurrences noted were the frequence of the bee-orchis along the foot of the Buckland Hills, and the plentiful growth of the wild strawberry, giving rise to an industry not before noticed. Some little girls were seen gathering the fruit, and they told us that they came out regularly (from a neighbouring farm) to get it for cooking.

A quarry at the foot of Colley Hill, showing small faults in the Upper Greensand, was seen, and then Reigate was reached, and a welcome tea consumed. After this, on the way to the station, a walk was taken through the Castle grounds, and the rich flower-beds of this beautiful public garden were much admired.

July 13*th*.—To Caterham, Haliloo Valley, and Worms Heath. For account of this excursion, see Botanical Committee Report.

July 19*th*.—To Oxted and Barrow Green.

Sept. 13*th*.—Fungus foray to Limpsfield, Squerries Park, and Westerham. (See Botanical Committee Report.)

Evening Meetings.

Feb. 18*th*.—Mr. W. Marriott, of the Royal Meteorological Society, gave an address on "Rainfall."

March 18*th*.—On this evening Dr. Vaughan Cornish, D.Sc., F.G.S., F.C.S., F.R.G.S., was to have given a lecture on "Waves in Water, Snow and Sand," but was prevented by illness. Mr. Fawcett gave an account of Rambles in the Alps, illustrated by numerous lantern-slides.

April 15*th*.—Mr. J. O. Pelton, Member of the Japan Society, read a paper on "The Japanese Sword-blade, its History and its Legends," illustrated by a large collection of specimens. (See Trans., Art. 2.)

May 27*th*.—Mr. W. Murton Holmes read a paper on the "Foraminifera of the Gault at Merstham," illustrated by lantern-slides. (See Trans., Art. 3.)

Sept. 16*th*.—This evening was devoted to accounts by members of excursions made during the recess, and exhibition of specimens, with descriptions.

Oct. 21*st*.—Mr. G. Clinch, F.G.S., read a paper on "The Recent Discoveries at Waddon," illustrated by lantern-slides. (See Trans., Art. 4.)

Nov. 18*th*.—Mr. W. F. Stanley, F.G.S., &c., contributed a paper on "Examples of perfect Flint Implements of the First Dynasty of Egypt"; and two early mirrors in copper found in recent excavations at Abydos. (See Trans., Art. 5.)

Dr. Parsons read papers on "The Flora of Hayes Common" (see Trans., Art. 6), and "Some Notes on the Flora of the Eastern Border of Dartmoor" (see Trans., Art. 7).

Dec. 16*th*.—The President, Mr. James Epps, Jun., F.L.S., gave a popular lecture entitled "A Trip to the West Indies," illustrated by numerous slides and specimens. (See Trans., Art. 8.)

On Nov. 25th the President, Mr. James Epps, Jun., gave a Soirée at the Pembroke Hall, the following account of which is taken from the 'Croydon Chronicle':—

"A large company assembled at the Pembroke Hall, on Tuesday last, in response to the invitation of the Society for their Annual Soirée—an event which is always anticipated with keenest interest. The customary exhibits were, this year, of a rather more comprehensive nature than was the case last year, when the main idea was to localise the interest to Croydon and district; though, on this occasion, the latter feature was by no means overlooked. Hence, at the very entrance door, was an exhibit by Dr. F. H. Parsons, consisting of cut flowers, numbering no less than one hundred and thirty-four species and varieties gathered during the day, in the open air, and in the neighbourhood of Addiscombe. Again, special interest centered round the relics from the recently discovered Waddon Caves, consisting of several cores and chips of green-coated flints, together with fragments of Romano-British pottery and mammalian bones. Dr. Hogg also showed a fine range of flint implements (axes, scrapers, and hammers) discovered in Croydon district. The Microscopic Section was again very strong—the membership of Mr. W. F. Stanley, of London Bridge Approach, doubtless influencing the endeavour to attain front rank in this department. Mr. J. O. Pelton exhibited a case of small, but very beautifully carved Japanese 'Netsuke' ivory figures, chiefly emblematic and illustrative of native legend; whilst Mr. Jas. Epps, Jun. (President of the Society), amongst other things, contributed Japanese miniature growing trees (not exceeding two feet high), but upwards of thirty or forty years old. Mr. W. Murton Holmes showed a very interesting exhibit, including a splendidly complete range of *Spirifera* of the Upper Silurian and Carboniferous ages. Mr. N. F. Robarts's collection of stone, arrow, and spear-heads and pottery antiquities from old London excited much interest. A very cosmopolitan and much appreciated collection was that of Dr. Male, including a specimen of flying fox from Queensland, young alligators and eggs from Florida, and edible birds' nests from China. Mr. H. C. Collyer displayed some interesting examples of African native beadwork, and some especially clever specimens of Eskimo handicraft; and Mr. E. Lovett, a model Alpine garden.

"A great feature of these annual soirées is the lantern entertainment by Mr. Baldock, from selected slides prepared by members of the Photographic Section of the Society. These slides are always of special excellence; but a new departure was made this year, in that some specimens were shown of colour photography, by the Lumière N. A. Co., with astonishingly beautiful result.

"The musical portion of the programme was efficiently carried out under the direction of Mr. A. M. Reeves, L.R.A.M."

Reports of Sections for 1902.

Anthropological and Archæological Committee.

During the past year there have been six meetings of the Committee and six meetings of the Section. There was also a special informal meeting of the Committee on July 8th for the purpose of discussing and comparing notes as to the important discovery of underground chambers at Waddon. This matter has been of considerable interest to this Section, as well as to the Society generally, and has had the effect of stimulating research in the special work of the Section. A paper on the subject, illustrated by lantern-slides and specimens, was read before the Society in October last, and a large audience assembled to hear it. This paper appears in the present part of the Society's 'Transactions.'

An excursion under the direction of this Section was made in May last to Keston and the neighbourhood, when the members inspected Roman masonry at War Bank, and some of Saxon or early Norman workmanship at Keston Church. A good many neolithic implements were collected by some of the members from the surface of the fields.

The following gentlemen have exhibited objects at the sectional meetings:—Messrs. Collyer, Gower, Hogg, Lovett, Moore, Robarts, Slack, Tarver, Voss, and Clinch.

It is highly satisfactory to be able to report a substantial increase in the number of members attending the meetings, as well as an equally important improvement in the number and character of the exhibits. It has been arranged that a special subject shall be selected a month in advance for each meeting, and recently the subject has been announced in the monthly circular. This plan has been found very useful, because it enables all the members to focus their efforts upon a particular subject on the same evening, and the result is that many objects are brought for exhibition which assist very materially in illustrating the particular subject agreed upon. The following are some of the subjects which have been discussed in this way:—Scrapers of the Stone age and their modern representatives; hammerstones; neolithic hoes and other agricultural tools; primitive pottery.

Substantial progress has been made with the work of marking the archæological map of Surrey. The chief palæolithic, neolithic, and bronze age discoveries have been marked, and it is proposed to proceed with the Roman and Anglo-Saxon remains early in the New Year.—George Clinch, *Hon. Sec.*

Botanical Committee.

The Botanical Committee have to report that progress has been made in the investigation of the flora of some of the commons near Croydon, though the observers who have undertaken the enumeration of the plants of other of these commons have been unable for one reason or another to make any further additions to the figures recorded in our last report. The numbers now stand:—Shirley Hills, 174; Croham Hurst, 253; Mitcham Common, 461; Riddlesdown, 167;

Hayes and West Wickham Commons, 321; Keston Common, 265; Duppas Hill, 69; Worms Heath, 43.

A preliminary report on the flora of Hayes Common was read by Dr. Parsons at the general meeting of the Society on Tuesday, Nov. 18th, 1902, at which meeting a paper was also read by the same author, "On the Flora of the Eastern Border of Dartmoor" (see Trans., Articles 6 and 7).

Among the general excursions of the Society, those which possessed especial botanical interest were the following:—

June 26*th* (Thursday, Coronation Day). All-day excursion to Ashdown Forest. Conductor, Mr. J. Edmund Clark, B.A., B.Sc.

July 12*th* (Saturday). Caterham, Haliloo Valley, and Worms Heath. Conductor, Mr. H. T. Mennell, F.L.S.

Sept. 13*th* (Saturday). Fungus foray. Limpsfield and Squerries Park, Westerham. Conductors, Dr. H. Franklin Parsons and Mr. G. W. Moore.

Botanical Excursion on July 12*th to Caterham, Haliloo Valley, Warlingham.* (Leader, Henry T. Mennell, F.L.S.)—The party of seventeen detrained at Caterham, and walked by the road across the fields to Haliloo Valley. In the woods above the valley the large helleborine (*Cephalanthera grandiflora*) was gathered. The bee orchis (*Ophrys apifera*) was abundant on the banks below the wood, though somewhat past its best: no other orchises were observed. The small bushes of sweet briar in full bloom were numerous, and the special rarity of the valley, *Lathyrus hirsutus*, was gathered in beautiful condition. Another Surrey rarity, *Phyteuma orbiculare*, was found in some plenty. Other plants gathered were *Hypericum hirsutum* and *perforatum*, *Echium vulgare*, *Calamintha Acinos*.

Tea was provided at Warlingham, after which most of the party returned to Croydon by train. Two members walked back to Croydon by way of Farleigh Green, where *Veronica longifolia* was found growing on the margin of a small enclosed pond in full bloom. It is of course not a British plant, but seemed well established. The well-known locality of the Surrey rarity, *Teucrium Botrys*, was visited. The plant was found in great profusion. Mr. Mennell, who has known the locality well since its first discovery by Mr. John Flower, has never seen it in such plenty. An interesting rose of the *Rubiginosa* (sweet briar) section, named by Mr. A. Bennett *Rosa micrantha* variety *Hystrix*, was also found in the hedge in the same field.

The last excursion of the season was the annual fungus hunt, which took place on Sept. 13th under the leadership of Dr. Parsons and Mr. G. W. Moore. The day was very fine though cold, and there was a good attendance. The route taken was a very picturesque one—from Oxted station by Limpsfield, across Limpsfield and Chart Commons, and through Chart Woods and Squerries Park to Westerham, returning thence in conveyances. Permission to visit Squerries Park had been kindly given by Col. Warde. Owing to the cool, rainy season, vegetation still retained its full verdure, and there was little sign of autumn in the landscape. For the same reason the woodland kinds of fungi were plentiful compared with what they have been in the dry seasons experienced during several past years, though the species frequenting open pastures had not yet, for the most part, made their appearance.

Among flowering plants, the following were the more noteworthy species observed :—

Jasione montana (sheepsbit), sand-pit at Limpsfield.
Tanacetum vulgare (tansy), ,, ,,
Mentha Pulegium (pennyroyal), dry pond on Limpsfield Common.
M. sativa (wild mint), ,, ,, ,,
M. hirsuta ,, Millpond in Squerries Park.
Bidens cernua (bur-marigold), ,, ,,
Scutellaria galericulata (larger skullcap), ,, ,,

Of fungi, about thirty-two species were observed, among which may be mentioned *Polyporus fraxineus*, on old ash trees at Limpsfield and Squerries Park; *P. giganteus* and *P. sulfureus*, on dead beech trees in Squerries Park—the former growing in large brown imbricated masses; *Agaricus murinaceus;* and *Hydnum repandum.*

A selection of the specimens found was exhibited at the ordinary meeting on Sept. 16th.

In addition to the general excursions, three evening rambles of the Botanical Section were held as follows. (Reports are by the leaders) :—

The first took place on Thursday, May 15th, under the guidance of Dr. Parsons, and was well attended, notwithstanding the damp and gloomy weather. The route taken was from Purley Station by Reedham to Wellcombe Woods, Coulsdon, returning by Hayes Lane and Kenley. The geological formations over which it lay were the valley gravel and the chalk; on the former the flora presented no special feature, but on the latter it contained a number of characteristic lime-loving plants, as the rock rose, the hairy violet, the small burnet, &c. Owing to the exceptionally cold weather which had been experienced during the preceding three weeks, vegetation was very backward for the time of year, the oaks only beginning to show leaf, and the ashes being even less advanced.

Among the plants found, the following may be noted, viz. *Geranium pyrenaicum*, the comfrey (*Symphytum officinale*), *Lamium Galeobdolon*, *Lychnis dioica*, *Orchis mascula*, *Listera ovata*, *Pyrus Aria*, buckthorn, cowslip, and *Hesperis matronalis;* the last a garden escape. The secluded valley is sufficiently removed from the deleterious influence of town smoke to permit the growth of lichens upon the tree-trunks, and upon some ash trees in Wellcombe Lane about eight species, several with fructification (apothecia), were observed.

The second ramble of the Section, under the guidance of Mr. J. E. Clark, B.A., B.Sc., and Dr. Parsons, took place on June 19th, and was well attended. Meeting at South Croydon, the party first devoted their attention to an old disused chalk-pit near the end of Croham Lane. Here were found an uncommon species of St. John's wort (*Hypericum montanum*), and the mullein (*Verbascum Thapsus*). The *Hypericum* still grows in considerable quantity in the chalk-pit, though it has now disappeared from its former locality in the adjoining lane. Hard by, in the short turf, on a piece of dry sandy ground near the entrance to Ballards Lane, were found a large variety of dwarf plants, chiefly annuals, such as *Sisymbrium Thalianum*, *Sagina apetala*, several species of clover (among them *Trifolium subterraneum* and *T. striatum*), the bird's-foot trefoil (*Ornithopus perpusillus*), *Alchemilla arvensis*, *Taraxacum erythrospermum*, *Myosotis collina*, and the grasses *Aira præcox* and *caryophyllea*. Owing to the wetness of the season, fungi were plentiful for the time of year, among those observed being *Agaricus petasatus*—a large species growing on sawdust in a saw-pit; *A. præcox*, plentiful and very variable in form and size; *Peziza rutilans*, with orange cups, growing on the sandy soil; and the cluster cup *Æcidium Tussilaginis*, parasitic on the leaves of coltsfoot.

The third botanical ramble of the season was from Waddon, by the river Wandle, to Beddington, the conductor being Mr. Henry T. Mennell, F.L.S. On Thursday evening, July 17th, a party of about fifteen were met at Waddon station by our fellow-member, Mr. N. Waterall, who most kindly escorted them through his beautiful garden, with its large ornamental water, in which the main head-springs of the Wandle take their rise. In this water many small aquatic plants were found, notably *Ranunculus circinatus*, distinguished by the absence of floating leaves, and having the segments of the submerged ones arranged in a flat plane with circular outline; *Apium nodiflorum; Anacharis Alsinastrum* (*Elodea canadensis*); *Callitriche verna; Lemna minor;* the water moss, *Fontinalis antipyretica*. Large numbers of the handsome larvæ of a sawfly, green with black spots in the centre of the body, with orange tail and head, were noticed on the willows by the edge of the water. Proceeding along the Wandle towards Beddington, *Spiræa ulmaria*, *Sium erectum*, *Bidens tripartita*, *Myosotis palustris*, *Veronica anagallis*, *Sparganium ramosum*, *Epilobium hirsutum*, *E. parvifolium*, and the grasses *Glyceria aquatica* and *fluitans* and *Phalaris arundinacea* were noted, and also *Carex riparia*.

From Beddington Church the party returned through the fields to Waddon. Large yellow patches of *Galium verum* were conspicuous, and of unusually large size. The plants noticed on waste ground in Beddington Park and elsewhere were *Senecio aquaticus*, *Chrysanthemum segetum* and *Leucanthemum*. On walls at Beddington were *Parietaria officinalis*, *Arenaria serpyllifolia*, *Sedum acre*. Specimens of *Impatiens parviflora* gathered on the Waldrons were brought by one of the party.

The following have been the chief meteorological characteristics of the year 1902 in relation to vegetation. As regards aggregate amount of rainfall, the year has been a remarkably dry one. There have been few heavy falls, and the total rainfall has been about a third below the average. But, on the other hand, rain, though in small amount, has fallen on a large number of days; in fact, according to observations made by Dr. Parsons at Park Hill Rise of the ten years 1893–1902, the year just ended is that which had the smallest total rainfall and the largest number of wet days. The wettest months were May, June, and August, and there was no prolonged drought, such as those which have parched up vegetation in the summers of several preceding years. There were only a few days of great heat in the end of June and at the middle of July; and there has been much cool cloudy weather. January began mild and dry; but in the last week a period of frost with dry cold winds set in, which lasted a month and checked all vegetation. The average time of appearance of the early spring garden flowers was about eight days behind that in the nine years 1893–1901. The frost, however, was not continuous, nor was it of very great severity, 15° F. being the lowest, not enough to kill back laurels and other shrubs of an ordinary hardiness, although there was but little snow to protect them. The last week of February and the month of March were mild, with a fair amount of rain and more favourable to growth. April was dry, often cloudy, and with much cold N. and E. wind. May and the greater part of June were very cold and stormy, though the last week of June was fine and hot. The trees were very late in coming into leaf, the oaks and ashes scarcely being in full leaf at the end of May. There were several frosts in April and May, which, with the cold blighting winds, did much damage to the blossoms of the fruit trees, and except as regards strawberries the year was a bad fruit year. The corn crops, too, which in the earlier part of the year had looked very well, were much damaged by the continuance of cold weather; and the hop crop was almost a failure. July was generally dry; it was cool and cloudy at the beginning and end, but there were some fine warm days towards the middle. A gale on July 26th did much damage to trees and hops. August was cold and wet. The potato disease made its appearance early in the month, and was more destructive than for a number of years past. September was cool and dry, except for a heavy thunderstorm on the 10th, which, however, was extremely partial in its distribution, two inches of rain and more having fallen at some places in the neighbourhood of Croydon, while at others not many miles distant only a few hundredths or none at all fell. Fungi were fairly plentiful as compared with the dry seasons of some recent years. October was cool and cloudy, with frequent rainfall in small amount and absence of frost. Owing doubtless to the cool damp season and absence of frost, the trees—as oaks, elms, and ashes—which had been very late in coming into leaf in the spring, retained their foliage late into the autumn; away from the influence of the towns little sign of autumnal colour was to be seen in the foliage until the end of September, but later on the colouring was finer than usual. The first half of November and the last week were mild and stormy; but between the 15th and 22nd was a week of cold dry weather with cutting N.E. winds and frost, which destroyed all the tender garden flowers which had remained in bloom up till then. Nevertheless, at the Annual Soirée of the Society on Nov. 25th, the collection of flowers gathered in the open air was a fairly good one in point of numbers, 134 kinds being shown as against 170 and 151 kinds in the mild autumns of 1897 and 1899, and 32 in the severe one of 1901. The earlier part of December—3rd–12th—was dry with cold N.E. wind; but the latter half of the month was mostly fine and mild, with occasional storms. On Dec. 31st thirteen species of plants were in flower at Oakhyrst, Park Hill Rise, *viz.* primrose, auricula, sweet violet, winter jasmine, *Petasites fragrans*, *Laurustinus*, *Crocus hyemalis* and *speciosus*, *Helleborus niger* and *albifolius*, *Escallonia macrantha*, *Potentilla verna*, and *Calendula officinalis*. Mr. J. E. Clark noted twenty-three species of wild plants as in flower near Croydon on December 25th–28th.

The Committee regret that there were no competitors for the prize offered by Dr. Hobson for the best botanical collection. The collection was to be limited to one hundred species, dried and mounted by the collector, the correctness of the nomenclature and quality of the specimens as illustrative of the habits and character of the plants being taken into account.

Geological Committee.

The Committee of the Geological Section beg to report that there have been held nine Committee meetings, nine sectional meetings, and two excursions. The average attendance at the Committee meetings has been five, and at the sectional meetings twelve, against five and nine, respectively, last year.

A few photographs of sections and some crayon sketches of geological interest have been added to the Section's album. The Committee would be glad if members would endeavour to procure more photographs for this purpose, so as to make a valuable permanent record of geological interest.

A few records of new sections have been made. The Committee would also call the attention of members to the value of these.

The excursions during the year have been as follows:—

May 2nd.—To the new railway-cutting of the S. E. & C. R. at Chislehurst in conjunction with the Geologists' Association. The party were conducted over the works by Mr. Osman, and had an admirable view of the exposures of the Oldhaven beds.

May 26th.—To the railway-cutting at Thornton Heath, L. B. & S. C. R.'s goods yard, when about twenty members and friends were present. A good exposure was shown of Oldhaven sands with the junction of the London clay, containing green-coated pebbles at base. Some successful photographs were taken by Dr. Hobson.

"The Geological Section of the Croydon Natural History and Scientific Society met at Thornton Heath Station on Monday evening, to examine the strata exposed in the new railway works near the station. Mr. Whitaker, F.R.S., explained the strata exposed, which consisted of Oldhaven sands, the surface of which had been eroded before the deposition of the London clay, the basement bed of which, with the customary pebbles derived from the Oldhaven series, was well seen. No fossils were found, though in the original railway-cutting shelly sandstone was found when the line was first made. Above the basement-bed of the London clay, the clay appeared to be made up of wash from the higher ground, being mixed with a few later flints and pebbles. The upper gravel terrace of the Wandle was seen, in parts, overlaying the clay, at a height of about 160 feet above Ordnance datum."

Museum Committee.

The Committee are pleased to be able to report that the additions to the Loan Museum have been considerably in excess of those received during the previous year. This has been largely owing to the number of objects found in the Waddon caves, although a large proportion of the objects found were of similar character.

The following members of the Society—Messrs. Geo. Clinch, F.G.S. J. Epps, Jun., H. D. Gower, W. M. Hobson, W. M. Holmes, A. J. Hogg, H. C. Male, M.D., G. W. Moore, and N. F. Roberts, F.G.S., together with the Croydon Land Co., Ld., and Mr. J. A. Smith, who are not members—have presented to the Society the objects they found at the Waddon caves and on the Waddon neolithic floor, and the Committee will therefore be able to keep these interesting collections intact as a permanent record of this discovery of the works of prehistoric man.

The late Mr. Willoughby Mullins has presented to the Society a collection of Serpentine and other rocks.

Specimens of various kinds have also been lent to the Museum by Messrs. J. M. Hobson, M.D., W. M. Holmes, H. Franklin Parsons, M.D., E. A. Martin, F.G.S., H. T. Mennell, F.L.S., N. F. Robarts, F.G.S., W. Whitaker, B.A., F.R.S., &c., members, and by Messrs. R. Donkin, E. A. Hansor, and F. Burfoot, who are not members.

The Committee desire to express their thanks to the members and others named who have given and lent objects to the Museum.

Although the Croydon County Council did not see their way last year to accept the Society's offer to co-operate in forming a Museum at Grange Wood, your Committee understand the Council have since accepted a gift of various objects from Mr. J. Chisholm, a member of this Society, and have agreed to go to some cost in arranging same for exhibition at Grange Wood.

The Committee have pleasure in stating that the public seem to continue to show considerable interest in the objects displayed in the Loan Museum at the Town Hall, and they hope that the Society will take steps to further increase and arrange the Society's own Museum.

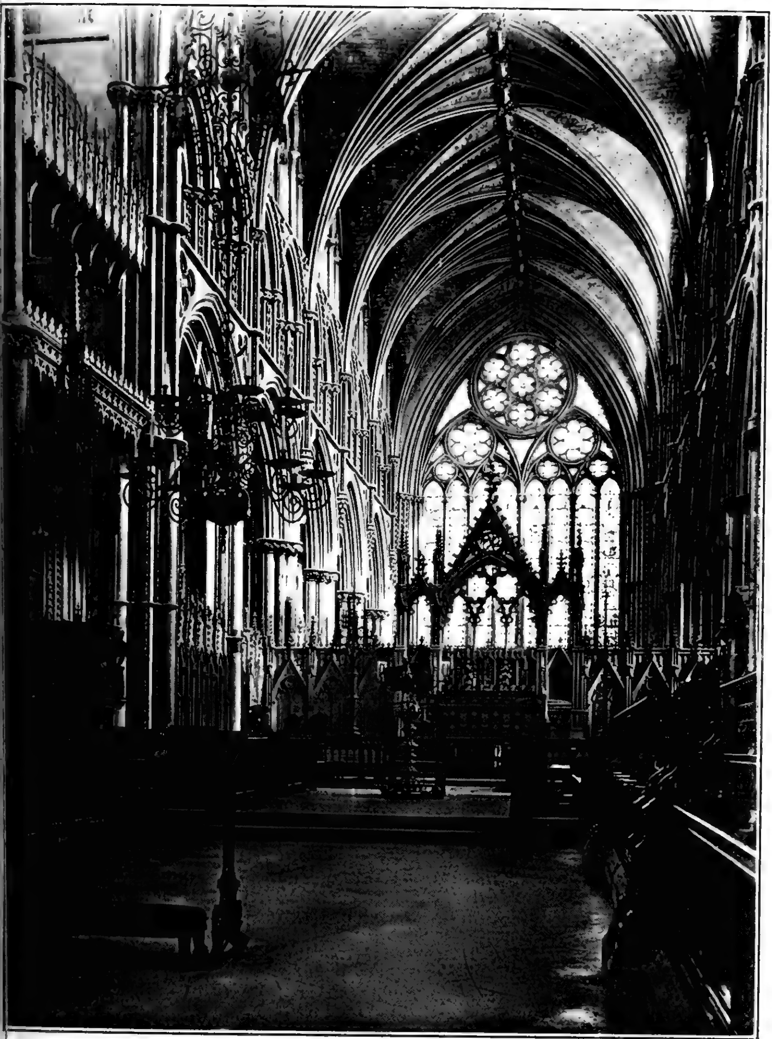
Photographic Committee.

The season from January, 1902–3 has, on the whole, been a successful one. The use of the dark room and enlarging lantern, judging from the entries made in the dark room book, has been quite up to the average.

The following are the most important papers read before the Section:—Demonstration of Wellington & Ward's Bromide Papers, by Mr. E. Human; The Development of unknown Exposures, by Mr. J. H. Baldock; Demonstration on Decorative Photography, by Mr. W. W. Welford; The Production of various Tones in Lantern-slides, by Mr. A. P. Hoole; Demonstration of the Rotograph Co's Papers, by Mr. W. A. Sims; Demonstration of Messrs. Houghton's Exhibits, by Mr. Wardall; Demonstration of the Lumière Colour Process; Visit to the Works of Messrs. Waddington's, Ltd., Croydon; Development of Lantern-slides and after-Treatment, by Toning, &c., by Mr. Hoole.

The following circulated papers were also read before the Section:—'Home Portraiture,' R. P. S.; 'Life and Work of George Tinworth,' R. P. S.; 'Photographic News' Prize Slides; 'Photography' Prize Slides; 'What can be done with a Hand Camera,' by C. P. Goerz; 'Telephotography,' R. P. S.; 'Focal Plane Shutter and its Management,' R. P. S.; 'The Beginnings of Photography: The Photogram.'

The excursions during the summer were held at:—Leatherhead and Burford Bridge; Ashdown Forest; Betchworth, and other interesting places.



Fawssett.

LINCOLN CATHEDRAL.

J. H. Baldock.

THE OLD MILL.

ames Epps. Junr.

STANHOPEA EBURNEA.

In conclusion, I might mention especially that the most appreciated demonstrations during the season were those of Mr. Waddington on process block work; Messrs. The Lumière Co. on colour photography; and last, but not least, those of Mr. Baldock, who, since September, has acted as Chairman of the Section—a luxury the Section had not, I think, previously possessed; and also for kindly working the lantern whenever it was required. To him the thanks of the Section must be given for all the time he spends to their advantage, and for the ready help and advice he is always willing to give to those who require it.

A second competition was held, at the suggestion of the President, for the selection of three pictures to be reproduced in the Society's 'Transactions.' The prizes were awarded to Mr. E. Fawssett for a fine "Interior of Lincoln Cathedral"; to Mr. J. H. Baldock, F.C.S., for "Houghton Mill on the Ouse"; and to the President (Mr. J. Epps, Jun.) for photograph of the orchid *Stanhopea eburnea.* — C. L. Faunthorpe, *Hon. Sec.* [These three photographs are reproduced.]

Zoological Committee.

During the past year seven meetings of the Zoological Section have been held. The specimens exhibited have been numerous and varied. Quarter-hour talks have been given by Messrs. H. D. Gower, Dr. Franklin Parsons, Mr. W. Murton Holmes, and the Hon. Secretary. Two insect cases have been presented to the Section by J. Epps, Esq., President, and these are now being filled.

On Jan. 28th the following objects were exhibited:—Cocoons and imago of *Plusia moneta* (golden ear), taken and exhibited by Mr. H. D. Gower in his garden in Croydon. This moth, which was first taken at Purley, and which was for some years a rarity, has since been recorded from many counties.—Dragonflies from Brighton (*Sympetrum striolata*), caught at the end of October. The specimens were spoken of in the 'Daily Mail,' and Mr. H. D. Gower communicated with the finder in order to ascertain the species.—Mr. Gower also exhibited a pair of dragonflies (*Agrion puella*); and *Paludina complanatus* from Beddington.—Mr. E. A. Martin exhibited a piece of native sponge, organ-pipe coral (*Tapipora musica*), and a worn section of a large *Voluta* from the Canary Islands (Las Palmas); also various opercula of *Turbinidæ* from the Quarantine Island (Melbourne).—Conversation followed on (1) the question of the choice of nests by the cuckoo, and (2) the gulls of the Thames, St. James's Park, &c.

On Feb. 25th the Chairman showed a large specimen of the swan mussel (*Anodonta cygnea*), remarkable by the great convexity of the valves; specimens of *Helix nemoralis* (one- to five-banded varieties), one of which was sinistrorsal; this was 2-banded, and came from near the Highgate Archway. — Mr. Gower showed lace-wing nymphs and photo of same; also ladybirds with black spots and lines on a yellow background.—Mr. Martin showed specimens of *Helix punctata* from Las Palmas. — Mr. Townend showed opercula of a large size (? of Turbo) from Singapore. — Miss Parsons exhibited a series of shells collected in the neighbourhoods of Croydon and Selborne, Hants.— Mr. Murton Holmes exhibited *Aphrodite aculeata* (sea-mouse) from Portsmouth, *A. hystricella* from Weymouth, and *Scalpellum vulgare* from Jersey. — Dr. Parsons showed star-fishes and sea-urchins— *Ophiura texturata*, Bangor; *Asterina gibbosa*, Bangor; *Solaster papposus*, Bangor; *Ophiocoma rosula*, Bangor. Also *Amphidotus cordatus*, Southport, an urchin much resembling in general form the chalk fossil, *Micraster cor-anguinum; Echinus purpureus*, Herm, with spines attached; and *Uraster rubens*, Bangor.

On March 25th Miss Klaassen exhibited the cast skin of a newt, which had been carefully pressed under glass. — Mr. A. Tarver exhibited darts of *Helix pomatia;* also damaged shells of the same species which had been naturally repaired during life. — Mr. P. B. Nash exhibited male and female beetles from Reigate (*Geotrupes typhæus*).—Two specimens of the parrot-fish, which had been hanging for some time on the wall of the room, were examined. — Mr. W. Whitaker invited members interested to call and see his collection of helices.—Reference was made also to the local names of "Hodmadod" in Suffolk, and "Dodman" in Norfolk, as synonyms for the common snail.

On April 22nd Mr. W. Murton Holmes opened the meeting with a quarter of an hour's talk on the Pteropods and Pteropod ooze, and exhibited in illustration specimens of *Cavolinia*, *Styliola*, *Limascinia*, as well as tubes of *Globigerina* ooze.—Miss Klaassen exhibited tailed frogs in spirit. — Mr. Nash exhibited *Rhizotrogus solstitialis* from Thornton Heath, and *Melolontha vulgaris* from Oxford and Reigate.— Mr. Gower exhibited *Plusia gamma* in four varieties.

On June 3rd Mr. H. D. Gower opened the meeting as announced by a quarter of an hour's talk on "The Nomenclature of Banded Shells," which was listened to with much interest. A discussion followed. In illustration of the talk, carefully prepared diagrams were exhibited, together with specimens of *Helix hortensis*, *nemoralis*, and *arbustorum*, by Messrs. Gower, Nash, Moore, and Whitaker. As an instance of protective mimicry, a specimen of the beetle *Clytus arietis* was shown.

On Sept. 23rd the President showed numerous local insects, with a view to their incorporation in a local collection being formed by the Section.—The Chairman showed male and female of the great crested newt (*Triton cristatus*) from Earlswood Common, and spoke on the natural history of the amphibians. Mr. Martin reported finding two grown specimens of the smooth newt still retaining their gills, from Thornton Heath.—Mr. Gower showed dragonflies collected during the Society's excursion to Forest Row. — Mr. Murton Holmes showed Aristotle's lantern, with the five teeth of the sea-urchin in their natural positions; also *Thenea muricata*, a tetractinellid sponge, from the Porcupine Expedition. — The Honorary Secretary read a paper on the exo-skeleton of the Norway lobster, and exhibited photos of a family Bible which had been lent to him containing entries of the births of various members of Gilbert White's family, including that of the naturalist of Selborne himself.

On Oct. 28th Mr. Epps exhibited two specimens of hunting spiders from Trinidad, with a report thereon from Mr. Pocock, of the British Museum. Consideration was deferred for further details.—Mr. Gower exhibited specimens of the common house-fly and of the proboscis-fly. —Mr. Gower then proceeded with his talk on the sectional insect case, which he had filled with specimens. Great interest was shown in his remarks, and at the close a hearty vote of thanks was accorded to him.

The case was then affixed to the wall, and the key handed to the care of the Honorary Secretary.

Members Elected, 1902.

February 18*th*.—Mr. A. F. Major, Mr. Evelyn Fawsett. Juniors—Miss D. Holah, Mr. P. B. Nash.

March 18*th*.—Miss E. N. Gwatkin, Miss R. E. Grant, Mr. W. P. D. Stebbing, Mr. F. J. H. Townend. Junior—Master Clive H. Townend.

April 15*th*.—Mr. W. L. Moore.

September 16*th*.—Mrs. E. M. Hall, Mr. W. H. Morris. Junior—Master J. R. M. Hobson.

October 21*st*.—Mr. M. Heffernan.

December 16*th*.—Miss Ada Hall, Miss A. E. Wilson, Mr. R. W. Brant, Mr. H. W. Corry, Mr. E. A. Fella, Dr. J. Brooke Ridley. Juniors—Master Dudley Phare, Master H. G. Smart.

Donations to the Library, 1902.

From Individuals.—Notes on the Flora of Sussex; Lancashire Notes on Botany—Mr. C. E. Salmon. Nature Notes; Transactions of the Chichester and West Sussex Natural History and Microscopical Society—Mr. W. Whitaker. Discovery of Anglo-Saxon Coins at White House, near Croydon—Mr. J. Evans. Elementary Lessons on Electricity and Magnetism—Mr. Baldock. Reminiscences of a Yorkshire Naturalist—Dr. W. C. Williamson. Report of the International Geographical Congress of Berlin, 1899—Mr. G. Phayre. Mr. Flowers's Notes on the Park Hill cutting—Mr. Chisholm.

From Societies.—Report of the Hastings and St. Leonards Natural History Society; Proceedings of the Academy of Natural Sciences, Philadelphia; Journal of the Royal Microscopical Society; Proceedings of the Scottish Microscopical Society; The South Eastern Naturalist; The Rochester Naturalist; Journal of the Quekett Microscopical Club; History of the Berwickshire Naturalist's Club; Reports and Appendices from the Meteorological Council; Transactions of the West Kent Natural History Society; Report of the Fernley Meteorological Observatory; Report of the British Association Glasgow Meeting and their Guide to Belfast; Proceedings of the South London Entomological Society; The Field Naturalists' Quarterly; Journal of the Manchester Geographical Society; Report of the Commons and Footpaths Preservation Society; Memoirs of the Zoological Society of France; Catalogue of the Lloyd Library, Cincinnati; Report and Transactions of the Manchester Microscopical Society; The Missouri Botanical Garden Report; Proceedings of the Homesdale Natural History Club; Catalogue of Works relating to Surrey in the Minet Public Library, Camberwell; Report of the Brighton and Hove Natural History and Philosophical Society; Journal of the City of London College Science Society.

From Publishers.—The Barnet Book of Photography; The Bromide Monthly; The British Journal of Photography; The Amateur

Photographer; Photography; The Photographic News; The Magic Lantern Journal; The Photographic Art Journal.

The Catalogue of Works relating to Surrey has been sent to the Public Library.

Books Deposited at the Central Public Library, Town Hall, Croydon.

British Association for the Advancement of Science. Report, 1894–1901. Illustrated, 1894–1902 ... M506

Royal Society of London. Abstracts of the Papers in the Philosophical Transactions, 1800–43; V. 1–4, 1832–43; V. 1, 1800–1814; V. 2, 1815–30; V. 3, 1830–37; V. 4, 1837–43 ... ... M506

L. STANLEY JAST,
Chief Librarian, Central Library.

Receipts.

1902. December 31.	£	s.	d.	£	s.	d.
To Balance				1	3	0
Subscription (1901) received 1902	2	10	0			
,, (1902) ,, 1901	4	0	0			
,, (1902) ,, 1902	89	12	6			
				96	2	6
For Rainfall Returns. Donations—F. C.-Bayard, Esq.	6	10	0			
,, Baldwin Latham, Esq.	6	10	0			
,, Lieut.-Col. C. N. Kidd	0	10	0			
,, G. Bower, Esq. ...	0	5	0			
,, W. Wagstaffe, Esq.	0	5	0			
,, Croydon Corporation	1	0	0			
,, Wimbledon Urban District Council ..	1	0	0			
,, Southwark & Vauxhall Water Company	0	10	0			
,, Croydon District Rural Council	0	10	0			
,, Kent Water Preservation Society ...	0	10	0			
,, Sutton District Waterworks	0	10	0			
				18	0	0
Sale of Transactions				0	1	0
Mr. Speyer's Lecture—						
Received for Tickets ...	9	3	3			
Less Expenses of Lecture	8	2	5			
				1	0	10
Balance due Treasurer				1	5	8
				£117	13	0

Payments.

1902. December 31.	£	s.	d.	£	s.	d.
By Rent of Club Room				10	0	0
Hire of Rooms for Meetings				4	10	0
Printing Transactions				15	11	5
Fire Insurance				1	13	9
Meteorol. Committ.—Printing Rainfall Returns, Dec. 1901, to Nov. 1902				25	18	6
Photographic Committee—						
Rent of Dark Room	10	0	0			
Portfolio, Postages, &c.	2	4	7			
Gas for Lantern, Postages, &c. ...	5	6	8			
Subscrip. to Royal Photogr. Society	1	1	0			
				18	12	3
Geological Committee, Postages ...				1	5	2
Botanical ,, ,, ...				0	2	7
Zoological ,, ,, ...				0	11	7
Anthropological ,, ,, ...				0	13	3
Printing Monthly Circulars, Postages on same, and on Transactions, &c.				15	7	3
Secretary's and Treasurer's Account for Stationery, Postages, &c. ...				7	12	8
Re-painting Society's new title on Board and at Public Hall ...				1	0	0
Printing Petitions to Corporation in favour of Purchase of Grange Wood	1	9	1			
Typing Correspondence with Corporation for the Papers	0	8	6			
				1	17	7
Mr. Kearton's Lecture—						
Expenses of same	15	15	6			
Less Sale of Tickets	10	2	0			
				5	13	6
Subscription to—						
South-Eastern Union of Scientific Socs.	0	10	0			
Commons Preservation Society ...	0	5	0			
Surrey Photographic Survey ...	0	2	6			
				0	17	6
Assistant Secretary				5	0	0
Gratuities				1	6	0
				£117	13	0

SPECIAL FUND ACCOUNT.

£186 9s. 0d. CONSOLS.

	£	s.	d.
1902. January 1.			
To Balance	26	5	5
Dividend, January	1	4	2
,, April	1	4	2
,, July	1	4	0
,, September	1	4	0
	£31	1	9

	£	s.	d.
1902. December 31.			
By County Fire Office, for Insurance on Museum Case	0	2	6
Curator, for Expenses in connection with same...	0	7	5
New Lens for Lantern	1	10	0
Repairs to Enlarging Lantern	0	4	6
Repairs to Cases in Old School of Art Room ...	0	5	0
Altering name on Museum Case	0	15	0
Balance	27	17	4
	£31	1	9

BALANCE SHEET.

	£	s.	d.
1903. January 1.			
To Balance of Special Account	27	17	4
Subscriptions, 1903 and 1904 (received in advance)	6	12	6
	£34	9	10

				£	s.	d.
By Balance due to Treasurer				1	5	8
,, at Bank	30	18	0			
,, with Treasurer	2	6	2			
				33	4	2
				£34	9	10

We, the undersigned, having examined the above books, accounts, and the vouchers relating thereto, hereby certify that the accounts are properly drawn up so as to exhibit the true and correct view of the Society's affairs.

F. J. TOWNEND, *Treasurer.*

GEORGE PHARE, } *Auditors.*
W. L. MOORE, }

5th January, 1903.

PORTFOLIOS.

The following illustrations are reproductions of subjects which have appeared during the past year in the Society's Scientific Portfolio, which is circulated to contributing members by Mr. H. D. Gower.

Plate A.—Calcareous Sandstone from Woolwich Beds, Croydon Corporation Sewage Farm, Beddington, by Mr. J. H. Baldock. Taken September 29th, 1900. This band of hard stone occurs about seventeen feet below the surface, and contains many fossils. The specimen of which an illustration is shown is full of Unio shells and casts of same. (See our Proceedings, 1900–1901, lxx.)

Plate B.—Sand Pipes in Chalk, Chipstead Valley railway cutting, beyond Kingswood Station. Taken at 4.50 p.m., July 30th, 1898, by Mr. J. H. Baldock.

Plate C.—Eggs of Blackheaded Gull, natural size. Taken October 10th, 1901. Three exposures, $1\frac{1}{2}$ min. at f. 64, with the apparatus figured. Mr. J. H. Baldock.

Plate D.—Apparatus for photographing eggs and other objects vertically, made by Mr. J. H. Baldock. The eggs are lying in sand, or on a little bed of wax on the glass. The same apparatus is also extremely useful for copying maps, engravings, and illustrations or text from a book. (See Brit. Journal Almanac for 1902.)

Plate E.—Rooks' nests in elm tree in South End, Croydon. Photographed about 1887. This fine old tree stood at the corner of Laud Street, in the South End of High Street, South Side, opposite the present Grand Theatre, and was taken down about 1895. The rooks built in this tree for a number of years, and it was thought a great deal of by the late Mr. Nalder, who preserved the tree as much as possible, by staying it with iron rings and chains to prevent it falling into the street and becoming a source of danger to the public. By Mr. H. D. Gower.

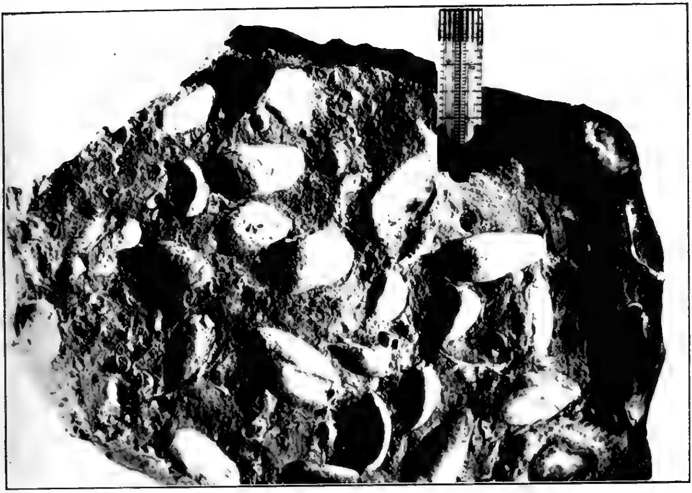


PLATE A.

PLATE B.

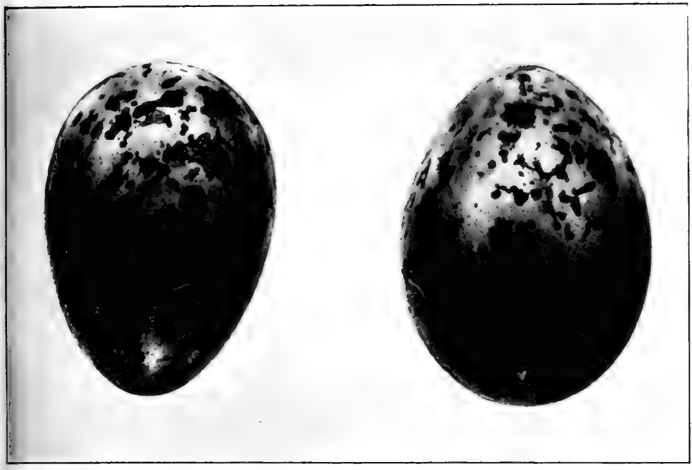


Plate C.

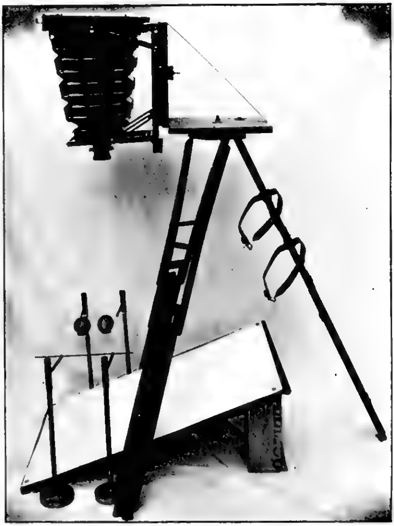


Plate D

PLATE E.

TRANSACTIONS

OF

THE CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

1902–1903.

2.—A Trip to the West Indies.

By James Epps, Jun., F.L.S.

(Read December 16th, 1902.)

The eventful day arrived, and it appeared as if I should at last have the opportunity of seeing with my own eyes Trinidad, the island that I had for years looked forward to beholding, of which I had heard so much, and of which I had drawn so many beautiful fairy pictures; and more, it was the island in which our firm was interested, as producing the chief article of its manufacture.

The West Indies are not so difficult to reach as one might be led to suppose. Every winter the Royal Mail Steam Packet Company now issues sixty days' excursion tickets to the West Indies, and those who have no special liking for fogs, frost, snow, and cold north-easterly winds will find it a most enjoyable trip. The best time for starting is the end of November, or early in December, for two reasons—first, the weather, as a rule, is not so boisterous as it often is later in the new year; and secondly, the weather in the islands has commenced to get dry and sunny, after their five months of wet season.

The dry season in Trinidad extends from December until the end of May; about that time the weather breaks; a thunderstorm and slight earthquake are the usual forerunners. The wind during the dry season is constant, varying very little from east in the morning to south-east in the evening. The temperature depends a great-deal on the elevation. It varies, during the dry season, in Port of Spain, from, say, 70° at night to 90° in the daytime: these are extremes.

A special train awaits the traveller at Waterloo Station, and in an hour and three quarters he is alongside the ship that is to carry him across the ocean. The afternoon is a busy one; everybody is fresh; the cabins have to be found, the luggage safely stowed away. Crowds of people are rushing about; very few know one another; everything appears in a state of chaos, when the first bell rings to prepare friends for a parting. This is soon followed by the second bell; many think it time to retire and so leave the ship, in order that they may get a prominent place on the quay to be able to shout their last "good-byes." At last the third bell rings; this is final, and a general clearance is the result. "Any more for shore?" calls the quartermaster. A few minutes' grace, and all the visitors are off, and the few remaining Dock officers, who have been at work on the ship, are the last to leave. Then the captain calls from the bridge to "let go her headline," and one is left to say "good-bye," and see as much of their friends as they can, in the few minutes left to them.

We glide slowly and quietly down Southampton Water, and in about three hours we are dropping our pilot, just before reaching the Needles, and in half-an-hour more we are on the open sea. All the passengers sit down to dinner (at least the first night), the water being somewhat smoother then than on the following evenings.

For the first few days, at this period of the year, the skies are grey, the air cold; very often the weather is wet and often stormy, therefore nothing can be done on deck, and the first few days appear somewhat long.

Usually about a dozen gulls follow close behind the ship, watching eagerly for any food that may be thrown overboard. It is most wonderful to see them, in the face of a strong head wind, keeping pace with the ship, without once moving their fully expanded wings. Another little incident which breaks the monotony of the day is to watch the shoals of porpoises (*Phocæna communis*), which will often run for miles alongside the ship, as if endeavouring to race it; at the same time leaping some three to four feet out of the water. Although hand-cameras are at once directed towards them and shutters snapped, I must say that I have not yet come across a satisfactory result. A full-grown porpoise varies considerably in length, say, from six to eight feet. Under the skin of the porpoise is a layer of white fat, which, when heated, is converted into oil of very fine quality. The skin when tanned is converted into a very tough leather. The teeth of a porpoise are closely set, are rather long, sharp, compressed, and multitudinous. There are seldom less than eighty, but in some specimens one hundred.

By the time the ship has reached the Azores—which is usually on the Sunday following the day of leaving Southampton (Wednesday)—passengers begin to know one another, a sweepstake on the ship's daily run is started, and the evenings are shortened by music. After leaving the Azores, we get out of the "Roaring Forties"; the weather improves, the deck chairs are brought out, and a ray of hope comes over all on board that the cold, frost, leaden skies, and rough weather have been left behind. The weather being good, the ships on this line make about 340 miles in the twenty-four hours. I see my notes for Sunday, Jan. 27th, confirm this—up at 8.15; a most charming, sunny and warm morning, no wind, and the Azores (St. Mary) in sight; this is indeed an ideal morning, one not to be forgotten, and which will repay the inconvenience of the last two days. In the evening we crossed the French mail for Martinique; this was the first vessel we had seen. The next object we saw was a blackfish, about twenty-five to thirty feet long. I understand it is a species of Grampus.

On the Wednesday, or just a week after leaving Southampton, we saw the first flying-fish (*Exocœtus volitans*); we also amused ourselves by fishing up the Gulf or "Sargasso" weed, which floats in golden-yellow patches on the surface of the water. The next day (Thursday) we entered the Tropic of Cancer about nine o'clock in the evening. The sea is now so calm that sports can be indulged in, such as egg-and-spoon race, potato race, marking the pig's eye, slinging the monkey, &c. It is very beautiful, ploughing along on a waveless sea on a very warm evening.

On Friday we had a very enjoyable concert on deck.

When you get into the trade winds, it is strange what cloud-formations you get. There are seldom clouds in the sky above you; but low down, all round the horizon, you have masses of white puffy clouds, as I have tried to show *in the sketch;* these appear to remain there and never blow up; in the evening these are beautifully coloured. Shoals of flying-fish are now constantly rising from the bows of the ship; they look very like large dragonflies; they fly at about six inches above the surface of the water; they sometimes fly about a hundred feet or so, and then suddenly drop into the water with a slight splash. I think they use their tails either to keep the head out of the water, or as a means of steering the body, as it can be seen to be kept bent down, and will often skim along the surface.

We were very much struck by the deep indigo blue colour of the ocean.

The sunsets are wonderfully grand, more especially the after-glows, when the sun has disappeared below the horizon. On the western horizon it is yellow; as we raise our eyes upwards it changes by innumerable shades of orange to blue, then plum-colour, and in the east a grey tinged as if with a bloom of purple. These tints change very rapidly, and one must see them to appreciate them; no tongue can describe them, and no artist can record or reproduce them.

We arrived at Bridgetown, Barbadoes, on Sunday, at 3.30 p.m. After seeing little but water for twelve days, it is very pleasing to see land once again, and everyone is anxious to get ashore. The loud sharp report of the signal-gun is heard from the bridge, signifying that the good ship has dropped her anchor. The English ensign is flying from her mast, and likewise the yellow flag.

Crowds of boats are waiting to come alongside, but the police boat is there and keeps them back until the ship's doctor has passed his papers over to the Barbadoes medical officer. The medical officer having looked them over, and it being a clean bill, passes the ship, and the yellow flag is then lowered, and the boats are allowed to come alongside, and cater for passengers. Attention is first given to the diving boys; these come alongside in small canoes, or more correctly old wooden packing cases, each canoe carrying two negro boys. On coins being thrown into the water they are eagerly contested for by the occupants. Very good divers these boys are, and they never let a coin slip out of their sight. These lads for a shilling will dive down from one side of the ship, go underneath, and come up on the other side, the ship often drawing 20 to 24 feet of water. These boys wear only a piece of white linen round their loins, and as they go under the water the white linen appears to change to a beautiful blue.

By this time the turmoil of tongues has commenced, and each occupant of the small boats is shouting to the passengers on the ship something after this style:—"Don't forget the 'Firefly,' sir!" "'Sunbeam,' sir?" "You can't take us all!" "I'm first, sir!" "First come, first served, sir!" "Don't forget 'No. 47,' '47,' sir!" The cranes on the ship are now at work, and all is noise and excitement.

We are lying about one mile from Bridgetown. The shore and town from the ship look charming, and the surrounding trees and fields are as green and fresh as in June in England. I have never felt greater delight than on looking at this picture. What a wonderful change in twelve days, from the dark, damp, cold, foggy, sunless climate of London! Everything on shore looks as if it had been washed, and then arranged for effect.

On the Monday morning we went ashore: the masses of black people busily moving about the bright streets, all looking remarkably happy and healthy, laughing and chattering, were to me, for the first time, thrilling.

We first stopped at the ice house, a house well known and visited by travellers from all parts. We had lime squashes. What a delightful drink it is! how different from the stuff sold as lime-juice at home! Up in the shady verandah overlooking the busy street we found it beautifully cool, and we could sit there and see the life in the streets below. Girls and women carrying about baskets of fruit, bananas, oranges, &c. Large casks of sugar and molasses on narrow trolleys being drawn by six mules or oxen through the narrow streets; men and women of all nationalities, all busy selling and buying. After walking through the chief streets, which are narrow and badly paved, we take tram-car to Hastings, a suburb about four miles out. Here is the Marine Hotel, which is a favourite meeting-place for all travellers. For the present I will leave Barbadoes, and say that we in the afternoon went aboard the intercolonial steamer the 'Solent,' which was lying near the 'Trent' (the ship that brought us), and about six o'clock steamed off for St. Vincent. I might mention it is a pretty sight to see all the intercolonial boats starting off in the evening. The 'Trent' started off first for Jamaica, then the 'Eden' for Demerara, the 'Esk' for the northern islands, and the 'Solent' for Trinidad. Each boat fires coloured rockets on starting.

At six o'clock the following morning we arrived and anchored about half-a-mile from Kingstown the chief town of St. Vincent. Saw a booby or fishing bird (the Sula Sula). The harbour police officer says that they are easily tamed, that the boys catch them with small hooks baited with pieces of meat, and when they have been tamed they will fly out to the bay, feed themselves, and then return home. The scenery around the town is very fine and mountainous, with some very sharp peaks. It is a pretty town from the sea and is fairly clean. As we walked through the charming Botanical Gardens, which lie about one mile inland from the town, we little expected to hear only a few weeks after of the awful volcanic disaster, which was not only to lay in ruins the northern part of the island, but which caused a layer of two feet of lava over all this beautiful vegetation.

The Botanical Gardens, with the bay in the distance, are very beautiful. On leaving the gardens we went to the Montrose Arrowroot Estate, and by the kindness of the proprietor saw the process of arrowroot growing, washing, drying and packing for shipment. The arrowroot is the starch obtained from the underground stem of the Maranta. The stems are put into a revolving drum with water, which washes away the earthy matter. It is then taken out and pressed against a revolving rasp; it is there torn to pieces, and falls into a large vat after passing through a sieve which removes the fibre (which is used for food for the pigs, or manure); the milky liquid is allowed to settle and the water drawn off. The settlement or starch is then again stirred with fresh water and again strained. It is afterwards run into an extensive shallow tray, where the arrowroot quickly settles, and the water drains away. It is then collected and put on trays in a large airy shed. When dry the trays are taken down from the racks and the arrowroot is rammed into barrels with a hand pestle, which is the only means taken to bring it into a powdered state. Some of the rhizomes which I brought with me are now growing freely at Norwood.

The chief industries of St. Vincent are arrowroot and sugar. It was at a small cottage here that I became possessed of a Carib stone implement.

On leaving St. Vincent we passed a string of small islands, all of volcanic origin; these run very much north to south, and so make a fine breakwater to the Atlantic waves which are rolling in with the trade wind from the east. It is therefore so calm that one might imagine that they were taking a trip on a fine sunny day round the Isle of Wight. The front part of the deck is filled with negro families; they have no cabins or hammocks, but mass themselves together and sleep on deck—men, women and children. These poor people bring with them what provisions they want, consisting chiefly of a very light character, principally fruit.

We now arrived off St. George, the chief town of Grenada; from the ship I think it is the finest piece of coast I have ever seen; the mountains are very richly covered with forest trees, and the small natural harbour is picturesque in the extreme. On a steep projecting arm of land on the left of the natural harbour is the fort; this arm of the land divides the town proper from the harbour, and communication is now carried on by a tunnel cut through the base of this rocky arm. About one mile from St. George are the Botanical Gardens, a prettily laid out and well-kept garden. There is a very fine double row of cabbage palms leading up-hill from the entrance, at the end of which there is a beautiful "traveller's tree." The garden contains some very fine specimen palms, orchids, and economic and medicinal plants. I was pleased to find them all labelled, which is a great assistance. The gardens can be reached by road or by boat; the latter will take you across the harbour and land you within a few feet of the entrance. The landing stage is situated in a small mangrove swamp; it is very interesting to see the twisted and net-like masses of roots, and one can soon understand how these collect the floating vegetable matter and turn it into a decomposing mass of matter which is the chief cause of malarial fever. These roots are often covered with masses of small oysters, which are fairly palatable and are served as *hors d'œuvre.*

Mr. Broadway, the curator, who kindly took us round the gardens, was showing me a species of thrip which is appearing on the cacao-pods, not only in the gardens but in several of the Grenada plantations; it is also attacking the leaves of other plants. He is anxious that it should be investigated; it certainly disfigures the pods. He looks upon the cacao trees here as a cross between the Calabacillo and Forastero varieties.

The chief industries of this island are cacao, sugar, and nutmegs. The cacao trees in the old plantations bear a yellow fruit, and you do not get the beautiful varieties of colour and shape of pod that you do in Trinidad. The cacao in this island is also grown differently to what it is in Trinidad; here they do not shade their trees by the "madre de cacao," the Saman, or other large shade trees. The consequence is their trees are very dwarfed, as the top young wood and leaves are very much checked or naturally pruned by the burning rays of the sun. The island within the last ten years has made vast strides in respect to the curing of the cacao, and in price it runs Trinidad cacao very close.

We were very much interested by seeing within a mile or so of the town one of the last of the old sugar mills, consisting of three vertical rollers slowly turned by two pairs of donkeys, the rollers being fed by hand. This was extremely primitive, but on the same piece of ground stood a still older sugar-mill, once turned by sails, very much resembling an English windmill. The master first drew my attention to the old mill, saying that it was found unsatisfactory, so was allowed to fall into decay. He then showed us six large sugar-pans in which the juice (pressed out by the rollers) was boiled down to the necessary density, after which it was put into wooden trays to crystallize. He showed us some finished sugar. Having a friend at Grenville, a town on the east coast, whom we wished to visit, we arranged with the hotel proprietor to have his buggy to drive to a rest-house at the summit of the Grand Etang, which also belonged to him.

This mountain (the Grand Etang), which is 1,800 feet above sea-level, is about the centre of the island. It is reached from St. George by a good metal road, and makes a hard piece of collar work for the horse. A grand sight it is as you gradually ascend, passing through (principally) cacao and nutmeg estates until you reach an elevation of about 1200 feet, when you dive into the virgin forest. The virgin forest is crown land, and is kept in that condition to encourage the rain; it certainly seems to have that effect. At the summit is the lake, which covers an area of about twenty-five acres; this is clearly seen, by the formation, to be the mouth of an extinct volcano. The land round the lake, which is almost circular, rises some hundred feet. On reaching the rest-house we had the pleasure of walking into the virgin forest, with which we were indeed charmed. Tree-ferns thirty feet high grow luxuriantly. Here also is the bird's-nest fern, which is attached to the roots and branches of the trees often twenty or thirty feet above the ground. The climbers up the giants of the forest are grand, and the festoons of roots hanging from the branches of these giants are most wonderful. The "traveller's ladder" is one of the most conspicuous, also the "traveller's water-bottle." One foot of this, if cut with a cutlass quickly, first at the top and then below, will yield about eight ounces of pure water. If cut slowly, and the second cut be above the first, the water is not found, as it is drawn upwards by capillary attraction. The temperature at the summit of the Grand Etang was only 70° Fahr. I was asked by some black women (who were busily bringing stones out of the forest for road repairing) whether I wanted a white flower. Of course I said "Yes, I should like to see it," and in a few minutes I heard them cutting away with their cutlasses, and a little later an awful crash as of a big tree falling, and they soon appeared bringing two large blossoms of the palmiste or "gru-gru" palm, which they presented to me. As these weighed some ten or twelve pounds, they were somewhat of a "white elephant," although very beautiful. I got them back to the rest-house, where I photographed them. The expanded flower-head is very like a piece of white coral. Humming-birds are very plentiful here, and we were much interested in watching one within a foot or so of us, collecting cobwebs from the house with which to cover the outside of its nest. We also heard some monkeys barking, and later in the day had the pleasure of watching a troop of a dozen or more feeding and playing in the trees not more than forty feet away from us, I understand they are sometimes shot and eaten. We found on that day in the forest an orchid, the passion flower, fuchsia, and begonia; also several small birds' nests, one more especially interesting, *viz.* the weaver-bird's nest. We had the good fortune to be at the Grand Etang when the moon was full, and the night was indeed enchanting.

The following day we continued our journey to Grenville, another seven miles, passing through miles of cacao estates, and returned to the Grand Etang the same evening.

I will sum up Grenada as follows:—A British colony, discovered by Columbus on August 15th, 1498. It lies ninety miles north of Trinidad, sixty-eight miles south-south-west of St. Vincent, and about one hundred south-west of Barbadoes. It is twenty-four miles long and about twelve miles broad, and contains about a hundred and twenty square miles. The highest elevations are Mount St. Catherine 2749 feet, Mount Surai 2300 feet, and the mountain over the Grand Etang 2014 feet. The island is a very beautiful one, and is well watered by streams in almost all directions. The island is of volcanic origin, and the last two active portions appear to be Mount St. Catherine and the Grand Etang. The valleys are principally cut in beds of volcanic conglomerate, tufa, and ashes. The chief town is St. George, with a population in 1891 of 4919. The population of Grenada in 1901 was 63,438. The prosperity of the island depends entirely on its agriculture. Sugar is still grown, but is not of a high class, and is consumed by the peasantry. Rum is distilled and is also consumed locally. The chief produce is now cacao, and it is this crop that has been the salvation of the island. Nutmegs are also largely grown and exported. Most tropical fruits are grown here. Ground provisions are numerous, including yams, plantains, tannias, sweet potatoes, koosh-koosh, ochroes, maize, bread-fruit, &c. The climate is mild and salubrious, and on the higher lands fresh and invigorating. The highest temperature is 90 degrees in the valleys, and about seven degrees lower on the hills. The island is outside the storm zone and hurricanes are unknown, and gales occur very seldom. Thunderstorms are rare, and an earthquake usually occurs at the breaking up of the dry weather—about June, The flora and fauna of the island are fairly rich, numbering about 39 fruits, 19 vegetables, and about 124 trees and shrubs of medicinal or economic value, 94 birds, 9 mammals, 15 reptiles, 6 shellfish, 20 sea fish and 10 freshwater fish.

We left Grenada about seven o'clock and retired early, as we had to be on deck early next morning. Up at 5.30; day just breaking; almost above us a glorious and bright star (Sirius), also the Southern Cross. The day breaks very quickly here; in half-an-hour it is bright and the sun brilliant. Trinidad was lying on our port bow, with the mainland in the distance; on our starboard and ahead of us were the Bocas; after passing these it is about ten miles to Port of Spain. Saw the new lighthouse; it has only been erected about eighteen months. The sky at sunrise and sunset is very beautiful, the sky opposite the sun being of a most beautiful purple, which quickly changes its tints. A sunrise over the island of Trinidad is a sight not be missed. The sun has just risen, but it is for the moment behind a mass of cloud, and is throwing out most beautiful rays of light, illuminating all the clouds in the heavens with various shades of colour. Immediately on passing through the Bocas we struck the swift yellow water flowing from the Orinoco into the Atlantic, and from a choppy sea we were launched into water without a ripple on its surface, and we glided rapidly forward. The water here is of a yellowish colour, and is absolutely swarming with yellow jelly-fish looking very like half lemons. We passed the convict prison, situated on a small island about a mile from shore. Our first officer told us that the waters here swarm with sharks; he has seen twenty at once fighting over the carcase of an ox.

The ship came to anchor about two miles off the port, as the water here is very shallow. The excitement now commences in finding one's luggage, and, when found, in the difficulty of getting it into a small boat. Then a row to shore, and the clearing the luggage at the Custom House, then finding a buggy to take one to the hotel, which is situated about a mile and a half from the quay. We at last arrived at the Queen's Park Hotel, and enjoyed our breakfast in peace and quietness. The hotel is a most comfortable one, and is beautifully situated, facing the Savanna. It is a perfect paradise. The large tree growing in front is the *Pithecolobium Berterianum.* The streets are lit with electric light and are fairly clean, but badly paved. They at present have no underground sewage system. The streets are picturesque, and the traveller is struck by the large number of black vultures, called the "corbeaux," which are protected by law, as they are considered most useful scavengers, and eat up at once any dead animals or flesh which may be lying about, which in a hot country would soon become offensive. My manager was waiting for us with the buggy, and we were soon enjoying the quiet and beauty of our own cacao estate. On leaving the hotel one has to pass through a coolie village. The coolies usually prefer their own company and live apart from the negroes, also they usually choose to live on a main road. The sights to be seen when passing through the village are most interesting. The coolie children are very pretty, also the young girls and women. The women and children are always heavily decorated with silver ornaments; the flesh of the arms of the women sometimes can hardly be seen, being so covered with silver bracelets; anklets are also worn, necklaces and usually a nose ring, which is a great disfigurement. They walk most beautifully erect from childhood to old age, and one never sees an old woman doubled by age; this is partly due to a natural and wise way of dressing, also to the habit of carrying everything on their heads. It is markedly noticeable that when carrying loads on the head no balancing of the load is done with the neck, but from the hips. The skin of the coolie is a light bronze, and the hair is dark and long. The coolie huts run along both sides of the road; they are mostly built of wood, some perhaps with a corrugated iron roof; they are not picturesque, neither are they kept in spick and span neatness. The coolies usually work on the land; a few get a living at fruit and vegetable selling, others by selling foodstuffs, and others as jewellers. The number of jewellers is large; the jeweller usually occupies a small wooden hut, in front of which may be seen one or two coolies hammering out a bar of silver, and perhaps at their side a small show-case holding from one to two dozen bracelets or anklets. In front of other huts we see displayed corn and meals for sale; in others fruits and vegetables, including sugar-cane, As a good water supply is laid on, and pumps are found at regular intervals, one often sees an affectionate father or mother tubbing his or her young offspring. The coolie women are given to smoking, and it is a common sight to see the materfamilias squatting down enjoying the fragrant weed.

After a little we left the coolie village, and passed through another village called Cocoarite; this is the terminus of the tram lines. We then arrived at the entrance to two valleys, one leading to Diego Martin and the Blue Basin, the other to Petite Vallée. We took the road to Petite Vallée. We then passed through several small cocoa estates, every now and then passing the owners' houses, beautifully surrounded with palms and flowers. Every time I turned my head I had something new to see. A few things I might mention: the frangipani (*Plumieria*), of which there are two varieties, the white and the pink; the beautiful Hibiscus, of which there are many varieties; the cotton (*Gossypium Barbadensis*), with its large mallow-shaped flowers, covered at the same time with bursting fruits, showing the cotton attached to the seeds within; the crotons with their wonderful variety of variegated leaves of the richest colours; the sorrel (*Hibiscus subdariffa*), the fruit of which is used for making preserves and for making sorrel wine, a very pleasant drink. Then we were struck by some grand trees covered with an intense scarlet blossom; these trees at this season of the year lose their leaves, and are decked with this blossom. These are the beloved trees of the Trinidadian, and ones they are justly proud of; they are the "madre de cacao," or mother-of-the-cocoa (*Erythrina umbrosa*). They are used by the cacao-planter to shade his cacao trees from the burning influence of the sun's rays. The tree is also supposed to supply nitrogen to the soil, chiefly by its leaves and blossoms, and the cacao certainly appears to thrive wonderfully under its protection. There is also another variety, which is evergreen, and is used in damp lowlands for shade, namely, the *Erythrina velutina*, or bocare; also a variety which takes a bush form, the flowers of which are of a dull yellow. This is the the tree the negroes call the "jumbie"; it is the *Erythrina corallodendron.* The seeds are very pretty, being very hard and of a bright scarlet colour, with a decided black spot. Then we have the bright yellow flowers of the poui (*Tecoma spectabilis*). This is a most useful timber, the wood being exceedingly hard; it is about the only wood that will stand tropical weather. It is used chiefly for posts, telegraph-poles, and timbers in exposed places. The balata, or bullet-wood (*Mimusops Balata*), though very hard is easily worked, and is a very useful wood; it is used for house-frames, fence-posts and wheel-spokes; the tree gives a deliciously sweet fruit, and also yields a valuable gum. Then we have another very large tree, sometimes used for shade, *viz.*

the sand-box (*Hura crepitans*); this is commonly called the artillery tree, because its fruit, if kept in a dry place (or sometimes when *on* the tree), bursts with a loud report, shedding its seeds in all directions. I had one explode in my bedroom one night, which somewhat surprised me, and it was only in the morning that I found out what the noise was, by finding the seeds in all parts of the room. It takes its name of sand-box from the use the fruits were put to, years ago, before blotting paper was used. The fruits were filled with fine sand, and from the slits in the fruit the sand was shaken over the wet ink, when writing, to dry it, in the same way that we even now occasionally see a nurseryman do. Then we have an interesting and delicious fruit, *i.e.* the Papaw (*Carica Papaya*). The male and female plants grow separately. The tree is not a branched one, and the fruits are arranged up the main stem in the axils of the leaves. I have had fruits of over a pound in weight. Then we have the nutmeg tree (*Myristica fragrans*); this, like the papaw, has separated male and female trees, which necessarily makes it very difficult for the planter to form an estate, as he must wait until the trees blossom before being sure whether he is putting in a male or female tree. The fruits very much resemble a nectarine, and when ripe divide into two portions; the kernel is then seen inside covered by a scarlet network, which constitutes mace. When a nutmeg plantation is once formed the trees give the most profitable crop of all fruits. Then we have two more interesting trees, very much alike—the bread-fruit tree (*Artocarpus incisa*) and the bread-nut tree (*Brosimum alicastrum*); both yield fruits which are cooked and used as food.

After a memorable drive of six miles we arrived at Les Fontaines estate (the small estate which I own). I could hardly believe I was there in the flesh, after looking at the photos at home so many times; I found it difficult to realize that I was at last in that beautiful spot. Just in front of the entrance to the estate is a fine clump of bamboos (*Bambusa vulgaris*); these clumps in the north of the island are common, but are very grand; at a little distance they resemble a flight of rockets at a firework display; a single stem will often measure six inches in diameter; they are one of the most useful tropical plants. Standing in front of the house is the Malacca apple; the tree being in blossom at the time, it brought a lot of humming birds to it. The orange trees were laden with fruit of a very fine quality. We then took a walk into the cacao plantation. One might imagine oneself in fairyland; all the trunks and the thick stems of the cacao trees look as if covered with fairy lanterns. They are the fruits of the tree; some are green, some yellow, some a rich reddish chocolate, and some bronze. The gathering of the crop had commenced, and we presently came across a number of men with their cutlasses, standing round a large pile of cacao pods which had been collected and were being opened, in order that the seeds might be removed and taken at once to the fermenting house. Other men have bamboo poles with hooks on the end for dislodging the pods from the trees. Under the shade of the cacao and larger shade trees it is beautifully cool, and work can be carried on without inconvenience all day. To prove this, the hands, on leaving off at five o'clock, make for the Savannah and go through with their cricket practice.

It was a beautifully cool and pleasant drive back to the town in the evening, the sun setting at 6.30 p.m. The shades of night fall quickly there; at seven it is almost dark, and then one sees the fireflies and the nocturnal moths begin their wanderings, also the bats. The vampire bat is the one dreaded; this bat will bite and then draw the blood of human beings if given an opportunity, and stables have to be carefully covered with wire netting in order to keep them out. If the owner cannot afford netting, a light is kept burning, which also has the desired effect. The hotel faces the Savannah. The Savannah is a piece of open land consisting of about eighty acres; on it are held the races; football matches and golf are also played on it; it is also used for cows, it is open public land. Some fine trees are found upon it—the cannon-ball tree (*Couroupita guianensis*), which stands about sixty to eighty feet high; the trunk rising for about fifty feet without a fork, then spreading out into a head not unlike an elm. The whole length of the unbranched stem is covered with short prickly pendant branchlets, about five feet long; these carry the crimson flowers, roughly resembling a single hollyhock, which afterwards produce the fruits, which very much resemble a cannon-ball, weighing about ten pounds. Hundreds of these fruits can be seen hanging on the trunk of a single tree at one time. The flowers and fruits appear at the same time. The fruit is perfectly round, and is of a light brown colour on the outside; it is very solid and hard. I know of no use its fruits are put to. A specimen tree of the hog-plum grows next to the cannon-ball tree (*Spondias purpurea*); it is about eighty to ninety feet high; a jelly is made of the fruit. On the Savannah are six fine cabbage-palms (*Oreodoxa oleracea*); these are called the "Six Sisters." Another wonderful tree (and one Mr. Hart, the Curator of the Botanic Gardens, is testing, and speaks highly of as a shade tree for cacao) is the Saman (*Pithecolobium Saman*); it is not a tall grower, but has wonderfully spreading habits. The height would not be more than thirty feet, but its boughs would, if not interfered with, produce a circle with a diameter of about eighty to hundred feet. On the north of the Savannah is the Governor's house, part of the grounds forming the Botanical Gardens. Some fine specimens of palms and economic plants are found here, and the grounds are prettily laid out, but I regret to say the Curator does not pay sufficient attention to the most important point of keeping the trees named. I will now refer to a few specimen palms—the traveller's tree (*Ravenala Madagascariensis*) is another very graceful and striking plant. It is so named because at the base of each petiole there is stored at least half a pint of pure water. This can easily be tested by a slight puncture, when the water runs freely from the wound, and may be safely drunk. Another most useful palm may be mentioned, the *Cocos nucifera*; this I think is one of the most beautiful of the palm family; it flourishes best, it is said, near the sea-coast; this is not altogether correct, as I have seen it flourish and produce fruits in large quantities many miles inland. At the entrance to the Caroni-farm cacao estate is an avenue of the coco-nut palm. The albumen contains a large percentage of oil, which is largely used for cooking purposes. The water, or milk as it is called in this country, contained in the immature fruit, is largely drunk, and is a very refreshing drink; boys and men can often be seen with donkey-carts filled with the fruits, and for five cents the boy takes his cutlass, trims off the husk, and cuts a small lid off the top of the nut, and one has at least a pint of the purest of drinks.

To see the virgin forest one must now go some little distance; it is slowly but certainly disappearing. Any energetic young man, who does not object to work for a little, can get a grant of crown lands for a nominal sum, and having got it he has at once to clean down the forest; this is no easy task. Any valuable timber trees are first cut down and removed; then the remaining bush is chopped down and burnt. The ashes and virgin soil make a most fertile soil for the young cacao trees. To dive into the virgin forest has a most wonderful charm. One is first struck by the absolute stillness of the air; not a movement, not a sound, except perhaps some noisy parroquet may start screaming, or one hears the mournful sound of the mountain dove; then to see the giants of the forest, reaching up to a hundred and fifty feet, with their boughs chained together by the climbing and aerial plants; these send their roots down in most fantastic shapes. One very noticeable climber is the "Scotchman"; this will start growing close to one of our fine forest giants, and after a little it will tie and bind its stem so closely round the trunk of our giant that it ultimately kills it and takes its place. The aerial roots and stems thus hanging from the higher trees very much resemble the rigging of a ship. Birds and animals are few in the forest. It is here that we find, climbing up the trunks of the trees, the vanilla plant, the pods of which when dried are used for flavouring.

Another place of interest in Trinidad is the Pitch Lake; this is reached by boat from Port of Spain to La Brea in about four hours. La Brea is the most miserable, God-forsaken place I was ever in. Pitch everywhere. The shanties or houses are all made of timber, and are constantly having to be raised on fresh logs of wood, or they would in a short time disappear below the surface. Only the men and managers of the Pitch Lake live here, and a few store-keepers. It is most dreadfully dusty, and when one perspires (as it is quite easy to do) it leaves an unpleasant deposit on the skin. The new Trinidad Asphalt Company works the Pitch Lake, and the pitch is sent to all parts of the world. Other persons having land adjacent also work the asphalt, which is constantly flowing from the lake to the sea. As fast as an excavation is made, so it fills up. These private holders of plots of land are looked upon by the Company as poachers, and the Company has done its best to buy them out, or to stop them by legal entanglements. The lake is about half a mile from the sea; in parts it is very soft, and any one standing on one spot long would sink in up to his knees in a very short time; it is very strange that the asphalt does not stick to the boots, and on drawing one's foot out it soons rises and finds its level. The surface of the lake is broken up by lagoons, or small water-ponds; the pitch has a strong smell of sulphuretted hydrogen. The direct rays of the sun being absorbed makes it very hot to the feet. When the pitch is dug out, it is sent down in buckets, suspended on a revolving steel cable, which carries it to the end of the pier where the ships lie alongside, and it is pitched into the holds. Each trolley is weighed before being gripped on to the steel cable. We also saw them refining the pitch; it is done by putting the blocks of pitch into large pans under which is kept a large wood fire. When soft it is well stirred, and the scum or impurities are removed, and the moisture in it is driven off; it is then ladled out into the wooden barrels, where it becomes hard, and is shipped in this form. I am told they can ship seventy-five tons of pitch per hour. The pier or jetty is about 1700 feet long, and the Company has its offices situated there; the officers of the Company also live there. La Brea is one of the worst fever-traps in the island.

Two other sights I think I should mention, which should be seen by the visitor; they are the Blue Basin and the Maraccas Falls. The Blue Basin is on the north of the island, at the end of the Diego Martin Valley. It is a natural pool of water on a rock foundation, and surrounded on all but one side by precipitous rocks, over one of which a fine fall of water shoots into the basin below. The hilly steep ranges, which lie behind the rocks are all covered with thick tropical growth. The scenery all round is very fine. The Maraccas Falls are even finer than the Blue

Basin; they lie about fourteen miles from Port of Spain. To reach them one must drive or take train to St. Joseph (this was once the capital of Trinidad), and then proceed up the Maraccas Valley. This is, I think, the most charming spot in Trinidad. The river, which flows down the valley, is a very winding one, and the visitor has to wade through this at least seven times before reaching its source. The land in the valley is very undulating, and most grandly clad, and after a drive of seven or eight miles through this paradise we arrive at the falls. The water falls over a perfectly vertical cliff, at least three hundred feet high. I timed the fall of the water; it took about sixteen seconds for the water to reach the ground from the summit. The water strikes a projecting ledge about half-way down, and the breeze carries a lot of the water away in the form of spray. Just before reaching the falls you pass through a bit of real virgin forest. It was here that we noticed more especially one parasitic plant, which had sent its roots round and round another tree as if it had taken it prisoner, and had bound it with ropes to prevent its escape. The root went round the tree at least thirty times. The aerial roots hanging down from the cliff by the waterfall must have been at least fifty or sixty feet long.

Trinidad in the past was a great sugar-producing island, and although it continues to put out a fair quantity it wisely took to cacao cultivation; that and the Pitch Lake have made it one of the most prosperous of our West Indian islands. Sugar, they declare, does not pay, and a few only are hanging to it in the hope that the British Government will eventually put a duty on bounty-fed beet-sugar. I must allow I think it only right that the continental beet-sugars should be taxed up to the amount of the bounty allowed, which would put our West-Indian planters and the continental beet-growers on similar ground. I must say, however, that I was very much surprised to find that, although there is so much grumbling on the part of the West-Indian planter, he has not got his own island to support him in boycotting the beet-sugar, and I found it quite a common thing for the West-Indians whom I visited in the islands to be using beet-sugar.

The climate of Trinidad is warm and humid, and is perfectly healthy, if a few precautions are taken: first, to keep clear of swampy ground, more especially at night-time; second, not to be tempted to sleep out of doors; third, to wear flannel next the skin; fourth, strict temperance. This last precaution is, I fear, often forgotten, and the foolish man or woman who breaks the rule pays dearly for so doing. I believe the West-Indians themselves would be far less liable to attacks of fever and other illnesses if they would give up cocktails, swivells, and wines.

The soil of Trinidad, as a whole, is rich and fertile. Fruits are numerous; the principal being bananas, sapodilla, mangoes, avocado pears, bread-fruit, shaddock, guava, hog-plum, oranges, custard apples, malacca apples, melons, sour-sop, pineapples, belle apples, and star apples. Vegetables are also plentiful, being: pigeon peas, sweet potatoes, christophenes, papaw, plantains, tannias, cassava, cush-cush, tomatoes, Indian corn, ochroes, yams, pumpkins, &c. The animals are few, and only one of any size, the lappe, agouti, squirrel, porcupine, monkeys, deer, matapurio, tiger-cat, armadillo, mangrove dog, little ant-eater, opossum, wood-dog, bat.

The birds are numerous, the most common being the "Qu'est ce qui dit" ("who says"). This I think is the *most* common bird in the islands, and its note is heard continuously all day long. Then we have the corbeau, or black vulture, the most miserable-looking bird ever created. There are two varieties—those that inhabit the towns, and sit perched on the roofs of the houses and telegraph-poles, and when hungry hunt about the streets after any filth they may find; and the variety that lives in the fields away from the town; they are wonderful flyers, and wherever a dead animal is a flock of these corbeaux will soon be hovering round. Then we have the campanero or bell-bird, so called from the metallic tone of its call, somewhat resembling a bell; this bird is found only in the high woods. Then we have the mountain dove, with its most dismal cry, like a person in pain. Then we have no less than eighteen varieties of humming bird; the tick-bird, which is black, and somewhat resembles our blackbird, but is thicker made; this may always be found where cattle are feeding, and will follow closely in their footsteps, seeking the worms so disturbed. Then we have the washerwoman (a small black bird with a white head), the goat-sucker, the lucan, the flamingo, the stork, the ramier, the snipe, the plover, the quail, the parrot, the ortolan, the merle, the cormorant, the scissor or frigate-bird, the acravat or ringed-neck, the rosignal or God's-bird, the grass-bird, the Colorado or cardinal-bird, and the picoplat or silver-beak, and many others.

The reptiles include some eighty species, among which are sea-turtles, land tortoises, freshwater turtles, frogs, lizards, and snakes. We have only four deadly snakes, and these are found only in uncultivated parts of the island; the rest may be looked upon as harmless. Two varieties are, however, dangerous in their coil, *viz.* the boa constrictor, which I have seen up to twelve feet long, and the honillia or water-boa up to twenty feet. The deadly snakes are two, *Mapipire zanana* and *Mapipire balsin*, and two species of coral snake. Another harmless and rather common snake is the whip-snake, taking its name from its resemblance to the thong of a whip; it is about a yard in length.

The fish round the coast are plentiful, and the chief ones are the grouper, the king-fish or tasard, the Spanish mackerel or carite, the baracuta or becune, the pike or brochet, the carrangue or covali, the lebranche, the mullet, coulirou, and the pagre. The freshwater fish are few; they are the guabin and yarro, and the cascaradura, a mud-fish found in ponds of the Caroni. The poisonous fish not fit for food are the shark, ray, baracuta, and vingt-quatre-heure ; not even the corbeau will eat it. The shell-fish are the crab, crab-manicou and mountain-crab, crayfish, shrimp, lobster, and oyster.

The island swarms with insects ; the most common are the ants, of which there are several varieties ; the most dreaded is the parasol-ant, which works havoc in the plantations, and both time and money are spent in destroying it. This is usually done, in the wet season, by digging a trench round the nest, and then filling up with water and puddling the holes. It is most surprising to see the paths made by these ants for yards away from their nests; also it is amusing to see thousands busily carrying large pieces of leaf to their nests, looking exactly as if covered with a green parasol. Then we have the brown ant, which builds its nest up in the trees; this is not a destructive ant, but a common one, and its nests up in the trees are often met with; some weighing twenty to thirty pounds. Then we have a very small brown variety, which, owing to its eccentric motions, is called the crazy ant; these will sting. Then we have the mosquito, which will also sting, and is a great pest at certain seasons of the year. Then we have the bête rouge, a small microscopic insect, which will attack the legs if you have been travelling through long dry grass, causing the skin to itch intensely. A little liquid ammonia is about the best antidote. Then we have the cricket, "Jack Spaniard" (several varieties), which is a species of hornet; sandflies, centipedes, scorpions, &c., and a fine variety of butterflies.

All things come to an end, and at last the day for our departure arrived, and it was with great regret that we had to leave this beautiful warm and sunny island for home.

On the second day after leaving we arrived at Barbadoes, where we determined to stop for a week before going on to Jamaica. A few days after our arrival in Barbadoes small-pox broke out, and we were much disappointed to find that the Royal Mail Company would not book us to Jamaica, as the other islands had quarantined all ships coming from Barbadoes, so we left Barbadoes by the next mail for England.

The island of Barbadoes is in a sad state. They have depended entirely on their sugar industry, and now many of the estates have been abandoned, and there is little work for the large population, and a crisis has to be faced. The island is of coral formation and comparatively flat, and is very bare of vegetation. Sugar is the only industry. The island is one of the most healthy of the West Indian group; the air is dry and salubrious.

For the visitor I would recommend Bashuba, a small seaside resort, on the east coast facing the Atlantic. The coast is very wild and rocky, chiefly of petrified coral. The island, though so healthy, lacks the beautiful tropical verdure and the thousands of beauties which the other islands can boast of, and therefore after a short time becomes monotonous; so after a week we again went on board, homeward bound. The ship had its full complement of passengers, and twelve very pleasant days were spent on board. So, with one or two views showing the treasures that had been collected by the passengers, I will conclude by simply advising all those persons who wish to escape the miserable English winter, and are interested in the beauties of tropical life, to take a trip to the West-Indian Islands, which I am sure they will never forget. Time, of course, prevents me from dealing with many things I should like to have noticed, but I have endeavoured to give just an outline of the most important incidents; and although I am thankful that we have photography to help us to record what we see, I regret that it can do it only very indifferently.

2.—The Sword of Old Japan.

By J. O. Pelton, Esq., Member of the Japan Society.

(Read April 15th, 1902.)

The sword has been described as the most honoured of weapons, a symbol of military dignity and authority with which the monarch confers the honour of knighthood. Although its use as a weapon in deciding the issues of a contest is rapidly diminishing, such an expression as "drawing the sword" is as full of meaning as ever. It is not my intention this evening to endeavour to trace the origin of the sword in Japan; suffice it to say that its use is very ancient, and in that country the sword-blade and its accessories have from time immemorial been the product of the highest skill of some of the most accomplished workmen of the world. The sword of Japan has, however, only been familiar to the Western world for little more than thirty years, whereas the beautiful blades of Toledo, Damascus, India, and Persia have been known, at least by repute, for centuries; it is not unnatural, therefore, we should consider that in them the greatest perfection in the welding and tempering of steel has been reached. Yet it has been truly said that the Japanese blade has no superior, and some have boldly affirmed that the finest specimens in the quality of the metal and the keenness of their edge excel anything ever produced. French experts, than whom there are no more accomplished critics, after a minute and exhaustive examination of some of the best Japanese blades, have expressed themselves to the effect that if they had not actually seen the results they should have considered them unattainable, and they further state, "We can award nothing but praise to Japanese artificers, for they accomplish, with very rude appliances, wonders which are beyond the possibilities of our very best workmen, assisted as they are with all the resources of perfected machinery."

It was not until 1877 that the wearing of swords was abolished in Japan, when nearly two millions of people—for that was about the number of those entitled to carry these weapons—laid down arms which a few months before they would not have relinquished while life lasted. The immediate result was to glut the market with swords of every description, but the finer specimens soon found purchasers, and are now very difficult to obtain, being eagerly purchased back by the Japanese themselves.

Many have doubted whether the great age ascribed to Japanese swords can be correct, considering their perfect preservation; but this can be explained by the fact that for a thousand years at least Japanese swords have not altered in shape; consequently they never, like our weapons, become obsolete and useless; they were handed down as precious heirlooms from father to son. A Japanese samurai would part with his life by starvation rather than sell his father's sword. There was no risk that it would be stolen, as each weapon was believed to have its own spirit, which would bring terrible evil upon a wrongful possessor. Many of the finest blades are unmounted, *i.e.* they are without the ornamental mounts which are such a unique feature with Japanese swords; they are instead encased in wooden scabbards, perfectly airtight, and thus calculated to preserve their qualities unimpaired. It is extremely rare for an ancient blade to retain its original mounts, although hidden away in remote temples, or in the royal treasuries they may perchance be found. When required the Japanese nobleman would have his cherished blade mounted either in elaborate mounts for purposes of display, or in more serviceable garb for stern warfare, but usually it would rest in its wooden sheath where its appearance and quality would be in no risk of deterioration.

The ruler in Japan who did most to discourage the too frequent use of the sword, who patronized the famous Tea ceremony where the sword was forbidden to be worn, and where the conversation indulged in by the guests must be of such a character as to raise no arguments or ill-feeling, yet left on record the saying, "The girded sword is the living soul of the samurai," he, the famous Iyeysan, the greatest of all the Shoguns, considered the sword the central point in the morals and customs of the land, the badge of honour and the token of chivalry.

The sword-forger was no ordinary artisan, his was a high social standing; nor was his occupation unworthy of his position. The skill and care necessary to produce a first-class blade was not common property; each forger of repute had his own particular methods, the twist and turns he gave to his metal, the degree of heat necessary for his tempering bath were secrets unknown to all but the master himself, even his assistants and pupils might be ignorant of them; hence it is that there are characteristics which enable Japanese experts to recognize the work of a particular master even if there is no signature to guide them. I can, therefore, in describing the forging of a sword, give but a general idea of the process. A bar of iron or steel, or of both combined, would be carefully chosen; this would be heated to white heat and then bent double and hammered until it attained its original length; this hammering and bending would be repeated fifteen times; then four of these bars would be welded together and the bending and hammering repeated five times, until, at the final hammering, the number of layers would amount to 4,194,304 (a very simple calculation will verify these figures). The metal would at this stage have a texture like the grain of wood. It was then beaten out to the required length; in the final hammerings the sword-forger sat alone while he gave these subtle touches to his work which were to distinguish it from all others.

Apparently simple, but really requiring the utmost care, was the process of tempering. The blade at this point was entirely composed of soft metal; it was then covered over with a mixture of red earth and charcoal; before this hardened it was removed from a narrow streak at the edge. Thus prepared, the blade was placed in the fiercest part of the wood fire, and as soon as the proper colour was reached it was plunged into the tempering bath; the exposed and highly heated portion was by this process rendered extremely hard and capable of taking a very sharp edge, while the remainder of the blade, protected by the paste, continued tough and capable of bearing any reasonable strain without breaking.

Each master regulated the heat of the tempering bath to his own fancy, judging entirely by the feel, and jealously was the secret guarded. There is a well-authenticated story of a great swordsmith who struck off the hand of a too venturesome pupil who, to learn the secret, plunged his hand at the critical moment into the bath; but, terrible as the penalty he had to pay, the pupil had learned the secret, and in his time became one of the most famous of the swordsmiths of Japan.

The Japanese implicitly believed that the spirit of the workman entered into the steel, enduing the blade with certain characteristics peculiar to its maker. I quote from an admirable article by Sir Edwin Arnold:—

"They say that the difference between the swords of Masamune and Muramasa, two famous craftsmen, was due to their singing. A Masamune blade brought victory and luck everywhere. A Muramasa sword was always leading its owner into quarrels, though it carried him through them well, and it would cause accidents and cut the fingers of friendly folks inspecting it, being never willing to go back to its scabbard without drinking blood. The real reason was, so runs the legend, that Muramasa while he sat at his work in the forge was ever singing a song which had the chorus of '*tenka tairan, tenka tairan,*' which means 'trouble in the world, trouble in the world,' whereas Masamune, the gentle and lucky swordsmith, always chanted while he worked, '*tenka taihei, taihei,*' which signifies, 'peace be on earth, peace!' Japanese people of the old days firmly believed that both the kindly words and the unkindly got somehow welded into the very spirit of the steel, so that Masamune's blades prevented quarrels or brought to their wielders a quick victory, while Muramasa's had in them a lurking instinct for doing mischief, a sort of itch to hurt and wound. All sorts of tales were told to illustrate this. There was a splendid sword of Muramasa's which had killed by *hara kiri* (*i.e.* legal suicide) four of its possessors in succession. Once, too, when the Shogun Iyeyasu was handling a spearhead embedded in the helmet of one of his warriors, the point wounded his august hand. 'See quickly,' he said, 'what is the mark upon the accursed iron; it must be Muramasa's.' And when they came to look at the maker's name it was indeed a spearhead from the grim sword-maker's who had chanted the thirst for blood into his *yari* and *katana*."

It is stated that to sharpen a fine Japanese blade required no less than fifty days' work, and, simple as the operation may seem, it can only be done in Japan. "I look upon a well-finished Japanese blade," writes Mr. Gilbertson, "as a marvel of mechanical skill and perfect workmanship." The work is done on a peculiar sort of stone, not on a wheel. Afterwards the blade is finished on a polishing stone dressed with oil, and finally burnished. The export of the stones required for these processes is prohibited.

The forging of a sword was accompanied by a ceremonial ritual which partook almost of a religious character. The smith must lead a more or less religious life, abstaining from excesses of every kind. He clad himself in his ceremonial dress, and wore the *eboshi* or small lacquered cap, while a *shimenawa*, or straw rope, was stretched across the smithy to scare away evil spirits and invite good ones. It was believed that the *Kamis*, or spirits of his ancestors, came to the forger's, and when he hammered out the metal, put the blade into the furnace, annealed and tempered it, sharpened and polished it, and added the signature, the god Inari, who lives in the fir woods, and whose image for this reason is often accompanied by that of a fox, on some occasions came to help the forger in the making of his finest blades.

According to an article by Philippe Burty, which appeared in a publication entitled 'Artistic Japan,' the possession of a renowned blade was of itself sufficient to ensure its owner being treated with the utmost respect.

"A young Japanese, a page in the house of a prince, before the revolution of 1868, told me that sometimes a man in shabby and stained clothes appeared at the gate of the castle and begged for a hearing. He drew from his belt his two swords, placing them in the hands of the pages, and was in a short time allowed entrance. The younger people smiled at his strange appearance, and then hastened to examine his swords, which were placed upon a rack of lacquer decorated with armorial bearings. When the man retired he received back his swords, which were presented to him with the greatest respect. Their exquisite quality bore witness to the fact that they alone remained as relics of the former exalted position of their master."

Although it was the privilege of a numerous and powerful class to carry two swords, it was forbidden to wear them in the presence of the Emperor, or even to draw the blade within the precincts of the palace. A story, probably true, is told of a certain damio, high in imperial favour, who, hearing before he went to the palace of a plot against his life, entered with his *ki dachi*, *i.e.* a sword with a wooden blade, which was permissible, but to deceive his enemies he had had the wooden blade coated with silver paper, thus presenting the appearance of an actual blade; this he drew and flourished about, by this means intimidating his enemies, who, knowing him to be an accomplished fencer, refrained from attacking him. On leaving, he deposited the weapon at the door of the palace. Next morning he was summoned, as he had anticipated, to explain his conduct, for he had apparently incurred the penalty of death. Calling for the sword he had deposited, he broke the wooden blade in the presence of the Emperor, covering his enemies with confusion, and rising still higher in the monarch's favour.

No student of Japanese history can fail to be familiar with the story of the Forty-seven Ronin. Grossly insulted by a high official, Asano, the lord of the castle of Ako, drew his sword within the sacred precincts, for which offence he was condemned to perform *hara-kiri*, i.e. commit suicide by disembowelling. The story of how his faithful dependants, forty-seven in number, finally avenged their master's death, and by so doing incurred the same fate, is a terrible story of fierce heroism too long to recount here.

The extraordinary feats that are accomplished by Japanese swords may seem incredible. It is said that so keen can the edge of a first-class blade be made, that if held upright in running water the reeds and grasses which are floating down with the current will be divided when they come in contact with it. A Japanese nobleman of the old school would not consider a blade satisfactory unless it would cut a bar of iron and sever a falling hair. But these feats, which seem so incredible, have been vouched for by reliable authorities, both native and foreign. The fact that a bar of iron or a falling hair can be divided is of course only possible when the blade is sharpened to its utmost, and in the former case is wielded by an accomplished expert. No novice, however powerful, could accomplish it; it is a work of skill, not of force. Those of you who may have witnessed Japanese gymnastics, fencing, wrestling, conjuring, &c., will admit that in all these they have knacks and tricks which are in many ways superior to anything we can show. In the hands of an accomplished expert the Japanese sword is the most effective cutting instrument in the world. The most wonderful part of the matter is that the quality of the metal is so good, and the tempering carried to such perfection, that, though subjected to such severe tests, a fine blade will be uninjured and its beauty unimpaired.

The best experts—I believe they exist with very few exceptions only in Japan—can tell, when the sharpening and polishing of the blade is completed, who has wrought it, and if they are government officials are empowered to give a certificate written on special paper and stamped. Only a most consummate judge can note and estimate all the markings which a fine blade will show,—the *nioi*, misty spots and flecks, fleecy and broken apart like clouds; *tobi yaki*, flying burns, *i.e.* isolated specks of soft white. Along the edge would appear little points of bright silver, called *nie;* then there would be the *utsuri*, or reflection, resembling the mist round the moon; the *chikei*, small films of white; the *niadzuma*, or lightning flashes; the *sunagashi*, resembling specks of sand in a row; the *ucki yoke*, or narrow forge-marks. The blade which combined all these would be the treasured possession of a damio, to be handed down from father to son, an heirloom never to be parted with.

An examination of swords will show differences that are difficult of explanation. I refer more particularly to the grooves or blood-channels which are cut in many of them. Very rarely the grooves will be filled with red lacquer; in some blades there are two grooves, generally of unequal length; the grooves may extend nearly the whole length of the blade, or may affect a portion only, while very frequently they are absent altogether. The blades are also very variable in weight; some, even of the long swords, are extremely light, others have a most formidable weight. It seems as if each blade had been made for a particular individual, who, while keeping to certain recognised rules, had in other particulars allowed his personal predilections to have full play. Sometimes the name of the owner will appear with that of the forger. It is not unusual to find a good blade without a signature; certain makers, it is said, omitted their signature because no one could fail to recognise their work. It is not at all improbable that many signatures have been added, long after the forging of the blade, either by a pupil or an expert; it was customary in such cases to inlay the signature with gold or red lacquer, to show it was not the swordsmith's own work; signatures were, however, added without this distinction. Mr. Gilbertson makes the following pertinent allusion to the subject:—

"If the signature of Masamune was placed, a hundred years ago, on a blade that no one will certify as by him, it may be fairly assumed that the style and quality of the blade so closely resembled his work that it was likely to be mistaken for it by any ordinary collector, and is therefore worth purchasing, though not an original."

A boy of noble birth would carry two swords from the early age of seven, but until he was fifteen they would be of small size; at the latter age he received the weapons he was to carry through life and hand down unsullied to his heir. "It can be easily imagined," writes Marcus Huish, "that in a country where internal wars were constantly carried on, where private quarrels grew into family feuds, where the vendetta were unhindered by law and applauded by society, where the slightest breach of etiquette could only be repaired by the death of one or other of the parties, and where a stain of any sort upon one's character necessitated suicide with one's own weapon, attention was very early directed towards obtaining perfection in the only article of defence or offence a Japanese carried."

I cannot here describe in detail the "*hara-kiri*," or suicide by disembowelling; I merely allude to it as one of the reasons why a Japanese nobleman would consider it necessary to carry a keen weapon. The custom originated during the sanguinary internecine wars which for centuries desolated Japan. Prisoners of war in those fierce days were always condemned to death; but it was felt that they hardly deserved to suffer by the hand of the executioner like common felons; they were therefore permitted to commit suicide, and around this terrible custom grew up one of the most elaborate ceremonials of old Japan, only abolished, and then after desperate opposition, when contact with western nations rendered it no longer possible. The ceremony is minutely described in Mitford's 'Tales of Old Japan.'

Japanese sword-blades are divided into two groups, *koto* and *shinto*; *koto*, which are the older blades, being considered the better. The date of division is 1596. I am indebted for this information to a paper by Mr. Gilbertson, who, however, expresses his inability to account for that particular year being chosen, as fine blades described as koto, were certainly forged well into the seventeenth century; but, speaking generally, the *koto* blades were forged when war was the normal condition of society, while the *shinto* blades belong to the era of profound peace with which Japan was blessed for two centuries and a half. This fact, I think, largely accounts for the preference of the Japanese for the older blades. Although the majority of the fine blades are *koto*, many smiths in the *shinto* period forged blades equal to anything their predecessors had produced. It has been stated that a wound from a *koto* blade would probably prove fatal, while a similar wound from a *shinto* blade would readily heal; but I do not consider the statement worthy of credence.

A legend connected with the sword seems to indicate that the blades were divided into sexes. A certain king became mysteriously possessed of two masses of iron, of which he commanded a sword to be made. But the smith made two swords of surpassing fineness, male and female, one only of which he gave to the king, burying the other in the ground. The secret was, however, discovered by the continued presence of moisture on the king's blade, which lamented its absent mate, and the king summoned the smith to his presence. The smith, forseeing his fate, told his wife of the sword, which he bade her dig up and give to his three-year-old son when he should be come to man's estate. It befell as he expected, and on his refusal to disclose the whereabouts of the sword he was put to death. There is no explanation of the smith's reason for refusing to deliver up the sword.

Foremost among the popular legends connected with the sword is the story of Susano and the Eight-headed Dragon, not unlike the familiar legend of St. George and the Dragon. Susano was the son of Isanaghi, the creative spirit, and brother of Amterasu, the radiant Sun Goddess. Susano, being very ill-behaved, so exasperated his sister that she retired into a cave, and the universe was plunged in darkness. After much trouble the gods enticed her from her retreat, and banished Susano. Wandering disconsolately along the sea-shore, he encountered two fond parents with their arms around their daughter, the fair Kushinada. He learns from them that a terrible dragon, with eight heads, has devoured all the maidens in the country, and now their child too must go. Susano resolves to slay the dragon. Filling eight jars with *sake*, a fermented liquor made from rice, he awaited the foe. Soon the monster appeared, and, as Susano had anticipated, plunges a head into each of the jars. He was soon intoxicated, and in that condition was slain by Susano, who proceeded to cut up the body; but his sharp blade struck against a hard substance in the tail of the monster, which proved to be a beautifully mounted sword. This sword was subsequently presented by Amterasu to the first emperor, B.C. 585, together with the mirror and the sacred gem—the three sacred relics still to be seen in the Royal Treasury. "Preserve them," said the Sun Goddess, "and your empire shall endure while heaven and earth remain." It is a singular fact that during twenty-five centuries the imperial sceptre has never passed to any other dynasty, the only example in the world's history. The sword in question is also known as "the sword of the clustering clouds."

Many famous swords are existing in the *kuras* of noble families, or in the temples, though the legends associated with them are not always, I need hardly say, authentic; but we can credit the story of the *Higikiri*, or beard-cutter, that, after cutting off a man's head, also divided his beard; or of the *Hizamaru*, the knee-cutter, which, in beheading a kneeling criminal, cut his knees also in its downward course. The edge of a famous blade made by Nagamitsu was so keen that it cut through a small bean thrown into the air.

Rigid etiquette attended the wearing and the use of the sword in Old Japan. Dr. Lyman says:—"To draw a sword from its scabbard without begging leave of the others present was not thought polite; to clash the scabbard of your sword against another was a great rudeness; to turn the sword in the scabbard as if to draw was tantamount to a challenge; and to lay your weapon on the floor, and to kick the guard towards another, was an intolerable insult that generally resulted in a combat to the death."

Another writer states:—"The rules of observance connected with the wearing of the long and short sword, or the single sword, were most minute, but have fallen into disuse. In former days the most trivial breach of this elaborate observance was often the cause of murderous brawls and dreadful reprisals. To express a wish to see a sword was not usual, unless when a blade of great value was in question, and then a request to be shown it would be a compliment appreciated by the happy possessor. The sword would then be handed with the back towards the guest, the edge turned towards the owner, and the hilt to the left, the guest wrapping the hilt either in the little silk napkin always carried by gentlemen in their girdle-books, or in a sheet of clean paper. The blade was drawn from the scabbard, and admired inch by inch, but not to the full length, unless the owner pressed the guest to do so, and then, with much apology, the blade was entirely drawn, and held away from the other persons present. After being admired it would, if apparently necessary, be carefully wiped with a special cloth, sheathed, and returned to its owner as before."

I will finish my paper with the concluding words of Sir Edwin Arnold's able article :—

"These high manners of the steel bred that Japanese courtliness and chivalry which have survived it. The cult of the *Katana* is now for ever at an end in Dai Nippon—the Samurai and Lords of the Land have laid aside their proudly cherished weapons, and go abroad as peacefully as the *Akindo*, the merchant. Yet there are fine swordsmen still to be found among the quietest of the emperors, senators, and lieges, and I have myself seen wonderful things done by some of them with ancient blades. Moreover, the measured spirit, the deep and headful reverence, the silent dignity, the instincts of manhood, which clustered round the steel are still characteristic of the race, and the swords, though no longer worn, are proudly and carefully preserved in many a mansion, castle, and temple. . . . . Japan, by a wonderful effort of abnegation on the part of her upper classes, altogether laid aside the perilous habit of going abroad with a girdle full of swords and daggers. It was a noble submission to new ideas; yet to this day a Japanese gentleman raises your sword to his forehead, and bows deeply before he examines it; nor will he uncover a single inch of the shining and sacred steel without gravely obtaining your permission and that of the company present."

Mr. Pelton exhibited several fine blades by the leading Japanese swordsmiths.

3.—Foraminifera from the Gault at Merstham.

By W. Murton Holmes.

(Read May 27th, 1902.)

The Foraminifera referred to in these notes were obtained in the early part of 1899, on the occasion of a visit of the Natural History Club to the new cutting through the Greensand and Gault, on the London, Brighton and South Coast Railway, a little to the north of Merstham.

Gault is a Cambridgeshire provincial term applied to a dark, stiff, blue, sometimes sandy or calcareous clay, with layers of pyritous and phosphatic nodules, and occasional seams of green sand, which separates the Upper from the Lower Greensand. It is considered to be the lowest member of the Upper Cretaceous formation. In thickness it varies from about one hundred to upwards of three hundred feet, and some of the strata are very rich in organic remains, among which ammonites, belemnites, inocerami, and other mollusca, crustaceans, and sharks' teeth are of frequent occurrence. At Betchworth, Dunton Green, Otford, and other places it is used for the manufacture of bricks and tiles.

The best section of Gault is seen at Copt Point, near Folkestone, where it is about one hundred and thirty feet thick. Here there is a complete exposure of a series of strata, and, from its easy accessibility, it has been selected as a basis for zonal subdivision by geologists, who have divided it into eleven zones.

A glance at a geological map shows a line of Gault extending westward from Folkestone almost unbroken, except where cut through by river valleys, passing Wye, Ashford, Sevenoaks, Godstone, Merstham, Betchworth, and Guildford, to Farnham. Here it takes a southerly direction as far as Petersfield, when it turns eastward, passes north of Lewes, and comes to a full stop at Willington, near Eastbourne, thus forming an elongated basin enclosing the members of the Lower Cretaceous, that is to say, the Lower Greensand, Weald Clay, and Hastings Beds.

The term Foraminifera is applied to an order of animals belonging to the Protozoa, mostly microscopic, which have existed, according to Dr. Carpenter, without any fundamental modification or advance from the primitive type from the Palæozoic period down to the present time. Although minute, the number of individuals is so incalculable, that vast mountain ranges, such as the nummulitic limestone of Eocene times, are very largely composed of their remains. In the Carboniferous Limestone, the Oolite, and the Chalk their skeletons are also extremely abundant. In the living state Foraminifera consist of a minute particle of protoplasm, or sarcode, or of an aggregation of such particles, without any distinction of parts into organs or tissues. This protoplasm is capable of extending any part of its substance into filaments, called pseudopodia, either for locomotion or for the purpose of obtaining food; it, moreover, secretes a shell, or test, which is either calcareous, or made up of agglutinated particles of mud or sand, or even of other shells, or of sponge spicules. Some forms of these shells are profusely perforated by minute pores (foramina), through which the pseudopodia are protruded, and from this circumstance the name of the order is derived.

This property of extending pseudopodia is not confined to the

Protozoa, but belongs to all living protoplasm. It occurs in the white corpuscles of blood, and also in pus cells. It is exhibited also by vegetable protoplasm, as in the case of the plasmodia of the Myxomycetes, an order of Fungi. These plasmodia—the flowers-of-tan, for example—are the early stages of the plant, and consist of masses of naked protoplasm, without any distinction of cells or tissues, creeping from place to place over the ground or decaying vegetable matter. In due course the whole plasmodium is converted into sporangia, which are spherical bodies in which the spores are formed.

The Foraminifera from the Gault at Folkestone have been systematically worked out, and the results published in the 'Journal of the Royal Microscopical Society,' by Mr. Frederick Chapman, to whom I must express my acknowledgments for kindly examining my slides and revising the names of the specimens. My specimens were obtained from two small pieces of Gault at Merstham, one from the top and the other from the bottom of the cutting. These have yielded fifty-one species, comprising sixteen genera, and belonging to four families. There is no doubt that the number of species found would be largely increased if a greater quantity of the Gault were operated upon.

The best method of extracting the Foraminifera is to first thoroughly dry the Gault in an oven, not too hot, then place it on a moderately fine strainer and wash thoroughly in a stream of water until the washings are no longer turbid. The contents of the strainer should then be dried, and the Foraminifera picked out, with the assistance of a lens, by means of a moistened camel-hair brush.

Sub-kingdom PROTOZOA.

Body consisting of a minute mass of protoplasm, or an aggregation of such masses, without differentiation of parts into organs or tissues, either with or without a testaceous envelope or skeletal framework.

Class RHIZOPODA.

Protoplasmic body capable of protruding any portion of its substance in the shape of lobes, bands, or threads, for the purpose of locomotion or the prehension of food; generally more or less completely inclosed in a testaceous envelope; nucleus and contractile vesicle present or absent.

Order FORAMINIFERA.

Pseudopodia protruded as fine threads which flow together wherever they touch, forming a network of granular protoplasm; nucleus and vacuoles generally indistinguishable; tests either chitinous, calcareous, or of agglutinated sand or shells, never siliceous.

Family MILIOLIDÆ.

Test calcareous, imperforate, porcellanous.

Sub-family Miliolininæ.

Test coiled on an elongated axis, in a single plane, or inequilaterally; chambers two in each convolution.

Genus Spiroloculina, D'Orbigny.

Chambers in a single plane, all visible on both sides of the shell.

Spiroloculina papyracea (Burrows, Sherborne, and Bailey).—This occurs in some abundance in the upper part of the Gault at Merstham. The species was described from a thin and much compressed form from the Red Chalk of Flamborough Head.

S. nitida, d'Orbigny.—Upper Gault of Merstham. Mid-Jurassic, recent.

Genus Miliolina.

Chambers inequilateral, coiled around the long axis of the shell in such a way that more than two (usually three or five) are visible externally.

Miliolina venusta, Karrer, sp.—Upper Gault, Merstham. Gault, recent.

M. Ferussacii, d'Orbigny, sp.—Upper Gault. Gault, recent.

Family Textularidæ.

Tests of the larger species arenaceous, either with or without a perforate calcareous basis; smaller forms hyaline and conspicuously perforated. Chambers arranged in two or more alternating series, or spiral, or confused; often dimorphous.

Genus Tritaxia.

Monomorphous. Segments alternating in three rows. Aperture simple, produced, central.

Tritaxia tricarinata, Reuss.—Upper Gault and bottom of cutting, Merstham. Lower Greensand, recent.

T. pyramidata, Reuss.—Upper Gault. Gault, Chalk.

Genus Gaudryina.

Early segments triserial; aperture either textularian, or situated in a short terminal neck.

Gaudryina oxycona, Reuss.—Upper Gault and bottom of cutting. Gault, Upper Chalk.

Genus Bulimina.

Test spiral, elongate, more or less tapering; often triserial.

Bulimina affinis, d'Orbigny.—Upper Gault. Lower Greensand, recent.

B. brevis, d'Orbigny.—Upper Gault. Lower Greensand, Chalk.

B. Orbignyi, Reuss.—Upper Gault and bottom of cutting, Merstham. Gault, Chalk.

B. Presli, Reuss.—Upper Gault and bottom of cutting. Gault, Chalk.

B. Presli var. *sabulosa*, Chapman.—Upper Gault and bottom of cutting. Gault, Chalk Marl.

B. obliqua, d'Orbigny.—Upper Gault. Gault, Chalk.

Family Lagenidæ.

Test calcareous, very finely perforated; either monothalamous, or consisting of a number of chambers joined in a straight, curved, spiral, alternating, or (rarely) branching series. Aperture simple or radiate, terminal. No interseptal skeleton nor canal system.

Genus Nodosaria.

Test straight or curved, circular in transverse section; aperture typically central.

Nodosaria cylindracea, Reuss.—Upper Gault. Gault, Chalk.
N. consobrina, d'Orbigny.—Upper Gault. Gault, recent.
N. communis, d'Orbigny.—Upper Gault. Permian, recent.
N. farcimen, Reuss.—Upper Gault and bottom of cutting. Lias, recent.
N. paupercula, Reuss.—Upper Gault. Gault, Chalk.
N. obscura, Reuss.—Upper Gault. Lower Greensand, Chalk.
N. bambusa, Chapman.—Upper Gault. Gault.
N. raristriata, Chapman.—Upper Gault. Gault, Chalk.
N. hispida, d'Orbigny.—Upper Gault. Lias, recent.
N. tenuicosta, Reuss.—Bottom of cutting. Neocomian, Chalk.
N. prismatica, Reuss.—Upper Gault and bottom of cutting. Neocomian, Gault.
N. tetragona, Reuss.—Upper Gault and bottom of cutting. Aptian, Gault.
N. orthopleura, Reuss.—Upper Gault. Gault.

Genus Frondicularia.

Test compressed or complanate, segments V-shaped, equitant; primordial chamber distinct.

Frondicularia Parkeri, Reuss.—Bottom of cutting. Gault.
F. Guestphalica, Reuss.—Bottom of cutting. Gault.
F. planifolium, Chapman.—Bottom of cutting. Gault.

Genus Rhabdogonium.

Test straight or slightly curved, triangular or quadrangular in section.

Rhabdogonium tricarinatum var. *acutangulum*, Reuss.—Upper Gault. Neocomian, Gault (and Red Chalk).

Genus Marginulina.

Test elongate, curved; segments nearly circular in section; aperture marginal.

Marginulina soluta, Reuss.—Upper Gault.
M. striato-costata, Reuss.—Upper Gault. Neocomian, recent.

Genus Vaginulina.

Test elongate, compressed or complanate, septation oblique, aperture marginal.

Vaginulina recta, Reuss.—Upper Gault and bottom of cutting. Gault, Chalk Marl.

V. arguta, Reuss.—Upper Gault and bottom of cutting. Gault and Red Chalk.

V. truncata, Reuss.—Upper Gault and bottom of cutting. Neocomian, Chalk Marl.

V. truncata var. *robusta*, Berthelin and Chapman.—Upper Gault and bottom of cutting. Gault.

Genus CRISTELLARIA.

Test plano-spiral in part or entirely; complanate, lenticular, crosier-shaped, or ensiform.

Cristellaria gaultina, Berthelin.—Upper Gault and bottom of cutting. Gault, Chalk.

C. rotulata, Lamarck.—Upper Gault. Jurassic, recent.

C. rotulata var. *macrodiscus*, Reuss.—Upper Gault and bottom of cutting. Neocomian, Gault (and Red Chalk).

C. Bronni, Römer.—Upper Gault. Gault.

C. circumcidanea, Berthelin.—Upper Gault. Gault.

C. complanata, Reuss.—Upper Gault. Lower Greensand, Chalk (Turonian).

C. vestita, Berthelin.—Upper Gault. Lower Greensand, Chalk Marl.

C. gibba, d'Orbigny.—Bottom of cutting. Lias, recent.

Genus POLYMORPHINA.

Segments bi- or tri-serial or irregularly spiral, aperture radiate.

Polymorphina compressa, d'Orbigny.—Upper Gault. Lias, recent.

Sub-family RAMULININÆ.

Test irregular, branching.

Genus RAMULINA.

Test branching, composed of pyriform chambers connected by long stoloniferous tubes.

Ramulina aculeata, Wright.—Upper Gault and bottom of cutting. Jurassic, Tertiary.

Genus VITRIWEBBINA, Chapman.

Test adherent, consisting of a series of hemispherical or elliptical chambers, gradually increasing in size and usually arranged in a curve. Aperture, a simple crescentic slit at the termination of the last chamber.

Vitriwebbina lævis, Sollas.—Bottom of cutting. Gault, Chalk (Turonian).

Family GLOBIGERINIDÆ.

Test free, calcareous, perforate; chambers few, inflated, arranged spirally; aperture single or multiple, conspicuous.

Genus GLOBIGERINA.

Test coarsely perforate; trochoid, rotaliform, or symmetricall plano-spiral.

Globigerina cretacea, d'Orbigny.—Upper Gault. Lower Greensand, recent.

Genus Anomalina.

Test nearly alike on both faces; coarsely porous.

Anomalina ammonoides, Reuss. — Upper Gault and bottom of cutting. Lower Greensand, recent.

A. rudis, Reuss.—Upper Gault. Gault, Cenomanian.

A. complanata, Reuss.—Upper Gault and bottom of cutting. Aptian, Eocene.

When sending me the list of names, Mr. Chapman wrote:— "The assemblage is of much interest, and especially I would note the occurrence of *Spiroloculina papyracea*, Burrows, Sherborne, and Bailey, in some abundance from the Upper Gault. I did not find this at Folkestone, and, in fact, it has been found only at Speeton, in the Red Chalk, possibly at about the same horizon. Some of the Gault specimens approach my *S. nitida* from Folkestone, but differ in some respects. *Marginulina soluta*, Reuss, also was not obtained from Folkestone, but occurs in the Cambridge Greensand." (See Annals of Nat. Hist. for April (1899?)).

Ostracoda.

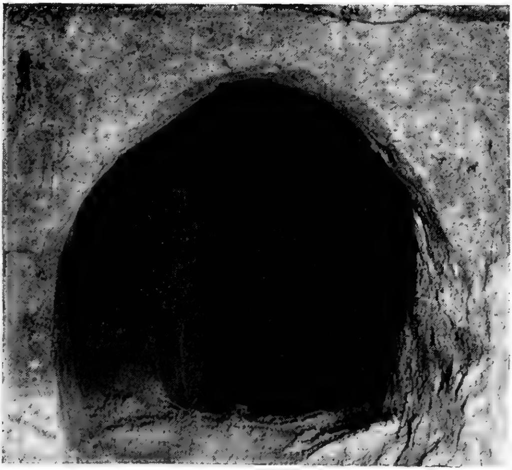
Bairdia subdeltoidea, Münster.—Bottom of cutting.
Cythereis auriculata, Cornnel.—Bottom of cutting.
C. triplicata, Römer.—Upper Gault.
C. ornatissima, Reuss, var. *reticulata*.—Bottom of cutting.
Cytherella ovata, Römer.—Bottom of cutting.
C. Muensteri, Römer.—Bottom of cutting.
C. Williamsoniana, Jones, var. *stricta*.—Bottom of cutting.

4.—Recent Discoveries at Waddon, Surrey.

By George Clinch, F.G.S.

(Read October 21st, 1902.)

Early in June, 1902, our Vice President, Mr. W. Whitaker, F.R.S., was so good as to draw my attention to the fact that certain subterranean chambers had been found under the lawn near Waddon House, the residence of the late Mr. Philip Crowley, F.L.S. I took an early opportunity of visiting the site, and found that in the course of some excavations for a projected sewer in these grounds three chambers, cut in a bed of compact sand, had been brought to light. The chambers, of which a sketch ground-plan is here given, were found to be partly occupied by sand, which had probably been washed in by the rain. On the removal of the loose sand, however, a compact floor was



ENTRANCE TO CHAMBER A, SEEN FROM THE INTERIOR.
(From a photo. by Mr. John Noaks.)

ENTRANCE TO CHAMBER B, SEEN FROM THE INTERIOR.
(From a photo. by Dr. J. M. Hobson.)

ANCIENT CHAMBERS AT WADDON.

discovered in each chamber, at a depth of about fifteen feet below the surface of the ground. It was also found that the chambers were of beehive shape, about seven feet in height, and varying from twelve feet to something less in diameter. The regular form of the chambers is remarkable. It was probably produced, after the chamber was roughly shaped, by the excavator standing in the centre of the floor and scraping the sides and roof with a wooden tool.

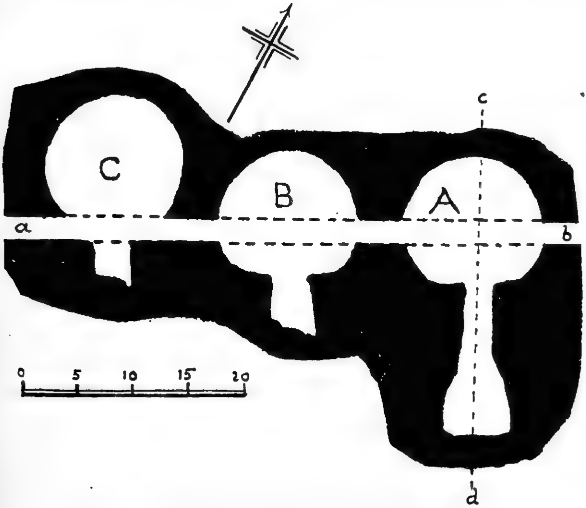


FIG. 1.—ANCIENT CHAMBERS AT WADDON.
Plan with scale of feet.

Once made in this way, there would be little fear of the roof falling in, because the sand, owing partly to its having been deposited in water, and partly to the slight proportion of clay it contains, is remarkably hard and firm. This particular quality of the Thanet beds, well known to modern geologists, was doubtless known also to the men who excavated the Waddon chambers.

Each of the three chambers had its independent oval-shaped opening on the S.S.E. side, but it is clear there was no other means of access to them until the crowns of their dome-shaped roofs were cut into in constructing the modern sewer-trench. This trench was fortunately made in such a way as to expose these three chambers without seriously damaging them, and it was found possible to preserve them for a sufficiently long time to allow of a careful examination, not only of their interesting and ingenious construction, or rather excavation, but also of the loose sand lying upon the floors, and in one case of the material with which the entrance and lateral avenue of approach were filled. It was thus possible to give much closer attention to several points than would have been the case if the chambers had collapsed, or if they had been discovered and explored by their ancient entrances.

Some of the observations made, particularly in connection with the relative positions of the hard unmoved sand and "made earth," have proved of great value in the intricate work of tracing the ancient environments of these sepulchral chambers.

Upon removing the loose sand which covered the floors of the chambers with an uneven layer, several cores and chips of green-coated flints were found, together with some small fragments of imperfectly baked pottery and some larger pieces of Romano-British pottery.

Perhaps I may be pardoned if I take this opportunity of saying a word or two about the kind of stones generally known as green-coated flints. From the specimens now exhibited it will be seen that the external part is of a deep olive-green colour; below this is an orange-coloured layer, whilst the interior of the flint nodule is of the ordinary unaltered kind seen in a newly-broken flint from the Chalk, with which we are all familiar.

A layer of these green-coated flints is generally, perhaps always, found at the base of the Thanet beds. Nearer Waddon railway station, where a lower level sewer-trench has been dug, there is a well-pronounced stratum containing these green-coated flints, and there is clear evidence that these flints have been worked into neolithic implements. This digging for special flint for implement-making is perhaps one of the more interesting points of the discoveries at Waddon.

Now, the presence within the chambers of flint implements made of the green-coated variety is of considerable importance, because such flint, which is tough and specially suitable for the manufacture of implements, is hardly ever found above the base of the Thanet beds. It is pretty clear, therefore, that these materials were procured at the lower level and brought up the hill to the chambers. This is a piece of work which obviously could not have been done by rain-wash or similar forces.

The worked flints found actually within the chambers consist of a large proportion of cores of green-coated flint, a few flakes and chips broken from them, and a smaller proportion of cores of ordinary chalk-flint. It is probable that some of the more minute pieces of flint were overlooked, as, among the sand thrown out, a considerable number of small flakes, including a well-made saw,* were found. In the loose sand, fragments of pottery, evidently of Romano-British character, were found.

In the sand filling up the lateral avenue several fragments of mammalian bones were discovered. These have been submitted for examination and identification to Mr. E. T. Newton, F.R.S., who kindly reports that they consist of the upper teeth, metatarsal, phalange, &c., of a young ox, probably *Bos longifrons*, the tooth of *Ovis aries*, the teeth of *Sus scrofa*, and the canine teeth of a dog or wolf. No fragment of bones could be pronounced to be human. When found these bones were in a very fragile condition, but, thanks to the kindness of Dr. H. Franklin Parsons, they have now been treated with size. These bones, flint-cores, and flakes are now deposited on exhibition in the Town Hall, Croydon.

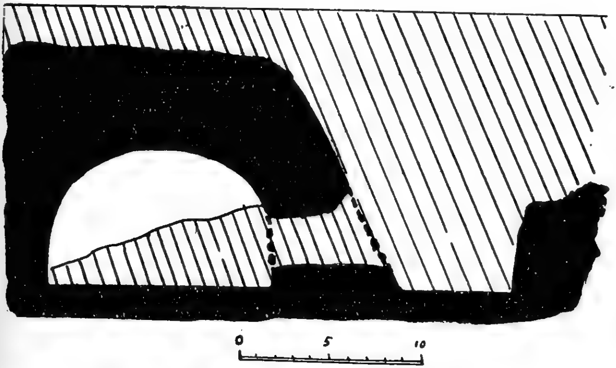


Fig. 2.—Ancient Chambers at Waddon.
Section c–d (see plan), with scale of feet.

We have now to consider the material with which the passage (fig. 2) leading to chamber A was filled, and which also covered the whole of the floor of that chamber. This consisted of sand, which at first sight was indistinguishable from the undisturbed sand of the Thanet beds, but when tested by probing it was found to be much less hard.

In examining this deposit the greatest care was exercised, because it seemed likely that the objects found in it might give at least a clue to the period of the excavation of the chambers.

Before describing our discoveries, however, I should like to say one or two words on the general subject of deposits of this kind. Every one, of course, admits that a careful examination

* I was present when this was found by Mr. F. R. Hobson.—G. C.

of this kind of deposit is of the utmost value in scientific archæology, but it may not be so widely recognised that there are two distinct kinds of deposits of this sort. One kind, which may be called simple, is admirably typified by the rubbish-pits found on the site of the Romano-British city of Silchester. From these many important objects illustrative of Roman times have been obtained. The pits were purposely dug in the earth as receptacles for rubbish of various kinds, such as broken pottery, glass, &c.; and the accumulation of rubbish in them went on gradually and in regular order, so that one can safely assign objects found in the lowest deposits to an earlier period than those of the upper layers.

But there is another class of deposits which may be termed complex. This is well represented by certain filled-in deneholes, where we find not only a deposit made in regular order, but also one or more beds made up of material brought down from the sides of the shaft and the upper surface when collapse or partial collapse of the pit has occurred. In such cases the upper deposits may, and sometimes do, contain antiquities of an earlier period than that of the excavation of the pit, and they must be regarded by the archæologist exactly as "derived" fossils are regarded by the geologist.

The various bones of *Bos longifrons* found at Waddon have already been mentioned, and I think they afford sufficient evidence that the lateral approach to the chamber has in the main been filled up in the simple manner just described. If this be accepted we have additional ground for the opinion that the chambers are of very considerable antiquity, for it is generally admitted that this particular variety of ox was extinct in Britain in the fourth or fifth century A.D., and has been introduced again into this country only in comparatively recent times.

Among the various subterranean excavations in Great Britain there seems to be nothing to which the Waddon chambers can be exactly, or even approximately, likened. The most superficial examination would be sufficient to prove that they belong to an entirely different class of excavations to those commonly known as deneholes. Their small dimensions, the absence of a perpendicular shaft, and their occurrence in sand, are among the most obvious points of dissimilarity. Their form and plan, too, are equally unlike those of deneholes. On the other hand, they do not present any feature in common with mines for flint (those at Grimes, Graves, and Cissbury for example), or the curious beehive-shaped buildings found under the surface of the ground in the Isle of Purbeck.*

In looking for similar excavations on the Continent of Europe,

* *Proceedings of the Geologists' Association*, vol. viii. No. 7 (July, 1884), pp. 404–410.

the chambers which seem to approach these most closely in shape, size, and particularly in plan, are certain underground excavations at Palmella in Portugal, which, as M. Cartailhac* has shown, were chiefly devoted to sepulchral purposes, and belong to the latter end of the period of polished stone.

M. Cartailhac draws attention to a feature which occurs both in the Palmella and the Waddon chambers, *viz.* the incurved walls on each side of the entrance. He points out that this arrangement was probably made as a provision against the special wear and rubbing to which that part of the chamber would be subject. It would seem, therefore, that these chambers were frequently entered, and the natural inference is that they were occasionally used as shelters or dwellings; but if, as will presently be shown, the tomb-chamber was modelled on the plan of the dwelling-house, it is conceivable that this feature may have been reproduced, either as a meaningless point and unconsciously, or as an intentionally realistic detail.

In the Palmella chambers, as well as those at Waddon, we find the same flat floors, hemispherical, vault-like sides and roof, and a single lateral avenue leading to each.

In France there are some subterranean chambers which present certain features in common with the Waddon chambers. Examples containing an interment are recorded from La Tourelle, near Quimper,† Brittany, &c., but they seem to belong to a later period than those at Waddon, as objects of metal were found buried below their floors.

It may be noted here that the subterranean chambers of Mycenæ, called by Tsountas "chamber tombs," offer some points of resemblance to the Waddon chambers. Both have been excavated in a hill side, both are beehive-like in form, and both are approached by a horizontal avenue. There are, of course, some important differences, particularly in the matter of dimensions and materials, but the plan is practically the same.

Returning to the Waddon chambers, it may be added that, whilst careful searches on the floors and in the lateral passages have revealed the presence of mammalian bones and no human remains have been identified, it is impossible to avoid the conclusion, after a most careful sifting of the evidence, that these chambers were primarily intended to serve as sepulchral places during the latter part of the neolithic age. That they were subsequently disturbed seems pretty clear from the later objects found in the filling-in sand, and from certain rude, possibly mediæval scratches on the curved roof, which have been variously

* *Matériaux pour l'histoire primitive et naturelle de l'homme*, 3me série, ii. 1885, pp. 1–18.

† *Archæologia Cambrensis*, 3rd series, vol. xiv. pp. 293–311.

interpreted by different observers as representing a bird, an animal, and a boat.

It seems probable that the hard sand in which the excavations were originally made was buried under a considerable thickness of made earth when the lawn was levelled.

This work was probably done when or soon after the house was built, perhaps about the middle of the eighteenth century.

From the remains which have been found during the past twenty years it is clear that a large district to the E., S.E. and S. of Croydon was much occupied by man during the neolithic age. On Hayes Common there are numerous indications of neolithic hut floors. These occur in groups, and suggest independent or successive settlements of a small tribe occupying about six or eight huts.

There are other, but fewer, indications of neolithic dwellings on Shirley Hills and the high ground in the southern part of West Wickham parish; and to come nearer home, several examples have been found on the top of Croham Hurst, as well as on its steep southern side. At Croham Hurst, and at the various other sites indicated, particularly at West Wickham, very extensive operations in the manufacture of flint implements have been carried on, pointing to the presence of a large population or of long continued occupation.

These hut-circles, which have been attributed to the neolithic age, are circular in plan, with marks of entrances on the E. or S.E. side; and one can hardly fail to be impressed by the strong resemblance in dimensions and plan of these circles to the underground chambers at Waddon. Moreover, on the steep side of Croham Hurst, traces of similar dwellings are recorded, and it seems extremely probable that the men who made the sepulchral excavations at Waddon may have been influenced by those examples of hill-side dwellings.

The chambers for the dead were in fact practically copies of those for the living, and when, as in the case of the Waddon site, it was desired to find a secret place of burial, where violation would be practically impossible, the chamber was excavated in an underground situation.

As a contribution towards the solution of the interesting question of the position, shape, plan, &c., of prehistoric dwellings, the Waddon discovery is of great importance. In the vaulted roofs, cut in the hard sand, we see a durable copy of the ordinary hut built on the surface of the ground, with its covering of interlaced boughs, benders, and basket-work, and in the small opening by which the underground chamber was entered from the lateral passage we see probably an exact imitation of the doorway of a neolithic habitation. This, judging from those of the sepulchral chambers, was oval in form so as to allow of the easy passage of a human body in or out of the hut, but with no superfluous space for unwelcome draughts or excessive ventilation.

Taking it for granted that the Waddon chambers were really of the neolithic age, and intended for sepulchral purposes, it may be interesting to compare them with neighbouring structures which are unquestionably of this period and purpose. The megalithic structures of Kent, particularly Kit's Coty House, near Aylesford, and Coldrum, about two miles N.E. of Wrotham, are examples which offer parallel cases of sepulchral underground chambers, each entered by a lateral entrance. The form of these chambers for the burial of the dead is certainly square or oblong in plan, but this is in consequence of the material used in their construction. Sarsen stone, of which these sepulchral chambers were built, occurs naturally upon the surface of the ground in mid Kent. Moreover, the chambers were not constructed below the surface, but covered by artificial mounds of earth, which have been subsequently removed by weathering and the operations of treasure-seekers: but in reality we find much in common in both.

If we compare the Waddon chambers with well-authenticated examples of sepulchral structures known as chambered barrows, the parallel is even more remarkable, and particularly in the well-marked feature of the entrance restricted at one or more points where it may be presumed some sort of door was placed as a bar to the entrance of unwelcome intruders.

It is worthy of note that the same idea of interment within a house or a house-like receptacle survived during the bronze age, but, as cremation usually preceded the rite of burial among that race, a large house was no longer necessary for the remains of the dead, and a small earthen vase shaped like a bronze-age house, and usually called a hut-urn, was employed as the depository of the ashes of the departed.

The tradition of the hemispherical neolithic hut was carried on in the Celtic bee-hive dwellings of Cornwall, Wales, Scotland, Ireland, and Gaul; whilst the plan may be regarded as the prototype of the circular fortresses, such as Chun Castle, &c., and the brochs of Scotland, and indeed much of the mediæval military architecture of England.

The bronze-age dwellings, on the other hand, whose forms have been preserved by hut-urns, display a tendency to squareness and augularity which is clearly due to the employment of timber in their construction.* The influence of the use of metal was shown, even at that early period, in the form of the domestic

* In the case of pottery we find that the bronze age forms are a gradual development and evolution of stone age forms, but with regard to buildings the case is strikingly different.

dwelling. The possession of bronze tools made it possible to work timber into the requisite forms of beams and rafters, and flat walls and gabled roofs took the place of rounded walls constructed of interwoven branches and wicker-work of the earlier period.

Our modern houses, in which timber was once largely used for the outlines, and is still generally used for roofing, may be regarded as the direct descendants, with various modifications, improvements and developments, of the bronze-age hut.

The recent discoveries at Waddon are of considerable local value on account of the information they give us of Croydon in prehistoric times, but they have something more than local importance. They furnish a material contribution to the knowledge already possessed by anthropologists and archæologists as to the modes of life of prehistoric man, and they supply evidence of great importance as to what were probably his very earliest efforts in house construction.

5.—Example of a perfect Flint Implement, supposed to be of the Period of the First Dynasty of Egypt; and of two early Mirrors in Copper, found in recent Excavations at Abydos.

By Wm. F. Stanley, F.G.S.

(Read November 18th, 1902.)

The great valley of the Nile is in every sense eminently adapted to preserve records of very remote periods of human existence. This is commonly recognized by its being spoken of as the "cradle of our race." For this assertion there are no doubt physical as well as historical reasons, among the most striking of which is the isolation of fertile plains, in desert land, upon the bank of the great highway that the river forms in the four thousand miles from its sources to its mouths in the Mediterranean and Red Seas. For more than two thousand miles this mighty river has cut out its course through arid sandy deserts, and in this long run there are only three alluvial plains of considerable extent upon its banks suitable for agriculture—Thebes, Abydos, and Cairo. That these larger areas utilized for cultivation have left records to our times is largely due to the great Libyan desert entirely backing them up, and protecting them from depredations. Thus we find that temples that were built upon the fertile land have for the most part entirely or nearly disappeared to clear the land for cultivation, whereas those built upon the borders of the desert where cultivation is impossible remain, except for the depredations of parts of these structures for common building materials. The border temples in many instances have been filled up and covered over with blown sand, or rubbish-heaps from the villages near, from which causes they have been largely protected as fields for modern research.

The alluvial plain of Abydos, where the exhibits I wish to describe were found, extends over eight miles inland from the Nile, and may possibly present about twenty square miles of agricultural surface. This area is entirely overflowed every summer by the rich muddy water of the Nile. At the back of the plain, from natural pools and artificial reservoirs, for a very long period sufficient water has been held back for winter irrigation, when the land is cool and suitable for cultivation. Therefore it follows, when agriculture became an art, Abydos was eminently adapted to become a prosperous district or kingdom, which we know became historical.

The universal evidence of ethnology shows that one of the earliest or lowest instincts special to humanity is the preservation of the dead, and, as this could only be done on the banks of the Nile by taking the deceased into the waste dry desert to escape the disturbance of the inundations, probably for all periods of civilization the borders of the desert were the burial-grounds of the people. In the desert, from the desiccated state of the land, there is little cause of decay; therefore here we find not only the well-preserved tombs of the mighty, but also other well-defined spots which were very ancient or even prehistorical burial-grounds. As the grander pyramids or tombs gave richer spoil to the explorer, it is only in quite recent times that the earlier or prehistorical tombs have been opened carefully for research, particularly by Brugsch Bey, Flinders Petrie, and Seton-Karr.

The most beautiful flint implements as the work of the early people that have been discovered are those brought to light by the careful and methodical work of Flinders Petrie. A beautiful collection of these was exhibited at the British Association Meeting at Bristol in 1898. We have also an excellent collection by W. H. Seton-Karr added last year to the Egyptian Collection of the British Museum. This last is of special antiquarian interest. The flint implements come from the ancient desert tombs of Wâdî Shekh, and give examples of the work of various periods extending from the remote palæolithic to that of the relatively recent, or that of the highest art of flint workmanship. This period is supposed to be not earlier than the first Egyptian dynasty, now estimated at nearly seven thousand years ago. It is of this period of perfect workmanship that the spear-head I have to show to our Society was wrought. This I infer, as I have not seen a finer piece of workmanship in any collection. In this specimen I wish to call particular attention to the marvellous technical skill in flint-chipping shown in the sharp saw-teeth notches cut uniformly along the symmetrically formed edges at distances apart of the fine teeth that only vary between forty-five to fifty teeth per inch.

If one takes this implement in the hands, the sharp edges which cut the flesh show clearly that it was never intended for a hand implement; therefore it must in use have possessed some form of handle. Judging from the somewhat similar forms shown in our British Museum, which appear to be spear-heads of various periods, we may suppose it was the highest, or possibly the last, development of the form. This actual specimen, which was no doubt buried with its former owner, was probably used only as an official spear; its thinness makes it evident that it could not be used effectively for war or chase. I have made a rough diagram, from examples in our British Museum, of what may be the historical series of evolution spear-head, judging from the increased perfection of flint-work from the spear-head I exhibit. There is another form in the Seton-Karr collection, but whether this may be a later form I cannot tell. The workmanship of this, although fine, is inferior to that I exhibit. It may be observed that generally, as the quality of the work advances, the hollow shown at the tops of the examples increases in development. I offer a suggestion for the mounting—that it was lashed with raw hide into a crutch of the stem of a young fir-tree, placed in a cleft of an ornamental staff, fixed by asphaltum or one of the gums which abound in Africa, and held firmly in position by binding with linen-cord, as a state or ceremonial spear.

The entire series of prehistoric hand implements for war and chase probably were the spear, the knife (of which I exhibit a specimen), the dagger, and the axe. There is no doubt that coarser implements were made for common purposes at the same period as the superior for state purposes.

While in Abydos I had, as all other visitors have, a number of antiquities, found by the natives about the ancient tombs, offered to me, among which were a number of metal mirrors. These were sold for a few shillings each. One of these, when offered, particularly attracted my attention. It was smaller than the others. It was quite flat. It possessed a handle which held the mirror firmly, which is very rare, and it was of copper, as I found by trial with the nail-file of my pocket-knife. It struck me at once as being much more ancient than some others offered to me; that the handle was not decayed appeared to me very curious, as the handles of ancient mirrors in our museums, if present, are in a very decayed condition. The cause of this I

EGYPTIAN SPEAR-HEAD AND KNIFE OF FINELY WORKED FLINT, FROM ABYDOS.

afterwards discovered was that it was made of a fossil hippopotamus tooth, which was therefore imperishable. This point is very interesting, as in this handle it is not only that it is perfectly preserved, but that it shows clearly the state of art at the period it was made.

There was another point that appeared to me unusual in ancient mirrors—the verdigris did not cover the surface equally, as is general upon old copper, but appeared to be partially crystallized or glazed in parts. It was also extremely hard, so that the knife-file would scarcely touch it. When I got home I thought I would scrape off a part of the surface to analyse it. I found to my surprise that it came off in scales. As it had become disfigured by this process, I cleared off the whole surface to have sufficient for analysis, and handed the mirror over to my glass-worker to rework and repolish the surface to restore it to its original form. In this my glass-worker found a great difficulty; the metal, which as pure copper would have been very soft, was found to be harder than speculum metal—in fact, it could only be cut down by sharp emery; further, that it would not bear an even polish. I have brought it as he finished it. On examination it will be seen that there are many spots crystallized upon the surface, which were of course originally in the interior of the mirror.

Upon analysis I found the verdigris contained over 5 per cent. of silica, which was in broken needles and crystals. It was quite evidently formed of native copper, which is found in thin veins in primitive rock, often associated with silicon. It may possibly have been ground down from its original flake, or have been forged. It was probably made before the art of smelting copper was known. Very possibly it may be of the period when the perfect flint implement exhibited was made.

I bought another mirror at Abydos, which relatively to that just described may be considered as quite recent. It is larger, and of the advanced concave and convex form. It is interesting in one way that, being formerly bound over the breast of a mummy, the verdigris has taken the impression of the mummy-cloth, the quality of which would pass for fairly good calico.

6.—On the Flora of Hayes Common.

By H. Franklin Parsons, M.D., F.G.S.

(Read November 8th, 1902.)

In a paper which I read before our Society—then the Croydon Microscopical and Natural History Club—on Feb. 21st, 1899, I made the suggestion that the Club should compile for future reference lists as complete as possible of the flora of each of the commons and open spaces in the neighbourhood of Croydon. Arrangements were subsequently made by the Botanical Section for carrying this suggestion into effect, and the cataloguing of the floras of Hayes and Keston Commons was assigned to me. As an instalment of the work I submit this first report, on the Flora of Hayes Common.

With Hayes Common I include for this purpose West Wickham Common, for, though the two commons are in different parishes, and under different management, yet they form one continuous tract, and the plants of West Wickham Common are with few exceptions found also on Hayes Common; so that to enumerate them separately would be mere duplication. (West Wickham Common is the part to the right of the road going up Coney Hill, and extends on the same side of the road nearly half a mile beyond the top of the hill. The steep wooded slope is noteworthy for a number of venerable pollard-oaks, mostly in various stages of decay, but some still vigorous, and for the abundance of bluebells in spring. On the brow of the hill are some ancient barrows and intrenchments.)

The united area of the two commons is some two hundred acres in extent, and constitutes an oblong tract rather over a mile in its greatest length, *viz.* from N.W. to S.E., and about half a mile in its greatest breadth from S.W. to N.E. The N.W. and N.E. borders are irregular, being encroached on by enclosed grounds, and there is another enclosure in the centre of the common. The surface forms an elevated plateau, sloping gently to the N.E., and bounded on the N.W. and S.W. sides by an abrupt escarpment. At the W. corner West Wickham Common extends down the slope of the escarpment nearly to the foot of the hill, and Hayes Common proper also extends part of the way down the escarpment at its S. end near the 'Fox Inn,' but for the most part the S.W. border of the common extends along the brow of the escarpment. The elevation varies from about 230 ft. O.D. at the foot of West Wickham Common to 400 ft. O.D. near the 'Fox.' Geologically the common is practically wholly composed of the Oldhaven beds; the lowest part of West Wickham Common scarcely touches the chalk; and the Thanet sand and Woolwich beds, if present near Coney Hall, must be very thin, and are almost entirely concealed by rainwash from the slopes above. The Oldhaven beds consist mainly of round-pebble gravel, with some sand. The surface soil is peaty on the bare common, but near the roads and on the N. border it is loamy or sandy. The surface of the common is mostly dry; there are no running streams, and the only water to be found is in a few ponds, one by Coney Hall, one near the centre of the S.W. border, and one or two near the N.E. border. These are the only stations for aquatic plants. The E. corner of the common near the road to Keston Mark is the wettest part of the common, the natural drainage tending in this direction; and here several bog-loving plants are still found. On the common there are a number of gravel-pits, some still worked, others long disused and overgrown with turf and bushes; others again are used as places of deposit for rubbish of various kinds.

The vegetation on the common has suffered much during the recent dry summers from fires, a large portion of the S.E. part of the common having been burnt a year or two ago. This fire was so strong as to cross the roads, whereas generally even a footpath is sufficient to arrest the progress of a heath fire. After a fire the first vegetation to appear consists of mosses, especially *Funaria hygrometrica* and *Ceratodon purpureus*, together with the young shoots of strong growing plants, such as the gorse and bracken, the deep roots of which the fire has failed to reach. In a year or two, when a little mould has formed, the burnt surface is taken possession of by certain plants which thrive in barren soils, such as *Senecio sylvaticus*, *Aira flexuosa*, *Rumex Acetosella*.

On the open parts of the common, as on peaty heaths generally, the vegetation is made up of comparatively few species of plants—the gorse, the ling, and purple heath, and several species of grasses, especially *Aira flexuosa*, *Festuca ovina*, and *Agrostis canina* forming the bulk; there are also hawthorn trees dotted about, which afford harbour for the honeysuckle and brambles.

Of the plants of wet and boggy ground which are still to be found on Hayes Common, may be mentioned the berry-bearing alder (*Rhamnus Frangula*), the marsh pennywort, *Genista anglica*, the cross-leaved heath, the creeping-jenny, the lesser skullcap, *Salix repens* and *aurita*, several rushes and sedges, and *Nardus stricta*. These, as already stated, are chiefly found in the low damp ground at the E. corner of Hayes Common. Old records quoted in Hanbury's 'Flora of Kent' name a number of other bog-loving plants as formerly found on Hayes Common, e.g. *Hypericum elodes*, *Drosera rotundifolia*, *Wahlenbergia hederacea*, *Menyanthes trifoliata*, *Narthecium Ossifragum*, and *Osmunda regalis;*

but these have now disappeared, either through extinction or possibly through the part where they grow having been enclosed. There is wet boggy ground near the Ravensbourne, a little beyond the present limits of the common.

Of aquatics found in the ponds already mentioned the following may be named, viz. *Ranunculus peltatus*, *Nasturtium palustre*. *Callitriche stagnalis*, *Peplis Portula*, *Veronica Beccabunga*, *Polygonum Hydropiper*, *Lemna minor*, *Alisma Plantago*, *Alopecurus fulvus* (?), and *Glyceria fluitans*.

On the dry sandy ground by the roadsides among the short turf grow a number of dwarf annual plants, which flower early in the year, and have ripened their seed and completed their life-history before the ground is parched up by the drought of summer; such are *Erophila vulgaris*, *Sisymbrium thalianum*, *Cerastium quaternellum*, *Buda rubra*, *Trigonella purpurascens*, several species of *Trifolium*, as *glomeratum* and *striatum*, *Ornithopus perpusillus*, *Myosotis collina*, *Scleranthus annuus*, and *Aira caryophyllea* and *præcox*. *Potentilla argentea* and *Plantago Coronopus* are other plants of sandy ground.

The numerous plants characteristic of chalky soils are, on the other hand, for the most part conspicuous by their absence. A few, as the rock-rose and *Bromus erectus*, are found in the dry turf of an old overgrown gravel-pit opposite Cooper's Cottages; *Geranium lucidum* and *Salvia Verbenaca* on banks on the N. border of the common, and the squat thistle (*Cnicus acaulis*) near Coney Hall.

Among denizens, or plants found chiefly in the neighbourhood of habitations, and probably introduced by human agency, though now well established, may be mentioned the celandine (*Chelidonium majus*), the sweet violet, *Geranium pyrenaicum*, the goutweed, and the hop. Other plants, no doubt introduced, are the dame's violet (*Hesperis matronalis*), the horse-radish, *Saponaria officinalis*, and *Claytonia perfoliata*.

Colonists, or weeds of cultivated ground, differ from denizens chiefly in their annual habit of growth. These are found most plentifully on the rubbish-heaps in the gravel-pits. Among them may be mentioned the poppies, the fumitory (*Fumaria officinalis*), *Erysimum cheiranthoides*, *Coronopus Ruellii*, *Thlaspi arvense*, *Anthriscus vulgaris*, *Æthusa Cynapium*, *Matricaria Chamomilla*, the red pimpernel, *Solanum nigrum*, several species of *Chenopodium* and *Atriplex*, and *Urtica urens*. The rubbish-heaps also yield a number of "casuals," *i. e.* plants accidentally introduced, but which have not established themselves as permanent residents. These are very uncertain in their appearance; they are represented by single or few individuals, and have often disappeared by the next year. As examples of plants which in this locality can only be regarded as casuals, I may name *Saponaria*

Vaccaria, the flax (*Linum usitatissimum*), *Melilotus officinalis*, the evening primrose (*Œnothera biennis*), the parsley, the teasel (*Dipsacus sylvestris*), *Chrysanthemum Parthenium*, the milk-thistle (*Mariana lactea*), the blue cornflower, and *Mercurialis annua*. Others which have not yet been dignified with a place, even in italics, in the 'London Catalogue,' are the Jerusalem artichoke (*Helianthus tuberosus*), and *Nicotiana affinis*.

The following are some other noteworthy plants of the common, and probably among its original inhabitants, *viz.* climbing fumitory (*Corydalis claviculata*) (West Wickham Common), *Tilia cordata* (small-leaved lime), a large tree by the road going up Coney Hill, *Vicia angustifolia*, *Rubus suberectus*, *Epilobium angustifolium*, *Saxifraga granulata*, *Hieracium tridentatum*, *Ruscus aculeatus* (butcher's-broom), *Carex distans*, and *Bromus commutatus*.

Brambles are plentiful, but I have not been able to study them sufficiently to make a full list. The ordinary species of mosses and fungi which might be expected to occur in such a locality are fairly plentiful, but I have not observed any kinds worthy of special notice, nor can I make a list sufficiently complete to be worth putting on record.

The total number of flowering plants which I have so far observed on Hayes Common is 320, and one fern; total 321.

The following are plants which I have not as yet observed on Hayes Common, though they are found on other commons in the neighbourhood, and might be expected to occur there:—*Clematis Vitalba*, *Nasturtium officinale*, *Oxalis Acetosella*, *Trifolium subterraneum*, *Lathyrus pratensis*, *Potentilla anserina*, *Cornus sanguinea*, *Poterium sanguisorba*, *Pyrus Aria*, *Apium nodiflorum*, *Viburnum Lantana* and *Opulus*, *Tussilago Farfara*, *Carduus crispus*, *Centaurea scabiosa*, *Vaccinium Myrtillus*, *Lysimachia nemorum*, *Myosotis versicolor*, *Melampyrum pratense*, *Origanum vulgare*, *Populus tremula*, and *Juniperus communis*.

The following plants are recorded in Hanbury's 'Flora of Kent' from Hayes Common, though I have not seen them there, viz. *Berberis vulgaris*, *Erysimum perfoliatum*, *Lepidium Smithii*, *Hypericum elodes*, *Trifolium subterraneum*, *Rubus fissus*, *Rogersii*, *carpinifolius*, *pulcherrimus*, *foliosus*, and *rosaceus* var. *infecundus*, *Potentilla recta*, *Alchemilla vulgaris*, *Rosa rubiginosa* and *micrantha*, *Drosera rotundifolia*, *Senecio viscosus*, *Jasione montana*, *Wahlenbergia hederacea*, *Menyanthes trifoliata*, *Cuscuta Epithymum*, *Narthecium ossifragum*, and *Osmunda regalis*. Some of these have been previously mentioned under the heading of bog-plants; others are casuals, which, as I have already said, are uncertain in their appearance. Others, again, as *Senecio viscosus* and *Jasione montana*, are still found in the neighbourhood, if not on the common itself.

I do not profess to have fully explored Hayes Common and its flora. On the contrary, almost every ramble over it reveals some fresh nook or corner, and, if this presents some slight difference of soil or situation, it commonly yields new species of plants. Hence I may have at some future time to present a supplemental list.

Plants of Hayes Common.

Explanation.—A. Aquatic plants. B. Bog- and wet-loving plants. C. Chalk- and lime-loving plants. S. Sand-loving plants. H. Heath- and peat-loving plants. Den. Denizens. Al. Aliens. Cas. Casuals. Col. Colonists.

Anemone nemorosa
Ranunculus peltatus. A. Ponds
R. Flammula. B. By pond
R. acris
R. repens
R. bulbosus
R. Ficaria
Papaver somniferum. Cas. Casual on rubbish heaps
P. Rhœas. Col. Ditto and roadside
P. dubium. Col. Ditto
Chelidonium majus. Den. Near Hayes village
Neckeria claviculata. H. West Wickham Common
Fumaria officinalis. Col. Rubbish heaps
Nasturtium palustre. A. Pond near N. border
Cardamine pratensis Ditto
C. hirsuta
Erophila vulgaris. S.
Hesperis matronalis. Al. Gravel pit
Cochlearia Armoracia. Al. Ditto
Sisymbrium Thalianum. S.
S. officinale
S. Alliaria
Erysimum cheiranthoides. Cas. Gravel pit near centre of common
Sinapis sinapioides = nigra. Cas.
S. sinapistrum = arvensis
S. alba. Cas.
Bursa bursa-pastoris
Coronopus Ruellii. Cas. Gravel pit filling
Thlaspi arvense. Col. Ditto
Raphanus Raphanistrum. Col. Rubbish heaps
Helianthemum Chamæcistus. C. Old pit opposite Cooper's Cottages
Viola odorata. Den. Near N.W. border
V. hirta. C. Old pit opposite Cooper's Cottages
V. silvestris ?
V. Riviniana
Polygala serpyllacea. H.
Saponaria Vaccaria. Cas. Casual in gravel pit
S. officinalis. Den. Near S.E. border
Silene Cucubalus
Lychnis alba
L. dioica
Cerastium quaternellum. S. Sandy ground near road
C. glomeratum. S.
C. triviale
Stellaria media
S. Holostea
S. graminea. H.
Arenaria trinervis
A. serpyllifolia
Sagina apetala

S. procumbens. By pond on N. border
Buda rubra. S. Roadside
Claytonia perfoliata. Al. Garden hedge-bank, N.W. border
Hypericum perforatum
H. humifusum
H. pulchrum. H.
Malva moschata. C.
M. sylvestris
M. rotundifolia
Tilia vulgaris. By houses, E. border
T. cordata. Coney Hill; a large tree
Linum usitatissimum. Cas. Roadside, S.E. border
Geranium pyrenaicum. C. Gravel pit near N. border
G. molle
G. pusillum
G. dissectum
G. lucidum. C. Bank near village
G. Robertianum
Erodium cicutarium. S.
Ilex aquifolium
Euonymus europæus
Rhamnus Frangula. B. Damp thicket near S.E. corner
Acer Pseudo-platanus
A. campestris
Genista anglica. B.
Ulex europæus. H.
U. nanus. H.
Cytisus scoparius. H.
Trigonella purpurascens. S. Gravel pit, West Wickham Common
Medicago lupulina
Melilotus officinalis. Cas. Casual in gravel pit
Trifolium pratense
T. arvense. S. Gravel pit
T. striatum. S. Sandy ground
T. glomeratum. S. Ditto
T. repens
T. procumbens
T. dubium
T. filiforme. S. Sandy ground
Lotus corniculatus
L. uliginosus. B. Damp ground near pond and in E. corner
Ornithopus perpusillus. S. Gravel pit
Vicia Cracca. South escarpment
V. sepium
V. sativa
V. angustifolia. H.
Prunus spinosa
P. Avium. West Wickham Common
Rubus idæus. H. Near village
R. suberectus. H. E. corner
R. Lindleianus
R. rhamnifolius
R. rusticanus
R. Sprengelii
Geum urbanum
Fragaria vesca
Potentilla Fragariastrum
P. silvestris (Tormentilla). H.
P. reptans
P. argentea. S. Sandy ground near road
Alchemilla arvensis. S.
Agrimonia Eupatoria. C.
Rosa canina
R. arvensis
Pyrus Aucuparia
P. Malus
Cratægus oxyacantha monogyna
Saxifraga granulata. Grove near village
Sedum acre. C. Gravel pit near N. border
Callitriche verna. A. Ponds
Peplis Portula. A. Pond near N. border
Epilobium angustifolium. H.
E. montanum
E. obscurum. B.
Œnothera biennis. Cas. Casual on rubbish heap

Circæa lutetiana
Bryonia dioica
Hydrocotyle vulgaris. B. Damp ground near pond and in E. corner
Sanicula europæa
Carum Petroselinum. Cas. Casual on rubbish heap.
Sison Amomum. Near village
Œgopodium Podagraria. Den. Ditto
Pimpinella Saxifraga
Chærophyllum temulum
Anthriscus vulgaris. Cas., S. Gravel pit
A. sylvestris
Æthusa Cynapium. Col. Gravel pit
Peucedanum sativum. C.
Heracleum Sphondylium
Caucalis Anthriscus
Hedera Helix
Sambucus nigra
Lonicera Periclymenum
Galium verum
G. Mollugo
G. saxatile
G. palustre. Near pond.
G. Aparine
Dipsacus sylvestris. Gravel pit
Scabiosa succisa. B. Damp ground, E. corner
Solidago Virgaurea
Bellis perennis
Filago germanica. S. Gravel pit
F. mimina. S. Ditto
Gnaphalium uliginosum. S.
Achillæa Millefolium
A. ptarmica. B. Damp ground
Chrysanthemum leucanthemum
C. Parthenium. Den. Casual in gravel pit
Matricaria inodora. Gravel pit
M. Chamomilla. Col. Ditto
Artemisia vulgaris. Coney Hill
Senecio vulgaris
S. sylvaticus. S.
S. Jacobæa
Arctium minus
Cnicus lanceolatus
C. palustris. B.
C. acaulis. C. Near Coney Hall
C. arvensis
Mariana lactea. Cas. Casual near Coney Hall
Centaurea nigra
C. Cyanus. Cas. Casual in gravel pit
Lapsana communis
Crepis virens
Hieracium Pilosella
H. rigidum = tridentatum
H. boreale
H. umbellatum. H.
Hypochæris radicata
Leontodon autumnalis
Taraxacum officinale
Sonchus oleraceus
S. asper
S. arvensis
Campanula rotundifolia
Calluna Erica. H.
Erica Tetralix. B. E. corner
E. cinerea. H.
Lysimachia Nummularia. B.
Anagallis arvensis. Col.
Fraxinus excelsior
Ligustrum vulgare
Myosotis arvensis
M. collina. S.
Volvulus sepium
Convolvulus arvensis
Solanum Dulcamara
S. nigrum. Gravel pit
Verbascum Thapsus
V. nigrum. C. Near Fox Inn
Linaria vulgaris
Scrophularia nodosa
Digitalis purpurea. H.
Veronica hederæfolia
V. agrestis
V. arvensis
V. serpyllifolia
V. officinalis. H.

V. Chamædrys
Euphrasia officinalis
Pedicularis sylvatica
Mentha hirsuta
Thymus Serpyllum
Calamintha Clinopodium
Salvia Verbenaca. C. Bank on N.E. border
Nepeta Glechoma
Scutellaria minor. B. Damp ground, E. corner
Prunella vulgaris
Stachys Betonica. Near S.E. border
S. sylvatica
Lamium purpureum
L. album
Ballota nigra
Teucrium Scorodonia
Plantago major
P. lanceolata
P. Coronopus. S.
Scleranthus annuus. S.
Chenopodium polyspermum. Col. Rubbish heaps in gravel pit
C. album. Col. Ditto
Atriplex patula. Col. Ditto
A. deltoidea. Col. Ditto
Polygonum aviculare
P. hydropiper. B. Pond
P. Persicaria
Rumex pulcher ?
R. obtusifolius
R. crispus
R. acetosa
R. Acetosella. S.
Euphorbia amygdaloides. C. South escarpment
E. Peplus
(E. Lathyris. Den. Copse near E. corner—not on common)
Mercurialis perennis
M. annua. Cas. Casual in gravel pit
Ulmus montana
U. surculosa
Humulus Lupulus. Den. Near village
Urtica dioica
U. urens. Col. Gravel pit
Betula verrucosa
Carpinus Betulus
Corylus Avellana
Quercus Robur pedunculata
Castanea sativa. Al. Plantations
Fagus sylvatica
Salix alba. E. corner
S. cinerea
S. aurita. B. E. corner
S. caprea. Ditto
S. repens. B. Ditto
Taxus baccata. C.
Pinus sylvestris. Plantations
Tamus communis
Ruscus aculeatus. S. escarpment
Scilla festalis
Juncus bufonius. B.
J. squarrosus. B.
J. effusus
J. conglomeratus
J. lampocarpus. B.
J. acutiflorus. B.
Luzula vernalis
L. campestris
L. erecta congesta
Arum maculatum
Lemna minor. A. Ponds
Alisma Plantago aquatica. A. Ditto
Carex muricata
C. divulsa
C. ovalis
C. sylvatica
C. distans
C. flava. B.
Anthoxanthum odoratum
Phleum pratense
Alopecurus fulvus ? A. Ponds
A. pratensis
Agrostis canina
A. palustris
A. vulgaris
Aira caryophyllea. S.
A. præcox. S.

Deschampsia cæspitosa
D. flexuosa. S.
Holcus mollis
H. lanatus
Trisetum pratense
Arrhenatherum avenaceum
Sieglingia decumbens. B.
Cynosurus cristatus
Koeleria cristata
Melica uniflora
Dactylis glomerata
Poa annua
P. nemoralis
Glyceria fluitans. A. Ponds
Festuca ovina
Bromus ramosus
B. erectus. C. Old pit opposite Cooper's Cottages
B. sterilis
B. commutatus
B. mollis
Brachypodium gracile
Solium perenne
Agropyrum repens
Nardus stricta. B. E. corner
Hordeum murinum
Molinia varia. B.
Pteris aquilina

7.—Some Notes on the Flora of the Eastern Border of Dartmoor.

By H. Franklin Parsons, M.D., F.G.S.

(Read November 18th, 1902.)

The following notes on the plants of a neighbourhood in some respects unlike our own are based on observations made during a fortnight spent in the first part of August, 1902, at Manaton, a village near the eastern border of Dartmoor. Owing to the elevated character of the region—the altitude varying from 400 to 1700 ft., and averaging about 1000 ft.—the vegetation there was considerably—I should estimate about three weeks—more backward than that in the neighbourhood of Croydon, being about as advanced as it would be with us in the middle of July; hence the proportion of plants still in flower was greater than it would be here. The neighbourhood comprises pasture, cultivated ground, woodland, moor, rock, bog, and running streams, but little still water. The subsoil is granite, except in a portion of the lower ground, where it consists of altered carboniferous shales. On these shales the surface soil exhibits more tendency to become peaty than on the granite, where, except on the higher hills, it is generally a brown gritty loam rather than peat. The flora also exhibited a corresponding difference, several plants, as *Myrica Gale*, *Radiola linoides*, and *Pinguicula lusitanica*, being found on the shales but not on the granite. The granite on the hills often crops out in rocky tors, or forms large rounded detached blocks; and these rocky masses are commonly covered with a luxuriant growth of mosses and lichens.

About 275 species of flowering plants were observed, the greater number occurring in the pastures, hedge-banks, and cultivated ground. On the moorland proper the number of species of plants is small, though some species occur in great abundance. The two common species of heath and the ling—all three occasionally found with white flowers—the whortleberry, bearing abundant fruit, the gorse, bracken, tormentil, and a few species of grass, especially *Agrostis canina*, almost make up the vegetation. In the wet places the bog-pimpernel, the ivy-leaved campanula, the bog-asphodel, bog St. John's wort, and round-leaved sundew are plentiful.

Devonshire is noted for its hollow lanes, with steep fern-clad banks. In the region I am speaking of the banks of the lanes and hedges are strengthened by large blocks of granite, and at the time of my visit were gay with flowers, especially the foxglove, the navel-wort, the sheepsbit, the knapweed, *Lychnis dioica*, *Sedum anglicum*, *Lotus major*, and *Galium Mollugo*. The foxglove has the local name of "curflops," a name which seems to have reference to the flowers drooping to one side, as the sam ename "curflops" is also given to the black or Tartary oat, with its close secund panicle; the white oat, with its loose spreading panicle, being called "sparvel." The navel-wort (*Cotyledon umbilicus*) is locally called "penny pies." This plant, with its tuberous root, fleshy trumpet-shaped leaves, and long spike of greenish white flowers, is a characteristic feature of the West Country flora; it is very common in the south-west counties of England, and in Wales; but in the east of England the only place where I have seen it is on the walls of a ruined castle in Lincolnshire, where it was no doubt introduced. At Croydon I have never succeeded in getting it to live through the winter. At Manaton it was everywhere abundant on banks, rocks, walls, trees and roofs.

The sheepsbit (*Jasione montana*), resembling a small bright blue scabious, is abundant, as in most parts of Devonshire. It is not common about Croydon, though this year I have found it in some abundance on the railway banks between West Wickham Station and Hayes. Of the knapweed (*Centaurea nigra*) the rayless form—the form found about Croydon—was the prevailing one on the high ground and granite soil. On the low ground and calcareous soil, at Bovey Tracey and Torquay, the rayed form was the usual one, as in the West of England generally.

In the cornfields *Silene anglica* and *Spergula arvensis* were among the most abundant weeds. *Chrysanthemum segetum*, a plant abundant in some western counties in cornfields on light soil, was not seen.

It was curious to note the absence or scarcity of some of the plants most abundant about Croydon. Of course, on a granite soil one would not expect to find many of the plants characteristic of our chalk downs, such as the rock-rose, the squat thistle, the wayfaring-tree, and the wild clematis. (The altitude may have to do with the absence of the latter, as it is a plant characteristic of the lowest or infer-agrarian zone of vegetation in Britain.) But some plants, which from the nature of the habitat one might have expected to be plentiful, were not seen, e. g. *Silene inflata*, *Galium verum*, *Bryonia dioica*, *Genista anglica*, and *Campanula rotundifolia*, while other species common with us occurred but sparingly, e. g. *Senecio Jacobæa*, *Tamus communis*, and *Euphorbia amygdaloides*.

Roses were scarce; *Rosa canina* and *R. arvensis* were the only ones seen, and that sparingly.

Of brambles, *Rubus leucostachys* and *R. rhamnifolius* were the prevalent forms. *R. discolor* (*rusticanus*), the common blackberry of lowland cultivated districts, was seen in two or three places on the lower ground only.

Of hawkweeds, *H. Pilosella* was the only species seen. Of willows, the sallow (*Salix cinerea*) was the only species plentiful; it often formed a small tree with a distinct trunk, about the size of a large plum-tree, instead of, as with us, a large bush branching from the root. *S. aurita* was found in a few places, and two osiers—*S. viminalis* and *S. triandra* (?)—by one stream; but the common tree-willows, *S. fragilis* and *S. alba*, were not seen, nor the dwarf willow, *S. repens*, which one would have expected to be plentiful in the boggy places. Sedges, too, were much less plentiful than might have been expected, *Carex muricata*, *flava*, *stellulata*, and *distans* being the only species observed.

Ferns are very abundant on banks, and in woods and wet places, especially the lady-fern, male fern, common polypody, *Lastræa Oreopteris*, *Blechnum*, and of course the bracken; also the black spleenwort (*Asplenium Adiantum-nigrum*), which is plentiful in most parts of Devonshire and Cornwall. The hart's-tongue and wall rue—plentiful on calcareous soils in Devonshire, were only found on one or two old walls. The filmy fern (*Hymenophyllum Tunbridgense*) grew among mosses, on the huge boulders of granite in the bed of a torrent.

Among the plants observed, besides those previously mentioned, the following may be named:—*Ranunculus Lenormandi*, *Corydalis claviculata*, *Fumaria confusa*, *Lepidium Smithii* (plentiful), *Hypericum Androsæmum*, *Oxalis stricta* (garden weed), *Linum angustifolium*, *Coronilla varia* (garden escape), *Alchemilla vulgaris*, *Œnanthe crocata* (common), *Valerianella dentata*, *Cuscuta Epithymum* (up to altitude of 1400 ft.), *Rhynchospora alba*.

8.—Report of the Meteorological Committee, 1902.

Prepared by the Hon. Sec., Francis Campbell-Bayard, F.R. Met. Soc.

(Read 17th March, 1903.)

The same arrangements under which the daily rainfall of the district round Croydon has been observed and tabulated have been continued throughout the year 1902. The number of stations in the printed list is 88, and there is one additional station—*viz.* Beddington Corner, the record of which is complete for the whole year, and which will be found at the end of this Report. These 89 stations are under the superintendence of 72 observers. There was a change of the observers at South Norwood, mentioned in the April sheet, and Mr. Craven, of Woburn Road, Croydon, ceased observing at the end of June, at which date he left the town.

Appendix I. to this Report contains a list of the observers, with particulars relating to the stations and gauges, and also the monthly tables of daily rainfall, of which a sufficient number have from month to month been pulled for the use of the Society. These printed tables contain the records of all observers, with the exception already mentioned, reporting to the Committee.

Appendix II. contains a record of all falls of rain of 1·00 in. and upwards, extracted from the monthly tables in Appendix I.

Having regard to the large fall of rain—*viz.* 3·51 in.—at Esher on September 10th, and which fall is more particularly referred to in the printed sheet for that month, it seems desirable to place on record in the form of a short table a list of all falls in the twenty-four hours, which are 2·50 in. and upwards. These are eleven in number, and are taken from our printed tables, which commence with the year 1888.

TABLE A.—Maximum Falls in 24 Hours of 2·50 in. and above.

Date.	Station.	Fall.
		in.
30 July, 1888	Deptford	2·54
2 Sept., 1889	Wilmington	3·90
17 July, 1890	Kingston	2·62
28 June, 1892	Caterham Valley	2·50
1 Sept., 1896	Keston (Tower Fields)	2·62
,,	,, (Bradfield) ..	2·54
,,	Merstham	2·51
10 Sept., 1902	Esher	3·51
,,	Carshalton	2·99
,,	South Norwood	2·76
,,	West Molesey	2·57

If this table is examined it will be seen that there are only two falls which are over 3·50 in., and only four falls over 2·75 in. The late Mr. G. J. Symons always warned his observers to look to the capacity of their gauges, saying that "once in your rainfall life you will have a fall of over four inches." In the fifteen years since the foundation of this organization there has been no such fall recorded, though the fall at Wilmington in 1889 is very close to this amount.

With reference to the rainfall for the year 1902, the impression has gone about that the year has been a very wet one, with a large number of rainy days. Both of these impressions are not in accordance with the facts, but, at the same time, if we look at tables B and C, we shall at once see how the impression has arisen.

TABLE B.

THE RAINFALL OF 1902 AS COMPARED WITH THE AVERAGE OF THE TEN YEARS 1891–1900.

STATIONS.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Knockholt (F. G.)	—1·30	—0·28	—0·18	—0·75	+1·14	+1·68	—0·94	+0·25	—1·57	—1·05	—1·14	—0·98	—5·12
Dorking	—1·40	—0·82	—0·15	—0·17	+1·01	+2·49	—0·74	+0·29	—1·54	—1·39	—0·37	—1·90	—4·69
Caterham	—1·72	—0·91	—0·15	—0·64	+1·27	+2·48	—1·07	+0·55	—1·07	—1·53	—1·19	—1·80	—5·78
Banstead	—1·28	—0·86	+0·15	—0·49	+0·85	+2·82	—0·69	+0·69	—1·51	—1·82	—0·50	—1·38	—4·02
Addington Hills	—0·98	—0·81	—0·07	—0·48	+1·14	+2·11	—0·71	+0·92	—1·33	—1·92	—0·90	—1·21	—4·24
Nutfield (O. G.)	—1·38	—0·74	+0·08	—0·56	+1·27	+2·16	—0·54	+1·08	—1·70	—1·19	—1·14	—1·29	—3·95
Reigate Hill	—1·47	—0·80	—0·14	—0·55	+0·92	+1·84	—1·08	+0·73	—1·69	—1·00	—1·00	—1·46	—5·70
Sevenoaks	—1·69	—0·72	0·00	—0·97	+1·47	+1·35	—0·98	+0·42	—1·94	—0·71	—1·61	—1·34	—6·72
Forest Hill (S. & V. W. C.)	—1·04	—0·75	+0·20	—0·63	+1·31	+1·72	—0·44	+0·63	+0·86	—1·51	—1·00	—0·71	—1·36
Addington (Pumping St.)	—1·16	—0·72	+0·04	—0·57	+1·28	+2·17	—0·91	+0·54	—1·49	—1·73	—1·13	—1·34	—5·02
Abinger (The Hall)	—1·46	—0·91	—0·12	—0·28	+0·90	+1·72	—1·23	+0·05	—1·56	—1·46	—0·38	—1·92	—6·65
Farningham Hill	—0·95	—0·55	—0·15	—0·79	+1·61	+1·33	—0·30	+0·99	—1·07	—1·25	—1·21	—0·77	—3·11
Redhill (Oxford Road)	—1·52	—0·77	—0·01	—0·44	+1·29	+2·09	—0·72	+0·79	—1·48	—1·13	—0·91	—1·52	—4·33
Bickley	—1·12	—0·91	—0·21	—0·74	+1·54	+1·24	—0·86	+1·64	—1·32	—1·94	—1·31	—0·81	—4·80
D'Abernon Chase	—1·14	—0·87	+0·09	—0·40	+0·47	+2·70	—0·36	+1·10	—1·30	—1·55	—0·45	—1·24	—2·95
Addington (Park Farm)	—1·05	—0·82	—0·02	—0·61	+1·34	+2·30	—0·79	+1·21	—1·39	—1·77	—1·24	—1·14	—3·98
Leatherhead	—0·83	—0·70	+0·16	—0·11	+0·62	+2·39	—0·56	+0·66	—1·02	—1·68	—0·24	—1·36	—2·67
Sutton*	—1·26	—1·02	—0·02	—0·43	+0·90	+2·34	—0·83	+0·79	+0·17	—1·77	—0·87	—1·16	—3·16
Forest Hill (Newfield H.)	—1·01	—0·77	+0·03	—0·67	+1·30	+1·78	—0·28	+0·73	+0·98	—1·67	—0·94	—0·59	—1·11
Orpington	—1·00	—0·78	—0·24	—0·68	+1·57	+1·58	—0·28	+0·93	—1·19	—1·60	—1·15	—0·99	—3·83
W. Norwood	—1·04	—0·98	+0·02	—0·73	+1·11	+2·39	—0·93	+0·81	+0·44	—1·78	—0·86	—0·81	—2·36
Oxshott	—0·91	—0·92	+0·02	—0·27	+0·67	+2·38	—0·44	+1·11	—1·35	—1·61	—0·59	—1·16	—3·07

THE RAINFALL OF 1902 AS COMPARED WITH THE AVERAGE OF THE TEN YEARS 1891–1900 (*contd.*).

STATIONS.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Croydon (Whitgift)	—1·20	—0·94	—0·11	—0·51	+1·14	+2·50	—0·95	+0·91	—0·48	—1·86	—0·86	—1·06	—3·42
Beckenham*	—0·97	—0·78	+0·07	—0·63	+1·46	+1·67	—0·59	+1·13	—1·00	—1·69	—1·04	—0·59	—2·96
Nunhead	—0·82	—0·63	+0·05	—0·64	+1·17	+1·63	—0·32	+0·43	+0·11	—1·53	—0·77	—0·68	—2·00
Sidcup	—0·98	—0·81	+0·09	—0·51	+1·75	+0·99	—0·48	+1·41	—0·87	—1·70	—0·90	—0·58	—2·59
Croydon (Duppas House)	—1·15	—0·97	+0·04	—0·46	+1·03	+2·24	—0·91	+0·87	—0·86	—1·82	—0·92	—1·12	—4·03
Wimbledon Hill*.........	—1·01	—0·86	+0·12	—0·46	+0·69	+2·60	—1·09	+0·52	+0·38	—1·80	—0·89	—0·80	—2·60
Greenwich	—1·00	—0·75	—0·14	—0·75	+1·89	+1·50	—0·96	+0·72	—0·07	—1·72	—0·93	—0·68	—2·89
Croydon (Waddon N. R.)	—1·11	—0·92	+0·09	—0·48	+1·13	+2·37	—0·83	+0·65	—1·07	—1·83	—0·78	—0·94	—3·72
Wallington	—1·10	—0·88	+0·03	—0·56	+1·23	+2·65	—0·77	+0·77	+0·11	—1·76	—0·93	—1·11	—2·32
Croydon (Brimstone Bn.)	—0·97	—0·84	—0·05	—0·52	+1·00	+2·43	—0·85	+1·94	+0·12	—1·58	—0·89	—0·75	—0·96
Beddington	—1·16	—0·97	—0·01	—0·55	+0·98	+2·45	—0·91	+0·87	—0·29	—1·75	—0·93	—1·09	—3·86
Richmond*	—1·19	—0·64	+0·01	—0·65	+0·94	+2·00	—1·05	+0·91	+0·68	—1·49	—0·65	—0·95	—2·08
Brixton....................	—1·10	—0·75	+0·13	—0·69	+1·34	+2·10	—0·24	+0·22	—0·31	—1·51	—0·83	—0·84	—2·48
Wimbledon (Sew. Wks.)	—1·05	—0·85	+0·03	—0·64	+0·84	+2·70	—1·10	+0·21	—0·10	—1·67	—1·00	—0·75	—3·38
Raynes Park	—1·25	—1·00	—0·07	—0·55	+0·54	+2·59	—1·16	+0·23	+0·11	—1·74	—1·00	—1·02	—4·32
New Malden.............	—0·85	—0·72	—0·25	—0·59	+0·61	+2·02	—1·05	+0·46	—0·39	—1·74	—1·05	—0·85	—4·40
Esher	—0·80	—0·75	+0·29	—0·38	+0·71	+1·97	—0·92	+1·34	+2·10	—1·49	—0·25	—0·84	+0·98
Kingston	—1·08	—0·88	+0·36	—0·62	+1·00	+2·67	—1·19	+0·40	+0·32	—1·76	—0·87	—1·07	—2·72
Surbiton	—0·95	—0·77	+0·10	—0·51	+0·75	+1·97	—0·81	+0·51	+0·56	—1·69	—0·58	—0·84	—2·26
Wilmington	—0·79	—0·55	—0·10	—0·62	+1·24	+1·21	—0·51	+1·48	—1·08	—1·21	—1·08	—0·82	—2·83
Battersea	—0·79	—0·52	+0·01	—0·69	+1·13	+1·69	—0·70	+0·81	—0·92	—1·49	—0·69	—0·66	—2·82
Deptford	—0·89	—0·66	—0·07	—0·61	+1·44	+1·35	—0·96	+0·45	+0·10	—1·72	—0·73	—0·64	—2·94

TABLE C.

NUMBER OF RAINY DAYS AT WALLINGTON, SURREY.

Average of 10 years	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year.
1891–1900	18	14	13	11	11	11	10	15	12	16	16	17	164
1902	9	12	12	10	20	19	11	18	7	19	12	12	161

On examining table B, which consists of 44 stations from amongst the 48 whose averages were given for the 10 years 1891–1900 in the Report for 1900, and comparing these averages with the rainfall of 1902, we shall at once be struck with the fact, in looking at the year's column, that the rainfall has been deficient, for out of all these stations only one shows an excess—*viz.* Esher—and this excess, anyone can see, has arisen from the great thunderstorm on September 10th. If now we take the several months we shall at once see the cause of the numerous complaints which have been made as to the want of water. The months of January, February, April, July, October, November, and December were all very dry. March we might call an average month, the small deficit in some places being balanced by the small excess in other places. September also was a dry month in the places which were not affected by the thunderstorm on the 10th. This leaves only the three months of May, June, and August as the months of an excess of rain, and these are the months when most persons take their holidays. It will be noticed how wet these months were, and I may remark that, though July appears dry, yet the last half of that month was wet with a large number of rainy days. If we now look at table C, we at once notice that May, June, August, and October had a considerable number of rainy days in excess of the average. These facts will at once account for the impression that the year was a wet one. It is, again, a curious fact that the driest place in the district appears to be Sevenoaks, which is closely followed by Abinger Hall.

Through the courtesy of a member of the Society, Mr. Baldwin Latham, who has a self-recording rain gauge, I have been furnished with the following figures for 1902. The actual number of hours during which rain fell during the year was 529·35, which gave a rate of fall of 0·39 in. per hour, and the actual number of days of twenty-four hours each as 22·056.

The Committee would like to point out that the number of days on which the fall of rain was one inch and above was not large, being only five, and that the amounts, with the exception of the fall on September 10th, which has already been dealt with, were not remarkable. In conclusion, the Committee desire to thank those, eleven in number, who have given donations in aid of this rainfall work, which, from the letters received, evidently supplies a want which has been felt for some time, and it seems a pity that the state of the finances does not permit the extension of the scheme to a larger area.

GORDON VILLA, BEDDINGTON CORNER, SURREY.

Observer—G. MILLER. Gauge 5 in. in diameter.

Height of gauge above ground, 5 ft.
Height of station above sea-level, 77 ft.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
0·50	0·70	1·48	0·55	2·27	4·56	1·14	3·54	2·64	1·44	1·84	1·66	22·32

NOTE.—The observations are taken at 7 p.m., and the amount entered to the same day.

APPENDIX II.

Falls of 1 Inch and above.

March 24th.—Hayes 1·21 in.

June 13th.—Worcester Park 1·29 in.; Raynes Park 1·27 in.; Clapham Park 1·19 in.; Wimbledon (The Downs) 1·18 in.; Brixton 1·16 in.; Wimbledon (Sewage Works) 1·15 in.; Morden 1·13 in.; Wimbledon (The Windmill) 1·10 in.; Streatham, and West Norwood 1·09 in.; Putney Heath 1·07 in.; Kingston 1·06 in.; Wandsworth Common 1·05 in.; Battersea 1·03 in.

June 15th.—West Wickham 1·00 in.

August 16th.—Holmbury St. Mary 1·00 in.

August 18th.—Croydon (Brimstone Barn) 1·20 in.; Esher 1·15 in.

September 10th.—Esher 3·51 in.; Carshalton 2·99 in.; South Norwood 2·76 in.; West Molesey 2·57 in.; Upper Norwood 2·38 in.; Forest Hill (Denmark Road) 2·12 in.; Surbiton 2·04 in.; Kingston 1·96 in.; Croydon (Windmill Road) 1·90 in.; Forest Hill (S. & V. Water Co.) 1·80 in.; Wallington 1·70 in.; Croydon (Brimstone Barn) 1·65 in.; Raynes Park 1·63 in.; Sutton and Wimbledon (The Downs) 1·61 in.; Beddington 1·34 in.; Deptford 1·31 in.; New Maldon 1·25 in.; West Norwood 1·24 in.; Worcester Park 1·21 in.; Benhilton 1·19 in.; Streatham 1·15 in.; Greenwich 1·09 in.; Richmond 1·08 in.; Croydon (Whitgift) and Wimbledon (Sewage Works) 1·05 in.

9.—Rainfall.

By W. Marriott, Esq.

(Read February 17th, 1902).

Mr. W. Marriott said he hoped his audience would not be disappointed, as he had brought no paper to read, nor had he come prepared to lecture, but rather to give a conversational address on the subject of rainfall. The subject was probably a familiar one to the members of the Society, as the Meteorological Committee of the Society had done good work for many years past by issuing a very useful Monthly Return of Rainfall in the district south of London, compiled from daily records.

Whence, however, comes the rain? If ice be put into a glass of water and its temperature reduced below that of the surrounding atmosphere, the outside of the glass becomes wet. This is caused by condensation of the moisture in the atmosphere owing to the temperature of the glass being below dew point, whereby the air is induced to part with a portion of its moisture. The atmosphere contains moisture, and the higher the temperature the more moisture it can absorb. On reaching colder currents of air in the higher regions the moisture is condensed and forms clouds; and when the temperature is reduced below the dew point the moisture is parted with in the form of rain.

The prevailing rain-bearing wind in the British Isles is the south-west, which comes off the Atlantic warm and highly charged with moisture. It strikes against the hills on the west and rain is discharged. Thus the heaviest rains occur chiefly on the west coast, and the amount increases according to altitude. Mr. Marriott said that he had collated the rainfall data for the Croydon district, published by the Meteorological Committee, for the ten years 1891–1900, according to height above sea level, and found that the rainfall increased with altitude, in the same way as in other parts of the country. The following were the results:—

Altitude.	Rainfall.
100 feet.	22·08 inches.
200 ,,	23·41 ,,
300 ,,	24·54 ,,
400 ,,	26·87 ,,
500 ,,	27·18 ,,
600 ,,	———
700 ,,	29·97 ,,

Peculiarities in the position of localities will modify the apparent fall. Thus a gauge placed at the top of a hill near the sea may not record so great a fall as one placed a short distance inland

and lower, because a high wind drives the rain over the higher station.

The average rainfall for the South-east of England, as recorded at Greenwich for the past eighty years, is just under 25 inches. As will be seen from the following figures, there have been during the past twelve years only two in which the rainfall has been above the average, viz.:—

In.	In.	In.
1890—3·06	1894+1·92	1898—6·11
1891+·006	1895—5·24	1899—2·63
1892—2·61	1896—2·49	1900—2·64
1893—4·87	1897—2·88	1901—4·65

There is thus a deficiency on the twelve years amounting in the aggregate to 35·22 inches, which is equal to about a year and a half's rainfall.

The average rainfall varies, of course, in different parts, and at Seathwaite in Cumberland is about 140 inches. There the spring months, April, May, and June, are the driest months on the average, the fall gradually increasing until January, and then again decreasing; whereas in the London area it is found that October is the wettest month, July next, and March the driest. It has been found useless to base calculations on records of short periods, owing to the great variability of the rainfall. Thus, if an average were struck from the records of the past ten or twelve years in the London district, it will be found to be much below the 25 inches recorded as an average for the past eighty years at Greenwich.

Snow and hail are other forms of rain, about one foot of the former being equal, speaking roughly, to one inch of rain. Hailstones are particularly interesting, as showing by their structure the varying changes of temperature passed through. Fortunately we do not get in this country such heavy hailstorms as occur in Australia, South Africa, and other places, where corrugated iron of ordinary thickness is riddled, but at times we do have them very heavy and destructive, in fact sometimes dangerous.

Mr. Marriott exhibited a numerous and interesting series of lantern-slides illustrating his address, giving diagrams, tables, and maps showing the different temperatures existing in different parts of the world, both in winter and summer, indicated by lines termed isotherms; the rainfall in different countries, and the monsoon areas of the East; also portraits of some well-known meteorologists. He hoped that more observers would be obtained, and the number of stations increased in the Croydon district, as it is necessary to obtain accurate information from numerous sources and for long periods, in order that it may be of use.

APPENDIX I.

CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY

(Meteorological Committee.)

No.	Stations.	Observers.	Size of Gauge.	Height above Ground.		Height of Statn. ab. Sea-level.
			IN.	FT.	IN.	FT.
	Holmbury St. Mary (Ioedwynds)	F. Cornish	5	1	0	530
	Abinger (The Rectory)..........	Miss Brodie-Hall....	5	1	0	381
	Abinger (The Hall)	The Lord Farrer	8	2	0	320
	Dorking (Denbies).............	J. Beesley	5	0	6	610
5	Redhill (Oxford Road)	W. H. Tyndall......	8	1	0	300
	Redhill (Linkfield Lane)	Mrs. Stephenson	5	1	0	350
	Nutfield (The Priory)	J. Moffatt	8	1	2	468
	Nutfield (The Priory) 2nd gauge	J. Moffatt	8	1	2	331
	Buckland (Hartswood)	R. W. Clutton	5	1	0½	174
10	Reigate Hill (Nutwood Lodge)..	H. E. Gurney	5	1	0	440
	Upper Gatton (The Park)........	F. Druce	5	1	0	600
	Merstham (Rockshaw Lodge)....	T. W. Hill..........	5	1	0	475
	Harp's Oak Cottage	R. C. Grant	5	1	0	454
	Chipstead (Shabden Park)	J. Crerar	5	1	0	550
15	Chaldon (The Rectory)	Rev. G. E. Belcher ..	5	1	0	542
	Caterham (Metropolitan Asylum)	P. E. Campbell, M.D.	5	1	0	610
	Westerham (Hill Estate)........	W. Morris	5	1	0	539
	Westerham (The Town)	W. Morris	5	1	0	380
	Knockholt Beeches (Field Gauge)	W. Morris	5	1	0	785
20	Knockholt Beeches (Tower Gauge)	W. Morris	5	24	6	812
	Chevening (The Park)..........	C. Sutton	5	1	0	360
	Sevenoaks (St. Johns Hill)......	W. W. Wagstaffe	5	1	10	380
	Chelsham (Fairchildes)	A. S. Daniell	8	1	0	600
	Warlingham (Egremont)........	H. Rogers	5	1	0	614
25	Kenley (Hazelea)	Mrs. Carr-Dyer	5	1	0	282
	Sanderstead (The Red House) ..	Capt. Carpenter, R.N.	5	1	0	320
	Burgh Heath (The Reservoir)....	Sutton Dis. Water Co.	5	1	0	580
	Leatherhead (Downside)	A. Tate	5	1	0	250
	D'Abernon Chase	Sir W. Vincent, Bart.	5	1	0	280
30	Oxshott (Beverstone)	W. H. Dines........	5	1	0	212
	Banstead (The Larches)	Rev. C. J. Taylor....	8	1	0	488
	Sutton (Sutton District Water Co.)	Sutton Dis. Water Co.	5	1	0	110
	Benhilton (Angel Hill)	J. C. M. Stanton	5	1	3	125
	Carshalton (Sewage Works)	W. W. Gale	5	1	0	118
35	Wallington (Maldon Road)......	F. Campbell-Bayard	5	4	1	140
	Beddington (Riverside)	S. Rostron	5	1	0	120
	Croydon (Brimstone Barn)	Croydon Corporation	5	1	0	130

No.	Stations.	Observers.	Size of Gauge.	Height above Ground.		Height of Statn. ab. Sea-level.
			IN.	FT.	IN.	FT.
	Croydon (Waddon New Road)....	Croydon Corporation	5	1	0	146
	Croydon (Duppas House)	Baldwin Latham	8	1	0	158
40	Croydon (Whitgift)	A. E. Watson	5	1	0	191
	Croydon (Woburn Road).........	M. L. Craven	5	1	1	178
	Croydon (Windmill Road)	A. Malden	5	1	6	174
	Croydon (Park Hill Rise)	H. F. Parsons, M.D.	5	1	0	250
	Croydon (Ashburton Road)......	J. E. Clark	5	1	0	188
45	Addington Hills (The Reservoir)..	Croydon Corporation	8	0	9	473
	Addington (Park Farm)	W. Whalley	5	1	0	268
	Addington (Pumping Station)....	Croydon Corporation	8	1	0	331
	West Wickham (Wickham Court)	Sir H. F. Lennard, Bt.	5	1	2	300
	Hayes (Hayes Place)	W. Beale	8	1	0	350
50	Farnborough (Feniton)	Miss Percy	5	1	0	376
	Orpington (Kent Water Co.)	W. Morris	5	1	0	220
	Farningham Hill (Hill House) ..	A. J. Waring	5	3	0	300
	Southfleet (Kent Water Co.)	W. Morris	5	1	0	82
	Chislehurst (Hawkwood)	Miss Edlmann	5	1	0	300
55	Bickley (The High Field)	J. Batten	5	1	2	295
	Bromley (The Palace)	Coles Child	5	1	0	187
	Bromley Common (Elmfield)	Rev. J. P. Faunthorpe	5	0	9	240
	Beckenham (Wickham Road)....	E. Scovell..........	5	1	2	155
	South Norwood (Apsley Road) ..	W. H. Cullis........	5	1	0	125
60	Morden (Steel Hawes)..........	Miss R. Hames......	5	5	2	100
	Wimbledon (Sewage Works)	C. H. Cooper	5	1	0	58
	Wimbledon (The Downs)	Francis Fox	5	1	1	162
	Wimbledon (The Windmill)	Jesse Reeves........	5	1	0	172
	Raynes Park (Pumping Station)..	C. H. Cooper	5	1	0	47
65	New Malden (Sewage Works)	T. V. H. Davison....	5	1	0	45
	Worcester Park (Manor Lodge)..	F. D. Outram	5	1	9	120
	Esher (Sewage Works)..........	A. J. Henderson	5	1	0	40
	West Molesey (Chelsea W. Co.)..	H. Wrinch..........	5	1	0	32
	Surbiton (Seething Wells)	H. Wrinch..........	10	0	6	25
70	Kingston (Sewage Works)	T. Stevens..........	5	1	0	25
	Richmond (The Terrace)	J. H. Brierley	8	1	6	109
	Putney Heath (The Reservoirs)..	H. Wrinch..........	5	1	0	180
	Wandsworth Com. (Patten Road)	F. J. Brodie	5	1	0	100
	Clapham Park (New Park Road)	D. W. Horner	5	1	3	128
75	Streatham (Woodfield Avenue)...	F. Jordan	5	1	0	120
	West Norwood (Thornlaw Road)..	W. Marriott	5	1	0	220
	Up. Norwood (Dulwich-wood Park)	J. P. Caldicott	5	1	2	276
	Forest Hill (Dartmouth Road) ...	L. W. F. Behrens ..	5	1	0	220
	Forest Hill (S. & V. Water Co.)..	J. W. Restler	5	1	0	344
80	Sidcup (Hatherley Road)	Lionel Burrell, M.D.	5	1	2	160
	Wilmington (Kent Water Co.)....	W. Morris	5	1	0	25
	Dartford (West Hill House)	Lieut-Col. C. N. Kidd	5	1	3	100
	Eltham (High Street)	W. Morris	5	1	0	245
	Greenwich (Royal Observatory)..	Astronomer Royal ..	8	0	5	155
85	Deptford (Kent Water Co.)	W. Morris	5	1	0	20
	Nunhead (S. & V. Water Co.)....	J. W. Restler	5	4	0	176
	Brixton (Acre Lane)	F. Gaster	8	1	0	77
	Battersea (S. & V. Water Co.) ...	J. W. Restler	5	3	0	21

Day of M	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Ha	Dorking (Denbies	Redhill (Oxford	Redhill (Linkfd.	Nutfield (old gaug	Nutfield (newgaug	Buckland	ReigateHi	Upper Gatton	Merstham	Harp's Oa Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·30	·33	·23	·25	·28	·27	·26	·26	·31	·25	·35	·28	·35
2	..	..	..	..	..	..	..	..	..	·01	..	..	·01
3	..	..	..	..	..	·01	..	..	..	..	·01	·01	·01
4	·16	·14	·13	·19	·11	·14	·10	·10	·10	·13	·18	·14	·15
5	..	..	..	..	..	..	..	..	·01	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	·07	·07	·06	..	..	..	..	..
9	·11	·08	·04	·09	·08	·01	..	..	·07	·04	·05	·06	·05
10	·02	..	..	..	·01	·02	·04	·04	·01	·01	·01	..	·01
11	..	..	..	..	·02	..	..	..	·01	·02	·02	·03	·02
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	·04	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	·01	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	·01	·01	..	..	..	..	..
22	..	..	..	..	..	·01	..	..	..	·01	·01	..	·01
23	..	..	..	..	..	..	·08	·11	..	..	..	..	..
24	·14	·23	·21	·20	·12	·11	..	..	·11	·10	·14	·11	·12
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·36	·34	·33	·40	·24	·27	·24	·25	·28	·23	·27	·24	·25
27	·02	·02	..	..	·02	·01	..	..	..	·01	..	·01	·02
28	..	..	..	..	..	..	..	..	·02	..	·01	..	..
29	..	·02	..	..	·01	..	..	..	..	..	..	..	..
30	..	..	·04	..	·01	·02	·02	·01	·01	·02	·02	·01	·02
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·11	1·20	·98	1·11	·90	·94	·82	·84	·93	·84	1·07	·89	1·02
†	..	..	..	..	..	..	..	..	..	..	..	..	..

Day of M	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·32	·30	·31	·25	·20			·21	·14		·31	·28	·24
2	..	..	·05	..	..			..	·01		..	·01	·01
3	·01	·02	·01	·02	..			..	..		..	..	..
4	·13	·11	·12	·14	·15			·18	·13		·15	·13	·15
5	..	·01	..	·01	..			·02	·02		..	·01	·01
6	..	..	..	..	..			..	..		..	..	..
7	..	..	..	..	..			..	..		..	..	..
8	..	..	..	..	..			..	..		..	..	..
9	·04	·06	·04	·07	·06			·07	·05		·05	·03	·02
10	·01	..	·01	·05	..			·01	..		·01	..	·01
11	..	·03	·01	·06	..			·08	·18		·03	·03	·03
12	..	..	..	..	..			..	..		..	..	..
13	..	..	..	..	..			..	..		..	..	..
14	..	..	..	..	..			..	..		..	..	·01
15	..	..	..	..	..			..	..		..	..	..
16	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
17	..	..	..	..	..			..	..		..	..	..
18	..	..	..	..	..			..	..		..	..	..
19	..	..	..	..	..			..	..		..	·01	..
20	..	..	..	..	..			..	..		..	..	..
21	..	..	..	..	..			..	..		..	..	..
22	·01	..	·02	·03	·08			..	·02		·03	..	·02
23	..	..	..	..	..			..	..		..	·02	..
24	·15	·09	..	·14	·10			·20	·11		·15	·16	·11
25	..	..	..	..	..			..	..		..	..	..
26	·25	·28	·35	..	..			·22	·17		·22	·19	·17
27	..	..	·01	·01	·04			·04	·01		·02	·01	·02
28	·02	..	..	..	..			·02	..		·12	·02	·01
29	..	..	..	..	..			..	..		..	..	..
30	·03	..	..	..	..			..	·02		·02	·03	·03
31	..	..	..	..	..			..	..		..	..	..
*	·97	·90	·93	·78	·63	1·05	·60	1·05	·86	1·01	1·11	·93	·84
†	..	..	..	..	..	..	..	..	..	..	..	..	..

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for January is 1·87 in.* **January, 1902.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	·30	·16	·17	·21	·11	·09	·10	·11	·11	·08	·10	·11
2		..	..	..	..	..	..	..	..	..	..	..	..
3		..	..	..	..	..	..	..	..	..	..	..	..
4		·16	·12	·15	·14	·15	·14	·15	·17	·15	·14	·14	·13
5		..	·01	·02	..	..	..	..	..	..	·01	·01	·01
6		..	..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..	..
8		..	..	..	..	..	..	..	..	..	..	..	..
9		·03	·03	·03	·02	·02	·02	·02	·02	·02	..	·01	·02
10		..	..	..	..	..	..	..	..	..	..	..	..
11		..	..	·02	·03	·03	·02	·03	·03	·03	·04	·03	·03
12		..	..	..	..	..	..	..	..	..	..	..	..
13		..	..	..	..	..	..	..	..	..	..	..	..
14		·02	..	..	..	..	..	..	..	..	..	·01	..
15		..	..	..	·01	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..
17		..	..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	..	..	..	..	..	..	..	..
19		..	..	..	·01	..	..	..	..	..	..	..	..
20		..	..	..	..	..	..	..	..	..	..	..	..
21		..	..	..	..	..	..	..	..	..	..	..	..
22		..	..	..	·01	·03	·01	·02	·02	·01	..	·02	·02
23		..	..	..	..	..	..	..	..	..	..	..	..
24		·19	·12	·14	·17	·12	·11	·11	·13	·11	·13	·12	·12
25		..	..	..	..	..	..	..	..	..	..	..	..
26		·27	·28	·26	·23	·18	·18	·18	·19	·18	·16	·20	·19
27		..	·02	..	·01	·01	·01	·01	..	·01	..	·01	·01
28		·01	·01	·02	·01	·01	·01	..	·02	·01	..	..	·02
29		..	..	..	..	..	..	..	..	..	..	..	..
30		..	..	..	·02	..	·01	·02	·01	·01	·03	..	·01
31		..	..	..	..	..	..	..	..	..	..	..	..
*	·77	·98	·75	·81	·87	·66	·60	·64	·70	·64	·59	·65	·67
		..	..	..	..	..	..	..	..	..	..	..	..

Day of Mo.	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·14	·10	·09	·10	·11	·21	·26	·25	·22	·07	·15	·20	·17
2	..	·01	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	·01	..	·01	..	..	..	..	·02	..	..
4	·15	·14	·14	·14	·15	·17	·20	·17	·17	·11	·14	·14	·12
5	..	·01	..	·01	·02	·02	..	·01	·03	..	·01	·01	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·03	·02	·02	·02	·01	·02	·03	·03	·01	·02	·02	..	·01
10	..	..	..	·01	..	..	..	..	..	..	..	..	..
11	·02	·03	·02	·03	·04	·04	·04	·03	·03	·03	·03	·01	·04
12	..	..	..	..	..	·01	..	..	..	..	·01	..	·01
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·01	·01	·01	·01	·01	·02	·02	·01	·01	·01	..	..	·02
23	..	..	..	..	..	..	·01	..	..	..	·01	..	..
24	·12	·12	·12	·12	·11	·11	·15	·16	·13	·10	·14	·16	·16
25	..	·01	..	..	..	..	..	..	..	..	..	..	..
26	·18	·18	·18	·16	·18	·17	·20	·17	·16	·12	·18	·16	·19
27	..	·02	·01	·01	·02	·02	·02	..	..	..	·01	..	·03
28	·03	·02	·02	·03	·02	·03	·04	·02	·03	..	·04	·06	·04
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·02	·02	..	·02	·01	·02	·04	·02	·02	·06	·03	·02	·01
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·70	·69	·61	·67	·68	·85	1·01	·87	·81	·52	·79	·76	·80
	..	..	..	..	..	..	..	..	..	..	..	..	..

Day of Mo	Southfleet	Chislehurs	Bickley	Bromley	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·06	·10	·11	·12	·10	·12	·07	·11	·20	·17	·14	·16	·15
2	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	·01	..	..	·01	..	..	..	..	..
4	·07	·16	·15	·10	·09	·19	·13	·17	·13	·14	·14	·16	·12
5	..	..	·01	·02	·02	·02	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·01	·01	·01	·02	·02	·03	·01	·03	·01	·02	·02	·02	..
10	·02	..	..	..	..	..	..	..	..	..	..	..	..
11	·03	·03	·03	·04	·03	·03	·05	·03	·02	..	·03	·03	·02
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·02	..	·02	·02	·02	·01	..	..	·01	·02	·01	·02	·01
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·11	·09	·09	·11	·11	·11	..	·01	·01	·11	·12	·08	·10
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·12	·47	·19	·18	·17	·18	·28	·08	·17	·19	·19	·19	·18
27	·04	..	..	..	·01	·01	..	·21	..	·02	..	·01	·01
28	·02	..	..	..	·03	..	..	·02	..	·01	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	·03	·02	·04	·03	·02	..	·01	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·50	·89	·63	·65	·64	·72	·44	·68	·55	·68	·65	·67	·59
†	..	..	..	..	..	..	..	..	..	..	..	..	..

Day of Mo	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·12	·12	·20	·15	·14	·11	·12	·17	·14	·06	·12	·07	·10
2	..	·01	..	..	..	..	·01	..	..	..	..	..	..
3	·01	..	..	..	..	..	..	..	..	·01	..	..	..
4	·15	·22	·12	·16	·15	·08	·13	·14	·13	·12	·14	·14	·12
5	..	..	..	..	..	..	..	·01	·01	·02	·01	·02	·03
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·02	·02	·02	·01	·01	·02	·12	·03	·01	·03	·02	·02	·02
10	..	·01	..	..	..	..	..	..	..	..	..	..	..
11	·04	·03	·03	·02	·03	·03	·03	·04	·02	·03	·03	·04	·04
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	·02	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	·01	..	..	..
19	..	..	..	..	..	..	..	..	..	·01	..	..	..
20	..	..	..	..	·01	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	·01	..	..	..
22	·01	..	..	..	·02	·02	·01	..	..	·01	·01	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·10	·14	·11	·12	·13	·11	·12	·08	·07	·06	·09	·10	·06
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·20	·22	·23	·21	·23	·19	·18	·18	·18	·16	·21	·18	·23
27	..	·02	·02	·01	..	..	·01	·02	..	·01	·01	·01	·01
28	·01	..	..	..	·01	·02	·01	..	·01	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·01	..	·01	..	..	..	..	..	..	·02	·01	..	·02
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·67	·79	·74	·68	·73	·58	·64	·67	·57	·58	·65	·58	·63
†	..	..	..	..	..	..	..	..	..	..	..	..	..

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **January, 1902.**

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·11	·11	·08	·08	·11	·14	·12	·10	·16	·11
2	..	..	..	..	..	..	·01	..	..	..
3	·01	..	..	..	·01	..	..	..	..	..
4	·13	·10	·09	·08	·01	·13	·12	·10	·15	·10
5	·01	..	..	..	·11	..	·01	..	·01	..
6	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..
9	·02	·03	·01	·01	·03	·01	·01	..	·02	·02
10	..	..	..	..	..	..	..	..	..	..
11	·02	·04	·03	·05	·02	·03	·02	·02	·03	..
12	..	..	·01	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..
15	..	..	·01	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..
22	·01	·02	..	..	..	·01	·01	..	·01	..
23	..	..	..	..	..	..	..	..	..	..
24	·09	·12	·13	·12	·10	·10	·08	·06	·07	·09
25	..	..	..	..	..	..	..	..	..	..
26	·17	·19	·13	·13	·15	·17	·16	·14	·18	·16
27	·01	·04	·04	·04	·03	·03	·02	..	..	..
28	..	..	..	..	..	..	..	..	·01	..
29	..	..	..	..	..	..	..	..	..	..
30	..	·03	·03	..	·03	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..
*	·58	·68	·56	·51	·60	·62	·56	·42	·64	·48
†	..	..	..	..	..	..	..	..	..	..

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(January, 1902.)

The month has been a very remarkable one. It is very unusual to find a dry period of ten days in the middle of January. There have been several cases of influenza and measles in the district, and the month as a whole has been unhealthy. One of the observers at Redhill saw and heard a lark on the 2nd, and the observer at Nutfield reports a thrush's nest with eight eggs in it on the 6th, and snowdrops, winter aconite, and primroses are in full flower. The end of the month has been cold, and vegetation was greatly checked. Hail fell at Clapham Park on the 4th and 5th, and snow fell generally throughout the district on the 26th and 30th. Solar halos were seen at Clapham Park and Greenwich on the 13th and 14th, and at Upper Gatton on the 14th; whilst lunar halos were observed at Greenwich on the 24th and 25th, at Upper Gatton on the 18th, at Wallington on the 22nd, and Clapham Park on the 27th. The mean temperature of the month is about four degrees above the average, and was at Croydon (Duppas House and Whitgift) 41°·8, at Wallington 41°·3, at Worcester Park 41°·2, at Redhill 40°·7, at Chipstead 40°·6, and at Warlingham 40°·1. The rainfall of the month is about one-third of the average. There were recorded at Wallington 52·9 hours of sunlight, which is 10·7 hours or four per cent. above the January average of the fifteen years 1886–1900.

FRANCIS CAMPBELL-BAYARD, F.R.Met.Soc.,
Hon. Sec.

Day of Mo	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	·01	..	..	..
2	..	..	..	..	·01	..	·02	·02	·01	·01	·02	·03
3	·16	·14	·14	·15	·10	·12	·09	·09	·08	·10	·13	·10
4	..	..	..	..	·02	..	·02	·01	·01	·01	·02	..
5	..	..	..	..	..	..	..	..	..	..	..	..
6	·10	·12	·10	·14	·10	·11	·11	·11	·10	·09	·10	·12
7	·06	..	·06	..	·02	..	·07	·07	·05	·01	·03	·04
8	·06	·11	·04	·07	·08	·11	·06	·04	·04	·09	·08	..
9	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..
14	..	·02	..	..	·02	·03	·01	·01	·01	·01	·02	·07
15	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..
19	..	·02	..	..	..	·01	·02	·01	..	·01	..	·01
20	..	..	..	..	..	·01	..	..	..	·01	..	..
21	..	..	..	..	..	..	·01	·01	..	..	·03	..
22	·26	·26	·21	·20	·17	·20	·11	·17	·18	·16	·18	·18
23	·10	·09	·08	·07	·08	·02	·03	·04	·03	·06	·06	·04
24	·26	·21	·19	·21	·19	·20	·21	·21	·27	·18	·22	·20
25	·06	·06	..	·05	·08	·07	·03	..	·04	·08	·04	·04
26	·28	·30	·38	·34	·21	·22	·16	·19	·22	·19	·21	·19
27	·16	·17	·11	·11	·10	·08	·10	·11	·08	·09	·11	·11
28	..	·02	·01	·02	·02	·02	·03	·05	..	·03	·04	·02
*	1·50	1·52	1·32	1·36	1·20	1·20	1·08	1·14	1·13	1·13	1·29	1·15
†	2·61	2·72	2·30	2·47	2·10	2·14	1·90	1·98	2·06	1·97	2·36	2·04

Day of Mo	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..			..	..		..	..	·01
2	..	·04	·02	..	..	..			·02	·03		·03	·03	..
3	·12	·15	·09	·10	·16	·11			·15	·09		·12	·11	·17
4	·02	·02	·04	..	·04	·03			·07	·03		·03	·02	·02
5	..	..	..	..	..	..			..	..		..	..	..
6	·08	·12	..	..	·15	·10			·16	·16		·12	·05	·09
7	·05	..	..	·07	..	..			..	·04		·04	·06	·02
8	·05	·11	·10	·10	..	..			·15	·06		·04	·08	·08
9	..	..	..	..	..	..			..	..		..	..	..
10	..	..	..	..	..	..			..	..		..	..	..
11	..	..	..	..	..	..			..	..		..	..	..
12	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
13	..	..	..	..	..	..			..	..		..	·01	..
14	·01	·01	·03	..	..	..			·03	·03		·03	·03	·02
15	..	..	..	..	..	..			..	..		..	..	·02
16	..	..	..	..	..	..			..	..		..	..	..
17	..	..	..	..	..	..			..	..		..	..	..
18	..	..	..	..	..	..			..	..		..	..	..
19	..	..	..	·02	..	..			·04	·02		..	·02	·03
20	·01	·02	..	·04	..	..			..	..		·02	..	·01
21	..	..	..	·01	..	..			..	..		..	·13	..
22	·19	·16	·17	·18	·37	·26			..	·23		·19	..	·11
23	·05	·05	·05	·04	·13	·13			..	·09		·05	·03	·02
24	·22	·22	·20	·22	·27	·27			·34	·18		·22	·23	·20
25	·04	·06	..	..	·01	..			·28	·19		·02	·03	·02
26	·22	·25	·25	·27	·21	·10			·23	..		·28	·27	·25
27	·11	·12	·08	·10	·05	·15			·09	·12		·13	·09	·05
28	·04	·03	·03	·05	·02	·10			·11	·02		·05	·03	·01
*	1·21	1·36	1·06	1·20	1·41	1·25	1·60	1·17	1·67	1·29	·85	1·37	1·22	1·13
†	2·23	2·33	1·96	2·13	2·19	1·88	2·65	1·77	2·72	2·15	1·86	2·48	2·15	1·97

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for February is 1·60 in.* **February, 1902.**

Day of Mo.	Burgh Heath	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	..	..	..	..	..	..	..	..	..	..	·02
2		..	..	·01	·02	·01	·01	·02	·01	·01	..	·01
3		·17	·12	·10	·15	·10	·10	·09	·11	·10	·10	·12
4		..	..	..	·01	..	..	·01	..	..	..	..
5		..	..	..	..	..	..	..	..	..	..	..
6		·08	·03	..	·10	..	·03	·03	·04	·04	·04	·06
7		·03	..	·01	·01	..	·01	..	..	..	..	·01
8		·05	·07	·08	·06	·11	·05	·07	·07	·06	·07	·06
9		..	..	..	..	..	..	..	..	..	..	..
10		..	..	..	..	..	..	..	..	..	..	..
11		..	..	..	..	..	..	..	..	..	..	..
12		..	..	..	..	..	..	..	..	..	..	..
13		..	..	..	..	..	..	..	..	..	..	..
14		..	..	..	·01	..	·01	..	·01	·01	·02	·04
15		..	..	..	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..
17		..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	·01	..	..	..	..	..	..
19		..	..	..	·01	·02	·02	..	·01	..	..	..
20		..	..	..	·01	..	·01	..	..	·01	..	·02
21		..	·03	..	·01	..	..	..	..	·01	..	..
22		·13	·07	·05	·15	·06	·05	·05	·07	·08	·06	·07
23		·04	·02	·02	·02	·01	..	..	·01	·01	·02	·01
24		·19	·18	·14	·20	·18	·21	·19	·20	·20	·17	·20
25		·33	·05	·05	·04	·06	·03	·05	·05	·03	·02	·02
26		·09	·20	·18	·30	·19	·19	·18	·21	·18	·16	·18
27		·10	·05	·05	·10	·01	·02	·02	·04	·05	·04	·05
28		..	..	..	·01	..	..	..	..	..	..	..
*	1·21	1·21	·82	·69	1·21	·76	·74	·71	·83	·79	·70	·87
†	1·98	2·19	1·57	1·50	2·08	1·42	1·34	1·35	1·53	1·43	1·29	1·52

Day of Mo.	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farnborough	Orpington	Farningham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	·02	..	..	·01	..	..	..	..	..	..	..	..	..
2	·01	·02	·02	·02	·01	·01	·01	·02	·01	..	..	·01	..	..
3	·12	·10	·11	·12	·12	·14	·15	·16	·15	·15	·09	·14	·13	·15
4	..	..	..	·01	..	..	·01	·01	·01	..	·01	·02	·01	·03
5	..	..	..	..	..	·02	..	..	..	..	..	..	..	..
6	·05	·05	·05	·04	·06	·07	·09	·08	·11	·11	·05	·09	·10	·13
7	..	·01	·01	·01	·01	..	·01	..	·01	..	..	·01	..	..
8	·06	·08	·07	·06	06	·06	·08	·10	·07	·07	·06	·06	·06	·06
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·01	·03	·03	..	·01	·03	·02	·04	·05	·05	·02	·02	·02	·02
15	..	..	..	..	·01	..	·01	·04	..	·02	..	..	..	·01
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·01	·01	·01	..	·01	·01	·01	..	·01	·01	..	·01	..	·02
20	..	..	..	..	·01	·01	·02	·01	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	·01	..	..	..	..	..
22	·07	·07	·07	·07	·07	·01	·09	·13	·12	·09	·08	·17	·14	·18
23	·01	·01	·02	·01	·01	·01	·02	·03	·03	·03	·02	·05	·03	·03
24	·20	·20	·18	·20	·20	·15	·18	·16	·20	·20	·10	·21	·20	·24
25	·02	·03	·04	·01	·01	·06	·02	..	·01	..	·02	·02	..	·01
26	·18	·21	·17	·17	·19	·18	·21	·31	·27	·24	·12	·20	·17	·15
27	·07	·07	·06	·04	·05	·04	·05	·06	·08	·05	·04	·06	·07	·10
28	..	..	..	..	·01	..	·01	·02	·03	·02	·01	·01	·01	·01
*	·81	·91	·84	·76	·85	·80	·99	1·17	1·17	1·04	·62	1·08	·94	1·14
†	1·48	1·61	1·53	1·37	1·52	1·48	1·84	2·18	2·04	1·85	1·14	1·87	1·70	1·94

† The totals from January 1st.

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	·01	..	..	..	..	..
2	·01	..	·01	·02	..	·02	..	..	·01	·02	·02	·02	·01
3	·09	·14	·14	·14	·14	·12	·13	·10	·05	·09	·09	·09	·08
4	·04	..	..	·02	·01	..	..	..	..	..	..	..	..
5	·01	..	..	..	..	..	..	..	..	..	..	·01	..
6	·12	·10	·09	·04	·10	·05	..	·01	..	·01	..	..	..
7	..	..	..	..	..	·01	..	·01	·01	..	..	·01	..
8	·07	·08	·05	·08	·07	·03	·10	·07	·08	·09	·10	·09	·12
9	..	..	..	..	..	..	..	·03	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	·01	..
13	..	..	..	..	..	..	..	..	·01	..	..	..	..
14	·02	..	·03	·04	·04	·07	..	·01	..	..	..	·01	..
15	..	..	..	..	..	..	..	·01	..	..	..	..	..
16	..	·02	..	..	..	..	..	..	..	..	..	..	..
17	·01	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	·01	..	..	..	..	..	..	..	..	..
19	·03	..	·02	·03	·02	·03	·03	..	..	..	..	·01	..
20	..	..	..	..	..	..	..	..	..	·02	..	..	..
21	·01	..	..	..	..	..	..	·02	..	..	..	..	..
22	·13	·09	·09	·09	·08	·09	·06	·07	·06	·07	·05	·07	·04
23	·02	·02	·02	·03	·03	·02	..	·03	·01	·01	·09	·01	·01
24	·20	·20	·21	·19	·17	·19	·21	·23	·22	·21	·24	·21	·20
25	..	·01	..	·02	·02	..	..	..	·02	·05	·02	·04	·05
26	·11	·18	·15	·16	·15	·15	·16	·15	·10	·11	·10	·12	·06
27	·07	·04	·03	·04	·05	·03	..	·03	·03	·04	·04	·05	·01
28	·02	..	..	..	·02	..	..	·02	..	..	·01	..	..
*	·96	·83	·84	·91	·90	·81	·69	·80	·60	·72	·76	·75	·58
†	1·46	1·72	1·47	1·56	1·54	1·53	1·13	1·48	1·15	1·40	1·41	1·42	1·17

Day of Mo.	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	·02	..	..	..	..	..	..	..	..	..	..	..
2	·02	·01	·01	·02	·01	..	..	·01	·01	·03	·01	..	·05
3	·11	·07	·09	·09	·10	·03	·07	·07	·07	·10	·10	·15	·09
4	..	·01	..	..	..	·08	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	·01	..	..	..
6	..	..	..	..	..	..	·01	..	..	..	·02	..	..
7	·03	·03	·02	·01	·01	..	..	..	..	..	·01	..	..
8	·09	·06	·09	·10	..	·09	·08	·10	·10	·09	·06	..	·10
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	·01	..	..	..	..	..	·01	..	·03	·01	..	..
15	..	..	..	..	..	..	..	..	..	·01	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	·04
17	..	..	·01	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	·01	..	..	..	..	..
19	..	..	..	..	..	..	..	..	·01	·02	·01	..	..
20	·01	..	..	·01	..	..	..	..	..	·01	·01	·13	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·05	·09	·15	·07	·11	·18	·17	·13	·11	·08	·07	·05	·13
23	·01	·01	·01	..	·02	·02	·04	·04	·05	·03	·01	·03	·04
24	·18	·18	·18	·18	·26	·27	·25	·21	·22	·22	·20	·21	·21
25	·05	·04	·05	·06	·06	·05	·05	·13	..	·04	·04	·04	·02
26	·12	·10	·10	·10	·11	·14	·10	·12	·11	·10	·12	·12	·12
27	·04	·07	·05	·04	·05	·05	·04	·03	·02	·03	·03	·01	·02
28	..	..	·04	·01	·02	·03	..	..	..	·01	..	..	..
*	·71	·70	·80	·69	·75	·94	·81	·86	·70	·81	·70	·74	·82
†	1·38	1·49	1·54	1·37	1·48	1·52	1·45	1·53	1·27	1·39	1·35	1·32	1·45

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. February, 1902.

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..
2	·01	·01	·02	..	·01	·01	·01	..	·01	..
3	·06	·11	·08	·11	·10	·08	·06	·02	·08	·03
4	·02	·01	·01	..	·01	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..
6	·01	·06	·10	·08	·03	·01	·01	..	..	..
7	..	·03	·01	·06	·01	..	..	..	..	·01
8	·07	·05	·08	..	..	·07	·07	..	·09	..
9	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..
14	..	·03	·02	·02	·03	·03	·03	·08	..	..
15	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	·01	..
19	·02	·03	·01	·04	..	·01	..	..	..	..
20	·02	..	..	..	·01	..	·01	..	..	..
21	·01	..	·01	..	..	·01	..	..	..	..
22	·10	·12	·13	·12	·12	·18	·14	·12	·19	·25
23	·02	·05	·03	·02	·02	·03	·03	·01	·03	·02
24	·19	·24	·24	·27	·23	·24	·23	·21	·19	·20
25	·02	·01	..	..	·01	·01	·01	·02	·07	·02
26	·10	·11	·08	·07	·12	·09	·10	·10	·12	·10
27	·02	·03	·04	·04	·01	·02	·02	·02	·03	·02
28	·01	·01	..	..	..	..	..	..	·01	..
*	·68	·90	·86	·83	·71	·79	·72	·58	·83	·65
†	1·26	1·58	1·42	1·34	1·31	1·41	1·28	1·00	1·47	1·13

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(February, 1902.)

The month for the first three weeks was very dry and cold, but the last week was warm and wet. The rainfall is again very small, being less than half the average for the district. The month has been very unhealthy, influenza being especially prevalent, whilst there have been a few cases of small-pox, several cases of scarlet fever and measles; diphtheria and typhoid are decreasing. Snow fell generally on about seven days during the first three weeks, the greatest depth being two inches at Sevenoaks on the 6th. The gale on the 1st did some damage to trees, more especially at Nutfield. Vegetation is rather backward. Slight fogs and hoar frosts occurred during the first three weeks. Crocuses and snowdrops flowered on the 24th at Warlingham. Solar halos were observed at Greenwich on the 10th, 22nd, and 25th. The mean temperature of the month is nearly 4° below the average, and was at Croydon (Duppas House) 35°·7, at Croydon (Whitgift) 35°·4, at Worcester Park 35°·2, at Wallington 35°·0, at Chipstead 34°·2, and at Warlingham 34°·0. There were recorded at Wallington 53·5 hours of sunlight, which is 8·4 hours or three per cent. below the February average of the fifteen years 1886–1900.

Francis Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfld.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
2	·02	·03	·01	·02	·03	·03	·01	·02	·06	·02	·02	·02	·03	·02	..	·03	..	..			..	·02		·02	·03	·04
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
4	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..			..	..		..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	·01
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
7	..	..	..	..	..	·01	·01	·01	..	..	..	..	..	·01	·02	·01	..	..			..	·02		·01	..	·01
8	..	..	..	..	·01	..	..	..	..	..	·01	·01	..	..	..	..	..	..			·02	..		..	..	..
9	·03	..	·02	..	·04	·05	·06	·06	·02	·05	·08	·08	·08	·08	·09	·10	..	·10			·07	..		·10	·08	·09
10	..	..	..	..	·01	·02	..	..	·01	·01	..	..	..	..	..	·01	..	..			..	..		..	..	..
11	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			..	..		·01	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
14	·80	·97	·83	·95	·80	·86	·74	·87	·77	·81	·88	·87	·82	·88	·60	·86	·80	·75			·79	·70		·83	·82	·72
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..			..	..		..	..	..
16	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			..	·01		..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
19	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..	..			..	..		·02	·01	..
20	·19	·14	·09	·09	·12	·10	·17	·15	·15	·08	·11	·12	·10	·08	·11	·10	·20	·10			·18	·34		·10	·11	·19
21	..	·06	·02	·07	·02	·02	·04	·05	·03	·03	·03	·01	·04	·04	·03	·02	·07	..			·11	·17		·02	·07	·07
22	·10	..	·08	·04	·08	·10	·09	·10	·08	·05	·06	·09	·08	..	·11	·16	·07	·15			·15	·05		·21	·02	·02
23	..	..	..	..	·01	·02	·01	·01	·02	..	·01	..	·01	·04	..	..	..	..			..	..		..	·01	..
24	·37	·39	·44	·34	·35	·28	·24	·45	·32	·24	·23	·27	·25	·24	·25	·23	·31	·44			·34	·36		·29	·28	·28
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	..
26	·24	·26	·21	·20	·22	·23	·22	·22	·13	·21	·22	·23	·22	·19	·23	·23	·23	·15			·21	·20		·21	·18	·12
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
29	·29	·24	·20	·20	·17	·18	·17	·17	·14	·19	·16	·15	·16	·14	·15	·14	·09	..			·11	·09		·13	·11	·13
30	·09	·06	·12	·08	·08	·06	·06	·04	·06	·07	·06	·06	·04	·06	·05	·04	·06	..			·04	·04		·05	·03	·03
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
*	2·13	2·15	2·02	1·99	1·94	1·96	1·82	2·15	1·82	1·76	1·88	1·91	1·83	1·78	1·64	1·95	1·83	1·69	1·97	1·24	2·02	2·00	2·02	2·00	1·78	1·71
†	4·74	4·87	4·32	4·46	4·04	4·10	3·72	4·13	3·88	3·73	4·24	3·95	4·06	4·11	3·60	4·08	4·02	3·57	4·62	3·01	4·74	4·15	3·88	4·48	3·93	3·68

* The figures in this row give the totals for the month.

† The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for March is 1·54 in.* **March, 1902.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·02	..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·12
2		..	·05	·05	·02	·03	·02	·02	·03	·02	·02	·03	·03	·04	·03	·03	·03	·04	·04	·06	·04	·04	·02	·01	·02	·01
3		..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4		..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..
5		..	..	..	·01	·01	..	..	..	..	..	..	..	..	·01	·01	..	..	·01	..	·01	..	..	·01	..	..
6		..	..	..	·01	..	..	..	·01	..	..	..	..	·01	..	..	·01	..	..	..	..	..	..	..	..	..
7		..	..	..	..	·01	·01	..	·01	·01	..	·02	·01	..	..	..	..	..	·01	..	·01	·02	·02	..	..	..
8		..	·02	·02	..	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	·02
9		..	·05	·03	·09	·07	·08	·09	·09	·08	·08	·08	·09	·07	·07	·06	·08	·10	·08	·12	·10	·08	·05	·06	·05	·03
10		..	..	..	..	·01	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..	..	..	..
11		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	MONTHLY GAUGE.	·80	·60	·56	·83	·64	·57	·53	·68	·68	·57	·70	·71	·74	·67	·64	·47	·70	·69	·81	·81	·90	·33	·75	·74	·72
15		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
17		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
18		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20		·12	·13	·15	·23	·11	·12	·12	·11	·12	·13	·12	·12	·13	·14	·12	·13	·15	·15	·23	·16	·21	·13	·13	·10	·13
21		·20	·07	·07	·18	·10	·05	·06	·16	·18	·14	·16	·16	·15	·18	·13	·15	·14	·07	·07	·05	·03	·02	·01	..	·03
22		·05	·20	·07	·02	·04	·05	..	·01	..	·01	·02	·02	·02	·03	·01	·01	·01	·02	·03	·05	·04	·02	·10	·11	·05
23		..	..	..	..	..	..	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
24		·25	·25	·20	·31	·28	·24	·22	·29	·28	·22	·28	·25	·27	·25	·25	·26	·26	·26	·32	·30	·33	1·21	·23	·26	·29
25		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26		·20	·14	·15	·17	·16	·14	·13	·15	·14	·12	·13	·14	·13	·13	·12	·10	·12	·12	·10	·14	·11	·08	·10	·08	·12
27		..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	·01	..	..	..	..	..	..	..	..
28		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·10	..	..	..
29		·15	·15	·15	·14	·16	·17	·04	·16	·16	·16	·18	·16	·16	·16	·13	·14	·15	·14	·15	·13	·12	..	·11	·10	·06
30		·09	·09	·08	·06	·04	·04	·17	·04	·04	·03	·02	·04	·05	·05	·04	·05	·04	·04	·04	·04	·02	·02	·03	·01	·02
31		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..
*	1·65	1·88	1·75	1·53	2·09	1·66	1·49	1·45	1·74	1·71	1·48	1·74	1·73	1·77	1·74	1·54	1·45	1·74	1·64	1·94	1·85	1·90	2·00	1·56	1·47	1·61
†	3·63	4·07	3·32	3·03	4·17	3·08	2·83	2·80	3·27	3·14	2·77	3·26	3·21	3·38	3·27	2·91	2·97	3·22	3·48	4·12	3·89	3·75	3·14	3·43	3·17	3·55

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·35	..	..	..	..	..	..	·01	..	..	..	..	..
2	·01	·04	·05	·06	·04	·03	·03	·07	..	·04	·06	·04	·03
3	..	..	..	..	..	..	..	·01	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	·01	·01	..
6	..	..	..	..	..	..	..	..	·01	..	..	·01	..
7	·01	..	..	..	..	·02	..	..	..	..	..	·01	..
8	·02	·01	·02	·01	..	..	..	·02	..	..	..	..	..
9	·05	·07	·07	·07	·08	·08	·10	·10	·08	·11	·11	·09	·05
10	..	..	..	..	..	..	..	·01	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·55	·65	·66	·63	·67	·67	·50	·47	·37	·47	·44	·49	·30
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	·11	·11	·14	·14	·13	·14	·12	·12	·26	·30	·25	·24	·16
21	·02	..	·10	·13	·03	·13	·11	·07	·08	·04	·08	·05	·08
22	·05	..	·01	·03	·02	·04	..	·13	·16	·14	·05	·26	·04
23	·04	·02	..	..	..	..	..	..	..	..	..	..	..
24	·18	·21	·26	·22	·23	·25	·21	·23	·16	·17	·15	·18	·11
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·13	·12	·13	·14	·10	·13	·12	·15	·13	·14	·15	·15	·11
27	..	..	..	·02	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·08	..	·08	·10	·09	·10	·10	·15	·13	·12	·14	·12	·11
30	·02	·11	·03	·04	·03	·04	·05	..	·03	·04	·04	·04	·04
31	..	..	..	·01	..	..	..	..	..	..	..	..	..
*	1·62	1·34	1·55	1·60	1·42	1·63	1·34	1·54	1·41	1·57	1·48	1·69	1·03
†	3·08	3·06	3·02	3·16	2·96	3·16	2·47	3·02	2·56	2·97	2·89	3·11	2·20

Day of Mo.	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	·01	..	..	..	..	..	..	..	·01	..	..	..
2	·03	·09	·06	·05	·10	·05	·07	·10	·05	·06	·05	·05	·04
3	..	..	..	..	..	..	..	..	..	..	..	..	·01
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	·01	..	..	·01	..	..	..	..	..	·01	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	·01	·02	·01	..	..
8	..	..	..	..	..	..	..	..	..	·01	..	..	..
9	·09	·03	·04	·04	·07	·09	·10	·10	·12	·11	·11	·12	·09
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·55	·45	·54	·48	·54	·42	·47	·42	·45	·42	·52	·46	·53
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	·01	·02	·01	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	·12	·28	·27	·24	·35	·15	·18	·21	·24	·31	·27	·23	·27
21	·04	·10	·15	·07	·10	·12	·08	·06	·05	·07	·06	·04	·06
22	·24	·03	·11	·13	·12	·19	·14	·16	·25	·13	·05	·04	·05
23	..	..	..	..	..	..	..	..	..	·02	..	..	..
24	·21	·19	·15	·20	·20	·15	·15	·15	·16	·14	·19	·21	·17
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·16	·20	·17	·16	·20	·16	·15	·17	·14	·11	·14	·14	·16
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	·01	..	..	..
29	·15	·15	·13	·14	·15	·14	·14	·14	·12	·11	·13	·11	·17
30	·04	·07	·04	·03	·04	·05	·05	·05	·03	·05	·05	·05	..
31	..	..	·01	..	..	..	..	..	..	..	..	..	..
*	1·63	1·61	1·67	1·54	1·88	1·52	1·53	1·56	1·63	1·60	1·60	1·45	1·55
†	3·01	3·10	3·21	2·91	3·36	3·04	2·98	3·09	2·90	2·99	2·95	2·77	3·00

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **March, 1902.**

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	·07	..	..	..	..	..	..	..
2	·04	·04	·01	·03	·05	·05	·05	·05	·05	·06
3	..	..	..	..	..	..	..	..	..	..
4	·01	..	..	..	..	..	..	..	..	..
5	..	·02	..	..	..	..	..	..	..	..
6	·01	..	..	..	..	..	..	..	..	..
7	·01	·01	..	..	..	·02	..	..	..	..
8	..	..	·01	..	..	..	·01	..	·01	..
9	·07	·06	·02	..	·05	·06	·07	·08	·10	·08
10	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..
14	·53	·64	·56	·60	·53	·51	·46	·40	·47	·37
15	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..
20	·28	·18	·12	·16	·25	·18	·19	·17	·20	·14
21	·06	·14	..	·07	·06	·05	·05	·05	·12	·06
22	·10	·08	·03	..	·01	·08	·08	·08	·21	·09
23	..	..	·01	·01	..	..	..	..	..	..
24	·16	·21	·23	·18	·19	·15	·12	·10	·15	·10
25	..	..	..	..	..	..	..	..	..	..
26	·16	·15	·13	·14	·13	·15	·13	·11	·15	·11
27	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..
29	·13	·11	·07	·09	·09	·10	·09	·10	·11	·07
30	·04	·02	·01	..	·01	·01	·02	·02	·05	·03
31	..	..	..	..	..	..	..	..	..	..
*	1·60	1·66	1·27	1·28	1·37	1·36	1·27	1·16	1·62	1·11
†	2·86	3·24	2·69	2·62	2·68	2·77	2·55	2·16	3·09	2·24

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(March, 1902.)

The month has been warm and somewhat unsettled, with a rainfall slightly below the average. The month has been somewhat unhealthy, there being several cases of small-pox, and diphtheria and scarlet fever cases do not decrease. Vegetation has made but little progress. Lightning was seen at Upper Gatton and Wallington on the 2nd. Solar halos were seen at Greenwich on the 12th, 13th, 14th, 24th, and 31st; at Clapham Park on the 13th, 24th, 25th, 26th, 27th, and 28th; at Wallington on the 19th and 24th; and at Upper Gatton on the 13th and 24th. Lunar halos were observed at Greenwich on the 16th; at Clapham Park on the 16th and 19th; at Wallington on the 13th and 16th; at Croydon on the 13th and 16th; and at Upper Gatton and Sanderstead on the 15th and 16th. Hail fell at Greenwich and Clapham Park on the 20th, 21st, and 22nd; at Wallington and Raynes Park on the 20th; at Upper Gatton and Beddington on the 21st; and at Morden on the 24th. A thunderstorm occurred at Croydon and Morden on the 21st. Fogs occurred at Clapham Park on the 4th, 5th, 6th, 7th, and 11th; at Croydon on the 5th, 6th, and 11th; at Morden and Raynes Park on the 5th and 6th; and at Wimbledon on the 6th. The almond blossomed at Beddington on the 14th, and at Wallington and Sidcup on the 16th; and the sallow at Sidcup on the 16th. Parhelia were observed at Clapham Park on the 28th and 31st. The mean temperature of the month is about three and a half degrees above the average, and was at Worcester Park 45°·4, at Wallington 45°·3, at Croydon (Duppas House and Whitgift) 45°·2, at Chipstead 44°·2, at Warlingham 43°·8, and at Redhill 43°·6. There were recorded at Wallington 120·4 hours of sunlight, which is 5·4 hours or two per cent. above the March average of the fifteen years 1886–1900.

Francis Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of M	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.	Redhill (Linkfd.la.	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	·04	..	..	..	..	..			..	..		..	..	..
4	·04	..	·03	·03	·01	..	·02	·02	·01	·01	·04	·03	..	·04	·04	·04	·03	·03			..	..		·04	·04	·03
5	·11	·08	·10	·14	·14	·14	·12	·12	·10	·12	·13	·11	·12	·11	·11	·13	·15	·15			·17	·12		·12	·05	·04
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
11	·16	·08	·13	·11	·10	·09	·10	·10	·09	·10	·11	·08	·10	·10	·09	·08	·12	·14			·11	·07		·09	·09	·10
12	..	..	·01	..	·01	·02	·01	·02	..	..	·01	..	..	·01	·01	·04	..	·01			·06	..		·03	·01	·01
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
14	·14	·19	·13	·13	·03	·03	·03	·03	·05	·03	·03	·04	·03	·03	·03	·03	·04	·03			..	·04		·03	·03	·02
15	·02	·09	·01	·02	·01	·01	·03	·03	..	·01	·02	·01	·02	·04	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	·01	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
19	·04	..	·05	·08	·08	·08	·08	·10	·11	·08	·10	·09	·11	·11	·10	·10	·13	·12			·12	·04		·10	·11	·09
20	·03	..	·03	·03	·01	..	..	..	..	·01	·01	·01	·01	·01	·02	..	..	..			..	..		·02	·02	·01
21	·22	·40	·35	·31	·16	·16	·15	·17	·22	·12	·09	·14	·11	·17	·18	·14	·16	·08			·05	·07		·13	·12	·10
22	·33	·30	·30	·33	·30	·29	·26	·26	·21	·27	·23	·24	·24	·26	·21	·23	·16	·19			·22	·17		·24	·20	·19
23	·06	·04	·05	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
30	..	..	·01	·05	·09	·08	·07	·07	·06	·08	·09	·12	·11	·12	·14	·10	·06	·05			·04	·04		·13	·12	·08
*	1·15	1·18	1·20	1·23	·94	·90	·87	·92	·85	·83	·86	·87	·89	1·00	·93	·89	·85	·80	·76	·53	·77	·55	·75	·93	·80	·67
†	5·89	6·05	5·52	5·69	4·98	5·00	4·59	5·05	4·73	4·56	5·10	4·82	4·95	5·11	4·53	4·97	4·87	4·37	5·38	3·54	5·51	4·70	4·63	5·41	4·73	4·35

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for April is 1·64 in.* April, 1902.

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	·01	· ·	· ·	·01	·01	·01	·01	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
2		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
3		· ·	·01	· ·	· ·	·02	·02	· ·	·02	·02	·02	·02	·02	·03	·05	·04	·03	·05	·01	· ·	·01	·01	·05	·02	·02	·03
4		· ·	·03	·03	·03	·04	·03	· ·	·03	·03	· ·	·02	·03	·02	·01	·02	·02	· ·	·02	· ·	·03	·01	· ·	·02	·01	· ·
5		·12	·03	·03	·04	·04	·05	·08	·06	·05	·06	·05	·05	·06	·08	·04	·05	·07	·06	·11	·06	·06	·06	·04	·03	·08
6		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	·01	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
7		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
8		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
9		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
10		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
11		·11	·12	·10	·12	·10	·10	·08	·10	·08	·08	·08	·09	·09	·09	·09	·08	·09	·10	·06	·09	·08	·06	·08	·05	·08
12		· ·	·02	·05	·01	·01	· ·	· ·	· ·	· ·	· ·	·01	· ·	· ·	· ·	· ·	· ·	· ·	·02	·02	·01	· ·	· ·	·02	· ·	·02
13		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
14		·11	·02	·10	·04	·03	·03	·03	·03	·02	·03	·03	·03	·03	·03	·03	·03	·03	·03	·04	·03	·03	·03	·04	·04	·04
15		· ·	·02	·01	·02	·02	·02	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	·01	· ·
16		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
17		· ·	· ·	· ·	·01	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
18		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
19		·05	·03	·03	·13	·10	·09	·09	·09	·09	·08	·08	·08	·09	·09	·04	·09	·07	·09	·10	·10	·09	·06	·08	·08	·03
20		·02	·01	· ·	·01	·01	·01	· ·	·01	·01	·01	·01	·01	· ·	·01	·01	·01	·01	·02	·02	·01	· ·	·01	·01	· ·	· ·
21		·24	·17	·17	·14	·10	·09	·09	·10	·10	·08	· ·	·10	·11	·07	·06	·07	·06	·10	·07	·11	·08	·06	·07	·05	·02
22		·28	·22	·20	·23	·17	·14	·10	·18	·17	·15	·25	·18	·19	·17	·16	·09	·16	·17	·22	·21	·20	·12	·20	·18	·16
23		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	·01	· ·	· ·	· ·	· ·	· ·	·01	· ·	· ·
24		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
25		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
26		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
27		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
28		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
29		· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·	· ·
30		·10	·12	·10	·12	·10	·10	· ·	·07	·08	·10	·12	·13	·12	·12	·12	·10	·08	·09	·07	·07	·03	· ·	·02	·01	·03
*	·80	1·03	·80	·82	·90	·74	·68	·47	·69	·65	·61	·68	·72	·74	·73	·62	·58	·65	·71	·71	·73	·59	·45	·61	·48	·49
†	4·43	5·10	4·12	3·85	5·07	3·82	3·51	3·27	3·96	3·79	3·38	3·94	3·93	4·12	4·00	3·53	3·55	3·87	4·19	4·83	4·62	4·34	3·59	4·04	3·65	4·04

Day of Mo	Southfleet	Chislehurs	Bickley	Bromley	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	·01	..	..	..	..	..	[illegible]	·01	·01	..	..	..	..	..	..	..	..	..	·01	..	..	..
2	..	..	..	..	..	..	..	..	..	..	[illegible]	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	·06	·05	·04	·05	·02	·06	·04	·04	·05	·08	..	·10	·07	..	·02	·07	·04	·09	·06	·09	·07	·10	·06	·07	·07	·09
4	·02	..	..	·02	..	·03	·02	·01	·03	..	·10	·03	·02	·03	·01	·03	·03	·03	..	·04	..	·01	·03	·02	..	·05
5	..	·05	·06	·06	·07	·06	·05	·09	·04	·09	·06	·07	·05	·06	·09	·06	·09	·05	·08	·05	·08	·06	·05	·07	·06	·07
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·05	·08	·08	·08	·08	·07	·08	·09	·09	·10	·11	·10	·09	·12	·12	·12	·11	·11	·10	·10	·08	·07	·08	·07	·11	·08
12	·06	..	..	·03	..	..	..	·02	·05	·01	·01	·01	·01	·01	..	·06	·02	·01	·02	·02	·02	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..
14	·06	·04	·03	·05	·04	·04	·03	·02	·02	·04	·03	·03	·04	·04	·08	·09	·05	·05	·10	·03	·05	·02	·04	·03	..	·03
15	..	..	..	..	..	..	..	·02	..	·04	·03	·05	·01	..	·03	·01	..	·02	..	·05	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·01	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·02	·07	·07	·08	·07	·08	·08	·08	·08	·08	·05	·09	·04	·06	·02	·02	·04	·04	·05	·07	·09	·07	·04	·07	·09	·09
20	..	..	..	..	..	·01	..	·01	..	·01	·01	·01	·01	..	·02	·03	..	·01	·01	·01	·02	..	..	·01	..	..
21	·02	·04	·07	·04	·06	·05	·09	·05	·01	·05	·01	·05	·02	·09	·08	·05	·07	·06	·03	·03	·01	·01	·03	·04	·02	·02
22	·12	·14	·13	·13	·16	·14	·11	·13	·04	·09	·09	·11	·03	·12	·15	·12	·12	·11	·09	·07	·06	·05	·03	·10	·06	·09
23	..	..	·04	·02	·05	..	..	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·08	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·02	·04	·02	·02	·02	·02	·02	·06	·09	·08	·06	·07	·06	·13	·05	·07	·08	·08	·06	·05	·04	·01	·03	·02	·03	..
*	·44	·51	·54	·58	·58	·56	·52	·65	·50	·67	·57	·73	·46	·67	·69	·73	·65	·66	·60	·61	·52	·40	·48	·50	·44	·52
†	3·52	3·57	3·56	3·74	3·54	3·72	..	3·67	3·06	3·64	3·46	3·84	2·66	3·68	3·79	3·94	3·56	4·02	3·64	3·59	3·61	3·30	3·47	3·45	3·21	3·52

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. April, 1902.

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..
3	·09	·08	·04	·07	·06	·04	·04	·04	·06	·03
4	·05	·04	·01	..	..	·02	·02	·02	..	·02
5	·06	·07	·06	·07	·09	·09	·08	·05	·10	·03
6	..	..	·09	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..
11	·07	·09	·07	·08	·07	·06	·06	·06	·08	·04
12	·01	·02	..	..	..	·02	·01	..	..	..
13	..	..	..	..	..	..	..	..	..	..
14	·03	·07	·04	..	·04	·04	·03	·03	·03	·02
15	..	..	·01	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..
19	·08	·09	·02	·07	·06	·08	·07	·07	·07	·05
20	·01	..	..	..	..	..	..	..	·03	·01
21	·02	·04	·01	..	·01	·01	·01	..	·01	..
22	·07	·13	·09	·10	·08	·05	·05	·04	·07	·02
23	..	·05	..	..	·02	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..
30	·01	·06	..	..	·03	·03	·04	..	·03	·03
*	·50	·74	·44	·39	·46	·44	·41	·31	·48	·25
†	3·36	3·98	3·13	3·01	3·14	3·21	2·96	2·47	3·57	2·49

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(April, 1902.)

The month has been very dry, with about an average temperature. At Greenwich it is the driest April since 1893, and the rainfall for the four months of this year is less than half the average. The want of rain is becoming rather serious, as the wells are very low. There have been several cases of small-pox, and a good deal of chicken-pox and scarlet fever in places; but the outbreaks seem to be diminishing. The wryneck was heard on the 1st at Nutfield; the swallow was seen at Bromley on the 3rd, at Nutfield on the 16th, at Croydon on the 20th, at Morden on the 21st, and at Abinger on the 26th; the cuckoo was heard at Nutfield on the 11th, at Abinger, Upper Gatton, and Croydon on the 13th, at Morden on the 17th, and at Bromley on the 19th; whilst the nightingale was heard at Abinger on the 14th, at Nutfield and Upper Gatton on the 16th, and at Croydon on the 19th; and at Wallington a humble bee was seen on the 22nd. The plum blossomed at Sidcup on the 5th, and at Wallington on the 6th; the cherry and pear at Sidcup on the 17th; whilst at Wallington the pear blossomed on the 18th, and the morello on the 20th; and the apple at Sidcup on the 25th. At Nutfield *Ribes* flowered on the 16th, and the wild cherry on the 26th. At Croydon an observer reports no less than fourteen solar halos, one on the 2nd having a tangental arc, and one on the 4th with mock suns, which latter was reported from Greenwich with seven halos, and at Upper Gatton with four halos. Lunar halos were seen at Greenwich on the 21st and 25th, and at Clapham on the 22nd, on which day the lunar eclipse was well seen. The mean temperature of the month is about the average, and was at Croydon (Duppas House) and Worcester Park 47°·5, at Croydon (Whitgift) 47°·2, at Wallington 47°, at Chipstead 46°·8, at Redhill 46°·7, and at Warlingham 45°·5. There were recorded at Wallington 118°·1 hours of sunlight, which is 41·8 hours or ten per cent. below the April average of the fifteen years 1886–1900.

Mr. Cullis, at South Norwood, has ceased observing, and his place has been kindly taken by Mr. Dean, of Woodvale, South Norwood, the height of whose station above sea-level is 216 feet.

Francis Campbell-Bayard, F.R.Met.Soc.,

Hon. Sec.

Day of M	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall	Dorking (Denbies)	Redhill (Oxfordrd	Redhill (Linkfd.la.	Nutfield (old gauge	Nutfield (newgauge	Buckland	ReigateHil	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·02	..	..	·02	..	..	·02	·03	·01	·02	·01	·01	..	·01	..	·01	..	..			..	..		..	·01	..
2	·14	·34	·30	·30	·22	·20	·19	·19	·22	·18	·21	[illegible]	·19	·16	·19	·16	·26	·15			·12	·12		·13	·09	·05
3	·16	·21	·20	·39	·24	·22	·26	·25	·43	·18	·17	[illegible]	·16	·21	·19	·27	·18	·41			·33	·27		·32	·31	·21
4	·03	..	·04	·05	·02	·05	·03	·02	·03	·03	·04	·02	·04	·04	·04	·04	·03	·03			·02	·03		·04	..	·03
5	..	·16	·14	..	·03	·03	·03	·03	..	..	·02	·02	·01	·03	·03	·06	·02	·04			·04	·05		·04	·02	..
6	..	·02	·02	..	·02	·01	·03	·03	·01	·02	·02	·05	·04	·06	·04	·05	·03	·03			·09	·04		·03	·08	·02
7	·06	·04	·12	·07	·21	·21	·27	·26	·25	·20	·22	·34	·18	·22	·24	·36	·23	·26			·25	·15		·40	·33	·28
8	·16	·14	·11	·11	·14	·12	·12	·11	·12	·14	·13	·11	·13	·12	·09	·09	·10	·06			·16	·10		·11	·09	·09
9	..	·02	..	..	..	·01	..	..	..	..	..	·01	·01	·01	..	..	·08	·10			·06	·04		·01	·01	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·03			·04	..		..	..	..
11	·06	·05	·05	·07	·04	·04	·05	·06	·07	·04	·03	·03	·03	·03	·03	·04	·02	·03			·01	·04		·04	·04	·04
12	..	·02	·02	..	·05	·05	·03	·02	·02	·05	·06	·04	·06	·09	·04	·05	·04	..			·04	·04		·06	·07	·08
13	·13	·09	·02	·12	·15	·12	·11	·11	·08	·12	·04	·02	·03	·02	·05	·03	·01	..			·03	·01		·02	·03	·02
14	·14	·12	·17	·09	·09	·10	·12	·13	·10	·10	·17	·17	·14	·15	·15	·16	·13	·11	MONTHLY GAUGE.	MONTHLY GAUGE.	·11	·11	MONTHLY GAUGE.	·12	·07	·09
15	·04	·02	·02	·04	·08	·09	·05	·05	·02	·06	·03	·05	·05	·04	·04	·05	·06	·05			·07	·04		·04	·03	·03
16	·06	·07	·09	·15	·13	·15	·13	·13	·05	·12	·18	·17	·15	·15	·16	·15	·18	·16			·36	·23		·20	·15	·18
17	·37	·20	·15	·24	·24	·23	·27	·27	·28	·23	·29	·27	·28	·27	·29	·32	·33	·27			·12	·26		·32	·38	·33
18	·20	·14	·13	·13	·09	·02	·07	·07	·10	·04	·03	·09	·09	·03	·05	·06	·04	·07			·06	·04		·06	·04	·05
19	·04	·05	·05	·02	·03	·03	·03	·03	·01	·01	·03	·05	·04	·04	·04	·04	·03	·06			·04	·05		·04	·05	·03
20	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	·01	·01			·01	·01		·01	·01	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
22	·40	·36	·35	·32	·33	·32	·31	·31	·30	·31	·33	·36	·33	·29	·39	·35	·33	·33			·32	·32		·34	·31	·31
23	·02	·02	·02	..	·01	..	..	..	..	..	..	..	·01	..	..	·01	..	..			..	..		..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
28	·07	·06	·04	·07	·08	·08	·09	·09	·06	·07	·07	·07	·07	·05	·07	·06	·08	·09			·11	·09		·06	·05	·03
29	·20	·23	·23	·27	·25	·25	·25	·25	·20	·23	·26	·25	·24	·26	·27	·28	·28	·25			·29	·26		·28	·27	·27
30	·10	·07	·07	·07	·10	·10	·11	·11	·08	·09	·09	·13	·10	·10	·14	·17	·30	·28			·64	·61		·19	·16	·16
31	·12	·11	·12	·10	·18	·13	·11	·10	·06	·14	·13	·03	·09	·09	·04	·05	·04	·03			·07	·04		·08	·08	·09
*	2·52	2·54	2·46	2·63	2·73	2·56	2·68	2·65	2·50	2·37	2·56	2·71	2·47	2·48	2·58	2·86	2·81	2·85	2·71	2·30	3·39	2·95	2·45	2·94	2·68	2·39
†	8·41	8·59	7·98	8·32	7·71	7·56	7·27	7·70	7·23	6·93	7·66	7·53	7·42	7·59	7·11	7·83	7·68	7·22	8·09	5·84	8·90	7·65	7·08	8·35	7·41	6·74

* The figures in this row give the totals for the month.

† The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for May is 2·00 in.* **May, 1902.**

Day of Mo.	Burgh Heath	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farnborough	Orpington	Farningham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		..	·01	..	·01	..	..	·07	..	..	..	·01	·01	..	..	·01	..	·01	·01	·01	..	..	·05	·01	..	·02
2		·10	·07	·07	·09	·07	·06	·05	·07	·07	·05	·06	·06	·06	·06	·04	·06	·05	·05	·07	·06	·05	·04	05	·05	·05
3		·20	·17	·17	·33	·28	·25	·28	·34	·32	·04	·28	·27	·27	·22	·20	·13	·21	·23	·23	·22	·22	·15	·18	·19	·16
4		·04	·07	·04	·03	·03	·03	·03	·03	·02	·02	·02	·02	·04	·04	·04	·03	·02	·02	·02	·03	·03	·03	·03	·03	·03
5		..	·01	..	·01	..	·01	..	..	..	·01	·02	·01	·02	·03	·02	·02	·05	·02	·05	·03	·09	·04	·17	·08	·07
6		..	..	..	·01	·02	·01	..	·01	·04	·02	·02	·03	·03	·03	·02	·02	·03	·03	·03	·03	·04	..	·02	·02	·05
7		·06	·06	·04	·19	·16	·17	·17	·24	·25	·22	·21	·22	·25	·23	·22	·27	·35	·41	·43	·46	·60	·30	·23	·25	·18
8		·11	·11	·15	·16	·13	·10	·03	·18	·11	·10	·10	·08	·10	·10	·11	·07	·12	·08	·11	·11	·12	·08	·15	·10	·14
9		·02	·02	·02	·01	·01	..	..	..	·01	..	·01	..	..	·01	·01	·01	·01	·01	·01	..	..	..	·03	·13	·04
10		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11		..	·05	·04	·03	·04	·04	·13	·05	·04	·03	·04	·04	·01	·03	·03	·03	·03	·03	·03	·03	·03	..	·03	·03	·05
12		·03	03	·02	·08	·06	·06	·06	·06	·05	·06	·08	·08	·13	·11	·07	·07	·11	·09	·09	·11	·06	·07	·04	·02	·08
13		·16	·08	·10	·02	·02	·01	..	·02	·01	·02	·02	·01	·02	·02	·01	·02	·02	·01	·02	·02	·01	·02	·01	..	·01
14		·12	·12	·13	·15	·09	·08	·06	·08	·08	·05	·07	·07	·07	·06	·06	·06	·05	·06	·07	·08	·09	·04	·07	·07	·19
15	MONTHLY GAUGE.	·05	·02	·01	·03	·02	·01	..	·03	·02	·01	·01	·02	·02	·03	·01	·02	·03	·03	·04	·04	·03	·03	·02	·02	·05
16		·09	·12	·10	·11	·15	·14	·11	·17	·15	·13	·14	·15	·15	·15	·13	·15	·14	·20	·21	·21	·22	·11	·19	·15	·19
17		·26	·40	57	·34	·55	·53	·40	·55	·49	·78	·60	·57	·55	·53	·56	·45	·68	·47	·43	·34	·50	·37	·46	·46	·56
18		·09	·04	·03	·01	·02	·03	·05	·07	·03	·02	·03	·03	·03	·04	·03	·02	·07	·03	·06	·05	·05	·07	·06	·09	·05
19		·02	·01	·02	·04	·07	·09	·05	·04	·03	·05	·05	·05	·04	·03	·02	·02	·02	·03	·03	·04	·03	·03	·03	·03	·09
20		·01	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..
21		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22		·10	·30	·28	·29	·25	·26	·23	·29	·28	·30	·32	·31	·31	·31	·29	·30	·31	·31	·33	·31	·34	·23	·35	·29	·34
23		·20	..	..	..	·01	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28		·01	..	..	..	·05	..	..	·01	·01	·02	·01	·02	·02	·02	·01	·02	·02	·03	·04	·05	·03	·04	·05	·04	·07
29		·26	·25	·22	·27	·16	·22	·11	·24	·23	·23	·26	·25	·25	·25	·24	·23	·28	·28	·29	·28	·31	·20	·30	·27	·30
30		·08	·05	·05	·11	·12	·11	·06	·13	·13	·13	·14	·14	·16	·16	·15	·15	·20	·22	·32	·28	·26	·19	·25	·53	·31
31		·05	·08	·05	·06	·04	·03	..	·07	·05	·05	·05	·06	·07	·05	·04	·04	·03	·04	·06	·05	·02	·03	·04	·03	·01
*	1·90	2·06	2·07	2·11	2·38	2·35	2·24	1·89	2·68	2·42	2·34	2·55	2·50	2·60	2·53	2·32	2·19	2·84	2·69	2·98	2·83	3·13	2·12	2·77	2·88	3·04
†	6·33	7·16	6·19	5·96	7·45	6·17	5·75	5·16	6·64	6·21	5·72	6·49	6·43	6·72	6·53	5·85	5·74	6·71	6·88	7·81	7·45	7·47	5·71	6·81	6·53	7·08

Day of Mo	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	·02	·01	·02	·01	·01	·01	·02	..	·02	..	·02	·01
2	·05	·03	·03	·04	·03	·04	·04	·03	·05	·03	·13	·04	..
3	·09	·27	·29	·28	·26	·25	·20	·23	·44	·42	·42	·32	·46
4	·05	·05	·04	·06	·05	·05	·04	·02	·03	·04	·07	·03	·02
5	·03	·07	·07	·07	·04	·07	·10	·01	·04	·02	·01	·02	·01
6	·05	..	·01	·01	·01	·02	·04	·01	·02	..	·03	..	..
7	·34	·33	·39	·48	·38	·43	·30	·05	·05	·02	·03	·02	·05
8	·14	·10	·10	·15	·10	·12	·14	·27	·09	·06	·07	·06	·10
9	·03	·02	..	·01	·03	·01	·01	·01	..	·01	·04	·02	·04
10	..	..	..	..	..	..	..	·01	..	..	..	..	..
11	·02	·03	·03	·04	·03	·03	·04	·05	·04	·03	..	·03	·02
12	·03	·06	·07	·08	·05	·09	·09	·07	·05	..	·14	·06	·05
13	·01	..	·02	·03	·02	·03	·02	·03	·01	·06	·01	·02	·01
14	·20	·08	·05	·06	·06	·08	·11	·07	·06	·09	..	·09	·10
15	·02	·03	·02	·04	·03	·02	·03	·03	..	·02	·11	·02	·01
16	·11	·12	·12	·12	·11	·12	·13	·11	·08	·08	·11	·11	·07
17	·46	·47	·60	·56	·49	·55	·49	·44	·47	·47	·47	·44	·27
18	·04	·09	·07	·08	·06	·04	·04	·02	·08	·03	·11	·02	·04
19	·05	·05	·03	·04	·04	·03	·01	·07	·05	·08	·08	·09	·02
20	·02	..	..	..	·01	..	..	·01	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·31	·35	·37	·34	·33	·28	·29	·24	·24	·25	·27	·25	·24
23	..	..	..	..	..	·01	·01	·02	..	..	..	·01	·01
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	·04	·06	·02	·03	·03	·02	..	..	..	·01	·02	..	·01
29	·27	·29	·28	·23	·27	·26	·29	·19	·19	·21	·23	·20	·20
30	·01	·49	·28	·27	·27	·23	·22	·11	·13	·11	·12	·11	·04
31	·02	·02	·03	·04	·04	·03	·04	·05	·04	·04	·08	·04	·03
*	2·39	3·03	2·93	3·08	2·75	2·82	2·69	2·17	2·16	2·10	2·55	2·02	1·81
†	5·91	6·60	6·49	6·82	6·29	6·54	..	5·84	5·22	5·74	6·01	5·86	4·47

Day of Mo	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	·01	·02	·01	·01	..	·03	·01	·01	·02	·03	..	·04
2	·04	·04	·04	·02	·06	·10	·10	·14	·09	·07	·04	·05	·07
3	·30	·41	·53	·51	·57	·36	·49	·47	·37	·40	·25	·23	·25
4	·01	·05	·06	·02	·02	·03	·05	·07	·05	·03	·05	·05	·07
5	..	·02	·05	·02	·01	·03	·05	·10	·08	·09	·08	·09	·07
6	·01	..	..	·02	·01	·03	..	·02	·02	·01	·02	·04	·02
7	·02	·14	·08	·07	·11	·11	·05	·12	·08	·15	·16	·25	·36
8	·10	·13	·06	·10	·09	·07	·06	·09	·15	·12	·17	·11	·13
9	·01	·06	·07	·04	·06	·09	·04	·01	..	·03	·03	·02	·02
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·04	·05	·04	·04	·03	..	·03	·05	·03	·03	·04	·04	·04
12	·04	·03	·03	·04	·03	·09	·06	·05	·10	·09	·12	·10	·12
13	·01	·05	·04	·02	·03	·01	·01	·01	·02	·02	·03	·03	..
14	·14	·09	·12	·10	·13	·12	·05	·10	·04	·07	·09	·07	·05
15	·01	..	·01	·01	·01	·02	·02	·02	·05	·04	·03	·03	·04
16	·11	·10	·08	·09	·09	·10	·09	·13	·11	·11	·12	·12	·15
17	·42	·30	·44	·38	·53	·45	·46	·52	·47	·48	·49	·48	·46
18	·03	·06	·07	·04	·02	·10	·12	·02	·01	·06	·05	·04	·07
19	·02	·04	·02	·01	·01	·05	·06	·03	·01	·03	·03	..	·03
20	..	..	..	..	..	·01	..	·01	·01	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·25	·24	·25	·27	·30	·26	·25	·27	·26	·25	·27	·27	·28
23	·01	·01	..	..	·01	..	·01	..	..	·01	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	·02	·03	·01	·02	·05	·02	·01	..	..	..	..	..
29	·23	·18	·15	·19	·22	·20	·20	·19	·22	·20	·23	·27	·04
30	·05	·05	·04	·03	·03	·06	·11	·15	·17	·14	·17	·22	·47
31	·05	..	·04	·07	·05	·03	·08	·05	·02	·04	·03	·05	·03
*	1·90	2·08	2·27	2·11	2·45	2·37	2·44	2·64	2·37	2·49	2·53	2·56	2·81
†	5·58	5·87	6·21	5·67	6·47	6·01	6·03	6·25	5·67	5·96	5·98	5·77	6·33

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **May, 1902.**

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·02	..	·01	..	·01	·02	·01	·02	·01	·02
2	·10	·04	·03	·08	·12	·14	·10	·13	·22	·15
3	·25	·19	·08	·20	·15	·32	·32	·26	·44	·55
4	·06	·05	·03	·06	·07	·05	·04	·05	·05	·03
5	·06	·07	·06	·07	·06	·04	·06	·04	·07	..
6	·01	·02	·06	·08	..	..	·01	..	·01	..
7	·33	·33	·20	·11	·30	·60	·36	·29	·12	·14
8	·13	·11	·07	·14	·19	·15	·14	·12	·10	..
9	·02	·06	·04	·06	..	·01	·03	·02	·01	..
10	..	..	..	..	..	..	..	..	..	..
11	·03	·04	·01	..	·01	·03	·03	·03	·03	·02
12	·09	·10	·07	·11	·12	·11	·12	·08	·10	·10
13	·02	·01	..	·03	·01	..	·01	·02	·02	·02
14	·07	·22	·12	·12	·12	·07	·06	·04	·03	·07
15	·04	·04	·02	·03	·05	·02	·02	·02	·04	..
16	·12	·11	·09	·08	·10	·10	·08	·07	·11	·05
17	·52	·47	·41	·40	·36	·60	·55	·43	·51	·45
18	·06	·04	·07	·07	·07	·08	·02	·03	·03	·03
19	·02	·06	·05	·06	·05	·06	·01	·02	·03	·01
20	..	·01	..	..	..	..	..	..	·01	..
21	..	..	..	..	..	..	..	..	..	..
22	·27	·31	·50	·30	·35	·34	·27	·19	·25	·20
23	·01	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..
28	..	·03	·03	..	..	·01	..	..	·01	·01
29	·25	·29	·26	·27	·26	·25	·23	·22	·21	·12
30	·23	·53	·24	·25	·42	·30	·20	·20	·18	·15
31	·03	·04	·01	·01	·03	·02	·01	·03	·03	..
*	2·74	3·17	2·46	2·53	2·85	3·32	2·68	2·31	2·62	2·12
†	6·10	7·15	5·59	5·54	5·99	6·53	5·64	4·78	6·19	4·61

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(May, 1902.)

The month has been the coldest and the wettest May for several years past. At Greenwich it is the wettest since 1886, and at most other stations since 1898; whilst with respect to temperature we have to go back more than twenty years to find such a cold May. The month has been an unhealthy one, there being several cases of scarlet fever and diphtheria, and also some cases of small-pox. The first three weeks of the month were unusually cold, whilst the last week was warm, and until the last week vegetation was most backward. Thunderstorms occurred generally throughout the district on the 3rd and 7th, and thunder was heard and lightning seen on other days, an oak tree being struck at Abinger Hall on the 18th. There was a peculiar black mist and darkness on the 12th between 11.40 a.m. and noon at many places in the district, and a similar occurrence took place at Nutfield on the 13th between 2 and 3 p.m. Snow occurred at Wallington on the 5th, and at Greenwich on the 6th. Great damage was done in many places by the frost on the 13th. At Croydon the hawthorn flowered on the 17th. The rainfall of the month is about three-quarters of an inch above the average, but the number of rainy days is nearly fifty per cent. above. The mean temperature of the month is about three and a half degrees below the average, and was at Croydon (Duppas House) 49°·7, at Worcester Park 49°·4, at Croydon (Whitgift) 49°·3, at Chipstead 49°·2, at Wallington 49°·1, at Redhill 48°·9, and at Warlingham 47°·2. There were recorded at Wallington 120 hours of sunlight, which is 80·6 hours or seventeen per cent. below the May average of the fifteen years 1886–1900.

FRANCIS CAMPBELL-BAYARD, F.R.Met.Soc.,
Hon. Sec.

Day of M.	Holmbu. St. Mar.	Abinger (Rectory	Abinger (The Ha	Dorking (Denbies	Redhill (Oxford	Redhill (Linkfd.	Nutfield (old gaug	Nutfield (newgaug	Buckland	ReigateHi	Upper Gatton	Merstham	Harp's Oa Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·06	·10	·10	·09	·06	·06	·03	·03	·05	·05	·04	·06	·05
2	·26	·26	·27	·40	·58	·60	·64	·62	·55	·56	·58	·47	·62
3	·11	·09	·10	·10	·14	·14	·15	·14	·10	·14	·16	·19	·17
4	·04	·06	·05	·06	·05	·05	·04	·04	·06	·04	·04	·05	·05
5	..	·10	·03	·02	·04	·06	·02	·03	..	·05	..	·01	..
6	·36	·32	·31	·43	·32	·32	·32	·32	·22	·37	·36	·40	·37
7	·30	·26	·17	·45	·25	·32	·29	·23	·29	·21	·15	·30	·19
8	·10	·07	·09	·05	..	·01	..	..	·01	·01	·01	·01	·01
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·14	·11	·11	·08	·02	..	·04	·04	·05	·03	·06	·03	..
12	·46	·45	·50	·55	·48	·47	·52	·57	·46	·42	·44	·48	·52
13	·71	·71	·64	·67	·56	·56	·53	·52	·49	·63	·59	·67	·57
14	·76	·27	·11	·12	·37	·27	·42	·45	·68	·15	·26	·17	·28
15	·46	·56	·60	·53	·58	·36	·55	·57	·47	·51	·47	·60	·54
16	·35	·27	·19	·20	·27	·37	·34	·22	·11	·30	·18	·23	·18
17	·10	·11	·08	·10	·01	·03	·02	·02	·46	·01	·01	·02	·01
18	..	..	..	..	..	..	..	..	·01	..	..	..	..
19	·15	·09	·08	·12	·13	·12	·13	·14	·08	·10	·11	·11	·12
20	·02	·02	·01	..	·02	..	·01	·01	·01	·01	·01	·02	·02
21	·02	..	..	..	..	..	..	..	·01	..	·01	..	..
22	..	..	..	..	..	..	..	..	·01	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·02	..	·02	..	·02	·02	..	..	·02	·01	·02	·01	..
30	·23	·23	·22	·23	·20	·21	·24	·23	·23	·19	·29	·52	·36
*	4·65	4·08	3·68	4·27	4·10	3·97	4·29	4·18	4·37	3·79	3·79	4·35	4·06
†	13·06	12·67	11·66	12·59	11·81	11·53	11·56	11·88	11·60	10·72	11·45	11·88	11·48

Day of M.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·05	·07	·06	·05	·03			·05	·08		·09	·07	·07
2	·62	·57	·46	·36	·28			·20	·15		·38	·40	·38
3	·08	·21	·21	·24	·26			·34	·32		·21	·21	·22
4	·05	·07	·06	·10	·08			·07	·09		·08	·08	·08
5	..	..	..	..	·01			·02	..		..	·01	..
6	·32	·20	·38	·40	·35			·35	·27		·29	·22	·21
7	·23	·24	·22	·10	·01			·11	·06		·10	·23	·22
8	·02	·04	·05	·01	..			·03	·01		·03	·06	·04
9	..	..	..	..	..			..	·01		..	..	..
10	..	..	..	..	..			..	..		..	..	..
11	·04	·05	·04	·02	·02			..	·04		·03	·05	·06
12	·55	·62	·54	·42	·50			·65	·62		·48	·50	·45
13	·57	·65	·67	·50	·45			·54	·32		·65	·60	·61
14	·30	·32	·34	·26	·25	MONTHLY GAUGE.	MONTHLY GAUGE.	·23	·29	MONTHLY GAUGE.	·34	·36	·36
15	·44	·73	·68	·88	·72			·98	·46		·70	·34	·31
16	·17	·19	·17	·37	·28			·13	·12		·45	·31	·38
17	·03	·03	·05	..	·06			·03	·02		·03	·02	·01
18	..	..	..	..	·01			..	..		..	..	..
19	·10	·13	·22	·03	..			·11	·04		·11	·13	·04
20	·01	..	..	·06	·06			·01	·05		·01	·02	·01
21	..	..	..	..	..			..	·04		..	·03	·01
22	..	..	·01	..	..			..	·02		·01	..	·02
23	..	..	..	..	..			..	..		..	..	..
24	..	..	..	..	..			..	..		..	..	..
25	..	..	..	..	..			..	..		..	..	..
26	..	..	..	..	..			..	..		..	..	..
27	..	..	..	..	..			..	..		..	..	..
28	..	..	..	..	..			..	..		..	..	..
29	·01	..	·01	·03	·02			..	·03		·02	·02	·01
30	·35	·39	·48	·89	·65			·55	·74		·53	·43	·30
*	3·94	4·51	4·65	4·72	4·04	4·02	3·71	4·40	3·78	4·12	4·54	4·09	3·79
†	11·53	11·62	12·48	12·40	11·26	12·11	9·55	13·30	11·43	11·20	12·89	11·50	10·53

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Burgh Heath	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	·08	·09	·07	·03	·02	·02	·04	·05	·06	·06	·06	·06
2		·43	·41	·41	·62	·56	·53	·56	·49	·46	·38	·42	·38
3		·11	·14	·15	·19	·21	·21	·20	·21	·22	·22	·20	·22
4		·08	·08	·09	·04	·06	·06	·07	·08	·08	·08	·08	·09
5		..	..	..	..	..	..	..	..	..	..	..	..
6		·22	·22	·25	·23	·25	·25	·22	·24	·23	·22	·20	·24
7		·41	·49	·52	·39	·16	·16	·13	·13	·07	·05	·05	·06
8		·02	..	·02	·01	·03	·02	·03	·03	·03	·05	·04	·04
9		..	..	..	..	..	..	..	..	..	..	..	..
10		..	..	..	..	..	..	..	..	..	..	..	..
11		..	·05	..	·05	·05	·06	..	·04	·04	·03	·04	·05
12		·63	·45	·42	·43	·46	·54	·46	·34	·38	·41	·40	·39
13		·63	·90	·80	·73	·82	·86	·87	·80	·79	·80	·80	·75
14		·39	·46	·38	·44	·36	·38	·30	·48	·46	·50	·45	·42
15		·44	·10	·25	·38	·40	·25	·31	·38	·33	·32	·44	·39
16		·13	·37	·13	·41	·25	·29	·29	·37	·40	·46	·40	·43
17		·26	·22	·05	·01	·01	·01	·04	·11	·06	·03	·03	·03
18		..	..	..	..	..	..	..	..	..	..	..	..
19		·10	·15	·21	·13	·20	·20	·28	·26	·15	·05	·04	·04
20		·02	..	..	·01	..	·01	..	·01	·01	..	·02	·02
21		..	..	..	·01	·02	·02	·03	..	..	..	·01	..
22		..	·03	·03	·01	·03	·03	·03	·04	·03	·04	·02	·02
23		..	..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..	..
25		..	..	..	..	..	..	..	..	..	..	..	..
26		..	..	..	..	..	..	..	..	..	..	..	..
27		..	..	..	..	..	..	..	..	..	..	..	..
28		..	..	..	..	..	..	..	..	..	..	..	..
29		..	..	..	..	·02	·01	..	·02	..	·02	·02	·02
30		·17	·21	·20	·50	·21	·19	·24	·28	·35	·36	·37	·33
*	4·82	4·12	4·37	3·98	4·62	4·12	4·10	4·10	4·36	4·15	4·08	4·09	3·98
†	11·15	11·28	10·56	9·94	12·07	10·29	9·85	9·26	11·00	10·36	9·80	10·58	10·41

Day of Mo.	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farnborough	Orpington	Farningham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·05	·04	·03	·04	·04	·03	·07	·02	·04	·03	·05	·04	·04
2	·39	·39	·39	·32	·39	·41	·38	·37	·36	·23	·25	·18	·22
3	·24	·24	·23	·21	·24	·23	·28	·26	·30	·21	·32	·38	·32
4	·09	·10	·09	·09	·10	·09	·11	·09	·10	·08	·09	·07	·09
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	·23	·25	·26	·22	·26	·27	·39	·28	·26	·17	·22	·20	·19
7	·06	·04	·03	·06	·05	·09	·16	·20	·11	·06	·15	·15	·10
8	·04	·04	·03	·04	·03	·03	·04	·03	·03	·04	·05	·03	·09
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	·01	..	..	..	..	..	..	..	..
11	·04	·03	·03	·05	..	·05	·04	·07	·04	·04	·14	·03	·02
12	·37	·40	·39	·33	·38	·38	·41	·40	·38	·28	·34	·54	·39
13	·81	·85	·90	·68	·87	·62	·66	·65	·70	·46	·57	·58	·36
14	·56	·57	·42	·40	·40	·42	·50	·41	·57	·28	·38	·32	·28
15	·43	·31	·25	·32	·34	·59	·41	·66	1·00	·26	·44	·26	·01
16	·44	·42	·41	·36	·39	·42	·54	·37	·35	·19	·23	·32	·17
17	·01	..	..	·01	·01	..	..	..	..	..	..	·01	·05
18	..	..	..	..	..	..	..	..	..	..	..	..	·01
19	·05	·04	·04	·03	·01	·03	..	·03	·03	·02	·05	·03	·01
20	·02	·03	·02	·02	·03	·02	·04	·01	·01	·03	·04	·03	·02
21	·01	·01	·01	·01	·01	..	·02	·02	·01	..	..	..	..
22	·03	·03	·03	·02	·02	·03	·02	·02	·01	·02	·03	·02	·05
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·03	·02	·02	·02	·03	·02	·02	·03	..	·03	·02	·01	..
30	·36	·33	·27	·34	·35	·33	·32	·35	·50	·22	·50	·38	·95
*	4·26	4·14	3·85	3·57	3·96	4·06	4·41	4·27	4·80	2·65	3·87	3·58	3·37
†	10·98	10·67	9·70	9·31	10·67	10·94	12·22	11·72	12·27	8·36	10·68	10·11	10·45

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·01	·03	·03	·03	·03	·03	·04	·07	·06	·05	·06	·04	·03	·03	·10	·10	·01	·03	·04	·07	·07	·04	·06	·04	·04	·02
2	·25	·20	·26	·30	·27	·31	·39	·50	·48	·54	·54	·55	·53	·55	·39	·38	·52	·65	·60	·52	·50	·38	·35	·37	·40	·35
3	·40	·34	·34	·31	·29	·30	·28	·21	·22	·19	·21	·19	·17	·18	·15	·14	·14	·20	·18	·21	·25	·27	·26	·26	·30	·30
4	·02	·09	·07	·09	·09	·10	·09	·07	·08	·06	·07	·06	·04	·05	·07	·07	·05	·06	·05	·06	·09	·08	·10	·10	·10	·11
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	·02	..	..	..	..	..	..	..	..
6	·09	·21	·23	·23	·22	·22	·25	·21	·46	·32	·33	·29	·19	·26	·24	·36	·20	·42	·29	·28	·27	·28	·40	·40	·35	·33
7	·02	·05	·02	·04	·06	·04	·05	·18	·13	·20	·20	·23	·18	·16	·26	·35	·24	·28	·16	·16	·07	·11	·13	·11	·07	·11
8	·09	·05	·05	·06	·05	·04	·04	·03	·01	·03	·03	·03	·01	..	·02	·02	·02	·01	·02	·04	·02	·06	·07	·06	·05	·02
9	·01	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·04	·03	·03	..	·04	·04	·04	·07	·01	..	..	·03	·02	·02	·03	·01	·02	·01	..	·02	·02	·01	·02	·02	·02	·02
12	·32	·35	·30	·36	·32	·34	·44	·47	·37	·39	·45	·41	·25	·39	·35	·33	·28	·30	·31	·39	·43	·40	·50	·49	·47	·39
13	·39	·70	·68	·72	·63	·70	·94	1·13	1·15	1·18	1·10	1·27	·93	1·29	·88	·90	·88	1·06	·96	1·07	1·05	1·19	1·09	1·09	·99	·95
14	·40	·43	·37	·49	·38	·41	·44	·41	·32	·27	·34	·32	·27	·32	·40	·27	·29	·38	·30	·36	·34	·31	·33	·32	·34	·29
15	..	·23	·25	·28	·95	·24	·23	·37	·25	·30	·24	·32	·33	·40	·31	·35	·53	·45	·25	·20	·03	·12	·33	·33	·22	·06
16	·28	·20	·15	·15	·30	·19	·20	·23	·16	·18	·08	·14	·27	·32	·14	·09	·15	·20	·10	·07	·38	·05	·13	·21	·23	·06
17	·02	·01	..	·02	..	..	..	·03	..	..	..	..	·03	..	·08	..	..	..	..	·01	·04	·02	·03	..	..	·01
18	..	..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·01	·02	·02	·05	·03	·07	..	·26	·21	·27	·34	·25	·14	·12	·14	·17	·17	·16	·20	·31	·10	·02	·04	·03	·05	·08
20	·02	·04	·03	·06	·05	·05	·04	·04	·01	·03	..	·02	·03	..	·02	·01	·01	·02	·02	·03	·08	·03	·05	·04	·06	·06
21	·01	·02	·01	·02	..	·02	·02	·03	·14	·11	·03	·08	·07	·06	·03	..	·03	·04	·01	·02	·10	·12	·14	·06	·07	·07
22	·02	·04	·02	·03	·02	·01	·03	·03	·01	..	·01	·01	..	·01	·01	·01	..	·01	..	·01	..	·01	·02	·01	..	·01
23	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·01	..	..	·02	·02	·02	·02	·03	·02	·03	..	·03	·02	..	·01	..	·01	·02	·02	·02	·02	·01	·03	·02	..	..
30	·06	·49	·39	·36	·43	·32	·25	·20	·16	·18	·18	·17	·14	·21	·22	·20	·27	·20	·16	·15	·15	·16	·20	·18	·22	·24
*	2·47	3·53	3·26	3·62	4·18	3·45	3·83	4·59	4·25	4·33	4·21	4·44	3·65	4·37	3·86	3·76	3·82	4·52	3·67	4·00	4·01	3·67	4·28	4·14	3·98	3·48
†	8·38	10·13	9·75	10·44	10·47	9·99	..	10·43	9·47	10·07	10·22	10·30	8·12	9·95	9·73	9·97	9·49	10·99	9·68	10·03	10·26	9·34	10·24	10·12	9·75	9·81

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **June, 1902.**

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·04	·02	..	·03	·04	·02	·01	·06	·07
2	·32	·18	·20	·22	·17	·29	·30	·31	·38	·33
3	·29	·29	·32	·34	·31	·26	·23	·26	·27	·24
4	·11	·10	·03	·04	·09	·08	·08	·08	·09	·07
5	..	..	..	..	..	..	..	..	..	..
6	·19	·23	·13	·22	·21	·19	·16	·14	·22	·15
7	·11	·05	·01	..	·06	·06	·08	·10	·08	..
8	·05	·03	·03	·05	·04	·06	·06	·04	·06	·05
9	..	·02	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..
11	·02	·01	·01	..	·02	·02	·01	·01	·01	..
12	·46	·39	·55	·40	·29	·42	·38	·50	·45	·35
13	·97	·66	·34	·40	·79	·83	·78	·90	1·16	1·03
14	·29	·21	·45	·25	·28	·27	·21	·23	·36	·25
15	·03	·03	..	..	·01	·02	·01	..	·02	·02
16	·15	·14	·20	·11	·07	·01	·01	·06	·01	·01
17	·01	·02	·06	·04	·01	..	..	·01	·02	·06
18	..	..	..	..	..	..	..	..	..	..
19	·04	·04	..	..	·03	·04	·04	·03	·01	·09
20	·03	·04	·02	·04	·03	·05	·03	·04	·08	·04
21	·06	·02	..	..	·07	·19	·14	·12	·13	·02
22	·01	·02	·01	..	·01	..	..	..	·01	..
23	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..
29	·01	·01	..	..	·01	·03	..	..	·02	..
30	·19	·45	·65	·64	·35	·22	·19	·14	·15	·09
*	3·37	2·98	3·03	2·75	2·88	3·08	2·73	2·98	3·59	2·87
†	9·47	10·13	8·62	8·29	8·87	9·61	8·37	7·76	9·78	7·48

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(June, 1902.)

The month has been a very wet one for June at every place in the district, and on looking up the records, it is found that there are in existence eighteen stations with records of twenty years and upwards, and on turning to them we find that at Wimbledon it is the wettest June since 1860, at Brixton since 1879, at Greenwich since 1888, and at all the other stations within the last ten years, with the exception of Sutton, West Norwood, Croydon, Beddington, and Wallington, which have no such wet June. The first three weeks were cold, but the last week was fine and warm. As a whole the month has been a fairly healthy one. Thunder was heard, and thunderstorms occurred on several days. Solar halos were visible on several days throughout the district, and on the 30th there was a parhelion observed at Greenwich. Vegetation as a rule was backward, and all fruit trees are much blighted. The dog-rose flowered on the 20th. Faint replicas of the sunsets of 1883 were noticed at Croydon and Wallington from the 26th to 29th. The rainfall of the month is more than double the average, and at Croydon no less than 2·63 in. percolated through a chalk gauge. The mean temperature of the month is about one and a half degrees below the average, and was at Chipstead 58°·4, at Worcester Park 58°·3, at Redhill, Wallington, and Croydon (Whitgift) 57°·9, and at Warlingham 56°·5. There were recorded at Wallington 159·5 hours of sunlight, which is 46·5 hours or nine per cent. below the June average of the fifteen years 1886–1900.

Francis Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·16	·13	·11	·52	·49	·43	·43	·45	·46	·47	·48	·60	·32	·66	·42	·42	·31	·28			·31	·33		·32	·34	·32
2	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
9	·24	·28	·27	·33	·33	·33	·32	·34	·26	·37	·36	·38	·32	·35	·35	·34	·43	·39			·44	·42		·33	·29	·28
10	·10	·02	·01	..	·09	·10	·05	·06	..	·08	·09	·18	·16	·11	·09	·11	·24	·25			·09	·09		·14	·11	·09
11	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
17	·06	·15	·05	..	·01	..	·01	·02	·05	·01	..	..	..	..	..	·01	..	·01			..	·01		..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
19	·04	·04	·03	·03	·07	·07	·07	·07	·06	·06	·07	·07	·07	·07	·07	·06	·04	·04			·06	·07		·06	·05	·06
20	·06	·03	·05	..	·04	·03	·03	·03	·01	·03	·04	·04	·03	·03	·03	·04	·06	·04			..	·06		·04	·02	·03
21	..	·02	..	..	·01	·01	·01	·01	..	·02	·02	·03	·03	·01	..	·03	·01	·02			..	·03		·02	..	..
22	·09	·04	·03	·08	·05	·04	·04	·04	..	·04	·03	·03	·04	·05	·05	..	·03	·03			·08	·03		·03	·02	·01
23	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			..	..		·01	..	·01
24	·02	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	·01
25	·13	·12	·10	·10	·13	·12	·13	·14	·18	·11	·13	·12	·11	·11	·12	·12	·10	·09			·10	·09		·13	·09	·07
26	·21	·19	·16	·18	·12	·11	·29	·28	·22	·08	·16	·17	·13	·17	·16	·18	·15	·15			·09	·14		·19	·08	·12
27	..	·13	·10	·34	·19	·17	·19	·20	·20	·17	·10	·07	·09	·07	·09	·10	·14	·19			·17	·18		·13	·33	·12
28	·11	·26	·33	·13	·28	·26	·25	·25	·20	·13	·27	·10	·21	·05	·20	·17	·08	·08			·09	·09		·05	·08	·12
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
30	·06	·05	·03	·02	·04	·04	·04	·05	·02	·03	·03	·03	·03	·03	·03	·04	·02	·02			·04	·03		..	·03	·01
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
*	1·28	1·47	1·27	1·73	1·85	1·73	1·86	1·94	1·67	1·54	1·78	1·82	1·54	1·71	1·61	1·62	1·61	1·59	1·31	0·00	1·47	1·57	1·60	1·45	1·44	1·25
†	14·34	14·14	12·93	14·32	13·66	13·26	13·42	13·82	13·27	12·26	13·23	13·70	13·02	13·24	13·23	14·10	14·01	12·85	13·42	9·55	14·77	13·00	12·80	14·34	12·94	11·78

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for July is 2·52 in.* July, 1902.

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·70	·87	·73	·54	·45	·48	·49	·41	·44	·63	·50	·45	·49
2		..	..	..	..	..	..	..	..	..	..	..	..	..
3		..	..	..	..	..	..	..	..	..	..	..	..	..
4		..	..	..	..	..	..	..	..	..	..	..	..	..
5		..	..	..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..	..	..
8		..	..	..	..	..	..	..	..	..	..	..	..	..
9		·28	·29	·29	·31	·26	·29	·29	·28	·28	·27	·30	·26	·27
10		·04	·12	·14	·05	·11	·09	·10	·09	·10	·10	·13	·11	·10
11		..	..	..	..	..	..	..	..	..	..	..	..	..
12		..	..	..	..	..	..	..	..	..	..	..	..	..
13		..	..	..	..	..	..	..	..	..	..	..	..	..
14	MONTHLY GAUGE.	..	..	..	..	..	..	..	..	..	..	..	..	..
15		..	..	..	..	..	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..	..
17		..	..	..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	..	..	..	..	..	..	..	..	..
19		·03	·04	·01	·05	·05	·05	·04	·06	·05	·06	·06	·06	·04
20		·03	·03	..	·01	..	·01	..	..	..	·01	·02	·01	·03
21		..	·01	..	·01	..	..	..	·01	..	..	..	..	..
22		·04	·03	..	·02	..	·01	..	·01	·01	..	·01	·01	..
23		·01	·01	..	..	·01	..	..	..	·01	·02	·01	·01	·01
24		..	..	..	..	..	..	..	..	..	..	..	..	..
25		·07	·06	·08	·08	·05	·05	·06	·06	·06	·06	·06	·07	·06
26		·21	·07	·11	·12	·06	·03	..	·09	·07	·05	·01	·05	·04
27		·07	·17	·09	·14	·20	·10	·10	·19	·15	·07	·16	·12	·15
28		..	·03	·05	·16	·02	·02	·03	·08	·05	..	·04	·05	·04
29		..	..	..	..	..	..	..	..	..	..	..	..	..
30		·06	·03	·02	·01	·02	·03	..	·03	·03	·05	·03	·02	·03
31		..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·10	1·54	1·76	1·52	1·50	1·23	1·16	1·11	1·31	1·25	1·32	1·33	1·22	1·26
†	12·25	12·82	12·32	11·46	13·57	11·52	11·01	10·37	12·31	11·61	11·12	11·91	11·63	12·24

Day of Mo.	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·48	·35	·53	·32	·28	·27	·45	·34	·67	·77	·55
2		..	..	..	..	..	..	..	..	·01	·01	..
3		..	..	..	..	..	..	..	..	..	..	..
4		..	..	..	..	..	..	..	..	..	..	..
5		..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..
8		..	..	..	..	..	..	..	..	..	..	..
9		·27	·27	·29	·28	·32	·30	·32	·14	·27	·26	·29
10		·12	·09	·12	·13	·14	·10	·10	·14	·19	·23	·18
11		..	..	..	..	..	..	..	..	..	..	..
12		..	..	..	..	..	..	..	..	..	..	..
13		..	..	..	..	..	..	..	..	..	..	..
14	RECORD CEASED.	..	..	..	..	..	..	..	..	..	..	..
15		..	..	..	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..
17		..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	..	..	..	..	..	..	..
19		·10	·05	·05	·06	·07	·07	·06	·06	·06	·05	·10
20		·02	·02	·02	·02	·02	·02	·02	·03	·04	·01	·02
21		..	..	..	·02	·02	·01	..	..	·02	..	·01
22		·01	·01	·01	·01	·01	·01	·01	..	·02	..	·04
23		·02	·01	·02	·02	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..
25		·05	·06	·06	·08	·09	·09	·08	·09	·10	·09	·10
26		·06	·05	·05	·10	·05	·20	·12	·02	·16	·18	·20
27		·03	·08	·09	·19	·25	·16	·15	·07	·12	·13	·23
28		·02	·05	·04	·18	·15	·06	..	..	·12	·04	·02
29		..	..	..	..	..	..	..	..	..	..	..
30		·02	·03	·03	·03	·09	·03	·03	·11	·05	·04	·07
31		..	..	..	..	..	..	..	..	..	..	..
*		1·20	1·07	1·31	1·44	1·44	1·32	1·34	1·00	1·83	1·81	1·81
†		10·90	10·38	11·98	12·38	13·66	13·04	13·61	9·36	12·51	11·92	12·26

Day of M	Southfleet	Chislehur	Bickley	Bromley	Bromley Common	Beckenhan	South Norwood	Morden	Wimbledon (Sew. Wks.	Wimbledon (TheDowns	Wimbledon (Windmill)	Raynes Park	New Malden
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·41	·60	·46	·35	·36	·52	·42	·57	·37	·33	·36	·36	·37
2	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·26	·26	·26	·24	·25	·26	·29	·21	·26	·24	·24	·25	·22
10	·30	·10	·09	·10	·15	·14	·16	·10	·15	·19	·20	·14	·14
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·05	·05	·05	·06	·05	·06	·14	·06	·03	·04	·05	·04	·01
20	·02	·02	·02	·02	·03	·02	·02	·01	..	·01	..	·01	·01
21	·01	·02	·01	·02	·02	..	·01	·03	..	..	..	·01	..
22	·02	·02	·01	·05	·01	·03	·02	..	..	·01	·03	·01	..
23	..	..	..	..	·03	..	..	·01	..	..	·02	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·06	·08	·07	·07	·08	·06	·07	·05	·06	·07	·11	·08	·07
26	·21	·02	·02	·04	·03	·08	·11	·10	·05	·07	·04	·07	·05
27	·09	·09	·08	·07	·12	·03	·02	·03	·06	·03	·19	·02	·02
28	·03	·03	·01	·02	·07	·02	·03	·05	·01	·02	·01	·03	..
29	..	..	..	..	..	..	·01	..	..	..	..	..	..
30	·04	·05	·04	·05	·04	·04	·04	·05	·02	·03	..	·04	·02
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·50	1·34	1·12	1·09	1·24	1·26	1·34	1·27	1·01	1·04	1·25	1·06	·91
†	9·88	11·47	10·87	11·53	11·71	11·25	..	11·70	10·48	11·11	11·47	11·36	9·03

Day of M	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm. rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·65	·52	·66	·53	·45	·34	·41	·46	·50	·27	·39	·42	·56
2	..	..	..	..	..	..	..	..	..	·01	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·27	·14	·19	·23	·26	·20	·23	·23	·26	·26	·31	·30	·26
10	·12	·06	·14	·13	·17	·11	·15	·17	·24	·11	·09	·10	·55
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·03	·03	·04	·02	·03	·05	·03	·02	·03	·05	·06	·06	·05
20	·01	·01	..	..	·01	..	..	·01	..	·01	·03	·02	·04
21	..	..	..	..	..	·01	..	..	..	..	..	·02	..
22	..	·01	·01	·01	·01	·02	·03	..	·03	·03	·02	·02	·06
23	..	..	..	..	..	·01	..	·03	..	..	·03	·02	·02
24	..	..	..	..	..	..	..	·01	..	..	..	..	·02
25	·06	·11	·13	·09	·12	·17	·10	·08	·05	·07	·06	·06	·09
26	·08	·04	·02	·10	·03	..	·04	·04	·04	·08	·10	·03	·08
27	·06	·02	·04	·02	·01	·07	·08	·04	·05	·05	·04	·02	·04
28	·04	·01	·01	·03	·02	..	..	..	..	·01	·11	..	·05
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·02	·02	·03	·02	·02	·03	·03	·03	·03	·04	·04	·10	·09
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·34	·97	1·27	1·18	1·13	1·01	1·10	1·12	1·23	·99	1·28	1·17	1·91
†	11·29	10·70	11·24	10·67	12·12	10·69	11·13	11·38	10·57	11·23	11·40	10·92	11·72

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **July, 1902.**

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·61	·53	·45	·53	·28	·33	·33	·55	·84	·39
2	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..
9	·28	·26	·24	·23	·24	·25	·22	·21	·25	·20
10	·38	·27	·42	·48	·31	·10	·13	·41	·38	·35
11	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..
19	·05	·08	·05	..	·04	·06	·04	·04	·04	·01
20	·02	·01	·02	·07	·01	·04	·03	·02	·01	..
21	·01	..	..	..	..	·01	·01	·01	..	..
22	·02	·03	·02	·03	·01	·04	·03	·01	·02	·02
23	·01	..	..	..	..	..	·01	..	·02	..
24	·01	..	..	..	..	..	..	..	..	..
25	·06	·08	·08	·07	·04	·07	·06	·05	·07	·07
26	·10	·02	·09	·03	·03	·10	·08	·06	·05	·03
27	·04	·05	·05	·02	·03	·03	·03	·01	·03	..
28	·02	·05	·02	..	·06	·01	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..
30	·05	·06	·05	·08	·05	·05	·03	·04	·04	·03
31	..	..	..	..	..	..	..	..	..	..
*	1·66	1·44	1·49	1·54	1·10	1·09	1·00	1·41	1·75	1·10
†	11·13	11·57	10·11	9·83	9·97	10·70	9·37	9·17	11·53	8·58

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

Note.—The Rev. C. J. Taylor having left The Larches, Banstead, Mr. E. J. Maitland, of The Hall, Banstead, has kindly taken his place. In other respects there is no change.

NOTES.

(July, 1902.)

A dry, cool, and unseasonable month. It is ten years since there has been a July so cold, and with the exception of the three dry Julys of 1897, 1898, and 1899, there has been no such dry July since 1885. The month has been an unhealthy one, scarlet fever and chicken-pox being very prevalent. The unseasonable weather has checked all vegetation, and fruit crops have especially suffered. Ants have been very numerous. The lime blossomed at Sidcup on the 8th. Thunderstorms occurred generally throughout the district on the 1st and 10th. Solar halos were seen at Greenwich on the 2nd, 3rd, 4th, 12th, 17th, and 30th; at Upper Gatton on the 3rd, 4th, 12th, and 25th; at Clapham Park and Wallington on the 12th; and at Sanderstead on the 17th. The meteor on the 13th was seen at Upper Gatton and Wallington. There was a severe gale on the 26th throughout the district, and much damage was done, especially to trees. The rainfall of the month is about one-half of the average. The mean temperature of the month is about one degree below the average, and was at Croydon (Duppas House) 61°·9, at Croydon (Whitgift) 61°·3, at Wallington and Worcester Park 61°·1, at Redhill 60°·5, at Warlingham 59°·6, and at Chipstead 58°·7. There was no percolation during the month at Croydon. There were recorded at Wallington 192·3 hours of sunlight, which is 17·8 hours or three per cent. below the July average of the fifteen years 1886–1900.

Francis Campbell-Bayard, F.R.Met.Soc.,

Day of Month	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.	Redhill (Linkfd.la.	Nutfield (old gauge	Nutfield (newgauge)	Buckland
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	MONTHLY GAUGE.	..	..	..
2	·03	·03	·03	·05	·05		·07	·08	·04
3	·05	·02	·02	..	·01		·03	·03	·04
4	·12	·14	·01	·02	·11		·23	·27	·10
5	·06	·21	·18	·20	·07		·07	·07	·09
6	·30	·16	·11	·12	·17		·16	·18	·10
7	..	·03	..	..	·02		·03	·02	·01
8	..	..	·02	..	·01		..	..	·01
9	·02	..	..	..	·01		..	..	·01
10	·12	·11	·12	·20	·09		·07	·07	·09
11	·06	·03	·03	..	..		..	..	·01
12	·05	·03	·03	·03	·01		..	..	·01
13	..	·01	·01	..	·04		·03	·03	·01
14	·06	..	..	..	..		..	..	·01
15	..	..	..	..	..		..	·01	..
16	1·00	·61	·50	·40	·58		·60	·65	·58
17	·07	·08	·07	·06	·16		·16	·16	·10
18	·88	·89	·73	·73	·83		·78	·73	·84
19	·02	·02	·01	·04	·11		·02	·02	·01
20	..	·02	·03	..	·02		·01	·02	·01
21	..	..	..	..	..		..	..	..
22	·02	·01	·01	..	·02		·02	·02	·01
23	·16	·35	·39	·37	·46		·40	·40	·34
24	·11	·14	·01	..	·01		·02	·01	·04
25	·06	..	·03	..	·18		·45	·45	·23
26	..	..	..	·08	..		..	..	·05
27	·12	·48	·17	·13	·01		..	..	..
28	..	..	..	..	..		..	..	..
29	..	..	..	..	..		..	..	..
30	·02	·02	·05	·05	·01		·09	·09	·12
31	·60	·48	·34	·46	·41		·37	·35	·25
*	3·93	3·87	2·90	2·94	3·39	3·29	3·61	3·66	3·11
†	18·27	18·01	15·83	17·26	17·05	16·55	17·03	17·48	16·38

Day of Month	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..
2	·05	·05	·04	·04	·05	·05	·05	·04	·03
3	·01	·02	..	·02	·01	·02	·01	·03	·01
4	·06	·02	·05	·02	·02	·02	·02	·06	·14
5	·07	·17	·08	·08	·18	·12	·10	·10	·09
6	·22	·21	·16	·21	·17	·16	·15	·10	·13
7	·03	·05	·04	·02	·06	·04	·05	·03	·04
8	..	·01	..	..	·01	..	..	·01	·11
9	·01	·01	..	..	·01	..	·01	..	..
10	·09	·06	·03	·06	·05	·04	·07	·06	·01
11	..	·01	·01	·01	·01	·01	·01	..	·07
12	·01	..	..	..	..	..	..	·02	..
13	·02	·04	·02	·02	·02	·03	·03	·02	·01
14	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..
16	·44	·53	·55	·48	·57	·43	·45	·50	·45
17	·17	·18	·16	·16	·11	·24	·19	·20	·10
18	·79	·80	·83	·78	·75	·84	·90	·85	·73
19	·14	·05	·11	·05	·05	·04	·05	·01	·04
20	·02	·02	·02	·02	·02	·05	·02	·01	·01
21	..	..	..	..	..	..	..	..	..
22	·01	·01	·02	·01	·02	·02	·02	·01	·01
23	·43	·45	·55	·44	·34	·48	·52	·43	·35
24	·01	·01	·02	..	·01	..	·03	·05	·03
25	·07	·04	·13	·02	·06	..	·01	·06	·05
26	..	..	..	..	..	..	·01	..	..
27	..	·01	..	..	·02	..	..	..	..
28	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..
30	..	·08	·12	·07	·03	..	·05	·01	..
31	·42	·44	·42	·44	·48	·58	·45	·50	·40
*	3·07	3·27	3·36	2·95	3·05	3·17	3·20	3·10	2·81
†	15·33	16·50	17·06	15·97	16·29	16·40	17·30	17·11	15·66

Day of Month	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
2			·05	·04		..	·05	·06
3			..	·03		·07	·03	·01
4			·11	·14		·02	·10	·13
5			·12	·15		·15	·11	·12
6			..	·07		·14	·18	·14
7			..	·01		·04	·04	..
8			·01	·05		..	·02	·01
9			·01	..		..	·02	·01
10			..	·02		·09	·08	·08
11			·08	·06		·02	·02	·03
12			..	..		..	..	..
13			·02	·01		·03	·02	·02
14			·04	·05		..	·01	·07
15			..	..		..	..	..
16			·54	·47		·48	·30	·16
17			·13	·09		·34	·36	·28
18			·77	·72		·91	·67	·61
19			·01	·05		·04	·04	·08
20			·02	·01		·02	·01	..
21			..	..		..	..	..
22			..	·03		·02	·01	·01
23			·37	·33		·43	·36	·47
24			·06	·04		·04	·04	·05
25			·01	..		..	·01	..
26			..	..		·01	..	..
27			..	..		..	..	..
28			..	..		..	..	..
29			..	..		..	..	..
30			..	·11		·02	·01	..
31			·40	·31		·48	·40	·46
*	2·98	2·47	2·75	2·79	2·72	3·35	2·89	2·80
†	16·40	12·02	17·52	15·79	15·52	17·69	15·83	14·58

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for August is 2·30 in.* **August, 1902.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	..	MONTHLY GAUGE.	..	..	..	..	..	..	..	..	..	..
2		·04		·10	·04	·13	·18	..	·09	·11	·16	·10	·10
3		·02		..	·02	·03	·06	·03	·01	·01	·02	..	·02
4		·20		·36	·13	·15	·05	·13	·12	·11	·11	·10	·09
5		·15		·05	·19	·16	·12	·14	·15	·14	·14	·14	·14
6		·06		·13	·08	·03	·04	·03	·08	·07	·05	·05	·07
7		..		..	..	·03	·02	·03	..	..	..	·01	·01
8		·07		·05	..	·02	·02	..	·02	·02	·02	·02	·02
9		·01		..	..	·03	·02	..	·03	·02	·02	·02	·02
10		·10		·10	·03	·09	·08	·04	·11	·09	·10	·07	·09
11		..		..	..	·02	·01	·07	·02	·03	·02	·03	·02
12		·04		·06	..	..	..	·03	..	..	..	·01	·01
13		·04		·04	·02	·04	·04	..	·01	·03	·03	·03	·04
14		..		..	..	..	..	·03	..	..	..	..	..
15		..		..	..	..	..	..	..	..	..	..	..
16		·20		·41	·31	·15	·16	·16	·16	·15	·15	·16	·14
17		·28		·44	·48	·96	·93	·97	·49	·57	·65	·54	·61
18		·71		·75	·74	·73	·77	·77	·77	·73	1·20	·70	·73
19		·05		·09	·03	·04	·02	·02	·06	·05	·04	·03	·03
20		..		..	..	..	·01	..	..	..	..	·01	..
21		..		..	..	..	..	..	..	..	..	..	..
22		..		..	·01	·02	·01	..	..	·01	..	·01	·01
23		·40		·39	·53	·41	·36	·40	·38	·37	·88	·37	·42
24		·02		·01	·03	·05	·07	·05	·12	·13	·05	·06	·07
25		..		..	..	..	..	..	..	..	..	..	..
26		..		..	..	..	..	..	..	..	..	..	..
27		·03		..	..	..	..	..	..	..	..	..	..
28		..		..	..	..	..	..	..	..	..	..	..
29		..		..	..	..	..	..	..	..	..	..	..
30		·02		..	·01	·02	·05	..	·01	·02	..	..	·01
31		·34		·60	·60	·02	·49	·54	·54	·53	·53	·50	·57
*	3·10	2·78	3·66	3·61	3·25	3·13	3·51	3·44	3·17	3·19	4·17	2·96	3·22
†	15·35	15·60	15·98	15·07	16·82	14·65	14·52	13·81	15·48	14·80	15·29	14·87	14·85

Day of Mo.	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	RECORD CEASED.	..	..	..	..	..	..	..	..	..	..	..
2	·11		·10	·09	·12	·08	·08	·06	·09	·07	·09	·06	·08
3	·02		..	·02	..	·03	·01	·01	·01	·02	·01	..	..
4	·10		·14	·08	·10	·10	·10	·07	·14	..	·10	·12	·08
5	·17		·19	·14	·07	·11	·07	·11	·10	·15	·08	·07	·05
6	·04		·04	·07	·15	·13	·23	·22	·22	·20	·09	·05	·08
7	..		..	..	·01	·02	·03	·02	·01	·02	·04	·02	·03
8	·02		·02	·02	·01	·02	·02	·01	·05	·05	·09	·03	·02
9	·02		·01	·02	·02	·02	·01	·01	..	..	·01	..	..
10	·09		·06	·09	·07	·09	·10	·06	·07	·03	·04	·02	·08
11	·04		·03	·04	·04	·04	·05	·04	·03	·02	·05	·04	·05
12	..		·01	·01	..	..	..	..	..	..	..	..	..
13	·03		·03	·03	·02	·03	·03	·02	·02	·08	·03	·02	·01
14	..		..	..	..	..	..	..	..	..	·27	·16	·29
15	..		..	..	..	..	..	..	..	..	..	..	..
16	·20		·23	·13	·15	·16	·20	·19	·22	·19	·30	·68	·34
17	·61		·74	·50	·51	·42	·43	·35	·43	·32	·35	·39	·29
18	·75		·75	·58	·73	·63	·65	·64	·64	·39	·59	·53	·62
19	·03		·03	·02	·02	·07	·10	·10	·08	·03	·02	·01	..
20	·01		..	·01	..	·02	·02	·01	·01	..	..	..	..
21	..		..	..	..	..	..	..	..	..	..	..	..
22	·01		·01	·01	·01	·02	·02	·01	·01	..	·02	·01	·02
23	·41		·39	·42	·43	·54	·53	·42	·51	·34	·40	·39	·41
24	·04		·02	·04	·02	·08	·16	·15	·10	·02	·05	·11	·24
25	..		..	..	..	..	..	..	..	..	..	..	..
26	..		..	..	..	·01	..	..	..	..	..	..	..
27	..		..	..	..	..	..	..	..	..	..	..	..
28	..		..	..	..	..	..	..	..	..	..	..	..
29	..		..	..	..	..	..	..	..	..	..	..	..
30	·02		·01	·01	·01	..	..	·01	..	..	..	..	..
31	·52		·59	·53	·59	·70	·75	·44	·66	·44	·40	·40	·41
*	3·24		3·40	2·86	3·08	3·32	3·59	2·95	3·40	2·37	3·03	3·11	3·10
†	15·48		14·30	13·24	15·06	15·70	17·25	15·99	17·01	11·73	15·54	15·03	15·36

Day of Mo	Southfleet	Chislehurs	Bickley	Bromley	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·02	·07	·08	·08	·09	·12	·16	·11	·11	·14	·12	·15	·15	·14	·12	·10	·17	·18	·13	·09	·09	·10	·10	·10	·10	·11
3	..	..	..	·01	·02	·02	..	·07	·02	·04	·04	·04	·05	·03	·04	·06	·04	·08	..	·03	·03	·01	·03	·02	·03	·10
4	·06	·06	·05	·06	·06	·08	·06	·05	·12	·33	·10	·15	·15	·08	·27	·11	·22	·08	·12	·05	·08	·06	·11	·11	·08	·12
5	·04	·09	·10	·12	·11	·16	·17	·14	·17	·16	·21	·14	·16	·10	·11	·12	·12	·15	·10	·23	·16	·18	·18	·16	·16	·04
6	·09	·14	·16	·20	·20	·08	·05	·05	·13	·14	·20	·09	·30	·03	·35	·55	·30	·28	·57	·24	·38	·15	·08	·10	·15	·16
7	·05	·04	..	..	·03	·02	..	·02	·02	·02	·06	·03	..	..	·01	·11	·01	·03	·09	·05	·03	·05	·02	·03	..	..
8	..	..	·02	·01	·01	·02	..	·02	·02	·03	·03	·02	·03	·02	·05	·06	·02	·03	·04	·04	·04	·04	·03	·03	·04	·06
9	..	..	..	·02	..	·01	·03	·03	·02	·03	·02	·03	·01	·01	..	·02	..	..	·02	·03	·02	·01	·03	·03	·02	·02
10	·04	·04	·02	·05	·03	·04	·07	·09	·06	·09	·09	·10	·06	·07	·07	·05	·05	·09	·08	·07	·04	·02	·03	·04	·03	·04
11	·05	·04	·03	·06	·04	·05	·06	·02	·02	·02	·02	·03	·01	..	·02	·01	·01	..	·02	·03	·03	·05	·05	·05	·06	·06
12	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
13	·02	·01	·02	·03	·03	·03	·05	·07	·02	·04	·05	·03	·03	·04	·02	·02	·02	·03	·06	·04	·04	·03	·06	·07	·04	·02
14	·21	·50	·60	·45	·26	..	..	..	..	..	..	..	·01	·03	·03	·04	·09	·05	·15	..	·01	..	·01	..	..	·01
15	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·26	·18	·14	·14	·19	·14	·20	·16	·15	·13	·16	·13	·08	·14	·23	·21	·10	·15	..	·15	·13	·17	·20	·21	·16	·09
17	·24	·65	·70	·77	·74	·57	·72	·38	·26	·24	·25	·27	·28	·31	·48	·14	·38	·27	·12	·23	·40	·18	·27	·42	·43	·40
18	·57	·59	·72	·67	·55	·73	·80	·83	·82	·84	·82	·90	·72	·82	1·15	·75	·80	·90	·81	·83	·86	·85	·83	·85	·84	·82
19	·01	·01	·02	·02	·03	·03	·02	·03	·08	·09	·10	·10	·07	·04	·09	·21	·11	·15	·19	·09	·08	·12	·07	·03	·01	·02
20	..	..	·01	..	·01	·01	..	·03	·02	..	·03	·01	..	·01	·01	·02	·01	·02	·01	·03	·02	.01	·02	·03	·01	·02
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
22	·01	..	·01	·03	·01	·02	·02	·03	..	..	·01	·01	..	·01	..	·01	..	..	..	·01	..	·01	·02	·02	·02	..
23	·41	·49	·57	·45	·46	·40	·48	·33	·24	·25	·27	·28	·21	·32	·16	·19	·20	·24	·25	·27	·27	·25	·24	·30	·28	·29
24	·09	·02	·02	·03	·02	·02	·02	·05	·10	·06	·16	·05	·03	·02	·02	·10	·02	·03	·14	·10	·11	·06	·10	·07	·07	·09
25	..	..	..	..	·01	..	..	..	..	..	..	..	..	·01	..	..	..	·01	·01	..	..	..	..	..	..	..
26	·01	..	..	..	..	..	..	·01	..	..	..	..	..	..	·02	·03	..	·02	·15	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	·58	..	·03	·01	·02	·04	·02	·03	·04	·05	·05	·03	·05	·04	·04	·04	·25	·14	·03	·02	·03	·09	·05	·03	·06
31	·52	·05	·65	·65	·61	·63	·64	·48	·37	·38	·39	·37	·30	·37	·32	·33	·29	·16	·24	·39	·47	·42	·36	·57	·57	·53
*	2·70	3·56	3·92	3·88	3·54	3·20	3·59	3·03	2·78	3·07	3·18	2·95	2·68	2·65	3·61	3·30	3·00	3·20	3·44	3·03	3·31	2·80	2·93	3·29	3·13	3·08
†	12·58	15·03	14·79	15·41	15·25	14·45	..	14·73	13·26	14·18	14·65	14·31	11·71	13·94	14·31	14·54	13·67	15·32	14·13	14·16	14·69	13·37	14·16	14·69	14·05	14·80

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. August, 1902.

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..
2	·10	·08	·02	..	·08	·10	·09	..	·10	·12
3	·01	..	..	·07	..	·03	..	·08	..	·02
4	·05	·07	·06	·05	·03	·04	·03	·03	·06	·04
5	·16	·11	·07	·03	·17	·16	·14	·17	·10	·20
6	·13	·16	·08	·23	·14	·13	·10	·05	·22	·19
7	·05	·02	·07	·05	·03	·07	·05	·04	·04	·04
8	·04	·04	..	..	·01	·01	·01	·01	·03	·01
9	·01	·13	..	..	..	..	·01	·02	·01	..
10	·04	..	·05	..	·09	·08	·07	·07	·05	·03
11	·05	·04	·11	·15	·06	·04	·03	·03	·05	·04
12	..	..	..	..	·01	..	..	..	..	..
13	·03	·02	·01	·02	·04	·02	·02	·01	·03	·01
14	·01	·25	·66	·83	·12	·03	·04	·07	..	..
15	..	..	..	..	..	..	..	..	..	·03
16	·13	·11	·13	·11	·08	·10	·09	·11	·13	·08
17	·37	·74	·49	·53	·77	·32	·25	·23	·21	·48
18	·81	·75	·48	·58	·77	·74	·72	·74	·85	·75
19	·03	..	..	..	..	·07	·06	·10	·05	·05
20	·01	..	..	..	..	·01	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..
22	·01	·02	·01	·02	·01	..	..	..	·01	..
23	·26	·48	·41	·44	·17	·26	·23	·21	·27	·27
24	·04	·05	·07	·10	·07	·14	·01	·02	·08	·04
25	..	..	..	..	..	..	..	..	..	..
26	..	·01	..	..	..	·01	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..
30	·02	..	..	..	..	·08	·02	·02	·02	·13
31	·58	·59	·64	·52	·60	·50	·49	·47	·44	·25
*	2·94	3·67	3·36	3·73	3·25	2·94	2·46	2·48	2·75	2·78
†	14·07	15·24	13·47	13·56	13·22	13·64	11·83	11·65	14·28	11·36

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(August, 1902.)

The month has been wet and cold, and consequently unfavourable to agricultural interests. As showing the lowness of the shade temperature, one of the Croydon observers remarks that the maximum thermometer only touched 80° on the 16th and 29th. At Hayes, the observer says that peaches on outside walls have a difficulty in ripening, and that Victoria plums are still green and beginning to decay; at Abinger potato disease is rampant; whilst the observer at Kenley complains that the ground, notwithstanding the frequent showers, is extremely dry, and flowers do not flourish. As might be expected, the month has been unhealthy, and diphtheria, scarlet fever, and typhoid have been somewhat more prevalent than during the same month of last year. Solar halos were observed at Greenwich on the 2nd, 15th, 16th, and 24th; at Upper Gatton on the 2nd, 14th, and 16th; and at Wallington on the 16th and 22nd: whilst lunar halos were seen at Greenwich on the 15th and 22nd; at Wallington on the 12th and 14th; and at Upper Gatton and Beddington on the 22nd. A fine rainbow was seen at Nutfield and Wallington on the 19th. A thunderstorm occurred throughout the district on the 19th, and a thick fog in the early morning of the 27th. The rainfall of the month is about 35 per cent. above the average. The mean temperature of the month is about 1°·5 below the average, and was at Croydon (Duppas House) 60°·8, at Worcester Park 60°·4, at Croydon (Whitgift) 60°·3, at Chipstead 60°·1, at Redhill and Wallington 60°·0, and at Warlingham 58°·7. There were recorded at Wallington 119·6 hours of sunlight (the lowest August value in the record), which is 78·7 hours or 17 per cent. below the August average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·16	·15	·11	·14	·14	·02	·06	·08	·09	·10	·09	·05	·16	·10	·03	·12	·04	·07			·06	·02		·10	·09	·08
2	·22	·26	·23	·22	·13	·13	·13	·13	·10	·13	·16	·15	·15	·17	·15	·17	·18	·13			·16	·13		·14	·13	·11
3	..	·01	·02	..	..	·08	..	..	·08	..	..	·02	·01	·01	·06	·11	..	..			..	..		..	·01	..
4	..	..	..	..	·06	..	..	..	..	·02	..	..	..	·01	..	·01	..	..			..	..		·02	..	..
5	·10	·02	..	·03	·16	·11	·06	·04	·18	·10	·09	..	..	..	..	..	..	·16			..	·06		..	..	·07
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
9	·06	·06	·03	·02	·04	·05	·06	·06	·04	·03	·03	·04	·02	·03	·06	·04	·02	·02			·06	·04		..	·01	·01
10	·02	·01	·03	..	·03	·04	·01	·01	·05	·02	·02	..	·02	·11	·03	·01	·04	·15			·07	·14		·02	·06	·08
11	·24	·20	·32	·30	·12	·12	·09	·08	·01	·10	·07	·15	·08	·06	·29	·25	..	..			·11	·03		·07	·34	·25
12	..	..	..	..	·01	·01	..	..	·01	·01	·01	..	..	·01	..	..	..	..			·01	..		..	·01	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
14	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
15	..	..	·02	..	·01	·02	·02	·02	·01	·01	·02	·03	·02	·02	·04	·03	·01	·05	MONTHLY GAUGE.	MONTHLY GAUGE.	..	·03	MONTHLY GAUGE.	·02	..	..
16	·16	·05	·05	·07	·03	·03	·04	·04	·03	·02	..	·01	·01	·02	·01	·02	·04	..			·07	·01		·03	·06	·05
17	..	..	..	..	..	·01	..	..	·01	..	·01	..	·01	·01	..	·50	·01	..			..	..		..	·01	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
20	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			..	..		..	..	..
21	..	·02	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..	..			..	..		..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
23	..	..	..	..	..	..	..	·01	·01	·01	·01	·01	..	·02	..	..	..	..			..	..		..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	·02		..	..	..
29	..	..	..	..	..	·01	·01	·01	·01	·01	·01	·02	·01	·01	·02	·03	·02	..			..	..		·03	·02	·02
30	..	·02	·02	..	..	·01	..	..	·01	·01	·01	·01	·01	·02	..	..	..	..			..	·01		..	·02	·01
*	·96	·81	·83	·78	·73	·64	·48	·48	·66	·57	·54	·49	·50	·60	·69	1·29	·36	·58	·59	·62	·54	·49	·47	·43	·76	·69
†	19·23	18·82	16·66	18·04	17·78	17·19	17·51	17·96	17·04	15·90	17·04	17·55	16·47	16·89	17·09	18·59	17·47	16·24	16·99	12·64	18·06	16·28	15·99	18·12	16·59	15·27

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for September is 2·30 in.* **September, 1902.**

Day of Mo.	Burgh Heath	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·05		·08	·06	·02	·06	·02	·01	·02	·02	·03	·03	·03
2		·17		·08	·16	·08	·08	. .	·09	·10	·09	·10	·11	·11
3		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
4		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
5		·34		. .	. .	. .	. .	. .	. .	. .	·02	·01	·01	·10
6		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
7		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
8		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
9		·02		·01	·01	·01	·01	. .	·02	·02	. .	·01	·01	·02
10		. .		·07	·42	1·61	1·19	2·99	1·70	1·34	1·65	·56	·76	1·05
11		·33		·33	·05	·43	·36	·32	·13	·07	. .	·06	·06	·12
12		. .		·01	. .	. .	. .	. .	. .	. .	·05	. .	. .	. .
13		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
14		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
15		·04		. .	. .	. .	. .	. .	. .	. .	. .	. .	·01	. .
16	MONTHLY GAUGE.	·01	MONTHLY GAUGE.	·03	·05	·07	·06	·06	·06	·08	·10	·08	·08	·11
17		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
18		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
19		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
20		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
21		. .		. .	. .	. .	. .	. .	. .	·01	. .	. .	. .	. .
22		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
23		. .		. .	. .	·02	·01	. .	. .	. .	. .	·01	·01	. .
24		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
25		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
26		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
27		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
28		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
29		. .		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
30		. .		·01	. .	. .	·02	. .	·03	·03	·03	·03	·03	·02
*	·65	·96	·75	·62	·75	2·24	1·79	3·39	2·04	1·67	1·96	·89	1·11	1·56
†	16·00	16·56	16·73	15·69	17·57	16·89	16·31	17·20	17·52	16·47	17·25	15·76	15·96	17·04

Day of Mo.	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farnborough	Orpington	Farningham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·07	·03	·04	·10	·08	·07	·05	·04	·03	·02	·03
2		·10	·08	·09	·12	·14	·13	·14	·11	·20	·18	·16
3		. .	. .	. .	. .	. .	·01	. .	. .	·01	. .	·01
4		. .	. .	. .	·01	. .	. .	. .	. .	·03	. .	. .
5		·10	·07	·06	·08	·33	·20	·10	·05	. .	·05	·10
6		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
7		. .	. .	. .	·01	. .	. .	. .	. .	. .	. .	. .
8		. .	. .	. .	·01	. .	. .	. .	. .	. .	. .	. .
9		. .	·01	·01	·01	. .	·01	. .	. .	·02	·01	·07
10		1·90	·47	·32	·07	·05	·05	·04	. .	·01	. .	·06
11		·07	·16	·15	·19	·12	·06	·22	·13	·18	·40	·35
12		. .	·01	·02	·01	·02	·01	. .	. .	·01	·01	·04
13		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
14		. .	. .	. .	·01	·01	. .	·01	. .	. .	. .	. .
15		·01	·01	·01	. .	·01	. .	. .	. .	·01	. .	. .
16	RECORD CEASED.	·09	·09	·13	·09	·09	·07	·08	·09	. .	·07	·11
17		. .	. .	. .	. .	. .	. .	. .	. .	·06	. .	. .
18		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
19		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
20		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
21		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
22		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
23		. .	·01	. .	·01	. .	. .	. .	. .	. .	. .	. .
24		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
25		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
26		. .	. .	. .	·01	. .	. .	. .	. .	. .	. .	. .
27		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
28		. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
29		. .	. .	·01	·02	·02	·02	. .	. .	·03	·03	·07
30		·02	·02	·03	·02	·01	·01	·01	·03	·01	. .	·01
*		2·36	·96	·87	·77	·88	·64	·65	·45	·60	·77	1·01
†		16·66	14·20	15·93	16·47	18·13	16·63	17·66	12·18	16·14	15·80	16·37

Day of M	Southflee	Chislehur	Bickley	Bromley	Bromley Common	Beckenhar	South Norwood	Morden	Wimbledo (Sew. Wks	Wimbledo (TheDown	Wimbledo (Windmill	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·14	04	·09	·03	·06	·04	·11	·13	·12	·12	·11	·09	·10	·05	·03	·09	·09	·09	·11	·14	·08	·08	·04	·05	·07
2	·12	..	·14	·16	·13	·13	·10	·03	·05	·06	·05	·07	·04	·06	·04	·04	·04	·04	·04	·05	·06	·06	·08	·11	·09	·10
3	..	..	..	..	..	..	..	·07	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	·01	..	..	·05	..	..	..	·01	..	·01	..	..	..	..	..	..	..	·01	·02	..	..	..
5	..	·04	·07	·11	·05	·02	·06	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·08	..	·01	·02	·02	·02	·01	·02	·01	..	·01	·01	..	..	..	..	..	..	..	·01	..	·01	·01	·01	..	..
10	·05	..	..	·02	·01	·03	2·76	·81	1·05	1·61	·91	1·63	1·25	1·21	3·51	2·57	2·04	1·96	1·08	·72	·86	·93	1·15	1·24	2·38	2·12
11	·34	·23	·12	·10	·09	·33	·19	·29	·43	·42	·36	·30	·16	·32	·18	·25	·18	·32	1·22	·29	·41	·58	·71	·80	·37	·42
12	·02	..	..	..	·01	..	..	·01	..	..	..	..	..	..	..	..	·03	·02	·02	..	·01	.01	·01	·01	·01	..
13	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	·01	..	·01	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	·01	..	·01	·01	..	..
15	·01	·03	·01	·02	·01	·03	·03	·01	..	·01	·02	·01	·01	·01	·02	..	·02	..	·02	·02	·01	·01	·01	·01	·03	·03
16	·07	·06	·06	·08	·08	·07	·04	·09	·06	·08	·05	·07	·03	·05	·03	·06	·06	·06	·01	·03	·03	·02	·03	·04	·06	·05
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	·01	..	..	·02	·02	·02	·02	·02	·01	..	..	..	..	..	·02	·02	·01	·01	·01	·01	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·04	..	..	..	·01	..	..	..	..	·01	..	..	..	..	·01	..	..	·01	..	·01	..	..	..	..	..	·01
30	·01	..	·02	·04	·02	·03	·02	..	·01	·02	..	·02	·01	·01	·01	..	·01	..	..	..	..	·01	·02	·01	·02	·02
*	·77	·50	·47	·65	·48	·73	3·25	1·51	1·76	2·36	1·56	2·25	1·60	1·77	3·85	2·95	2·47	2·50	2·50	1·26	1·54	1·73	2·15	2·29	3·01	2·82
†	13·35	15·53	15·26	16·06	15·73	15·18	..	16·24	15·02	16·54	16·21	16·56	13·31	15·71	18·16	17·49	16·14	17·82	16·63	15·42	16·23	15·10	16·31	16·98	17·06	17·62

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **September, 1902.**

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·04	·05	·01	..	·09	·04	·06	·03	·09	·10
2	·10	·19	·14	·14	·17	·08	·07	·06	·07	·04
3	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	·02	..
5	..	·07	..	..	·15	·01	·02	..	..	..
6	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..
9	·01	·02	·03	·06	..	·01	·01	·01	..	·01
10	1·80	..	..	..	·02	1·09	1·31	·93	·79	·47
11	·61	·36	·35	·93	·11	·34	·20	·57	·53	·26
12	·02	·03	·02	·02	·01	·01	..	..	·01	..
13	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..
15	·01	·10	..	..	..	·01	·01	..	..	..
16	·04	..	·06	·05	·04	·05	·02	·02	·04	..
17	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..
23	·01	..	..	..	..	..	..	..	·01	..
24	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..
26	·01	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..
29	..	·02	·01	..	..	..	..	..	..	..
30	·02	·04	·02	·04	·01	·03	·02	·02	·01	..
*	2·67	·88	·64	1·24	·60	1·67	1·72	1·64	1·57	·88
†	16·74	16·12	14·11	14·80	13·82	15·31	13·55	13·29	15·85	12·24

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(September, 1902.)

The month may be divided: from 1st to 15th it was somewhat showery, and the latter half dry. It has been cool throughout. The thunderstorm on the 10th has been very partial. On the high ground practically no rain fell, but the case was different in the low ground. At Esher there was 3·51 in.; at Carshalton 2·99 in.; at South Norwood 2·76 in., of which ·36 in. fell between 4 and 5 p.m., and 2 in. between 6 and 7 p.m.; at West Molesey 2·57 in.; at Upper Norwood 2·38 in.; at Forest Hill (Denmark Road) 2·12 in.; and at Surbiton 2·04 in. At Wimbledon (The Downs) 1·50 in. fell between 4.30 and 5.30 p.m. But for the thunderstorm, the rainfall would be about one-quarter of the average. The month has been somewhat unhealthy, and diphtheria has been prevalent at Sevenoaks. Solar halos were observed at Greenwich on the 19th, 20th, 24th, and 27th; at Upper Gatton on the 5th and 20th; and at Croydon on the 20th and 22nd: and lunar halos were seen at Greenwich on the 15th and 20th, and at several other places in the district on the 20th. Lightning was seen generally throughout the district on the 9th, and there was a rather thick white fog on the 26th and 27th, with a yellow fog at Croydon in the forenoon on the 19th. Temperature has been rather low, as much as 1° in some places below the average, though at Croydon it has been about the average. The mean temperature has been at Croydon (Duppas House) 57°·4, at Worcester Park 57°·0, at Croydon (Whitgift) 56°·7, at Chipstead 56°·4, at Wallington 56°·0, at Warlingham 55°·9, and at Redhill 55°·4. There were recorded at Wallington 159·8 hours of sunlight, which is one per cent. below the September average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,

Day of Mo	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·07	·03	·04	·06	·07	·07	·19	·18	·09
2	·12	·10	·06	·09	·19	·17	·16	·20	·13
3	·01	..	·01	..	·02	·03	·02	·02	·01
4	·02	..	·03	·02	..	·01	..	..	·02
5	..	..	..	..	..	..	..	..	..
6	..	·03	..	..	·01	..	..	..	..
7	..	..	..	..	..	..	..	·01	..
8	..	..	..	..	..	..	..	..	..
9	·30	·30	·32	·30	·21	·20	·15	·16	·20
10	·62	·56	·52	·37	·24	·25	·16	·15	·25
11	..	·01	·03	·11	·06	·07	·08	·10	·06
12	..	..	..	..	..	·02	..	..	..
13	·12	·13	·11	·11	·09	·08	·07	·07	·08
14	·02	·05	·03	·18	·17	·18	·18	·10	·12
15	·74	·69	·57	·55	·67	·68	·56	·57	·67
16	..	..	..	..	..	..	..	..	..
17	·29	·30	·31	·30	·23	·24	·23	·22	·21
18	..	·02	·02	..	·03	·05	·02	·02	·02
19	·15	·14	·12	·13	·11	·12	·15	·15	·07
20	·16	·16	·15	·15	·19	·17	·17	·16	·23
21	·02	·02	·02	..	..	..	·02	·02	·01
22	..	..	..	..	·03	·04	·01	·01	..
23	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..
25	..	..	·01	..	..	·02	·01	·01	·01
26	·03	·04	·03	·05	·03	·04	·03	·03	·03
27	..	..	..	..	..	..	..	..	..
28	·02	·01	·02	..	·02	·03	·01	·01	·02
29	..	·02	·02	·02	·01	·03	·01	·01	·01
30	·04	·02	·02	..	·04	·05	·04	·03	·02
31	..	..	..	..	..	..	..	..	..
*	2·73	2·63	2·44	2·44	2·42	2·55	2·27	2·23	2·26
†	21·96	21·45	19·10	20·48	20·20	19·74	19·78	20·19	19·30

Day of Mo	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·08	·09	·12	·08	·08	·13	·12	·39	·50
2	·16	·14	·21	·13	·11	·18	·20	·34	·25
3	·05	·01	·04	·01	·02	·02	·03	·02	..
4	..	·01	..	..	·01	..	·01	..	..
5	..	·01	·01	..	·02	..	·01	..	..
6	..	·01	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..
9	·20	·22	·15	·19	·23	·22	·18	·09	·09
10	·27	·35	·25	·22	·32	·30	·16	·24	·24
11	·10	·13	·14	·24	·03	·08	·11	·07	·07
12	..	..	..	..	..	..	..	·14	·14
13	·11	·12	·09	·10	·10	·11	·10	·10	..
14	·14	·06	·11	·08	·14	..	·07	·05	·02
15	·67	·74	·64	·66	·62	·64	·07	·51	·59
16	..	·01	..	..	..	..	..	..	..
17	·24	·23	·22	·21	·21	·13	·20	·21	·22
18	·02	·02	·02	·02	·02	·02	·02	·01	..
19	·09	·14	·14	·12	·10	·15	·13	·22	·21
20	·16	·14	·14	·14	·12	·13	·14	·16	·16
21	·01	·03	·03	·03	·03	·04	·04	·03	·03
22	·02	..	..	..	..	..	..	..	·02
23	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..
25	·01	·01	·01	·01	·01	..	·01	..	..
26	·03	·03	·03	·03	·02	·04	·04	·07	·06
27	..	..	..	..	..	·02	..	..	..
28	·02	·01	·05	·02	·05	..	·03	..	..
29	·01	·01	..	·01	·02	·02	·01	..	..
30	·05	·05	·05	·04	·04	·03	·03	..	·01
31	..	..	..	..	..	..	..	..	..
*	2·44	2·57	2·45	2·34	2·30	2·26	2·31	2·65	2·61
†	18·34	19·61	20·00	18·81	19·19	19·35	20 90	20·12	18·85

Day of Mo	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1			·18	·50		·15	·17	·08
2			·52	·40		·22	·15	·15
3			·11	·01		·01	·02	·02
4			..	..		..	·01	..
5			..	·01		·02	·02	·02
6			..	..		..	·01	·01
7			..	..		..	..	..
8			..	..		..	..	·02
9			·11	·12		·19	·21	·20
10			·22	·30		·14	·16	·13
11			·24	·21		·27	·04	·03
12			..	..		..	..	..
13			·11	·06		·11	·08	·06
14			·05	·06		·07	·09	·11
15			·61	·77		·69	·59	·45
16	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	·01	·01
17			·21	·24		·20	·18	·18
18			·01	·01		·02	·02	·02
19			·19	·17		·16	·08	·07
20			·16	·15		·12	·10	·08
21			·04	·04		·03	·04	·04
22			·01	..		..	..	·01
23			..	..		..	..	..
24			..	..		..	..	·01
25			..	..		·01	·01	·01
26			·08	·05		·04	·03	·02
27			..	..		..	..	..
28			..	..		..	..	·02
29			..	·01		·01	·03	..
30			·03	·02		·06	·04	03
31			..	..		..	..	·01
*	2·58	2·10	2·88	3·13	1·96	2·52	2·09	1·79
†	19·57	14·74	20·94	19·41	17·95	20·64	18·68	17·06

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for October is 2·77 in.* October, 1902.

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·02		·02	·04	·04	·03	..	·02	·03	·02	·03	·03	·03
2		·10		·03	·09	..	·08	·08	·08	·09	·09	·08	·08	·08
3		·02		..	..	..	..	..	..	..	..	·01	·01	·01
4		..		·01	..	·07	·01	..	..	..	..	..	..	..
5		..		..	·02	·03	·02	..	·02	·02	..	·01	·02	·02
6		..		..	..	..	..	..	·01	..	..	..	..	..
7		..		..	..	..	..	..	..	..	..	..	..	..
8		..		..	..	..	..	..	..	..	..	..	..	..
9		·31		·29	·26	·26	·28	·25	·24	·24	·25	·22	·24	·24
10		·28		·21	·29	·22	·25	·13	·18	·18	·12	·11	·11	·10
11		·01		·01	..	·01	·01	·05	·02	·02	..	·01	·01	·02
12		..		..	..	..	..	·03	..	..	..	..	..	..
13		·08		·05	·05	·04	·03	·03	·04	·05	·05	·04	·06	·05
14		·10		·15	·09	·07	·07	·06	·09	·07	·05	·07	·07	·08
15	MONTHLY GAUGE.	·39	MONTHLY GAUGE.	·30	·42	·38	·33	·32	·42	·42	·40	·39	·40	·42
16		..		..	..	..	..	..	..	..	..	..	..	..
17		·19		·20	·20	·15	·16	·14	·14	·14	·14	·13	·15	·16
18		·02		..	·01	..	·01	·02	·01	·01	..	·01	·01	·02
19		·05		·07	·07	·05	·05	·04	·06	·06	·05	·04	·05	·05
20		·12		·07	·10	·06	·05	·05	·07	·06	·06	·06	·06	·06
21		·03		·02	·03	·04	·04	..	·05	·04	·03	·04	·04	·04
22		..		..	..	..	..	·03	..	..	..	..	..	..
23		..		..	..	..	..	..	..	..	..	..	..	..
24		..		..	..	..	..	..	..	..	..	..	..	..
25		·01		·02	..	..	·01	..	·01	·01	..	..	·01	·01
26		..		·02	·04	·03	·02	·02	·02	·02	·03	·03	·01	·02
27		..		..	..	..	..	..	..	..	..	..	..	..
28		·02		·01	..	·01	·01	..	·02	·03	·05	·06	·05	·03
29		..		·01	..	..	·01	..	..	·01	·02	·01	·01	·01
30		·02		·02	·04	·02	·01	·03	·03	·02	..	·03	·02	·02
31		..		..	..	..	..	..	..	..	..	..	..	..
*	1·90	1·77	1·80	1·51	1·75	1·48	1·48	1·28	1·53	1·52	1·36	1·38	1·44	1·47
†	17·90	18·33	18·53	17·20	19·32	18·37	17·79	18·48	19·05	17·99	18·61	17·14	17·40	18·51

Day of Mo.	Croydon (Woh. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·02	·02	·03	·07	·08	·09	·10	..	·11	·13	·16
2		·07	·09	·11	·12	·16	·15	·12	·11	·17	·17	·28
3		·01	·01	·01	·01	·03	·01	·01	..	·02	·02	·06
4		..	..	..	..	..	..	..	..	..	..	..
5		..	·01	·01	·02	·01	·01	·01	..	·01	..	·01
6		..	·01	·01	·01	·01	..	..	·03	..	..	·02
7		..	..	..	..	..	..	..	..	..	..	·01
8		..	..	..	..	..	..	..	..	..	..	..
9		·22	·16	·19	·17	·17	·17	·16	·12	·15	·13	·11
10		·10	·09	·09	·08	·05	·06	·03	..	·08	·10	·10
11		·02	·03	·05	·02	·08	·08	·03	·09	·39	·19	·25
12		..	..	..	..	..	..	..	..	·01	..	..
13		·03	·05	·06	·06	·07	·07	·05	·04	·04	·05	·05
14		·05	·07	·06	·14	·12	·12	·09	·05	..	·03	·05
15	RECORD CEASED.	·43	·30	·44	·41	·55	·56	·62	·32	·62	·54	·41
16		..	..	..	..	..	..	..	..	·01	..	..
17		·14	·15	·16	·17	·17	·16	·21	·12	·18	·15	·19
18		·01	·02	·02	·02	·02	..	..	·02	·02	·01	·02
19		·05	·05	·06	·07	·07	·08	·06	·06	·07	·08	·11
20		·06	·06	·07	·08	·11	·11	·09	·05	·07	·07	·08
21		·03	·04	·01	·04	·01	·04	·03	·04	·03	·03	·01
22		..	·01	·03	·01	·08	..	..	..	..	..	·03
23		..	..	..	..	..	..	..	..	·01	..	..
24		..	..	..	..	..	..	..	..	..	..	..
25		·01	·01	..	·01	·02	·01	..	·01	·01	..	·01
26		·01	·02	·02	·02	..	·02	·01	·02	·01	·01	..
27		..	..	..	..	..	..	..	..	..	..	..
28		·02	·02	·02	·03	..	·01	..	..	..	..	..
29		·02	·01	·01	·01	·01	·01	..	·02	·01	..	..
30		·01	·02	·02	·03	·04	·04	·03	·02	·03	·01	·03
31		..	..	..	..	..	..	..	..	..	..	..
*		1·31	1·25	1·48	1·60	1·86	1·80	1·65	1·12	2·05	1·72	1·99
†		17·97	15·45	17·41	18·07	19·99	18·43	19·31	13·30	18·19	17·52	18·36

Day of M	Southflee	Chislehur	Bickley	Bromley	Bromley Common	Beckenha	South Norwood	Morden	Wimbledo (Sew. Wks	Wimbledo (TheDown	Wimbledo (Windmill	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·16	·11	·09	·03	·08	·06	·04	·01	·02	·03	·02	·04	·01	·01	..	·02	·02	·02	·03	·03	·02	·02	·04	·03	·01	·06
2	·19	·12	·08	·15	·12	·09	·05	·02	·01	·03	·03	·03	·02	·03	..	..	..	..	·01	·01	·01	·01	·03	·04	·05	·03
3	·03	..	·03	·03	·02	·02	·02	·03	·01	·01	·04	·02	..	..	·01	·01	·01	·01	·02	·01	·02	·01	·02	·02	..	·02
4	·01	..	..	..	..	..	..	·01	..	·01	..	·02	..	..	..	·01	..	·01	·02	..	·02	..	..	..	..	..
5	·01	..	·02	·02	·02	·03	·01	·01	·01	..	·02	·01	..	·02	..	·01	..	..	..	·01	..	..	·02	·01	..	..
6	..	·04	·01	·03	..	..	..	..	..	..	·01	·01	·02	..	..	..	..	·01	·01	·01	..	·01	·01	·01	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·04
9	·11	·15	·16	·16	·15	·16	·23	·27	·26	·29	·30	·28	·19	·27	·31	·35	·28	·35	·33	·32	·25	·26	·22	·24	·28	·21
10	·08	·08	·05	·05	·06	·03	·11	·23	·13	·19	·19	·19	·20	·24	·24	·31	·21	·25	·15	·16	·19	·19	·21	·14	·15	·06
11	·09	·11	·14	·05	·14	·02	·07	·02	·02	·02	·04	·02	·04	..	..	..	..	..	·02	·02	·07	..	·01	·01	·05	·07
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	·02	·03	·02	·04	·04	·04	·03	·04	·02	·03	..	·04	·03	·04	..	·03	·03	·02	·03	·03	·04	·02	·04	·03	·04	..
14	·05	·02	·01	·04	·04	·03	·04	·04	·03	·04	·07	·05	·02	·05	·03	·02	·02	·02	·12	·05	·08	·04	·04	·07	·07	·14
15	·32	·39	·40	·40	·41	·44	·37	·29	·36	·33	·43	·31	·22	·29	·24	·35	·33	·42	·32	·40	·39	·34	·28	·26	·31	·30
16	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·18	·18	·18	·16	·16	·17	·18	·17	·21	·21	·21	·20	·20	·16	·22	·21	·19	·23	·23	·26	·25	·22	·19	·20	·20	·03
18	..	..	..	·01	·02	·02	·01	..	·01	·02	·05	·02	·02	..	·02	..	..	·03	·02	·02	·01	·01	·02	·01	·02	..
19	·07	·10	·08	·08	·08	·07	·07	·06	·07	·07	·08	·07	·06	·06	·07	·08	·07	·05	·08	·08	·07	·05	·07	·07	·07	·05
20	·03	·07	·06	·06	·08	·04	·05	·03	·03	·04	·04	·05	·03	·05	·05	·03	·04	·03	·05	·04	·04	·03	·05	05	·04	·08
21	·04	·04	·04	·05	·03	·04	·04	·04	·03	·04	·05	·04	·02	·04	·05	·04	·03	·02	..	·05	·06	·05	·05	·05	·06	·19
22	·01	·01	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·04	·01	·02	..	..	..	..	·06
23	..	·02	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..
25	..	..	·02	·01	..	..	..	·02	·02	·02	..	·02	·02	·01	·02	·02	..	·02	..	·02	·01	·01	·02	·01	..	..
26	·02	..	·01	·01	·02	·03	·02	..	·02	·01	..	·02	..	·02	·02	·02	·02	·01	·04	·02	·02	·01	..	·02	·03	·04
27	..	..	..	..	·01	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
28	..	..	..	..	..	·01	·02	·01	·02	..	·03	·02	..	..	·02	·02	·01	..	·05	·02	..	·03	·02	·04	·04	·02
29	·01	..	..	·01	·01	·02	·02	·03	·01	·03	..	·03	..	·01	..	·01	..	·01	..	·02	·05	·02	·02	·01	·02	..
30	·02	·03	..	·03	·03	·02	..	·01	..	..	..	·02	..	..	..	..	·02	·01	·03	·01	·01	·01	·01	·02	·03	·04
31	..	..	·02	·01	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..	..	..
*	1·45	1·50	1·42	1·45	1·52	1·34	1·38	1·34	1·29	1·44	1·63	1·53	1·10	1·30	1·30	1·55	1·28	1·52	1·60	1·60	1·63	1·34	1·39	1·35	1·50	1·44
†	14·80	17·03	16·68	17·51	17·25	16·52	..	17·58	16·31	17·98	17·84	18·09	14·41	17·01	19·46	19·04	17·42	19·34	18·23	17·02	17·86	16·44	17·70	18·33	18·56	19·06

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. October, 1902.

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·04	·11	·12	·13	·03	·03	·02	..	·02	·03
2	·03	·15	·12	·13	·07	·03	·02	..	·02	..
3	·02	·04	..	·05	·03	·03	·02	·05	·01	..
4	..	·04	·04	..	..	..	..	..	·02	..
5	·01	..	·01	·01	..	..	..	..	..	..
6	·01	..	..	..	..	·01	..	..	·01	..
7	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..
9	·17	·18	·11	·10	·15	·19	·17	·18	·27	·18
10	·11	·10	·08	·08	·06	·05	·07	·10	·15	·15
11	·02	·05	·14	·23	·42	·04	..	·02	·05	·02
12	..	..	..	..	..	..	..	..	..	..
13	·06	·04	·02	..	·03	·04	·03	..	·04	..
14	·08	·02	·09	..	·04	·08	·06	..	·04	·02
15	·33	·39	·35	·48	·36	·30	·28	·30	·39	·31
16	..	·01	..	..	..	..	..	..	..	..
17	·31	·24	·19	·20	·20	·20	·17	·20	·21	·15
18	·03	·02	·01	..	·01	·01	·01	·02	·02	..
19	·08	·09	·09	·10	·11	·09	·08	·04	·06	·07
20	·05	·05	·04	·05	·04	·04	·03	..	·06	·02
21	·07	·08	·05	·06	·02	·04	·05	..	·03	·04
22	·01	·02	·01	..	·05	..	..	·06	·03	..
23	..	..	..	..	·01	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..
25	·02	·01	..	..	·01	·01	·01	..	·02	·02
26	·02	·02	·01	..	..	·01	..	..	·01	..
27	..	..	..	..	..	..	..	..	..	..
28	·02	..	..	..	..	..	..	..	·02	·02
29	·01	..	..	..	..	·01	·01	·02	·02	·02
30	·02	·04	..	..	·03	·01	·01	..	·03	..
31	..	..	·01	..	·01	..	..	..	..	..
*	1·52	1·70	1·49	1·62	1·68	1·22	1·04	·99	1·53	1·05
†	18·26	17·82	15·60	16·42	15·50	16·53	14·59	14·28	17·38	13·29

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(October, 1902.)

The month has been very dry and sunless, with about an average mean temperature. It has been unhealthy, both diphtheria and scarlet fever being somewhat prevalent. The absence of frost has been remarkable, and at Redhill wallflowers, violets, and primroses have been gathered, whilst a laburnum was in bloom, and a lark was heard on the 7th and 14th; at Nutfield dahlias, mignonette, tea roses, scarlet geraniums, lobelia, and marigolds are numerous; and at Chislehurst a brimstone butterfly was seen on the 31st, and a laburnum was in bloom. The observer at Nutfield mentions a curious fact; he says "that the first week was cold, too cold for the swallows. A great number of them died on the roofs of the houses here from cold. They settled on the warmest houses, got limper and limper, and at last rolled into the gutters." At Kenley dahlias and heliotropes were killed by frost on the 31st. Thunder was heard at Upper Gatton on the 10th and 14th, and at Nutfield and Sidcup on the 14th. The last swallow was seen at Nutfield on the 16th. At Greenwich a remarkable rainbow—very persistent—occurred on the 10th from 4.45 to 5 p.m., and one at Beddington at 6.30 a.m. on the 21st. Fog occurred on many days. The rainfall is about one-half of the average, with a large number of rainy days. The mean temperature is about the average, and was at Croydon (Whitgift) 49°·9, at Croydon (Duppas House) 49°·8, at Chipstead and Wallington 49°·5, at Worcester Park 49°·4, at Redhill 48°·8, and at Warlingham 48°·1. There were recorded at Wallington 55·3 hours of sunlight, which is 45·1 hours or 13 per cent. below the October average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.	Redhill (Linkfd.la.	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	·01	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	·02	..	..	..	·01	·01	·01	..	·01	..
5	·26	·25	·28	·29	·23	·22	·18	·20	·18	·22	·23	·20
6	·33	·30	·34	·34	·28	·27	·21	·21	·24	·26	·27	·17
7	·31	·29	·18	·22	·32	·31	·24	·25	·30	·25	·28	·23
8	·34	·43	·62	·49	·41	·38	·27	·24	·33	·30	·25	·32
9	·02	·03	·02	..	·01	..	·01	·01	·01	·01	..	·01
10	·06	·03	·05	·07	·02	·04	·04	·04	·01	·02	·02	·05
11	·25	·23	·21	·19	·20	·20	·18	·21	·19	·20	·24	·22
12	..	·01	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	·01	·01	..	..	·01	..
14	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..
22	..	·15	·02	·03	·02	·04	·03	·03	..	·02	·02	..
23	·05	·01	..	..	·02	..	·01	·01	..	·01	·01	·03
24	·70	·91	·71	·60	·35	·35	·28	·26	·35	·37	·46	·34
25	·11	·12	·14	·15	·10	·10	·06	·09	·10	·09	·08	·09
26	·02	·01	·02	·05	·03	·01	·02	·01	..	·03	·01	·02
27	·03	·01	·11	..	..	..	..	..	..	..	..	..
28	·36	·43	·24	·47	·36	·37	·30	·35	·37	·33	·37	·34
29	·19	·24	·30	·25	·16	·17	·15	·15	·15	·16	·19	·16
30	·03	·02	·03	·05	·08	·08	·08	·08	·03	·10	·09	·05
*	3·06	3·47	3·29	3·20	2·59	2·55	2·08	2·16	2·27	2·37	2·54	2·23
†	25·02	24·92	22·39	23·68	22·79	22·29	21·86	22·35	21·57	20·71	22·15	22·23

Day of Mo	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..			..	..		..	..	..
2	..	·02	..	·01	..	..			..	..		..	..	..
3	..	..	..	..	..	..			..	..		..	..	..
4	..	..	..	·01	..	..			..	·02		..	..	..
5	·23	·27	·21	·21	·20	·12			·15	·06		·18	·20	·21
6	·23	·26	·20	·19	·17	·19			·20	·22		·18	·17	·16
7	·27	·29	·29	·25	·24	·18			·22	·11		·22	·26	·17
8	·30	·28	·36	·31	·31	·32			·27	·28		·31	·38	·34
9	..	..	..	..	..	..			..	..		..	·01	·01
10	·02	·02	·04	·06	..	·01			·03	..		·05	·02	·02
11	·22	·24	·23	·26	·23	·18			·15	·13		·27	·17	·14
12	..	..	..	·01	..	..			..	..		..	·01	..
13	..	..	..	..	..	..			..	..		..	..	..
14	·01	..	..	..	..	..			..	..		..	..	..
15	..	..	..	..	..	..			..	..		..	..	..
16	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
17	..	..	..	..	..	..			..	..		..	..	..
18	..	..	..	..	..	..			..	..		..	..	..
19	..	..	..	..	..	..			..	..		..	..	..
20	..	·01	..	..	..	..			·03	·03		·02	..	·02
21	..	..	..	..	..	..			..	..		..	·01	..
22	·03	·03	..	·03	·02	·01			..	..		·02	·02	·02
23	·01	..	..	..	..	..			..	..		·01	·01	·01
24	·39	·48	·41	·37	·41	·34			·35	·33		·38	·33	·30
25	·08	·11	·10	·12	·11	·11			·09	·03		·10	·08	·09
26	·01	·01	·01	..	..	·01			·02	·02		..	·01	·01
27	..	..	..	..	..	·01			..	·04		..	·01	..
28	·35	·42	·24	·40	·33	·31			·39	·29		·38	·37	·33
29	·18	·22	·27	·19	·22	·21			·19	·18		·20	·21	·21
30	·08	·11	·07	·08	·04	·04			·14	·08		·14	·13	·10
*	2·41	2·77	2·43	2·50	2·24	2·04	2·31	1·63	2·23	1·82	2·19	2·46	2·40	2·14
†	21·22	21·96	21·78	23·40	22·36	20·89	21·88	16·37	23·17	21·23	20·14	23·10	21·08	19·20

* The figures in this row give the totals for the month.   † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for November is 2·35 in.* **November, 1902.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..
2		..	..	..	..	..	..	..	..	·01	·02	..	·01	·01		·02	·01	·02	·01	..	·01	..	..	..	..	..
3		..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..
4		..	..	·01	..	..	·01	..	..	..	..	·01	..	..		..	..	..	..	..	..	..	..	..	..	..
5		·22	·20	·18	·26	·22	·19	·19	·20	·13	·14	·16	·16	·18		·14	·16	·18	·20	·16	·16	·13	·10	·16	·14	·11
6		·32	·25	·21	·28	·18	·16	·11	·12	·12	·11	·12	·13	·14		·11	·12	·13	·13	·14	·16	·14	·11	·16	·18	·11
7		·19	·15	·13	·25	·16	·16	·15	·15	·13	·13	·14	·14	·15		·11	·12	·13	·16	·21	·24	·19	..	·13	·13	·17
8		·52	·34	·29	·51	·37	·34	·32	·39	·40	·35	·42	·42	·42		·35	·40	·38	·40	·23	·31	·35	·20	·27	·27	·24
9		..	..	..	..	..	..	..	..	..	..	..	..	..		·01	..	..	..	..	..	..	..	·01	..	·01
10		·08	·11	·03	·03	·02	·01	..	·01	·01	..	·01	·01	·02		·01	·02	·02	·02	·03	·03	·02	..	·03	·04	·01
11		·13	·06	·05	·18	·10	·07	·06	·09	·10	·08	·07	·08	·07		·06	·06	·07	·13	·13	·16	·11	·07	·11	·11	·10
12		..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	·01	..	·01	..	..	..	..	..
13		..	..	..	..	..	..	..	..	..	..	..	..	..		·01	·01	..	·01	..	·01	..	..	..	..	..
14		..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..
15		..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..
16	MONTHLY GAUGE.	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	..	..	..	..	..	..	..	..	..	..	..
17		..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..	..	..
19		..	..	..	..	..	..	..	..	..	..	..	..	·01		..	..	..	·01	..	..	..	·02	..	..	..
20		..	..	..	..	..	..	..	..	..	..	..	..	·01		..	·01	..	·01	·01	·01	..	..	..	·02	·03
21		..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	·02	..	..
22		..	·04	·03	..	..	..	..	·01	·02	..	·04	·01	·02		·02	·01	·03	·02	·04	·02	·05	·02	·01	·01	·01
23		..	..	..	..	..	·02	..	..	..	..	·01	..	..		..	·01	·01	..	·01	·01	..	..	·01	..	·01
24		·44	·35	·29	·44	·23	·19	·16	·22	·23	·20	·20	·19	·19		·16	·12	·18	·24	·20	·23	·20	·13	·25	·24	·21
25		·11	·11	·07	·10	·08	·10	·07	·09	·09	·08	·08	·08	·09		·06	·06	·08	·09	·09	·10	·07	·08	·11	·11	·05
26		..	·02	·02	..	..	..	·03	..	..	..	..	..	..		..	..	·01	..	..	..	..	·02	·03	·01	·01
27		·04	·06	·01	..	·02	..	..	..	..	..	..	..	..		..	·03	..	..	..	..	..	..	..	..	..
28		·42	·38	·38	·44	·37	·37	·37	·34	·35	·31	·34	·32	·33		·30	·22	·30	·34	·36	·36	·35	·20	·29	·29	·22
29		·27	·30	·28	·23	·19	·20	·15	·19	·20	·21	·24	·20	·20		·20	·22	·21	·19	·24	·18	·19	·10	·17	·17	·18
30		·04	·07	·05	·10	..	·08	·07	·09	·13	·13	·12	·14	·16		·17	·16	·12	·11	·08	·06	·06	·11	·10	·07	·17
*	2·40	2·78	2·44	2·03	2·82	1·94	1·90	1·68	1·90	1·92	1·76	1·96	1·89	2·00		1·73	1·74	1·87	2·08	1·93	2·06	1·86	1·16	1·86	1·79	1·64
†	20·30	21·11	20·97	19·23	22·14	20·31	19·69	20·16	20·95	19·91	20·37	19·10	19·29	20·51		19·70	17·19	19·28	20·15	21·92	20·49	21·17	14·46	20·05	19·31	20·00

Day of M	Southfleet	Chislehurs	Bickley	Bromley	Bromley Common	Beckenham	South Norwood	Morden	Wimbledon (Sew. Wks.	Wimbledon (TheDowns	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	·01	·01	·02	·01	·02	·03	·01	·03	·02	..	..	..	..	·01	·01	..	·03	·01	·03	·03	·02	·02	..
3	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·02	·01	·02	..	..	..	..	·02
4	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	·02	..	..	..	..	..	..	..	..
5	·07	·13	·10	·10	·10	·11	·15	·02	·13	·17	·18	·17	·12	·17	·16	·15	·10	·10	·14	·18	·14	·16	·13	·17	·15	·15
6	·09	·14	·13	·08	·16	·10	·10	·15	·07	·16	·13	·15	·15	·18	·17	·13	·28	·17	·17	·13	·08	·08	·06	·08	·09	·17
7	·12	·10	·10	·12	·12	·12	·12	·11	·14	·14	·14	·16	·11	·16	·13	·07	·12	·20	·10	·13	·11	·12	·11	·15	·10	·10
8	·21	·30	·30	·28	·30	·36	·27	·38	·18	·29	·22	·30	·18	·33	·23	·22	·26	·19	·18	·23	·24	·24	·24	·26	·17	·20
9	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	·04	·02	·03	·02	·01	·01	·02	..	..	..	·01	·01	·02	·03	·02	·02	·02	·02	·02	·02	·01	·01	·01	·02	·01
11	·05	·05	·04	·05	·07	·05	·04	·03	..	·03	·02	·02	·03	·03	·04	·03	·02	·02	·03	·02	·01	·02	·02	·02	·02	·03
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	·02	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·01	·03	·02	·04	·03	·02	·03	·01	·03	·02	..	·02	·02	·02	..	·02	·01	..	·02	·02	·01	·02	·02	·02	..	·01
23	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	·01	·01	..	·03
24	·12	·12	·10	·09	·13	·12	·13	·11	·12	·17	·20	·16	·15	·18	·30	·29	·24	·23	·26	·20	·18	·15	·12	·11	·11	·10
25	·02	·11	·11	·08	·09	·07	·07	·09	·04	·08	·07	·10	·04	·08	·08	·03	·05	·06	·06	·09	·09	·09	·05	·07	·05	·10
26	·01	..	..	·02	..	·02	·02	..	..	..	..	·01	..	..	·03	..	..	..	..	..	·02	..	·02	·01	·03	·02
27	..	..	..	..	·02	..	..	..	..	..	·01	..	..	..	·01	·01	..	..	..	..	..	..	..	..	·02	..
28	·20	·22	·24	·29	·25	·26	·27	·30	·20	·28	·23	·27	·19	·36	·41	·35	·34	·37	·33	·27	·24	·26	·24	·25	·20	·22
29	·18	·19	·20	·20	·12	·20	·23	·15	·19	·20	·24	·20	·11	·22	·32	·27	·24	·26	·27	·23	·26	·31	·22	·23	·25	·29
30	·35	·11	·12	·12	·09	·10	·18	·10	·17	·12	·16	·10	·04	·10	·08	·07	·09	·07	·12	·23	·24	·25	·24	·24	·22	·13
*	1·44	1·54	1·52	1·51	1·53	1·56	1·62	1·49	1·30	1·67	1·63	1·70	1·15	1·86	1·99	1·66	1·78	1·74	1·72	1·79	1·67	1·74	1·52	1·66	1·45	1·48
†	16·24	18·57	18·20	19·02	18·78	18·08	..	19·07	17·61	19·65	19·47	19·79	15·56	18·87	21·45	20·70	19·20	21·08	19·95	18·81	19·53	18·18	19·22	19·99	20·01	20·54

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **November, 1902.**

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..
2	·02	..	..	..	..	·01	·01	..	·02	..
3	·01	..	..	..	..	..	..	..	·02	·02
4	..	..	..	..	..	..	..	..	..	..
5	·15	·14	·10	·14	·09	·12	·13	·15	·14	·10
6	·07	·18	·09	·07	·12	·09	·08	·06	·08	·04
7	·10	·09	·10	·08	·08	·09	·09	..	·11	·09
8	·20	·32	·18	·18	·25	·16	·15	·27	·21	·15
9	..	..	..	..	..	..	..	..	..	..
10	·02	·05	..	..	·02	..	..	..	·01	..
11	·02	·04	·04	·03	·02	·02	·01	·01	·02	..
12	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..
20	..	·02	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..
22	·03	·03	·01	..	·02	·02	·02	..	·02	·01
23	·01	·01	..	..	..	..	..	..	..	..
24	·09	·12	·13	·11	·11	·15	·13	·11	·17	·16
25	·10	·07	·02	·03	·06	·06	·05	·09	·09	·05
26	·01	·01	·02	..	..	..	·01	..	·01	..
27	..	..	..	..	..	..	..	..	..	..
28	·19	·21	·18	·20	·16	·18	·19	·20	·16	·21
29	·20	·22	·19	·20	·24	·27	·25	·23	·27	·20
30	·14	·13	·23	·26	·11	·14	·21	·13	·27	·16
*	1·36	1·64	1·29	1·30	1·28	1·31	1·33	1·25	1·60	1·19
†	19·62	19·46	16·89	17·72	16·78	17·84	15·92	15·53	18·98	14·48

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(November, 1902.)

The month may be divided into three portions:—From 1st to 11th it was mild, wet, and stormy; from 12th to 22nd dry, with cold north-east winds; and from the 23rd to the 30th it was mild, wet, and stormy. The month has been somewhat unhealthy, there being several cases of diphtheria and scarlet fever of a mild type. Strawberries and raspberries were gathered at Sevenoaks up to the 15th, and flowers were plentiful up to that date throughout the district. There was slight snow on the 19th and 20th. Solar halos were seen at Greenwich on the 10th, 11th, 12th, 13th, 25th, and 29th; at Upper Gatton on the 8th and 10th; at Clapham Park on the 11th; and at Nutfield on the 28th: and lunar halos were seen at Greenwich and Wallington on the 13th and 14th; and at Upper Gatton, Nutfield, Croydon, and Clapham Park on the 13th. There was hoar frost at Greenwich on the 13th, 17th, 18th, and 21st. The rainfall for the month is about one inch below the average. The mean temperature for the month is rather over a degree above the average, and was at Croydon (Whitgift) 45°·4, at Wallington 45°·3, at Croydon (Duppas House) 45°·2, at Worcester Park 44°·8, at Warlingham 43°·9, and at Chipstead 43°·4. There were recorded at Wallington 52·4 hours of sunlight, which is the November average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Month	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·40	·42	·43	·44	·34	·34	·26	·30	·30	·33	·36	·35	·34
2	..	..	..	..	·01	..	·01	·01	·01	·01	..	..	·01
3	..	·01	·01	·02	..	·02	·01	·01	..	·01	·01	..	..
4	..	·01	..	..	..	..	·01	·01	..	..	·01	·02	·01
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	·01	..	·02	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·02	·01	·02	..	·02	..	·02	·03	..	·02	·03	·04	·01
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·09	·08	·07	·10	·05	·08	·06	·05	·07	·05	·06	·05	·05
13	·04	·01	·03	·05	·05	·07	·05	·05	·05	·05	·06	·05	·06
14	·13	·19	·14	·16	·12	·12	·08	·12	·09	·11	·13	·14	·12
15	·11	·21	·13	·11	·11	·14	·08	·10	·10	·10	·15	·11	·12
16	·01	·03	·04	·08	·15	·13	·07	·10	·07	·11	·12	·12	·14
17	·34	·29	·27	·37	·32	·34	·35	·33	·25	·36	·37	·39	·38
18	..	..	..	..	..	..	..	..	..	·02	..	..	·01
19	·01	..	..	..	·01	..	·02	·02	·01	..	·01	·05	·02
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	·01	..	..	..	·02	·01	..	..	·01	·01	·01	·01
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·02	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..
27	·05	..	·04	·02	·04	·05	·04	·04	·03	·04	·03	·03	·03
28	·21	·20	·16	·20	·17	·18	·15	·14	·14	·19	·18	·20	·18
29	..	..	..	..	..	..	..	..	..	..	..	..	·01
30	·06	·06	·09	·10	·09	·12	·10	·10	·07	·08	·09	·10	·09
31	·01	..	..	..	..	..	..	..	..	..	..	..	·01
*	1·50	1·53	1·44	1·65	1·50	1·61	1·32	1·41	1·19	1·49	1·62	1·66	1·60
†	26·52	26·45	23·83	25·33	24·29	23·90	23·18	23·76	22·76	22·20	23·77	23·89	22·82

Day of Month	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower gu.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·41	·40	·38	·46	·45	MONTHLY GAUGE.	MONTHLY GAUGE.	·47	·33	MONTHLY GAUGE.	·39	·30	·28
2	..	..	..	..	..			..	·01		..	·01	·01
3	·02	..	..	..	..			·06	·06		·02	..	·02
4	·01	..	..	·02	..			..	..		..	..	·01
5	·01	..	..	..	..			..	..		..	..	..
6	..	..	..	..	..			..	..		..	..	..
7	·01	..	..	..	..			..	..		·01	..	..
8	·05	·02	..	·02	..			·05	·01		·02	·04	·04
9	..	·02	..	..	..			..	..		..	·01	..
10	..	..	..	..	..			..	..		..	..	..
11	..	..	..	..	..			..	..		..	..	..
12	·06	·06	·10	·04	·02			·04	·03		·05	·05	·05
13	·05	·06	·06	·08	·12			..	·05		·06	·04	·03
14	·15	·15	·17	·12	·12			·09	·14		·18	·11	·11
15	·14	·16	·14	·17	·16			·25	·15		·17	·15	·09
16	·09	..	·14	·14	·12			·17	·08		·16	·07	·06
17	·35	·06	·36	·45	·51			·47	·41		·41	·38	·39
18	..	..	..	..	..			..	..		..	·01	..
19	·02	·05	·04	·03	·03			..	·02		·02	·02	·01
20	..	..	..	..	..			..	..		..	·01	..
21	·01	·02	·01	·03	·03			·03	·03		·02	..	·01
22	..	..	..	..	..			..	..		..	..	..
23	..	..	..	..	..			..	..		..	..	..
24	..	..	..	..	..			..	..		..	..	..
25	..	..	..	..	..			..	..		..	..	..
26	..	..	..	..	..			..	..		..	..	..
27	·03	·04	·04	·06	·07			·05	·07		·04	·02	·03
28	·24	·15	·11	·19	·21			·19	·18		·22	·23	·24
29	..	..	..	..	..			·01	..		..	..	..
30	·09	·08	·14	·09	·11			·08	·07		·09	·08	·07
31	..	..	..	..	..			..	..		..	..	..
*	1·74	1·27	1·69	1·90	1·95	2·01	1·18	1·96	1·64	1·56	1·86	1·53	1·45
†	23·70	23·05	25·09	24·26	22·84	23·89	17·55	25·13	22·87	21·70	24·96	22·61	20·65

* The figures in this row give the totals for the month.

† The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for December is 1·96 in.* December, 1902.

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·36	·25	·20	·41	·27	·25	·25	·28	·27	·28	·28	·26	·29
2		..	..	..	..	..	..	..	..	..	..	..	..	·01
3		·03	..	..	..	·01	..	..	..	..	..	..	·01	..
4		..	..	..	..	..	..	..	..	..	..	..	..	·01
5		..	..	·01	..	..	..	..	..	..	..	·02	..	..
6		..	..	..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..	·01	..
8		·03	..	·03	·02	..	·04	·03	·03	·05	·04	·04	·04	·03
9		..	..	..	..	..	..	..	..	..	..	..	..	..
10		..	..	..	..	..	..	..	..	..	..	..	..	..
11		..	..	..	..	..	..	..	..	..	..	..	..	..
12		·06	·02	·02	·07	·07	·04	..	·05	·04	·04	·04	·04	·04
13		·01	·04	·01	·02	·02	·01	·04	·02	·03	·02	·03	·02	·01
14		·15	·05	·10	·19	·13	·10	·11	·14	·15	·14	·12	·14	·13
15	MONTHLY GAUGE.	·14	·10	·05	·15	·09	·08	·03	·09	·10	·09	·09	·09	·10
16		·04	·09	·03	·06	·02	·01	·06	·03	·03	·02	·02	·03	·03
17		·34	·40	·38	·42	·43	·44	·46	·43	·45	·50	·52	·41	·48
18		..	..	..	..	..	..	..	..	..	..	..	..	..
19		..	..	..	·01	·03	·02	·02	·02	·01	..	·01	..	..
20		..	..	..	..	..	..	..	..	..	..	..	..	..
21		..	..	..	..	..	..	..	..	..	..	..	..	..
22		..	..	..	..	..	..	..	..	..	..	..	..	..
23		..	..	..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..	..	..
25		..	..	..	..	..	..	..	..	..	..	..	..	..
26		..	..	..	..	..	..	..	..	..	..	..	..	..
27		·02	·02	·01	·03	·05	·06	·05	·05	·05	·05	·04	·04	·04
28		·18	·21	·20	·23	·20	·17	·16	·21	·22	·20	·24	·20	·22
29		·01	..	..	..	..	..	..	..	..	..	..	..	..
30		·08	·09	·05	·08	·08	·07	·07	·08	·09	·08	·08	·09	·08
31		..	..	..	..	..	..	..	..	..	..	..	..	..
*	2·16	1·45	1·27	1·09	1·69	1·40	1·29	1·28	1·43	1·49	1·46	1·53	1·38	1·47
†	22·46	22·56	22·24	20·32	23·83	21·71	20·98	21·44	22·38	21·40	21·83	20·63	20·67	21·98

Day of Mo.	Croydon (Wob. rd.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·31	·26	·31	·27	·31	·32	·33	·15	·33	·37	·40
2		·01	..	..	..	..	·01	..	..	·01	..	..
3		..	·01	·02	·01	·01	..	..	·03	..	·02	·04
4		..	·01	..	..	..	·01	..	..	..	..	·03
5		..	..	..	·01	..	..	..	..	·01	·01	..
6		..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..
8		·03	·03	·05	·02	·05	·02	·08	..	·04	·03	·03
9		..	..	..	..	..	..	..	..	..	..	..
10		..	..	..	..	..	..	..	..	..	..	..
11		..	..	..	..	..	..	..	..	..	..	..
12		·04	·05	·03	·05	·05	·05	·03	·06	·03	·02	·01
13		·02	·03	·02	·03	·05	·05	·02	·03	·02	·03	·05
14		·13	·11	·13	·12	·16	·13	·12	..	·13	·10	·08
15	RECORD CEASED.	·09	·09	·07	·10	·13	·13	·10	·14	·10	·14	·11
16		·02	·03	·05	·04	·09	·05	·04	·23	·05	·06	·05
17		·54	·48	·57	·43	·49	·41	·47	·35	·39	·39	·52
18		..	..	..	..	..	..	..	..	..	..	..
19		..	·02	·02	·02	·03	·02	·02	·03	..	..	·02
20		..	..	..	..	..	..	..	..	..	..	..
21		..	·01	..	·01	..	..	..	..	·01	..	·02
22		..	..	..	..	..	..	..	..	..	..	..
23		..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..
25		..	..	..	..	..	..	..	..	..	..	..
26		..	..	..	..	..	..	..	..	..	..	..
27		..	·05	·06	·04	·05	·04	·03	·04	·02	·02	·03
28		·25	·21	·22	·21	·25	·24	·26	·15	·20	·19	·16
29		..	..	..	..	..	..	..	..	..	..	..
30		·08	·07	·09	·08	·09	·08	·09	·09	·05	·10	·08
31		..	..	..	..	..	..	..	..	..	..	..
*		1·52	1·46	1·64	1·44	1·76	1·56	1·59	1·30	1·39	1·48	1·63
†		21·22	18·65	20·92	21·59	23·68	22·05	22·76	15·76	21·44	20·79	21·63

Day of M	Southfleet	Chislehur	Bickley	Bromley	Bromley Common	Beckenhar	South Norwood	Morden	Wimbledon (Sew. Wks.	Wimbledon (TheDowns	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood	Forest Hill (Dartm.rd.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·19	·32	·36	·36	·22	·42	·61	·33	·15	·24	·16	·23	·21	·17	·18	·22	·19	·25	·15	·14	·12	·12	·13	·20	·24	·20
2	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	·01	·02	·04	..	..	..	..	..	..	·01	·02	·01	·02	..	..	..	·03	·01	..	·01	..	·01	..	..
4	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	·01	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
8	·03	..	·04	·06	·05	·05	..	..	·01	·04	·03	·03	..	·03	·02	·02	·02	..	·02	·01	·06	·03	·02	·03	..	·04
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	·03	·03	·04	·03	·03	..	·04	·06	·05	·05	·05	·04	·03	·02	·05	·04	·05	·06	·06	·05	·09	·06	·06	·07	·05
13	·03	..	·02	·03	·02	·02	·04	..	·01	·02	·02	·02	·01	·02	·06	·02	·02	·02	·03	·03	·05	·03	·02	·02	·01	..
14	·09	·12	·12	·09	·11	·10	·01	·09	·10	·11	·12	·10	·09	·10	·10	·13	·10	·12	·13	·12	·12	·11	·11	·12	·09	·03
15	·08	·09	·08	·08	·11	·08	·08	·06	·06	·07	·08	·07	·06	·08	·10	·09	·09	·08	·07	·07	·07	·08	·07	·07	·07	·16
16	·02	·03	·01	·02	·03	·02	·01	·01	·01	·02	·02	·02	·01	·02	·03	·03	·02	·02	·03	·03	·02	·02	·02	·01	·08	·02
17	·50	·53	·57	·54	·46	·53	·55	·50	·50	·50	·50	·50	·46	·46	·42	·45	·50	·52	·49	·53	·55	·54	·53	·57	·52	·58
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..
19	·03	·02	·01	·02	·02	·03	·02	..	..	·02	·02	·03	..	·01	..	..	..	·01	·01	·02	·01	·03	·01	·02	·03	·05
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·04	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	·07	·09	·07	·08	·04	·08	·05	..	·02	·02	·02	·03	·02	·05	·03	·02	·02	..	·07	·07	·04	·06	·02	·02	·03	·03
28	·11	·23	·22	·30	·21	·22	·22	·05	·19	·17	·16	·19	·10	·15	·14	·15	·15	·18	·13	·16	·16	·17	·14	·21	·10	·22
29	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·04	·12	·11	·13	·11	·12	·10	·16	·13	·09	·12	·10	·07	·07	·09	·08	·07	·08	·09	·11	·11	·09	·09	·11	·12	·13
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	·01	..	..	..	..	..	..
*	1·24	1·58	1·65	1·79	1·47	1·70	1·69	1·24	1·24	1·35	1·30	1·39	1·09	1·20	1·25	1·26	1·22	1·33	1·31	1·37	1·37	1·39	1·22	1·46	1·36	1·52
†	17·48	20·15	19·85	20·81	20·25	19·78	..	20·31	18·85	21·00	20·77	21·18	16·65	20·07	22·70	21·96	20·42	22·41	21·26	20·18	20·90	19·57	20·44	21·45	21·37	22·06

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **December, 1902.**

Day of Mo.	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·17	·24	·07	·16	·16	·14	·13	·12	·12	·07
2	·01	..	..	..	..	..	..	..	..	..
3	·01	·03	·02	..	·02	·01	·01	..	..	..
4	..	..	·01	..	·01	..	·01	..	·01	..
5	..	..	..	..	·01	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..
8	·02	·04	·03	·06	·02	·04	·03	·01	·04	..
9	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..
12	·04	·03	..	..	·02	·04	·04	..	·08	·06
13	·02	·02	·02	·02	·02	·03	·01	·02	·03	·11
14	·11	·12	·07	·06	·10	·11	·10	·08	·12	·07
15	·08	·10	·08	·07	·08	·12	·10	·07	·07	·02
16	·02	·02	·02	..	·03	·03	·02	·01	·02	..
17	·58	·68	·53	·54	·60	·60	·57	·55	·55	·50
18	..	..	..	..	..	..	..	..	..	..
19	·03	·02	·01	..	..	·01	·01	..	·02	..
20	..	..	..	..	..	..	..	..	..	..
21	..	·01	·01	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..
25	..	..	·01	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..
27	·03	·05	·03	·04	·03	·08	·06	·04	·06	·11
28	·22	·25	·22	·22	·17	·17	·16	·13	·16	·15
29	..	..	..	..	..	..	..	..	..	..
30	·13	·12	·06	·06	·07	·10	·10	·08	·11	·08
31	..	..	..	..	..	..	..	..	..	..
*	1·47	1·73	1·19	1·23	1·34	1·48	1·35	1·11	1·39	1·17
†	21·09	21·19	18·08	18·95	18·12	19·32	17·27	16·64	20·37	15·65

Note.—The observations are taken at 9 a.m., except at Redhill, Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Croydon (Woburn Road) (8.30 a.m.), and Sevenoaks (10 a.m.).

NOTES.

(December, 1902.)

The month was dry and cold from the 3rd to the 12th, with very keen north-easterly winds; it was then milder and stormy, and fine and mild with occasional storms in the last week. On the 3rd at Nutfield and Upper Gatton, and on the 21st at Morden, there was a dense dark fog. There was slight snow in parts of the district on the 3rd, 4th, 5th, 6th, 7th, 8th, and 28th and 30th. There was hail at Nutfield on the 3rd and at Wallington on the 28th, and lightning at Upper Gatton on the 28th and at Beddington on the 30th. A rainbow was observed at Hayes at 9.30 a.m. on the 18th. Solar halos were seen at Greenwich on the 2nd and 12th, and a lunar one there and at Upper Gatton on the 15th. The mildness of the month is shown by the numerous flowers, the observer at Reigate Hill reporting that primroses, polyanthus, anemones, and blue gentian were in bloom on the 16th, and crocuses, aconites, and periwinkles were appearing; at Upper Gatton primroses were gathered on the 27th; at Morden primroses and violets were gathered on the 25th; and the sallow was in bloom at Sidcup on the 2nd. The month has been rather more healthy than the last month, there being rather fewer cases of diphtheria and scarlet fever, though colds were very prevalent. The mean temperature was high, being in some cases over two degrees above the average, and was at Croydon (Whitgift) 41°·3, at Croydon (Duppas House) 41°·1, at Wallington 41°·0, at Worcester Park 40°·9, at Warlingham 39°·6, and at Chipstead 39°·5. The rainfall is about from half to three-quarters of an inch below the average. There were recorded at Wallington 19 hours of sunlight, which is 19·9 hours or eight per cent. below the December average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

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TRANSACTIONS.

28.

PROCEEDINGS & TRANSACTIONS

OF THE

CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

FEBRUARY 17, 1903, TO JANUARY 19, 1904.

CROYDON:

PRINTED FOR THE SOCIETY, BY WEST, NEWMAN AND CO.,
HATTON GARDEN, LONDON.

1904.

PROCEEDINGS

OF

THE CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

1903—1904.

Thirty-fourth Annual Meeting,

Held at the Public Hall, Croydon, January 19th, 1904.

The President, F. Campbell-Bayard, LL.M., F.R. Met. Soc., in the chair.

The Statement of the Accounts for 1903 was approved.

The following gentlemen were elected Officers of the Society for the ensuing year:—

President.—F. Campbell-Bayard, LL.M., F.R.Met.Soc.

Vice-Presidents.—W. Murton Holmes; Edwd. Lovett, F.R.H.S.; Henry T. Mennell, F.L.S.

Hon. Curator of Museum.—N. F. Robarts, F.G.S.

Hon. Lanternist.—J. H. Baldock, F.C.S.

Hon. Librarian.—Alfred Roods.

Hon. Treasurer.—F. J. Townend, 11, Park Hill Risè.

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Photographic Committee. — J. H. BALDOCK, F.C.S. (Lanternist), Overdale, St. Leonard's Road; H. D. GOWER (Portfolio Secretary), 55, Benson Road; R. F. GRUNDY, 8, Havelock Road; A. ROODS, 67, Thornhill Road; A. J. WEIGHTMAN, Endsleigh, 11, Chepstow Road; Dr. J. M. HOBSON, 1, Morland Road.

Zoological Committee.—J. H. BALDOCK, F.C.S., Overdale, St. Leonard's Road; H. D. GOWER, 55, Benson Road; W. MURTON HOLMES, Glenside, St. Peter's Road; E. A. MARTIN, F.G.S., 23, Campbell Road; ALFRED ROODS, 67, Thornhill Road; A. TARVER, 7, Stuart Road, Thornton Heath.

The President's Address.

Ladies and Gentlemen,

In coming before you to-night with the usual Presidential Address, I feel that I owe an apology to you all for my many shortcomings. When Mr. Moore communicated to me your wish that I should allow myself to be put in nomination for the office of President, I felt that the pressure of other work would be very heavy, and that I should be unable to devote as much time as I should have wished to the business of the Society. I feel that I should have utterly failed in my duties but for Mr. Moore, and also the Council, to whom I desire to tender my most grateful thanks.

I propose, in my Address to you to-night, to give a short *résumé* of the work of the Society during the past year; and then, with your permission, to give you some short account of my own special subject, *viz.* the weather of the district during the past remarkably wet year; and also, with your permission, to include with this account some correspondence which I have had with the Astronomer Royal and the London County Council, which will give some idea of the great esteem in which our Society is held. This short account need not interfere with the Meteorological Committee's Report, which will in due course be sent in as usual, as soon as the returns are complete, but it will probably render the reading of it unnecessary.

During the past year we have to regret the loss of two members by death,—one, Mr. John Berney; and the other, Mr. E. L. Shore. Mr. Berney was one of our original members, of whom eight now remain.

Our roll now numbers 201 members—189 adults, 12 juniors. Since last year 14 have resigned, 1 struck off, and 14 new members have been elected, *viz.* 12 adult and 2 junior.

At the Monthly Meetings the following papers have been read:—

April 21st, on "Comets," by Mr. L. N. G. Filon, M.D., D.Sc.

May 1st, "A Section of Clay with Flints, near Woldingham"; "The Plateau Gravel, Upper Norwood Hill;" both by Mr. N. F. Robarts. The latter was supplemented by some notes by Mr. A. J. Hogg, which will appear in the 'Transactions'; also a short paper by Mr. H. D. Gower, on "Flints found at Waddon Marsh."

On Sept. 15th the evening was, as usual, devoted to an exhibition of specimens collected during the holidays.

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On October 20th Dr. T. A. Dukes, B.Sc., gave a paper on "The Parallel Roads of Glenroy."

On December 15th Mr. H. C. Collyer, a paper on "Jade."

On November 18th a *Soirée* was held at the Public Hall, which resulted successfully as far as exhibits were concerned. About 276 members and friends were present, but it is to be regretted that so few of the general public as compared with former occasions came, in spite of advertisements three consecutive weeks in three papers, and the issue of a large number of posters and bills.

SECTIONS.

The Anthropological and Archæological Section has had eight meetings,—on almost every occasion having an interesting subject announced for discussion. Several excursions, especially archæological, have been made. The attendance is not mentioned, but I believe it has been fair, though, in consequence of the meeting falling early in the month, and on one or two occasions the circular having been unavoidably delayed, the members only received it the same day as the meeting.

BOTANICAL.—This section has held one evening meeting jointly with the Microscopical Section, but one otherwise on April 23rd. They have, however, held four or five evening rambles in the neighbourhood, besides taking part in general excursions, at which the members have been active, and the annual fungus hunt in September.

GEOLOGICAL.—This section has also been active; at their own meetings a good attendance of members has been obtained. Six meetings have been held, and one joint meeting with the Microscopical Section. Several special excursions have been made, of which reports have been sent in.

MICROSCOPICAL.—Two meetings have been held by this section, in addition to the joint meetings with the Botanical and Geological Sections.

MUSEUM.—One meeting has been held, but Mr. Robarts reports the addition of several objects to the museum-case at the Town Hall by members and friends.

PHOTOGRAPHIC.—About twenty-seven meetings have been held, and several separate excursions made.

ZOOLOGICAL.—Seven meetings have been held, and one or two special excursions made. Several members of the section have done excellent work for the Society, bnt the Hon. Secretary complains that the meetings have not been good; and in reference to this it is desirable to call members' earnest attention to the trouble taken to arrange meetings; yet on several occasions no one has appeared. This applies not only to the Zoological Section. It is disheartening to those who do work, and will prevent them taking any trouble in future.

Two special zoological excursions were made—one on July 4th, jointly with the London branch of the British Conchological Society, whose president, the Rev. Canon Horsley, attended. A report appears of this.

Excursions.

In addition to the excursions especially connected with one or other of the sections, the following whole-day excursions were made:—

June 1st.—To Leatherhead, Stoke D'Abernon and Cobham, which was very well attended, and has yielded results from the points of view of the botanist, antiquarian, zoologist, and photographer.

August 3rd.—Whole day to Ightham and Sevenoaks. As this occurred while many members were away at the commencement of the holiday season, it was not so well attended as that to Leatherhead, but the attendance was decidedly good. About a dozen members went, and all were much interested in the specimens of eolithic implements displayed and described by Mr. Benjamin Harrison, of Ightham, who afterwards accompanied the members to the Rock Shelters and the Roman Camp, describing the positions relative to other places of archæological interest in the district. The day was thoroughly enjoyable, and of much interest in many ways. A full report appears at p. xv.

The balance-sheet which our Treasurer has put before us is, it seems to me, a satisfactory one. There is a small balance on the debit side. This balance, as you have heard, would have been a credit one but for the cost of the 'Transactions.' I do not, and I believe that you also will not, regret this, for a more beautiful Annual Report I no not think that I have ever seen. It is a credit to all concerned—the council, authors, photographers, and editorial committee.

Weather of 1903.

In dealing with the weather of the past year, I should like to preface my remarks that though it has been an extremely wet one, yet it has by no means been so cold or so sunless as may be imagined. To illustrate this fact I have taken my own observations at Wallington, which have now been taken for very nearly twenty years. I propose to give two short tables: (1), the mean temperature of 1903 as compared with the average of the fifteen years, 1886–1900; and (2) the duration of sunlight in 1903 as compared with the same average.

MEAN TEMPERATURE.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average 1891–1900	deg. 37·8	deg. 38·4	deg. 41·8	deg. 47·3	deg. 53·3	deg. 59·8	deg. 62·5	deg. 61·9	deg. 57·8	deg. 49·5	deg. 44·5	deg. 39·0	deg. 49·5
1903	40·8	44·7	46·3	44·0	53·6	55·7	61·1	59·6	57·6	52·8	44·3	38·5	49·9

SUNLIGHT.

	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Average 1886–1900.	hrs. 42·2	hrs. 62·1	hrs. 115·0	hrs. 159·9	hrs. 200·6	hrs. 206·0	hrs. 210·1	hrs. 198·3	hrs. 160·2	hrs. 100·4	hrs. 51·3	hrs. 38·9	hrs. 1545·6
1903.	54·3	92·1	165·2	153·2	189·5	174·1	194·1	201·8	183·3	97·5	42·2	28·3	1575·6

These tables well deserve careful study, and they show (1) that the months of January, February, March, and October were exceedingly warm, the excess of temperature being respectively 3°·0, 6°·3, 4°·5, and 3°·3; (2) that the months of April, June, July, and August were cold, the deficiency being respectively 3°·3, 4°·1, 1°·4, and 2°·3; (3) the other four months differed but slightly from the average; and (4) that the year was slightly above the average by 0°·4. With respect to the sunlight table we have a somewhat different distribution, *viz.* (1) the months of January, February, March, and September were sunny, the excess in hours being respectively 12·1, 30·0, 50·2, and 23·1; (2) that the deficiency in hours in April, May, June, July, November, and December was somewhat large, namely, respectively in hours, 6·7, 11·1, 31·9, 16·0, 9·1 and 10·6; (3) that the remaining two months differed but slightly from the average; and (4) and that the year was above the average by 30·6 hours, practically three days. It will be noticed from these tables how closely the mean temperature and sunlight correspond, but the tables do not show the disastrous consequences of the, shall I say it, celebrated frost in April, which practically destroyed all our fruiting season.

I will now deal shortly with the rainfall of the district. In the 'Times' of Monday, Jan. 11th, 1904, there appears a letter from Dr. Mill, who has most courageously put on the mantle of our late honorary member Mr. G. J. Symons, giving a short account of the rainfall of 1903, in which he practically sums up the results of 1903 as follows: "that in England, 1872 must be taken as the first and worst, 1852 second, and 1903 third." This applies to the kingdom as a whole, but it would seem from this letter that this does not apply to London. Of course Dr. Mill had not access to the complete records of your Meteorological Committee, as the December sheet is not yet in the printer's hands. As you know, your organization takes in the whole of South London, also a large part of the surrounding country south of the Thames, and from these records we have for 1903 the greatest amount, 50·04 in., at Denbies, Dorking, where the mouth of the gauge is 6 in. above the ground, and the height of the station 610 ft. above O.D., and the least amount 26·13 in. at the Town Hall, Anerley, where the gauge is 40 ft. above the ground on the roof of the building, and the height of the station 191 ft. above O.D., which would appear from the experiments of Prof. Phillips, F.R.S. (see 'British Rainfall,' 1880, p. 19) to be equivalent to 32·66 in. at ground level, an amount which would leave Battersea as the lowest, with a record of 30·65 in. In his letter Dr. Mill estimates the rainfall for the whole of London as about 37 in., which is the average volume of rain and half as much again. With the view of seeing what was the excess of the fall of 1903 over the 10 years' average, 1891–1900, which, by-the-by, was a dry period, I have compared them, and find that the greatest excess occurred at Leatherhead, which had 45·97 in., an excess of 20·74 in. above the average; and that the least was at New Malden, which had 30·87 in., an excess of 9·82 in. One of the great features of the rainfall was the very large number of days on which the fall was over one inch, there being at Dorking alone nine of such falls.

With reference to the total rainfall for 1903, it seems probable, if we may take the observations at Greenwich for a guide, that there has been no such fall for probably over one hundred years. The total fall of rain at Greenwich for 1903 is 35·54 in., and with reference to this I should now like to include a copy of a letter which I wrote to the Astronomer Royal on Dec. 9th, 1903, and the answer of Mr. Nash written by his order.

Cotswold, Wallington, Surrey,
9th Dec., 1903.

My Dear Sir,

You have for many years past very kindly sent me the rainfall returns of the Observatory for publication in the "Daily Rainfall" sheet of the Croydon Natural History Society. Having regard to this extraordinary wet year of 1903, I am emboldened to make a request, which I trust that you may see your way to grant. The present year's rainfall for the eleven months totals up to 34·27 in., which exceeds the year's total of 1852, which is 34·01 in., this year being previously the highest since 1841. In the Proceedings of the Meteorological Society, vol. 5, p. 87, there is a paper giving the daily rainfall from 1815 to

1869, by the late Mr. Glaisher, in which, from 1815 to 1840, both exclusive, the only years having a total fall of 30 in. and above are :—

1821	31·53 in.
1824	32·98 in.
1830	31·14 in.
1831	34·48 in.
1836	31·01 in.

In this paper, on p. 112, Mr. Glaisher says :—"The series is mainly that of the Royal Observatory, Greenwich, which began on January 1st, 1815, my investigations closing with the end of the year 1869. During this period the fall of rain has been registered at Greenwich daily from the year 1815 to 1830, and from 1836 to the present time; from 1830 to the end of 1835 the falls were not registered daily, but only at two or three or more days' interval; and for the daily falls in this period I have had recourse to a journal in my possession, taken apparently with great care, at High Wycombe, near Reading." On the top of p. 114 he gives a description of the gauge and the corrections he applied.

What I am going to ask is that you will kindly direct an inquiry to be made as to the rainfall of 1831 at the Observatory, as that year seems to be the nearest to the present one, and let me know the result.

I hardly like to ask for the other four years mentioned, as I particularly do not wish to trouble you more than I can possibly help.

I am, my dear Sir,
Yours very truly,
(Signed) F. Campbell-Bayard.

The Astronomer Royal.

Royal Observatory, Greenwich, London, S.E.,
December 10th, 1903.

Dear Mr. Bayard,

I am desired by the Astronomer Royal to furnish you with particulars relating to the rainfalls recorded at the Observatory in the years mentioned in your letter of Dec. 9th. The observations were made at very irregular intervals, sometimes after the lapse of three or four days (as has already been pointed out in Mr. Glaisher's paper), and cannot be considered to be of equal value to those made after the establishment of the regular meteorological service in 1841. This being premised, I will proceed to give details of the amounts. The amounts for the years 1821 and 1824 are correctly given in Glaisher's paper, *viz.* 31·53 in. and 32·98 in., but the other values are not derived from the Observatory journals. In 1830 and 1831 the results from observations of a gauge placed on the ground are 24·62 in. and 26·41 in. respectively; and in 1836 the amount recorded at 22 ft. above the ground was 24·50 in., which is equivalent to an amount for ground-level of 27·84 in., using the proportion established by a comparison of the results given by the gauges on the ground and at the height of 22 ft. made in the years 1841–1850.

By permission of the Astronomer Royal I am now engaged in discussing the results for these earlier years, with a view of forming a complete table for the period 1815–1903, for presentation to the Royal Meteorological Society.

I am, dear Mr. Bayard,
Yours faithfully,

W. C. Nash,
For the Astronomer Royal.

F. Campbell-Bayard, Esq.

This answer from the Astronomer Royal is, I feel sure that you will agree with me, the more gratifying because it is unexpected. It is an instance of the esteem in which our Society is held, that the oldest observatory in the kingdom should be willing to undertake a long and laborious work of examining, tabulating, and discussing the rainfall returns from 1815 to 1840 under, as you see from the letters, circumstances of peculiar difficulty. There is luckily a journal by Mr. Belville, who was during these earlier years an assistant at the Observatory, extant, and this has been lent by the Royal Meteorological Society to the Astronomer Royal for the purpose of affording any help that it is capable of rendering to the investigation.

The only other piece of information that I have to give is a letter from the Clerk of the London County Council in answer to one of my own. I do not think that it is necessary to include a copy of my own letter, for Mr. Gomme's letter sufficiently explains itself:—

County Hall, Spring Gardens, S.W.,
23rd December, 1903.

Sir,

With reference to your letter of 27th ultimo, addressed to the Chief Officer of the Council's Parks Department, asking that the Croydon Natural History and Scientific Society may be supplied with the rainfall returns from the Council's parks south of the Thames, for the purpose of including them in the monthly return issued by the Society, I have the pleasure to inform you that instructions have been given for the returns from Battersea, Brockwell, and Southwark Parks, and Telegraph Hill to be forwarded to you monthly. The parks mentioned are the only parks south of the Thames where records of rainfall are kept.

The Council will be pleased to receive the monthly return issued by the Society, which you have kindly expressed your willingness to supply.

I am, Sir, your obedient Servant,

G. L. Gomme,
Clerk of the Council.

F. Campbell-Bayard, Esq., F.R.Met.Soc.,
Cotswold, Wallington, Surrey.

This letter, as you will agree with me, is as cordial as it is gratifying. It is but one of many instances which go to show that our great municipal bodies are appreciating the aid which even a comparatively small Society like our own may give in helping forward the study of the problems which affect the health of our great cities and towns.

In closing my address to you to-night, may I tender to you my thanks for listening to me so long and so patiently, and may I express a hope that our Society may prosper during this present year, and prove of some, even though it is but small, use to this town which has given it birth, and to the county at large.

British Association.

Report of the Meeting of Representatives of Corresponding Societies at the Meeting at Southport, Sept. 1903.

The Committee of the Corresponding Societies, consisting of Messrs. W. Whitaker and F. W. Rudler, Sir John Evans, and others, report that they recommend that the work entrusted to the Sectional Committees, under Rule 10 of the last Report, shall henceforth devolve upon the Organizing Committees. The effect of which will be that the Organizing Committees of each Section will transmit to the Secretaries of Sections, and through them to the Secretaries of the Conference of Delegates, any recommendations that the Corresponding Societies desire. The Organizing Committees to specify what local work can be most usefully undertaken by the separate Corresponding Societies. This work the Council of the Association will consider, particularly to develop science and scientific education throughout the provincial centres. These subjects will be discussed after consideration by the Committee of the Council at the following meeting of delegates, of which a letter has been addressed to the leading officers of the Corresponding Societies.

The Committee of the Council of the British Association express the opinion that immense benefit would accrue to the country if the Corresponding Societies would take advantage of the expert knowledge many members possess to endeavour to secure representation for scientific education on the Educational Committees now being appointed under the new Act. The Council invite the opinion of the Corresponding Societies upon higher education to be put forward by their representatives at the next meeting of delegates for full consideration of this subject. In the President's Address the want of scientific education in this country was deeply deplored, and its great loss shown both in the dignity of, and profit to, the nation.

Beyond the subject of higher education, which occupied much of the time, the general useful work of the Corresponding Societies was recommended by the various speakers for research in anthropology, zoology, botany, geology, meteorology, and photography. Upon the work done some reports were given verbally. The prevailing idea for the future being that these subjects should be studied in detail, that useful if not original work might be produced. It was particularly urged that a good account of the flora of each district should be carefully recorded, as it was found that all evidences of ancient vegetation commonly disappeared before modern buildings near towns. The desirability of preserving antiquities—prehistoric and later—was pointed out by the endeavour of Corresponding Societies to support and found museums.

I do not feel it necessary to discuss these subjects in detail, as it does not strike me that any new ideas were introduced upon them. The following interesting communications were made, which will be printed:—

(1) "The Methods and Results of a Botanical Survey of Counties," by W. G. Smith, Ph.D., B.Sc., and W. M. Rankin, B.Sc.

(2) "A Suggestion with respect to Exploration and Registration work for County Local Societies," by W. Cole, F.L.S.—Wm. F. Stanley.

Obituary Notice.

The late Mr. John Berney.

During the past year the Society has had to regret the loss of one of its prominent and oldest members in the death, on September 9th, in his eighty-second year, of Mr. John Berney, who had been a member from the formation of the original Croydon Microscopical Club in 1870, and was President during the years 1883 and 1884. Mr. Berney's chief interest was in entomology, and his collection of insects found in the locality contained many fine series and several varieties arranged with great care. He had also collected in the New Forest. He also took much interest in microscopy, and gave a paper on Mounting Objects for the Microscope at one of the Conversational Meetings. Mr. Berney will be specially remembered for his exceedingly kind and genial manner, and for his readiness on all occasions to assist others, especially younger members; also for the trouble which he took for many years in the arrangements for the Annual Soirées, his practical knowledge of such matters contributing very largely to the success of these meetings. Mr. Berney was a member of the Royal and Quekett Microscopical Societies.

Summary of Proceedings.

Excursions.

April 18th (Saturday).—Kew Gardens. Conductor, Mr. H. T. Mennell.

April 25th (Saturday) and *May 9th* (Saturday).— Joint excursions with Geologists' Association to Loam-pit Hill, Lewisham, and to Crayford and Erith. (See report of Geological Section, p. xxiii).

May 21st (Thursday).—Botanical Section, evening excursion (see p. xix).

May 23rd (Saturday).—Photographic Section.

May 30th (Saturday).—Photographic Section.

June 1*st* (Whit-Monday).—Whole day. Leatherhead, Stoke D'Abernon, and Cobham.

A whole-day excursion was made under the guidance of Dr. Parsons and Mr. G. W. Moore to the valley of the Mole below Leatherhead. The day was very fine and hot, and there was a good attendance of members. Shortly after leaving Leatherhead station, the route taken was by Fetcham mill-pond; this is an artificial sheet of water of considerable size, formed by holding up with a bank the large springs which issue here from the chalk where it dips beneath the tertiary clays. One large spring of beautifully clear blue water was seen issuing from a deep depression in the bottom of the pond. From Fetcham a footpath, found with some difficulty, led across meadows, and through a field of tall rye and scarlet clover to Slyfield House. This is an old house with a history, and possesses some interesting architectural features in brickwork; but the party were not able to obtain permission to visit it. Crossing the Mole, Stoke D'Abernon was reached, and a visit was paid to the church, which is picturesquely situated on the river-bank in the grounds of the Manor House. It is an unpretentious building externally, but contains a large number of well-preserved monuments of the D'Abernon, Vincent, and Phillips families, from ancient brasses and stone effigies of James the first's time to modern mosaics and inlaid marbles. There are also ancient armour, a parish chest with three locks, said to be six hundred years old, and on the pulpit an iron stand for the hour-glass by which the preacher timed his sermon. One small window consisting of a single light in the west end of the church, also the font, are said to be eight hundred years old. The church is mentioned in Rickman's 'Gothic Architecture' as one of twenty churches in the country containing old "long and short" work in east wall and chancel arch, in Rickman's opinion dating back before A.D. 1000, but the work itself is not now visible. After a halt for lunch the party walked on to Church Cobham, a village picturesquely situated on the river Mole, with an old mill and a brick bridge of many arches. The church here possesses fewer special features than that at Stoke D'Abernon, the chief being the Norman south doorway and wooden porch. It had been proposed to visit the Hut Ponds on Ockham Common, but time did not permit of this, except in the case of one energetic visitor, and the rest of the party walked through pleasant wooded lanes to Effingham Junction, and spent the time while waiting for the train on the adjoining common. The return was made to Leatherhead, and, after tea there, to Croydon.

As regards botany, the route lying almost entirely over London Clay, the flora was not expected to present any very special features, though wet-loving plants were better represented than they are in the comparatively waterless region south of Croydon. The aquatic and waterside plants, however, were not many of them yet in flower, and the swollen state of the river and ponds, owing to the heavy thunderstorm on May 30th, prevented their being easily reached. *Hippuris vulgaris* (marestail) was plentiful in Fetcham Pond. *Geranium pyrenaicum* and *Rhinanthus crista-galli* (yellow rattle) were found at Fetcham; and *Cerastium aquaticum* by the river at Slyfield. *Œnanthe crocata* and *Nasturtium amphibium* grew by the Mole at Cobham; and *Viola canina*, *Genista anglica*, *Lathyrus macrorhizus*, *Pedicularis sylvatica* (a nearly white-flowered variety), and *Carex pilulifera* on Effingham Common. A few species of fungi, as *Agaricus semiglobatus*, *Marasmius oreades*, *Boletus flavus*, and *Æcidium urticæ*, were seen.

The results of the day as regards entomology and conchology are thus given by Mr. Gower:—

The walk by Fetcham Ponds yielded many varieties of the little reed beetles, *Donacia sagittariæ;* the common caddis-fly, *Sialis lutaria*, was also very abundant on the wing here; several species of *Ephemera* also being noticed. From the pond itself one member took the freshwater snail, *Physa fontinalis;* while upon the reeds by the bank *Succinea putris* was very abundant, but somewhat small in size, and not fully developed. *Helix hortensis* (var. *lutea*) was found on the other side of the path; also *Hyalinia nitidula* and *Helix hispida* (= *H. concinna*). Walking from here towards Stoke D'Abernon, some of the party who got slightly astray from the main party took a lane leading from Eastwick Park, and coming out to the road skirting a part of Great Bookham Common. On the way the beetle *Telephorus lividus* was taken; the snail *Helix cantiana* was abundant, but not full-grown. In the lane skirting the park, many of the beautiful dragonfly, *Colopteryx virgo* (female and male), were captured; the well-known spring butterfly *E. cardamines* being frequently met with and captured. Some little ponds by the side of the common yielded another little dragonfly, *Agrion puella* (males only). The Mole at Cobham being reached, *Ephemera vulgata* was very abundant. The freshwater mussel, *Unio pictorum*, was found in the Mole, but empty shells only; and also the freshwater limpet, *Ancylus fluviatilis*. On the way to Effingham Junction, a wayside pond at Downside yielded *Limnæa peregra*, *Planorbis corneus*, *P. albus*, *P. vortex*, and *P. complanatus*.*

June 13*th* (Saturday).—Beddington and Carshalton.

June 18*th* (Thursday).—Botanical Section, evening excursion (see p. xix).

* This name has been altered during the last few years, since 1892, to *P. umbilicatus*.

July 4th (Saturday).—Merstham and Caterham, in conjunction with the Conchological Society of Great Britain and Ireland. Conductor, Mr. H. D. Gower.

Nine members were present at this excursion, *viz.* five from our own Club, including two ladies, and four of the Conchological Society, the President of the London branch of the above Society, Canon Horsley, being amongst those present.

A most enjoyable but somewhat dusty walk was made. Starting from Merstham Station, the road taken was a little north of the station and south of the spot where the old mill once stood. From here to Rockshaw little was found in the way of mollusca, some *Helix cellaria* and an isolated specimen of *H. hortensis* var. *lutea* being found. *H. caperata* and also *H. virgata* were noticed, but very small and immature, by the footpath leading up the hill by Rockshaw. *H. cellaria* was found under some pieces of limestone, as well as a specimen of *Cochliicopa lubrica.*

Insect life was exceptionally scarce; a specimen of the moth *Xylophasia lithoxylea* was boxed on a post, and curious to note was the absence of butterflies. Taking the footpath to the top of the hill by the Quarry Hangers, a search was made for *Helix pomatia*, and living specimens of this well-known shell were curiously absent, although plenty of empty shells and also operculum were in evidence. *Cyclostoma elegans* was also taken in the long grass beside the path by the hill. Numbers of cocoons of the burnet moth, *Zygæna filipendulæ*, on the grass-stems were noticed. The road to Caterham was then taken, a compressed variety of *Helix rufescens* being found; the members taking tea together at the 'Railway Hotel,' Caterham Valley.

The flora noted in the walk were as follows, and only include the less common and more conspicuous plants. List furnished by Mr. Cooper, Conchological Society, London Branch :—

Agrimonia eupatoria, Anthyllis vulneraria, Briza media, Bromus erectus, Bryonia dioica, Calamintha acinos, Carduus acanthoides, Chelidonium majus, Chlora perfoliata, Conium maculatum, Cornus sanguinea, Daucus Carota, Fragaria vesca, Fumaria officinalis, Helianthemum vulgare, Hieracium pilosella, Hippocrepis comosa, Hordeum pratense, Ophrys apifera, Orchis maculata, Plantago media, Polygala vulgaris, Poterium Sanguisorba, Rosa arvensis, Salvia verbenaca, Stellaria graminea, Thymus Serpyllum, Trifolium incarnatum (white), *T. hybridum, Verbascum Thapsus, Vicia Cracca.*

July 11th (Saturday).—Photographic.

July 16th (Thursday).—Botanical, evening excursion (see p. xix).

July 18th (Saturday).—Box Hill, Denbies Park, and Ranmore. Conductor, Mr. J. H. Baldock.

July 25th (Saturday).—Three Bridges for Worth (see p. xviii).

August 3rd (Monday).—Bank Holiday. Whole day. Ightham, Oldbury, and Knole Park. Conductor, the President.

In spite of the threatening appearance of the weather, this excursion was favoured by a most enjoyable day, bright and pleasant. About twelve members attended; the main body of the party meeting at Beckenham Junction, whence they travelled to Wrotham by the 11.40 train, arriving soon after 12.30. Some members who had started earlier or cycled were met at Ightham, where, after noticing a very fine example of old domestic architecture in a timbered house at the end of the village, lunch was had at 'The Chequers.' This had been very kindly arranged by Mr. B. Harrison, who afterwards took the party to his house to view his collection of flint implements, giving a very elaborate description. Mr. Harrison has been engaged on the study of the flint implements found by him in the neighbourhood for over thirty-five years. He divided the implements into five classes: those from the plateaus, termed eoliths; those of the hill-men deposited in drifts; those of the valley-men deposited by rivers—these two series comprising the older palæolithic implements—the newer palæoliths from rock-shelters, and the neoliths found spread over the country. The earliest forms have been much debated upon, but are now recognized by many as being actually worked. Mr. Harrison then conducted the party to the rock-shelters at Oldbury, and from the high ground pointed out the places in the neighbourhood whence he had obtained the various classes of implements. The rock-shelters are just to the north of the Roman Camp, and are formed by a hard rock in the Folkestone beds of the Lower Greensand, over which formation the whole of the route taken lay. The party then went to some rising ground with mounds, believed by many to be artificial, and to present a sinuosity indicating a possibility of connection with serpent-worship. Due east from this spot, the site of Kits Cotty House could be seen. The Roman Camp was then visited, the fosse surrounding it pointed out, and the whole position explained by Mr. Harrison, to whom a hearty vote of thanks for his kindness and attention was moved by the President. The party then proceeded by Seal Chart and Godden Green to Knowle Park, noticing in the park the fine old trees known as the king's beech and King John's oak; but time did not allow of much stopping, and, after having tea at Sevenoaks, the party returned to Beckenham Junction from the Bat-and-Ball Station.

September 12th (Saturday).—Fungus foray, Addington Park.

Favoured by fine weather, the annual exploration for fungi was very successful, except that our leader, Dr. Parsons, was unavoidably absent. This was the more unfortunate, as the present wet season has greatly favoured this section of plant-life, thus standing in strong contrast with recent dry autumns. There was a good muster of members and their friends, eighteen in all, taking the walk through the beautiful woods which form the upper part of Addington Park, permission to visit the park having been kindly given by the present proprietor, F. A. English, Esq. Starting from the lodge entrance on Shirley Church Road, we first worked eastwards to the obelisk, by the Cedar of Lebanon planted in commemoration of the Jubilee of George III. Thence we traversed the undulating ground towards the western entrance on the Shirley Hills. The woods are mainly of birch, with areas of Scotch firs and other conifers, fine beeches, mountain ash, sweet chestnut, and oak. The last was not largely represented. Everywhere was a thick undergrowth of bracken. The party was fortunate in obtaining thirty-nine species in all, the names of which are appended, as identified by Dr. Parsons, to whom they were submitted. The four which are starred are less common species and new additions to the local series. On the pasture land above the house very few were found of any kinds, it being hardly late enough in the season for the majority of the pasture-frequenting species, and not a single mushroom was seen. But the woodlands made full compensation, giving an abundance of specimens, as well as species such as one seldom sees. In one part the ground beneath the bracken was thick with the handsome yellow edible chanterelle, many specimens being of unusual proportions. This latter point was true also of several other species, as *Boletus edulis* and *Polyporus betulinus*, the latter of which was plentiful on birch trees.

Fungi found at Addington Park, September 12th, 1903:—

Agaricus (*Amanita*) *rubescens*, *A.* (*Amanita*) *phalloides*, *A.* (*Amanita*) *vaginatus*, **A.* (*Amanita*) *pantherinus*, *A.* (*Tricholoma*) *terreus*, *A.* (*Clitocybe*) *laccatus*, **A.* (*Collybia*) *maculatus*, *A.* (*Mycena*) *galericulatus*, *A.* (*Stropharia*) *æruginosus*, *A.* (*Hypholoma*) *fascicularis*, *A.* (*Psilocybe*) *semilanceatus*, *A.* (*Psilocybe*) *spadiceus*, *Cortinarius elatior*, *Hygrophorus psittacinus*, *Cantharellus cibarius*, *Lactarius turpis*, *L. subdulcis*, *L. pyrogalus*, *L. rufus*, *L. vellereus*, *Russula emetica*, *R. virescens*, *Marasmius peronatus*, **Lentinus cochleatus*, *Boletus edulis*, *B. flavus*, **B. felleus*, *Polyporus betulinus*, *P. annosus*, *P. versicolor*, *P. vaporarius*, *Thelephora laciniata*, *Stereum hirsutum*, *Corticium læve*, *Clavaria inæqualis*, *Calocera viscosa*, *Phallus impudicus*, *Scleroderma vulgare*, *Lycoperdon pusillum*.

Evening Meetings.

March 17th.—Reading of Meteorological and Botanical Committees' Reports.

April 21st.—Mr. L. N. G. Filon, M.A,, D.Sc., on "Comets." (See Trans., Art. 1.)

May 19*th*.—Mr. N. F. Robarts, F.G.S., "On a Section of Clay with Flints near Woldingham" (see Trans., Art. 2), and "On the Plateau Gravel, Upper Norwood" (see Trans., Art. 3). Note on same, by Mr. A. J. Hogg (see Trans., Art. 4). Mr. H. D. Gower, "Flints found at Waddon Marsh," illustrated (see Trans., Art. 5).

Sept. 15*th*.—Notes by members on results obtained during the vacation.

Oct. 20*th*.—Dr. T. A. Dukes, B.Sc., "On the Parallel Roads of Glenroy." (See Trans., Art. 6.)

Dec. 15*th*.—Mr. H. C. Collyer, on "Jade" (Nephrite). (See Trans., Art. 7.)

Soirée.

A Soirée was held at the Public Hall, Croydon, on Wednesday, November 18th, and notwithstanding that less time than usual had been available for arrangements, was very successful. A considerable number of interesting exhibits were shown by the following members and friends:—

Messrs. W. Watson & Sons, of Holborn: Radium.
Messrs. W. F. Stanley & Co., London Bridge: X-Ray apparatus.
Mr. J. H. Baldock, F.C.S.: Photo-micrographic apparatus.
Mr. H. C. Collyer: North Europe hand-mangles, shell money from New Britain, native decorative work, and Chinese coins.
Mr. E. Lovett: Specimens illustrating the origin and evolution of the pen-annular brooch.
Dr. J. M. Hobson: Photographs of the same subject.
Mr. E. A. Martin, F.G.S.: Geological implements and minerals.
Mr. J. Epps, F.L.S.: Jade specimens from China and Siberia.
Mr. J. O. Pelton: Japanese lacquer ware.
Miss A. E. Willson: Antique and modern shoes and antique bodices.
Dr. H. F. Parsons: Two hundred and twenty species and varieties of flowers gathered in bloom same day, including strawberry in fruit.
Mr. J. H. Baldock: Fir-cones (showing formation).
Miss Klaassen: Leaf of *Bryophyllum calicinum*, see description.
Mr. C. E. Salmon: Dried plants.
Mr. W. M. Holmes: Boomerangs, skin of Australian monitor.
Miss Hobson: Fungi.
Mr. J. H. Goodman: British beetles.
Mr. Elliott: Palæolithic implements.
Mr. N. F. Robarts, F.G.S.: Fossils.
Mr. A. J. Hogg: Red lustrous ware (Roman) and fossils.
Mr. J. H. Carpenter, F.E.S., Leatherhead: Cases of butterflies comprising 1240 specimens.
Mr. S. E. Hall: Young living specimen of boa constrictor, and casts of skins.
Messrs. Negretti and Zambra: Deep-sea thermometors and self-recording anemometors.

Mrs. H. D. Hall: Photographs of Yellowstone Park, California; specimens of North American bead and poker work.
Mr. C. Thorpe: Mounted specimens of British birds, and fish.

Microscopes.—Messrs. J. E. Syms; T. D. Ersser, F.R.M.S.; E. Hinton; W. H. Langton; J. H. Stanley; A. Smith, Q.M.S.; A. Fitzgerald; and Dr. Dukes, B.Sc. Messrs. W. Watson & Sons; Messrs. Beck & Co.

Photographs.—Messrs. J. H. Baldock; H. W. Corry; J. Epps, Jr.; H. D. Gower; W. L. Moore; Dr. J. M. Hobson; and Mr. N. Waterall, Collection of Photographic Survey and Record of Surrey, per Mr. H. D. Gower.

Document.—Mr. J. O. Pelton: Petition for incorporation by the inhabitants of Croydon to King William and Queen Mary, dated Feb. 5th, 1701.

Lantern-slides lent by: Messrs. J. Epps, Jr.; Faunthorpe; E. A. Martin; J. H. Baldock; and Dr. Hobson.

Description of Leaf of Bryophyllum calicinum.—*Bryophyllum calicinum*, order *Crassulaceæ*, is a tropical plant having fleshy leaves with crenate margins. When the leaf is full-grown, there are in each indentation of the crenate margin a group of cells which, to the naked eye, appear as a rounded elevation. This group of cells does not develop further so long as the leaf remains on the stem; but, if removed and laid upon the ground, these groups of cells begin to develop into small plants with stem, leaf, and root. The plants live upon the food-material and water stored in the fleshy leaf until the reserve material is consumed. The rootlets then start off to find nourishment in the ground.

Reports of Sections for 1903.

Anthropological and Archæological Committee.

Eight meetings of the Committee and Section respectively have been held during the year.

Meetings.—The following members have exhibited and described antiquities and other objects during the year:—Messrs. Clinch, Collyer, Hogg, Lovett, and Tarver, and Dr. Hobson.
The following are the subjects which have been discussed, and when possible illustrated by means of specimens:—Roman pottery; Samian pottery; ancient horn and leather work; Easter customs in England; spindle-whorls; brooches and pins; cultivation terraces; prehistoric flint and other stone implements; jade objects from Pekin, New Zealand, and Brittany; bull-roarers and other objects from New Guinea, &c.

Excursions.—Two excursions were projected. The first, on June 13th, to Beddington and Carshalton, was abandoned in consequence of the very heavy rain. The second, on July 25th, to Worth Church, Sussex, was a successful visit, and fairly well attended. The more important architectural features were described by Mr. George Clinch, who drew attention to the interesting combination of British and Roman (Basilican) types in the plan. The thanks of the Committee are due to Mr.

F. Campbell-Bayard (President), who kindly offered tea on the occasion of the Beddington and Carshalton excursion; to the Rectors of Beddington, Carshalton, and Worth, and the Secretary of the Royal Female Orphan Asylum, Beddington, for kindly giving to the Committee permission to visit the buildings under their charge.

Botanical Committee.

During 1903 the Botanical Committee have held sectional meetings, Saturday afternoon and Thursday evening excursions. The investigation of the flora of the commons near Croydon has been continued, and botanical specimens have been exhibited at the Society's meetings and at the Soirée. (See p. xvii.)

On Thursday, March 26th, a joint meeting of the Botanical and Microscopical Sections was held. Microscopic plants were the subject of a talk opened by Dr. Parsons, and illustrated by living and mounted specimens shown under the microscopes.

On Thursday, April 13th, the Society's herbarium was on view. Surrey specimens were exhibited and added to the collection.

Saturday afternoon excursions were made on :—

April 18th to Kew Gardens. (See p. xi.)

September 12th to Addington Park. Fungus Hunt. (See p. xv.)

The excursion on Whit-Monday, June 1st, was also of botanical interest. (See p. xii.)

On May 21st, under the leadership of Dr. Parsons, a visit was paid, by kind permission of C. H. Goschen, Esq., to Thrift Wood, near South Croydon. Thrift Wood is on the chalk, with a loamy or clayey top-soil, as in the lower part of Croham Hurst near by, and the flora is generally similar. The primrose, however, which is now almost if not quite exterminated at Croham Hurst, is still very abundant in Thrift Wood, and the following plants were observed there which have not of late years at least been found at Croham Hurst, viz. *Orchis mascula* and *maculata*, *Habenaria chloroleuca* (butterfly orchis), *Lithospermum officinale* (gromwell), *Cnicus palustris* (marsh thistle), and *Hypericum montanum* (found last year in the old chalk-pit by Croham Lane). The only fungus observed was *Leuzites betulina*, fungi being scarce this spring, in spite of the wetness of the season. The oak was in full leaf, and nightingales were heard in song.

The second ramble, under the guidance of Mr. J. E. Clark, B.A., B.Sc., took place on June 18th to Mr. Cochrane's British Botanic Garden, Perry Hill, S.E. In all, a party of nearly twenty paid a most interesting visit to this spot, actually within one of the London boroughs, where Mr. Cochrane, a working gardener, cultivates some eight hundred British species of flowering plants with signal success. He has managed to afford many of them a natural soil. The hillocks on which were chalk flora and heath flora were good illustrations of this. This garden would at any time be a source of pleasure to those interested in our native flowers. Mr. Cochrane is very glad to supply fresh flowers to schools or others for botanical purposes.

The third ramble was on July 16th to Purley Downs. Mr. J. E. Clark, B.A., B.Sc., conducted. The stormy evening reduced our party to five, who approached from the Riddlesdown side. In spite of occasional showers and wet feet, the ramble was enjoyable as well as interesting, and resulted in the observation of a number of our rarer flowers. This, indeed, is the nearest spot in Croydon for not a few, including the cowslip, henbane (*Hyoscyamus niger*), and round-headed rampion (*Phyteuma orbiculare*). Most noteworthy perhaps was the size as well as abundance of the dropwort (*Spiræa filipendula*), which literally whitened large areas with panicles as large as those of meadow-sweet (*S. ulmaria*). A specimen of *Orobanche minor* was picked up by a clover field in the hollow between Purley Beeches and Sanderstead Hill. Another was found by Miss Annie Hinde a week or two earlier on the side of the road just above Sanderstead Station. Appended is a list, by Dr. Parsons, of the chief plants:—*Spiræa filipendula* (abundant and very fine), *Rosa rubiginosa, Asperula cynanchica, Lactuca muralis, Tragopogon pratensis, Phyteuma orbiculare, Primula veris, Gentiana Amarella, Hyoscyamus niger, Verbascum Thapsus, Orobanche minor, Verbena officinalis, Juniperus communis* (abundant), *Bromus erectus, Brachypodium pinnatum.*

The following is a brief summary of the remarkable meteorological characters of the year 1903 as affecting vegetation. The year opened with genial though somewhat rainy and occasionally stormy weather, which lasted during the first three months. There was a week of frost in January, but it was of no great severity, 21° F. on the 14th being the lowest temperature reached; and there was a remarkable absence of snow and of cold east wind. The mean monthly temperature at Greenwich was above the average by 2°·2 in January, by 5°·5 in February, and by 4°·3 in March. In consequence of the mildness of the season the early spring flowers appeared much before the usual date. The annexed table, compiled from observations made by Dr. Parsons in his garden at Park Hill Rise, Croydon, shows that of twenty-seven species of early hardy flowering plants the date of flowering in 1903 was in all but two cases earlier than the mean date in the ten years 1893–1902, the average of the whole being eleven days earlier. The oak was seen in leaf on April 5th. In April, however, the weather became cold and wet, with cold winds and frequent night frosts; and with the exception of a week of hot weather at the end of June, it maintained its cold and wet character throughout the remainder of the year. The April frosts and a succession of cold N.E. winds which prevailed during May and the early part of June were very destructive to fruit-blossom, and except the later strawberries the fruit crop was an extremely bad one. Even the wild berries in the hedgerows were very scarce, with the exception of the hips of the dog rose, and of blackberries; the latter, however, did not ripen properly owing to the lack of sun and warmth in the autumn.

The growth of grass in the meadows was very luxuriant, and those who were able to take advantage of the fine weather at the end of June secured a good harvest of hay, but where this was not done the hay lay long on the ground, and was much damaged by rain; indeed, in some places in the hilly parts of the kingdom it rotted on the ground, and was not worth harvesting. The corn crop was damaged by rust and storms, and the harvest was late and poor. The hop crop was also a bad one. The young foliage of rose-trees and other shrubs was much damaged by the frosts and cold winds in April, and the early bloom of roses was not so good as the later one. A second bloom occurred on some trees; on June 21st a hawthorn tree was seen covered with bloom near Chaldon. The potato disease appeared in August, and did much damage to the crop. A severe gale on September 10th–11th, occurring when the trees were still in foliage, did much damage, overturning some large trees, and breaking large limbs off others. Owing to the absence of frosts until late in the autumn—the first occurring on the night of November 18th–19th—the fields and trees long continued green; and the tender summer flowering plants, as dahlias, begonias, and nasturtiums, remained in bloom in the gardens. At the Society's Annual Soirée on November 18th the exhibit of flowers gathered in the open air in gardens at Addiscombe and Park Hill comprised two hundred and twenty species and varieties, by far the highest record during the past twenty-two years; the next highest number having been one hundred and seventy in the mild autumn of 1897, and the lowest thirty-two in the cold frosty one of 1901. The large number in 1903 is, however, partly due to the Soirée having been held a week earlier than in previous years; had it been deferred until after the frost which occurred the same night, the number of kinds available for exhibition would have been much fewer. The female flowers of the cob-nut (*Corylus avellana*, var.) were well developed at the end of November in Mr. Mennell's garden, Park Hill Rise.

The rainfall of 1903 has been in contrast to that of 1902 in that, while it has been double in amount (37·84 in. as against 18·65 in. at Park Hill Rise), the number of wet days has been fewer (one hundred and ninety-one as against one hundred and ninety-four). 1903 was a year of heavy downpours; 1902 one of frequent drizzles. But in both years the air was generally humid, and this has been favourable to the growth of cryptogamic vegetation. Mosses have grown more luxuriantly on walls, trees, and heathy ground than in the previous series of dry years; and fungi have been more plentiful than for a number of years past. A number of species of fungi not previously observed in the neighbourhood have been found, and several other of the less common species have reappeared which had not been seen for several years. Lists are appended:—

Fungi Newly Found, 1903.

Agaricus (*Armillaria*) *mucidus*.—Godstone.
A. (*Clitocybe*) *inornatus*.—Chelsham.
A. (*Clitocybe*) *nebularis*.—Mitcham Common.
A. (*Mycena*) *purus*.—Purley Downs.
A. (*Entoloma*) *Bloxami*.—Box Hill.
A. (*Flammula*) *flavidus*.—Coombe Lane.
A. (*Nancoria*) *pediades*.—Hayes Common and Farthing Down.
Bolbitius fragilis.—Hayes Common and Beddington.
Cortinarius sanguineus.—Shirley Hills.
Lactarius fuliginosus.—Botley Clump.
Lentinus cochleatus.—Addington Park.
Panus conchatus.—Tadworth.
Boletus felleus.—Shirley Hills.
Polyporus Schweinitzii.—Shirley Hills.
Hydnum gelatinosum.—Shirley Hills.
H. Auriscalpium.—Keston Common.

Clavaria amethystina.—Lunghurst.
C. fusiformis.—Ballards.
Geaster fornicatus.—Keston Common.
Helvella crispa.—Godstone Hill.
Leotia lubrica.—Croham Hurst.

Fungi Refound, 1903.

Agaricus (*Tricholoma*) *sulfureus.*—Purley.
A. (*Clitocybe*) *geotrupus.*—South Croydon.
A. (*Clitocybe*) *flaccidus.*—Croham Hurst.
Hygrophorus hypothejus.—Shirley Hills.
Cantharellus cinereus.—Croham Hurst.
Nyctalis parasitica.—Croham Hurst.
Craterellus coruneopioides.—Croham Hurst.

Not many additions have been made during the year to the list of flowering plants previously recorded as observed on the commons near Croydon, the numbers at present standing as follows:—

Hayes and West Wickham Commons	333
Keston Common	273
Shirley Hills	174
Croham Hurst	253
Mitcham Common	461
Riddlesdown	167
Worms Heath	50
Farthing Down	62

In this connection it may be mentioned that during the past year the Corporation of Croydon have acquired for the use of the public an additional area of 30⅔ acres at Shirley Hills, adjoining Oaks Road. On this additional area grow a number of interesting plants, as *Cerastium quaternellum* and *pumilum*, *Hypericum elodes*, *Trifolium subterraneum*, *Potentilla argentea*, and *Drosera rotundifolia*, which may now be reckoned among the flora of Shirley Hills.

Apart from the systematic record of the flora of the commons, and from the species already mentioned as having been observed during the Society's excursions, the following less frequent species of plants—in this neighbourhood at least—may be put on record as having been observed during 1903, some of them no doubt introductions:—

Thlaspi arvense.—Burgh Heath.
Lepidium Draba.—Gasworks, Waddon.
L. ruderale.—Brickyard, Elmers End.
Saponaria Vaccaria.—Gravel-pit near Hayes station.
Silaus flavescens.—Godstone.
Pimpinella major.—Burgh Heath.
Erigeron acre.—Park Hill.
E. canadense.—Gravel-pit near station, Hayes.
Anthemis tinctoria.—Gravel-pit near station, Hayes.
Filago minima.—Gravel-pit near station, Hayes.
Pulicaria dysenterica.—Mitcham.
Lactuca muralis.—Chaldon.
Jasione montana.—Gravel-pit near station, Hayes.
Atropa Belladonna.—Gravelly Hill near Caterham.

Verbascum Lychnitis.—Selsdon and West Wickham.
Salvia pratensis.—Haling chalk-pit. ? casual.
Spiranthes autumnalis.—Keston.
Scirpus sylvaticus.—Godstone.
Ruscus aculeatus.—Lane between Keston and West Wickham.
Scolopendrium vulgare.—West Wickham.
Lastrea dilatata.—Addington.

And the freshwater algæ :—
Cladophora glomerata.—River Wandle, Beddington.
Batrachospermum moniliforme.—Wallington.

DATES OF FLOWERING OF EARLY SPRING FLOWERS IN GARDEN AT OAKHYRST, PARK HILL RISE, CROYDON.

	Average dates in ten years, 1893–1902.	Date in 1903.	Before Average.
Eranthis hyemalis (winter aconite)	Jan. 17	Jan. 6	11
Galanthus nivalis (snowdrop)	,, 25	,, 25	—
Erica carnea (Mediterranean heath)	,, 26	,, 25	1
Crocus aureus (yellow crocus)	Feb. 11	,, 29	13
Scilla bifolia (early blue squill)......	,, 15	Feb. 8	7
Crocus vernus (purple crocus).........	,, 18	,, 8	10
Dondia Epipactis	,, 19	Jan. 25	25
Leucojum vernum (spring snowflake)	,, 20	Feb. 8	12
Crocus Imperati	,, 22	,, 14	8
Helleborus Caucasicus (purple hellebore or lenten rose)	,, 22	Jan. 26	27
Crocus stellaris (cloth-of-gold crocus)	,, 23	Feb. 15	8
Anemone hepatica (hepatica)	,, 23	,, 13	10
Narcissus minimus (least daffodil)...	,, 25	,, 21	4
Saxifraga apiculata (primrose saxifrage)	,, 26	,, 9	17
Iris reticulata (early purple iris) ...	,, 27	,, 18	9
Bulbocodium vernum	Mar. 1	,, 9	20
Scilla sibirica (Siberian blue squill)	,, 2	Mar. 3	–1
Chionodoxa Luciliæ (glory of the snow)	,, 2	Feb. 23	7
Saxifraga oppositifolia (purple saxifrage)	,, 6	,, 23	11
Vinca minor (lesser periwinkle)......	,, 7	Mar. 2	5
Daphne Mezereum (spurge olive red)	,, 9	Feb. 21	16
Amygdalus communis (almond tree)	,, 13	,, 25	16
Forsythia viridissima	,, 15	,, 21	22
Arabis albida (white rock-cress) ...	,, 20	Mar. 8	12
Ribes sanguineum (red-flowered currant)	,, 23	,, 4	19
Erythronium dens-canis (dog-tooth violet)	,, 27	,, 19	8
Iris pumila (dwarf iris)	April 10	April 8	2

WILD FLOWERS SEEN IN CHRISTMAS WEEK (at Caterham).—Dandelion (*Taraxacum dens-leonis*), daisy (*Bellis perennis*), gorse (*Ulex europæus*), lesser gorse (*U. nanus*), heartsease (*Viola tricolor*), groundsel (*Senecio vulgaris*), ragwort (*S. Jacobæa*).—J. E. CLARK.

WILD FLOWERS ON CHRISTMAS DAY (at Croydon). H. T. M.—Primroses (very abundant), *Lamium album*, *Pyrethrum inodorum*, *Ranunculus repens*, *Fragaria vesca*, *Mercurialis perennis*, *Leontodon Taraxacum*, *Senecio Jacobæa*, *Veronica agrestis*.

FLOWERS IN BLOOM ON CHRISTMAS DAY (at 31, Park Hill Rise). H. T. M.:—Primrose, polyanthus (various), pansy, snapdragon, *Aubrietia deltoides*, wallflower, *Lithospermum prostratum*, *Iberis balearica*, *Alyssum saxatile* (yellow), rose (W. A. Richardson, very good condition), *Vinca minor*, *Helleborus niger* var. *altæfolius*, holy thorn (*Cratægus oxyacantha* var. *Arimatheæ*), cob-nut (female blossom).

Dr. Parsons adds:—*Potentilla alba*, *Calendula officinalis*, *Viburnum tinus*, *Jasminium nudiflorum*, *Escallonia macrantha*, *Petasites fragrans*.

J. E. C.:—Violets, carnation (annual), *P. Auricula*, and *Ceanothus*.

GEOLOGICAL COMMITTEE.

The Committee have pleasure in reporting that eight committee meetings, seven sectional meetings, and six excursions have been held during the year, in addition to the Society's geological excursions, April 25th and May 9th, taken in conjunction with the Geologists' Association.

The average attendance at the Committee meetings has been five, and at the sectional meetings ten, against five and twelve respectively the previous year.

No photographs of Geological Sections have been added to the Society's album since the last annual report, but the Committee hope that during the ensuing year members will interest themselves in obtaining photographs of all possible sections.

Very few records of sections have been made this year, but this is partly accounted for by hardly any new sewers or railway cuttings having been made in the neighbourhood of Croydon; this should, however, not have affected photographic records having been obtained from other parts of Surrey.

The excursions during the year were as follows:—

January 10th.—To the Croydon Electricity Works, under the guidance of Mr. Faunthorpe, for the purpose of seeing an exposure of Woolwich and Reading beds in the new reservoir. The pit being full of water, the section was not visible, but the spoil-bank showed fragments of a shell-bed containing Cyrena, underlain by a yellow sand. The party were informed that the section was 6 to 8 ft. made soil, 7 to 9 ft. alluvium, 1 ft. 6 in. shell-bed, 4 to 5 ft. yellow sand.

April 18th.—Under the guidance of Messrs. Whitaker and Robarts, an excursion, to which members of the Geologists' Association were invited, was made to the New Cross cutting of the London, Brighton, and South Coast Railway, by permission of the company's engineer, Mr. Charles L. Morgan. About thirty members of the two societies were present, and were shown the junction of the basement beds of the London clay with a thin bed of Oldhaven pebbles resting on clayey Woolwich and Reading beds, the upper part of which contained Paludina rock. Specimens of *Unio*, *Cyrena*, *Ostrea*, *Cerithium*, *Hydrobia*, &c., were found. *Pitharella rickmani* was also discovered in this cutting for the first time.

April 25th.—The members of the Society, on Saturday afternoon, joined the Geologists' Association, under the guidance of Mr. W. Whitaker, F.R.S., and Mr. A. E. Salter, F.G.S., in an excursion to Loam-pit Hill, Lewisham. The day being fine, a large party of the two societies assembled. The first pit visited showed the junction of the Woolwich and Reading beds with the Thanet sand, the surface of the latter being considerably eroded, whilst cutting into both was a terrace of Thames gravel, which probably contained flint implements, but there was not sufficient time to search for them. The next pit seen contained the upper beds of the Woolwich and Reading series, including a bed of oyster-shells nearly two feet thick, overlying a bed of Cyrena, in which latter one of the party was so fortunate as to find some turtle-bones. Mr. Whitaker having explained the section, a third pit was visited, where the lower beds of the London clay containing Ditrupa were seen resting upon the Woolwich beds. Several other pits were visited, showing sections of London clay and Woolwich beds, which the Croydon members were able to compare with the same deposits in their own neighbourhood. The party then went to the Horniman Museum, where they partook of tea, and subsequently examined the exhibits.

May 9th.—The members of the Society joined the Geologists' Association in a visit to Crayford and Erith, for the purpose of inspecting the gravels and brickearths of that district. Fortunately the weather was favourable until late in the afternoon, and the party escaped the severe hailstorm which fell in other places. Under the guidance of Messrs. W. Whitaker, F.R.S., and A. E. Salter, F.G.S., the party had a good opportunity of examining the gravel known as the Dartford Heath gravel; also some of the brickearths in pits, which have become historic from the mammalian remains discovered in them, as well as flint implements, which latter have been fully described by Mr. F. J. Spurrell. After partaking of tea at Erith, the party separated, having spent a very interesting afternoon.

June 6th.—An excursion was made to Mr. Brown's clay-pit, Earlswood Common, to see a section in the Atherfield clay, from which the following specimens have been obtained:—Cephalopoda: *Nautilus*, *Belemnites.* Gasteropoda: *Aporrhais Robinaldiana*, *Turritella.* Lamellibranchiata: *Venus vectensis*, *Cyprina angulata*, *Cytherea parva*, *Astarte striato-costata*, *Panopæa plicata*, *Solen*, *Trigonia Etheridgii*, *Mytilus lanceolatus*, *Exogyra sinuata*, *Perna Mullettii*, *Pecten interstriatus*, ? another species, *Anomia lævigata*, *Gervillia anceps.* Brachiopoda: *Terebratula sella*, *Rhynconella*, ? *latissima.* Annelida: *Serpula.* Cœlenterata: *Astrocœnia decaphylla.*

June 23rd.—A visit was paid to the Croydon Gasworks, under the guidance of Mr. H. D. Gower, when Woolwich and Reading fossils were found on the spoil-heaps, viz. *Ostrea tenera* and *bellovacina*, *Cyrena cordata* and *cuneiformis*, *Cerithium funatum*, and *Melania inquinata.*

October 21st.—Under the guidance of Mr. Hogg, twelve members of the Section visited Mr. Iles's gravel-pit at Mitcham, in which remains of tusks of *Elephas* have been found. The gravel was found to be much eroded in some places, and the axes of the stones composing the gravel were found to be frequently almost vertical. Some worked flints (eolithic) were found by two or three members of the party, and fragments of mammoth tusk were seen.

December 12th.—Mr. Whitaker conducted an excursion to see the flow of the Bourne. The party, numbering twenty-one, walked from Upper Warlingham to Purley. They found the Bourne commenced in the field opposite the 'Rose and Crown' Inn, just above the Gas Company's new gasometer. At the back of the 'Rose and Crown' it was flowing freely, and the party was informed by Mr. Walker, engineer to the East Surrey Waterworks, that the flow had risen to 500,000 gallons per diem. Mr. Walker subsequently showed the party over the Kenley Waterworks, and then took them to the engine-house at Foxley Hatch, where boulders of pudding-stone, taken from the gravel, were pointed out.

The Committee desire to record their thanks to Mr. Charles L. Morgan, engineer to the London, Brighton and South Coast Railway; Mr. Brown, and Mr. Iles, for permission to visit respectively the New Cross cutting, the Atherfield clay-pit, Earlswood Common, and the gravel-pit at Mitcham; and to Mr. Walker, engineer of the East Surrey Waterworks, for showing the members of the Section over the works under his charge at Kenley and Purley.—N. F. Robarts, *Hon. Sec.*

Microscopical Committee.

The Microscopical Section, though it has not yet done great things, has shown some sign of life, and will, in time, it is hoped, quite recover from its long trance, and fully justify its existence.

In March, a joint meeting of the Botanical and Microscopical Sections was held, subject "Microscopic Plants and Fresh-water Algæ," which was well attended, and a great success in every way. Consequently, the next month a joint meeting of the Geological and Microscopical Sections was next held, subject "Geological Microscopy"; this was also a great success. Encouraged by these successes, it was decided, after the long summer holidays, to have a meeting of the Microscopical Section without extraneous aid. This meeting was also most encouraging as regards the members present, and the interest which the paper read by Mr. Lester Reed, one of the members of the Committee, aroused. Its subject was "The Microscope and Food Adulteration." It was fully illustrated by Mr. Reed's own sketches and microscopic slides. The paper has been printed in full, as it was thought a summary would not do it justice.

Museum Committee.

The Museum Committee have pleasure in reporting that the Town Hall Loan Museum still continues to attract interest from the visitors to the Free Library, and it is much to be regretted that more objects cannot be exposed to view, as numbers of persons do not open the drawers to see the contents; and many of those who do are children, who shake them, and in so doing confuse the specimens and disarrange the labels. It is a question whether it would not be better to keep the drawers locked, if arrangements could be made for the key to be obtained if really required.

Upwards of one hundred specimens have been deposited during the year by various lenders, and upwards of fifty have been withdrawn.

Entomological and other zoological loans would be much appreciated, geological specimens so far being much the most numerous.

The Committee consider it would be to the advantage of the Society if arrangements could be made for improving the Museum Collection in the Old School of Art Room. A few donations have been made to this during the year, which the Committee have accepted in the hope that some day arrangements will be made for properly exposing them to view.

The following members of the Society have made loans or gifts of objects during the year:—Messrs. W. B. Bannerman, F.S.A., F.G.S.; F. Churchill; J. E. Clark, B.A., B.Sc., F.G.S.; C. L. Faunthorpe; H. D. Gower; W. G. Hinde; W. Murton Holmes; E. A. Martin, F.G.S,; H. Franklin Parsons, M.D., F.G.S.; G. Phare; N. F. Robarts, F.G.S.; and G. W. Moore and F. E. Walsingham, Junr.; whilst gifts or loans have also been received from Messrs. H. H. Crump, H. Carter, G. F. Brown, E. Hansor, James Healey, Miss M. S. Johnston. and Mr. J. Kidd, who are not members, to all of whom the Committee tender their thanks.

Photographic Committee.

I much regret that I cannot present a more satisfactory report for the past year, and that a considerable falling off in the attendance of members of this Section at the special meetings has to be recorded.

There were in all thirty-two meetings, inclusive of excursions, arranged, of which the following are the chief:—"A Trip to Norway," by C. L. Faunthorpe; "Practical Demonstrations on Elementary Photomicography," by Mr. J. Baldock, F.C.S.; "Night Photography" (illustrated), by Mr. Ellis Kelsen; "Stereoscopic Photography," by Mr. A. Dunning (R.P.S. affiliation); "Birds' Nests and Methods of Photographing them" (illustrated), by Mr. J. C. Crowley; Exhibition of lantern-slides by Messrs. J. and R. Beck; Demonstrations on the uses of Pinakol P. and Pinakol Salt N., by Mr. J. H. Baldock, F.C.S.; "Photographic Lens Making," Messrs. Taylor and Hobson; "Natural History Photography" (R.P.S. affiliation), by Mr. G. T. Harris. The excursions were to Chislehurst and Bickley, on May 23rd; Beddington Church and Orphanage, May 30th; Ranmore Park, Boxhill and Denbies Park on July 18th.

Mr. J. Epps's (Junr.) Competition. A third competition was held, and the following selected by the judges of the Royal Photographic Society—acting for the affiliated societies—for reproduction:—"Ely Cathedral; East Window and Lantern," by Mr. J. H. Baldock, F.C.S.; "Shirley Oaks," by Dr. J. M. Hobson, B. Sc.; "Bruges; Entrance to Beguinage," by Mr. N. F. Robarts, F.G.S. Owing to the small number of pictures originally sent in for competition the time was extended, and a picture by Mr. J. Epps, Junr., "Norman Door, Patricksbourne," was selected for reproduction with the others. The four photographs are reproduced.

Owing to the paucity of attendance, it has been suggested that instead of four meetings each month, one or two will be quite sufficient; but it is much to be regretted that this Section, which used to be one of the strongest, should have fallen off so much. Possibly, however. the unavoidable loss of a very active Secretary, owing to

Mr. Faunthorpe leaving Croydon during the year, has become to a great extent the cause of failure.

The thanks of the Section, and of the Society generally, are due to Mr. Faunthorpe, for all that he did during the time he was a member, and especially whilst acting as Hon. Secretary to the Photographic Section.—J. W. Baldock, *Hon. Sec. pro tem.* (On the retirement of Mr. Faunthorpe, Mr. Baldock very kindly undertook to act as Hon. Secretary, *pro tem.*, and has continued as far as possible to carry on the work of the Section.—G. W. Moore, *Hon. Gen. Secretary.*)

Zoological Committee.

During the past year seven meetings have been held of the above Section, but the series of objects exhibited have been very limited, owing to the small attendance of members.

The principal specimens shown have been land and freshwater mollusca from Surrey localities and elsewhere.

On Jan. 27th Mr. Gower brought a series of *Acidalia remutaria* showing variation of band marking; all the moths were taken at Waddon. The Honorary Secretary showed specimens of foreign land-shells, including a large exotic *Bulimus.*—Mr. Nash, two skulls illustrating the smallest known in animal and bird life.

On Feb. 14th an excursion was made to Beddington for the purpose of collecting freshwater shells, at which seven members attended. A number of specimens were collected from the River Wandle, the best species secured being *Valvata cristata.* At the meeting of Feb. 24th the specimens obtained were exhibited by Messrs. Gower and Nash. Mr. Murton Holmes also showed a number of small pearls from freshwater mollusca.

At the meetings of March 24th and April 28th the Honorary Secretary brought land-shells from Felixstowe, and a series of gulls' eggs showing marked variation; only one member attended.

On Sept. 22nd there were shown a nice series of freshwater shells from Surrey localities by Messrs. Nash and Gower, who also brought an abnormal fungus found growing on deal at the gasworks, Waddon. —Mr. Tarver showed a series of *Pupa umbilicata,* and a scarce shell, *Helix revelata,* from Cornwall, collected during his holidays.

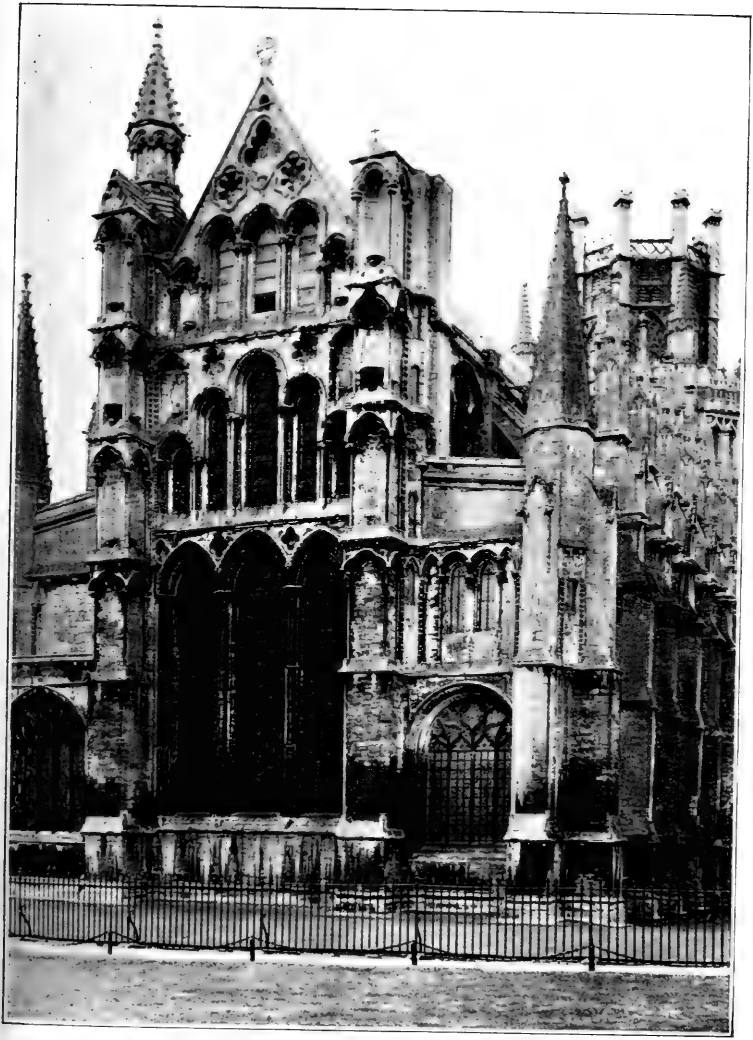
At the meeting of Oct. 27th Mr. Gower explained his method of utilising waste lantern-slide slips for making small glass cases, suitable for holding small natural history objects.

Dr. Parsons, at the November meeting, exhibited live specimens of *Testacella haliotidea*, a slug, somewhat local, found in his garden at Park Hill. In the course of his remarks he mentioned that it was subterranean in habit, was carnivorous, and fed only at night, principally on earthworms, which it kills by severing the worm in half. The rudimentary external shell was very prominent at the extremity of the tail.

Mr. Murton Holmes brought a specimen of *Vermetus* sp., found growing on cable off the coast of Brazil; also *Siliquaria Australis* and *Scalaria pretiosa*, shells from the East Indian Seas.

Mr. Nash, specimens of *Helix arbustorum*, *H. nemoralis*, and *H. hortensis*, remarkable for their fine size.

Owing to the bad season, nothing further has been done towards adding to the case of local insects in the club-room. During one of



J. H. Baldock.

ELY CATHEDRAL.

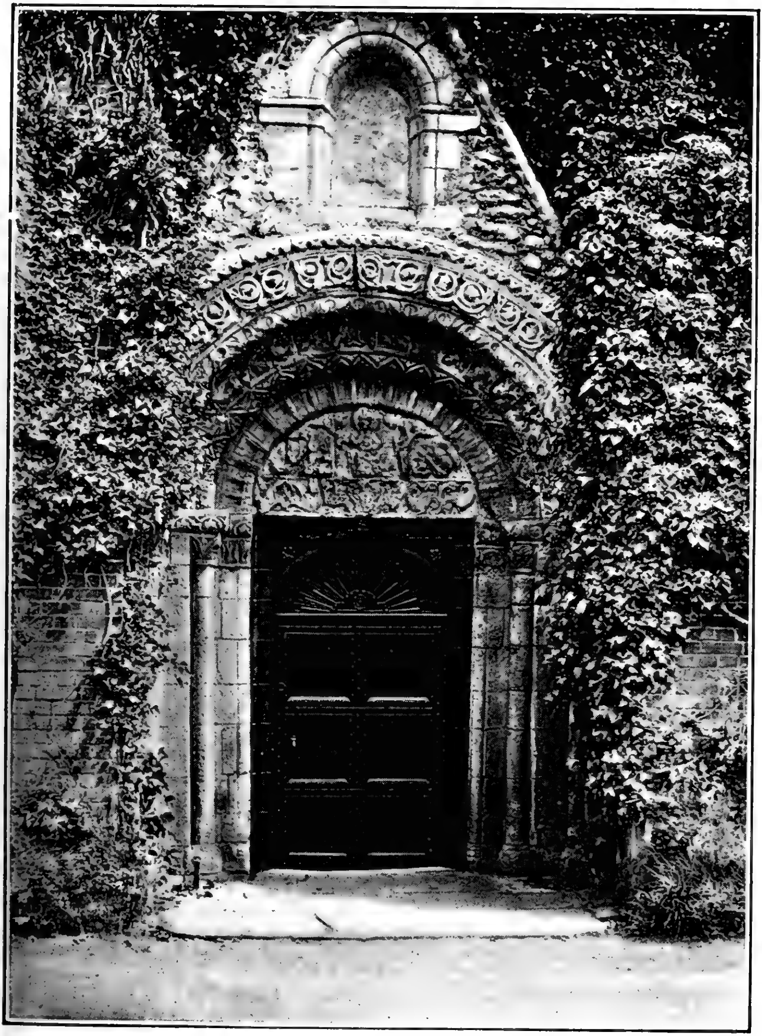
EAST WINDOW AND LANTERN.

Dr. Hobson.

SHIRLEY OAKS.

N F. Robarts.

BRUGES—ENTRANCE TO BÉGUINAGE.



James Epps, Junr.

NORMAN DOOR, PATRIXBOURNE.

the meetings, suggestions were made for starting an album of local natural history subjects, and it is hoped members will send in photographs of anything interesting.—Alfred Tarver, *Hon. Sec.*

Members Elected, 1903.

February 17th.—Miss M. G. Moore.

March 17th.—Miss D. L. Meihé, Mr. A. P. Diamond, Mr. John J. Parker.

April 21st.—Mr. Alexander C. Shore. Junior—Mr. H. C. Reynard.

May 19th.—Mr. Francis E. Wilkinson, Mr. James Williams.

September 15th.—Mr. E. W. Neales.

October 20th.—Miss S. White, Mr. F. C. Lloyd.

December 15th.—Miss Alice M. Bonus, Dr. T. Rutherford Allen, Mr. D. E. Goddard. Junior—Mr. W. G. Hinde.

Donations to the Library, 1903.

From Individuals.—*Althæa hirsuta* in Surrey by Mr. Salmon. Nature Notes, Mr. W. Whitaker. English Climatology, 1881–1900, Mr. Campbell-Bayard. Pulse and Rhythm, Mary Hallock-Greenewalt.

From Societies.—Proceedings of the Academy of Natural Sciences, Philadelphia; Annual Report of the Society for the Protection of Birds; Transactions of the West Kent Microscopical, Natural History, and Photographic Society, 1902; Report of the Underground Water Preservation Association; Journal of the Northants Natural History Society and Field Club, 1902; Journal of the Royal Microscopical Society; Journal of the Quekett Microscopical Club; Proceedings of the South London Entomological Society, 1902; Transactions of the East Kent Scientific and Natural History Society; Transactions of the Eastbourne Natural History Society; Report of the Meteorological Council, Additions to Library, &c.; Report of the Fernley Observatory, Southport; Report of the British Association Belfast Meeting, 1902; Journal of the Manchester Geographical Society; Transactions of the Manchester Microscopical Society; Transactions of the Norfolk and Norwich Naturalists' Society; History of the Berwickshire Naturalist's Club; The Photographic Journal; Bulletin de la Sociéte Royale Malacologique Belgium; Bulletin of the Lloyd Library, Cincinnati; Annual Report of the Missouri Botanical Garden; Report of the Home Counties Nature Study Exhibition; The Rochester Naturalist; Transactions of the Brighton and Hove Natural History and Philosophical Society; Reports of the Peterborough Natural History and Scientific Society; Annual Report of the Yorkshire Philosophical Society, 1902.

From Publishers.—The British Journal of Photography; The Barnet Book of Photography; The Bromide Monthly; The Amateur Photographer; The Magic Lantern Journal.

Croydon Natural History and Scientific Society.—Receipts and Expenditure for the Year ending 31st December, 1903.

Receipts.

1903.	£	s.	d.	£	s.	d.
December 31.						
To Subscriptions (1901) received 1903	0	10	0			
,, (1902) ,, ,,	8	2	6			
,, (1903) ,, ,,	99	5	0			
				107	17	6
Donations to Meteorological Section—						
F. Campbell-Bayard, Esq. ...	5	5	0			
Baldwin Latham, Esq. ...	5	5	0			
J. Edmund Clark, Esq. ...	0	10	0			
G. Bower, Esq.	0	10	0			
C. H. Cooper, Esq.	0	5	0			
J. H. Crocker, Esq.	0	5	0			
Lt.-Col. C. N. Kidd	0	10	0			
W. W. Wagstaffe, Esq. ...	0	2	6			
Croydon Corporation... ...	0	10	0			
Croydon Rural District Council	0	10	0			
London County Council ...	0	5	0			
Southwark & Vauxhall Water Co.	0	10	0			
Sutton District Water Co. ...	0	10	0			
Underground Water Preservation Association	0	10	0			
Ditto for extra Papers ...	2	5	0			
Wimbledon Urban District Council	0	10	0			
				18	2	6
Sale of Transactions and Papers				0	8	6
Rent of Lockers in Dark Room				0	7	6
Amount received from A. Lloyd for Life Membership... ...	10	0	0			
Less paid for £10 19*s*. 6*d*. $2\frac{3}{4}$ per cent. Consols @ $91\frac{1}{8}$	10	0	0			
Half-year's dividend on same				0	2	8
Balance due Treasurer				2	13	5
				£129	12	1

Payments.

1903.	£	s.	d.	£	s.	d.
January 1.						
By Balance due Treasurer				1	5	8
Rent of Club Room				10	0	0
Hire of Rooms for Meetings				4	0	0
Cost of Printing Transactions ...	30	17	6			
,, Illustrations to same ...	3	13	0—	34	10	6
Fire Insurance				1	13	9
Meteorol. Committ.—Printing Rainfall Returns, Dec. 1902, to Nov. 1903				26	2	0
Photographic Committee—						
Rent of Dark Room	10	0	0			
Portfolio, Postages, &c.	1	4	8			
Gas for Lantern, cost of Lectures, &c.	2	17	1			
Subscrip. to Royal Photogr. Society	1	1	0—	15	2	9
Botanical Committee, Postages, &c....				0	4	1
Geological ,, ,, ...				1	6	8
Zoological ,, ,, ...				0	2	4
Anthropological ,, ,, ...				0	7	10
Printing Monthly Circulars and Postages on same and on Transactions, &c.				14	0	4
Treas. & Sec. account for Stationery, Post., &c.				5	12	1
Professor Anderson's Lecture—						
Expenses incurred over same ...	6	1	1			
Less Sale of Tickets	4	10	0—	1	11	1
Printing Catalogue of Books deposited at the Town Hall				5	9	6
Paid for Cleaning Glass Doors of Dr. Carpenter's Collection in Old School of Art Room, and Club Book Cases				0	10	0
Cost of Investing amount received from Life Membership Commutation				0	2	6
Subs. to—S.E. Union of Scientific Socs.	0	10	0			
,, Com. & Footpaths Preser. Soc.	0	5	0			
,, Photographic Survey of Surrey	0	5	0			
,, Soc. for the Protection of Birds	0	5	0—	1	5	0
Assistant Secretary				5	0	0
Gratuities				1	6	0
				£129	12	1

SPECIAL FUND ACCOUNT.

£186 9s. 0d. CONSOLS.

1903.	£	s.	d.	1903.	£	s.	d.
January 1.				January 1.			
To Balance	27	17	4	By Paid County Fire Office on Museum Case ...	0	2	6
Dividend, January	1	4	0	,, Repairing Lens of Lantern	0	9	10
,, April	1	4	0	,, Curator's Expenses over Museum Case ...	1	7	11
,, July	1	3	3	,, Balance	30	11	7
,, October	1	3	3				
	£32	11	10		£32	11	10

BALANCE SHEET.

1904.	£	s.	d.	1904.	£	s.	d.	£	s.	d.
January 1.				January 1.						
To Balance, Special Account	30	11	7	By Balance due Treasurer				2	13	5
Subscriptions for 1904, paid in advance ...	6	2	6	Cash at Bank	30	17	6			
				,, with Treasurer	3	3	2			
								34	0	8
	£36	14	1					£36	14	1

We, the undersigned, having examined the books of the above Society, also accounts and vouchers relating thereto, hereby certify the above are properly drawn up so as to exhibit the true and correct view of the Society's affairs.

F. J. TOWNEND, *Hon. Treasurer.*
4th January, 1904.

GEORGE PHARE, } *Hon. Auditors.*
W. L. MOORE, }

LIST OF MEMBERS.

(*Compiled to December* 31*st*, 1903.)

Date of Election.

1903. Adams, Dr. T. R., 171 St. James-road.
1897. Aldrich, Miss F. K., 14 Tavistock-road.
1899. Alexander, E., Grasmere, Birdhurst Rise.
1897. Allan, A. P., M.B., Crogdene, Croham-road.
1884. Allen, A. H., 10 Morland-road.
1899. Allen, F., 21 Duppas Hill Terrace.
1899. Allen, Mrs. F., 21 Duppas Hill Terrace.

1879. Backwell, R. J., 16 Penge-road, South Norwood.
1873. Bailey, E., 10 Lansdowne-road.
1898. Bailey, H., 10 Lansdowne-road.
1890. Baker, W. R., 9 Belmont Villas, Wallington.
1874. Baldock, J. H., F.C.S,, Overdale, St. Leonard's-road.
1898. Bannerman, W. Bruce, F.S.A., &c., The Lindens, Sydenham-road.
1885. Barber, J. H., 92 Oakfield-road.
1898. Batten, J., The High Field, Bickley, Kent.
1871. Beeby, W. H., F.R. Met. Soc., Hildasay, Portsmouth-road, Thames Ditton.
1895. Berry, B. H., Rutherford, Pampisford-road.
Origl. Blake, W. J., Elmfield, Park-lane.
1903. Bonus, Miss A. M., Sarum, Radcliffe-road.
1902. Brant, R. W., 8 Moreton-road.
1884. Brebner, G. R., M.D., 232 London-road.
1880. Brewer, J. G. B., 12 Havelock-road.

1886. Campbell-Bayard, F., LL.M., F.R.Met.Soc., Cotswold, Wallington.
1899. Campbell-Bayard, S., Cotswold, Wallington.
1877. Carpenter, A. B., B.A., M.R.C.S., F.R.M.S., Bedford Park.
1898. Carr-Dyer, Mrs., Hazelea, Kenley.
1892. Carrington, L., Penmare, Tavistock-road.
1888. Cash, Wm., Coombe How, Stanhope-road.
1891. Chatterton, G., M.I.C.E., 6 The Sanctury, Westminster.
1891. Clark, Hy., 12 High-street.
1897. Clark, J. E., B.A., B.Sc., Lile Garth, Ashburton-road.
1882. Collyer, H. C., Breakhurst, Croydon-road, Beddington.
1900. Corcoran, B., Fairlight, Oliver Grove, South Norwood.
1893. Corry, J., J.P., Rosenheim, Park Hill-road.
1902. Corry, W. H., Rosenheim, Park Hill-road.
1895. Corser, Rev. R. K., Eastbrook, Park Hill-road.

1879. Cowdell, H. S., Cotleigh, West Wickham.
1899. Crowley, Mrs. A. C., 16 Chatsworth-road.
1901. Crowley, J. C., 16 Chatsworth-road.
1890. Culverwell, J. W., 119 Lower Addiscombe-road.
1874. Curling, G., Elgin House, Addiscombe-road.
Origl. Cushing, Thos., F.R.A.S., 2 Southside, Chepstow-road.

1901. Day, W. J., Glenrose, Avondale-road.
1903. Diamond, A. W., Bracklyn, Maldon-road, Wallington.
1875. Dickenson, Wm., M.A., F.G.S., Warham-road.
1897. Dighton, J., Fairlight, Altyre-road.
1884. Drage, J. H., Orlands, Willingdon-road, Eastbourne.
1891. Drew, H. W., F.R.C.S., Eastgate, Addiscombe-road.
1898. Druce, F., 65 Cadogan-square, S.W.
1893. Dukes, T. A., M.B., B.Sc., 16 Wellesley-road.
1891. Durham, R., Nuthurst, Park Hill Rise.

1879. Eaton, H. S., M.A., F.R.Met.Soc., National Club, 1 Whitehall Gardens.
1890. Edridge, Sir F. T., J.P., Bramley Croft, Bramley Hill.
1897. Epps, Miss A. M., Norfolk House, Beulah Hill, South Norwood.
1881. Epps, Jas., Jun., Norfolk House, Beulah Hill, South Norwood.
1901. Epps, Master J., Norfolk House, Beulah Hill, South Norwood.
1901. Epps, Miss B. M., Norfolk House, Beulah Hill, South Norwood.

1902. Fella, E. A., 48 Parson's Mead.
1883. Fenn, W. G., Heath Lodge, Thornton Heath.
1901. Filon, L. N. G., M.A., D.Sc., F.R.A.S., Godwin House, St. Augustine's Avenue.
1894. Fitzgerald A., Oaklands, Sudbury-road, Thornton Heath.
1899. Fox, C., The Chestnuts, Warlingham-on-the-Hill.
1901. Freshfield, E., LL.D., The Mint, Chipstead, Surrey.

1903. Goddard, D. E., Eaglehurst, Wallington.
1887. Goodman, C. H., Bryn Cottage, Whyteleafe.
1885. Gower, H. G., 55 Benson-road.
1902. Grant, R. C., Hale Edge, South Nutfield.
1885. Grundy, R. F., 8 Havelock-road.
1901. Gwatkin, Miss E. N., Croft Cottage, Liphook, Hants.

1902. Hall, Miss A., Ribblesdale, Foxley-lane, Purley.
1902. Hall, Mrs. H. D., Colleendene, Addiscombe-grove.
1899. Harvey, J. E., 11 Carew-road, Thornton Heath.
1888. Helps, J. W., A.M.I.C.E., F.C.S., 3 Tavistock-road.
1902. Hefferman, M., 82 Brigstock-road.
1887. Hinde, G. J., D.Ph., F.G.S., 24 Avondale-road.
1903. Hinde, Master W. G., 24 Avondale-road.
1881. Hobson, Dr. J. M., M.D., B.Sc., 1 Morland-road.
1900. Hobson, Miss M., 1 Morland-road.
1900. Hobson, Master F., 1 Morland-road.
1901. Hobson, Miss N. K., 1 Morland-road.
1902. Hobson, Master R. M., 1 Morland-road.
1896. Hogg, A. J., 43 Whitworth-road, South Norwood.

1886. Holmes, W. M., Glenside, St. Peter's-road.
1893. Hoole, A. P., The Willows, Sutton, Surrey.
1881. Hovenden, R. G., Heathcote, Park Hill-road.
1891. Hovenden, A., Oaklands, Haling Park-road.
1885. Hughes, Morgan, M.R.C.S., L.D.S., East Bridge, Addiscombe-road.
1896. Hunt, G. H., Leecroft, St. Peter's-road.

1890. I'Anson, W. H., 39 Dingwall-road.

1874. Jarrett, C., 2 St. John's-grove.
1899. Jast, L. S., 203 Brighton-road.
1896. Johnson, E. W., 50 Birdhurst-rise.

1888. Klaassen, H. M., F.G.S., Aberfeldy, Campden-road.
1897. Klaassen, Miss, Aberfeldy, Campden-road.

1877. Laing, R. A., Shirley Hurst, Radcliffe-road.
Origl. Latham, B., M.I.C.E., F.G.S., Duppas House, Old Town.
1892. Lincoln, J. G., Bank Chambers, High-street.
1896. Link, F., 43 Park Hill-road.
1901. Linton, Master F. J., 104 Park-lane.
1892. Lloyd, A. (Life Member), Coombe Wood, Coombe-road.
1891. Lloyd, F., Coombe House, Coombe-road.
1903. Lloyd, F. C., Southwood, Birdhurst-road.
Origl. Long, Hy., 132 High-street.
1874. Lovett, E., F.R.H.S., 41 Outram-road.

1902. Major, A. F., 30 The Waldrons.
1895. Malden, A., 26 Windmill-road.
1898. Male, H. C., M.D., 74 Birdhurst-road.
1886. Marshall, R., 31 The Waldrons.
1899. Martin, E. A., F.G.S., 23 Campbell-road.
1895. Martyn, J. W., 58 Westminster Mansions, Great Smith-street, Westminster, S.W.
1878. Mather, C. W., 47 Dingwall-road.
Origl. McKean, K., 1 Lewin-road, Streatham.
1886. McLachlan, R., F.R.S., F.L.S., 23 Clarendon-road, Lewisham.
1903. Meihe, Miss D. L., Limatburg, Ambleside Avenue, Streatham.
1879. Mennell, H. T., The Red House, Park Hill Rise.
1895. Moore, G. W., Bryndhyrst, Dornton-road.
1903. Moore, Miss M. G., Bryndhyrst, Dornton-road.
1902. Moore, W. L., Bryndhyrst, Dornton-road.
1896. Moore, H. K., Chipstead, Chepstow Rise.
1898. Morris, W., C.E., The Kent Waterworks, Deptford.
1903. Morris, W. H., 1 Walpole-road.

1902. Nash, P. B., 135 Melfort-road, Thornton Heath.
1903. Neales, E. W., Boswell Court, South End, Croydon.
1901. Neligan, Mrs. Linton, 104 Park-lane.
1895. Newby, G. E., F.R.C.S., 12 Addiscombe-road.

1895. Olive, C. D., M.A., Rokeby, The Downs, Wimbledon.

1899. Page, Miss M., Woodlands, Coombe-road.
1892. Page, T. K. F., 9 Rosemount, Wallington.
1903. Parker, J. J., 11 Woodville-road, Thornton Heath.
1881. Parsons, H. F., M.D., F.G.S., Oakhyrst, Park Hill Rise.
1897. Parsons, Mrs. H. F., Oakhyrst, Park Hill Rise.
1900. Parsons, Miss E. G., Oakhyrst, Park Hill Rise.
1900. Parsons, Miss F. M., Oakhyrst, Park Hill Rise.
1893. Pascall, J., Ambleside, Addiscombe-road.
1891. Pelton, J. O., 26 Friends'-road.
1897. Petri, R., Hazeltryst, Havelock-road.
1870. Philpot, C. W., M.D., Uplands, Park Hill-road.
Origl. Price, G. N., 16 Warham-road.
1880. Pye-Smith, A., J.P., Willersley, 27 Park Hill Rise.

1885. Reed, L., F.I.C., F.C.S., Hyrst Hof, South Park Hill-road.
1903. Reynard, H. C., Holly Bank, West Ewell.
1902. Ridley, Dr. J. B., 32 Sydenham-road.
1895. Ritchie, Honble. C. T., M.P., 19a Wetherby Gardens, South Kensington.
1894. Robarts, N. F., F.G.S., 23 Oliver-grove, South Norwood.
1888. Roods, A., 67 Thornhill-road.
1877. Rymer, S. L., J.P., 14 Wellesley-road.

1892. Salmon, C. E., Clevelands, Wray Park, Reigate.
1888. Schmitz, J. H., J.P., 4 Lansdowne-road.
1903. Shore, A. C., 28 Wellesley-road.
1896. Shore, E. R., 28 Wellesley-road.
1896. Shore, H. H., 28 Wellesley-road.
1895. Slack, J. Watson, 27 Birdhurst-road.
1899. Smedley, E. A., 173 Albert-road.
1884. Smith, Dr. S. Parsons, Parkhyrst, Addiscombe-road.
1898. Stanley, J. H., Sundial College, Banstead-road, Purley.
Origl. Stanley, W. F., F.G.S., &c., Cumberlow, Lancaster-road, South Norwood.
1902. Stebbing, W. P. D., F.G.S., Frith Park, Epsom.
1896. Stokes, F., 125 Melfort-road, Thornton Heath.
1878. Straker, E., 5 Park-lane Mansions.
1874. Swaine, J. C., Quarry Hill, Stanhope-road.
1882. Syms, J. E., Stanton Villa, Stanton-road.

1897. Tarver, A., Polruan, Stuart-road, Thornton Heath.
1898. Tate, A., Downside, Leatherhead.
1880. Thompson, F., Lynton, Haling Park-road.
1892. Thorpe, C., Selborne, Chatsworth-road.
1899. Topley, E. E., Ingleside, St. Augustine's Avenue.
1901. Topley, Master C., Ingleside, St. Augustine's Avenue.
1898. Topley, W. W., 46 Friends'-road.
1902. Townend, Master C. H., Harefield, Dornton-road.
1902. Townend, F. H., Harefield, Dornton-road.
1896. Townend, F. J., 11 Park Hill Rise.

1900. Voss, W. A., F.C.S., Melrose, Whitworth-road, South Norwood.

1877. Walker, T., C.E., Hazelhyrst, Warrington-rd., Duppas Hill.
1876. Walton, A., The Homestead, Bedford Park.
1897. Ward, Miss C., 42 Temple-road.
1877. Warner, A., 2 Grosvenor Villas, Holmesdale-road, Selhurst.
1881. Waterall, N., Waddon Lodge, Waddon.
1898. Webster, R. T., Claremont, Radcliffe-road.
1895. Weightman, A. J., Endsleigh, Chepstow-road.
1897. Weightman, W. A., Endsleigh, Chepstow-road.
1877. Wenham, W. P., 275 London-road.
1896. Whitaker, W., F.R.S., F.G.S., Freda, Campden-road.
1899. Whitaker, Miss M. de F., Freda, Campden-road.
1903. White, Miss S., Tweedbank, Whitworth-road, South Norwood.
1900. Whitley, Miss K., 11 Chichester-road.
1887. Wild, A. S., 28 Canning-road.
1903. Williams, J., Ridgeway, Sanderstead Hill, South Croydon.
1903. Wilkinson, F. E., Westbury, St. Paul's-square, Thornton Heath.
1901. Willock, E. H., 113 London-road.
1902. Willson, Miss A. E., Limatburg, Ambleside-avenue, Streatham.
1889. Wise, H. R., Beachfield, Bramley Hill.
1895. Wissenden, A. C., 50 Canning-road.
1887. Wratten, F. C. L., Hellingley, Dingwall-avenue.

Honorary Members.

1885. Berney, F. L., Ravensbourne, Kamboo, Queensland.
1875. Cole, R. Beverley, San Francisco, California.
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1894. Sarjeant, W. Low, New Zealand.

TRANSACTIONS

OF

THE CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

1903—1904.

1.—Comets: their Appearance, Nature, and Origin.

By L. N. G. Filon, M.A., D.Sc.

(Being Notes of a Lecture delivered April 21st, 1903.)

When our ancestors looked up at the heavens, they were occasionally startled by the appearance of extraordinary objects, consisting of a bright head and nucleus, followed by a huge luminous streamer or "tail." It was this tail which impressed most the early observers. The Greeks compared them to streaming hairs; hence the name of "comets," or hairy stars, given to these objects.

These trails of fire, which stretched across the sky for months at a time, were considered, until comparatively recent times, as dreadful portents, which boded evil to nations and princes. Comets were seen at the time of Cæsar's death, and the Latin poet Vergil refers to them as "diri cometæ," terrible comets.

A comet was seen in 1066, the year of the battle of Hastings, but, this time, the Norman chroniclers enlisted the comet as their ally, and it is pictured on the Bayeux tapestry as an omen favourable to William the Conqueror.

The tale even runs that a Pope, Calixtus III., went so far as to excommunicate the comet of 1455.

Even in the nineteenth century, something of superstitious awe still clung to comets. Thus the celebrated comet of 1811 was supposed to be connected with the downfall of Napoleon; it passed perihelion on the day when the Russians burnt Moscow.

It is also known as the comet of the "Comet Year." The summer of that year was exceedingly hot, and the wine of the "Comet Year" long enjoyed a great reputation.

The origin and nature of comets were (and to some extent still are) the cause of much speculation.

The reason why comets were regarded with so much fear was the irregularity of their appearance and disappearance. Like the sun, moon, and planets, they moved among the stars; but, unlike them, they did not return at periodic intervals, or follow regular courses.

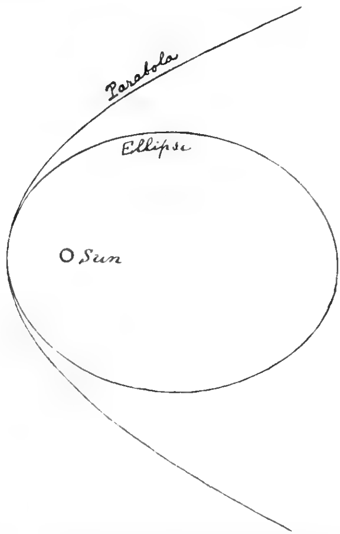


FIG. 1.—ELLIPTIC AND PARABOLIC ORBITS TOUCHING AT PERIHELION.

At first sight, therefore, it appeared that they might have no connection with the celestial bodies, and the old Greek philosophers, among them Aristotle, believed that they were earthly phenomena, meteors of the upper air, much as we now look upon the Aurora Borealis.

Tycho Brahe, who lived at Prague, in Hungary, in the sixteenth century, was the first to show, by actual observation, that they were more distant than the moon. This he did by comparing the apparent positions of the comet as seen from stations four hundred miles apart. Had the comet been at all near the Earth's surface, the change in its bearings would have been very large. It was found to be negligible.

Since the distance of comets is so great, it follows that their dimensions, in particular the length of their tail must be enormous.

Tycho Brahe supposed that comets moved in circles, the circle being the "perfect curve," and the only one worthy of a heavenly body, according to the notions of his day.

Kepler, one of Tycho Brahe's pupils, supposed that comets moved in straight lines; and he looked upon them more or less as living creatures, travelling through space with will and purpose, "like fishes in the sea."

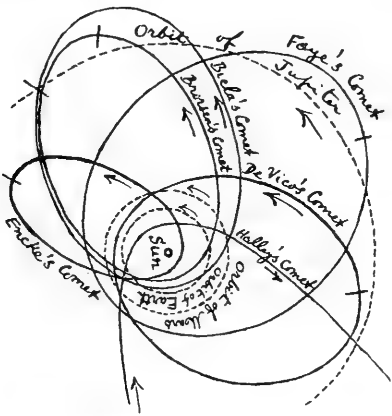


FIG. 2.—ORBITS OF SHORT-PERIOD COMETS.

Kepler's name is honoured by the discovery that planets do not move in circles, but in oval curves called ellipses, the sun being, not at the centre of the curve, but somewhat eccentrically placed.

Newton showed that a comet entering the solar system from a large distance away, would move in a very elongated ellipse. If the original distance were infinitely great, the ellipse would be infinitely elongated. A curve of this kind is called by mathematicians a parabola. It is the same as the path of a projectile under gravity.

This deduction from the law of gravitation was verified by observation and the astronomer Halley calculated the paths of all the comets then known. He discovered that certain comets which had appeared in 1531, 1607, and 1682, followed very nearly the same path; and he also found that there were records of great comets in 1066, 1145, 1301, 1456, 1531. The inference was that all these were really different appearances of one and the same comet, returning at intervals of about seventy-six years, intervals such as 1145–1301 (156 years), and 1301–1456 (155 years), were accounted for by the comet not having been seen under sufficiently favourable conditions at the intermediate return.

Halley predicted that this comet moved, not in an accurate parabola—no comet moving in a parabola can ever return—but in a very long ellipse, and he announced its return for 1758. His prediction was fulfilled, but Halley did not live to see it; he died sixteen years before the reappearance of his comet.

Since then the latter has been observed at every return. It was last seen in 1835, and is due again in the summer of 1910.

The existence of Halley's comet shows that all comets do not move in parabolas and go out of our ken for ever, but that some move round the sun like the planets and are permanent members of the solar system.

Since Halley's day, several other comets, returning at comparatively short intervals, have been discovered. Out of two hundred and seventy comets whose paths have been calculated, fifty have been found to move in ellipses, and more are doubtful, Only thirteen, however, have actually been observed more than once.

The accompanying woodcut (Fig. 2), which is reproduced from Professor Young's 'General Astronomy' (slide exhibited), shows the paths of some of the best known of these comets. The crosscut on each of the orbits marks the *node* or point where the paths of the comets cross the plane of the solar system.

These *nodes* are all close to the orbit of Jupiter. Jupiter is the largest and heaviest of the planets and his attraction disturbs the comets and pulls them down nearer his own orbit.

The comet of shortest known period is Encke's comet, discovered in 1818. It returns at intervals of three years and four months. It presents a curious and hitherto unexplained anomaly: its period is being gradually accelerated, so that it threatens, eventually, to fall into the sun.

Encke's comet is a faint object. All the bright periodic comets return at such long intervals that the ancients never thought of identifying them.

Structure of Comets.—For purposes of description we distinguish three parts in a comet:—

(A) *The Head.*—This is a hazy cloud of faintly shining matter, On one occasion (1882) it was preceded by a fainter forerunner or "sheath," a luminous shadow, so to speak. The diameter varies usually from 40,000 to 100,000 miles.

FIG. 3.—THE COMET 1901 (I.).

(Reproduced by kind permission of H.M. Astronomer at the Cape of Good Hope.)

To face p. 5.

The head of the comet of 1811 at one time measured 1,200,000 miles, and its volume was about three times that of the sun.

(B) *The Nucleus.*—This is the name given to a bright star-like point near the centre of the head. Its actual diameter ranges from 8000 miles to 100 miles.

The nucleus appears to be the seat of considerable activity. Its dimensions are continually changing, and it throws out occasionally bright prominences which are called *jets.* It is often surrounded by bright concentric rings called envelopes.

Fig. 3 (Plate) shows a picture of the comet 1901 (I.), observed at the Cape Observatory. The black streak behind the nucleus should be noted. The comet seems to leave a kind of double wake in space, shedding luminous matter on either side. This brings us to—

(C) *The Tail.*—This is by far the most characteristic part. Its length varies considerably, but has been known to reach 100,000,000 miles. The volume of the tail of the great comet of 1882 was more than 8000 times that of the sun.

That the matter composing the tail is exceedingly attenuated, follows from the fact (slide shown) that stars shine through the tail of a comet with undiminished brilliance.

But we have other reasons to believe that comets are extremely light bodies. We have seen how easily they are influenced by the attraction of Jupiter. The comets themselves, however, produce on Jupiter no appreciable effect. Thus Brook's comet of 1889 actually passed inside the orbit of the nearest satellite of Jupiter. Its own path was completely changed; yet the disturbing effect on the planet's path was practically *nil.*

Now it is a well-known fact, that if two bodies react on one another, the effects produced in each are inversely as the mass. Thus, if a cannon be fired, the velocity of recoil is to the velocity of the shot in the inverse ratio of the mass of the cannon to that of the shot. If the velocity of the bullet be given, then the lighter the bullet, the less the recoil. In the same way with Jupiter, the lighter the comet, the less its disturbing effect.

Calculation from data of this kind has shown that the mass of comets is certainly less than one 100,000th of the Earth's mass.

We have then to suppose the matter of comets to be made up either of very attenuated gas, or of very finely scattered dust, "pin's heads several hundred feet apart," as one authority has described it.

Origin and Nature of Tail.—The appearance of a comet's tail suggests, at first sight, a trail of matter left behind by the head in its course, like the smoke from a locomotive. But this appearance is deceptive; for, if this were so, the tail would always lie in the wake of the comet. On the contrary, the tail of a comet is found to be constantly directed *away* from the sun, so that as the comet moves away from the latter, the tail precedes it. Thus the analogy of the locomotive smoke would be improved if we suppose a wind, directed from the sun, always blowing the smoke (tail) outwards.

This hypothesis is confirmed by the fact that the tail is usually not straight, but somewhat curved, because the nucleus of the comet, which is nearer the sun, moves faster than the tail, which is more remote.

The formation of this tail is explained by the supposition that the nucleus throws out matter towards the sun (as we have seen to be the case with the jets and envelopes), and that this matter is somehow repelled by the sun.

The tail of a comet is thus analogous to a vertical jet of water in a garden, the drops curving outwards and falling under the Earth's attraction. This is illustrated by Fig. 4, which is also

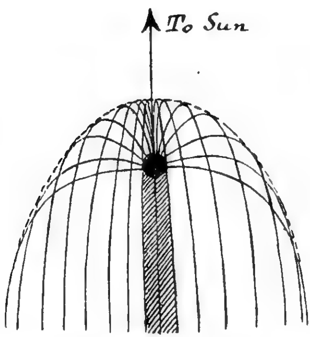


Fig. 4.—Formation of a Comet's Tail by Matter expelled from the Head.

taken from Professor Young's very instructive treatise. When viewed sideways, the drops will appear to be more numerous on either side, even though they really are distributed symmetrically, and thus we have the explanation of the dark streak behind the nucleus.

Cause of the Repulsion.—The question, how is this repulsion produced? remains a very vexed one.

One theory brought forward is that the sun and the particles of the comet's tail are both electrified. Bodies charged with electricity of the same kind repel one another.

Another cause suggested is the pressure of light. According to modern theories of optics, we have to suppose that light exerts a certain pressure on the opaque bodies it encounters.

The fact that we can get no experimental evidence of such a pressure is no argument against its existence, for its calculated value is far too small to produce any effect which our instruments could detect in the case of the familiar objects which surround us.

But when we have to deal with the excessively fine dust, of which we suppose the material of the comet to be formed, the pressure of light may be large enough to overcome the sun's gravitation.

For a pressure is proportional to the area over which it acts, but the force of gravitation is proportional to the mass of the body, and therefore to its volume.

Now if we have a cube of one inch side, made of material weighing one pound to the cubic inch, if we hold it up in the hand, the pressure upwards, which we have to exert upon its base to keep it balanced, must be exactly one pound weight; and this pressure is exerted upon an area of one square inch, so that it is one pound weight per square inch.

But if we make a cube of side half an inch, of the same material, its volume is only one-eighth of what it was before, and its weight accordingly one-eighth of a pound. To hold it up, my hand has to exert upon its base, which is one-fourth of a square inch in area, a total pressure of one-eighth of a pound weight, that is, of half a pound weight per square inch, or exactly half the previous pressure.

And so on. If our cube, still made of the same material, be reduced to one-tenth of an inch side, its weight is reduced to one-thousandth of a pound, and the pressure I have to exert to balance gravity is one-thousandth of a pound weight upon an area of one-hundredth of a square inch—*i. e.* one-tenth of a pound weight per square inch.

Thus as we diminish the dimensions of a body, keeping its density the same, a lesser and lesser pressure is found to balance gravitation. Ultimately it will be found that, if only our particles be taken small enough, any pressure intensity, however small, will be found able to overcome any gravitational attraction, however large.

In a precisely similar way, if you take powdered lead and fair-sized lead shot, and let them fall, the shot will fall to the ground far more rapidly than the powdered lead. This is due to the resistance of the air, which is of the nature of a pressure, and is proportional to the area of the particles. In a vacuum the powdered lead and the shot would fall with the same rapidity.

We see, then, that in the case of comets it is conceivable that the sunlight should exert a sufficient pressure on the minute particles of which the comet is composed to overcome the solar attraction.

Whatever may be the cause, there is no doubt that the tail is due in some way to the solar action, for the comet only acquires its tail when it gets within a certain distance of the sun, and it loses it as it leaves the solar neighbourhood.

Multiple Tails. — The repulsion theory derives considerable support from the fact that a very large number of comets have several tails (see Fig. 5). Now it seems probable that the pressure of light is independent of the material on which it is exerted, so that, other things being equal, heavy matter will be less forcibly repelled than light matter. Hence we see why it is that the material of a comet's tail should sort itself into several streamers.

Bredichin classified comets' tails into three main types (shown on Fig. 5). The straight tails, which point nearly away from the sun, and which one would expect to be composed of the lightest matter, he assumed to consist chiefly of hydrogen.

The middle tail, which is usually the brightest and is much more curved, he supposed to contain gases which are known as hydrocarbons—*e. g.* the gas in the blue part of an ordinary gas or candle flame.

On examining the light from these tails with a spectroscope, the existence of some such gas, in the middle tail, has been established beyond question.

The hydrogen tails are usually too faint for their light to be analyzed, and so this hypothesis still remains doubtful.

Finally, in certain cases a third tail can be observed—a short brush—still more strongly curved than the main tail.

Bredichin states that such a tail would be composed of iron and sodium; but these tails are very rare, and all the evidence we have on this subject is, that the great comet of 1882, when it approached the sun, brightened up considerably, and its light showed evidence of the presence of iron and sodium and other metals.

The Speed of Comets.—The speed of comets is highly variable. When at a large distance from the sun they move very slowly, quickening up their pace as they approach nearer.

The comets of 1668, 1843, 1880, and 1882 all came very close to the sun, and went round it at a tremendous speed. The comet of 1843 circled round the sun, at perihelion, at a distance from the centre less than the solar diameter, and went through a half-turn in something under three hours, corresponding to a maximum speed of 320 miles per second.

Again, the comet of 1882 went round the sun so fast that its tail could not follow it, and parted company; so that the comet, like the sheep of the story, left its tail behind it, but when it reappeared on the other side of the sun, unlike the sheep, it grew a new tail.

Origin of Comets.—It is probable that comets are bodies floating about in interstellar space, and come only accidentally within the reach of the solar attraction.

With regard to the periodic comets, it is supposed that they, too, were chance visitors, but that, in their course, they have passed near one of the big planets, Saturn or Jupiter, and been "captured" by them—that is, prevented by the planet's attraction from wandering away again into space. They are thus naturalized citizens, not native born members of the solar system.

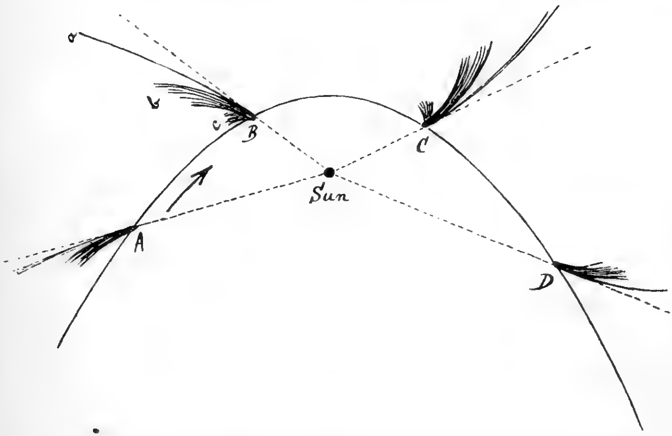


FIG. 5.—A, B, C, D. VARIOUS POSITIONS OF A COMET NEAR PERIHELION, SHOWING DEVELOPMENT AND ORIENTATION OF THE VARIOUS TAILS.

a. Hydrogen tail. *b.* Hydrocarbon tail. *c.* Sodium and Iron tail.

Fate and End of Comets.—Since comets are continually losing part of their substance by means of their tail, it follows that they cannot last indefinitely: eventually periodic comets must fritter themselves away.

But it also happens that, even before this occurs, comets break up. Thus a comet, named Biela's comet, was discovered in 1826 with a period of about 6½ years. At its return in 1846 it had broken up into two fragments. These two halves were again observed at the next return, 1852, since when nothing has been seen of Biela's comet. But on the night of Nov. 27th, 1872, as the Earth was passing through the old track of the vanished comet, it encountered a brilliant shower of shooting stars. The phenomenon was repeated, under the same circumstances, in November, 1886. The motion of the meteor stream is the same as that of the original comet, and there seems little doubt that they are the scattered remnants of Biela's comet.

Other comets have since then been found to break up. (Slides were shown of Brook's comet, 1893 (IV.), breaking up; and of Swift's comet, 1892 (I.), developing a second nucleus.)

Danger of the Earth from Comets.—The possible danger to the Earth from comets has been the subject of much discussion, and has given rise in recent years to various "comet scares."

There are two possible causes of such danger:—

(*a*) The Earth may strike a comet. This is quite possible: according to calculation, it is likely to occur, on an average, once in 15,000,000 years. If it did occur, it is highly probable that the result would be simply a grand display of shooting stars, the matter of the comet not being solid enough to hurt the Earth much. The Earth has actually passed through the tail of a comet without any result.

(*b*) A comet may fall into the sun, and the heat developed may be such as to be a grave danger to organic life on the Earth. Apart from the improbability of such a collision (it can be shown that such an event is far more unlikely than a collision with the Earth, because the comet must initially be heading straight towards the sun, if it is to occur at all), the mass of a comet is so small that it would only generate as much heat as the sun will radiate in eight or nine hours. But this heat will be developed *inside* the sun, below its photosphere, and will only be gradually liberated. The effect on the Earth will be practically *nil*.

So that, after all, comets are very harmless objects, although at first sight they make such a brave show. We, however, are wiser than our ancestors, and look upon them as mines of information rather than as harbingers of death. It is one great regret of astronomers that, since astronomical photography has been extensively introduced, no great bright comet has been kind enough to sit before our cameras.

2.—Notes on a Section of Clay with Flints near Woldingham.

By N. F. Robarts, F.G.S.

(Read May 19th, 1903.)

The recent excavations upon the crest of the escarpment of the North Downs slightly to the north-west of Oxted Chalk Quarry, made during the construction of the new fort at that spot, have afforded an opportunity for examination of a section which may be usefully recorded, as not only are sections of any depth uncommon upon the higher parts of the Downs, but the position chosen for the excavation has fortunately been one which geologically has some features of peculiar interest.

The higher parts of the Chalk, in the district referred to, are covered with "Clay with Flints," as shown on the Survey map; for the Clay having been removed by denudation during the erosion of the valleys, is now only found on the intervening hills.

Sections in the Upper Chalk almost invariably lead to the discovery of "pipes," the contents of which inform us as to the strata originally overlying the Chalk; and those members who a year or two ago visited the Kingswood cutting on the Chipsted Valley Railway will recollect the grand show of "pipes" filled with Thanet Sand and other Lower Tertiaries which was then visible in the cutting.

The fort at Woldingham, in making the foundations of which the section I am about to describe was exposed, lies at an elevation of 860 ft. O. D., and the only Tertiary bed known near it is the small outlier of Oldhaven pebbles and sand about 200 yards to the south-east. The bed of pebbles appeared to be of no great depth, probably not more than 10 or 15 ft., and is therefore probably but a remnant of the original bed, which—a mile to the south, at Worms Heath—has a thickness of 40 ft., if the pebble-beds were continuous over this area, about which I have some doubt.

This outlier appeared on the western side to contain a bed of sand, but the ground has been so disturbed by digging for gravel that it was almost impossible in the present state of the section to decide upon the relative position of the two beds of sand and pebbles.

The excavation of the fort showed that the whole surface of the chalk was honeycombed with pipes, and in an area of about thirty yards square the whole of the Clay with Flints appears to have sunk more or less into the underlying pipes. I should draw a ttention to the character of the Clay, which was of a peculiarly bright red, and free from any admixture of other rocks than Flint.

The pipes were apparently absolutely conterminous, and could be traced in many places, not by the usual intervening pillars of chalk, but solely by the disturbance of the superior strata which have been let down into them.

The greatest depth of the excavation was about 14 ft., exposing the side of a pipe, which evidently ran to a greater depth. The highest chalk between some of the pipes was about 6 ft. below the surface, but above the chalk divisions it was possible, by noting the different strata which had been let down, to trace the sides of the pipes, although the chalk between them had perished.

In spite of the adjacent outlier of Oldhaven Pebbles being so near, in no instance was any of this pebble-bed to be found in the pipes, which in every case but two appeared to be lined at the side with green-coated flints, and filled up to the subsoil with Red Clay with Flints. In the two cases referred to, one pipe contained in its centre a reddish clayey gravel composed of very small tertiary pebbles with some small angular flints, which *may* have formed part of the Southern Drift, but I could not find in it any chocolate-coloured flints or implements, or Lower Greensand rocks.

The other pipe contained, enclosed in the Clay with Flints, a buff-coloured clayey sand with a very few small greenish flint pebbles. evidently not derived from the Oldhaven Pebble-bed, unless the colour of the pebbles had been altered by the matrix in which the stones were lying, and thus their original colour had been lost.

It was clear from the position of the sand in the centre of the pipe surrounded by "Red Clay with Flints" that the sand had been superior to part of the Clay with Flints, and may have been derived from the sandy Oldhaven beds. If this was the case, as there were no Oldhaven Pebbles in the pipe, the Clay with Flints must either have been formed before the sand was deposited, or formed beneath it since the sand was laid down.

But the supposition that this clayey sand, which is not unlike the sand on the north-west of the pebble outlier, was deposited on the Red Clay with Flints, and that the latter was of its present thickness, does not seem probable, as the great depth of the surrounding clay would, in a comparatively narrow pipe, prevent the sand from sinking to any depth down the centre of the pipe, since the underlying clay would naturally fill up any narrow depression.

I think these narrow pipes with sand in the centre of the pipe, with considerable depth of surrounding clay, go to prove that the clay was not of great thickness when the pipe began to form, but that there must have been some clay before the sand began to sink, and that the clay has gone on thickening ever since, so that now there is a great thickness of clay surrounding and overwhelming the sand.

The very large quantity of Flints, all unbroken and unrolled, contained in the Clay of this section supports the theory that the latter is the insoluble portion of the Chalk; in no other way does it seem possible that such large unrolled Flints could be preserved. We are not accustomed to seeing in our gravels or elsewhere Flints of their natural size—even in Chalk-pits they are usually broken as they are uncovered, and only disclosed a few at a time; but in a section like the one under consideration we see them of full size, and freed from their original matrix.

It is unfortunate that this excavation was not made on a spot where there is undoubted Southern Drift, as such a section, at a spot where that drift was exposed upon the surface at an elevation of 860 ft., might have been very useful in elucidating some of the problems connected with that gravel and its accompanying eolithic implements.

At all events such a section shows the desirability of more closely defining and mapping the different deposits comprised under the term "Clay with Flints." Clay containing unrolled Flints, free from an admixture of other rocks, formed, as far as we know, by the dissolution of the Chalk, might be always specified as "Red Clay with Flints"; and when other rocks than unrolled Flints are associated with Clay, the formation should be termed "Clay with Southern Drift," or whatever other term may best describe the formation, according to its specific character.

I particularly think this is necessary for the purpose of defining the implement-bearing Clays, for I note that Prestwich, in 'Primitive Characters of the Flint Implements of the Chalk Plateau of Kent,' refers to Mr. Harrison having found eoliths in Red Clay with Flints; but I believe it is the fact that, though Mr. Harrison has found them on the surface of Red Clay with Flints, as defined above, he has never found them *in* any Clay which has not contained Southern Drift; and I doubt if Mr. Bullen's implement, also referred to by Prestwich, was found in the Red Clay with Flints.

It is satisfactory to those who hold that eoliths are only to be found in Southern Drift, or gravels derived from same, that no forms of that description were found in these undisturbed beds of

Flint lying undisturbed in the remains of their original matrix, though this is only negative evidence.

As building operations may take place during the next few years at other points near the escarpment, it would, I think, be very desirable to keep a close watch upon any excavations, as new facts may be obtained about both the Red Clay with Flints and the Southern Drift, more especially about the latter.

3.—The Plateau Gravel, Upper Norwood, and associated Eolithic Implements.

By N. F. Robarts, F.G.S.

(Read May 19th, 1903.)

A few weeks since the Croydon Corporation commenced making a drain on South Norwood Hill, from about 150 yards below Grange Hill to the corner of Beulah Hill and Church Road. As the trench approached the stables of 'Falkland Park,' I noticed gravel being thrown out, and I thereafter watched the progress of the work almost to its final point. It is seldom that the gravel upon the top of Norwood Hill is exposed, the whole neighbourhood having been built upon, though, in view of the number of houses to let, there is, I should think, a strong probability that before long some of the larger ones will be pulled down, and roads cut through the grounds, which may be of advantage to geologists, if not to the other residents.

Two or three years since a shallow trench was dug along Church Road for the purpose of laying electric mains, but this was only about two feet in depth, and scarcely touched the gravel *in situ*. The drain which has recently been made was carried to a uniform depth of five feet, and the lower part was throughout almost the entire length in undisturbed clay or gravel.

Our member, Mr. E. A. Martin, F.G.S., writing in 'Science Gossip,' September, 1900, refers to the gravel, under the title of Westow Hill Gravels, as follows:—"Recent excavations have shown that the gravel is here of considerable extent, and in a direction north to south along Church Road it cannot be far short of a mile in length. . . . The excavation in which the wires were laid was about four feet deep, but in some places somewhat deeper. From Grange Hill to All Saints Church there was little or no 'soil,' the road material resting on a sandy loam. Midway between the two was a peculiar patch of pinkish-coloured loam with rounded pebbles." (I may say I did not closely watch this trench three years ago, but my recollection of it was that it did not exceed three feet in depth.)

Mr. Martin further remarks upon the sand and gravel near Upper Beulah Hill, which, he states, "resembled Croydon gravel," and near the house 'St. Ives' "contained a large number of rounded flint pebbles." I am sorry Mr. Martin did not record the character of the gravel and its constituents more particularly, as this seems to me to be the most important matter respecting this isolated sheet of gravel.

I have endeavoured to find other records respecting this gravel, but they seem to be very meagre, though there must have been many sections exposed when the houses from South Norwood Hill to Westow Hill were built; but at that time there was unfortunately not the same interest felt in gravels as there has been since it was discovered that many in the South of England contained flints bearing evidence of human workmanship.

I know of no recorded finds of implements from this patch of gravel.

Mr. Whitaker, in his 'Memoir on the Geology of the London Basin,' 1889, vol. i. p. 383, referring to Mr. F. J. Spurrell, says:—"The gravels of the Norwood hills are referred to as the highest of the old Wandle, but it seems possible, if these are River Gravel, they may belong rather to the old Thames." Later (p. 427):—"Besides this [the gravel at Wandsworth Common] the only high isolated patches are at Clapham and at Balham, besides the still higher ones of Lower and Upper Norwood, as to the classification of which there may be some doubt, especially with the highest and most southern."

It must be borne in mind that we are dealing with a very high gravel, the altitude of this patch being from 350 to 380 ft. above O.D., or about 200 ft. above the highest terrace of Wandle gravel at Croydon or Thornton Heath, and about the same height above the Thames as the gravels at Wandsworth or Clapham.

The only other high patches of drift anywhere near Norwood are those at Shooter's Hill to the east and Wimbledon Common to the west, both at a considerable distance, with the still more distant patches at Telegraph Hill, Swanscombe and Dartford Heath to the east, and Kingston Hill to the west.

The fullest reference that I can find to the gravel under our notice is that made by Prestwich in his communication to the Geological Society, "On a Southern Drift in the Thames Valley, and its Relation to the Westleton Beds," &c.* This gravel is there referred to as follows:—

"Surrey. Here it is on the Tertiary hills, and not on the

* Q. J. G. S., vol. xlvi. 1890, p. 158.

Chalk-downs that we find the best exhibition of this Southern Drift. A thin bed of it resting on London Clay caps West-Ho Hill, Norwood. The following is a detailed section taken some years since :—

	FT.	IN.
a. Surface soil	2	0
b. Loamy gravel	1	0
c. Fine ochreous gravel, with veins of grey sandy clay	1	0
d. Grey sandy clay	0	6
e. Yellow gravelly sands	2	0
f. Grey sandy clay	0	6
g. Ochreous sand	1	3
h. Grey sand	0	3
i. Coarse ochreous gravel	2	0

According to one specimen I kept, this gravel consists of :—

1. Subangular flints, unstained and stained brown, in largest proportion.
2. A considerable proportion of Tertiary flint pebbles, some broken and worn.
3. About 10 per cent. of subangular fragments of chert and ragstone.

With one pebble of a hard sandstone or quartzite (Tertiary ?), and one small pebble of quartz.

This gravel extends southward all along the top of this hill at a height of 360 to 380 ft. above O. D."

Now to describe the section in question.

On South Norwood Hill, at a little below 350 ft. above O. D., the gardens on the east and the bank on the west side of the road are seen to contain a considerable number of pebbles and subangular flints, some of the latter being stained brown.

Below 350 ft. above O. D. the trench, after passing through one to two feet of made soil, was in solid London Clay, but, on reaching the notice-board giving warning to cyclists opposite to 'Court Royal,' the clay had a mottled appearance, and if seen by itself might readily have been taken for a clay of the Reading beds; this was followed to the north in the lower half of the cutting by about 30 ft. of irregular grey gravel, 9 ft. of yellow clay, 6 ft. of yellow and grey gravel, 6 ft. of sandy yellow clay, 9 ft. of yellow clayey gravel, followed by sandy yellow clay up to the gate of 'Thornaby'; then 25 ft. grey clayey gravel, 10 ft. clay, 7 ft. small sandy chalky gravel, 10 ft. clay; then, at the corner of Grange Hill, about 50 ft. yellow clayey chalky gravel, made up entirely of small Tertiary pebbles, with a very few large, and hardly any of intermediate size, with some subangular flints, principally stained brown, but containing no other rocks whatever; neither quartz pebbles, quartzites, lower greensand cherts, ragstone, or ironstone.

From Grange Hill to the corner by the church the section was of much the same character as that detailed above, except that the gravels became of a brighter yellow.

There were some patches which were of a greyish pinkish colour, but these I considered had been disturbed or discoloured by gas, and of them I have taken no notice.

The gravel, where passed through, always remained at the bottom of the trench; in no case was the underlying clay exposed, so that the depth of the bed was not ascertained, but from the way the gravel held the water after rain, although on the slope of the hill, I think the gravel was of little depth below the trench.

As to the materials composing the gravel, these appeared to be different to those noted by Prestwich at West-Ho Hill, as I could find none of the "10 per cent. of subangular fragments of chert and ragstone," or any quartzite or quartz pebbles.

The chalky character of the gravel in some patches, however, gave a strong indication that it had come from the chalk on the south, and was not an old Thames gravel, *i. e.* had not come from the west.

The pebbles and subangular flints were usually embedded in such a very adhesive clayey matrix that it is quite possible that other rocks may have been present; it was very difficult to ascertain what the stones were until the clay was removed, and perhaps, had the works been left open long enough for the rain to have more thoroughly removed the clay from the stones, other materials besides flint might have been recognized.

There was, however, no doubt about the brown-stained subangular flints, some of which had the original crust entirely removed, whilst others had a whitish crust in parts, the remainder being stained brown.

I carefully examined these and all subangular flints for traces of human workmanship or use, but those not stained brown gave no indication of either; but I have placed upon the table some specimens of the brown-stained flints, which in my opinion give undoubted evidence of chipping by design, rude as it is, and one specimen which, though it has been subsequently broken, gives signs of use. This, moreover, is a common form of eolith, and not much rolled.

Whatever doubt may be thrown upon the age of rude implements from the surface on the escarpment of the downs or elsewhere, there is no doubt of those upon the table having been taken from undisturbed gravel at a height of 350 ft. above O. D.

and 200 ft. above the highest terrace of the Wandle, thus making them rank amongst the oldest yet known.

When further sections are made in this gravel, and attention is given to the search for eoliths, I have little doubt that other specimens will be found to confirm those to which I desire to direct attention.

Meanwhile it is well to consider the position of this high-level gravel, if it has been derived from the North Downs and Wealden area.

The nearest point where the height of 380 ft. above O. D. is reached is the Addington Hills, nearly three and a half miles distant, the intervening valley having been cut out to a depth of about 250 ft., as the lowest point between Norwood and Addington Hills is about 125 ft. above O. D., whilst towards Beckenham is a few feet less. We have therefore to allow time for the intervening valley of three to four miles in width, to be eroded to a depth of 250 ft., if this gravel has been derived from the south.

I would refrain from theorising upon the apparent absence of other rocks than flint in this particular section until this is further confirmed, but the brown-stained subangular flints and implements certainly seem to point to the southern origin of this gravel.

I am glad to know that Mr. Hogg, to whom I mentioned this section whilst the works were in progress, has independently examined the gravel, and found worked flints which corroborate the finds I have myself obtained.

4.—The Gravels of South Norwood Hill.

By A. J. Hogg.

(Read May 19th, 1903.)

The cutting on South Norwood Hill described by Mr. Robarts, so interesting from the discovery of eolithic flint-implements in an unexpected locality, was also remarkable for the succession of beds which it revealed as the hill was ascended.

I had the advantage of being able to watch the progress of the work from day to day, and noted the successive sections as they appeared, commencing at a height of about 340 feet O.D., and continuing to the top of the hill.

The beds cut through differed in every few yards, and the sections recorded are only some examples of the many changes in the series of deposits.

It will be noticed that at the time when the road was made, the upper part of the hill was a peat-covered heath.

SECTIONS FROM "HOLMWOOD" (No. 260) TO NEAR ST. SAVIOUR'S CHURCH.

		FT.	IN.
I.—	Peaty gravel	2	0
	Grey sandy gravel	3	0
II.—	London Clay, extending 9 feet only	5	0
III.—	Peaty gravel	2	0
	Grey sandy gravel	3	0
IV.—	Peaty gravel	2	0
	Grey gravel	2	0
	Ochreous clay	1	0
V.—	Peaty gravel	3	0
	Grey gravel	2	0
VI —	Peaty gravel	1	0
	London Clay	4	0
VII.—	Peat with bracken-roots	2	0
	Coarse ochreous gravel	2	6
VIII.—	Peat with bracken-roots	1	6
	London Clay	3	0
	Grey gravel	4	6

The peaty gravel was pebbly and sandy, and contained no implements.

The grey gravel was either clayey or sandy in different sections, and consisted of angular and subangular flints, a number of which were of a deep ochreous tint, and comprised a good many rude eolithic implements resembling those of the Chalk plateau found by Mr. Harrison and others.

This was evidently a drift-gravel, perhaps from the north or north-west, composed of the *débris* of some of the Older Tertiaries, and containing many irregularly-shaped fragments of flint, so white as to be easily mistaken for chalk. No chert, ragstone, or ironstone was observable; and I did not see any chalk in the sections which I examined.

The ochreous gravel was much coarser, contained many large pebbles, and differed entirely in appearance from the grey gravel. I found in it only two implements of plateau-type, and no implements of later date were found in either gravel. All the implements are much abraded.

5.—Flints found at Waddon Marsh.

By Harry D. Gower.

(Read Tuesday, May 19th, 1903.)

When Mr. Clinch, the Honorary Secretary of the Anthropological Section of the Society, intimated to me that the few flints (Fig. 1, Plate) I had discovered, with one or two very small pieces of pottery, at Waddon Marsh, were of considerable importance, and suggested that I should exhibit the objects, and read a short note of the find, at our monthly meeting, I felt at the moment, and do now, that he, being well versed in the matter, could make a much more presentable record of the subject than myself, and to whom also I must tender my thanks for a note upon the small pieces of pottery found in September, 1902.

But, to be brief, I will give you, in as few words as possible, the facts of this small find.

Last year, when the Waddon caves were discovered, I may perhaps not be wrong in stating that some amount of disappointment was felt from the lack of interesting material they yielded; certainly we got pieces of pottery, and also flints showing use, and also other traces; but apart from this, nothing in the way of those nicely chipped flints and arrow-heads and finished weapons one might expect to find in or around caves of this sort; and the question may naturally arise, Have these caves ever, at some later period, been disturbed?

This is a question I am not prepared to discuss, but, the fact of this question crossing my mind, I made a careful examination of some earth at Waddon Marsh that was being excavated and carted away, with the result of finding a carefully-worked lance-head, as shown upon the table this evening; the finding of this implement gave me fresh energy, with the result of further finds, which are also shown. I might mention, that a good many of the flints have not been found without some amount of labour, and also with the kindly help of several of our members in sifting and examining the soil, which is about 18 to 24 in. thick, before we come to the gravel, or, might I say, neolithic floor? Also amongst it, some few small pieces of pottery were also found, a piece of which I submitted to Mr. G. Clinch, and he kindly reported to me as follows:—

"*Note on Pottery found at Waddon Marsh, in September*, 1902.

"I have carefully examined, with the aid of the microscope, the fragments of pottery found at Waddon Marsh, and find that the

FIG. 1.—ARROW-HEAD AND FLAKES, WADDON MARSH, CROYDON.

To face p. 20.

small white grains in it are fragments of calcined flint. As many of the other fragments of flint in the pottery show but

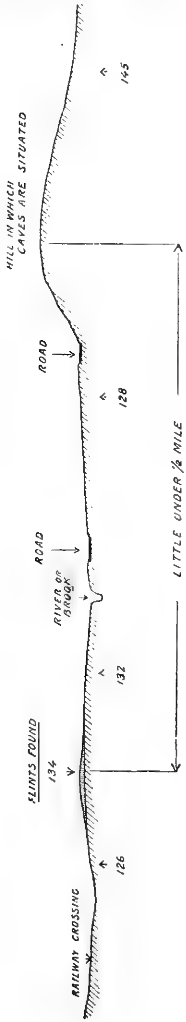


FIG. 2.—SECTION OF LINE DRAWN FROM CAVES FOUND AT WADDON, AND WHERE FLINTS WERE FOUND AT WADDON MARSH.

few, if any, traces of fire, and are not at all reduced to a calcined condition, it is clear that the flint was first burnt and broken into small fragments before being mixed with the clay, of which the vessel was mainly formed; the whole was then burnt to a brownish tint.

"I think there can be little, if any, doubt that the pottery is of a pre-Roman date; and I think it probable that it was made in the pre-historic age of iron.—Signed, GEORGE CLINCH."

The situation of the ground would not, perhaps, at the present period, give much idea as to what it was like in years gone by; but from the Waddon caves we have a gentle downward slope in a northerly direction to the present brook or Wandle stream, and past the brook the ground eventually rises somewhat, making a very natural shallow depression, and, after heavy rains, gives the surrounding meadows a marshy aspect; but the present drainage soon getting rid of the water, and, as we should expect from such a situation as this, with a stream running between the two contours and the absence of any drainage, would certainly make the ground around, in a short time, very swampy. The caves being situated upon the south side of the stream, the present flints being found upon the north side, and in the south-east corner of the ground upon which the Croydon Gasworks are situated.

I had hoped, before reading these notes, to have been able to investigate further; the ground is not in a very good condition for sifting, and it is really only by this method, and careful examination, that one can find anything interesting and of value; but I do think it points to one thing, and that is, coupled with the recent finding of the caves, and traces of flints and pottery which I have mentioned to you this evening, that a careful examination of the soil, where possible, around and in the immediate vicinity or neighbourhood, will give us some interesting facts, and are worth more than a passing notice.

You will notice a good many of the flints, and also flakes, show the bulb of concussion very plainly, and in several cases worked at the edges, and probably used for a variety of purposes, most noticeable, perhaps, being a scraper with a round worked edge; others might be only large chips, and fragments chipped off during the process of manufacturing more finished implements, and of which up to the present time I have singularly failed to find many specimens.

The lance or arrow-head is, I believe, a somewhat uncommon form, and not frequently met with; but it will be noticed it is very carefully worked, and leaves little doubt as to the purpose it was intended for; the other two flakes in the same box may be flakes, but they show some working, but are of an entirely different shape.

Here is upon the table a flint which to all appearance has been partly manufactured into an arrow-head, but probably discarded from an accident in flaking or working, and has been cast on one side; also other flints, which one might almost assume were in process of manufacture.

Many of the flints, that would most likely be passed by a casual observer, are worthy of careful examination, for it will be seen a good many possess a business edge, and probable wear from use.

A small flint used for hammering, showing the small fractures, which is a well-known sign of what it has been used for, is amongst the larger flints shown; and since I have made the previous notes a small piece of hard sandstone, which is very much worn, has come to light. It is somewhat oval in form, and has the appearance of having been used on one side, a groove in the centre being polished, and is certainly curious.

With this I must not detain you longer, but I am in hopes that, as the ground gets more broken up in the immediate neighbourhood of the Waddon Marsh, other examples may be found, which may supplement the present small collection before you this evening.

6.—The Parallel Roads of Glen Roy.

By Dr. T. Archibald Dukes, B.Sc.

(Read October 20th, 1903.)

What are these "Parallel Roads" of Glen Roy? They are not highways for traffic; nor even footpaths. They are just terraces or ledges making lines along the mountain-sides. Of course, there often are ledges or shelves upon mountains; but these are unusual, extraordinary, even strikingly so. They run for miles and miles right up to the very ends of the valley; they run into all the branches and arms of the valley; they are quite horizontal; there are three of them, one above the other; and they are upon both sides of the valley.

The causation of these curious terraces, or Roads of Lochaber, as they were called, has attracted the interest of most of the geologists of the last century. Since, however, the various theories of their causation appear to be mutually destructive, I have ventured to suggest another cause which seems simple and natural.

First, let us see where Glen Roy is. Half-way down the west coast of Scotland is the Firth of Lorne, which runs up north-east into Loch Linnhe, and this in the same direction to Fort William. Just east of Fort William is Ben Nevis, and ten miles north-east of Ben Nevis is this Glen Roy, which also runs up north-east for some ten miles or so.

Fig. 1.—A sketch-map of Scotland, showing how the south-west wind is caught by the Firth of Lorne and conducted up Loch Linnhe to Ben Nevis, beyond which Glen Roy is indicated.

It is a steep narrow valley about a mile broad, between mountains over 2000 ft. high, and has a noisy burn running along the bottom. Starting up this glen, you first notice a branch valley on the left—Glen Collarig—which curves round and rejoins Glen Roy higher up, thus helping to isolate the Bohuntine Hill, which stands west of the entrance to Glen Roy. The public path up Glen Roy runs along the side of this Bohuntine Hill, until you get a good view up the glen and see the three "parallel roads."

There they are at a much higher level than yourself on every mountain-side, running into every recess, and everywhere parallel, while yet following every sinuosity of the mountain-sides. Now let us climb up this Bohuntine Hill, and see what they look like from there. The side is steep; the soil is soft, easily breaking

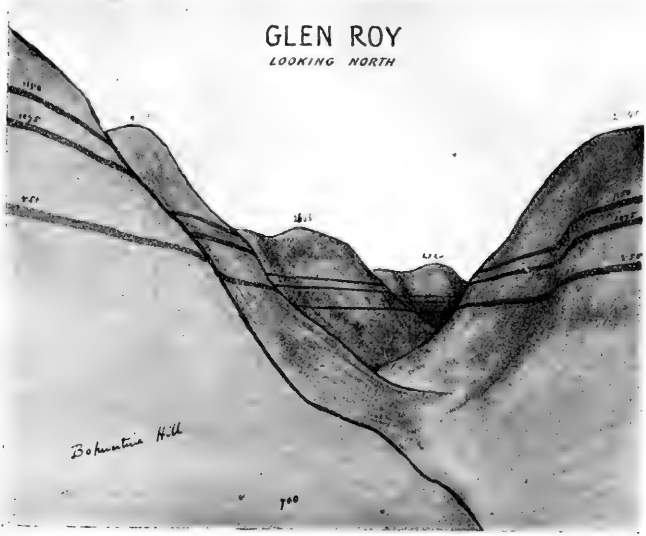


FIG. 2.—A sketch-view looking up Glen Roy, showing the general appearance of the "parallel roads" upon the hill-sides as seen from the much lower level of the public path running up the glen.

away, and consists, under a few inches of peat, of a gritty clay full of angular stones of all sizes from your fist downwards, though there are some boulders larger than your head; no shells; no fossils. It is very likely soaking with moisture, and barely held together by the heather and grass with ferns and mosses which are growing on it. Now, although these "roads" are strikingly distinct when seen from a distance with a favourable light, you will be surprised to find how vague and inconspicuous they are when you are actually on them; in fact, it is quite easy to walk right over a "road" without noticing it, and then, on looking back, to be doubtful where it is. Let us then go up to the middle or second "road." It is by no means obvious to look at; it is just a slight alteration of the general inclination of the mountain-side, such as frequently occurs where any depth of soft soil lies on a slope. This forms a terrace or landing, rather more level than the hill-side, which again is extra steep just above and below it. This terrace makes a strip from 20 to 60 ft. broad, with rather more grass growing on it, between two narrower strips with rather more heather than usual. It is quite easy to doubt if any one spot is really part of the road, until you look wide and abroad; then the effect is indeed remarkable. It is

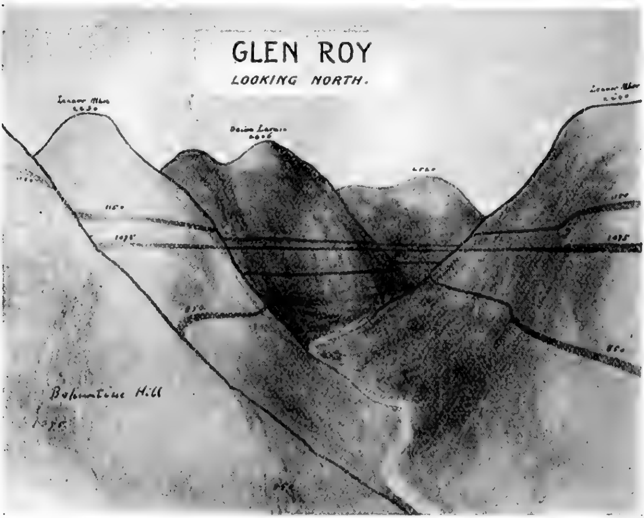


Fig. 3.—A sketch-view looking up Glen Roy as seen when standing on the middle "road," showing how in that position the middle "road" appears everywhere in one straight horizontal line.

just like when a diver raises his head above the surface, and sees the shore all round him—everywhere in one straight horizontal line.

You may get some idea of this effect from the above view, in which the second "road" is drawn in one straight line from hill to hill; in fact, a piece of stretched string held before the eye can be made to eclipse that middle "road" all along. This is equally true of the upper and lower "roads" when you are standing at their respective levels. The "roads" above and below where you happen to be standing of course appear curved by perspective, and can be seen winding round the hill-sides. It has been proved that each "road" is accurately horizontal; so much so that the road in the far distance distinctly dips below the horizontal level, just as a water surface does, owing to the earth's curvature. It is probably because the eye instinctively recognizes this curvature that the impression of a lake-shore is so irresistible.

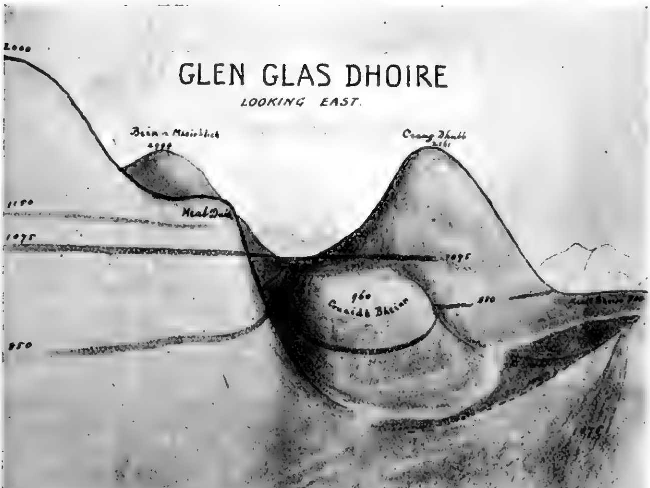


FIG. 4.—A sketch view from Bohuntine Hill, at the level of the middle "road," showing how the different "roads" variously end upon the other side of the glen.

That was looking north. Now, from near the same spot take another view, looking east, of the "roads" on the other side of the glen. Here you see a branch valley—Glen Glas Dhoire—cutting off a big hill—Creag Dhubh—from the eastern mountain wall of the Glen Roy Valley; and looking up that Glen Glas Dhoire Valley, you see it ends in a broad flat "col" (mountain pass or valley watershed). Now note how accurately that "col" corresponds with the level of the middle "road." The impression of a lake overflowing there is insistent, almost irresistible. (In the same way the upper parallel "road," height about 1150 ft., corresponds to the level of a "col" at the top or far end of the Glen Roy Valley, height 1151 ft.) Again, note that the upper parallel "road" terminates above (*i.e.* north of) the Glen Glas Dhoire entrance. The second "road," after running up towards the "col," is continued beyond on to the side of the big hill—Creag Dhubh—and ends there; while the lowest "road" runs right away round the Creag Dhubh Hill into the main Spean Valley, of which this Glen Roy is a mere tributary.

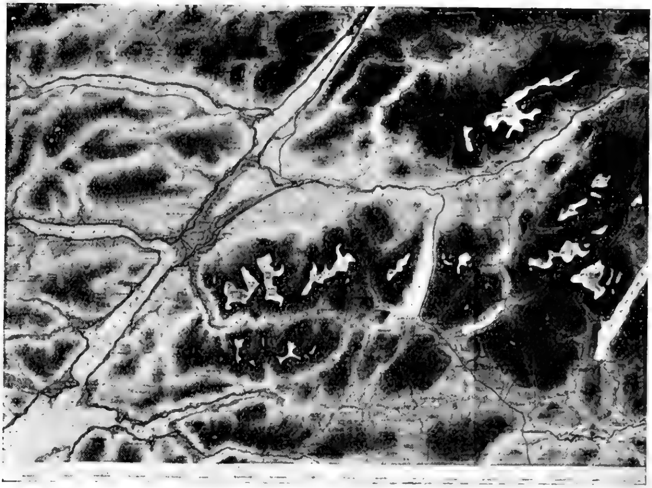


Fig. 5.—A reduced Ordnance Survey map of the district. Mountains shaded according to elevation, but heights over 3000 ft. are lighter, as though snow-capped. Ben Nevis and his range are seen running east from the top of Loch Linnhe. The Spean Valley, near the centre of the map, runs parallel and to the north of this range. Glen Roy is a branch valley on the north side of the Spean.

In this Glen Spean no traces of the upper two parallel "roads" are anywhere found, but the lowest "road" is, at intervals, repeatedly indicated, either by faint lines or big terraces on its boundary mountains, and always at this level of 850 ft.; so that, as we travel along the coach-road up this valley, we gradually mount up towards the same level, and several times before we reach Loch Laggan find ourselves actually on a broad terrace at this same level. Here, looking across the valley towards where the river Gulbin joins the Spean, we see what looks for all the world like a huge railway embankment, with a level top as high as the roof of a house which is built under its lee. This really is the side view of a huge terrace or platform half a mile across, with its upper surface a few feet below this same (850 ft.) level. In one place sand is being dug from it. Proceeding eastward, while passing Loch Laggan, the coach-road is generally on a terrace at this same 850 ft. level; and at the head of the valley the "col" at Makoul is at the same height (850 ft.) as this lowermost parallel "road," which we have traced all the way from Glen Roy up the Spean Valley; so you see the level of each "road" corresponds to that of a "col" into which it runs.

Now what was the cause of these parallel "roads"? How came they there? That is the question which makes them so interesting. Are they raised sea-beaches? Well, consider that there are hundreds of similar glens all round about. Remember how distinctly the "roads" are marked in Glen Roy, and that no trace of them appears anywhere else.

There is, however, just one other parallel road, and this is found in the next-door valley, Glen Gloy; and there, though this fourth "road" occurs on the other side of the same mountains, though it approaches within a few hundred yards of our highest Glen Roy "road," yet it is at a level which is distinctly higher than this "road," but corresponds instead to the level of the "col" at the head of its own valley. Could the sea have made this fourth parallel "road" in Glen Gloy, and yet make no trace of a parallel "road" at this level in Glen Roy? Or can you believe that the sea was standing for a long time at the lower levels of the Glen Roy "roads," and made no corresponding marks in Glen Gloy? Or, more incredible still, can you believe that the sea could have stood at these four different levels, and yet left no other traces in the hundreds of similar valleys all over the country? No alteration of sea-level can explain why parallel "roads" were formed just here and nowhere else.

Then again, since in every instance the "road" corresponds to the level of its particular "col," the conclusion is natural that that "col" was concerned in the formation of that "road." Why should the ocean choose to stand still always just at the level of a "col"? No! These "roads" are distinctly local and peculiar, and require an explanation that is also local and peculiar; and this is ready to hand. If the lower half of Glen Roy were to be blocked up, obviously the rain and water would accumulate in the upper part until it gently overflowed at the lowest available level; this is the "col" at the top of the glen communicating with Strath Spey, and the water would remain at that level as a lake, which would wash a shore or beach out of the soft steep bank round its edge. Thus the highest parallel "road" is made. Now let the obstruction which we suppose blocked up Glen Roy be moved lower down the valley. When it gets past Glen Glas Dhoire, obviously the water will rush up that glen and flow over its "col," which is at a lower level than that of the old lake in Glen Roy, until the lake settles to the level of this second "col." Thus the second parallel "road" is formed. Now move the obstruction lower down, and old Loch Roy runs directly into the Spean Valley; but if we suppose the mouth of this Spean Valley to be itself blocked up, the waters of the glen, dammed back to form a huge lake, would again overflow at the lowest available spot. This is the "col" which we have seen at Makoul in the far end of the valley beyond Loch Laggan; so at this level, 850 ft., the lowest "road" is formed in both Glen Roy and Glen Spean.

What could have formed this slowly moveable obstruction? An obstruction which has now completely gone, and left not a trace behind? Ice, certainly. And there is abundant evidence of ice action in the Spean Valley—moraines, scratches, and striæ; while, in places, obstructing rocks of hard schist are rounded off and smoothed down by the grinding glaciers which flowed over them. And there, opposite the mouth of Glen Roy, stands the highest mountain in the kingdom—Ben Nevis—with his neighbours Aonach Beg and Stob Coire an Easan, which are supposed to supply the required glacier. I believe, however, no one has ventured to draw upon a map the position and course of a glacier thus obstructing the glens. The configuration of the hills makes it mechanically impossible that any glacier should take such a course, for when it has reached the bottom of the Spean Valley, consider the forces acting upon it. From Glen Roy there comes a pressure of a mass of water, 850 ft. high, forcing the glacier towards the west. There is nothing to prevent the glacier going in that direction downhill some 200 ft. to the river Lochy, four or five miles off. But instead of taking this widely open unobstructed passage to the sea, we are asked to believe that it turns eastward, and, in the face of that enormous pressure, runs uphill more than 200 ft. for some four miles into a steep narrow valley. There is no moraine nor other sign of the former existence of such a glacier, and Glen Gloy, which is a branch of the Lochy Valley, would require another glacier to block its entrance; and to this there are further objections.

All these difficulties disappear, however, if we remember that ice is not always liquid, it is sometimes solid; it is not always a flowing glacier, it is sometimes a stationary mass. How it came about was, I imagine, something like this:—During the Glacial Epoch Scotland was covered deep with ice, because year by year more snow fell than got melted. This accumulated till it flowed off the mountains as glaciers, filled up the valleys, and perhaps covered up the tops of the mountains in one uniform snow-field, or ice-cap, so deep that its weight squeezed icebergs out of the valleys into the sea as fast as the snowfall accumulated upon its surface. Then slowly the Ice-age began to abate; it got warmer, and more snow was melted in summer-time than formerly. That does not mean that the ice-cap began to get thinner all over, for the rainfall and snowfall is much greater in the west than towards the east—*e. g.* at one end of the Caledonian Canal the rainfall is well over 100 in., at the other end it is only 25 in. per annum; hence, clearly, while the yearly thaw was between those amounts, in the one place the ice and snow would be melting right away, while in the other, though just as much thawed each year, the ice-cap would be kept at its full thickness by the excess of snowfall upon it.

The prevailing south-west wind is the chief rain-bearing wind; this wind, after skirting the North of Ireland, is caught by the Firth of Lorne and conducted by Loch Linnhe to Ben Nevis; hence the snowfall there would be very great. Even nowadays the annual rainfall is as much as 80 in. at Fort William, 100 in. on the hills, and 120 in. in Glen Coe, and as much as 145 in. on Ben Nevis, while in Glen Roy it is only 40 in., and 46 in. at L. Laggan. In the Ice-age the precipitation on Ben Nevis was even greater, but the chief difference then was that much of the rain which now falls on the south-west slopes of the mountain was then, as snow, blown over Ben Nevis and drifted into the Spean Valley under its lee, while at Glen Roy and Laggan the rainfall was less than at present; hence for a long time after the ice and snow was melted away from the upper end of the Spean Valley, from Glen Roy, Glen Gloy, and beyond, the last remnant of the glacial ice-cap, sheltered behind Ben Nevis, remained unimpaired in the mouth of the Spean Valley.

I have marked on the contour map of the district the position which, I suppose, this huge snow-drift once occupied. (Fig. 6.)

It will be seen this ice-mass blocks up the mouths of Glens Gloy, Roy, Glas Dhoire, and Spean, so as to dam back lakes in them, each overflowing at its "col" at the far end of the glen. This state of things had existed for a long time before the ice-mass had shrunken to this size, and so the highest roads were formed. Now, although the warmth of the sun and air had been insufficient to melt this obstruction, it is clear that the waters of the lakes would have more effect, for they gather warmth all along their valleys, and expend it in melting the ice-block where they touch it. So each of the lakes is drawn with its corresponding gulf hollowed out of the ice. This gulf, in the case of Glen Gloy, for instance, will go on extending and undermining till it reaches the second position drawn on the map. A little more of this action, when it has reached the second ice-margin drawn in the map and shaded diagonally, and Lake

Gloy undermines the ice-mass, eats its way through to freedom, and empties its waters in a northern direction into Loch Lochy. *Note.*—To this day the River Gloy turns north at this point and runs into Loch Lochy, instead of continuing its course south-west in the direction of the valley.

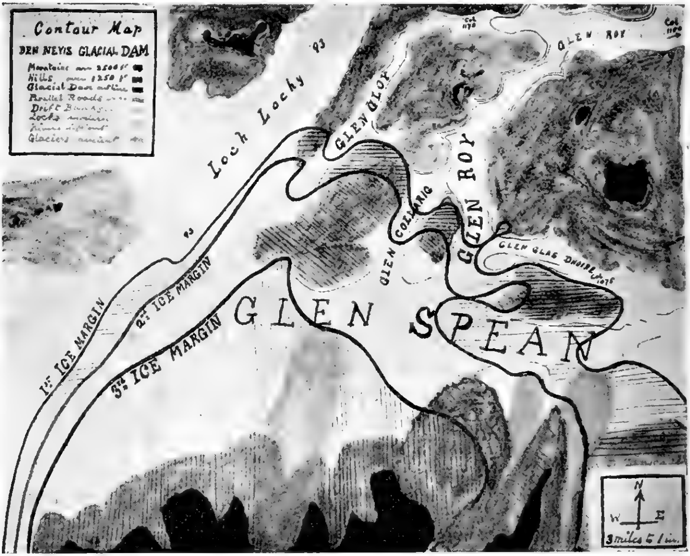


FIG. 6.—Map showing the successive positions of the shrinking ice-dam which blocked up the valleys, so making lakes, the shores of which are the parallel "roads." Hills over 1250 ft. shaded lightly. Mountains over 2500 ft. are black. The lower edge of the map shows the northern slopes of Ben Nevis and his big neighbours, with peaks ranging from 4400 to 3500 ft. high. In other parts a few peaks reach 2500 ft. The parallel "roads" are seen as thin lines bordering the valleys. The margin of the ice is indicated by a thick wavy line, and is shaded horizontally, diagonally, and vertically in the first, second, and third positions respectively.

In the same way the lakes in Glen Roy and Glen Glas Dhoire eat their way into the icy dam till they reach the position drawn as the first ice-margin. A little more of this undermining, and these two lakes finally intercommunicate sideways, deep down under the ice, by a hole which would at first be small, but, since the greater pressure on the Roy side of that hole corresponds to a column of water 85 ft. high, it would be rapidly enlarged. The soft soil and stones would be washed away and carried into Glen Glas Dhoire. Thus, while the waters of Roy rush up that glen, the tongue of land between the two lakes would be steeply and abruptly cut off, and the materials washed away and packed into the convenient gulf hollowed out of the dam by the Glas Dhoire Lake. We may see that this has happened. The sketch of Glen Glas Dhoire shows Meal Dubh steeply cut off; while just opposite, at a level a little below the second "road," is the big rounded bank, Cruaidh Bheinn, whose size, shape, height, and position show that it remains as a cast of the gulf which existed there at the time of the *débâcle*. The stones in this drift-bank are water-worn, which is very unusual in these valleys. (Fig. 4.)

After the waters of Glen Roy had thus overflowed through Glen Glas Dhoire and settled to the level of the middle "road," the united lake would continue to eat its way into the ice-dam. At the same time the lake in the upper part of Glean Spean would similarly continue to hollow out its gulf for another three or four miles. Then in the position of the second ice-margin drawn in the map the two lakes would communicate over the shoulder of Creag Dubh, and again form a drift-bank in the end of the advancing Spean gulf, which remains to-day as Meall Dhoire, a big bank, height 800 ft., on the east side of the entrance to Glen Roy. Thus the water in the glens sinks to the 850 ft. level, and there forms the lowest "road" round its edge.

But at this time there must be a small lake left in the upper part of Glen Collarig, for it communicates with Glen Roy as yet only by its "col," height about 950 ft. Until its gulf joins the advancing Spean gulf, this little lake ought to be forming a less marked "road" at that level. I am not aware if that road in Glen Collarig does exist, but expect it does, since opposite Glen Collarig there is a mound, height 800 ft., due north of Roy Bridge, which I take to be the drift-bank formed when this Collarig lake emptied itself into the Spean. Anyhow, the enlarged Spean lake would continue to advance into the diminishing glacial dam until it reaches the position of the third ice-margin drawn, and shaded vertically, where the ice is seen hugging the mountain, and sheltered under its northern slopes, while still stretching across to the other side of the valley. Then what probably happened was that the dammed-up waters found, or melted, a channel or crevice under the ice, and emptied all the waters of this huge lake, thirty miles long, and at this place 600 ft. deep, by this subglacial channel.

When such a large body of water at such tremendous pressure was discharged through a narrow passage at one place, it would naturally make some permanent mark on the locality. And there is here a striking phenomenon. The small river Spean, in its meandering course through a broad flat valley, at this point runs through a jagged rocky gorge, which makes a magnificent sight from the railway above Spean Bridge. How could that small stream have exerted such extraordinary power at this point to break up and destroy its rocky bed? Probably this gorge was cut by the escape of the waters of Loch Spean under the Ben Nevis glacial snow-drift. The river from that point still skirts the position that that snow-drift then occupied, instead of running straight across to Fort William.

This snow-drift ice-block theory seems to explain all the details of the parallel "roads." The upper "road" comes down to the margin of the ice, in the first stage drawn, and no further. The middle "road" reaches the retiring edge of the block, as drawn in the second position. And both these "roads" wind into the upper part of Glen Collarig, and stop at the place where the ice stood in that glen then. The lowest "road" occurs everywhere above the last boundary of the obstructing dam. It does not wind into the upper end of Glen Collarig from Glen Roy, for that is at too high a level, but it runs up the lower half of Glen Collarig from Glen Spean. Also this "road" is marked less clearly in the lower part of Glen Spean, into which the lake had not long advanced; while in the upper part of Glen Spean, where the lake must have existed much longer (from the very beginning of the upper "road"), there the water-level is represented by very broad stony terraces, and by the big delta which the River Gulbin formed when Lake Spean flowed eastwards.

Thus, merely assuming that the Glacial Epoch only very slowly passed away, this simple and natural theory completely and accurately accounts for the exact position and extent of all the parallel "roads," points out evidence of the successive *débâcles* by which the lakes were lowered, and explains it all as the natural result of the physical conditions at present existing.

7.—Jade or Nephrite.

By H. C. Collyer.

(Read December 15th, 1903.)

The subject of the paper this evening is one which was for a long time involved in a considerable amount of mystery, which has even now not been entirely cleared up. Jade and its kindred minerals have been found in use in several parts of the world where the stone itself is not known to exist; for instance, at the discovery of America the natives of Mexico had ornaments and amulets of green jade, which material has not been found in its natural state on the American Continent, the only exception being two small boulders found in the bed of the Frazer River, British Columbia, which may have been brought there by human agency, as one had been partly cut, as noted later on, the nearest known source being eastern Asia. On this has been founded the theory that at some time there has been communication between Asia and the western coast of North America. The jade of Mexico was very rare, and the subject of many superstitious beliefs.

Again, in Western Europe, especially in Brittany, axes of jade and jadeite occur which were supposed at one time to have been brought from Asia, none of the natural jade being found in Brittany; but of late years there have been isolated finds of jadeite of a somewhat similar character in the Alps and in Silesia, so in any case it was probably brought from a long distance.

Jadeite differs from true jade in having a larger proportion of alumina in its composition; it is harder and more opaque.

The most notable characteristic of the various forms of jade is its extreme toughness; it can only be broken or splintered by using very great force, but is not too hard to be worked into shape by laboriously rubbing it on a rough stone or with wet sand.

Primitive man seems to have had a keen eye for the hardest stone to be obtained, and from the stones in river-beds he picked out the rare pebbles of jadeite in preference to all others. In the Swiss lake-dwellings the jadeite axes found are of a peculiar variety called "saussurite," which occurs in pebbles in the valley of the Rhone, and was found *in situ* in the Alps by De Saussure, hence the name.

On the table are two specimens of "saussurite" axes from Switzerland, and a number of jadeite axes from Brittany; the latter show every sign of the value placed on them in the careful way they are finished. One has the commencement of a drill-hole at the top, as if the owner began to bore a hole in it for suspension, and found it too tough a job. The material was evidently scarce and highly prized, for the jadeite axes are very rare, and are found buried with their owners as evidently valuable possessions.

The Brittany celts shown are all of jadeite except two, one of them being of fibrolite, which looks like jade, but is a simple silicate of aluminium; the other and larger one is made of chloromelanite, which is also a silicate of aluminium, but with a proportion of iron; it is much heavier than any of the others, having a higher specific gravity.

A dark green jade, and also a variety of it called oceanic jade, are found in New Zealand, New Guinea, and New Caledonia. The Maoris of New Zealand place a high value on it. A weapon peculiar to the chiefs, called a "Mere," was sometimes made of this material, and was then priceless; one was given by the Maoris to the Prince of Wales on his visit to New Zealand two years ago, as the most valuable thing they had.

Green jade was also made up into pendants for the ears, charms in the form of axes, and especially into certain charms called "Tikis," or "Hei Tikis," which are in the form of a little squat figure with eyes of haliotus-shell, and a wide open mouth showing his tongue. An old specimen of a "Tiki" is now very valuable, and can with difficulty be obtained, as the Maoris are buying back all they can, and none are allowed to leave New Zealand.

On the table are some green jade axes, charms, and ear-pendants from New Zealand, and also a "Mere" of diorite, to show what a "Mere" is; it was used for thrusting, not for striking.

But China is the country in which jade is most highly valued; it is considered to bring good luck, hence all who can afford it wear a piece about their persons, either in the form of an ornament for the dress, or a charm-pendant, either carved or a crude natural piece. The Chinese name for jade is "Yu." They regard it with the most superstitious reverence, and expend an immense amount of labour in carving it elaborately when they get a good piece to work on. It is such an intractable material that years are expended in some of the more elaborate carving.

The specimens shown include a finely carved cup lent by Dr. Hobson. Also a green jade incense-burner, an exquisite charm or dress-fastener, cups, and a sceptre; all from Mr. Epps's collection. There is also another sceptre from my own collection.

These sceptres are called "Joo-ee," and formerly used to be given by the emperor to the governor of a State on his appointment, as an emblem of authority. Some are made entirely of jade, but the majority are of wood, with pieces of jade affixed, as are the specimens before you. In my own specimen, the cement fixing them on had perished with age, and on fastening them on again I found that the top piece of jade is hollowed out with great care to make it lighter, and as the bottom piece is solid the sceptre balances well in the hand. The peculiar form seems to show that in its origin the "Joo-ee" was a flower with a long stalk, in all probability a lotus lily, as the earlier jade specimens are all carved with the lotus, and the others have trees or flowers on them.

Among the other specimens from my own collection are an ointment-box in the form of an interrupted ring—this is a very rare and curious piece; several carved cups, one of rounded form, so cleverly made that it will only stand upright, and cannot be upset. A green jade cup and saucer have the monogram of the Emperor Kien Lung, dating about 1740 A.D. There are several dress-fasteners and ornaments and some charms, some of them finely carved. One has characters on it meaning "good luck," "prosperity," and "long life," and is in the shape of a Chinese coin. An unfinished spill-box has the interior only just roughly worked out, and shows how the Chinese bore out some of the specimens. A copper cylinder has been made to rotate quickly with wet sand in the hollow. This leaves a core which is broken off; the stump of the core can be seen. Most of these specimens have been brought from Pekin recently.

Chinese jade varies in colour from dark green to light apple-green, greenish grey, grey and white. New Zealand jade is dark green and semi-transparent.

There has been great confusion between jade, jadeite, and similar minerals; but some years ago a French chemist, M. Damour, published analyses which set the matter at rest. The analysis of white Oriental jade from China is given as follows:—

	Per cent.
Silica	57·60
Magnesia	25·61
Ferrous oxide	00·66
Lime	12·68
Alumina	00·25
Water, &c.	2·74
	99·54

Specific gravity, 2·97 per cent.

Green jade from New Zealand; analysis as follows:—

	Per cent.
Silica	51·70
Magnesia	23·50
Ferrous oxide	7·62
Lime	13·09
Alumina	00·65
Water, &c.	2·42
	98·99

Specific gravity, 3·015 per cent.

Thus containing less silica and magnesia than Chinese jade, but a considerable amount of ferrous oxide, to which its colour is due.

Jadeite, as distinguished from true jade, contains a large amount of alumina and soda, which take the place of magnesia and lime in the true jade, as the following analysis of a jadeite celt from Brittany will show:—

Analysis of Jadeite Celt from Brittany.

	Per cent.
Silica	58·62
Magnesia	2·23
Ferrous oxide	1·86
Lime	3·85
Soda	11·64
Alumina	21·77
	99·97

Specific gravity, 3·344 per cent.

"Saussurite," the form of jadeite from which many of the celts from the Swiss lake-dwellings are made, contains a much larger percentage of lime than other jadeite, but less soda.

Specific gravity is the simplest test by which to distinguish jade from jadeite; the latter being much heavier. And, again, jasper, which sometimes resembles green jade, is a great deal lighter, having only a specific gravity of 2·6.

In New Zealand is found a green mineral resembling jade, but more transparent, softer, and having a laminated structure, which is a green variety of hornblende. Imitation Maori pendants are made of it, and passed as jade. One or two specimens are shown, and a piece of the crude mineral; also a piece of crude green jade.

When jade was first brought to Europe by the Spaniards, it was believed to be a specific against disease of the kidneys, and was called by them "Piedra di Hijada," or kidney-stone; thus the origin of the name jade, and nephrite also means the same thing.

Chinese jade is found among the mountains of Western China, in the province of Yunan, but the Chinese obtain their larger supply from Central Asia, from quarries in Turkestan, Yarkand, and Khotan, which have been worked for about two thousand years. Jade is also found in Burmah and in Siberia.

Axes of jadeite and jade occur very frequently on the Pacific coast of North America. But the only pieces in its natural state yet found have been two small boulders in the Frazer River; and one of these had been partly sawn into shape by means of a thong of leather worked to and fro in wet sand. The stone had been worked from opposite sides, and when the cuts were sufficiently deep, the medial ridge was broken.

Dr. Schliemann found at Hissarlik, the site of Troy, in the lowest prehistoric stratum, a number of axes of jade and jadeite, which are supposed to have been made of material brought from Central Asia. Although the theories of tribal migrations founded on the occurrence of jade far away from its source of origin may be far-fetched and hypothetical, there can be no doubt that in the earliest times objects of value travelled long distances from hand to hand by means of barter. Witness the constant occurrence of amber from the Baltic on prehistoric sites in Southern Europe, and of turquoise from the east in the dolmens of Brittany. It may therefore be fairly inferred that jade axes, being of great value from their rarity and toughness, and esteemed for the properties attributed to the material, were used as articles of barter, and passed from one tribe to another over large tracts of country.

Jade is said to be softer and easier to work when first quarried, and hardens by exposure. But the Chinese prefer water-worn boulders for important work, as, although much harder, they are less liable to unsuspected flaws, as such flaws, had they existed, would long ago have caused fractures from the knocking about the pieces received in the river.

The Emperors of China claimed all jade found, and in the case of an exceptionally fine piece a committee of artists was called to decide as to the most suitable form to cut it into, the work frequently taking many years. The first occasion on which Chinese jade appeared in Europe in any quantity was after the sack of the Summer Palace in 1860, when quantities of fine specimens were brought here, and more especially to France; also since the recent occupation of Pekin by European troops a great deal has been brought over. It is therefore to be feared that nearly all the fine old specimens of jade in European collections have been looted from their owners. Apart from the proceeds of warlike expeditions, old carved specimens of Chinese jade are difficult to obtain, and very expensive.

It may be of interest to inquire as to the origin of the esteem and superstition with which jade is regarded wherever it is known and used. We have seen that alike in China, New Zealand, Mexico, and prehistoric Europe it has been looked upon as possessing magical properties, and highly valued accordingly. May it not be that, as jade was the toughest material known to primitive man that was suitable for weapons and tools, before he became acquainted with the use of metals, it became always associated with the idea of power and authority, as only those of high rank could afford to possess it on account of its rarity? In proof of this, there is a beautifully made green jade axe found in the Imperial Palace at Pekin, which was evidently regarded as an amulet of value. Also the necklaces worn as collars of office by mandarins have small axes mounted in gold hanging from them, the number denoting the rank of the wearer. The one shown from my own collection has four such—two of jade, one of amythyst, and one of glass imitating saphhire. There is a vacant place for another to be added when the wearer rose in rank. There is also an imitation of a New Zealand "Tiki," but smaller—this is from Pekin, thus being a Chinese adoption of a New Zealand superstition; and a Persian charm of greyish jade with a long inscription; also three Chinese discoidal charms, one of them with characters, another plain, and the third of pure white jade, very finely carved. A water-worn lump of white jade is in its natural state, as found in a river-bed.

I was recently shown a large piece of New Zealand jade which its owner had received in its natural state, but afterwards had it cut and polished, and the workman said he did not wish to do any more jade-cutting, as being so tough it tore his wheels all to pieces.

The principal authorities on the subject of nephrite in this country are Mr. F. W. Rudler, F.G.S., and Mr. J. Hilton, F.S.A. Various papers and notes by both these gentlemen have appeared at various times in the Journal of the Archæological Institute, and the Journal of the Anthropological Institute of Great Britain, from which many of the foregoing facts have been collated. Dr. A. B. Meyer, the Director of Museums at Berlin, is issuing in parts a most exhaustive work on nephrite, "Zur Nephritfrage." The part issued this year describes the jade axes used by the natives of New Guinea, which are true oceanic jade; and also gives an account of the finding of a large and remarkable block of jade found in a quarry at Jordansmühl, in Silesia. This block, weighing 2140 kilos, was an erratic boulder, borne from a long distance by glacial action, and of fine quality. It is estimated to exceed in weight all the jade and jadeite axes found, and in public and private collections in Europe. He also gives a full list of all the papers, books, and notices on the subject of jade, amounting to about three hundred in number, which have appeared in various scientific journals and transactions, reports and publications of societies, &c., in Germany, America, Great Britain, France, and Italy during the past twenty years.

The whole subject of the superstition attached to various stones is a wide and a very interesting one. It lies at the root of much of the esteem in which precious stones are held, apart from their beauty. Even at the present day in this country many people firmly believe in lucky and unlucky stones. How many people consider opals unlucky, and will neither wear them or give them to anyone, although they are the most beautiful of stones; whilst jade, which is ugly and unattractive-looking, is highly esteemed as lucky.

8.—The Microscope and Food Adulteration.

By Lester Reed, F.I.C., F.C.S.

(Read December 16th, 1903.)

While the analyst depends chiefly upon chemical methods for his qualitative, and almost entirely so for his quantitative work, it would be impossible to avoid falling back upon the invaluable help of the microscope in many cases. I propose this evening to pass briefly in review a few of these.

When a sample of flour is submitted for analysis, the question of admixture with foreign starches is almost wholly a microscopical one, and it is fortunate for our purpose that the shapes and other characters of starch granules are as distinctive as they are.

With a microscope of very moderate power it is possible to become intimate with some of the more striking peculiarities of some of the more common starches, and with the use of a polarizer further distinctions may be brought to light. We cannot assign a fixed or invariable diameter to any particular starch. We have only the average diameter to go by, if we attempt to judge by size alone.

Potato-starch granules are some of the largest, and may be roughly compared to oyster-shells, which they resemble not only in outline, but in their concentric, distinct, ring-like markings; with polarized light they give a well-marked cross, and show colours well with selenite; their size is from 60 to 100 microns (the micron being ·001 millimetre).

In wheat-starch the markings are comparatively faint, and a near approach to the circular form is often attained.

Maize-starch is smaller than that of wheat, and somewhat angular in form.

Rice-starch is still smaller, and very angular.

The natural starches of cocoa and pepper are very small, the latter from 0.5 to 5 microns.

If we are at any time in doubt whether the objects we are looking at under the microscope are starch granules or not, there is a very simple test by which the point may be decided. We introduce a droplet of iodine solution under the cover-glass. This solution is pale straw-coloured, but whenever it reaches and passes a starch granule, the latter becomes deep blue, approaching to black, if the iodine solution be strong. This is due to the fact that a blue compound, commonly called iodide of starch, is formed by the action of the iodine upon the starch, of which the granule is mainly composed.

Starch is to be regarded as a definite chemical substance, having an existence and identity independently of its granular structure; nor is the granule necessarily composed entirely of one substance. It is a small structure built up chiefly of starch, on a plan varying with the nature of the plant from which it is derived. Starch is a substance allied to sugar and to cellulose, having, in common with these, the peculiarity that it consists of carbon united to hydrogen and oxygen, the two last being in the exact proportions in which they exist in water; so that if we remove the elements of water from starch, sugar, or cellulose, a black mass of carbon remains, and all these substances are therefore charred by strong sulphuric acid (which has a great attraction for water) for this reason.

Occasionally a chemist requires to ascertain whether a particular fibrous structure is cellulose or not, and, although a mere examination of structure with the microscope may be sufficient to distinguish, for example, fibres of scraped leather from those of cotton or paper (cellulose), it is convenient to apply, as a confirmation, a colour-test in this case also.

Iodine, however, under ordinary circumstances will not give any such blue colour with cellulose, as it will with starch, but in the presence of chloride of zinc it will do so. So that if we mix together fibres of cotton and leather, and treat them dry on a slide with the iodine and chloride of zinc solution, and then place the cover-glass over, we see all the cotton fibres blue, while those of leather are colourless.

Another colour reaction may be made use of to detect ferruginous particles in drinking-water. We allow a drop of the water, containing some of the particles to be examined, to dry on a slide, warming it, until it does so, over a small flame, then, having placed on a cover-glass a drop of mixed solution of ferrocyanide of potassium and hydrochloric acid, we invert this on to the dried residue of the drop, and upon examining under the microscope shall probably see one or more bright blue particles; these are due to the formation of prussian blue, by the action of these reagents upon the iron-containing particles originally suspended in the water that was to be examined.

Perhaps one of the most common uses of the microscope for the detection of adulteration is in the case of coffee wherein we have to search for chicory. In this case I have not yet been able to find any chemical reagent which will give satisfactorily a characteristic effect visible in the microscope, and it seems to be necessary to rely, as regards the microscopical examination, upon differences of structure only. The presence of chicory, if that substance appears to be present, must of course be confirmed by independent chemical tests. Chicory contains sugar and sodium, neither of which are present to any extent in normal coffee, and it is quite conceivable that some microscopical test might be found, based upon these distinctions.

The presence of crystals or fragments of alum in flour may be rather prettily demonstrated by moistening a little of the flour on a slide with a mixture of tincture of logwood and carbonate of ammonia solution. A microscopical examination then shows a slaty blue patch on a pink ground wherever there was originally a fragment of alum.

Much may be done with the microscope in the recognition of definite crystalline forms and characteristic crystal groupings; these are of some help in the identification of alkaloids. We are accustomed to think of crystals as hard, yet so soft a substance as butter readily takes a crystalline shape, and, indeed, its crystals are to a certain extent, and especially when viewed by polarized light, characteristic of the substance. If butter be melted and allowed to cool, its appearance is quite altered; it becomes glistening from the breaking up of light from its innumerable crystal faces. When we find such crystals in butter, we have proof that it has been melted, and a suspicion may be aroused of admixture, while melted, with other fats, which suspicion may, or may not, be confirmed by subsequent chemical analysis.

"Dr. Thomas Taylor (of the U. S. Department of Agriculture)" (I quote from J. P. Battershall) "has made an elaborate investigation of the microscopic appearance of various fats when viewed by polarized light. He regards the presence of peculiar globular crystals and the black cross commonly termed St. Andrew's cross as characteristic of genuine butter. Lard, beef, and other fats are said to exhibit different and, to some extent, distinctive crystalline forms. Prof. Weber, however, affirms that mixtures of lard and tallow fat, under certain conditions, cannot be distinguished from butter by means of this method of examination. More recently, Dr. Taylor states that the distinguishing difference between butter and other fats under the microscope is, that the former, when observed by polarized light through a selenite, exhibits a uniform tint, whereas the latter shows prismatic colours. Although the results of these investigations cannot as yet be considered as perfectly satisfactory or conclusive, they certainly are entitled to rank as a highly valuable and important step in advance of the optical processes hitherto employed."

Quantitative determinations by methods of counting under the microscope are in some cases possible. Speaking of the application of such methods to starches, A. W. Blyth says: "If adulteration in any case has been made out, approximative quantitative results may be obtained by making a standard mixture of the genuine starch with the adulterant found, and then counting the individual grains in the microscopic field. Thus, for example, supposing oatmeal to be found adulterated with barley-starch, and from a preliminary examination the mixture supposed to be 40 per cent., we proceed as follows:—

"Pure barley-meal and oatmeal are carefully dried at 100° C., and mixed so that the mixture is exactly 40 per cent. A few grains of this powder are now rubbed up with glycerine and alcohol into a smooth paste, which is then further diluted to a certain bulk, a drop taken out with a glass rod, and covered with a glass, which is gently pressed down. The number of grains of barley- and oat-starch are now counted, and their relative proportion noted; and an exactly similar process is applied to the oatmeal in question. If proper care is taken to repeat the experiments, the result is a near approximation to the truth."

In the case of many starches, however, we should probably meet with the difficulty, that while you may be able readily enough to identify and count certain of the granules in view, there are many others less characteristic and of sizes varying from the average.

Milk, when observed under the microscope, shows fatty globules. The fat-globules are lighter than the liquid in which they float, as regards specific gravity, and, consequently, when milk is allowed to stand, we have a layer of cream. The larger of these globules reach the surface first, and some of the more minute never get there. There will therefore be only the smaller globules to be seen in skim milk, so that the size of the fat-globules may be to some extent an indication of the particular form of adulteration which consists in the abstraction of cream. Starch granules in milk would of course be readily detected by the iodine test.

Occasionally the microscope is of use in identifying a crystalline precipitate in the ordinary course of qualitative analysis, as in the case of the ammonio-phosphate of magnesia, or of iodide of lead after solution in hot water and reprecipitation by cooling, when beautiful iridescent yellow hexagons of very perfect form are seen.

By the aid of photography it is possible to render permanent our microscopical observations, but the great advantage of colour is lost; indeed, for the purpose of training one's powers of observation, and of fixing in the memory the appearance of objects, I doubt if there is anything much better than to practice one's self in making coloured sketches of them.

Instances of the use of the microscope in food analysis might be multiplied; but perhaps enough has been said to show that the microscope is a very valuable adjunct to chemical work, and that there exists a wide field for the devising of simple but characteristic tests by means of observations with the instrument.

9.—List of Fossils Collected.

By W. Murton Holmes.

From the Chalk obtained from the Cutting and Tunnel between Coulsdon and Merstham, L.B. & S.C.R.

Radiolaria.—Twenty genera, forty-one species.

Spongida.—*Placotrema cretaceum, Ventriculites decurrens, V. impressus, V. alcyonoides, V. radiatus, Plocoscyphia, Camerospongia, Porosphæra pileolus* (one specimen), *Porosphæra* sp. (irregular-lobed form, two specimens).

Actinozoa.—*Parasmilia centralis, P. serpentina.*

Bryozoa.—*Truncatula alternata*, and other Bryozoa.

Echinodermata.—*Bourgueticrinus ellipticus, Pentacrinus Agassizi, Pentagonaster Parkinsoni, Cidaris sceptrifera, C. clavigera, C. hirudo, Cyphosoma radiatum, Echinocorys vulgaris* var. *gibbus, Micraster cor-bovis* (type form), *M. cor-bovis* (passage form), *M. Leskei, M. Leskei* (passage form), *M. præcursor, M. cor-testudinarium, Holaster planus, H. placenta, Cardiaster Cotteaui.*

Annelida.—*Serpula ampullacea, Serpula* sp.

Brachiopoda.—*Crania egnabergensis, Terebratulina striata, T. gracilis* var. *lata* (Eth.), *Terebratula semiglobosa, T. carnea, Rhynchonella Cuvieri, R. plicatilis.*

Mollusca: Lamellibranchiata.—*Janira quinquecostata, Spondylus spinosus, Dianchora lata, Lima Hoperi, Ostrea semiplana, O. Normaniana, Plicatula sigillina, Inoceramus Cuvieri, I. mytiloides, Teredo amphisbæna.*

Gastropoda.—*Pleurotomaria perspectiva, Turbo gemmatus.*

Cephalopoda.—*Nautilus* sp., *Ammonites peramplus.*

Crustacea.—*Scalpellum maximum.*

Pisces.—*Oxyrhina Mantelli, Macropoma* (coprolite).

From the Haling Chalk-pit, Brighton Road, Croydon.

Spongida.—*Ventriculites radiatus, Ventriculites* sp.

Echinodermata.—*Bourgueticrinus ellipticus, Pentagonaster megaloplax* (Sladen), *Pentagonaster* sp., *Cidaris perornata, C. sceptrifera, C. hirudo, Cyphosoma Konigi, Echinoconus conicus, Micraster cor-anguinum.*

Annelida.—*Terebella Lewesiensis.*

Brachiopoda.—*Terebratulina striata, Terebratula semiglobosa.*

Mollusca: Lamellibranchiata.—*Ostrea Normaniana, Inoceramus, Spondylus spinosus, Lima Hoperi.*

Crustacea.—*Enoploclytia Sussexiensis.*

Pisces.—*Ptychodus rugosus, Lamna appendiculata, Scapanorhyncus rhaphiodon* (Ag.). *Corax falcatus, Oxyrhina Mantelli, Notidanus microdon, Enchodus* sp., *Cladocyclus Lewesiensis;* Fish Coprolites.

From the Chalk-pit at Whyteleafe, Surrey.

Spongida.—*Ventriculites impressus, V. radiatus.*

Echinodermata. — *Cyphosoma radiatum, Echinoconus subrotundus, Holaster planus.*

Brachiopoda.—*Terebratulina gracilis* var. *lata* (Eth.), *Terebratula semiglobosa.*

Mollusca: Lamellibranchiata. — *Spondylus spinosus, Inoceramus Cuvieri.*

Cephalopoda.—*Nautilus* sp., *Prionocyclus Neptuni* (Geinitz).

Reptilia: Plesiosauridæ.—*Polyptychodon interruptus.*

Pisces.—*Ptychodus mammilaris, Lamna appendiculata, L. semisulcata, Oxyrhina Mantelli, Corax falcatus, Protosphyræna ferox.*

10.—Report of the Meteorological Committee, 1903.

Prepared by the Hon. Sec., Francis Campbell-Bayard, F.R. Met. Soc.

(Read February 16th, 1904.)

The same arrangements, under which the daily rainfall of the district round Croydon has been observed and tabulated, have been continued throughout the year 1903. The number of stations in the printed list is 89, and there are three additional stations—*viz.* the County Hall, Kingston; Fox Hill Gardens, Upper Norwood; and the Sewage Works, Sutton—the records of which are complete for the whole year, and which will be found at the end of this Report. These 92 stations are under the superintendence of 74 observers. Two changes have occurred in consequence of the removal of the observers, *viz.* Mr. A. E. Watson, who left the Whitgift at the end of July; and Miss Percy, who left Feniton, Farnborough, at the end of October. Mr. Watson's record, commencing in April, 1899, is, I am happy to say, in the possession of your Committee; and efforts are being made to obtain a complete set of the records at Farnborough, which commenced in 1896. A great loss has, however, been sustained at the beginning of this present year through the death of Mr. W. H. Tyndall, of Redhill, on January 13th, at the great age of ninety-one years. Through the courtesy of Mr. Tyndall, your Hon. Sec. was some time ago presented with a copy of his rainfall record at Redhill, commencing with January, 1867.

Appendix I. to this Report contains a list of the observers, with particulars relating to the stations and gauges, and also the monthly tables of daily rainfall, of which a sufficient number have from month to month been pulled for the use of the Society. These printed tables contain the records of all observers, with the exceptions already mentioned, reporting to the Committee.

Appendix II. contains a record of all falls of rain of 1·00 in. and upwards, extracted from the monthly tables in Appendix I.

In dealing with the rainfall records of this very remarkable wet year, it is extremely difficult to know where to begin, and it is, I fear, by no means impossible to forget some important feature. One of the great points to be remembered, as I mentioned in my presidential address last month, is, that we here, just south of the Thames, have had the largest year's rainfall that has been experienced in this district for a very great number of years. If we may take the long rainfall record of Greenwich, commencing in 1815, as a standard—though, by-the-by, the first 26 years are not considered very reliable, and have never yet been adequately discussed—there has been no such wet year since 1815, and it seems possible that the fall of 1903 has not been exceeded for quite a century.

With reference to the number of days on which a fall of one inch and upward fell, we have no less than 28 such days, a number which has certainly not been exceeded since these observations in the district have been started; but even more wonderful is the magnitude of the individual falls, and their widespread character. We have on May 30th two falls of over 3 in., on June 10th one such fall, and on July 23rd two falls of over 4 in. and no less than seven falls between 3 and 4 in.; and with reference to their widespread character, I should like to mention that the fall on June 10th occurred at no less than 56 stations, possibly more (for some of the gauges are monthly ones), out of 89; on July 23rd at 71 stations out of 88; on Aug. 11th at 41 stations out of 88; on Sept. 4th at 30 stations out of 88; and on Nov. 27th at 69 stations out of 87. Besides all this, some of the individual stations had no less than eight such falls—Denbies, Dorking, and Beddington Corner.

TABLE I.

The Rainfall of 1903 as compared with the Average of the Ten Years 1891–1900.

Stations	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Knockholt (F. G.)	+0·59	+0·29	+0·90	+0·77	+0·78	+3·71	+2·50	+1·50	+0·59	+4·40	—0·43	—0·68	+14·92
Dorking	+0·29	+0·03	+1·87	+0·91	+2·60	+3·93	+1·98	+3·80	+1·67	+4·52	—0·92	—0·66	+20·02
Caterham	0·00	—0·38	+1·34	+1·01	+1·54	+4·26	+1·40	+4·25	+0·27	+4·24	—0·77	—1·25	+15·91
Banstead	+0·37	—0·06	+1·29	+0·79	+1·63	+4·97	+3·06	+1·92	+1·06	+4·01	—0·74	0·00	+18·30
Addington Hills	+0·62	—0·06	+0·85	+0·66	+1·31	+4·97	+2·16	+1·61	—0·07	+2.37	—0·45	—0·53	+13·44
Nutfield (O. G.)	+0·13	—0·04	+0·83	+0·87	+1·34	+3·19	+2·05	+1·52	+0·35	+3·80	—0·43	—0·67	+12·94
Reigate Hill	+0·27	—0·17	+1·26	+0·73	+1·08	+3·68	+1·60	+2·05	+0·63	+3·31	—0·66	—0·86	+12·92
Sevenoaks	—0·13	—0·55	+0·36	+0·86	+0·88	+3·12	+3·62	+2·65	+0·28	+2·64	—0·53	—0·87	+12·33
Forest Hill (S. & V. W. C.)	+0·58	—0·10	+0·70	+0·82	+0·99	+4·43	+2·00	+1·98	+0·50	+1·98	—0·26	—0·82	+12·80
Addington (Pumping St.)	+0·57	+0·05	+1·22	+0·62	+0·63	+4·79	+2·02	+1·49	—0·22	+3·56	—0·35	—0·62	+13·76
Abinger (The Hall)......	+0·34	—0·05	+1·25	+1·12	+1·92	+3·23	+1·95	+3·12	+1·58	+5·03	—1·14	—0·23	+18·12
Farningham Hill.........	+0·61	+0·02	+0·49	+0·53	+0·54	+4·17	+3·86	+1·44	+0·73	+3·40	—0·15	—0·35	+15·29
Redhill (Oxford Road)...	+0·16	—0·16	+1·26	+0·75	+1·31	+3·42	+1·19	+1·44	+0·67	+3·78	—0·69	—0·76	+12·37
Bickley	+0·58	—0·14	+0·41	+0·60	+1·08	+4·90	+3·64	+1·61	+0·18	+2·43	—0·42	—0·74	+14·13
D'Abernon Chase	+0·69	—0·32	+0·82	+0·83	+1·65	+5·24	+2·12	+2·79	+1·46	+3·17	—0·71	—0·45	+17·29
Addington (Park Farm)	+0·86	+0·31	+1·21	+0·79	+0·67	+5·93	+2·13	+1·94	—0·23	+3·19	—0·42	—0·55	+15·83
Leatherhead..............	+0·77	+0·01	+1·53	+0·94	+1·71	+4·65	+3·35	+3·66	+1·54	+3·75	—0·82	—0·35	+20·74
Sutton*	+0·36	—0·29	+0·66	+0·53	+1·04	+4·89	+2·22	+2·19	+0·99	+2·72	—0·53	—0·25	+14·53
Forest Hill (Newfield H.)	+0·67	—0·22	+0·48	+0·85	+1·08	+4·42	+2·03	+1·65	+0·35	+1·72	—0·27	—0·72	+12·04
Orpington.................	+0·47	—0·15	+0·57	+0·46	+0·62	+4·18	+3·67	+1·04	+0·18	+2·68	—0·42	—0·41	+12·89
W. Norwood..............	+0·58	—0·31	+0·41	+0·68	+1·69	+4·80	+1·90	+1·75	+0·61	+1·67	—0·51	—0·94	+12·33
Oxshott....................	+0·62	—0·21	+0·93	+0·82	+1·48	+4·90	+1·96	+2·51	+1·63	+2·72	—0·67	—0·45	+16·24

THE RAINFALL OF 1903 AS COMPARED WITH THE AVERAGE OF THE TEN YEARS 1891–1900 (*contd.*).

STATIONS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Beckenham*	+0·58	—0·12	+0·45	+0·64	+1·65	+5·06	+2·82	+1·88	+0·18	+1·71	—0·34	—0·54	+13·97
Nunhead	+0·53	—0·45	+0·30	+0·65	+0·88	+4·22	+2·09	+2·08	+0·51	+1·64	—0·58	—0·89	+10·98
Sidcup	+0·55	—0·07	+0·62	+0·76	+0·76	+4·17	+4·46	+1·71	+0·36	+2·50	—0·12	—0·52	+15·18
Croydon (Duppas House)	+0·34	—0·27	+0·62	+0·56	+2·42	+5·46	+2·16	+1·48	+0·04	+2·01	—0·44	—0·34	+14·04
Wimbledon Hill*	+0·60	—0·48	+0·77	+0·71	+1·30	+4·35	+2·35	+1·70	+0·75	+2·08	—0·46	—0·80	+12·87
Greenwich	+0·63	—0·30	+0·70	+0·68	+0·50	+4·50	+3·22	+2·60	+0·50	+1·58	—0·39	—0·89	+13·33
Croydon (Waddon N. R.)	+0·52	—0·23	+0·69	+0·61	+2·51	+6·04	+2·35	+1·68	+0·19	+2·26	—0·25	—0·33	+16·04
Wallington	+0·52	—0·13	+0·69	+0·44	+3·94	+5·38	+2·57	+1·69	+0·83	+2·77	—0·35	—0·41	+17·94
Croydon (Brimstone Bn.)	+0·59	—0·05	+0·56	+0·49	+1·93	+6·45	+2·29	+1·27	+0·16	+2·19	—0·15	—0·24	+15·49
South Norwood*	+0·75	—0·18	+0·67	+0·96	+1·70	+5·14	+2·26	+2·02	+0·55	+1·81	—0·37	—0·52	+14·79
Beddington	+0·56	—0·13	+0·69	+0·45	+3·05	+5·33	+2·27	+1·67	+0·39	+2·31	—0·48	—0·53	+15·58
Richmond*	+0·51	—0·67	+0·61	+0·57	+2·21	+4·87	+2·11	+0·95	+1·24	+2·10	—0·86	—0·86	+12·78
Brixton	+0·61	—0·45	+0·49	+0·85	+1·96	+4·68	+3·21	+2·09	+0·64	+2·28	—0·34	—0·92	+15·10
Wimbledon (Sew. Wks.)	+0·47	—0·46	+0·47	+0·49	+3·22	+4·19	+2·55	+1·53	+0·65	+1·70	—0·29	—0·73	+13·79
Raynes Park	+0·47	—0·68	+0·35	+0·52	+1·22	+4·27	+2·37	+1·58	+0·68	+1·91	—0·69	—0·96	+11·04
New Malden	+0·41	—0·63	+0·31	+0·29	+0·57	+4·26	+2·09	+1·79	+0·70	+1·68	—0·78	—0·87	+ 9·82
Esher	+0·84	—0·36	+1·10	+0·62	+0·55	+4·47	+1·22	+1·66	+1·50	+2·47	—0·63	—0·50	+12·94
Kingston	+0·65	—0·52	+1·02	+0·67	+0·69	+4·93	+2·84	+1·59	+1·20	+2·25	—0·77	—0·77	+13·78
Surbiton	+0·71	—0·52	+0·88	+0·41	+0·35	+4·79	+2·06	+1·60	+1·30	+2·16	—0·65	—0·63	+12·46
Wilmington	+0·63	—0·10	+0·38	+0·49	+0·42	+3·54	+3·92	+1·61	+0·53	+2·27	—0·32	—0·46	+12·91
Battersea	+0·45	—0·54	+0·32	+0·70	+1·89	+4·00	+2·35	+2·16	+0·33	+1·81	—0·35	—0·94	+12·18
Deptford	+0·66	—0·29	+0·59	+0·67	+0·77	+4·36	+2·56	+2·47	+0·51	+1·67	—0·36	—0·81	+12·80

With reference to the rainfall of 1903, I have prepared Table I. This table consists of 44 stations from amongst the 48 whose averages for the ten years are given in the Report for 1900, the stations for which the individual records are not the same being marked with a *. If we examine this table carefully, we shall see that, with two exceptions, *viz.* Caterham and Sevenoaks, the rainfall of January was above the average; that it was below the average in February, except at Knockholt, Dorking, Addington (Pumping Station), Farningham Hill, Addington (Park Farm), and Leatherhead; that in March, April, May, June, July, and August it was above the average at every station; that in September it was above the average, except at Addington Hills, Addington (Pumping Station), and Addington (Park Farm); that in October it was above the average at every station; that it was below the average in November at every station, and likewise also in December, with the single exception of Banstead; and, on the year's average, that it was above at every station. The month of June is the most remarkable of these months; there the excess varied from 6·45 in. at Brimstone Barn, Croydon, to 3·12 in. at Sevenoaks; then would appear to come July, with an excess of 4·46 in. at Sidcup to 1·19 in. at Redhill; and after that May, with an excess from 3·94 in. at Wallington to 0·62 in. at Orpington. The excess on the year's average varied from 20·74 in. at Leatherhead and 20·02 in. at Dorking to 9·82 in. at New Malden and 10·98 in. at Nunhead.

That the year has been an extremely wet one has already been shown by the amount of rain, but it can also be demonstrated in another way by comparing the number of rainy days with the average of the ten years 1891–1900. For this purpose I have prepared Table II. from my own observations at Wallington, and Table III. from the Greenwich observations.

TABLE II.

Number of Rainy Days at Wallington, Surrey.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year.
Average of 10 years 1891–1900	18	14	13	11	11	11	10	15	12	16	16	17	164
1903	17	12	19	12	14	13	14	19	15	25	20	13	193

TABLE III.

Number of Rainy Days at Greenwich Observatory, Kent.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year.
Average of 10 years 1891–1900	16	12	14	11	12	12	12	15	12	16	15	16	163
1903	16	11	18	12	16	11	13	18	16	27	15	11	184

These two tables present some curious anomalies, but yet there is a certain agreement. The most curious feature is the month of June. Though this month was extremely wet, yet at Wallington the number of rainy days was only two in excess, and at Greenwich even one below the average. The number of rainy days in October is at both places very much above the average. December was much below the average at both places.

Through the courtesy of Mr. Baldwin Latham, I have this year been furnished with the following figures for 1903. The actual number of hours during which rain fell during the year was 756·7 hours, which gives the actual number of days of twenty-four hours each as 31·5 days, and the actual annual rate of fall as ·0512 in. per hour. The greatest rate of fall occurred in July, which has ·0805 in. per hour; May had the next, namely, ·0728 in. per hour; and June had the third, namely, ·0603 in. per hour; whilst April had the lowest rate of fall, namely, ·0280 in. per hour. In November the bourne broke out at Marlpit Lane, Carshalton, and Ewell.

It is out of place for this Committee to deal with the effects of this great rainfall on human life and on vegetation, but I think that perhaps a few words as to its effects on human life would not be considered out of place. The year has undoubtedly been a healthy one, so far as human life is concerned. The death-rate has been low, and diphtheria, enteric and other fevers have not, as a whole, been prevalent. There is no doubt that the cleansing the soil by the rainfall has greatly contributed to this immunity. Our holidays have been spoilt, but we have had great compensations in other ways. With respect to the influence of the rainfall on vegetation, this can better be dealt with by the Botanical Committee.

In conclusion, the Committee desire to thank those, fifteen in number, who have given donations in aid of this rainfall work, which evidently supplies a want which has been felt for some time.

THE COUNTY HALL, KINGSTON, SURREY.

Observer—E. UNDERWOOD. Gauge 5 in. in diameter.

Height of gauge above ground, 9 in.
Height of station above sea-level, 31 ft.
Time of observation, 7.30 a.m.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
2.44	1·12	2·57	1·69	2·07	6·37	4·48	4·30	3·21	5·02	2·04	1·51	36·82

3, Fox Hill Gardens, Upper Norwood, Surrey.

Observer—Windham H. R. Ryves. Gauge 5 in. in diameter.

Height of gauge above ground, 9 in.
Height of station above sea-level, 300 ft.
Time of observation, 9 a.m.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
2·10	1·32	2·07	2·05	3·13	5·61	4·38	3·78	2·30	5·12	2·22	1·48	35·56

The Sewage Works, Sutton, Surrey.

Observer—C. Chambers Smith. Gauge 8 in. in diameter.

Height of gauge above ground, 1 ft.
Height of station above sea-level, 94 ft.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
2·40	1·27	2·00	1·77	2·32	6·79	4·45	4·35	3·06	5·21	2·09	1·93	37·64

APPENDIX I.

CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY

(Meteorological Committee.)

No.	Stations.	Observers.	Size of Gauge.	Height above Ground.		Height of Statn. ab. Sea-level.
			IN.	FT.	IN.	FT.
	Holmbury St. Mary (Ioldwynds)	F. Cornish	5	1	0	530
	Abinger (The Rectory)	Miss Brodie-Hall	5	1	0	381
	Abinger (The Hall)	The Lord Farrer	8	2	0	320
	Dorking (Denbies)	J. Beesley	5	0	6	610
5	Redhill (Oxford Road)	W. H. Tyndall	8	1	0	300
	Redhill (Linkfield Lane)	Mrs. Stephenson	5	1	0	350
	Nutfield (The Priory)	J. Moffatt	8	1	2	468
	Nutfield (The Priory) 2nd gauge	J. Moffatt	8	1	2	331
	Buckland (Hartswood)	R. W. Clutton	5	1	0½	174
10	Reigate Hill (Nutwood Lodge)	H. E. Gurney	5	1	0	440
	Upper Gatton (The Park)	F. Druce	5	1	0	600
	Merstham (Rockshaw Lodge)	T. W. Hill	5	1	0	475
	Harp's Oak Cottage	R. C. Grant	5	1	0	454
	Chipstead (Shabden Park)	J. Crerar	5	1	0	550
15	Chaldon (The Rectory)	Rev. G. E. Belcher	5	1	0	542
	Caterham (Metropolitan Asylum)	P. E. Campbell, M.D.	5	1	0	610
	Westerham (Hill Estate)	W. Morris	5	1	0	539
	Westerham (The Town)	W. Morris	5	1	0	380
	Knockholt Beeches (Field Gauge)	W. Morris	5	1	0	785
20	Knockholt Beeches (Tower Gauge)	W. Morris	5	24	6	812
	Chevening (The Park)	C. Sutton	5	1	0	360
	Sevenoaks (St. John's Hill)	W. W. Wagstaffe	5	1	10	380
	Chelsham (Fairchildes)	A. S. Daniell	8	1	0	600
	Warlingham (Egremont)	H. Rogers	5	1	0	614
25	Kenley (Hazelea)	Mrs. Carr-Dyer	5	1	0	282
	Sanderstead (The Red House)	Capt. Carpenter, R.N.	5	1	0	320
	Burgh Heath (The Reservoir)	Sutton Dis. Water Co.	5	1	0	580
	Leatherhead (Downside)	A. Tate	5	1	0	250
	D'Abernon Chase	Sir W. Vincent, Bart.	5	1	0	280
30	Oxshott (Beverstone)	W. H. Dines	5	1	0	212
	Banstead (The Hall)	E. J. Maitland	8	1	0	488
	Sutton (Carshalton Road)	Sutton Dis. Water Co.	5	1	0	110
	Benhilton (Angel Hill)	J. C. M. Stanton	5	1	3	125
	Carshalton (Sewage Works)	W. W. Gale	5	1	0	118
35	Wallington (Maldon Road)	F. Campbell-Bayard	5	4	1	140
	Beddington (Riverside)	S. Rostron	5	1	0	120
	Croydon (Brimstone Barn)	Croydon Corporation	5	1	0	130

No.	Stations.	Observers.	Size of Gauge.	Height above Ground.		Height of Statn. ab. Sea-level.
			IN.	FT.	IN.	FT.
	Croydon (Waddon New Road)....	Croydon Corporation	5	1	0	146
	Croydon (Duppas House)	Baldwin Latham	8	1	0	158
40	Croydon (Whitgift)	A. E. Watson	5	1	0	191
	Croydon (Windmill Road)	A. Malden	5	1	6	174
	Croydon (Park Hill Rise)	H. F. Parsons, M.D.	5	1	0	250
	Croydon (Ashburton Road)......	J. E. Clark	5	1	0	188
	Addington Hills (The Reservoir)..	Croydon Corporation	8	0	9	473
45	Addington (Park Farm)	W. Whalley	5	1	0	268
	Addington (Pumping Station)....	Croydon Corporation	8	1	0	331
	West Wickham (Wickham Court)	Sir H. F. Lennard, Bt.	5	1	2	300
	Hayes (Hayes Place)	W. Beale	8	1	0	350
	Farnborough (Feniton)	Miss Percy	5	1	0	376
50	Orpington (Kent Water Co.)	W. Morris	5	1	0	220
	Farningham Hill (Hill House) ..	A. J. Waring	5	3	0	300
	Southfleet (Kent Water Co.)	W. Morris	5	1	0	82
	Chislehurst (Hawkwood)	Miss Edlmann	5	1	0	300
	Bickley (The High Field)	J. Batten	5	1	2	295
55	Bromley (The Palace)	Coles Child	5	1	0	187
	Bromley Common (Elmfield)	Rev. J. P. Faunthorpe	5	0	9	240
	Beckenham (Wickham Road)....	E. Scovell..........	5	1	2	155
	Anerley (The Town Hall)	H. W. Longdin......	8	40	0	191
	South Norwood (Woodvale)	E. Dean	5	1	0	216
60	Beddington Corner (Millgreen Rd.)	G. Miller	5	5	0	77
	Morden (Steel Hawes)..........	Miss R. Hames......	5	5	2	100
	Wimbledon (Sewage Works)	C. H. Cooper	5	1	0	58
	Wimbledon (The Downs)	Francis Fox	5	1	1	162
	Wimbledon (The Windmill)	Jesse Reeves........	5	1	0	172
65	Raynes Park (Pumping Station)..	C. H. Cooper	5	1	0	47
	New Malden (Sewage Works)....	T. V. H. Davison....	5	1	0	45
	Worcester Park (Manor Lodge)..	F. D. Outram	5	1	9	120
	Esher (Sewage Works)..........	A. J. Henderson	5	1	0	40
	West Molesey (Chelsea Water Co.)	H. Wrinch..........	5	1	0	32
70	Surbiton (Chelsea Water Co.)....	H. Wrinch..........	10	0	6	25
	Kingston (Sewage Works)	T. Stevens..........	5	1	0	25
	Richmond (The Terrace)	J. H. Brierley	8	1	6	109
	Putney Heath (The Reservoirs)..	H. Wrinch..........	5	1	0	180
	Wandsworth Com. (Patten Road)	F. J. Brodie	5	1	0	100
75	Clapham Park (New Park Road)	D. W. Horner	5	1	3	128
	Streatham (Woodfield Avenue)...	F. Jordan	5	1	0	120
	West Norwood (Thornlaw Road)..	W. Marriott	5	1	0	220
	Up. Norwood (Dulwich-wood Park)	T. P. Caldicott	5	1	2	276
	Forest Hill (Dartmouth Road) ...	L. W. F. Behrens ..	5	1	0	220
80	Forest Hill (S. & V. Water Co.)..	J. W. Restler	5	1	0	344
	Sidcup (Hatherley Road)	Lionel Burrell, M.D.	5	1	2	160
	Wilmington (Kent Water Co.)....	W. Morris	5	1	0	25
	Dartford (West Hill House)	Lieut-Col. C. N. Kidd	5	1	3	100
	Eltham (High Street)	W. Morris	5	1	0	245
85	Greenwich (Royal Observatory)..	Astronomer Royal ..	8	0	5	155
	Deptford (Kent Water Co.)	W. Morris	5	1	0	20
	Nunhead (S. & V. Water Co.)....	J. W. Restler	5	4	0	176
	Brixton (Acre Lane)............	F. Gaster	8	1	0	77
	Battersea (S. & V. Water Co.) ...	J. W. Restler	5	3	0	21

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·19	·30	·27	·20	·10	·10	·12	·14	·16	·08	·14	·13	·12	·15
2	·20	·07	·05	·12	·17	·20	·18	·18	·19	·16	·13	·16	·17	·12
3	·10	·10	·09	·15	·14	·13	·12	·12	·12	·17	·19	·14	·18	·12
4	·70	·75	·73	·65	·67	·66	·70	·67	·68	·65	·74	·74	·76	·78
5	·11	·10	·06	·07	·08	·11	·04	·04	·07	·05	·10	·06	·08	·06
6	·16	·24	·17	·23	·21	·22	·14	·17	·15	·18	·18	·18	·15	·17
7	..	..	..	..	..	..	..	..	·01	..	..	..	..	..
8	·07	·07	..	·07	·05	·07	·05	·05	·04	·06	·06	·05	·05	·07
9	·09	·09	·13	·08	·06	·06	·05	·04	·05	·05	·13	·05	·07	·08
10	·14	·03	·09	·06	·08	·11	·07	·09	·07	·09	·10	·15	·10	·08
11	..	..	..	..	..	..	..	..	..	·03	·01	..	..	·01
12	..	..	·01	..	·03	..	·02	·02	·02	·01	·01	·02	..	..
13	..	..	..	..	·01	..	·01	·01	..	..	..	..	..	..
14	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·30	·34	·30	·30	·23	·25	·22	·22	·25	·23	·22	·24	·22	·25
18	·09	·06	·05	·13	·06	·08	·04	·05	·08	·07	·06	·05	·04	·05
19	·02	·01	·02	·03	·03	·06	·03	·03	·02	·04	·04	·04	·05	·03
20	..	..	·01	..	..	..	·01	·01	..	·01	..	..	..	·01
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·12	·11	·11	·11	·16	·17	·15	·16	·14	·20	·16	·17	·16	·18
23	..	·04	..	..	..	..	..	..	..	·01	..	..	·01	..
24	·06	·06	·05	·18	·08	·08	·08	·07	·08	·08	·11	·10	·10	·09
25	·04	·03	·03	·02	·02	·03	·02	·02	..	·02	·05	·03	·04	·03
26	..	..	..	..	..	..	..	..	·01	..	..	..	..	..
27	·36	·44	·48	·40	·28	·29	·23	·23	·24	·28	·32	·25	·29	·30
28	..	..	..	..	..	..	..	..	..	·01	..	·01	..	·01
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	·10	·12	·13	..	·12	·12	·05	·07	·11	·10	·08	·06	·10	·08
*	2·86	2·96	2·78	2·80	2·58	2·74	2·33	2·39	2·49	2·58	2·83	2·63	2·69	2·67
†	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Day of Mo.	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·14	·13	·16	..			..	·22		·22	·16	·17
2	·17	·16	·18	·29			·05	·09		·10	·11	·11
3	·15	·15	·16	·14			·23	·10		·11	·12	·07
4	·75	·76	·82	·80			·87	·81		·85	·76	·78
5	·35	·07	·07	·06			·06	·05		·07	·04	·04
6	·15	·19	·18	·11			..	·15		·20	·13	·12
7	..	·01	..	..			..	..		..	·01	..
8	·05	·05	·04	·04			·06	·03		·02	·05	·04
9	·06	·04	·03	·03			·04	05		·09	·04	·05
10	·12	..	·14	·07			·11	·03		·13	·07	·07
11	..	·04	..	..			..	..		..	·10	..
12	..	..	·11	..			·05	·05		·01	·01	..
13	..	..	..	..			·02	..		·01	..	..
14	..	..	..	..			..	..		..	..	..
15	..	..	..	..			..	..		..	..	..
16	..	..	..	..			..	..		..	..	..
17	·25	·28	·15	·33			·21	·30		·29	·18	·18
18	·04	..	·02	·04	MONTHLY GAUGE.	MONTHLY GAUGE.	·05	·04	MONTHLY GAUGE.	·04	·05	·03
19	..	·05	·06	·06			·06	·04		·05	·03	·04
20	..	..	..	..			..	..		..	·01	·01
21	·04	·01	..	·01			..	..		..	..	..
22	·19	·19	·18	·15			·18	·15		·22	·18	·16
23	..	·01	..	..			·03	..		..	·01	·01
24	·11	·10	·16	·15			·14	·09		·11	·08	·06
25	·05	·05	·03	·03			·02	·02		·04	·02	·02
26	..	·01	..	..			·01	..		..	..	..
27	·30	·27	·16	·15			·17	·15		·29	·33	·34
28	..	..	..	..			..	..		..	·01	..
29	..	..	..	..			..	..		..	..	..
30	..	..	..	..			..	..		..	..	..
31	·12	·08	·05	·06			..	·05		·07	10	·09
*	3·04	2·65	2·70	2·52	2·94	1·99	2·36	2·42	2·47	2·90	2·60	2·39
†	..	..	..	..	..	..	..	..	..	..	..	..

* The figures in this row give the totals for the month.

† The totals from January 1st.

Day of Mo.	Burgh Heath	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	·17	·17	·10	·14	·10	·10	·04	·10	·10	·10	·14	·12
2		·07	·05	·08	·13	·06	·04	·10	·07	·08	·06	·06	·08
3		·09	·07	·06	·09	·05	·07	·05	·07	·06	·06	·05	·05
4		·69	·84	·79	·64	·80	·80	·73	·81	·81	·80	·86	·79
5		·04	·04	·04	·06	·01	·01	·07	·03	·04	·03	·03	·03
6		·12	·03	·03	·16	·06	·04	·05	·12	·12	·10	·09	·10
7		··	··	··	··	··	··	··	··	··	··	··	··
8		·06	·06	·05	·05	·02	·02	··	·03	·04	·03	·03	·03
9		·05	·05	·02	·07	·05	·04	·03	·06	·08	·06	·05	·05
10		·07	·12	·11	·03	·05	·05	·04	·06	·06	·05	·06	·06
11		··	··	··	··	··	··	··	··	··	··	··	··
12		··	··	··	··	··	·01	··	··	··	··	··	··
13		··	··	·01	··	··	··	··	··	··	··	··	··
14		··	··	··	··	··	··	··	··	··	··	··	··
15		··	··	··	··	··	··	··	··	··	··	··	··
16		··	··	··	··	··	··	··	··	··	··	··	··
17		·30	·19	·20	·25	·24	·25	·22	·17	·14	·14	·15	·15
18		·07	·04	·03	·04	·04	·03	··	·03	·05	·03	·03	·02
19		··	·02	··	·01	·04	·02	·04	·03	·03	·04	·04	·04
20		··	··	··	··	··	··	··	··	··	··	··	··
21		··	··	··	··	··	··	··	··	··	··	··	··
22		·11	·10	·12	·14	·11	·10	·10	·11	·11	·10	·11	·11
23		··	·02	··	··	··	··	·02	··	··	··	··	··
24		·07	·09	·08	·08	·07	·06	·05	·06	·07	·06	·06	·06
25		·02	·02	·01	·01	·01	··	·02	·01	·01	··	·01	·01
26		··	··	··	··	··	··	··	··	··	··	··	··
27		·48	·52	·48	·47	·42	·41	·37	·41	·39	·36	·42	·36
28		··	··	·01	··	··	··	··	··	··	··	··	··
29		··	··	··	··	··	··	··	··	··	··	··	··
30		··	··	··	··	··	··	··	··	··	··	··	··
31		·17	·15	·12	·15	·15	·13	·14	·15	·17	·13	·09	·10
*	2·60	2·58	2·58	2·34	2·52	2·28	2·18	2·07	2·32	2·36	2·15	2·28	2·16
†	··	··	··	··	··	··	··	··	··	··	··	··	··

Day of Mo.	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farnborough	Orpington	Farningham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·12	·11	·10	·07	·13	·11	·15	·13	·06	·06	·13	·20	·13
2	·08	·05	·07	·10	·11	·17	·12	·11	·08	·23	·11	·10	·01
3	·06	·07	·06	·07	·09	·11	·09	·07	·09	·08	·09	·12	·06
4	·84	·82	·82	·81	·84	·93	·86	·92	·64	·85	·83	·82	·87
5	·05	·02	·03	·06	·03	·06	·03	·03	·04	·02	·03	·03	·03
6	·12	·11	·10	·10	·12	·14	·11	·07	·08	·15	·19	·27	·14
7	··	··	··	··	··	··	··	··	·01	··	··	··	··
8	·04	·02	·03	·03	·04	·04	·04	·03	·03	·03	·02	·03	·02
9	·08	·05	·05	·04	·06	·08	·07	·05	·05	·02	·03	·04	·01
10	·07	·05	·05	·06	·06	·09	·08	·06	·06	·08	·08	·05	··
11	··	··	··	··	··	··	··	··	··	··	··	··	··
12	··	··	··	··	··	··	··	··	··	··	··	·01	··
13	··	··	··	··	··	·02	··	··	··	··	··	··	··
14	··	··	··	··	··	··	··	··	··	··	··	··	··
15	··	··	··	··	··	··	··	··	··	··	··	··	··
16	··	··	··	··	··	··	··	··	··	··	··	··	··
17	·17	·15	·16	·15	·16	·23	·20	·21	·14	·13	·15	·11	·14
18	·03	·02	·02	·03	·02	·02	·01	·01	·02	·05	·02	·03	·03
19	·04	·04	·05	·05	·06	·08	·06	·04	·07	·09	·06	·07	·05
20	··	·01	·01	··	·01	··	··	··	··	·01	··	··	·01
21	··	··	··	··	··	··	··	··	··	··	··	··	··
22	·11	·09	·10	·11	·14	·16	·17	·12	·10	·13	·12	·12	·09
23	··	··	··	··	··	·03	··	··	·01	··	··	·01	·01
24	·06	·06	·06	·07	·07	·08	·09	·06	·05	·07	·06	·06	·03
25	·02	·01	·01	·02	·01	·02	·02	··	·01	·01	·01	·01	·01
26	··	··	··	··	··	··	··	··	··	··	··	··	··
27	·36	·34	·35	·36	·38	·39	·34	·39	·24	·26	·22	·21	·18
28	·01	··	··	··	··	··	··	··	··	··	··	··	··
29	··	··	··	··	··	··	··	··	··	··	··	··	··
30	··	··	··	··	··	··	··	··	··	··	··	··	··
31	·13	·12	·10	·10	·12	·16	·16	·16	·11	·08	·08	·07	·11
*	2·39	2·14	2·17	2·23	2·45	2·92	2·60	2·46	1·92	2·35	2·23	2·36	1·93
†	··	··	··	··	··	··	··	··	··	··	··	··	··

* The figures in this row give

Day of Mo.	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·11	·10	·11	·12	·11	..	·10	..	·08	·07	·09	·09	·08	·08	·10	·11	·13	·10	·12	·13	·09	·11	·10	·10	·06	·04
2	·07	·07	·08	·10	·06	·06	·05	·13	·05	·03	·06	·05	·07	·07	·04	·10	·07	·10	·07	·03	·05	·02	·04	·03	·05	·05
3	·07	·07	·10	·07	·08	·04	·90	·07	·10	·17	·12	·08	·13	·11	·06	·13	·07	·14	·07	·05	·08	·10	·14	·10	·11	·12
4	·87	·93	·90	1·02	·87	·38	·08	·19	·76	·70	·80	·75	·81	·55	·81	·74	·72	·75	·83	·73	·73	·76	·82	·78	·86	·99
5	·02	·02	·03	·03	·03	·46	·03	·72	·05	·03	·03	·02	·03	·03	·02	·04	·03	·03	·03	·04	·04	·10	·04	·02	·03	·03
6	·06	·07	·09	·06	·07	·01	·08	..	·04	·02	·04	·08	·05	·05	·02	·07	·04	·10	·07	·03	·08	·03	·06	·04	·02	·03
7	..	..	..	..	..	·05	..	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·09	·03	·03	·03	·03	·02	·02	·02	..	·04	·05	·05	·05	·04	·04	·04	·03	·04	·03	·04	·04	·04	·06	·05	·03	·03
9	·04	·04	·06	·05	·04	·02	·05	·02	·05	·01	·02	·02	·02	..	·02	·01	·05	·01	·02	·05	·01	·01	·02	·04	·03	·03
10	·05	·04	·05	·06	·04	..	·06	·06	·03	..	..	..	..	..	·03	·02	·01	..	..	..	..	..	..	·01	·01	·03
11	..	..	..	..	..	·03	..	·06	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..
12	..	·01	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..	..	..	·01	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·14	·19	·18	·16	·20	·07	·21	..	·25	·25	·31	·38	·30	·27	·26	·37	·36	·33	·43	·47	·41	·39	·36	·31	·27	·20
18	·03	·03	·03	·03	·02	·13	·02	·28	·02	·02	·02	·02	·03	·03	·03	·05	·03	·03	·02	·03	·04	·02	·02	·02	·03	·05
19	·09	·08	·09	·09	·06	·05	·08	..	·03	·04	·03	..	·03	·02	·01	·02	·03	·02	·01	·04	·05	·04	·05	·04	·06	·10
20	..	..	..	..	..	·02	..	·03	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	·01	·01	·01
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	·01	..	..	..	..	..
22	·11	·11	·11	·11	·10	·06	·09	..	·10	·10	·10	·12	·09	·08	·10	·06	·10	·10	·10	·09	·08	·06	·12	·09	·10	·10
23	..	..	..	..	·02	..	..	·09	..	..	·01	·01	·03	..	..	..	..	..	..	..	·01	·01	..	·01	..	..
24	·08	·08	·10	·08	·07	·03	·06	·02	·06	·07	·05	·07	·07	·05	·06	·09	·07	·06	·07	·07	·06	·07	·08	·05	·06	·08
25	·01	·01	·02	·02	·02	·01	·01	·06	..	..	·02	..	·01	·02	·01	·02	·02	·01	·01	·02	·02	·01	·01	·01	·02	·02
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	·30	·31	·31	·30	·34	·16	·37	·02	·42	·46	·42	·38	·45	·35	·43	·39	·38	·41	·42	·34	·36	·43	·45	·40	·39	·37
28	..	..	..	..	..	·13	..	·40	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	·01	..	..
29	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	·09	·14	·12	..	·11	·04	·14	..	..	·10	·11	·11	·13	·08	·13	·15	·14	·11	·16	·12	·11	·09	·12	·12	·13	·12
*	2·23	2·33	2·41	2·34	2·27	1·77	2·35	2·20	2·04	2·07	2·29	2·25	2·39	1·85	2·18	2·43	2·28	2·34	2·46	2·28	2·27	2·29	2·49	2·25	2·27	2·40
†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·06	·10	·09	·06	·05	·07	·05	·05	·06	·06
2	·04	·07	·06	·05	·07	·05	·08	·08	·05	·07	·03
3	·15	·14	·10	·08	·10	·16	·10	·09	·10	·08	·06
4	·86	·81	·95	·90	·85	·90	·83	·77	·75	·76	·65
5	·06	·05	·03	·02	·02	·02	·03	·04	·02	·07	·02
6	·03	·03	·07	·12	·09	·07	·02	·01	..	·04	·05
7	..	..	..	..	..	..	..	..	..	..	..
8	·03	·03	·04	·02	·04	·01	·03	·03	·03	·05	·02
9	·04	·03	·05	·01	..	·03	·02	·02	·01	·02	..
10	·02	..	·03	·01	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..
12	·02	..	..	·01	..	·01	..	·01	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..
17	·21	·21	·17	·12	·17	·22	·29	·29	·19	·35	·30
18	·02	·03	·03	·04	·03	·03	·02	·02	·04	·02	·02
19	·08	·07	·07	·07	·06	·07	·09	·09	..	·05	·03
20	·01	·01	..	..	..	..	..	·01	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..
22	·10	·10	·13	·10	·12	·11	·11	·10	·12	·10	·07
23	..	..	..	·01	..	..	..	..	·01	·01	..
24	·07	·07	..	·05	·05	·07	·07	·06	·03	·07	·04
25	·01	·01	·02	·01	..	..	·01	·01	..	·01	..
26	..	..	..	..	..	..	..	..	..	..	..
27	·35	·36	·26	·22	·23	·27	·33	·32	·31	·48	·32
28	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..
31	·12	·12	·10	·05	·10	·09	·15	·11	·06	·11	·05
*	2·31	2·20	2·21	1·98	1·99	2·16	2·25	2·11	1·77	2·35	1·72
†	..	..	..	..	..	..	..	..	..	..	..

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(January, 1903.)

The month has been very warm, somewhat wet, and very unhealthy, catarrhal affections being prevalent, though the mortality was not high. Diphtheria was more distributed than in December, though the cases were fewer, and scarlet fever was somewhat less prevalent. The third week was very cold, but the other weeks were mild. The thunderstorm on the 3rd was experienced throughout the district. The somewhat unusual occurrence of a silver thaw took place on the 17th. There was slight snow throughout the district on the 11th, 12th, and 13th. Solar halos were seen at Greenwich and Clapham Park on the 1st, 4th, and 17th, and at Upper Gatton on the 1st, and Wallington on the 17th; and a lunar one at Beddington on the 8th. Lightning was seen at Greenwich on the 2nd, 3rd, and 31st, and at Upper Gatton on the 4th and 24th. Owing to the mild weather the winter aconite flowered at Croydon on the 6th, the snowdrop on the 11th, and the yellow crocus on the 29th; and besides these there were primroses and many other flowers in bloom. The rainfall is about one-third of an inch above the average at Greenwich. The mean temperature of the month is about three degrees above the average, and was at Wallington 40°·8, at Croydon (Whitgift) 40°·7, at Croydon (Duppas House) 40°·6, at Worcester Park 40°, at Warlingham 39°·4, and at Chipstead 39°·1. There were recorded at Wallington 54·3 hours of sunlight, which is 12·1 hours or five per cent. above the January average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·11	..	·06	·24	·11	·10	·09	·07	·02
2	..	..	..	..	..	..	..	..	·01
3	..	..	..	..	..	..	..	..	..
4	·04	·02	·02	..	·02	·02	·02	·02	·01
5	..	..	..	..	..	..	..	..	·01
6	..	..	..	..	..	..	·01	·01	·01
7	·02	·02	..	..	..	..	·01	..	·01
8	..	..	..	..	·02	·02	·01	·01	·01
9	·02	..	..	..	·01	..	..	..	·01
10	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..
15	·01	·03	·02	·06	·02	·02	·02	·02	·01
16	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	·01
20	..	..	..	..	..	..	..	..	·01
21	..	..	..	·02	·01	·01	·02	·02	·01
22	·32	·30	·21	·22	·27	·25	·22	·25	·23
23	·06	·10	·13	·06	·05	·05	·04	·04	·02
24	·36	·43	·42	·46	·34	·35	·45	·54	·53
25	·16	·14	·19	·19	·07	·07	·10	·12	·08
26	·30	·34	·35	·37	·22	·24	·05	·05	·14
27	·76	·64	·70	·50	·57	·61	·66	·66	·68
28	·06	·12	·08	·09	·10	·11	·08	·06	·07
*	2·22	2·14	2·18	2·21	1·81	1·85	1·78	1·87	1·88
†	5·08	5·10	4·96	5·01	4·39	4·59	4·11	4·26	4·37

Day of Mo.	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·04	·05	·01	·05	·05	·04	·07	·13
2	·01	·01	·01	·02	·01	..	..	..	..
3	..	..	..	..	..	..	..	..	..
4	·01	·02	·01	·02	·02	·02	·02	·02	..
5	..	..	..	..	..	..	..	..	..
6	..	·01	..	..	·01	..	..	..	·03
7	·01	·02	·01	·01	·01	·02	·02	..	·01
8	·01	..	..	..	..	..	..	..	·01
9	..	·01	·01	·01	·01	..	·01	·03	..
10	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..
15	·02	·04	·03	·03	·04	·09	·04	..	·03
16	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..
20	·02	·01	..	..	..	..	·01	..	..
21	..	·02	·01	·02	·03	..	·03	·02	..
22	·21	·27	·27	·26	·21	·30	·11	·29	·33
23	·05	·06	·13	·07	·07	·07	·07	·09	·07
24	·40	·55	·27	·45	·41	·43	·42	·28	·17
25	·03	·13	·06	·09	·19	·09	..	·12	·16
26	·22	·25	·21	·21	·27	·24	·25	·18	·20
27	·56	·65	·75	·61	·64	·67	·61	·78	·66
28	·12	·07	·09	·10	·07	·09	·10	·09	·08
*	1·76	2·16	1·91	1·91	2·04	2·07	1·73	1·97	1·88
†	4·34	4·99	4·54	4·60	4·71	5·11	4·38	4·67	4·40

Day of Mo.	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1			·08	·03		·03	·05	..
2			·06	·06		..	·01	·02
3			..	..		..	..	..
4			·02	·01		·02	·01	..
5			..	..		..	..	..
6			..	·01		..	..	..
7			·02	..		·02	·02	·01
8			..	..		..	..	..
9			·01	..		·01	..	..
10			..	..		..	..	..
11			..	..		..	..	..
12			..	..		..	..	..
13			..	..		..	..	..
14			..	..		..	..	..
15	MONTHLY GAUGE.	MONTHLY GAUGE.	·06	·02	MONTHLY GAUGE.	·05	·04	·04
16			..	..		..	..	..
17			..	..		..	..	..
18			..	..		..	..	..
19			..	..		..	..	..
20			..	..		..	..	..
21			·02	·02		..	..	..
22			·26	·21		·28	·16	·13
23			·05	·08		·09	·06	·03
24			·23	·10		·46	·36	·36
25			·21	·06		·08	·24	·11
26			·19	·13		·28	·23	·20
27			·81	66		·67	·68	·66
28			·14	·07		·09	·09	·07
*	2·17	1·31	2·16	1·46	2·00	2·08	1·95	1·63
†	5·11	3·30	4·52	3·88	4·47	4·98	4·55	4·02

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for February is 1·60 in.* **February, 1903.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	·04	·03	·03	·01	·05	·02	·02	·04	·03	..	·04	·02	·04	·02	·01	·03	·03	·05	·04	·02	·03	·02	·02	·03	·03
2		..	·01	..	·03	·01	..	..	·01	·01	..	..	·01	..	..	..	..	..	·01	..	·02	·01	..	..	..	·01
3		..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..
4		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
5		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7		..	..	·03	·01	·01	·01	..	·02	·02	·02	·02	·02	·02	·02	·02	·01	·03	·02	·01	..	·02	·01	·01	·01	..
8		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..
10		..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..
11		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15		·02	·02	·02	·03	·03	·02	..	·03	·02	·03	·03	·03	·03	·02	·03	..	·05	·06	·05	·04	·04	·06	·03	·03	·04
16		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..
17		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..
21		·01	..	..	..	..	..	·02	·01	·01	..	·02	..	·01	..	·01	·01	·01	·01	..	..	..	·01	..	..	·01
22		·13	·13	·10	·16	·11	·08	·10	·10	·11	·09	·09	·09	·10	·08	·11	·11	·16	·20	·19	·18	·17	·17	·15	·18	·13
23		·05	..	·05	·04	·04	·03	..	·05	·05	·05	·04	·03	·05	·06	·05	·04	·04	·06	·04	·03	·06	·04	·04	·05	·04
24		·46	·30	·35	·44	·24	·20	·27	·33	·38	·35	·38	·36	·38	·36	·36	·39	·36	·45	·39	·39	·34	·35	·38	·34	·24
25		·22	·08	·08	·14	·16	·09	·14	·11	·09	·08	·09	·08	·09	·07	·09	·09	·11	·22	·23	·28	·23	·05	·05	·08	·07
26		·38	·21	·19	·47	·29	·16	·27	·28	·29	·26	·25	·23	·31	·25	·25	·26	·25	·36	·22	·20	·26	·14	·19	·15	·12
27		·55	·50	·47	·61	·47	·47	·41	·53	·56	·55	·54	·57	·54	·55	·54	·55	·61	·69	·66	·72	·66	·64	·63	·72	·68
28		·06	·09	·08	·07	·07	·06	·08	·07	·06	·06	·06	·07	·07	·06	·06	·10	·07	·17	·11	·08	·09	·09	·07	·11	·07
*	2·35	1·92	1·37	1·40	2·01	1·49	1·14	1·31	1·58	1·63	1·49	1·56	1·51	1·64	1·49	1·55	1·61	1·74	2·30	1·94	1·96	1·91	1·59	1·57	1·71	1·44
†	4·95	4·50	3·95	3·74	4·53	3·77	3·32	3·38	3·90	3·99	3·64	3·84	3·67	4·03	3·63	3·72	3·84	4·19	5·22	4·54	4·42	3·83	3·94	3·80	4·07	3·37

* [illegible] the totals for the month. † The totals from January 1st.

Day of Mo.	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·03	·03	·13	·03	·06	·20	·16	·13	·07	·04	·07	·04	·03	·01	·03	·04	·02	·06	·04	·04	·09	·08	·06	·04	·03
2	..	..	·02	..	·01	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	·02	·01	·01	·01	..
3	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
7	·02	·03	·03	·03	·03	..	·02	·01	..	·01	·02	·01	·02	..	..	·01	..	·01	..	·03	·02	·02	·02	·02	·02	·03
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..
10	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	·04	·05	·05	..	·02	·01	·03	..	..	·01	·02	·02	·02	·01	·02	..	·02	·01	·01	·02	·01	·01	·03	·03	·03	..
16	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
21	..	..	·02	..	·02	..	·01	..	..	·02	·01	·02	·01	..	..	·01	·01	·01	..	·04	·04	·05	·03	·02	·02	·03
22	·17	·12	·11	·16	·11	..	·10	·02	·07	·09	·09	·10	·07	·05	·08	·09	·07	·08	·09	·12	·11	·10	·11	·08	·09	·09
23	·03	·04	·04	·04	·04	·02	·04	·10	..	·06	·04	·04	·04	·02	·02	·03	·05	·01	·05	·04	·04	·02	·03	·05	·04	·04
24	·26	·30	·28	·33	·31	·07	·24	..	·20	·20	·22	·11	·19	·14	·23	·16	·13	·18	·16	·13	·13	·18	·22	·21	·22	·31
25	·20	·08	·07	·22	·06	·11	·04	·24	·08	·03	·07	·08	·04	·02	·06	·12	·07	·06	·12	·07	·11	·07	·06	·08	·13	·14
26	·19	·20	·14	·23	·22	·04	·15	·16	·10	·09	·12	·10	·12	·03	·13	·17	·15	·11	·15	·06	·10	·08	·14	·13	·26	·14
27	·65	·68	·63	·61	·56	·34	·55	·24	·38	·36	·41	·40	·44	·33	·45	·38	·36	·40	·42	·31	·36	·38	·41	·40	·44	·50
28	·07	·08	·07	·08	·06	·41	·04	·54	·07	·05	·06	·06	·06	·04	·06	·05	·06	·05	·05	·05	·05	·05	·07	·05	·06	·06
*	1·66	1·61	1·49	1·84	1·47	1·06	1·42	1·49	1·03	·99	1·10	1·01	1·07	·67	1·06	1·09	·98	·94	1·11	·91	1·01	1·07	1·21	1·14	1·37	1·39
†	3·89	3·94	3·90	4·18	3·74	2·83	3·77	3·69	3·07	3·06	3·39	3·26	3·46	2·52	3·24	3·52	3·26	3·28	3·57	3·19	3·28	3·36	3·70	3·39	3·64	3·79

* The figure in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. February, 1903.

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·08	·06	·04	·02	..	·02	·08	·08	·07	·07	·03
2	..	·02	..	..	..	..	..	..	·01	·02	..
3	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..
7	·04	·03	·03	..	..	·01	·02	·02	..	·02	..
8	·01	..	..	..	..	..	..	..	..	..	..
9	..	·01	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..
11	..	·01	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..
15	·01	..	·02	·01	·02	..	·01	·01	..	·01	..
16	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..
21	..	·03	·02	·01	..	·02	·01	·01	·02	·04	..
22	·13	·10	·11	·12	·11	·10	·13	·10	·04	·11	·08
23	·03	·04	·06	·03	..	·08	·05	·05	·02	·05	·01
24	·25	·22	·24	·22	..	·26	·21	·18	·10	·23	·07
25	·13	·16	·14	·05	·30	·03	·15	·13	·09	·03	·12
26	·14	·17	·22	·14	·08	·17	·11	·07	·02	·10	·02
27	·48	·41	·67	·64	·67	·50	·43	·41	·37	·38	·28
28	·07	·07	·09	·07	·04	·06	·04	·03	·02	·07	·02
*	1·37	1·33	1·64	1·31	1·22	1·25	1·24	1·09	·76	1·13	·63
†	3·68	3·53	3·85	3·29	3·21	3·41	3·49	3·20	2·53	3·48	2·35

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(February, 1903.)

The month has been the warmest for February for a great many years. It was dry during the first three weeks, and very stormy and wet during the last week. The wet weather of the last week occasioned floods at Nutfield. The heavy gales on the 22nd and 27th caused much damage. At Sanderstead the observer reports that from the 22nd to the 28th there was a great deal of dust in the gauge, and at Upper Gatton the observer says that the slight rain on the 21st left a sandy deposit on the trees; there was, however, no deposit in the gauge on the morning of the 22nd, but on the morning of the 23rd the rain-water was thick. With reference to the warmth of the month, an observer at Croydon says that on the 21st the hawthorn was in leaf, frogs were spawning, the lesser celandine was abundant, and the male and female catkins of the sallow were in full bloom; and on the 28th the almond trees were in full bloom, and likewise the apricots on walls. The month has been fairly healthy, and diphtheria and scarlet fever cases seem to be diminishing. The rainfall is about four-tenths of an inch below the February average. The mean temperature of the month is nearly six degrees above the February average, and was at Croydon (Duppas House and Whitgift) 45°·1, at Worcester Park 45°, at Wallington 44°·7, at Warlingham 43°·3, and at Chipstead 43°·1. There were recorded at Wallington 92·1 hours of sunlight, which is 30 hours or eleven per cent. above the February average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·29	·21	·39	·34	·26	·37	·22	·29	·29	·23	·27	·29	·31	·30	·31	·30	·23	·19			·21	·25		·39	·37	·31
2	·49	·58	·47	·80	·58	·62	·44	·54	·51	·73	·77	·70	·75	·59	·74	·75	·68	·58			·79	·39		·61	·66	·52
3	·03	·06	·02	..	·06	·05	·06	·05	·03	·07	·04	·12	·10	·08	·09	..	..	·02			·18	·05		·04	·03	·03
4	·16	·10	·10	·15	·10	·11	·09	·10	·10	·06	·15	·11	·16	·06	·17	·22	·23	·15			·24	·12		·15	·11	·07
5	..	·23	·21	·22	·19	·17	·17	·16	·15	·20	·15	·16	·15	·24	·17	·07	·20	·16			·17	·18		·15	·14	·11
6	·10	·09	·20	·20	·02	·07	·04	·06	·06	·01	·06	·06	·07	·08	·07	·06	·03	·06			·02	·05		·08	·08	·06
7	·16	·15	·06	·10	·14	·10	·05	·04	·13	·13	·07	·09	·07	·09	·05	·05	·10	·06			·10	·05		·08	·07	·12
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	..
9	·21	·21	·25	·19	·13	·13	·12	·13	·10	·12	·17	·15	·17	·21	·15	·17	·13	·10			·04	·13		·21	·19	·11
10	·07	·12	·08	·08	·06	·06	·04	·04	·05	·06	·07	·05	·07	·09	..	·08	·11	·09			·13	·07		·09	·06	·04
11	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..			..	..		..	·01	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
14	..	..	·02	..	..	·02	..	..	·01	..	·01	..	..	..	·01	·03	·01	..			·03	·04		·03	·01	·01
15	..	..	..	..	..	..	..	·01	..	..	..	..	..	·01	..	..	·01	..			·02	·05		..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
17	·71	·77	·66	·77	·59	·58	·34	·58	·47	·59	·73	·56	·64	·66	·57	·62	·59	·47			·47	·29		·63	·46	·40
18	·03	·02	..	..	..	..	·03	·02	·02	·01	·01	·02	..	..	..	·02	·01	..			·03	·03		..	·01	..
19	·05	..	..	·03	·05	·06	·04	·03	·02	·04	·02	·04	·03	·02	·05	·02	·05	·07			·06	·02		·05	·03	·01
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..			..	..		..	..	..
21	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			..	..		..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
23	·11	·13	·15	·17	·10	·11	·08	·08	·06	·10	·14	·11	·11	·13	·11	·14	..	·05			·09	·09		·17	·18	·15
24	·09	..	·01	..	·11	·11	·11	·11	·07	·13	·15	·11	·14	·06	·12	·09	·14	·02			·05	·03		·13	·06	·02
25	·16	·20	·14	·22	·13	·14	·13	·14	·19	·12	·14	·14	·15	·14	·15	·16	·14	·11			·10	·07		·15	·15	·13
26	·10	·08	·10	·06	·01	·03	·02	·02	·03	·02	·02	·01	·01	·02	..	..	·01	..			..	..		..	·01	..
27	·11	·11	·14	·18	·12	·13	·06	·10	·07	·09	·15	·11	·13	·09	·12	·11	·10	·09			..	·07		·12	·19	·12
28	·09	·11	·10	·10	·09	·11	·07	·09	·09	·08	·12	·09	·12	·12	·12	·18	·09	·09			·11	·09		·13	·11	·08
29	·21	·22	·19	·25	·26	·27	·25	·24	·28	·19	·18	·23	·18	·18	·18	·20	·18	·19			·22	·18		·16	·18	·15
30	·04	·09	·10	·15	·16	·23	·21	·21	·10	·17	·24	·19	·19	·14	·13	·15	·11	·08			·14	·11		·11	·11	·07
31	..	..	..	..	·05	..	..	..	..	..	..	..	..	..	..	..	..	·11			..	..		..	·01	..
*	3·21	3·48	3·39	4·01	3·21	3·47	2·57	3·04	2·74	3·16	3·66	3·34	3·55	3·32	3·31	3·44	3·15	2·69	3·05	1·78	3·20	2·36	2·57	3·48	3·23	2·51
†	8·29	8·58	8·35	9·02	7·60	8·06	6·68	7·30	7·11	7·50	8·65	7·88	8·15	8·03	8·42	7·82	7·82	7·09	8·16	5·08	7·72	6·24	7·04	8·46	7·78	6·53

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for March is 1·54 in.* March, 1903.

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·30	·22	·22	·35	·26	·21	·21	·31	·30	·27	·30	·30	·30	·26	·26	·25	·32	·34	·37	·36	·34	·33	·31	·23	·18
2		·54	·40	·36	·57	·35	·22	·35	·37	·39	·36	·40	·40	·40	·36	·41	·45	·49	·68	·60	·59	·47	·42	·45	·50	·40
3		·02	·01	·01	·02	·02	·01	..	·02	·03	·03	·03	·02	·03	·02	·02	·02	·03	·03	·03	·02	·04	·05	·03	·02	·04
4		·09	·10	·09	·12	·08	·07	·02	·08	·08	·07	·08	·07	·07	·07	·07	·05	·08	·08	·10	·06	·07	·08	·07	·06	·04
5		·18	·18	·16	·16	·13	·12	·15	·13	·12	·12	·12	·12	·12	·12	·12	·16	·13	·17	·14	·12	·13	·14	·12	·19	·18
6		·21	·10	·07	·07	·05	·08	..	·07	·07	·06	·11	·08	·08	·06	·07	·03	·08	·02	·07	·05	·07	·04	·04	·03	·02
7		·08	·12	·11	·18	·21	·10	·22	·20	·19	·16	·11	·15	·16	·17	·14	·19	·10	·19	·10	·12	·09	·05	·06	·10	·06
8		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9		·12	·08	·06	·17	·07	·04	..	·08	·08	·06	·06	·08	·07	·05	·07	·07	·10	·11	·12	·07	·05	·06	·03	·03	·01
10		·07	..	·05	·07	·06	·04	..	·05	·06	..	·06	·06	·06	·04	·05	·04	·04	·03	·04	·01	·02	·02	·01	·03	·03
11		..	..	..	..	..	..	..	·02	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
12		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	MONTHLY GAUGE.	..	·03	..	..	·01	..	..	..	..	·03	·02	..	·01	..	·01	·02	·02	·03	·03	·01	·02	..	..	·02	·02
15		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17		·53	·25	·27	·56	·27	·15	·21	·28	·31	·22	·28	·27	·32	·26	·29	·34	·38	·47	·48	·42	·39	·40	·40	·37	·19
18		..	·01	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	·01	..	..	..
19		·02	..	..	·01	·01	..	..	·02	·02	·02	·01	·01	·01	..	·01	·02	·02	·02	·02	·02	·02	·02	·01	·01	·01
20		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23		·19	·26	·29	·19	·22	·21	·18	·19	·19	·18	·20	·19	·20	·18	·20	·20	·18	·23	·19	·20	·19	·16	·16	·14	·09
24		·03	·01	..	·02	·02	·02	..	·02	·02	..	·02	·01	..	·01	·01	·02	·02	·06	·08	·05	·05	·08	·06	·04	·05
25		·22	·15	·17	·16	·18	·14	·16	·14	·13	·15	·12	·14	·14	·12	·14	·15	·14	·17	·15	·14	·12	·11	·10	·10	·10
26		·04	·03	·03	·01	..	..	..	..	·01	..	..	..	..	..	..	·01	..	..	..	..	·03	·01	..	..	..
27		·16	·06	·05	·13	·06	·07	·05	·07	·08	·06	·08	·08	·07	·07	·08	·09	·10	·15	·17	·12	·09	·12	·10	·06	·04
28		·09	·13	·09	·07	·08	·07	·07	·08	·09	·07	·08	·06	·07	·07	·09	·09	·11	·13	·12	·11	·11	·10	·09	·07	·09
29		·20	·25	·25	·21	·18	·19	·15	·19	·20	·19	·21	·21	·20	·18	·20	·21	·17	·18	·16	·23	·17	·18	·14	·12	·09
30		·16	·09	·16	·10	·08	·08	·05	·08	·04	·04	·05	·05	·04	·03	·03	·04	·05	·08	·06	·06	·06	·06	·07	·13	·14
31		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	3·30	3·25	2·48	2·44	3·23	2·34	1·82	1·82	2·40	2·41	2·09	2·34	2·31	2·35	2·08	2·28	2·45	2·56	3·17	3·03	2·76	2·53	2·44	2·28	2·25	1·78
†	8·25	7·75	6·43	6·18	7·76	6·11	5·14	5·20	6·30	6·40	5·73	6·18	5·98	6·38	5·71	6·00	6·29	6·75	8·39	7·57	7·18	6·36	6·38	6·08	6·32	5·15

Day of Mo.	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·31	·30	·25	·29	·25	·16	·29	·21	·23	·13	·14	·15	·18	·12	·19	·19	·19	·19	·23	·18	·15	·12	·15	·12	·18	·22
2	·35	·38	·35	·71	·31	·20	·28	·28	·13	·29	·31	·30	·22	·12	·28	·32	·32	·27	·37	·25	·27	·29	·28	·30	·21	·21
3	·03	·02	·03	·03	·02	·01	·01	·04	..	..	·02	·02	·02	·04	·02	·01	..	..	·03	·02	·02	..	..	·02	..	..
4	·04	·04	·05	·05	·06	..	·09	..	·08	·09	·07	·08	·09	·05	·08	·09	·09	·10	·11	·09	·09	·12	·10	·06	·08	·09
5	·13	·13	·12	·10	·11	·12	·13	·19	·09	·10	·15	·14	·13	·09	·13	·10	·10	·11	·13	·10	·11	·12	·13	·12	·11	·13
6	·04	·05	·05	·04	·07	..	·05	..	·14	..	·06	..	·05	·05	·06	·08	·09	·07	·07	·08	·06	..	·05	·03	·03	·03
7	·11	·14	·14	·09	·14	·15	·18	·19	·01	·10	·11	·07	·09	·07	·07	·06	·16	·11	·18	·15	·14	·15	·13	·08	·12	·13
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	..
9	..	·02	·03	·03	·03	·02	·04	..	..	·11	·06	·12	·12	·07	·07	·18	·17	·16	·15	·14	·12	·12	·14	·11	·07	·08
10	·01	·01	·01	·02	·02	·03	·05	·08	·03	·04	·10	·15	·05	·02	·04	·04	·02	·03	..	·04	·05	·04	·08	·05	·05	·07
11	..	..	..	..	..	·01	..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	·01	·01	..	·02	..	·02	·04	·10	·04	·03	·04	·02	..	·01	·02	·05	·06	·02	·01	·01	·01	·05
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	·01	·01	·01	·02	..	..	..	..	..	..	..	..	..	..	·02	·01	..
17	·26	·25	·19	·31	·23	·09	·19	·06	·09	·14	·14	·13	·13	·06	·16	·30	·15	·15	·19	·15	·13	·12	·14	·10	·15	·15
18	..	..	·01	·02	..	·06	..	·11	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	·01
19	..	·01	·01	·03	·01	..	..	..	..	..	·01	·04	..	..	..	..	·02	..	·01	·04	·05	·04	·02	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	·18	·19	·18	·16	·17	·12	·20	..	·20	·21	·21	·25	·22	·24	·20	·29	·29	·27	·33	·23	·24	·20	·24	·16	·21	·19
24	·03	·03	·02	·05	·02	·06	·03	·26	..	..	..	·04	..	·11	..	·04	·09	·03	·03	·06	·03	..	..	..	·02	·07
25	·09	·10	·11	·12	·13	·02	·13	..	·11	·10	·16	·10	·16	..	·16	·11	·07	·09	·12	·13	·16	·11	·12	·10	·09	·12
26	..	·01	..	·01	..	·10	..	·13	..	..	..	·07	·01	·02	..	·03	·04	..	·01	..	·01	..	..	·01	..	..
27	·08	·09	·09	·09	·10	·07	·11	·06	·06	·11	·17	·10	·16	..	·05	·05	·05	·16	·13	·06	·07	·12	·16	·12	·20	·14
28	·03	·10	·08	·11	·10	·09	·13	·08	·12	·17	·18	·16	·16	·30	·08	·22	·13	·33	·15	·11	·12	·17	·16	·15	·19	·13
29	·24	·23	·21	·20	·17	·02	·21	·02	·07	·20	·24	·23	·20	·14	·21	·19	·21	·20	·20	·21	·24	·25	·22	·20	·20	·23
30	·07	·07	·07	·06	·06	·14	·05	·20	·21	·03	·04	·03	·05	·06	·04	·06	·06	·04	·08	·03	·04	·06	·07	·03	·06	·08
31	..	..	..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	2·00	2·17	2·00	2·52	2·01	1·48	2·17	1·97	1·57	1·85	2·22	2·33	2·11	1·59	1·88	2·42	2·25	2·32	2·54	2·12	2·16	2·05	2·20	1·79	1·99	2·13
†	5·89	6·11	5·90	6·70	5·75	4·31	5·94	5·66	4·64	4·91	5·61	5·59	5·57	4·11	5·12	5·94	5·51	5·60	6·11	5·31	5·44	5·41	5·90	5·18	5·63	5·92

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **March, 1903.**

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·20	·18	·27	·18	·23	·23	·20	·18	·17	·12	·11
2	·19	·25	·30	·30	·21	..	·26	·24	·18	·27	·19
3	·01	·02	·03	·02	..	·01	·02	·03	..	..	..
4	·03	·07	·04	·03	·04	·05	·07	·05	·05	·07	..
5	·17	·13	·15	·16	·16	·12	·11	·09	·07	·11	·07
6	·06	·03	·04	·02	..	·02	·02	·02	·01	·01	·04
7	·11	·14	·15	·06	·04	·19	·17	·16	·12	·14	·11
8	..	..	..	..	..	..	..	..	..	..	..
9	·03	·09	·02	·01	..	·05	·13	·11	·08	·14	·12
10	·10	·06	·02	·02	·04	·02	·04	·03	·02	·05	·03
11	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..
14	..	·02	·01	..	..	..	..	·01	..	·01	..
15	..	..	..	..	..	..	..	..	..	..	..
16	..	·02	..	..	..	..	..	..	..	..	..
17	·12	·14	·21	·19	·11	·13	·12	·09	·05	·12	·08
18	..	..	..	..	..	..	..	..	..	..	..
19	..	·01	·02	·01	..	..	·05	·03	·01	·04	·03
20	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..
23	·20	·20	·18	·14	·13	·16	·17	·18	·17	·22	·20
24	·05	·04	·06	·06	..	..	·04	·02	..	..	..
25	·10	·09	·10	·06	..	·06	·09	·08	·06	·10	·06
26	..	..	..	..	..	..	..	..	..	..	..
27	·19	·19	·12	·08	·21	·09	·17	·15	·14	·10	·02
28	·15	·17	·13	·10	·10	·15	·12	·11	·08	·16	·14
29	·21	·17	·22	·15	·22	·18	·24	·21	·13	·25	·16
30	·08	·08	·12	·16	·18	·14	·18	·14	·07	·07	·06
31	..	..	..	..	..	..	..	..	..	..	..
*	2·00	2·10	2·19	1·75	1·67	1·60	2·20	1·93	1·41	1·98	1·42
†	5·68	5·63	6·04	5·04	4·88	5·01	5·69	5·13	3·94	5·46	3·77

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(March, 1903.)

The month has been very warm, and also rather wet. The heat on the 25th was very unusual, and the hottest part of the day would seem to have occurred at about 8.30 p.m., and to have lasted till about 9 p.m. The month has been somewhat unhealthy, there being several cases of diphtheria and scarlet fever about. The month has been very stormy, and the gales have done a good deal of damage. There has been a remarkable absence of easterly winds. Vegetation is exceedingly forward. At Croydon the wood anemone was plentiful on the **14**th, and standard pear trees were in full bloom on the 26th; at Sidcup the plum blossomed on the 7th, and the pear and cherry on the 24th; whilst at Nutfield peaches were in full bloom on the 12th, plums on wall on the 19th, and pears on wall on the 28th. The cuckoo was heard at Redhill on the 22nd, and a bat was seen at Croydon on the 4th. There was a sandy deposit in the rain gauge at Wallington on the 11th. The thunderstorm on the 25th seems to have been general throughout the district. Solar halos were seen at Greenwich on the 14th, 17th, and 25th, at Upper Gatton on the 4th and 25th, and at Wallington and Clapham Park on the 14th; and lunar halos were observed at Upper Gatton on the 7th, 12th, and 13th, at Greenwich and Beddington on the 12th and 13th, at Clapham Park on the 6th and 12th, and at Wallington on the 13th. The rainfall of the month is about thirty-four per cent. above the average. The mean temperature of the month is about 4°·7 above the average, and was at Croydon (Duppas House) 46°·6, at Worcester Park 46°·4, at Croydon (Whitgift) and Wallington 46°·3, at Warlingham 44°·4, and at Chipstead 44°·2. There were recorded at Wallington 165·2 hours of sunlight, which is 50·2 hours or fourteen per cent. above the March average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·19	·17	·20	·20	·18	·23	·22	·22	·11	·20	·18	·21	·19	·21	·23	·20	·20	·19			·16	·19		·21	·17	·16
2	·02	..	..	..	·04	·05	·04	·04	·01	·03	·03	·06	·04	·05	·05	·09	·01	·02			·06	·02		·04	·09	·11
3	·10	·10	·08	·10	·07	·07	·07	·06	·05	·08	·08	·09	·08	·08	·08	·13	·06	·06			·05	·03		·07	·07	·06
4	·10	·11	·12	·13	·12	·13	·12	·12	·04	·12	·12	·11	·10	·08	·11	·11	·13	·12			..	·08		·10	·07	·07
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..			..	..		..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	..
7	·01	·02	..	..	·03	·04	·03	·02	·03	·03	·02	·02	·01	..	..	·02	..	..			..	..		·02	·02	·03
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
11	..	..	..	..	·01	·01	·02	·03	·01	·03	..	..	..	..	..	..	·01	..			..	..		..	..	..
12	..	..	..	..	..	·02	..	..	·01	..	..	·01	..	..	..	·01	..	..			..	..		..	..	..
13	..	..	·01	..	..	..	..	..	·01	..	·02	·01	..	·01	..	..	..	..			..	..		..	..	..
14	·06	·02	·05	·05	·03	·05	·03	·03	·01	·03	·04	·03	·03	·03	..	·04	·02	·03			·03	·03		·04	..	·04
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
16	·02	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
20	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			..	..		..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
25	·11	·30	·34	·31	·21	·22	·28	·25	·25	·24	·37	·35	·44	·37	·37	·40	·26	·35			·25	·30		·36	·28	·24
26	·86	·64	·50	·43	·67	·68	·68	·71	·57	·66	·73	·75	·70	·75	·69	·72	·77	·71			·67	·71		·67	·53	·40
27	·17	·12	·13	·15	·14	·14	·13	·13	·10	·13	·17	·14	·15	·14	·15	·10	·08	·11			·09	·06		·11	·11	·07
28	·50	·60	·62	·55	·39	·38	·43	·43	·46	·34	·47	·45	·49	·47	·47	·46	·48	·44			·52	·52		·50	·47	·42
29	·02	·04	·03	·07	·07	·07	·03	·03	·04	·06	·04	·03	·06	·05	·03	·05	·05	·07			·28	·05		·05	·05	·03
30	·42	·40	·52	·32	·17	·18	·22	·17	·14	·16	·21	·15	·18	·14	·15	·20	·41	·38			·06	·39		·23	·20	·19
*	2·58	2·54	2·60	2·31	2·13	2·27	2·30	2·24	1·85	2·11	2·48	2·41	2·47	2·38	2·33	2·54	2·48	2·48	2·28	1·85	2·17	2·38	2·10	2·40	2·07	1·82
†	10·87	11·12	10·95	11·33	9·73	10·33	8·98	9·54	8·96	9·61	11·13	10·29	10·62	10·41	10·75	10·36	10·30	9·57	10·44	6·93	9·89	8·62	9·14	10·86	9·85	8·35

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for April is 1·64 in.* **April, 1903.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	·10	·20	·16	·19	·13	·12	·12	·12	·13	·13	·15	·15	·15	·15	·15	·16	·18	·21	·20	·15	·15	·17	·14	·18	·14
2		·05	..	..	·02	·04	·04	·04	·07	·07	·09	·10	·11	·15	·15	·14	·14	·06	·02	·05	..	·01	·01	·01	·03	·04
3		·08	·09	·08	·08	·08	·08	·07	·07	·08	·07	·07	·08	·08	·08	·07	·08	·07	·07	·06	·05	·07	·06	·04	·03	·05
4		·10	..	·06	·06	·04	·04	·03	·06	·04	·04	·04	·04	·04	·04	·04	·04	·06	·07	·07	·05	·08	·08	·08	·08	·08
5		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7		..	·01	·02	..	·01	·01	..	·01	·01	..	..	·02	·02	·01	·02	..	·01	·03	·01	..	..	..	..	..	..
8		..	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	·01	..	..	..
9		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11		·03	..	..	..	..	..	..	..	..	·02	·02	·01	..	·02	·02	·01	..	·03	·02	..	..	..	..	..	..
12		..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	·03	..	..	..	..	..	..	..	..	..
13		..	..	..	..	..	..	..	..	·01	..	..	..	·01	..	·01	..	·01	..	..	..	..	..	..	..	..
14		..	·06	·05	..	·04	·04	..	·04	·03	·03	·03	·03	·03	·04	·03	·03	·03	·04	·02	·03	·07	·05	·02	·04	·03
15		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..
17		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25		·30	·38	·36	·32	·29	·30	·17	·28	·26	·26	·16	·28	·32	·29	·27	·24	·28	·28	·30	·30	·31	·35	·21	·26	·23
26		·55	·44	·42	·48	·38	·37	·50	·42	·40	·38	·56	·40	·40	·37	·38	·48	·43	·52	·46	·45	·42	·41	·37	·44	·45
27		·16	·10	·12	·12	·04	·06	·08	·06	·06	·06	·06	·06	·07	·05	·05	·05	·06	·08	·07	·06	·05	·09	·06	·08	·07
28		·44	·53	·43	·52	·48	·51	·38	·41	·41	·37	·40	·38	·43	·39	·39	·39	·41	·43	·39	·45	·44	·35	·41	·39	·30
29		·07	·04	·02	·12	·03	·01	·07	·02	·04	·02	·02	·02	·04	·02	·03	·04	·03	·05	·02	·01	..	·09	·03	·04	·02
30		·20	·18	·19	·25	·14	·15	·11	·13	·11	·15	·16	·16	·20	·14	·17	·16	·21	·28	·25	·35	·33	·32	·25	·23	·20
*	2·10	2·08	2·03	1·91	2·18	1·70	1·73	1·57	1·69	1·65	1·62	1·77	1·74	1·96	1·75	1·77	1·85	1·85	2·11	1·92	1·90	1·93	1·99	1·62	1·81	1·61
†	10·35	9·83	8·46	8·09	9·94	7·81	6·87	6·77	7·99	8·05	7·35	7·95	7·72	8·34	7·46	7·77	8·14	8·60	10·50	9·49	9·08	8·29	8·37	7·70	8·13	6·76

Day of Mo.	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·16	·17	·16	·16	·15	·13	·21	·08	·11	·13	·16	·16	·15	·11	·13	·12	·13	·14	·16	·14	·14	·17	·19	·18	·20	·20
2	·01	·01	·02	·01	·02	·10	·16	·10	·04	·02	·03	·02	·03	..	·01	..	..	..	..	..	·02	·05	·11	·07	·13	·16
3	·07	·06	·07	·07	·07	..	·09	..	·03	·03	·08	·09	·09	·06	·07	·06	·05	·07	·07	·08	·08	·09	·10	·09	·09	·09
4	·08	·07	·06	·07	·07	·09	·08	·04	·08	·07	·06	·09	·05	·04	·04	·03	·04	·03	·05	·04	·05	·05	·07	·05	·05	·06
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	·04	·03	..	..	·01	..	·03	·02	..	·02	·02	·02	..	·02	·02	·03	·03	·04	·02	..	·03	·02	·03	·02
8	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	·01	..	..	..	..	..	..	..	·02	·02	..	·01	..	..	..	..	..	..	..	·02	..	..	..	..	..
12	..	..	..	..	·01	..	·01	..	..	..	·01	·01	..	..	·02	..	..	..	·02	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	·01	..
14	·15	·03	·05	·04	·05	..	·07	..	..	..	·04	·05	·04	·02	·03	·04	·04	·03	·03	·04	·07	·06	·02	·06	·05	·07
15	..	..	..	..	..	·06	..	·03	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	·01	..	..	..	..	..	..	..	·01	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·28	·29	·29	·26	·31	..	·33	..	·40	·34	·30	·36	·31	·25	·32	·32	·33	·33	·53	·36	·32	·40	·45	·33	·31	·16
26	·47	·52	·47	·47	·41	·57	·44	·41	·43	·34	·36	·36	·34	·30	·37	·34	·39	·35	·25	·39	·40	·29	·30	·34	·41	·64
27	·05	·03	·05	·05	·05	·17	·06	·29	·08	·10	·10	·10	·09	·07	·09	·09	·09	·09	·10	·10	·09	·08	·08	·09	·06	·06
28	·37	·39	·38	·60	·37	·13	·38	·07	·38	·42	·46	·48	·48	·33	·44	·47	·36	·35	·46	·46	·47	·42	·44	·39	·38	·42
29	·03	·02	·01	·03	·02	·23	·02	·44	..	·03	·06	·03	·03	·03	·03	·02	·05	·01	·01	..	·03	·04	·05	..	·02	·03
30	·23	·28	·38	·29	·30	·23	·22	·07	·12	·11	·15	·12	·13	·11	·14	·18	·26	·14	·24	·17	·12	·13	·16	·18	·17	·27
*	1·90	1·88	1·99	2·08	1·83	1·72	2·09	1·54	1·72	1·63	1·84	1·91	1·80	1·34	1·69	1·69	1·76	1·57	1·95	1·82	1·83	1·78	2·00	1·80	1·91	2·18
†	7·79	7·99	7·89	8·78	7·58	6·03	8·03	7·20	6·36	6·54	7·45	7·50	7·37	5·45	6·81	7·63	7·27	7·17	8·06	7·13	7·27	7·19	7·90	6·98	7·54	8·10

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. April, 1903.

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·18	·18	·21	·15	·16	·18	·16	·13	·10	·16	·10
2	·08	·07	·02	·01	·04	·02	·07	·06	·04	·11	·07
3	·09	·09	·07	·06	·06	·07	·09	·07	·05	·08	·06
4	·08	·07	·10	·12	·14	·10	·08	·09	·06	·07	·09
5	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..
7	·03	·02	..	..	..	..	·03	·01	..	·04	·04
8	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	·01	..	..	..	..
14	·02	·04	·05	..	..	·04	·04	·04	·01	·05	·03
15	·03	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..
25	·22	·30	·29	·25	·26	·27	·29	·25	·05	·26	·32
26	·53	·44	·57	·45	·56	·52	·42	·42	·60	·44	·26
27	·04	·07	·06	·06	·06	·04	·05	·05	·04	·07	·07
28	·41	·35	·37	·26	·32	·38	·39	·34	·33	·45	·36
29	·02	·02	·03	·02	·03	..	..	·01	·02	·05	·04
30	·31	·30	·24	·17	·19	·21	·24	·22	·30	·24	·20
*	2·04	1·95	2·01	1·55	1·82	1·83	1·87	1·69	1·60	2·02	1·64
†	7·72	7·58	8·05	6·59	6·70	6·84	7·56	6·82	5·54	7·48	5·41

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(April, 1903.)

The first four and the last six days were wet and warm, whilst the rest of the month was very cold, with sharp frosts, which did a great deal of damage to fruit trees and vegetation, pears, plums, and greengages having especially suffered, whilst the roses, clematis, horse chestnut, Ghent azaleas, magnolia, and walnut trees have been much blackened. There were snow showers generally in the district between the 11th and 16th. At Bromley, asparagus was cut on the 11th, a fortnight earlier than usual, and was then cut off by the frost. There have been several cases of small-pox and scarlet fever in the district. The cuckoo was heard at Upper Gatton on the 20th, and swallows were seen at Nutfield on the 25th. Solar halos were seen at Greenwich on the 6th and 24th, at Wallington on the 6th, and at Upper Gatton on the 20th; whilst at Clapham Park one was seen on the 6th with parhelia. The rainfall is about a quarter of an inch above the average. The mean temperature of the month is between two and three degrees below the average, and was at Croydon (Duppas House) 44°·8, at Worcester Park 44°·3, at Wallington 44°·0, at Chipstead 43°·6, and at Warlingham 42°·6. There were recorded at Wallington 153·2 hours of sunlight, which is 6·7 hours or one per cent. below the April average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·21	·09	·15	·14	·10	·03	·04	·09	·09	·11	·06	·06
2	·50	·40	·54	·55	·23	·29	·24	·28	·32	·19	·28	·28	·30
3	·56	·82	·62	·68	·64	·58	·56	·58	·43	·65	·69	·72	·67
4	·04	·02	·03	·08	..	..	..	..	·03	..	..	·01	..
5	·03	·48	..	..	..	·02	·01	·02	·40	..	·01	..	·01
6	·94	·04	·59	·65	·69	·65	·55	·58	·01	·63	·60	·49	·52
7	..	·08	·06	·09	·03	·06	·01	·01	..	·01	·04	..	·03
8	..	..	..	..	..	..	..	..	..	..	..	·03	..
9	·23	·12	·12	·06	·01	..	·03	·04	·01	..	..	..	..
10	..	·03	·01	..	·07	·11	·27	·19	·03	·09	·12	·46	·21
11	·05	..	·04	·03	·03	·03	·04	·04	·01	·03	·04	·03	·03
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	·03	..	·01	..	..	·01	·01	·01	..	·02
14	..	..	..	..	..	·01	..	..	..	..	..	..	..
15	..	..	..	..	·02	·04	..	..	..	..	..	·04	·01
16	·27	·11	·36	·42	·30	·30	·35	·40	·01	·30	·31	·34	·33
17	·19	·45	·12	·25	·18	·19	·15	·14	·38	·18	·24	·21	·21
18	..	..	..	..	..	..	..	..	·23	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	·02	·02	..	..	·01	·01	..	..	..	·01	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	·09	·13	·19	·19	·21	·21	·25	·25	·14	·18	·28	·24	·24
29	·07	..	·05	..	·03	·04	·04	·05	..	·03	·03	·02	·03
30	·60	·56	·64	1·02	·17	·16	·21	·23	·30	·14	·33	·26	·27
31	..	..	..	..	..	..	..	..	..	..	..	..	..
*	3·66	3·45	3·48	4·22	2·75	2·80	2·75	2·86	2·40	2·53	3·09	3·20	2·94
†	14·53	14·57	14·43	15·55	12·48	13·13	11·73	12·40	11·36	12·14	14·22	13·49	13·56

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·16	·05	·05	·04	·05			·06	·04		·07	·03	·04
2	·31	·36	·33	·24	·25			·31	·31		·36	·32	·30
3	·76	·68	·64	·37	·31			·34	·36		·58	·50	·36
4	·03	..	·01	..	..			..	..		·03	·03	·03
5	..	..	..	·01	..			·02	..		·02	..	..
6	·53	·50	·50	·31	·35			·01	·24		·42	·31	·23
7	·06	·01	·05	·03	·11			·21	·14		·04	·07	·04
8	..	..	..	..	·02			·16	·10		..	..	..
9	..	..	·01	·01	·07			·09	·04		..	..	..
10	·22	·47	·39	·14	·11			·07	·03		·36	·46	·47
11	·05	·05	·06	·05	·03			·06	..		·06	·08	·06
12	..	..	..	..	..			..	..		..	..	..
13	·03	..	..	..	..			..	..		·02	..	..
14	..	..	..	..	..			..	·01		..	·02	..
15	·01	·03	·04	..	..			·01	..		·04	..	..
16	·37	·41	·38	·31	·32	MONTHLY GAUGE.	MONTHLY GAUGE.	·36	·32	MONTHLY GAUGE.	·46	·31	·32
17	·19	·17	·20	·17	·19			·16	·21		·16	·16	·12
18	..	..	·01	..	..			..	..		..	..	..
19	..	..	..	..	..			..	..		..	..	..
20	..	..	..	..	..			..	..		..	..	..
21	..	..	..	..	..			..	..		..	..	..
22	·01	..	·05	..	..			·01	·04		..	..	..
23	..	..	..	..	..			..	..		..	..	..
24	..	..	..	..	..			..	..		..	..	..
25	..	..	..	..	..			..	..		..	..	..
26	..	..	..	..	..			..	..		..	..	..
27	..	..	..	..	..			..	..		..	..	..
28	·22	·25	·22	·36	·38			·43	·47		·31	·34	·29
29	·03	·02	·03	·03	..			..	..		·04	..	·03
30	·22	·16	·16	·36	·32			·04	·05		·59	·65	1·20
31	..	..	..	..	..			..	..		..	..	..
*	3·20	3·16	3·13	2·43	2·51	2·35	2·00	2·34	2·36	2·62	3·56	3·28	3·49
†	13·61	13·91	13·49	12·73	12·08	12·79	8·93	12·23	10·98	11·76	14·42	13·13	11·84

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for May is 1·97 in.* May, 1903.

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·24	·18	·19	·19	·11	·10	·08	·10	·08	·07	·06	·07	·08	·06	·06	·09	·08	·06	·05	·04	·04	·04	·03	·03	·03
2		·39	·31	·28	·29	·22	·22	·18	·24	·26	·25	·25	·26	·32	·23	·27	·21	·28	·27	·35	·31	·26	·27	·23	·16	·15
3		·70	·53	·40	·60	·34	·28	·32	·36	·32	·28	·32	·30	·27	·24	·25	·29	·29	·34	·33	·30	·25	·28	·26	·17	·28
4		·04	·07	·05	..	·01	·01	·03	·02	·04	·03	·03	·02	·04	·02	·02	·04	·03	·01	·01	..	..	·01	..	..	..
5		·02	·11	·20	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..
6		·39	·46	·42	·42	·24	·22	·21	·22	·19	..	·20	·21	·20	·18	·24	·21	·22	·26	·27	·23	·20	·18	·16	·33	·15
7		·03	·12	·10	·09	..	·23	·27	·08	·05	·20	·06	·06	·04	·04	·09	·10	·05	·05	·03	·05	·07	·01	..	·07	·01
8		..	..	..	..	..	..	..	..	..	..	..	..	·08	..	..	·01	..	·01	..	·01	·02	·03	·03	·19	·29
9		·01	·30	·14	..	..	..	·04	..	..	·02	..	..	..	·11	·01	·05	·04	·05	·02	·11	·08	·01	·05	·07	·27
10		·03	·04	·02	·34	·34	·38	·33	·40	·38	·35	·38	·38	·43	·41	·40	·41	·34	·32	·24	·27	·31	·15	·12	·01	·02
11		·04	·05	·01	·07	·04	·05	·05	·04	·05	·03	·04	·04	·04	·03	·06	·07	·07	·09	·05	·04	·05	·05	·07	·12	·11
12		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
13		·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..
16	MONTHLY GAUGE.	·33	·40	·37	·41	·34	·34	·33	·41	·41	·42	·40	·37	·37	·44	·33	·31	·35	·30	·33	·33	·34	·34	·35	·33	·31
17		·24	·18	·21	·12	·13	·14	·08	·14	·18	·12	·12	·12	·12	·12	·12	·18	·13	·19	·14	·15	·16	·15	·24	·13	·25
18		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..
19		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22		·03	..	·05	..	·04	·02	·04	·02	·02	·02	·01	..	..	·01	..	..	..	..	..	..	..	..	..	..	·01
23		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27		..	..	..	..	..	..	..	..	·01	..	·01	·02	·02	·01	·01	·02	·01	..	..	..	..	..	..	..	..
28		·19	·20	·18	·28	·21	·19	..	·21	·17	·16	·16	·16	·17	·14	·15	·16	·23	·22	·27	·23	·22	·23	·19	·30	·11
29		·02	..	·02	·01	·02	·02	·05	·02	·04	..	·04	·03	·03	·02	·02	·03	·03	·04	·02	..	·01	·01	..	·02	·03
30		·43	·30	·28	·34	·45	·38	1·50	3·13	2·29	1·32	1·85	1·85	1·46	1·60	1·32	·72	·71	·10	·07	·19	·20	·28	·20	·03	·05
31		..	..	..	..	..	..	..	..	..	..	..	..	·10	..	..	..	..	..	..	..	..	..	..	..	..
*	3·45	3·15	3·25	2·92	3·16	2·49	2·58	3·47	5·39	4·49	3·27	3·93	3·89	3·77	3·66	3·35	2·92	2·86	2·31	2·18	2·26	2·21	2·04	1·93	1·97	2·08
†	13·80	12·98	11·71	11·01	13·10	10·30	9·45	10·24	13·38	12·54	10·62	11·88	11·61	12·11	11·12	11·12	11·06	11·46	12·81	11·67	11·34	10·50	10·41	9·63	10·10	8·84

† The totals from January 1st.

Daily Rainfall

Day of Mo.	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·05	·04	·04	·05	·07	·07	·08	·13	·12	·05	·10	·13	·12	·10	·10	·17	·10	·11	·12	·10	·13	·08	·06	·03	·05	·09
2	·20	·23	·20	·23	·23	..	·23	..	·05	·13	·21	·18	·19	·13	·18	·18	·18	·17	·18	·14	·16	·18	·20	·22	·21	·26
3	·17	·19	·20	·23	·17	·29	·21	·36	·07	·14	·23	·26	·20	·13	·23	·35	·36	·25	·28	·40	·30	·22	·26	·20	·21	·18
4	..	·01	..	·01	·01	·04	·02	·02	·09	·02	·02	·03	·03	·01	·02	·04	·04	..	·02	·02	·03	·01	·01	·02	·01	·03
5	..	..	..	..	..	·02	..	..	·22	·12	·13	·25	·10	·10	·18	·16	·08	·16	·24	·10	·26	·11	·15	·14	·05	·03
6	·36	·40	·35	·22	·30	·06	·27	..	·02	·15	·12	·12	·12	·12	·19	·17	·11	·15	·09	·09	·15	·27	·28	·27	·29	·38
7	·06	·11	·10	·07	·10	·30	·22	·45	·05	·25	·17	·13	·15	·05	·08	·09	·12	·05	·17	·32	·15	·26	·15	·01	·11	·15
8	·03	·02	·03	·03	·02	..	..	..	·01	..	..	·01	·01	..	..	·01	..	..	..	..	·01	..	..	..	..	..
9	·04	·16	·22	·05	·48	·26	·35	·23	·03	·36	·51	·30	·50	·03	..	·02	·03	..	·08	·05	·15	·22	·25	·35	·44	·18
10	·09	·18	·30	·22	·50	..	·39	..	·05	·35	·31	·43	·33	·22	·20	·02	·02	·08	·13	·26	·26	·31	·38	·34	·36	·46
11	·04	·05	·07	·05	·07	·43	·05	·45	·34	·04	·06	·03	·06	·02	·05	·03	·02	·01	·02	·04	·02	·03	·06	·06	·04	·05
12	..	..	..	..	..	·01	..	·03	·06	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	·15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	·07	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	·09	..	·01	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
16	·30	31	·31	·35	·30	·06	·39	·05	·34	·24	·23	·25	·25	·18	·32	·20	·20	·21	·29	·24	·23	·24	·30	·23	·31	·31
17	·13	·16	·16	·15	·20	·28	·18	·46	·08	·16	·10	·12	·10	·06	·15	·06	·15	·13	·08	·09	·12	·09	·15	·11	·16	·18
18	..	..	..	..	·01	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	·01	..	·01	·03	·02	..	·03	..	·03	..	·02	..	·01	·03	..	·01	·04	·02	·01	·02
23	..	..	..	..	..	..	..	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	·02	·03	·01	·03	..	..	..	..	..	..	..	·01	..	·02	..	..	..	..	..	..	..	..	·02	·04	·02
28	·20	·20	·17	·16	·15	·12	·21	·18	·17	·18	·21	·28	·27	·20	·25	·22	·19	·25	·28	·41	·24	·19	·21	·21	·22	·19
29	..	..	·01	..	·02	..	·06	..	·03	·05	·03	·03	·02	..	·01	·02	·01	·01	·01	·01	·04	·03	·05	·04	·05	·03
30	·27	·39	·37	·19	·35	·04	·37	3·67	1·15	2·26	·25	·48	·20	·42	·41	·18	·22	·13	·13	1·34	1·13	1·82	·73	1·14	·55	·23
31	..	..	..	..	..	·34	..	·08	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·95	2·47	2·56	2·02	3·01	2·33	3·04	6·14	3·20	4·54	2·71	3·04	2·70	1·77	2·42	1·92	1·85	1·71	2·14	3·64	3·38	4·07	3·28	3·41	3·11	2·79
†	9·74	10·46	10·45	10·80	10·59	8·36	11·07	13·34	9·56	11·08	10·16	10·54	10·07	7·22	9·23	9·55	9·12	8·88	10·20	10·77	10·65	11·26	11·18	10·39	10·65	10·89

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **May, 1903.**

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·06	·05	·04	·01	..	·07	·04	·03	·05	·06	·06
2	·20	·17	·20	·12	..	·16	·18	·14	·14	·16	·16
3	·17	·16	·18	·12	·17	·21	·21	·20	·18	·32	·25
4	·02	·01	·02	..	·02	..	·01	·01	·02	·03	·01
5	·01	·02	..	..	..	..	·02	·03	·05	·24	·17
6	·29	·28	·23	·11	·14	·21	·13	·14	·17	·18	·15
7	·15	·10	·08	·02	..	·12	·10	·07	·06	·24	·33
8	·02	·01	·06	·22	·23	·03	·01	·02	·01	..	..
9	·16	·14	·33	·32	·22	·22	·13	·25	·11	·31	·24
10	·45	·41	·04	·01	·02	·03	·05	·21	·29	·30	·35
11	·08	·09	·06	·04	..	·10	·09	·05	·10	·05	·01
12	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..
16	·34	·34	·33	·31	·15	·38	·34	·29	·24	·23	·23
17	·17	·16	·19	·20	·51	·15	·16	·13	·14	·12	·15
18	..	..	..	..	..	..	..	..	·01	..	..
19	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..
22	..	·02	..	..	..	..	·01	·01	..	·03	..
23	..	..	·01	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..
27	·03	·02	·05	..	..	·02	..	..	..	..	..
28	·21	·22	·29	·14	..	·27	·32	·28	·32	·31	·30
29	·02	·02	·01	·02	·13	..	..	..	·02	·05	·03
30	·21	·20	·06	..	·08	·06	·13	·15	·11	·61	·44
31	..	..	..	..	..	..	..	..	..	..	..
•	2·59	2·42	2·18	1·64	1·67	2·03	1·93	2·01	2·02	3·24	2·88
†	10·31	10·00	10·23	8·23	8·37	8·87	9·49	8·83	7·56	10·72	8·29

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(May, 1903.)

The month has been extremely wet during the first ten days, and then again on the 16th and 17th, and again on the 28th, 29th, and 30th. The fall is above the average of the ten years (1891–1900) at every station; in some cases more than three times. Though thunderstorms were experienced throughout the district on the 9th, 17th, 28th, 30th, and 31st, the only ones that may be worth noticing are those on the 30th and 31st, which were most severe. In the storm on the 30th, $3\frac{1}{2}$ in. of rain fell in just under the hour at Beddington Corner, and at Wallington 2·77 in. fell in sixty-five minutes, and at Croydon (Duppas House) eight-tenths of an inch fell in fifteen minutes, and at Croydon (Windmill Road) 1·45 in. fell in one hour. The damage done has been very great in the district round Croydon, where this storm was centred. The storm in the early morning of the 31st was not so bad, though the lightning and thunder were incessant. Several houses were struck by lightning in the storm on the 30th, and some people were killed. This storm was also accompanied by hail of large-sized pieces of ice. The month has been fairly healthy, though scarlet fever and diphtheria have been somewhat prevalent in places. The month has been warm, and the mean temperature is about one degree above the average, and was at Croydon (Duppas House) 54°·6, at Worcester Park 54°·0, at Croydon (Whitgift) 53°·7, at Wallington 53°·6, at Chipstead 53°·5, and at Warlingham 51°·7. There were recorded at Wallington 189·5 hours of sunlight, which is 11·1 hours or three per cent. below the May average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	..	·03	..	·01	·01	·03	·03	·01	·01	·01	..	·01
2	..	..	..	..	·01	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·35	·35	·33	·35	·46	·46	·42	·40	·30	·42	·41	·47	·40
9	·24	·30	·29	·30	·28	·29	·34	·37	·25	·24	·34	·29	·26
10	·64	·64	·67	·75	·80	·82	·76	·74	·79	1·00	1·04	1·12	1·13
11	·83	·94	·88	1·07	·96	·99	·99	1·01	·93	·89	·85	·95	·88
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	·89	·87	·88	1·04	·73	·74	·72	·77	·73	·74	·74	·78	·76
14	·21	·27	·41	·65	·83	·87	·78	·75	·44	·91	1·06	·90	1·00
15	·62	·54	·56	·47	·43	·43	·45	·39	·43	·48	·47	·40	·46
16	·03	·02	·02	·04	·11	·10	·14	·11	·05	·09	·04	·09	·05
17	..	..	..	·15	·17	·17	·16	·17	·08	·20	·16	·17	·15
18	·08	·04	·11	·09	·02	·07	·05	·05	·06	·01	·04	·04	·02
19	·82	1·00	1·01	·80	·61	·57	·47	·46	·46	·62	·70	·47	·50
20	..	..	..	..	·01	·01	·01	..	..	·02	·02	·02	·01
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	4·74	4·97	5·19	5·71	5·43	5·53	5·32	5·25	4·53	5·63	5·88	5·70	5·63
†	19·27	19·54	19·62	21·26	17·91	18·66	17·05	17·65	15·89	17·77	20·10	19·19	19·19

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·03	·03	..	..			·35	·01		·01	·03	·02
2	..	..	..	..	..			..	..		..	..	..
3	..	..	..	..	..			..	..		..	..	..
4	..	..	..	..	..			..	..		..	..	..
5	..	..	..	..	..			..	..		..	..	..
6	..	..	..	..	..			..	..		..	..	..
7	..	..	..	..	..			..	..		..	..	..
8	·45	·44	·45	·54	·48			·47	·53		·47	·44	·47
9	·32	·33	·32	·24	·35			·39	·45		·28	·26	·23
10	1·33	1·15	1·21	1·09	·90			1·23	1·07		1·52	1·70	1·75
11	1·05	1·02	1·05	·92	·96			·91	·82		·96	·95	·82
12	..	..	..	..	..			..	..		..	..	..
13	·83	·93	·88	·76	·82			·94	·86		·89	·99	·92
14	1·07	1·04	·98	·86	·86			·87	·81		·95	·81	·80
15	·50	·51	·47	·31	·26	MONTHLY GAUGE.	MONTHLY GAUGE.	·34	·24	MONTHLY GAUGE.	·48	·53	·53
16	·04	·07	·17	·04	·18			·18	·14		·26	·09	·21
17	·21	·22	·18	·09	·08			·23	·12		·15	·12	·27
18	·05	·03	·05	·05	·15			·01	·22		..	·03	·02
19	·62	·53	·60	·66	·51			·68	·28		·74	·64	·86
20	·04	·02	·04	·02	..			..	..		·03	·03	·02
21	..	..	..	..	..			..	..		..	..	..
22	..	..	..	..	..			..	..		..	..	..
23	..	..	..	..	..			..	..		..	..	..
24	..	..	..	..	..			..	..		..	..	..
25	..	..	..	..	..			..	..		..	..	..
26	..	..	..	..	..			..	..		..	..	..
27	..	..	..	..	..			..	..		..	..	..
28	..	..	..	..	..			..	..		..	..	..
29	..	..	..	..	..			..	..		..	..	..
30	..	..	..	..	..			..	..		..	..	..
*	6·54	6·32	6·43	5·58	5·55	6·05	6·00	6·60	5·55	6·79	6·74	6·62	6·92
†	20·15	20·23	19·92	18·31	17·63	18·84	14·93	18·83	16·53	18·55	21·16	19·75	18·76

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for June is 1·95 in.* June, 1903.

Day of Mo.	Bugh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1		·02	..	..	..	·05	·02	..	·02	·02	..	·01	·02
2		..	..	..	..	..	..	..	..	..	..	..	..
3		..	..	..	..	..	..	..	..	..	..	..	..
4		..	..	..	..	..	..	..	..	..	..	..	..
5		..	..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..	..
8		·47	·46	·43	·43	·47	·51	·50	·53	·52	·49	·50	·46
9		·36	·30	·30	·27	·27	·28	·30	·25	·26	·25	·28	·27
10		1·11	1·77	1·63	1·86	1·74	1·75	3·17	1·82	1·76	1·78	1·85	1·72
11		·73	·83	·71	·90	·70	·66	·69	·82	·75	·72	·82	·74
12		..	..	..	..	·01	..	..	..	..	..	..	..
13		·86	·95	·98	·96	·91	·87	1·40	1·04	·99	1·08	1·12	1·09
14		1·11	·76	·66	·76	·76	·88	1·01	·84	·92	1·88	1·10	·94
15	MONTHLY GAUGE.	·56	·62	·63	·57	·62	·61	·66	·68	·68	·68	·78	·75
16		·10	·11	·09	·09	·25	·35	·30	·17	·20	·29	·20	·23
17		·18	·28	·25	·18	·25	·25	·25	·21	·20	·21	·22	·21
18		·02	·03	·02	·06	·01	..	·03	·01	·01	..	·01	·01
19		·85	·80	·80	·68	·62	·58	·60	·69	·71	·72	·86	·76
20		·01	..	..	·01	·01	..	..	·01	·01	..	·01	..
21		..	..	..	..	..	..	..	..	..	..	..	..
22		..	..	..	..	..	..	..	..	..	..	..	..
23		..	..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..	..
25		..	..	..	..	..	..	..	..	..	..	..	..
26		..	..	..	..	..	..	..	..	..	..	..	..
27		..	..	..	..	..	..	..	..	..	..	..	..
28		..	..	..	..	..	..	..	..	..	..	..	..
29		..	..	..	..	..	..	..	..	..	..	..	..
30		..	..	..	..	..	..	..	..	..	..	..	..
*	7·00	6·38	6·91	6·50	6·77	6·67	6·76	8·91	7·09	7·03	8·10	7·76	7·20
†	20·80	19·36	18·62	17·51	19·87	16·97	16·21	19·15	20 47	19·57	18·72	19·64	18·81

Day of Mo.	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·01	..	..	..	·02	..	·05	..	..	..	..	..	·01
2	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·52	·49	·45	·48	·46	·53	·47	·54	·47	·45	·44	·55	·54
9	·30	·27	·27	·25	·30	·31	·29	·35	·31	·33	·26	·21	·23
10	1·75	1·75	1·75	1·74	1·59	1·81	1·67	1·25	1·58	1·48	1·40	·95	·30
11	·74	·62	·75	·82	·86	·95	·87	·90	·86	·89	·82	·80	·63
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	1·10	1·05	1·20	1·22	·90	1·06	·91	1·02	1·06	·90	·86	·90	1·00
14	·93	·92	·86	·82	·88	1·03	·83	·95	·95	·82	·87	·88	·93
15	·77	·70	·75	·84	·58	·77	·50	·62	·57	·49	·46	·52	·51
16	·32	·39	·39	·35	·21	·41	·34	·50	·43	·02	·02	·04	·02
17	·24	·29	·27	·28	·25	·26	·19	·25	·23	·21	·25	·46	·40
18	·02	·02	·01	·01	·04	·01	·04	..	·03	·18	·04	·04	..
19	·74	·76	·80	·79	·81	·86	·72	·90	·89	·60	·76	·86	·69
20	·01	·01	·01	·02	·02	·04	·01	..	·01	·01	..	..	·02
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	7·45	7·27	7·51	7·62	6·92	8·04	6·89	7·28	7·39	6·38	6·18	6·21	5·28
†	19·56	18·39	18·63	18·68	18·38	20·85	18·56	18·62	17·89	16·79	15·81	16·31	14·12

Day of Mo.	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	·03	·01	..	..	..	..	·03	·01	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·48	·50	·45	·44	·41	·49	·50	..	·51	·57	·61	·59	·57	·50	·47	·45	·47	·56	·60	·53	·60	·67	·61	·54	·56	·54
9	·20	·21	·23	·22	·26	·75	·31	·54	·38	·26	·26	·26	·27	·22	·26	·28	·26	·28	·31	·24	·25	·24	·23	·25	·25	·25
10	·97	1·15	1·30	1·45	1·22	·61	1·37	·85	·94	1·03	1·24	1·17	1·34	1·33	1·82	1·62	1·56	1·60	1·42	1·01	1·19	1·10	·96	·95	1·11	1·16
11	·70	·63	·59	·69	·52	·02	·48	1·79	·60	·36	·44	·33	·42	·44	·64	·49	·49	·55	·44	·23	·29	·33	·37	·34	·37	·42
12	..	..	..	..	..	..	..	·07	·57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	1·10	1·20	1·10	1·04	1·06	·47	·95	·50	·04	·79	·77	·84	·79	1·04	·90	·83	·87	·95	1·24	1·55	·94	1·00	·93	·87	·87	·95
14	1·06	1·10	1·03	·69	1·02	·59	·98	·54	·83	·95	·88	·93	·83	·69	·82	·94	·81	·83	·89	1·03	1·04	1·05	1·06	·99	1·00	1·01
15	·62	·71	·70	·60	·68	1·40	·74	1·38	·92	·66	·69	·73	·70	·61	·70	·71	·72	·71	·76	·65	·73	·81	·77	·70	·73	·69
16	·20	·13	·20	·11	·52	·12	·42	·37	·21	·15	·27	·43	·23	·10	·19	·15	·25	·10	·11	·26	·39	·20	·10	·24	·37	·28
17	·34	·31	·26	·20	·24	·23	·25	·29	·29	·30	·25	·32	·27	·32	·25	·25	·36	·27	·27	·33	·38	·44	·49	·40	·50	·40
18	·03	·02	·02	·02	·02	..	·01	·02	·10	..	..	·01	·01	·01	·02	·02	·01	..	..	·01	·02	..	..	..	·03	·02
19	·89	·96	·93	·83	·85	·32	·89	·60	·64	·65	·67	·73	·69	·63	·74	·61	·83	·79	·74	·70	·74	·68	·80	·68	·76	·92
20	..	..	..	..	·01	..	·01	·10	·01	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	·02
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	6·59	6·92	6·81	6·29	6·84	5·00	6·91	7·05	6·06	5·74	6·08	6·35	6·12	5·89	6·84	6·36	6·63	6·64	6·78	6·54	6·57	6·52	6·32	5·96	6·55	6·66
†	16·33	17·38	17·26	17·09	17·43	13·36	17·98	20·39	15·62	16·82	16·24	16·89	16·19	13·11	16·07	15·91	15·75	15·52	16·98	17·31	17·22	17·78	17·50	16·35	17·20	17·55

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. June, 1903.

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	N.
1	..	..	..	·01	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..
8	·51	·43	·45	·49	·53	·48	·57	·58	·45	·58	·52
9	·25	·24	·21	·22	·25	·27	·26	·24	·25	·20	·24
10	·75	·69	·85	·44	·45	·65	·52	·51	·57	·80	·68
11	·38	·36	·60	·64	·58	·47	·41	·39	·35	·30	·17
12	..	..	..	..	..	..	..	..	..	..	..
13	·97	·94	·91	·80	·87	·90	·99	·99	·90	1·03	·94
14	1·12	1·17	·96	·95	1·24	1·20	1·18	1·17	1·22	1·15	1·10
15	·71	·75	·66	·60	·55	·73	·71	·65	·55	·76	·67
16	·19	·11	·22	·06	·08	·09	·30	·13	·11	·09	·04
17	·41	·59	·41	·42	·43	·34	·32	·32	·42	·46	·32
18	·02	·01	·02	·09	..	·01	·01	..	..	..	..
19	·81	·79	·87	·62	·73	·82	·81	·76	·75	·80	·50
20	..	..	..	·02	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..
*	6·12	6·08	6·16	5·36	5·71	5·96	6·08	5·74	5·57	6·17	5·18
†	16·43	16·08	16·39	13·59	14·08	14·83	15·57	14·57	13·13	16·89	13·47

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(June, 1903.)

The month has been a most remarkable one. It is certainly the wettest, if not the coldest June, so far as the records of the district are concerned. But what is even more remarkable is the large quantity of rain which fell in the short space of twelve days between the 8th and the 20th. This rain had not the characteristics of thunderstorm rains, but rather of winter rains. The low temperatures and the wet have been prejudicial to all crops, some of which have been totally destroyed, but has not affected the health of the people so much as might have been expected. Scarlet fever cases, though not numerous, seem to be spread over a large area. Ground frosts have been reported in some places. The observer at Sanderstead mentions that on the evening of the 8th there was a remarkable orange-red moon through a sort of high fog. The observer at Sidcup says that the 19th was the coldest day in June in his record commencing in 1874, with a maximum in shade of 49°, and a minimum in shade of 46°; and the observer at Abinger Hall mentions a remarkable sunset on the evening of the 28th. Thunder was heard on the 1st, 16th, and 25th at Nutfield; on the 10th at Sidcup; on the 16th at Abinger; on the 16th and 17th at Upper Gatton, Beddington, and Greenwich; and on the 17th at Wallington and Clapham. And solar halos were seen on the 2nd at Upper Gatton; on the 26th and 28th at Clapham; and on the 28th at Wallington. The mean temperature of the month is about $3\frac{1}{2}°$ below the average, and was at Clapham Park 58°·2, at Chipstead 57°·8, at Croydon (Duppas House) 56°·3, at Worcester Park 56°·2, at Wallington 55°·7, and at Warlingham 54°·6. There were recorded at Wallington 174·1 hours of sunlight, which is 31·9 hours or seven per cent. below the June average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
5	·03	..	·02	·03	·03	·03	·03	·03	·01	·03	·04	·03	·03	·02	..	·04	·04	·06			..	·05		·04	·03	·02
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
12	..	..	·02	..	..	..	..	..	·01	..	·01	..	·01	·01	..	·01	..	..			..	..		·02	·01	·01
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
14	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
16	·11	·05	·06	·09	·06	·08	·08	·07	·04	·06	·07	·06	·07	·09	·08	·05	·09	·15			·15	·07		·07	·04	·06
17	·20	·10	·22	·20	·09	·08	·14	·12	·06	·16	·20	·45	·16	·25	·28	·56	·82	·53			·29	1·02		·83	·50	·44
18	·11	·50	·61	·67	·10	·12	·10	·08	·15	·11	·16	·10	·14	·32	·48	·44	·07	·05			·35	·02		·19	·13	·10
19	·40	·50	·60	·55	·68	·72	1·48	1·71	·68	·49	·30	·29	·26	·35	·22	·16	·30	·57			·84	·93		·10	·10	·06
20	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..	..			..	..		..	·01	·02
21	·06	·04	·03	·05	·02	·04	·03	·03	·01	·03	·04	·03	·02	·01	·02	·02	·02	·01			·04	·06		·03	·03	·05
22	..	..	..	..	..	..	·03	·03	·01	·01	..	..	..	..	·02	·03	·02	·04			·05	·03		·02	..	..
23	1·19	1·15	1·02	·95	·88	·93	·92	·93	1·05	·91	·98	1·16	·91	1·06	1·04	1·18	2·01	2·20			2·39	2·15		1·24	1·22	1·47
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			·02	..		·01	..	..
25	·89	·67	·68	·80	·43	·48	·46	·42	·60	·42	·83	·55	·79	·80	·59	·60	·39	·39			·32	·41		·62	·49	·42
26	·20	·29	·19	·07	·21	·20	·15	·13	·04	·28	·14	·07	·11	·14	·10	·13	·23	·15			·33	·18		·16	·19	·20
27	·34	·39	·37	·32	·24	·24	·21	·21	·21	·20	·28	·20	·23	·35	·24	·26	·22	·21			·18	·21		·24	·20	·18
28	·44	·31	·39	·43	·34	·37	·40	·38	·32	·37	·32	·38	·33	·35	·35	·35	·40	·39			·44	·56		·34	·36	·34
29	·22	·26	·22	·25	·62	·69	·36	·39	·19	1·10	·78	·80	·62	·64	·55	·20	·57	·34			·59	·38		·72	·72	·53
30	..	·02	·02	..	·02	·04	·02	·01	·01	·02	·03	·04	·06	·04	·04	·02	·03	·02			·06	·09		·05	·04	·05
31	·02	..	..	·04	·04	·04	·04	·04	·04	·03	·03	·02	·02	·03	·02	..	..	..			·01	·01		..	..	·01
*	4·21	4·28	4·45	4·45	3·76	4·06	4·45	4·58	3·45	4·22	4·21	4·18	3·76	4·46	4·03	4·09	5·21	5·11	4·75	3·94	6·06	6·17	4·77	4·68	4·07	3·96
†	23·48	23·82	24·07	25·71	21·67	22·72	21·50	22·23	19·34	21·99	24·31	23·37	22·95	24·61	24·26	24·01	23·52	22·74	23·59	18·87	24·89	22·70	23·32	25·84	23·82	22·72

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for July is 2·52 in.* **July, 1903.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5		..	..	..	·03	·01	·01	..	·01	·01	·02	·01	·02	·01	..	·01	·02	·04	·02	·02	..	..	..	..	·01	·01
6		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12		·02	..	..	..	..	..	..	·01	..	..	·01	·02	·02	..	·02	·02	·02	·02	·01	..	..	·02	..	·02	·02
13		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
15		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16		..	·06	..	·07	·04	·04	..	·05	·05	..	·04	·05	·05	·05	·05	·06	·06	·05	·07	·03	·09	·03	·03	·04	·02
17		·45	·36	·36	·05	·58	·80	·70	·62	·61	·76	·87	·71	·85	·85	·64	·59	·69	·43	·47	·75	·92	·68	·91	·60	·88
18		·34	·38	·27	1·00	·14	·23	·01	·10	·08	·08	·07	·07	·08	·06	·07	·10	·08	·18	·06	·07	·06	·02	·01	·01	·02
19		1·61	·15	·26	·16	·07	·13	·10	·08	·07	·07	·07	·07	·07	·08	·06	·06	·05	·06	·05	·01	·04	·04	·03	·21	·19
20		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02	..
21		·03	·05	·05	·04	·06	·04	·03	·06	·04	·04	·04	·04	·04	·03	·04	·04	·07	·08	·05	·05	·05	·05	·04	·05	·02
22		..	·04	..	..	..	..	..	..	..	..	..	·01	..	..	..	·01	·02	·01	·01	..	..	·01	·02	·04	·01
23		·94	·98	·88	1·11	1·15	1·18	1·17	1·34	1·38	1·40	1·53	1·41	1·40	1·41	1·46	1·56	1·55	1·68	1·58	1·81	2·45	2·63	3·16	3·78	3·54
24		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	·01	..	·01	·01
25		·77	·63	·68	1·14	·80	·72	·85	·64	·54	·43	·42	·42	·40	·39	·35	·27	·41	·34	·50	·38	·50	·51	·36	·28	·22
26		·08	·70	·52	·05	·48	·65	·30	·55	·52	·66	·44	·43	·45	·60	·30	·45	·27	·40	·19	·29	·16	·20	·17	·20	·36
27		·19	·10	·09	·12	·11	·09	·12	·16	·15	·11	·12	·15	·18	·11	·12	·13	·15	·16	·22	·20	·20	·22	·16	·13	·10
28		·38	·38	·30	·47	·29	·27	·35	·37	·34	·30	·34	·34	·60	·31	·76	·31	·39	·40	·35	·45	·42	·32	·28	·32	·60
29		·58	·35	·38	·99	·51	·59	·50	·62	·58	·56	·51	·51	·02	·50	·48	·48	·47	·49	·61	·41	·33	·39	·34	·24	·08
30		·02	·03	·10	·02	·04	·05	·03	·04	·06	·03	·04	·04	·02	·04	·04	·05	·04	·04	·06	·07	·27	·16	·25	·01	·01
31		·04	·03	·03	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..	..	..	..
*	5·80	5·45	4·24	3·92	5·25	4·28	4·80	4·16	4·65	4·43	4·46	4·51	4·29	4·19	4·44	4·40	4·16	4·31	4·36	4·25	4·52	5·50	5·29	5·76	5·97	6·10
†	26·60	24·81	22·86	21·43	25·12	21·25	21·01	23·31	25·12	24·00	23·18	24·15	23·10	23·75	22·83	23·03	22·84	22·69	25·21	22·81	23·14	23·39	22·08	21·57	22·28	20·22

* … the totals for the month. † The totals from January 1st.

Day of Mo	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	·02	·03	·02	·02	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
6	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	·02	..	·01	..	..	·01	..	·01	·01	·01	..	..	..	·01	·01	..	..	·01	·01	·01	..	·02	·01
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	·01	..	·01	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·05	·04	·07	·04	·07	..	·08	·03	·04	·04	·06	..	·07	·03	·04	·04	·03	·05	·05	·07	·06	·06	·08	·06	·08	·09
17	·68	·57	·43	·72	·58	·03	·88	..	·96	1·48	1·28	·98	1·30	1·10	1·61	·63	·64	·73	1·61	1·11	1·00	1·61	1·75	1·62	·55	·77
18	·04	·03	·07	·04	·05	..	·04	·81	·04	·10	·08	·18	·07	·10	·41	·33	·14	·28	·42	·35	·20	·14	·10	·05	·03	·05
19	·01	·03	·03	·03	·03	·01	·04	·16	·18	·04	·07	·05	·09	·14	·08	·03	·03	·05	·08	·03	·05	·03	·02	·03	·01	·03
20	..	..	..	·01	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	·03	·04	·03	·03	·02	·04	·02	·03	·04	·04	·05	·04	·01	·04	·05	·03	·04	·03	·04	·04	·03	·05	·03	·04	·06
22	·03	·01	·02	·02	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	3·25	3·21	2·84	2·60	2·19	·89	1·67	·14	1·14	1·32	1·17	1·27	1·13	1·08	1·03	·43	1·01	1·01	1·19	1·12	1·27	1·38	1·62	1·42	1·55	1·68
24	..	·01	..	..	..	·73	..	1·29	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
25	·45	·47	·38	·44	·29	..	·40	..	·83	·87	·87	·82	·87	·70	·66	·88	·81	·89	·92	·78	·81	1·09	1·00	·90	·74	·60
26	·25	·44	·33	·22	·55	·57	·35	1·45	·03	·13	·15	·11	·17	·11	·27	·12	·26	·20	·08	·11	·19	·20	·18	·24	·33	·36
27	·15	·13	·11	·16	·09	..	·09	·09	·05	·04	·07	·08	·06	·05	·04	·13	·11	·09	·10	·13	·08	·09	·10	·08	·08	·10
28	·32	·39	·35	·29	·33	·08	·30	·09	·29	·34	·31	·38	·35	·33	·22	·24	·33	·32	·37	·19	·30	·45	·49	·40	·41	·34
29	·26	·20	·26	·40	·28	·23	·29	·67	·25	·19	·29	·21	·36	·40	·52	·18	·33	·37	·30	·22	·22	·25	·27	·21	·20	·20
30	·05	·04	·22	·16	·13	·08	·19	·08	·06	·07	·07	·03	·05	..	·01	·01	..	·01	·01	·02	·07	·06	·08	·06	·07	·06
31	..	..	..	..	·01	·03	..	·01	·01	..	·01	..	·02	..	..	·02	..	..	..	..	·01	..	..	..	..	·02
*	5·54	5·62	5·18	5·20	4·67	2·71	4·38	4·85	3·92	4·66	4·48	4·19	4·59	4·05	4·93	3·11	3·73	4·05	5·16	4·17	4·31	5·40	5·75	5·10	4·11	4·38
†	21·87	23·00	22·44	22·29	22·10	16·07	22·36	25·24	19·54	21·48	20·72	21·08	20·78	17·16	21·00	19·02	19·48	19·57	22·14	21·48	21·53	23·18	23·25	21·45	21·31	21·93

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. July, 1903.

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..
5	..	..	·04	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	·02	·01	..	·01	..
13	..	..	..	..	..	..	..	..	..	..	..
14	..	..	·01	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..
16	·10	·08	·04	..	..	·08	·08	·07	·05	·06	..
17	·77	·68	·78	·57	·63	·46	·37	·39	·57	1·50	1·05
18	·05	·07	·03	..	·03	·05	·10	·11	·06	·14	·23
19	..	..	·03	·26	·14	·02	·01	..	·01	·01	..
20	..	..	..	..	..	..	..	..	..	..	..
21	·05	·03	·03	..	..	·01	·01	·01	·02	·02	..
22	..	..	·01	·01	..	..	..	..	..	..	..
23	1·70	1·73	3·94	4·03	4·41	2·68	3·15	2·48	1·55	1·53	1·09
24	..	·01	·01	·01	·03	..	..	..	..	..	·02
25	·49	·45	·47	·20	·10	1·56	·47	·39	·63	·92	1·01
26	·21	·29	·34	·26	·51	·27	·18	·29	·23	·26	·08
27	·08	·07	·11	·11	·09	·08	·08	·06	·07	·09	·05
28	·45	·40	·37	·38	·44	·49	·53	·49	·47	·45	·34
29	·28	·26	·15	·09	·14	·17	·26	·21	·15	·19	·26
30	·04	·03	·02	..	·02	·02	·01	·01	·01	·02	·02
31	..	..	..	..	..	..	..	..	..	..	..
*	4·22	4·10	6·38	5·92	6·54	5·89	5·27	4·52	3·82	5·20	4·15
†	20·65	20·18	22·77	19·51	20·62	20·72	20·84	19·09	16·95	22·09	17·62

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(July, 1903.)

The month can be divided—the first fifteen days being practically rainless, and the second sixteen days being extremely wet. For the first time since this organization was founded there have been falls of over four inches, *viz.* at Wilmington and Dartford. One of the most remarkable features of this and the previous months is the number of falls exceeding one inch. In this month alone in some places there are as many as three such falls. At Greenwich in fifteen hours, from 6 p.m. on the 23rd to 9 a.m. on the 24th, 2·98 in. fell; at Nutfield on the 19th just over an inch fell in an hour; at Benhilton on the 26th over half an inch fell between 9.35 a.m. and 9.50 a.m.; at Reigate Hill 1·10 in. fell in a thunderstorm on the 29th between 5 p.m. and 6 p.m.; and at Farningham Hill on the 23rd ·21 in. fell up to 6 p.m., 1·07 in. from 6 p.m. to 6.43 p.m., and 2·50 in. from 6.43 p.m. to 9 a.m. on the 24th. The observer at Abinger Hall says that there were several frosts. At Nutfield the observer says: "The longest streak of lightning I ever saw was in the S.W. on the 19th; it was of the slighter zigzag order, and came from the zenith to the horizon." At Sanderstead the observer says that there was dust in the gauge from the 23rd to the 28th. And at Redhill Mr. Tyndall mentions that a house was struck by lightning at 6 p.m. on the 29th. The month as a whole has been a healthy one. The mean temperature is about the average, and was at Clapham Park 63°·2, at Croydon (Duppas House) 62°·4, at Chipstead 62°·1, at Worcester Park 61°·4, at Wallington 61°·1, and at Warlingham 59°·8. Percolation was actively going on at the end of the month. There were recorded at Wallington 194·1 hours of sunlight, which is sixteen hours or three per cent. below the July average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	..	·02	·04	·03		·05	·03	·02	·04	·03	·02	·03
2	·15	·19	·13	·17	·19		·19	·20	·12	·16	·19	·19	·20
3	..	..	..	..	..		..	..	·01	..	..	..	..
4	·02	..	·01	·03	..		..	..	..	·01	·01	·01	·01
5	..	..	..	..	..		..	..	..	..	..	..	..
6	..	..	..	..	..		..	..	..	..	..	..	..
7	..	..	..	..	..		..	..	..	..	..	..	..
8	..	..	..	..	..		..	..	·01	..	..	..	..
9	·22	·23	·24	·25	·17		·22	·20	·15	·17	·22	·26	·30
10	·09	·19	·05	·18	·13		·16	·16	·14	·22	·14	·08	·10
11	1·22	1·25	1·17	1·18	1·00		·98	1·00	·97	·91	·95	·94	·93
12	..	..	..	..	..		..	..	..	..	..	..	..
13	·34	·43	·28	·21	·01		·08	·12	·09	·01	·09	·08	·08
14	·36	·44	·45	·50	·51		·67	·67	·41	·68	·67	·59	·71
15	·02	..	·02	·04	·02		·03	·03	·01	·02	·02	·07	·02
16	·50	·45	·38	·40	·36	MONTHLY GAUGE.	·29	·30	·32	·44	·54	·35	·52
17	·13	·12	·10	·22	·16		·13	·14	·10	·21	·18	·15	·13
18	·12	·32	·42	·82	·33		·21	·17	·11	·43	·67	·75	·67
19	·09	..	..	·02	·05		·06	·05	·06	·03	·05	·04	·07
20	·50	·51	·39	·33	·36		·32	·45	·38	·31	·45	·38	·41
21	..	..	..	..	..		..	..	..	..	..	..	..
22	..	..	..	..	..		..	..	..	..	..	..	..
23	·32	·32	·23	·28	·35		·15	·15	·19	·12	·20	·14	·16
24	1·37	1·70	1·98	1·60	·21		·35	·37	·33	·47	·37	·33	·47
25	·02	..	..	·02	·03		·03	·02	·06	·02	·02	·04	·03
26	..	..	..	..	..		..	..	..	..	..	..	..
27	·04	·02	·03	·05	·03		·03	·03	·02	·03	·05	·03	·04
28	·09	·07	·06	·07	·09		·09	·08	·06	·08	·09	·09	·08
29	..	..	..	·02	..		..	..	..	..	..	..	..
30	..	..	·01	·02	·01		·01	..	..	·03	·07	·05	·05
31	..	..	..	..	..		..	..	..	..	..	..	..
*	5·63	6·24	5·97	6·45	4·04	3·43	4·05	4·17	3·56	4·39	5·01	4·59	5·01
†	29·11	30·06	30·04	32·16	25·71	26·15	25·55	26·40	22·90	26·38	29·32	27·96	27·96

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·04	·03	..	·04	·04			·05	·03		·05	·06	·08
2	·22	·25	·30	·25	·27			·24	·22		·27	·21	·24
3	..	..	..	..	..			..	..		..	..	..
4	..	..	..	·01	..			·02	..		..	..	..
5	..	..	..	..	..			..	..		..	..	..
6	..	..	..	..	..			..	..		..	..	..
7	..	..	..	..	..			..	..		..	..	..
8	..	..	..	..	..			..	..		..	..	..
9	·21	·32	·31	·17	·30			·26	·36		·26	·26	·10
10	·09	·07	·75	·03	·10			..	·04		·09	·16	1·08
11	1·10	·97	1·00	·93	·79			·82	·65		1·08	1·06	·01
12	..	..	·01	..	..			..	..		..	·01	..
13	·04	·02	·13	·02	..			..	·25		..	·02	·02
14	·65	·52	·58	·51	·67			·64	·66		·68	·64	·80
15	·03	·02	·02	·04	..			·06	·09		·04	·02	·03
16	·50	·52	·55	·41	·35	MONTHLY GAUGE.	MONTHLY GAUGE.	·37	·33	MONTHLY GAUGE.	·57	·36	·30
17	·12	·10	1·50	·25	·19			·23	·28		·10	·06	·05
18	·60	·73	·64	·98	1·08			·58	·75		·63	·32	·28
19	·01	..	·01	·02	·01			·11	·30		..	..	·01
20	·33	·44	·42	·45	·45			·47	·37		·45	·25	·20
21	..	..	..	..	..			..	..		..	..	..
22	..	..	..	..	..			..	..		..	..	..
23	·16	·14	·14	·11	·14			·09	·25		·30	·12	·11
24	·49	·36	·33	·23	·25			·42	·20		·18	·38	·37
25	·04	·03	·03	·09	·08			·07	·05		..	·02	·06
26	..	..	..	..	..			..	..		..	..	..
27	·03	·03	·04	·04	..			·04	·05		·06	·11	·04
28	·08	·08	·09	·13	·18			·14	·13		·08	·03	·10
29	..	..	..	..	..			..	..		..	..	..
30	·04	·04	·05	..	·04			·05	·01		·07	·04	·04
31	..	..	..	..	..			..	..		..	..	..
*	4·78	4·67	6·90	4·71	4·94	4·23	3·36	4·66	5·02	4·51	4·91	4·13	3·92
†	29·39	28·93	30·91	28·23	27·68	27·82	22·23	29·55	27·72	27·83	30·75	27·95	26·64

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for August is 2·30 in.* **August, 1903.**

Day of Mo.	Burgh Heath	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	·07	·11	·09	·09	·10	·11	·10	·09	·09	·09	·08	·08
2		·11	·22	·22	·23	·31	·24	·23	·28	·25	·23	·28	·25
3		..	..	..	..	..	..	..	..	..	..	..	..
4		·01	..	..	..	..	..	..	..	..	..	..	..
5		·01	..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..	..
8		..	..	..	..	..	..	..	..	..	..	..	..
9		·21	·25	·20	·28	·18	·18	·20	·17	·18	·17	·16	·18
10		·16	·10	·16	·06	·09	·11	·10	·08	·17	·08	·09	·08
11		·95	·95	·80	1·20	1·03	·95	1·50	1·17	1·10	·94	1·05	1·08
12		..	..	..	..	..	..	·07	..	..	..	..	..
13		..	·18	..	·11	·04	..	..	·06	·03	..	·01	·04
14		·59	·36	·46	·01	·40	·49	·54	·35	·38	·47	·51	·45
15		·02	·03	·02	·01	·03	·03	·05	·03	·03	·02	·02	·02
16		·41	·26	·28	·35	·22	·25	·25	·29	·29	·26	·34	·34
17		·17	·08	·06	·09	·09	·08	·07	·09	·09	·09	·08	·07
18		·64	·17	·16	·26	·32	·24	·25	·35	·29	·24	·34	·29
19		..	·05	·15	..	·02	·02	·05	·04	·02	·01	·01	·01
20		·20	·20	·14	·28	·16	·17	·18	·16	·15	·14	·16	·16
21		·02	..	..	..	..	..	..	..	..	..	..	..
22		..	..	..	..	..	..	..	..	..	..	..	..
23		·20	·20	..	·21	·15	·14	·20	·11	·11	·10	·09	·10
24		1·87	1·95	2·06	1·07	1·21	1·40	1·65	·62	·66	·47	·55	·47
25		·02	·06	·04	·04	·03	·02	·05	·04	·05	·05	·06	·06
26		..	..	..	..	..	..	..	..	..	..	..	..
27		·05	·06	·06	·05	·04	·06	·10	·04	·04	·03	·04	·05
28		·04	·07	·05	·09	·09	·09	·12	·09	·09	·09	·09	·08
29		..	..	..	..	..	..	..	..	..	..	·01	..
30		·03	·05	·06	·05	·02	·05	·05	·03	·03	·02	·02	·02
31		..	..	..	..	..	..	..	..	..	..	..	..
*	5·90	5·78	5·35	5·01	4·48	4·53	4·63	5·76	4·09	3·99	3·50	3·99	3·83
†	32·50	30·59	28·21	26·44	29·60	25·78	25·64	29·07	29·21	27·99	26·68	28·14	26·93

Day of Mo.	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Farnborough	Orpington	Farningham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	RECORD CEASED.	·09	·09	·08	·07	·09	·05	·08	·08	·08	·07	·08	·11
2		·22	·26	·23	·26	·29	·25	·30	·26	·19	·27	·25	·24
3		..	..	..	..	..	..	..	..	..	..	..	·01
4		..	..	..	·01	..	..	..	·01	·01	..	..	·01
5		..	..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	..	..	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	..	..
8		..	..	..	..	..	..	..	..	..	..	..	..
9		·18	·20	·19	·18	·25	·23	·21	·21	·25	·19	·14	·13
10		·19	·07	·10	·12	·12	·15	·09	·14	·13	·15	·28	·40
11		1·06	1·09	1·36	1·14	1·14	·99	1·14	1·06	1·03	·87	·79	·83
12		..	..	..	..	..	..	..	..	..	..	..	..
13		..	·02	..	·04	..	·03	·03	·01	·01	..	..	·03
14		·39	·58	·71	·65	·59	·55	·53	·57	·40	·38	·47	·38
15		·03	·01	·02	·02	·04	·04	·05	·03	·03	·02	·09	·06
16		·22	·31	·32	·33	·53	·33	·37	·30	·29	·30	·29	·20
17		·09	·05	·07	·06	·05	·05	·04	·12	·05	·04	·06	·05
18		·23	·24	·23	·27	·29	·33	·27	·16	·26	·25	·28	·26
19		·01	..	·02	·01	·03	·01	·10	·11	·11	·06	·12	·12
20		·16	·16	·17	·16	·21	·22	·19	·17	·19	·19	·22	·12
21		·01	·01	..	..	..	..	..	..	..	..	..	..
22		..	..	..	..	..	..	..	..	..	..	..	..
23		·09	·10	·01	·11	·04	·10	·08	·10	·10	·09	·11	·04
24		·46	·46	·54	·37	·35	·30	·30	·28	·19	·17	·19	·18
25		·06	·06	·05	·05	·12	·07	·09	·08	·08	·04	·04	·05
26		..	..	..	..	..	..	..	..	·01	..	..	..
27		·04	·04	·04	·04	·04	·04	·02	·01	·03	·02	·03	·01
28		·11	·08	·10	·09	·10	·11	·09	·13	·10	·10	·10	·08
29		..	..	..	..	..	..	..	..	..	..	..	..
30		·03	·03	·03	·03	·04	·05	·03	·04	·02	·01	·01	·01
31		..	..	..	..	..	..	..	..	..	..	..	..
*		3·67	3·86	4·27	4·01	4·32	3·90	4·02	3·87	3·56	3·22	3·55	3·32
†		26·50	26·89	27·11	26·70	29·53	26·71	27·16	27·26	25·64	24·79	25·83	23·54

† The totals from January 1st.

Day of Mo	Chislehurs	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·10	·15	·15	·10	·12	·01	·17	·01	·15	·08	·07	·02	·08	·08	·15	·11	·08	·09	·10	·04	·06	·07	·08	·08	·06	·08
2	·24	·28	·27	·20	·28	·07	·27	·09	·23	·22	·21	·29	·22	·21	·26	·22	·20	·23	·24	·25	·27	·29	·32	·23	·30	·31
3	..	..	..	..	..	·22	..	·23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
4	..	..	..	·01	..	..	..	..	·01	..	·01	..	·01	..	..	..	..	..	·01	·01	·02	·02	·02	..	·01	·03
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·14	·13	·14	·15	·19	·15	·20	..	·16	·16	·18	·18	·18	·22	·20	·19	·21	·21	·21	·16	·18	·17	·20	·20	·17	·18
10	·18	·16	·20	·17	·12	·23	·21	·28	·05	·15	·11	·12	·10	·04	·04	·02	·06	·05	·08	·11	·16	·27	·32	·21	·23	·22
11	1·12	1·27	1·25	1·06	1·24	·41	1·25	·24	·87	·82	·90	·80	·87	·69	·83	·69	·62	·69	·84	·58	·90	·89	·98	·75	·93	1·12
12	..	..	..	..	..	..	..	·80	..	..	..	·01	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
13	..	..	·05	..	·02	..	..	..	..	·02	·01	·03	·07	..	·11	·07	·09	·06	·10	·13	·05	..	·03	·22	·16	..
14	·50	·63	·58	·59	·60	·28	·19	·32	·10	·21	·31	·38	·25	·36	·26	·23	·21	·26	·21	·13	·35	·23	·22	·01	·16	·33
15	·02	·03	·03	..	·03	·04	·21	·14	·31	·01	·01	·03	·02	..	..	·01	·03	·01	..	·02	·03	·02	·01	..	·02	·02
16	·22	·22	·24	·26	·26	..	·24	..	·20	·23	·24	·28	·27	·22	·26	·26	·24	·23	·28	·30	·31	·27	·26	·25	·25	·25
17	·05	·04	·06	·05	·10	·10	·08	·19	·05	·04	·04	·05	·05	·04	·03	·06	·05	·03	·05	·05	..	·08	·07	·05	·04	·06
18	·21	·23	·20	·20	·13	·21	·18	·07	·19	·20	·23	·25	·24	·18	·27	·24	·07	·16	·23	·18	·22	·29	·28	·22	·27	·22
19	·03	·03	·06	·11	·06	·06	·12	·23	..	·01	·01	..	·01	·06	·02	..	·02	·02	·03	..	..	·02	·02	·02	·04	·04
20	·13	·12	·12	·12	·13	·04	·22	·01	·17	·17	·20	·23	·18	·16	·16	·18	·24	·21	·25	·20	·24	·20	·20	·16	·18	·18
21	..	..	..	..	..	..	..	·12	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	·07	·10	·09	·09	·08	..	·12	..	·27	·11	·13	·16	·12	·13	·15	·15	·16	·15	·21	·21	·16	·06	·13	·10	·11	·10
24	·15	·24	·23	·28	·29	·31	·47	1·24	1·30	1·20	1·38	1·52	1·42	1·46	1·55	1·28	·91	1·51	1·33	·87	1·60	1·56	1·39	1·32	1·06	·60
25	·05	·07	·09	·08	·08	·25	·07	·24	·04	·20	·03	·01	·03	·03	·02	·06	·04	·02	·02	..	·02	·04	·05	·01	·04	·08
26	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
27	·03	·03	·04	·03	·04	..	·02	..	·05	·05	·06	·07	·06	·04	·05	·06	·07	·05	·07	·07	·06	·06	·07	·07	·07	·07
28	·17	·16	·16	·12	·16	·03	·03	·06	·15	·11	·11	·14	·10	·09	·09	·06	·11	·11	·12	·14	·15	·14	·15	·10	·12	·14
29	..	..	..	..	..	·09	·18	·12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	·01	·02	·02	..	·02	·01	·02	·10	·01	·02	·02	..	·02	·02	·01	..	·01	·03	·04	·03	·03	·01	·01	·03
31	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	3·41	3·89	3·97	3·65	3·95	2·50	4·25	4·41	4·32	4·10	4·25	4·62	4·30	4·01	4·47	3·93	3·42	4·09	4·39	3·48	4·82	4·71	4·83	4·02	4·23	4·06
†	25·28	26·89	26·41	25·94	26·05	18·57	26·61	29·65	23·86	25·58	24·97	25·70	25·08	21·17	25·47	22·95	22·90	23·66	26·53	24·96	26·35	27·89	28·08	25·47	25·54	25·99

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. August, 1903.

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·08	·10	·07	..	·07	·07	·06	·05	·06	·08
2	·27	·29	·29	·26	..	·27	·27	·25	·26	·28	·23
3	..	..	..	..	..	..	..	..	..	·02	·02
4	·02	·02	..	..	..	..	·01	·02	·01	·02	..
5	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..
9	·20	·19	·20	·19	·10	·16	·21	·24	·20	·18	·16
10	·35	·39	·40	·54	·50	·49	·44	·51	·39	·38	·34
11	1·07	1·04	1·20	·98	1·03	1·20	1·15	1·00	1·13	1·02	·72
12	..	..	..	..	..	·01	..	..	..	..	..
13	..	·01	..	..	..	..	..	..	·01	..	·07
14	·33	·30	·38	·31	·29	·68	·32	·28	·20	·20	·15
15	·02	·02	..	·08	..	·02	..	..	..	..	·10
16	·25	·26	·24	·23	·24	·27	·29	·26	·23	·24	·32
17	·05	·05	·09	·05	·09	·08	·04	·04	·05	·06	·04
18	·28	·25	·35	·17	·15	·28	·18	·22	·21	·22	·15
19	·07	·04	..	·17	·30	·17	·42	·22	·02	·12	·02
20	·16	·15	·12	·08	·10	·15	·18	·16	·13	·18	·16
21	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..
23	·06	·08	·08	·06	..	·07	·09	·04	·08	·06	·11
24	·48	·82	·23	·16	·31	·27	·91	·97	·93	1·27	1·26
25	·09	·07	·10	·03	·03	·18	·04	·04	·06	·06	·03
26	..	..	..	..	..	..	..	..	..	..	..
27	..	·06	·05	·02	·03	·05	·05	·04	·04	·07	·04
28	·18	·14	·13	·09	·10	·13	·14	·12	·11	·15	·12
29	..	..	..	..	..	..	..	..	..	..	..
30	·03	·03	·01	..	..	·03	·01	·01	·02	·03	·01
31	..	..	..	..	..	..	..	..	..	..	..
*	4·00	4·29	3·97	3·49	3·27	4·58	4·82	4·48	4·13	4·62	4·13
†	24·65	24·47	26·74	23·00	23·89	25·30	25·66	23·57	21·08	26·71	21·75

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(August, 1903.)

The month has again been wet; in fact, it is the wettest August since 1891. We have again the phenomenon of further falls of rain exceeding one inch; in many places there are as many as two such falls. With reference to the rate of fall: at Abinger Hall 1·62 in. of rain fell on the 24th between 9 a.m. and 5 p.m.; at Clapham Park, on the same day, ·81 in. fell between 3 and 5 p.m., and in the ten minutes between 8.25 and 8.35 p.m. ·57 in.; and at Clapham Park on the 10th ·25 in. fell in five minutes. There has been a good deal of scarlet fever about, but diphtheria does not seem to be so prevalent, except in a few places. The observer at Avondale Road, Croydon, remarks that "the unusual wet has produced a blight in vegetable marrows, tomatoes (out of doors), and potatoes, even on sloping ground on the chalk"; and the observer at Nutfield says that "wasps are very busy, but small in comparison, and that the birds have left, there being no hardy fruit to keep them." Solar halos were seen at Greenwich on eight days, and at Upper Gatton on four days. Thunder was heard and lightning seen at many places throughout the district. The rainfall is about double the August average. The mean temperature is about two degrees below the average, and was at Croydon (Duppas House) 60°·4, at Chipstead 59°·7, at Wallington and Worcester Park 59°·6, at Clapham Park 58°·8, and at Warlingham 57°·9. There were recorded at Wallington 201·8 hours of sunlight, which is 3·5 hours or one per cent. above the August average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·04	·03	·02	·02	·05	·05	·06	·06	·05	·05	·06	·05	·06
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	1·46	1·32	1·76	1·50	·68	·65	·62	·60	·77	·72	·98	·51	·75
5	·02	·12	..	..	·04	·03	..	..	..	·06	·01	..	·01
6	·02	..	·02	·02	..	..	·01	·02	·01	·01	·01	·02	·02
7	..	..	..	..	·01	·02	..	..	..	..	..	..	..
8	·11	·13	·10	·16	·13	·12	·12	·11	·08	·10	·17	·11	·15
9	·01	·04	·03	..	·03	·03	·03	·03	·01	·05	·07	·07	·08
10	·73	·60	·56	·65	·70	·75	·70	·73	·59	·65	·70	·67	·65
11	·21	..	·10	·04	·02	·03	·02	·02	..	·05	·01	·01	·02
12	·02	·10	·03	·02	·04	·10	·06	·04	·04	·03	·10	·10	·08
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	·01	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·09	·13	·12	·20	·02	·03	·01	·01	·02	·03	·02	·03	·01
22	·06	·03	·04	·05	·05	·05	·05	·06	..	·05	·06	·05	·05
23	·01	..	..	..	·01	..	..	..	..	..	..	..	..
24	·03	..	·03	·15	·06	·05	·03	·03	·08	·05	·09	·02	·02
25	·09	·04	..	..	..	..	..	..	..	·01	..	·13	..
26	·30	·35	·31	·40	·03	·26	·07	·07	·19	·03	·14	·11	·23
27	·07	·04	·11	·03	·30	·07	·18	·18	·08	·28	·20	·10	·07
28	·19	·26	·22	·18	·07	·08	·56	·56	·18	·11	·14	·06	·06
29	·51	·52	·52	·57	·64	·56	..	..	·64	·61	·67	·56	·58
30	·01	..	..	..	..	..	·01	·01	·01	..	..	..	..
*	3·98	3·71	3·97	3·99	2·88	2·88	2·53	2·53	2·76	2·89	3·43	2·60	2·84
†	33·09	33·77	34·01	36·15	28·59	29·03	28·08	28·93	25·66	29·27	32·75	30·56	30·80

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
2	·06	·04	·05	·08	·09			·12	·10		·08	·05	·03
3	..	..	..	..	..			..	..		..	..	..
4	·94	·55	·52	·42	·32			·55	·74		·40	·55	·65
5	..	..	..	·01	..			·03	·02		..	·01	..
6	·01	..	·02	..	·02			·04	·05		..	..	·01
7	..	..	..	..	..			..	..		..	..	..
8	·15	·19	·13	·14	·17			·17	·14		·22	·12	·08
9	·07	·07	·06	·03	·06			·04	..		·04	·02	·05
10	·65	·65	·75	·67	·71			·75	·66		·79	·53	·47
11	·01	..	·02	..	..			..	..		·01	·02	..
12	·01	·02	·01	..	..			..	..		·02	·03	..
13	..	..	..	·01	..			..	..		..	·01	..
14	..	..	..	..	..			..	..		..	·01	..
15	..	..	..	..	..			..	..		..	..	..
16	..	..	..	..	..			..	..		..	..	..
17	..	..	..	..	..			..	..		..	..	..
18	..	..	..	·01	..			·01	..		..	·01	·01
19	..	..	..	..	..			..	..		..	..	..
20	..	..	..	..	..			..	..		..	..	..
21	·01	..	·02	..	..			·02	·02		·02	·01	..
22	·05	·07	·04	·07	·09			·07	·10		·04	·04	·05
23	..	·02	..	..	..			..	..		..	·01	..
24	·04	..	·03	..	..			..	·05		·02	·01	·02
25	·02	..	·05	·01	..			..	..		·01	..	..
26	·09	·09	·11	·02	·08			..	·09		·08	·14	·06
27	·22	·12	·08	·09	·03			·11	·03		·07	·04	·10
28	·13	·08	·08	·04	·03			·06	·10		·08	·06	·07
29	·65	·55	·66	·63	·62			·76	·61		·62	·53	·51
30	..	..	..	..	..			..	..		..	..	·01
*	3·11	2·45	2·63	2·23	2·22	2·75	1·96	2·73	2·71	2·08	2·50	2·20	2·12
†	32·50	31·38	33·54	30·46	29·90	30·57	24·19	32·28	30·43	29·91	33·25	30·15	28·76

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for September is 2·30 in.* **September, 1903.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	..	..	..	..	..	·06	..	..	..	..	..	..
2		·03	·02	..	·07	·05	·01	·08	·06	·06	·05	·04	·05
3		..	..	..	..	..	·01	..	..	..	..	..	..
4		1·42	1·45	1·55	1·37	1·53	1·45	1·80	1·25	·96	·78	·78	·72
5		·01	·02	·06	..	..	·02	·06	..	..	..	..	..
6		·02	..	·03	..	·02	·03	·07	·02	·02	..	..	·02
7		..	..	..	..	..	·09	..	..	..	..	..	..
8		·09	·08	..	·10	·07	·01	·10	·06	·07	·09	·08	·06
9		·04	·08	·15	·05	·06	·10	·08	·06	·05	·03	·04	·04
10		·49	·40	·38	·52	·34	·33	·35	·35	·36	·33	·40	·36
11		·03	·02	..	·02	·01	·02	·05	..	..	..	..	..
12		·07	..	..	·04	..	·01	..	..	..	..	·01	..
13		..	..	..	..	..	..	..	..	..	..	..	..
14		..	..	..	..	..	..	..	..	..	..	..	..
15		..	..	..	..	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..
17		..	..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	..	·02	·03	·02	·02	..	·02	·01
19		..	..	..	..	·01	..	..	..	..	..	..	..
20		..	..	..	..	..	..	..	..	..	..	..	..
21		·05	·03	·05	·01	·01	·01	..	·01	·01	..	·01	·01
22		·05	·08	·08	·03	·05	·05	·05	·07	·08	·08	·06	·06
23		..	..	..	·04	·01	..	..	·01	..	..	..	..
24		·06	·13	·10	·05	·03	·03	..	·03	·02	·02	·01	·02
25		..	..	·05	..	·05	·02	..	..	..	..	..	..
26		·21	·23	·27	·20	·08	·24	·16	·11	·10	..	·10	·08
27		·20	·27	·19	·10	·18	·07	·25	·14	·14	·20	·12	·13
28		·21	·16	·15	·19	·15	·10	·15	·09	·06	·03	·04	·04
29		·54	·54	·53	·53	·40	·40	·65	·48	·40	·39	·44	·41
30		..	..	·01	..	·01	..	..	..	..	..	..	..
*	3·20	3·52	3·51	3·60	3·32	3·06	3·08	3·88	2·76	2·35	2·00	2·15	2·01
†	35·70	34·11	31·72	30·04	32·92	28·84	28·72	32·95	31·97	30·34	28·68	30·29	28·94

Day of Mo.	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	RECORD CEASED.	..	..	..	..	..	..	..	..	..	..	..	..
2		·04	·03	·04	·04	·07	·07	·08	·13	·08	·08	·09	·05
3		..	..	..	..	..	..	..	..	..	..	..	..
4		·80	·76	·77	·50	·34	·35	·42	·30	·27	·42	·78	·57
5		..	..	·02	..	·06	..	..	..	·02	..	·02	·01
6		·02	·02	·02	·02	·02	..	..	·03	·02	·01	·03	·03
7		..	..	..	..	..	..	..	..	..	..	..	..
8		·10	·06	·08	·08	·09	·10	·12	·13	·10	·07	·08	·08
9		·03	·02	·02	·04	·03	·04	·02	..	·04	·04	·03	..
10		·35	·39	·43	·45	·59	·54	·60	·62	·61	·74	·68	·52
11		..	..	..	..	..	..	..	..	..	..	·03	..
12		·01	..	·01	..	..	..	..	..	·01	·01	·01	·01
13		..	..	..	..	..	..	..	..	..	..	..	..
14		..	..	..	..	..	..	..	..	..	..	..	..
15		..	..	..	..	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..
17		..	..	·02	..	..	..	..	..	..	..	..	..
18		·02	·02	..	·02	·02	·01	..	·01	·01	..	·02	·06
19		..	..	..	..	..	..	..	..	..	..	..	..
20		..	..	..	..	..	..	..	..	..	..	·01	..
21		..	·01	·01	·01	..	..	..	·08	·01	..	·01	..
22		·06	·06	·07	·07	·08	·06	·08	·15	·12	·10	·13	·11
23		..	·01	·01	·01	..	..	..	..	·01	..	·01	..
24		·01	·01	·01	·02	·02	·03	·01	..	..	..	·04	..
25		..	..	..	..	..	..	..	..	..	..	·01	·12
26		·09	·10	..	·06	·02	·06	·05	..	·02	..	·03	·01
27		·12	·05	·17	·10	·13	·07	·02	·12	·05	·07	·07	·06
28		·05	·05	·07	·07	·09	·08	·03	..	·02	·03	·10	·07
29		·41	·43	·46	·53	·48	·50	·51	·46	·57	·57	·62	·47
30		..	..	..	·01	..	..	..	..	..	..	·01	..
*		2·11	2·02	2·21	2·03	2·04	1·91	1·94	2·03	1·96	2·14	2·81	2·17
†		28·61	28·91	29·32	28·73	31·57	28·62	29·10	29·29	27·60	26·93	28·64	25·71

Daily Rainfall.

Day of Mo.	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..
2	·08	·09	·10	·10	·05	·03	·02	..	·05	·03	·02	·02
3	..	..	..	..	..	..	·01	·05	..	..	..	..
4	·26	·34	·32	·32	·41	·06	·85	·70	1·51	1·26	1·20	1·15
5	..	..	..	..	..	..	..	·96	·05	..	..	·01
6	..	·02	·02	·03	·02	..	·02	·01	·02	·03	·02	·01
7	..	..	..	..	..	·09	·02	..	..	..	..	..
8	·08	·12	·09	·09	·11	..	·04	..	·10	·09	·09	·13
9	·03	·03	·02	·03	·03	·04	·16	·08	·06	·04	·07	·04
10	·54	·53	·48	·53	·44	·22	·34	·16	·25	·30	·31	·35
11	..	..	..	..	..	·10	..	·20	·02	..	..	·01
12	..	..	..	..	..	..	·02	..	..	..	·02	·04
13	..	..	..	..	..	..	·01	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..
18	·01	·02	·02	·02	·02	·01	·02	..	..	·01	·02	·01
19	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	·01
21	·01	·02	..	·01	·01	..	..	..	·01	·01	·02	·01
22	·13	·12	·14	·09	·13	·06	·08	·10	·06	·04	·05	·05
23	·01	..	..	..	·02	·02	·01	..	·01	..	..	..
24	..	·01	·01	..	·02	..	·01	..	·05	·04	·07	·07
25	·03	..	..	..	..	·01	·01	·09	·02	..	·02	..
26	·08	·03	·05	..	·08	..	·01	..	·30	·11	·10	·34
27	..	·09	·10	·11	·11	·22	·22	·28	·07	·16	·26	..
28	·03	·03	·03	·04	·06	..	·04	..	·08	·05	·08	·10
29	·47	·52	·45	·44	·40	·32	·42	·36	·37	·34	·38	·38
30	..	..	..	..	..	..	..	·20	·01	..	..	·01
*	1·76	1·97	1·83	1·81	1·91	1·18	2·31	3·19	3·04	2·51	2·73	2·74
†	27·04	28·86	28·24	27·75	27·96	19·75	28·92	32·84	26·90	28·09	27·70	28·44

Day of Mo.	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·02	·01	·02	·01	..	·02	·02	·01	·02	·03	·04	·02	·05	·04
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	1·28	1·30	1·26	1·58	1·93	1·48	1·55	1·48	1·20	1·19	1·24	·75	1·05	·80
5	..	..	..	·02	..	..	·02	..	..	·02	·01	·01	·01	..
6	·02	..	·02	·01	·01	·01	..	·01	·02	·03	·03	·01	·02	·05
7	..	·01	..	..	..	..	..	..	..	..	..	..	..	..
8	·12	·10	·07	·06	·09	·06	·09	·06	·08	·12	·15	·10	·10	·09
9	·07	·05	·04	·03	·05	·04	·04	·02	·02	·02	·02	·01	·04	·04
10	·26	·18	·37	·29	·32	·30	·35	·32	·40	·33	·36	·20	·34	·36
11	·01	..	..	·02	..	..	..	..	..	..	..	·01	..	..
12	·01	..	..	·01	..	..	..	·06	·07	·06	·03	..	·02	·03
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	·02	..	·01	..	·01	·02	..	·01	·02	·01	·01	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·02	·01	·02	·06	·09	..	·02	·02	·01	..	·01	·01	..	·03
22	·05	·05	·06	·06	·04	·07	·07	·05	·05	·09	·08	·07	·07	·10
23	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·06	·09	·14	·12	·14	·17	·07	·07	·05	·04	·03	..	·01	·03
25	·07	..	·06	..	..	..	..	..	..	..	·01	·03	·02	..
26	·17	·36	·23	·25	·26	·05	·09	·36	·11	..	·12	·26	·10	·23
27	·19	·04	·18	·13	·13	·40	·40	..	·20	·30	·19	·02	·18	·07
28	·07	·09	·13	·12	·14	·13	·15	·14	·11	·07	·08	·07	·04	·08
29	·38	·40	·37	·48	·58	·48	·50	·44	·37	·33	·37	·37	·40	·40
30	·01	..	..	..	..	..	..	..	..	..	·01	..	..	..
*	2·82	2·69	2·99	3·25	3·79	3·21	3·38	3·06	2·71	2·64	2·80	1·95	2·46	2·35
†	27·90	23·86	28·46	26·20	26·69	26·87	29·91	28·02	29·06	30·53	30·88	27·42	28·00	28·34

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. September, 1903.

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..
2	·04	·03	·09	·05	·07	·06	·03	·03	·03	·02	·02
3	..	..	..	..	..	..	..	..	..	..	..
4	·75	·83	·25	·74	·43	·36	·81	·82	·80	1·19	1·05
5	·01	..	..	..	..	..	·01	..	..	·03	..
6	·01	·03	·03	·02	..	·03	·04	·02	·03	·03	·01
7	..	..	..	..	..	..	..	..	..	..	..
8	·13	·15	·13	·09	·15	·17	·13	·08	·07	·10	·05
9	·04	·02	·03	·01	..	·02	..	..	·03	..	..
10	·33	·30	·48	·45	·36	·38	·38	·33	·26	·39	·32
11	·02	·01	..	..	..	..	..	..	..	..	..
12	..	..	·01	..	..	..	·01	·01	..	..	·04
13	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..
18	·02	·02	·02	..	..	·01	·01	·01	·03	·01	..
19	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..
21	·01	·02	·02	..	..	..	·01	·01	·01	..	..
22	·14	·15	·15	·11	·11	·16	·16	·15	·14	·07	..
23	..	·01	·01	..	..	·01	·01	..	..	..	..
24	..	·02	·01	·02	·03	·02	·03	·09	·03	·03	·05
25	·03	·01	·08	·09	..	·02	..	..	..	..	..
26	·23	·17	·05	·04	..	·07	·16	·08	·07	..	·16
27	·03	·10	·11	·06	·15	·13	·07	·15	·18	·23	·05
28	·04	·04	·03	·09	·05	·04	·03	·02	·03	·08	·08
29	·36	·38	·61	·48	·45	·50	·35	·33	·33	·34	·30
30	..	·02	..	..	..	..	..	..	..	..	..
*	2·19	2·31	2·11	2·25	1·80	1·98	2·24	2·13	2·04	2·52	2·13
†	26·84	26·78	28·85	25·25	25·69	27·28	27·90	25·70	23·12	29·23	23·88

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(September, 1903.)

The month has been somewhat cool, with about an average temperature; whilst the rainfall is somewhat variable, being slightly below the average at Greenwich, but three-quarters of an inch above the twenty years' average at Wallington, and about the average at Croydon. The month has been rather unhealthy, for scarlet fever has been somewhat prevalent, and also influenza. The wet weather seems to be becoming detrimental to garden crops, and the celery grub has done great damage. The gale on the 10th was general throughout the district, and caused great destruction amongst the trees. The thunderstorm on the 4th was experienced throughout the district. The observer at Abinger Hall mentioned that there was a severe frost on the 10th, which destroyed the vegetable marrows; and the observers at Redhill and Sevenoaks mention that primroses, violet, and laburnum were in flower for the second time at the end of the month; and Mr. J. E. Clark mentions that on the 15th there were acres of hay (twenty to thirty at least) in all stages above Marden Park station, and that the air was scented as in June. Solar halos were seen at Greenwich on the 1st, 2nd, 4th, 10th, 20th, and 23rd, and at Upper Gatton on the 10th and 23rd; whilst a lunar one was visible at Greenwich and Upper Gatton on the 3rd. The mean temperature of the month was at Croydon (Duppas House) 58°·6, at Worcester Park 57°·9, at Wallington 57°·6, at Chipstead 57°·0, at Warlingham 56°·5, and at Clapham Park 56°·1. There were recorded at Wallington 183·3 hours of sunlight, which is 23·1 hours or five per cent. above the September average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	·03	·05	·06	·06	·03	·03	·02	·04	·03	·02	·03	·03	·01	..			·25	·59		·03	·01	..
2	·05	..	·02	·03	·01	..	·01	..	·01	..	·03	·02	·04	·01	·02	·01	·02	..			·02	·01		..	·01	..
3	·29	·30	·22	·19	·20	·34	·25	·24	·30	·19	·20	·22	·16	·11	·18	·20	·24	·35			·21	·29		·20	·12	·09
4	·54	·62	·48	·48	·49	·47	·43	·47	·42	·49	·55	·45	·55	·60	·58	·59	·51	·51			·57	·41		·58	·53	·34
5	·07	·02	·04	·10	·06	·47	·04	·04	·04	..	·09	·06	·15	·19	·09	·08	·06	·04			·23	·05		·08	·13	·21
6	·36	·31	·28	·27	·37	·37	·35	·36	·30	·37	·36	·41	·30	·34	·40	·44	·45	·50			·36	·43		·44	·25	·19
7	·01	..	..	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	·01
8	·20	·19	·11	·16	·21	·22	·19	·19	·18	·18	·19	·18	·19	·18	·20	·19	·17	·25			·34	·09		·18	·15	·12
9	·09	·07	·18	·02	·09	·09	·09	·09	·01	·08	·07	·03	·02	..	..	·03	·02	·01			·03	·02		·02	·02	·02
10	·09	·10	·10	·16	·06	·07	·08	·11	·07	·05	·09	·07	·08	·09	·08	·08	·09	·10			·07	·10		·09	·08	·07
11	1·60	1·32	1·62	1·35	1·05	·63	·96	·96	1·06	1·01	1·21	1·02	1·12	1·28	1·11	1·13	1·00	·98			1·00	·93		1·16	·95	·90
12	·36	·91	·56	·65	·87	1·27	1·02	1·02	·90	·92	·70	·96	·81	·67	·93	1·07	·79	1·02			1·14	·43		·82	·91	·89
13	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	·01	·01
14	·27	·25	·23	·25	·33	·31	·41	·39	·47	·25	·27	·39	·26	·24	·33	·37	·37	·47			·46	·25		·37	·20	·21
15	·03	·03	·01	..	..	..	·03	·04	·01	..	·01	..	..	..	..	..	..	..			..	..		·01	·01	..
16	·04	·04	·07	·08	·04	·06	·05	·04	·03	·05	·05	·03	·05	·05	·04	·04	·02	·02			·01	·01		·04	·05	·06
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			·01	..		..	..	..
18	·14	·11	·15	·11	·11	·12	·10	·10	·05	·10	·09	·05	·07	·01	·06	·04	·05	·05			·05	·05		·07	·06	·05
19	·04	·04	·03	·02	..	·02	·02	·02	·02	·02	·03	·02	·02	·02	·03	·03	·03	·03			·02	·04		·04	·02	·02
20	·03	·02	·02	·02	·02	·01	·02	·02	·03	·02	·03	·02	·03	·04	..	..	·01	·03			·05	·04		·03	·06	·03
21	·82	·64	·65	·65	·45	·62	·63	·60	·71	·41	·57	·56	·52	·50	·50	·59	·96	·82			·76	·82		·63	·61	·61
22	·34	·39	·20	·23	·42	·28	·32	·31	·29	·35	·25	·37	·26	·34	·29	·29	·40	·35			·50	·24		·34	·25	·19
23	..	..	..	..	..	..	..	..	·01	..	..	·01	..	..	·02	·03	..	..			..	·02		·01	..	·01
24	·33	·48	·41	·40	·25	·24	·30	·31	·22	·19	·18	·27	·19	·17	·26	·27	·15	·10			·12	·10		·33	·17	·19
25	·84	·81	·84	·70	·08	·08	·08	·08	·08	·07	·09	·06	·07	·06	·05	·07	..	·07			·06	·09		·07	·05	·06
26	·97	1·05	1·08	1·08	1·23	1·21	1·03	·98	1·36	1·03	1·11	1·24	1·25	1·06	1·20	1·38	·78	·66			·59	·61		1·36	1·15	1·05
27	·96	1·00	1·02	·80	·48	·57	·50	·59	·56	·54	·54	·50	·62	·62	·53	·64	·66	·88			·94	·56		·64	·59	·64
28	·03	·04	·05	·02	..	..	..	..	..	..	..	..	..	..	..	..	·02	·02			·13	·01		·01	·01	·01
29	·04	·05	·04	·05	·07	·07	·04	·05	·01	·05	·04	·03	·05	·04	·04	·03	·03	·02			·04	·04		·04	·03	·03
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
31	·46	·52	·52	·50	·31	·32	·25	·31	·32	·34	·46	·34	·43	·48	·42	·45	·41	·34			·33	·25		·40	·36	·39
*	9·00	9·31	8·93	8·35	7·33	7·89	7·26	7·38	7·50	6·75	7·23	7·35	7·27	7·12	7·39	8·08	7·25	7·62	8·03	6·12	8·29	6·48	7·72	7·99	6·80	6·40
†	42·09	43·08	42·94	44·50	35·92	36·92	35·34	36·31	33·16	36·02	39·98	37·91	38·07	39·62	38·77	41·62	37·71	37·52	38·60	30·31	40·57	36·91	37·63	41·24	36·95	35·16

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for October is 2·77 in.* **October, 1903.**

Day of Mo.	Burgh Heath	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	..	..	..	..	..	..	..	..	..	..	·01	·01
2		·01	..	..	..	..	..	..	..	..	..	..	..
3		·09	·10	·10	·10	·08	·10	·10	·09	·09	·06	·07	·08
4		·33	·34	·32	·35	·30	·26	·25	·28	·29	·28	·28	·28
5		·19	·11	·12	..	·18	·09	·18	·23	·20	·19	·17	·16
6		·16	·12	·10	·34	·10	·07	·12	·10	·11	·09	·09	·10
7		·05	·06	·06	·03	·08	·04	·05	·05	:03	·04	·02	·02
8		·15	·15	·16	·16	·12	·13	·16	·12	·11	·10	·11	·11
9		·08	..	..	..	·03	·03	·05	·04	·03	·04	·03	·03
10		·08	·13	·07	·13	·09	·10	·10	·09	·08	·09	·10	·08
11		1·12	·92	·83	1·26	·85	·85	·98	·90	·86	·85	·93	1·00
12		·60	·53	·43	·66	·55	·41	·60	·65	·60	·59	·70	·54
13		..	..	..	..	..	..	..	..	..	..	..	..
14		·18	·16	·15	·20	·12	·11	·13	·18	·20	·18	·17	·20
15		..	..	..	..	..	..	..	..	..	..	..	..
16		·05	·05	·04	·06	·04	·03	·05	·05	·03	·02	·02	·03
17		..	..	..	..	..	..	..	..	..	..	..	..
18		·11	·19	·08	·05	·06	·07	·05	·06	·07	·05	05	·06
19		·02	·02	·02	·02	·02	·01	·08	·02	·02	·02	·02	·02
20		·01	·06	·06	·03	·03	·03	·04	·03	·03	·02	·02	·02
21		·60	·50	·52	·59	·53	·54	·08	·45	·43	·41	·45	·43
22		·18	·15	·17	·14	·15	·12	·72	·16	·14	·12	·13	·13
23		..	..	..	..	·02	·01	..	·01	·01	..	·01	..
24		·40	·25	·20	·28	·27	·17	·25	·19	·18	·25	·16	·14
25		·85	·82	·63	1·08	·85	·62	1·07	·74	·54	·25	·21	·20
26		·70	·72	·70	·84	·60	·45	·60	·72	·75	·78	·88	·84
27		·81	·81	·74	·67	·54	·49	·59	·55	·45	·42	·51	·48
28		·02	·03	·02	·04	·02	·01	..	·01	..	..	..	..
29		·03	·04	·04	·05	·03	·02	·05	·03	·03	·02	·02	·02
30		..	..	..	..	..	..	..	..	..	..	..	..
31		·38	·35	·28	·50	·31	·25	·30	·31	·30	·26	·31	·29
*	7·11	7·20	6·52	5·84	7·58	5·97	5·01	6·60	6·06	5·58	5·13	5·47	5·27
†	42·81	41·31	38·24	35·88	40·50	34·81	33·73	39·55	38·03	35·92	33·81	35·76	34·21

Day of Mo.	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farnborough	Orpington	Farningham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	RECORD CEASED.	..	·01	·01	·01	·01	·01	..	·02	·03	·10	·34	·35
2		..	..	·01	·01	..	..	..	·01	..	..	..	·01
3		·08	·07	·07	·09	·09	·11	·08	·04	·08	·08	·09	·11
4		·26	·30	·28	·30	·30	·41	·42	·35	·40	·17	·42	·26
5		·16	·15	·19	·23	·31	·21	·28	·21	·14	·31	·17	·10
6		·10	·10	·13	·14	·20	·20	·20	·18	·20	·17	·18	·13
7		·04	·01	·01	·01	..	..	..	..	..	..	..	..
8		·11	·11	·12	·12	·15	·17	·13	·14	·12	·13	·23	·08
9		·04	·04	·04	·06	·09	·03	·07	·06	·07	·06	·07	·08
10		·08	·08	·06	·07	·08	·08	·05	·08	·07	·07	·06	·08
11		·72	·66	·72	·80	·81	·94	·74	·79	·95	·82	·85	·47
12		·58	·68	·81	·82	1·04	·96	·80	·73	·50	·46	·79	·60
13		..	..	..	..	..	..	..	..	..	..	..	..
14		·17	·20	·21	·21	·21	·24	·20	·20	·30	·23	·24	·17
15		..	..	..	..	..	..	..	..	·01	..	..	..
16		·02	·02	·03	·04	·05	·06	·03	·03	·02	·01	·02	·04
17		..	..	..	..	·01	..	..	..	..	..	..	..
18		·06	·05	·05	·05	·06	·05	·04	·09	·09	·10	·18	·06
19		·02	·02	·02	·03	·02	·05	·01	·03	·03	·01	·04	·05
20		·02	·02	·03	·02	·02	·03	·02	·02	·26	·02	·02	·04
21		·41	·44	·34	·60	·49	·66	·66	·61	·37	·63	·66	·58
22		·10	·14	·29	·18	·37	·25	·22	·20	·27	·30	·68	·72
23		..	..	..	..	..	..	..	..	..	..	·02	·01
24		·14	·10	·12	·19	·28	·25	·24	·24	·27	·26	·12	·05
25		·29	·07	·05	·06	·06	·07	·05	·04	·06	·06	·04	·06
26		·72	·74	·86	·93	1·14	1·20	1·15	1·06	1·22	·95	·59	·42
27		·43	·49	·46	·55	·62	·71	·63	·46	·90	·78	·58	·43
28		..	·01	·07	·03	·07	·02	·04	·17	·03	·02	·02	..
29		·02	·02	·02	·04	·04	·03	·02	·03	·02	·02	·02	·01
30		..	..	..	..	..	..	..	..	..	..	..	..
31		·26	·26	·29	·30	·30	·35	·32	·29	·28	·24	·21	·21
*		4·83	4·79	5·29	5·89	6·82	7·09	6·40	6·08	6·69	6·00	6·64	5·12
†		33·44	33·70	34·61	34·62	38·39	35·71	35·50	35·37	34·29	32·93	35·28	30·83

Day of Mo.	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	·01	..	·02	·01	..	..	..	·01	..	..	·01	·02	..	..	·02	·05	..	·02	·03	..	..	·01	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	·01	·01	·03	·01	·01	..	..
3	·07	·07	·08	·07	·09	..	·11	..	·09	·13	·11	·14	·10	·07	·08	·09	·11	·10	·11	·16	·17	·15	·16	·11	·11	·12
4	·27	·29	·28	·33	·25	·06	·29	·10	·30	·30	·31	·33	·32	·29	·32	·37	·30	·32	·35	·34	·33	·30	·35	·26	·29	·30
5	·24	·13	·15	·22	·17	·16	·12	·41	·13	·10	·09	·04	·10	·10	·08	·04	·05	·07	·06	·11	·06	·10	·10	·09	·12	·20
6	·14	·14	·13	·10	·13	·08	·14	·10	·13	·13	·14	·15	·14	·07	·11	·14	·12	·13	·12	·11	·13	·17	·17	·15	·15	17
7	..	..	·01	..	·02	·07	·08	..	·07	·04	·04	·04	·05	·04	·05	·04	·05	·03	·03	·05	·04	·05	·06	..	·03	·07
8	·14	·12	·12	·12	·12	·11	·13	·12	·13	·13	·13	·17	·13	·11	·12	·23	·20	·16	·20	·18	·14	·20	·17	·14	·13	·14
9	·07	·07	·07	·06	·05	·03	·06	·08	·07	·04	·05	·06	·06	·02	·02	·02	·02	..	·03	·05	·07	·06	·07	·05	·05	·07
10	·05	·07	·07	·07	·08	..	·09	..	·10	·11	·09	·13	·11	·10	·10	·14	·14	·14	·32	·18	·13	·17	·14	·11	·10	·13
11	·59	·59	·58	·72	·61	..	·60	·64	·60	·64	·78	·75	·71	·72	·67	·96	·95	·82	·79	·94	·84	·69	·73	·62	·65	·69
12	·71	·81	·87	·74	·67	·44	·56	·60	·03	·33	·37	·47	·38	·46	·55	·34	·37	·40	·35	·35	·42	·41	·37	·35	·45	·56
13	..	..	..	..	..	·03	..	·11	·51	..	·01	·06	..	..	..	·01	..	..	·02	..	..	·07	·01	..	..	..
14	·15	·15	·14	·19	·15	·27	·15	·01	·13	·12	·11	·13	·10	·13	·10	·23	·24	·19	·23	·20	·17	·13	·12	·11	·08	·09
15	..	..	..	·01	..	·10	..	·09	·01	·01	·01	·02	..	..	..	..	..	..	..	·02	·04	·01	·01	·01	·01	·01
16	·11	·01	·02	·02	·02	..	·02	·01	·05	·02	·04	·03	·04	·02	·03	·02	..	·04	·03	·03	·03	·01	·03	·01	·02	·03
17	..	..	..	..	..	·09	·03	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	·13	·11	·10	·09	·08	·15	·09	..	·07	·09	·10	·11	·09	·07	·08	·08	·11	·08	·10	·12	·09	·12	·11	·08	·07	·09
19	·03	·03	·05	·08	·02	·23	·01	·08	·01	..	·02	·04	·01	·01	·01	·03	·02	..	·02	·04	·02	·01	·02	·01	·01	·02
20	·03	·03	·04	·02	·03	..	·04	·03	·04	·06	·08	·08	·08	·05	·07	·04	·02	·07	·06	·05	·06	·08	·07	·08	·05	·05
21	·55	·56	·53	·55	·45	·02	·41	·32	·27	·30	·39	·35	·41	·39	·47	·32	·28	·33	·35	·25	·32	·35	·41	·46	·39	·36
22	·15	·14	·12	·20	·13	·05	·10	·33	·25	·16	·12	·20	·12	·12	·12	·13	·40	·14	·28	·30	·21	·19	·11	·04	·07	·09
23	..	..	·01	..	..	..	·02	·01	..	..	·02	·01	·01	..	·01	..	..	..	·01	·01	..	..	..	..	..	..
24	·18	·20	·16	·21	·13	·01	·14	·01	·03	·20	·22	·13	·22	·10	·20	·15	·18	·12	·18	·12	·12	·22	·22	·23	·22	·18
25	·05	·05	·05	·07	·04	·02	·25	·31	·17	·69	·90	·63	·78	·57	·97	·23	·11	·46	·33	·18	·68	·66	·54	·40	·68	·58
26	1·00	1·05	·89	1·12	·73	·76	·67	1·21	·65	·51	·54	·65	·54	·44	·54	·57	·57	·62	·66	·58	·62	·47	·47	·50	·47	·47
27	·78	·73	·43	·63	·45	·17	·43	·16	·45	·32	·36	·31	·37	·41	·51	·65	·65	·58	·57	·47	·31	·37	·36	·30	·34	·41
28	·04	·12	·13	·12	·02	·25	..	·51	·43	·01	·03	·05	·02	·01	·05	·07	·04	·03	·02	·02	·04	·02	·01	·02	·01	·02
29	·01	·01	·02	·03	·02	..	·01	·01	·02	·01	·02	·02	·02	..	·03	·03	·01	·02	·01	·02	·02	·03	·02	..	·01	·02
30	..	..	..	..	..	..	..	·01	·03	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	·30	·26	·24	·27	·25	·29	·07	·29	·21	·24	·27	·25	·22	·27	·31	·27	·28	·28	·27	·27	·27	·30	..	·29	·34
*	5·49	5·79	5·31	6·03	4·74	3·35	4·84	5·35	5·07	4·66	5·32	5·41	5·18	4·52	5·56	5·26	5·26	5·13	5·53	5·19	5·34	5·34	5·15	4·14	4·80	5·21
†	32·53	34·65	33·55	33·78	32·70	23·10	33·76	38·19	31·97	32·75	33·02	33·85	33·08	28·38	34·02	31·46	31·95	32·00	35·44	33·21	34·40	35·87	36·03	31·56	32·80	33·55

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. October, 1903.

Day of Mo.	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·01	..	·02	·24	·39	·01	..	..	..	..	..
2	..	·01	..	·02	..	·01	·01	..	..	·02	..
3	·14	·15	·13	·09	·11	·17	·20	·18	·15	·19	..
4	·29	·30	·25	·23	·20	·27	·31	·29	·26	·31	·15
5	·19	·13	·20	·22	·13	·12	·13	·11	·06	·08	·03
6	·15	·16	·14	·13	·10	·19	·17	·14	·10	·16	·03
7	·05	·05	..	..	..	·04	·04	·03	·04	·04	·03
8	·15	·14	·15	·21	·19	·11	·12	·12	·11	·18	·13
9	·06	·08	·08	·09	·11	·10	·08	·09	·08	·09	·06
10	·08	·11	·10	·07	·10	·11	·12	·10	·10	·10	·15
11	·70	·65	·61	·58	·55	·56	·66	·59	·63	·78	·80
12	·42	·49	·60	·37	·55	·64	·47	·42	·41	·41	·37
13	..	..	..	..	..	..	·01	·01	..	·04	..
14	·08	·09	·16	·12	·15	·15	·10	·08	·06	·12	·16
15	·03	·02	..	..	..	·05	·01	·02	·01	·03	..
16	·03	·02	·02	·01	·02	·03	·02	·01	..	·01	..
17	..	..	..	..	..	..	..	..	..	..	..
18	·11	·12	·18	·06	·06	·17	·14	·13	·10	·11	·13
19	·02	·01	·05	·03	·04	·02	·01	·01	·02	·02	·01
20	·05	·05	·05	·03	·05	·05	·04	·03	·03	·07	·06
21	·36	·35	·51	·55	·53	·42	·34	·31	·33	·23	·32
22	·07	·08	·20	·24	·17	·12	·08	·08	·05	·34	·22
23	..	..	..	..	·03	..	..	..	..	..	..
24	·15	·18	·18	·15	·13	·16	·14	·16	·11	·17	·17
25	·47	·54	·08	·04	·03	·04	·25	·46	·48	·72	·52
26	·48	·45	·98	·77	·75	·64	·41	·40	·37	·46	·45
27	·43	·44	·81	·45	·42	·66	·35	·35	·41	·31	·33
28	·01	·01	·08	·02	·05	·08	·01	·04	·01	·01	·01
29	·01	·02	·02	..	·01	·03	·02	·02	·02	·03	·02
30	..	..	..	..	..	..	..	..	..	..	..
31	·29	·36	·30	·25	·25	·33	·28	·25	·22	·29	·20
*	4·83	5·01	5·90	4·97	5·12	5·28	4·52	4·43	4·16	5·32	4·35
†	31·67	31·79	34·75	30·22	30·81	32·56	32·42	30·13	27·28	34·55	28·23

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(October, 1903.)

The month has been extremely warm, but the most remarkable feature is the amount of rain, the large number of rainy days, and the number of days having a fall of one inch and above. With reference to the total fall of rain, if we take the long record of Greenwich as fairly representing the district, the present October fall has only been exceeded seven times in the same month, *viz.* in the years 1835, 1841, 1846, 1855, 1865, 1880, and 1882. The number of rainy days is also exceedingly large, for at Wimbledon, Windmill, we have thirty days, and at Kenley and Morden twenty-eight, and the smallest number is twenty-one at the lofty station of Anerley. With reference to the falls of one inch and above we have the two Abinger stations and Caterham with no less than three such falls. There have been a considerable number of scarlet fever cases throughout the district, but diphtheria and enteric cases have been comparatively few. The month will also be renowned for the great magnetic disturbance on the 31st. Mr. N. F. Robarts, of South Norwood, reports that he saw a distinct aurora at 8.30 p.m. on the 29th. As an instance of the warmth of the month, the observer at Kenley reports that three queen wasps were killed in the house on the 28th, and one flew into the house at Wallington on the 31st. The rainfall is about two inches above the average. The mean temperature of the month is about three degrees above the average, and was at Croydon (Duppas House), Wallington, and Worcester Park 52°·8, at Chipstead 51°·5, at Warlingham 51°·2, and at Clapham Park 50°·3. There were recorded at Wallington 97·5 hours of sunlight, which is 2·9 hours or one per cent. below the October average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury, St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·33	·29	·29	·27	·28	·30	·25	·25	·16	·28	·29	·27	·27
3	..	..	..	..	·01	..	·01	·01	..	..	·01	..	..
4	..	..	·01	..	..	..	·01	·01	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	·01	·01	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·04	·03	·02	·04	·03	·03	·04	·03	·02	·02	·02	·03	·02
9	·03	..	..	·03	·04	..	·02	·02	·03	..	·04	·02	·03
10	..	..	..	..	..	..	..	..	·02	·03	..	..	..
11	..	..	..	..	·01	..	·02	..	·01	·01	·01	·01	·01
12	·02	..	..	..	..	·05	·01	·01	·01	..	·01	·01	..
13	·06	·07	·05	·05	..	..	..	·01	·01	..	·02	..	·01
14	·04	·02	·07	·10	·07	·07	·06	·07	·06	·06	·08	·07	·08
15	..	..	..	..	·01	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	·01	·01	..	..	..	..	..
17	·10	·10	·10	·08	·10	·10	·09	·08	·07	·09	·10	·06	·08
18	..	..	..	..	·01	..	·01	·01	..	·01	·01	..	·01
19	..	..	..	..	..	..	..	..	·01	..	·01	..	..
20	·02	·02	·01	..	·01	·03	·02	·01	·01	·01	·01	·02	·02
21	·01	..	..	..	..	..	..	..	..	..	..	·01	..
22	..	..	..	..	..	·01	..	..	·01	..	..	·04	·01
23	·02	·12	·03	·12	·03	·03	·03	·03	·05	·02	·05	..	·03
24	·10	·02	·09	·04	·05	·05	·04	·06	·03	·05	·05	·05	·07
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·04	·09	·10	·03	·04	·05	·04	·03	·02	·02	·03	·02	·03
27	1·61	1·61	1·43	1·57	1·62	1·20	1·58	1·64	1·43	1·64	1·76	1·59	1·81
28	·36	·26	·26	·25	·27	·98	·31	·31	·32	·28	·26	·30	·25
29	·19	·12	·07	·07	·18	·05	·20	·19	·10	·15	·13	·20	·14
30	..	..	..	..	·05	..	·03	·05	·02	·04	·05	·06	·04
*	2·97	2·75	2·53	2·65	2·81	2·95	2·79	2·84	2·39	2·71	2·94	2·76	2·91
†	45·06	45·83	45·47	47·15	38·73	39·87	38·13	39·15	35·55	38·73	42·92	40·67	40·98

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..			..	..		..	·01	..
2	·24	·26	·24	·18	·16			·13	·12		·21	·21	·22
3	·02	..	..	..	..			..	..		..	·01	·01
4	·01	..	·01	..	..			..	..		·01	..	·01
5	..	..	..	..	..			..	..		..	..	..
6	..	..	..	..	..			..	·02		..	..	..
7	..	..	..	..	..			..	..		..	..	..
8	·03	·03	·03	·03	..			·11	·04		·04	·05	·05
9	·05	·04	·04	·04	·10			..	..		·06	·04	·05
10	..	..	..	..	..			..	..		..	..	·01
11	·02	..	·01	..	·01			..	·01		·02	·01	·02
12	·02	..	·02	·03	..			·04	·02		·03	·03	·04
13	..	·02	·01	..	..			..	·02		..	·05	·01
14	·10	·08	·08	·06	·07			·07	·07		·09	·01	·06
15	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	·02	..
16	..	..	·01	..	..			..	..		..	·02	..
17	·09	·06	·06	..	·08			·08	·06		·07	·05	·07
18	..	..	·01	..	..			..	..		..	..	·01
19	..	..	·01	..	..			..	..		..	..	·01
20	·02	..	·01	..	..			..	·01		..	..	·01
21	..	·01	..	..	..			..	..		..	·01	·01
22	·02	..	..	..	..			..	..		·02	·10	..
23	·08	·06	·03	·07	..			·05	·07		·07	..	·05
24	·02	·04	·07	..	·09			·06	..		·04	..	·05
25	..	..	..	..	..			..	..		..	..	..
26	·03	·04	·04	·10	·06			·07	·07		·03	·03	·03
27	1·69	1·76	1·75	1·59	1·80			1·81	1·64		1·57	1·48	1·42
28	·27	·31	·32	·44	·44			·42	·45		·34	·35	·36
29	·11	·17	·17	·36	·25			·39	·30		·20	·15	·12
30	·04	·05	..	·03	·04			·07	..		·02	·04	·04
*	2·86	2·93	2·92	2·93	3·10	3·02	2·36	3·30	2·90	2·98	2·82	2·67	2·66
†	42·48	41·70	44·54	40·64	40·62	41·62	32·67	43·87	39·81	40·61	44·06	39·62	37·82

* The figures in this row give the totals for the month, † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for November is 2·35 in.* **November, 1903.**

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	..	..	..	..	..	..	..	·01	..	..	..	..
2		·24	·30	·28	·30	·23	·19	·20	·23	·22	·18	·24	·24
3		..	..	..	..	..	..	..	·01	..	..	..	..
4		·01	..	..	..	..	..	..	·01	..	..	·02	·01
5		..	..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	..	·01	..	..	..	..	..	..	..
7		..	..	..	..	..	..	..	..	..	..	·01	..
8		..	·07	·07	·08	·06	·05	·07	·08	·08	·06	·09	·08
9		·13	·03	·01	·06	·02	·02	·05	·03	·03	·04	·02	·03
10		..	..	..	..	..	..	..	..	..	..	..	..
11		·01	·02	..	·02	·02	·01	·02	·01	·01	..	·01	·01
12		·01	·03	·04	·04	·04	·04	·05	·05	·05	·04	·04	·04
13		·03	·02	·01	·03	..	..	·02	·01	..	..	..	..
14		·06	·04	·05	..	·05	·02	·03	·05	·04	·03	·04	·04
15		..	..	..	..	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..
17		·08	·10	·08	·08	·08	·07	·03	·07	·07	·05	·08	·06
18		..	..	·01	..	..	..	·02	..	..	..	..	·02
19		..	..	..	..	..	..	..	·02	..	..	..	·01
20		·01	..	..	·03	·01	·01	·03	..	·01	..	·03	..
21		..	..	..	..	..	..	..	·01	·01	..	..	·01
22		..	..	·02	..	..	..	..	..	..	..	..	..
23		·08	·11	·04	·07	·01	·04	..	·06	·06	..	·05	·05
24		·03	·03	·07	·04	·08	·02	·03	·04	·03	·07	·03	·03
25		..	..	..	..	..	..	..	..	..	..	..	·01
26		·02	·04	·03	·03	·03	·03	·04	·02	·03	·03	·03	·03
27		1·16	1·15	1·01	1·49	1·30	1·17	1·20	1·36	1·32	1·60	1·38	1·30
28		·26	·22	·20	·25	·29	·28	·32	·34	·34	·33	·24	·33
29		·07	·02	·03	·06	·04	·02	·02	·05	·05	·04	·16	·05
30		..	..	..	..	·01	..	·02	·02	·02	·03	·02	·02
*	3·15	2·20	2·18	1·95	2·58	2·28	1·97	2·15	2·48	2·37	2·50	2·49	2·37
†	45·96	43·51	40·42	37·83	43·08	37·09	35·70	41·70	40·51	38·29	36·31	38·25	36·58

Day of Mo.	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	RECORD CEASED.	..	..	..	..	..	..	..	·02	RECORD CEASED.	..	..	·01
2		·19	·22	·21	·19	·19	·20	·15	·18		·15	·18	·17
3		..	..	·01	·01	..	·01	..	..		..	..	·01
4		..	..	..	·02	..	..	..	..		..	..	..
5		..	..	..	..	..	..	..	..		..	..	..
6		..	..	..	·01	..	..	..	..		..	..	..
7		..	..	..	..	..	..	..	..		..	..	..
8		·06	·05	·01	·05	·01	·05	·06	..		·02	·01	·02
9		·02	·04	·10	·06	·08	·05	·04	·14		·02	·05	·03
10		..	..	..	..	..	..	..	..		..	..	..
11		·01	·02	·02	·02	·02	·01	..	..		..	..	..
12		·04	·04	·06	·06	·06	·05	·07	·07		·05	·05	·08
13		..	..	..	..	..	·05	..	..		·03	..	..
14		·03	·03	·03	·06	·07	·06	·04	·06		·02	·07	·03
15		..	..	..	..	..	..	..	..		..	..	..
16		..	..	..	..	..	..	..	..		..	..	..
17		·06	·06	·06	·06	·08	·07	·07	·07		·05	·09	·06
18		..	·01	..	·02	..	..	..	..		..	..	..
19		..	·01	·01	·01	..	·01	..	..		..	..	..
20		·01	..	·01	..	·02	·01	..	·03		..	·02	·01
21		..	·01	..	..	..	·01	..	..		..	·01	..
22		..	..	..	..	..	..	..	..		..	..	..
23		·05	·04	·01	·04	·03	·06	·08	..		..	..	·04
24		·02	·02	·05	·03	·06	·04	·01	·14		·04	·05	..
25		..	..	..	..	..	..	..	..		..	..	..
26		·04	·04	·05	·04	·06	·04	·05	..		·05	·11	·04
27		1·23	1·25	1·31	1·40	1·47	1·63	1·56	1·20		1·42	1·34	1·01
28		·33	·24	·39	·34	·41	·37	·42	·40		·44	·46	·46
29		·04	·05	·06	·08	·15	·12	·09	·09		·21	·25	·16
30		·02	·02	·01	·03	·04	·03	·02	..		·02	·01	..
*		2·15	2·15	2·40	2·53	2·75	2·84	2·66	2·40		2·52	2·70	2·13
†		35·59	35·85	37·01	37·15	41·14	38·55	38·16	37·77		35·45	37·98	32·96

Day of Mo	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	·20	..	..	..	..
2	·17	·19	·19	·12	·17	·12	·23	..	·21	·24	·23	·22
3	..	..	..	..	..	..	..	·17	..	..	..	·07
4	·02	..	..	..	..	..	..	..	..	·01	..	..
5	..	..	..	..	..	..	..	..	·01	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..
8	·02	·06	·09	·06	·07	..	·05	..	·07	·09	·13	·07
9	·07	·05	·03	·05	·02	·08	·03	·09	·01	·04	·03	·02
10	..	..	..	..	·01	..	..	..	..	..	..	..
11	·02	·02	·03	·02	·02	·01	·02	..	·02	·02	·02	·03
12	..	·04	·05	·04	·04	·04	·05	..	·04	·06	·06	·06
13	..	..	·01	..	..	..	..	·06	..	..	·01	·02
14	·03	·03	·03	·04	·02	·02	·02	·03	·03	·05	·06	·05
15	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	·01	..	..	..	..	..	..	..
17	·06	·07	·06	·05	·06	·04	·05	·08	·07	·05	·07	·06
18	..	..	..	..	..	..	..	..	..	·01	..	·01
19	..	..	·01	..	..	..	..	..	..	..	·01	..
20	..	·02	·01	·02	·01	..	·01	..	·02	..	·01	·01
21	..	..	..	..	..	..	..	..	·02	..	..	·01
22	..	..	..	..	..	..	..	..	..	..	..	..
23	·06	·02	·04	·03	·04	..	·03	..	..	·05	·05	·04
24	·02	..	·03	·02	..	·04	·03	·09	·05	..	..	..
25	..	..	..	..	..	..	..	..	·01	..	..	..
26	..	·08	·06	·06	·06	·01	·07	·01	·05	·02	·04	·09
27	1·20	1·25	1·21	1·03	1·24	·53	1·13	·25	1·20	1·05	1·10	·98
28	·44	·47	·43	·42	·40	·53	·39	1·09	·27	·30	·26	·30
29	·08	·08	·08	·10	·06	·30	·04	·32	·03	·02	·02	·01
30	·02	·03	·04	·03	·03	..	·02	·01	..	..	..	..
*	2·21	2·41	2·40	2·09	2·26	1·72	2·17	2·40	2·11	2·01	2·10	2·05
†	34·74	37·06	35·95	35·87	34·96	24·82	35·93	40·59	34·08	34·76	35·12	35·90

Day of Mo	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·23	·16	·22	·20	·21	·19	·22	·23	·21	·22	·25	·54	·23	·20
3	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
4	·01	..	..	·01	..	..	·01	..	..	..	..	..	..	..
5	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	·06	·02	·05	·06	·06	·08	·08	·06	·06	·06	·10	·02	·06	·07
9	·03	·05	·03	·01	·01	·02	·02	..	·03	·07	·03	..	·05	·08
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·02	..	..	·02	..	·02	·01	·02	·03	·01	·02	·02	·02	·04
12	·05	..	·04	·04	·05	·03	·05	·06	·06	·06	·08	·06	·06	·08
13	·01	..	·01	·02	·01	·02	..	·02	·01	..	..	..	..	..
14	·05	·02	·04	·04	·04	·05	·07	·04	·04	·05	·04	·02	·02	·03
15	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
16	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·07	·05	·06	·09	·07	·07	·06	·05	·06	·07	·04	·05	·04	·07
18	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
19	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
20	·02	..	·01	..	..	..	·01	..	..	·02	·01	..	..	..
21	..	..	..	·01	..	..	..	..	..	..	..	..	·01	·01
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	·04	..	·03	·03	·04	·04	·03	·05	·03	·03	·06	·06	·05	·04
24	..	·01	..	·03	..	·01	·01	..	·01	·02	..	..	..	·04
25	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	·05	·03	·03	·02	·02	·02	·02	·03	·05	·02	·05	·05
27	1·11	·92	1·07	·78	·82	·97	·97	·64	·93	1·01	1·10	1·00	1·04	1·12
28	·25	·19	·22	·20	·26	·18	·22	·30	·28	·35	·38	·31	·36	·39
29	·03	..	·02	·03	·01	·01	·03	·02	·02	·05	·01	..	·02	·05
30	..	..	..	..	..	..	..	..	..	..	..	..	..	·02
*	2·01	1·42	1·85	1·61	1·61	1·71	1·84	1·51	1·79	2·05	2·17	2·10	2·01	2·29
†	35·09	29·80	35·87	33·07	33·56	33·71	37·28	34·72	36·19	37·92	38·20	33·66	34·81	35·84

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. **November, 1903.**

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	·01	..	..	..	..	..	..	..	..	..
2	·20	·19	·17	·14	·14	·18	·16	·14	·14	·22	·18
3	·01	..	·02	..	..	..	..	..	..	..	..
4	..	..	·01	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..
6	..	·01	..	..	..	..	..	..	..	..	..
7	..	..	·01	..	..	..	..	..	..	..	..
8	..	·07	·08	·02	·07	·05	·08	·06	·06	·05	·05
9	·12	·04	·05	·05	·03	·04	·06	·04	·02	·05	..
10	..	..	..	..	..	..	..	..	..	..	..
11	·03	·03	·02	..	..	·02	·02	·01	..	·02	·03
12	·08	·08	·08	·07	·07	·08	·08	·08	·06	·06	·06
13	..	..	..	..	..	..	..	..	..	..	..
14	·03	·04	·03	·02	..	..	·02	·02	·01	·05	·03
15	·01	..	·01	..	..	..	..	..	..	..	..
16	..	·01	..	..	..	..	..	..	..	..	..
17	..	·06	·07	·06	·07	·05	·06	·04	·03	·06	·04
18	..	·01	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..
20	..	·02	·02	·01	..	·01	·01	·01	..	·01	..
21	·08	..	..	..	..	..	·01	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..
23	·02	·04	·04	·02	·05	·07	·03	·03	·02	..	·02
24	·04	..	·01	·01	..	..	..	·01	..	·04	..
25	..	..	..	..	..	..	..	..	..	..	..
26	·03	·04	·07	·03	..	·06	·05	·03	·01	·02	·01
27	1·07	1·10	1·09	1·08	1·18	1·06	·95	·92	·81	1·10	·83
28	·38	·32	·52	·41	·35	·39	·30	·28	·26	·38	·28
29	..	·02	·10	·12	·07	·05	·01	·02	·02	·03	..
30	·05	·01	·02	·01	·02	·06	·01	·01	..	..	..
*	2·15	2·10	2·42	2·05	2·05	2·12	1·85	1·70	1·44	2·09	1·53
†	33·82	33·89	37·17	32·27	32·86	34·68	34·27	31·83	28·72	36·64	29·76

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(November, 1903.)

The month has been mild, and open, with very little rain till towards the end. The rainfall is about half an inch below the average, whilst the mean temperature has been very variable, though, on the whole, about the average, by from one-half a degree to a degree. A queen wasp was seen at Wallington at 9.45 a.m. on the 2nd, and at Reigate at 5 p.m. on the 21st a small white butterfly was seen fluttering about in the garden. At Redhill the observer says "that quite a dozen different kinds of flowers were blooming in the garden up to the middle of the month, amongst them being asters and carnations, and a 'Gloire' rose opened on the 29th." Dahlias at Croydon were not cut till the 18th by the frost. Fog occurred generally during the first week, and also on the 18th and 19th. At Greenwich a brilliant orange glow at sunset was seen on the 5th and 6th. At Nutfield the observer says that "on the night of the 15th there were a great many shooting stars in all points of the compass; but between 5 and 6 a.m. on the 16th there was a splendid display of heaven's fireworks, mostly south-west. It was the finest display I have ever seen. There was a recurrence on the night of the 21st, but not nearly so continuous or so numerous." The month has been unhealthy, there having been some cases of small-pox, while diphtheria and scarlet fever cases were somewhat prevalent. The mean temperature of the month was at Wallington and Croydon (Duppas House) 44°·3, at Chipstead 44°·1, and at Warlingham and Worcester Park 43°·6. There were slight snow showers on the 29th and 30th. There were recorded at Wallington 42·2 hours of sunlight, which is 9·1 hours or three per cent. below the November average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Oxfordrd.)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (lower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	MONTHLY GAUGE.	..	..	MONTHLY GAUGE.	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..			..	..		..	..	..
3	·50	·51	·41	·37	·27	·27	·18	·24	·25	·23	·31	·24	·29	·33	·27	·27	·19	·17			·17	·13		·26	·22	·23
4	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..			..	..		..	·01	·01
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	·01	..
6	..	..	..	..	..	..	·01	·01	..	..	·01	..	..	·01	..	..	..	..			..	..		..	..	·01
7	·46	·35	·38	·38	·23	·22	·15	·25	·26	·21	·26	·20	·25	·33	·24	·14	·26	·27			·28	·30		·33	·32	·28
8	·29	·31	·32	·32	·21	·28	·22	·27	·19	·20	·28	·24	·26	·28	·25	·27	·25	·23			·17	·26		·30	·29	·24
9	·45	·41	·46	·50	·47	·40	·37	·43	·42	·48	·39	·40	·43	·61	·41	·45	·33	·25			·36	·18		·46	·38	·35
10	·39	·53	·55	·59	·39	·41	·38	·43	·46	·40	·41	·40	·43	·47	·41	·40	·51	·70			·72	·66		·49	·46	·50
11	·22	·24	·25	·15	·20	·16	·15	·16	·16	·15	·17	·14	·18	·24	·12	·16	·22	·23			·19	·29		·18	·22	·17
12	·32	·38	·50	·38	·37	·40	·37	·41	·33	·32	·38	·36	·41	·41	·40	·36	·24	·19			·23	·14		·40	·40	·36
13	·06	·07	·07	·07	·06	·06	·06	·10	·03	·03	·05	·07	·05	·05	·07	·09	·11	·12			·11	·07		·09	·07	·07
14	..	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	·01	..	..			..	·01		..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
16	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
17	·02	..	..	..	·01	..	..	..	..	·02	·01	..	·01	·01	..	..	..	..			·01	..		..	..	..
18	..	·02	·03	..	..	·02	·01	·01	·01	..	..	..	..	..	..	·01	·02	·02			·02	..		·01	·01	·01
19	·04	..	·07	·08	·02	..	..	..	·01	·03	·02	..	·01	..	..	..	..	..			..	·02		·01	·01	..
20	..	·03	..	..	..	..	..	..	..	..	..	..	..	·02	..	·01	..	..			..	..		..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
22	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
23	..	..	..	..	..	..	..	..	·01	..	..	..	..	·01	..	..	..	..			..	..		..	..	..
24	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..			·01	..		..	..	..
25	·01	·02	·04	·02	·01	·01	·01	·01	..	..	·01	·01	·01	..	..	..	·01	..			..	·03		..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	·02			·01	..		..	·02	·03
27	·02	·03	·05	·03	·02	·01	·02	·02	·01	·02	·03	·03	·03	..	..	·05	..	·02			·02	·02		·06	·04	·05
28	..	..	..	..	..	..	..	..	..	..	..	..	·01	·05	·04	·01	..	..			..	..		..	·01	·01
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..			..	..		..	..	..
*	2·79	2·90	3·13	2·89	2·26	2·25	1·94	2·34	2·15	2·09	2·33	2·09	2·40	2·83	2·21	2·24	2·14	2·22	2·31	1·71	2·30	2·11	2·50	2·59	2·47	2·32
†	47·85	48·73	48·60	50·04	40·99	42·12	40·07	41·49	37·70	40·82	45·25	42·76	43·38	45·31	43·91	46·78	42·78	42·84	43·93	34·38	46·17	41·92	43·11	46·65	42·09	40·14

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The 85 years (1816–1900) mean at Greenwich for December is 1·96 in.* December, 1903.

Day of Mo.	Burgh Heath	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	..	..	..	..	..	..	..	..	..	..	..	..
2		..	..	..	..	..	..	..	..	..	..	..	..
3		·23	·20	·20	·32	·30	·14	·17	·17	·17	·15	·15	·15
4		·01	..	..	..	..	..	..	..	..	..	..	..
5		..	..	..	..	..	..	..	..	..	..	..	..
6		..	..	..	·02	..	..	..	·01	..	..	..	·01
7		·25	·20	·18	·35	·30	·25	·37	·30	·31	·29	·32	·29
8		·30	·23	·18	·34	·22	·18	·23	·22	·21	·20	·22	·21
9		·35	·19	·20	·35	·27	·22	·30	·26	·31	·38	·42	·47
10		·48	·38	·31	·91	·56	·39	·56	·50	·47	·44	·43	·41
11		·17	·14	·12	·16	·14	·10	·14	·15	·12	·12	·16	·17
12		·49	·50	·43	·45	·38	·36	·38	·35	·32	·26	·30	·30
13		·07	·09	·07	·07	·05	·05	·05	·06	·05	·04	·04	·05
14		..	..	..	..	..	..	..	..	..	..	..	..
15		..	..	..	..	..	..	..	..	..	..	..	..
16		..	..	..	..	..	..	..	..	..	..	..	..
17		..	..	..	..	..	..	..	..	..	..	..	..
18		..	..	..	..	..	..	..	·01	·01	..	·01	·01
19		·05	·06	·05	..	·02	·01	·03	·02	..	..	..	..
20		..	..	..	..	..	..	..	..	..	..	..	..
21		..	..	..	..	..	..	..	..	..	..	..	..
22		..	..	..	·03	..	..	..	..	..	..	..	..
23		..	..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..	..
25		..	·01	..	..	..	..	..	..	..	..	..	..
26		..	..	·01	..	·01	·01	..	·01	..	·02	·01	·01
27		·06	·06	·05	·07	·06	·10	·13	·07	·08	·07	·08	·08
28		..	..	..	..	..	..	..	..	..	..	..	..
29		..	..	..	..	..	..	..	..	..	..	..	..
30		..	..	..	..	..	..	..	..	..	..	..	..
31		..	..	..	..	..	..	..	..	..	..	..	..
*	2·60	2·46	2·06	1·80	3·07	2·31	1·81	2·36	2·13	2·05	1·97	2·14	2·16
†	48·56	45·97	42·48	39·63	46·15	39·40	37·51	44·06	42·64	40·34	38·28	40·39	38·74

Day of Mo.	Croydon (Whitgift)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Farn-borough	Orpington	Farning-ham Hill	Southfleet
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	RECORD CEASED.	..	..	..	..	..	..	..	..	RECORD CEASED.	..	..	..
2		..	..	..	..	..	..	..	..		..	..	..
3		·14	·15	·16	·21	·27	·23	·22	·25		·15	·14	·10
4		..	..	..	..	..	..	..	..		..	..	..
5		..	..	..	..	..	·01	..	..		..	·01	..
6		..	..	..	·01	..	..	..	..		..	..	..
7		·27	·24	·30	·24	·31	·31	·30	·32		·27	·32	·25
8		·19	·19	·15	·21	·16	·25	·20	..		·20	·17	·14
9		·40	·48	·45	·32	·49	·44	·40	·54		·38	·33	·21
10		·41	·41	·40	·44	·44	·43	·47	·45		·50	·54	·57
11		·11	·10	·11	·16	·14	·13	·09	·11		·16	·18	·17
12		·25	·28	·26	·30	·34	·31	·27	·24		·23	·18	·16
13		·04	·04	·06	·07	·07	·09	·07	·09		·10	·05	·04
14		..	..	..	..	..	..	..	..		..	..	..
15		..	..	..	..	..	..	..	..		..	..	..
16		..	..	..	..	..	..	..	..		..	..	..
17		..	..	..	..	..	..	..	..		..	..	·01
18		·01	·01	·02	·02	·01	·01	·01	·03		..	..	..
19		..	..	·01	·02	..	..	..	..		..	·01	·01
20		..	..	..	·01	..	..	..	..		..	..	..
21		..	..	..	..	..	..	..	..		..	..	..
22		..	..	..	..	..	..	..	..		..	..	..
23		..	..	..	·01	..	..	..	..		..	..	..
24		..	..	..	..	..	..	..	..		..	..	..
25		..	..	..	·01	..	..	..	..		..	·01	·03
26		..	·09	·02	·03	·04	..	..	..		·02	·03	·03
27		·09	..	·09	·05	·07	·07	·08	·09		·05	·07	·07
28		..	..	..	·01	·01	..	..	..		..	·01	..
29		..	..	..	..	..	..	..	..		..	..	..
30		..	..	..	..	..	..	..	..		..	..	..
31		..	..	..	..	..	..	..	..		..	..	..
*		1·91	1·99	2·03	2·12	2·35	2·28	2·11	2·12		2·06	2·05	1·79
†		37·50	37·84	39·04	39·27	43·49	40·83	40·27	39·89		37·51	40·03	34·75

Day of Mo	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston	Richmond	Putney Heath	Wandswth. Common	Clapham Park	Streatham	West Norwood	Upper Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	·14	·13	·12	·09	·12	·06	·12	..	·11	·15	·15	·16	·13	·12	·16	·16	·18	·14	·20	·16	·16	·15	·15	·11	·10	·11
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	·01	..	..
7	·23	·26	·20	·32	·23	·20	·19	..	·15	·10	·14	·13	·16	·10	·16	·14	·19	·15	·17	·12	·15	·11	·15	·07	·18	·17
8	·15	·15	·14	·16	·15	..	·16	·30	·20	·14	·16	·16	·16	·13	·14	·16	·17	·15	·18	·17	·16	·17	·16	·11	·15	·18
9	·30	·29	·29	·33	·37	·25	·35	·39	·15	·16	·18	·15	·19	·14	·23	·17	·24	·21	·24	·18	·15	·19	·18	·18	·21	·24
10	·44	·39	·38	·45	·42	·50	·37	·64	·35	·35	·35	·35	·35	·26	·36	·38	·45	·33	·36	·29	·35	·34	·33	·34	·40	·40
11	·16	·14	·15	·13	·12	·04	·11	·08	·15	·10	·08	·07	·09	·08	·10	·14	·07	·12	·16	·11	·06	·11	·08	·08	·07	·09
12	·16	·17	·19	·20	·18	·16	·21	·04	·10	·17	·21	·21	·24	·15	·34	·28	·20	·22	·20	·23	·22	·19	·20	·15	·14	·16
13	·07	·05	·04	·07	·05	·03	·03	·28	·09	·02	..	·02	·04	·07	·05	·07	·06	·04	·04	·03	·03	·03	·03	·01	·02	·03
14	..	..	..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	·02	·02	·03	..	·01	·01	..	·01	·01	..	..	..	..	..	..	..	..	..	..	·02	·01	·02	..	·01	·03
19	..	..	..	..	..	..	..	·01	·01	·01	·04	·04	·05	·02	·04	·06	·05	·04	·04	·04	·04	·01	·01	..	·01	..
20	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..
26	·02	·02	·02	..	..	..	..	..	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	·08	·10	·10	·08	·09	·06	·08	·02	..	·03	·03	·04	·04	..	·05	·03	·02	·02	·03	·05	·04	·04	·05	·05	·03	·02
28	..	..	·01	·02	·02	..	..	·08	..	..	·01	..	..	..	..	..	..	..	..	·01	·01	·01	·01	..	·01	·04
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·75	1·72	1·67	1·88	1·75	1·31	1·63	1·88	1·36	1·26	1·35	1·34	1·45	1·07	1·63	1·59	1·63	1·43	1·63	1·40	1·39	1·36	1·37	1·11	1·33	1·47
†	36·49	38·78	37·62	37·75	36·71	26·13	37·56	42·47	35·44	36·02	36·47	37·24	36·54	30·87	37·50	34·66	35·19	35·14	38·91	36·12	37·58	39·28	39·57	34·77	36·14	37·31

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. December, 1903.

Day of Mo.	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Eltham	Greenwich	Deptford	Nunhead	Brixton	Battersea
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..
3	·11	·15	·11	·07	·10	·14	·08	·07	·04	·12	·09
4	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..
6	..	..	·01	..	..	..	..	..	..	..	..
7	·15	·15	·18	·21	·18	·15	·12	·11	·08	·16	..
8	·16	·16	·17	·14	·13	·16	·15	·14	·12	·14	·10
9	·26	·24	·30	·30	·42	·28	·27	·23	·13	·20	·15
10	·40	·38	·42	·43	·43	·43	·38	·40	·32	·32	·30
11	·07	·07	·18	·08	·07	·17	·06	·05	·04	·08	·05
12	·14	·13	·14	·13	·11	·12	·14	·12	·13	·20	·17
13	·02	·02	·06	·04	·03	·03	·01	·01	·02	·02	·01
14	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..
16	..	·01	..	..	..	..	..	..	..	..	..
17	..	..	·01	..	..	..	·01	..	..	..	..
18	·03	..	·01	..	..	·01	..	·01	..	·02	..
19	..	·01	·02	..	..	..	..	·01	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	·04	..	..	..	..	..	..	..
27	·05	·03	·15	·09	·19	·05	·03	·02	·02	·03	·02
28	..	·01	·03	·02	..	·04	·02	·01	..	·02	..
29	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..
*	1·39	1·36	1·79	1·55	1·66	1·58	1·27	1·18	·90	1·31	·89
†	35·21	35·25	38·96	33·82	34·52	36·26	35·54	33·01	29·62	37·95	30·65

Note.—The observations are taken at 9 a.m., except at Redhill (Oxford Road), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), and Brixton (8 a.m.), Sevenoaks (10 a.m.), and Beddington Corner (7 p.m.).

NOTES.

(December, 1903.)

The month was cold at the beginning and end, and very mild about the middle. As instances of the warmth, Mr. Malden writes that "quite a fair specimen of a Gloire was picked on Christmas Day"; and Mr. Horner says, "In the second week I gathered in my garden here a perfect specimen of a rose and several primroses and pansies; strawberries also bloomed and set fruit." There was a dense black fog throughout the district on the 5th. On the night of the 9th there was heavy hail at Redhill, and on the 11th there was thunder and hail in most places in the district. At Greenwich there was granular snow on the 27th and 28th, and there was sleet generally throughout the district on the 27th. Solar halos were seen at Greenwich on the 1st and 2nd, and at Upper Gatton on the 2nd and 3rd, and a lunar one was seen at Greenwich and Sidcup on the 1st; and on the 29th at Croydon a small iridescent one was observed. Colds and coughs are very prevalent, and scarlet fever of a mild type is somewhat widely diffused. The mean temperature of the month is slightly below the average, and was at Wallington and Croydon (Duppas House) 38°·5, at Worcester Park 38°·2, at Chipstead 37°·2, and at Warlingham 37°·0. There were recorded at Wallington 28·3 hours of sunlight, which is 10·6 hours or four per cent. below the December average of the fifteen years 1886–1900.

F. Campbell-Bayard, F.R.Met.Soc.,
Hon. Sec.

APPENDIX II.

Falls of 1 Inch and Upwards.

January 4th.—Bromley Common, 1·02 in.

May 30th.—Beddington Corner, 3·67 in.; Wallington, 3·13 in.; Beddington, 2·29 in.; Wimbledon (Sewage Works), 2·26 in.; Croydon (Waddon New Road), and Croydon (Duppas House), 1·85 in.; Wandsworth Common, 1·82 in.; Croydon (Windmill Road), 1·60 in.; Carshalton, 1·50 in.; Croydon (Whitgift), 1·46 in.; Richmond, 1·34 in.; Croydon (Brimstone Barn), and Croydon (Park Hill), 1·32 in.; Morden, 1·15 in.; Streatham, 1·14 in.; Putney Heath, 1·13 in.; Dorking, 1·02 in.

June 10th.—Carshalton, 3·17 in.; Banstead, 1·86 in.; Croydon (Waddon New Road), 1·85 in.; Wallington and Worcester Park, 1·82 in.; Addington (Park Farm), 1·81 in.; Croydon (Brimstone Barn), 1·78 in.; D'Abernon Chase, 1·77 in.; Beddington, 1·76 in.; Sanderstead, Benhilton, Croydon (Whitgift), Croydon (Windmill Road), and Croydon (Park Hill), 1·75 in.; Sutton and Croydon (Ashburton Road), 1·74 in.; Croydon (Duppas House), 1·72 in.; Kenley, 1·70 in.; Addington (Pumping Station), 1·67 in.; Oxshott, 1·63 in.; Esher, 1·62 in.; Surbiton, 1·60 in.; Addington Hills, 1·59 in.; Hayes, 1·58 in.; West Molesey, 1·56 in.; Warlingham, 1·52 in.; Farnborough, 1·48 in.; Bromley Common, 1·45 in.; Kingston, 1·42 in.; Orpington, 1·40 in.; South Norwood, 1·37 in.; Raynes Park, 1·34 in.; Chipstead and New Malden, 1·33 in.; Bromley, 1·30 in.; West Wickham, 1·25 in.; Wimbledon (The Downs), 1·24 in.; Chevening Park, 1·23 in.; Beckenham, 1·22 in.; Caterham, 1·21 in.; Putney Heath, 1·19 in.; Wimbledon (The Windmill), 1·17 in.; Upper Norwood, 1·16 in.; Chaldon and Bickley, 1·15 in.; Harp's Oak Cottage, 1·13 in.; Merstham, 1·12 in.; Leatherhead and West Norwood, 1·11 in.; Wandsworth Common, 1·10 in.; Westerham (Hill Estate), 1·09 in.; Sevenoaks, 1·07 in.; Upper Gatton, 1·04 in.; Wimbledon (Sewage Works), 1·03 in.; Richmond, 1·01 in.; Reigate Hill, 1·00 in.

June 11th.—Beddington Corner, 1·79 in.; Dorking, 1·07 in.; Chipstead and Caterham, 1·05 in.; Chaldon, 1·02 in.; Nutfield (new gauge), 1·01 in.

June 13th.—Richmond, 1·55 in.; Carshalton, 1·40 in.; Kingston, 1·24 in.; Croydon (Ashburton Road), 1·22 in.; Croydon (Park Hill) and Bickley, 1·20 in.; Croydon (Waddon New Road), 1·12 in.; Croydon (Whitgift), Chislehurst, and Bromley, 1·10 in.; Croydon (Duppas House), 1·09 in.; Croydon (Brimstone Barn), 1·08 in.; Addington (Park Farm), Hayes, and Beckenham, 1·06 in.; Croydon (Windmill Road), 1·05 in.; Dorking, Wallington, Bromley Common, and New Malden, 1·04 in.; Brixton, 1·03 in.; West Wickham, 1·02 in.; Southfleet and Wandsworth Common, 1·00 in.

June 14th.—Croydon (Brimstone Barn), 1·88 in.; Dartford, 1·24 in.; Nunhead, 1·22 in.; Eltham, 1·20 in.; Greenwich, 1·18 in.; Forest Hill (S. & V. Water Co.) and Deptford, 1·17 in.; Brixton, 1·15 in.; Forest Hill (Dartmouth Road), 1·12 in.; Leatherhead, 1·11 in.; Croydon (Waddon New Road), Bickley, and Battersea, 1·10 in.; Chipstead, 1·07 in.; Upper Gatton, Chislehurst, and Clapham Park, 1·06 in.; Wandsworth Common, 1·05 in.; Chaldon and Putney Heath, 1·04 in.; Addington (Park Farm), Bromley, and Richmond, 1·03 in.; Beckenham, 1·02 in.; Carshalton and Upper Norwood, 1·01 in.; Harp's Oak Cottage and West Norwood, 1·00 in.

June 15th.—Anerley, 1·40 in.; Beddington Corner, 1·38 in.

June 19th.—Abinger (The Hall), 1·01 in.; Abinger (Rectory), 1·00 in.

July 17th.—Clapham Park, 1·75 in.; Streatham, 1·62 in.; Worcester Park, Kingston, and Wandsworth Common, 1·61 in.; Brixton, 1·50 in.; Wimbledon (Sewage Works), 1·48 in.; Raynes Park, 1·30 in.; Wimbledon (The Downs), 1·28 in.; Richmond, 1·11 in.; New Malden, 1·10 in.; Battersea, 1·05 in.; Sevenoaks, 1·02 in.; Putney Heath, 1·00 in.

July 18th.—Banstead, 1·00 in.

July 19th. — Nutfield (new gauge), 1·71 in.; Leatherhead, 1·61 in.; Nutfield (old gauge), 1·48 in.

July 23rd. — Dartford, 4·41 in.; Wilmington, 4·03 in.; Sidcup, 3·94 in.; Farningham Hill, 3·78 in.; Southfleet, 3·54 in.; Chislehurst, 3·25 in.; Bickley, 3·21 in.; Orpington, 3·16 in.; Greenwich, 3·15 in.; Bromley, 2·84 in.; Eltham, 2·68 in.; Farnborough, 2·63 in.; Bromley Common, 2·60 in.; Deptford, 2·48 in.; Hayes, 2·45 in.; Chevening Park, 2·39 in.; Westerham (The Town), 2·20 in.; Beckenham, 2·19 in.; Sevenoaks, 2·15 in.; Westerham (Hill Estate), 2·01 in.; West Wickham, 1·81 in.; Forest Hill (S. & V. Water Co.), 1·73 in.; Forest Hill (Dartmouth Road), 1·70 in.; Addington (Park Farm) and Upper Norwood, 1·68 in.; South Norwood, 1·67 in.; Clapham Park, 1·62 in.; Addington (Pumping Station), 1·58 in.; Croydon (Ashburton Road), 1·56 in.; Addington Hills, West Norwood, and Nunhead, 1·55 in.; Croydon (Waddon New Road) and Brixton, 1·53 in.; Sanderstead, 1·47 in.; Croydon (Park Hill), 1·46 in.; Streatham, 1·42 in.; Croydon (Duppas House) and Croydon (Windmill Road), 1·41 in.; Croydon (Brimstone Barn) and Croydon (Whitgift), 1·40 in.; Beddington and Wandsworth Common, 1·38 in.; Wallington, 1·34 in.; Wimbledon (Sewage Works), 1·32 in.; Wimbledon (The Windmill) and Putney Heath, 1·27 in.; Warlingham, 1·24 in.; Kenley, 1·22 in.; Holmbury St. Mary and Kingston, 1·19 in.; Caterham and Benhilton, 1·18 in.; Carshalton and Wimbledon (The Downs), 1·17 in.; Merstham, 1·16 in.; Abinger (Rectory) and Sutton, 1·15 in.; Mordon, 1·14 in.; Raynes Park, 1·13 in.; Richmond, 1·12 in.; Banstead, 1·11 in.; Battersea, 1·09 in.; New Malden, 1·08 in.; Chipstead, 1·06 in.; Buckland, 1·05 in.; Chaldon, 1·04 in.; Worcester Park, 1·03 in.; Abinger (The Hall), 1·02 in.; West Molesey and Surbiton, 1·01 in.

July 24th.—Beddington Corner, 1·29 in.

July 25th.—Eltham, 1·56 in.; Banstead, 1·14 in.; Wandsworth Common, 1·09 in.; Battersea, 1·01 in.; Clapham Park, 1·00 in.

July 26th.—Beddington Corner, 1·45 in.

July 29th.—Reigate Hill, 1·10 in.

August 11th.—Carshalton, 1·50 in.; Bickley, 1·27 in.; Croydon (Ashburton Road), 1·36 in.; Abinger (Rectory), Bromley, and South Norwood, 1·25 in.: Beckenham, 1·24 in.; Holmbury St. Mary 1·22 in.; Banstead, Sidcup, and Eltham, 1·20 in.; Dorking, 1·18 in.; Abinger (The Hall) and Wallington, 1·17 in,; Greenwich, 1·15 in.; Addington Hills, Addington (Park Farm), and West Wickham, 1·14 in.; Nunhead, 1·13 in.; Chislehurst and Upper Norwood, 1·12 in.; Chipstead and Beddington, 1·10 in.; Croydon (Park Hill), 1·09 in.; Warlingham and Croydon (Duppas House), 1·08 in.; Forest Hill (Dartmouth Road), 1·07 in.; Kenley, Croydon (Windmill Road), Hayes, and Bromley Common, 1·06 in.; Croydon (Waddon New Road), 1·05 in.; Forest Hill (S. & V. Water Co.), 1·04 in.; Sutton, Farnborough, and Dartford, 1·03 in.; Brixton, 1·02 in.; Redhill (Oxford Road), Nutfield (new gauge), Caterham, and Deptford, 1·00 in.

August 17th.—Caterham, 1·50 in.

August 18th.—Westerham (The Town), 1·08 in.

August 24th.—Oxshott, 2·06 in.; Abinger (The Hall), 1·98 in.; D'Abernon Chase, 1·95 in.; Leatherhead, 1·87 in.; Abinger (Rectory), 1·70 in.; Carshalton, 1·65 in.; Dorking and Putney Heath, 1·60 in.; Wandsworth Common, 1·56 in.; Worcester Park, 1·55 in.; Wimbledon (The Windmill), 1·52 in.; Surbiton, 1·51 in.; New Malden, 1·46 in.; Raynes Park, 1·42 in.; Benhilton, 1·40 in.; Clapham Park, 1·39 in.; Wimbledon (The Downs), 1·38 in.; Holmbury St. Mary, 1·37 in.; Kingston, 1·33 in.; Streatham, 1·32 in.; Morden, 1·30 in.; Esher, 1·28 in.; Brixton, 1·27 in.; Battersea, 1·26 in.; Beddington Corner, 1·24 in.; Sutton, 1·21 in.; Wimbledon (Sewage Works), 1·20 in.; Banstead, 1·07 in.; West Norwood, 1·06 in.

September 4th.—West Molesey, 1·93 in.; Carshalton, 1·80 in.; Abinger (The Hall), 1·76 in.; Esher, 1·58 in.; Oxshott and

Kingston, 1·55 in.; Sutton, 1·53 in.; Morden, 1·51 in.; Dorking, 1·50 in.; Surbiton and Richmond, 1·48 in.; Holmbury St. Mary, 1·46 in.; D'Abernon Chase and Benhilton, 1·45 in.; Leatherhead, 1·42 in.; Banstead, 1·37 in.; Abinger (Rectory), 1·32 in.; New Malden, 1·30 in.; Raynes Park, 1·28 in.; Wimbledon (Sewage Works) and Worcester Park, 1·26 in.; Wallington, 1·25 in.; Clapham Park, 1·24 in.; Wimbledon (The Downs) and Putney Heath, 1·20 in.; Wandsworth Common and Brixton, 1·19 in.; Wimbledon (The Windmill), 1·15 in.; West Norwood and Battersea, 1·05 in.

October 11th.—Abinger (The Hall), 1·62 in.; Holmbury St. Mary, 1·60 in.; Dorking, 1·35 in.; Abinger (Rectory), 1·32 in.; Chipstead, 1·28 in.; Banstead, 1·26 in.; Upper Gatton, 1·21 in.; Warlingham, 1·16 in.; Caterham, 1·13 in.; Harp's Oak Cottage and Leatherhead, 1·12 in.; Chaldon, 1·11 in.; Buckland, 1·06 in.; Redhill (Oxford Road), 1·05 in.; Merstham, 1·02 in.; Reigate Hill, 1·01 in.; Westerham (Hill Estate), Chevening Park, and Croydon (Duppas House), 1·00 in.

October 12th.—Redhill (Linkfield Lane), 1·27 in.; Chevening Park, 1·14 in.; Caterham, 1·07 in.; Addington (Park Farm), 1·04 in.; Nutfield (old gauge), Nutfield (new gauge), and Westerham (The Town), 1·02 in.

October 25th.—Banstead, 1·08 in.; Carshalton, 1·07 in.

October 26th.—Caterham, 1·38 in.; Buckland and Warlingham, 1·36 in.; Harp's Oak Cottage, 1·25 in.; Merstham, 1·24 in.; Redhill (Oxford Road), 1·23 in.; Farnborough, 1·22 in.; Redhill (Linkfield Lane) and Beddington Corner), 1·21 in.; Chaldon and Addington (Pumping Station), 1·20 in.; Kenley and West Wickham, 1·15 in.; Addington (Park Farm), 1·14 in.; Bromley Common, 1·12 in.; Upper Gatton, 1·11 in.; Abinger (The Hall) and Dorking, 1·08 in.; Chipstead and Hayes, 1·06 in.; Abinger (Rectory), Sanderstead, and Bickley, 1·05 in.; Nutfield (old gauge), and Reigate Hill, 1·03 in.; Chislehurst, 1·00 in.

October 27th.—Abinger (The Hall), 1·02 in.; Abinger (Rectory), 1·00 in.

November 27th.—Harp's Oak Cottage and Chevening Park, 1·81 in.; Westerham (The Town), 1·80 in.; Upper Gatton and Chaldon, 1·76 in.; Caterham, 1·75 in.; Chipstead, 1·69 in.; Nutfield (new gauge), Reigate Hill, and Sevenoaks, 1·64 in.; Addington (Pumping Station), 1·63 in.; Redhill (Oxford Road), 1·62 in.; Holmbury St. Mary and Abinger (Rectory), 1·61 in.; Croydon (Brimstone Barn), 1·60 in.; Merstham and Westerham (Hill Estate), 1·59 in.; Nutfield (old gauge), 1·58 in.; Dorking, and Warlingham, 1·57 in.; West Wickham, 1·56 in.; Banstead, 1·49 in.; Kenley, 1·48 in.; Addington (Park Farm), 1·47 in.; Abinger (The Hall) and Buckland, 1·43 in.; Sanderstead and Orpington, 1·42 in.; Addington Hills, 1·40 in.; Croydon (Waddon New Road), 1·38 in.; Wallington, 1·36 in.; Farningham Hill, 1·34 in.; Beddington, 1·32 in.; Croydon (Ashburton Road), 1·31 in.; Sutton and Croydon (Duppas House), 1·30 in.; Croydon (Park Hill) and Bickley, 1·25 in.; Beckenham, 1·24 in.; Croydon Windmill Road), 1·23 in.; Bromley, 1·21 in.; Redhill (Linkfield Lane), Carshalton, Hayes, Chislehurst, and Morden, 1·20 in.; Dartford, 1·18 in.; Benhilton, 1·17 in.; Leatherhead, 1·16 in.; D'Abernon Chase, 1·15 in.; South Norwood, 1·13 in.; Upper Norwood, 1·12 in.; Raynes Park, 1·11 in.; Wimbledon (The Downs), Clapham Park, Forest Hill (S. & V. Water Co.), and Brixton, 1·10 in.; Sidcup, 1·09 in.; Wilmington, 1·08 in.; Worcester Park and Forest Hill (Denmark Road), 1·07 in.; Eltham, 1·06 in.; Wimbledon (Sewage Works), 1·05 in.; West Norwood, 1·04 in.; Bromley Common, 1·03 in.; Oxshott, Southfleet, and Wandsworth Common, 1·01 in.; Streatham, 1·00 in.

NOVEMBER 28TH.—Beddington Corner, 1·09 in.

CROYDON BOURNE FLOWS.

By BALDWIN LATHAM,

MEM. INST. C.E., MEM. INST. M.E., F.G.S., F.S.S., F.R.MET. SOC., &c.

THE Author in this paper proposes first to deal with the historical notices of Bourne flows, and then to pass on to the circumstances that give rise to Bourne flows, and to give particulars of some of the Bourne flows that have occurred at Croydon and its immediate neighbourhood.

Bourne flows in the neighbourhood of Croydon.

Croydon may be looked upon as a centre in the neighbourhood of which a number of Bourne flows have been recorded: for example, what is called the Croydon Bourne flowing down the Caterham Valley; the Bourne which makes its appearance at Marlpit Lane in the Brighton Road Valley at Smitham Bottom; a Bourne which used to flow in the Wickham Valley below Kent Gate; and Bourne flows which occur at Carshalton, Cheam, Nonsuch Park, and Epsom.

Early history of Croydon Bourne.

The early history of the Croydon Bourne flows is very much mixed up with those occurring in other parts of the country, and will be considered in connection with them. It is probable that a Bourne flow recorded in other places than Croydon may mean that a Bourne was taking place at Croydon at the same period.

Superstition regarding Bourne flows.

All Bourne flows in earlier periods were viewed by some persons with much superstition, while other persons had a clear knowledge as to their cause.

Earliest record Warkworth's "Chronicle."

The earliest record the author has found referring directly to the Croydon Bourne flow is in Warkworth's "Chronicle," which is a chronicle of the first thirteen years of the reign of King Edward IV. (who began to reign on 4th March, 1461), by John Warkworth, D.D., Master of St. Peter's College, Cambridge. This "Chronicle" was published by the Camden Society in 1839, and the following is a quotation from pages 23 and 24 referring to Bourne flows:

Bourne flow, XIII. King Edward IV., 1472 or 1473

"In the same yere (XIII. of King Edward the 4th 1473)* Womere watere ranne hugely, withe suche abundaunce of watere, that nevyr manne sawe it renne so moche afore this tyme. Womere is callede the woo watere: for Englyschmen, whenne thei dyd fyrst inhabyde this lond, also sone as thei see this watere renne, thei knewe wele it was a tokene of derthe, or of pestylence, or of grete batayle; wherefor thei called it *Womere*; (for *we* as in Englysche tonge woo, and *mere* is called watere, whiche signyfieth woo-watere;) for alle that tyme thei sawe it renne, thei knewe welle that woo was comynge to Englonde. And this Wemere is vij myle frome Sent Albons, at a place callede Markayate; and this Wemere ranne at every felde afore specifyede, and nevere so hugely as it dyd this yere, and ranne stylle to the xiij day of June next yere folowynge. Also ther has ronne dyverse suche

* 1472 old style, 1473 new style

other wateres, that betokenethe lykewyse; one at Lavesham * in Kent, and another byside Canturbury called Naylborne and another at Croydone in Suthsex, and another vij myle a this syde the castelle of Dodley, in the place called Hungerevale; that whenne it betokennethe batayle it rennys foule and trouble watere; and whenne betokenythe derthe or pestylence, it rennyth as clere as any watere, but this yere it ranne ryght trouble and foule watere."

The Author has looked through Leland's "Itinerary" as likely to furnish information with reference to Bourne flows. This "Itinerary" was begun about the year 1538. There is only one reference to a Bourne flow, and that was the Bourne at Drelingore near Dover in Kent, and which has been flowing for a short time this year. In the third edition, volume 7, page 127, it is stated that: "Ther is also a great spring at a place cawlled . . . . and that ones in a vi or vii Yeres brasteth owt so abundantly, that a great part of the water cummeth into Dovar Streme, but els yt renneth yn to the Se betwyxt Dovar and Folchestan, but nearer to Folchestan, that is to say withyn a ii Myles of yt."

Leland's "Itinerary."

Bourne at Drelingore.

In a book called "A Topographe or Survey of the County of Kent," by Richard Kilburne of Hawkhurst, published in 1659, under the head of Langley there is a statement that: "In the year 1472 in the park in this parish did newly break out the bourne or spring there." Under the head of Leusham * it is stated that "at this parish (in the year 1472) a great spring newly break out."

"Topographe or Survey of the County of Kent," by Richard Kilburne of Hawkhurst, 1659.

Bourne at Langley in 1472.

Bourne at Lewisham in 1472.

In Camden's "Britannia," the first edition of which was published in 1586 and has gone through several

Camden's "Britannia." 1695 edition.

* Lewisham.

editions since, in the edition of 1695, page 159, the following quotation appears with reference to the Croydon Bourne flow:

"The Vandal* is augmented by a small river from the east which rises at Croydon formerly Cradiden, lying under the hills." "For the torrent that the vulgar affirm to rise here sometimes and to presage dearth and pestilence; it seems hardly worth so much as the mentioning, tho' perhaps it may have something of truth in it."

Garrow's "History of Croydon," 1818.

The above passage from Camden appears in Garrow's "History of Croydon," which was published in 1818.

Hertfordshire Bourne.

There is also mention of the Hertfordshire Bourne in Camden, pages 301 and 305.

"A certain brook near it (Watling Street) call^d Wenmer,† which (as the vulgar believe) when ever it breaks out and swells higher than usual, always portends dearth or troublesome times."

"North-west from hence is Markat, or more truly Meergate, *i.e.* (says Norden) an issue or out-gale of water which seems to refer to the River Womer, mentioned by our author.‡ This is said to have broke out in the time of Edward 4, and to have run from the 19th February till the 14th June following."

Vipsies of Yorkshire.

Camden also refers to the Vipsies of Yorkshire, now called Gipseys, another name for a Bourne flow.

Childrey's "Britannia Baconica," 1661.

In Childrey's "Britannia Baconica, or the Natural Rarities of England, Scotland, and Wales," published in 1661, there are references to Bourne flows.

* The Vandal was the old name of the Wandle.

† It is also called Womer.

‡ "Nord," p. 20.

Joshua Childrey, D.D., was a divine and natural philosopher, born in 1623, and died in 1670, was rector of Upwey in Dorsetshire after the Restoration, and filled other offices in the Church.

Under the head of Wiltshire he says: Childrey. Wiltshire Bourne.

"Sometimes there break out water in the manner of a sudden land flood, out of certain stones (that are like rocks) standing aloft in open fields near the rising of the River Kenet in this shire, which is reputed by the common people a forerunner of dearth. That the sudden eruption of springs in places where they use not always to run should be a sign of dearth is no wonder. For these unusual eruptions (which in Kent we call Nailbournes) are caused by extreme gluts of rain, or lasting wet weather, and never happen but in wet years (witness the year 1648 when there were many of them) in which years Wheat and most other grain thrive not well (for a plain reason) and therefore dearth succeeds the year following." Nailbournes, Kent. Bourne due to rainfall.

Under the head of Surrey he says: Childrey. Croydon Bourne.

"The rising of a bourn or stream near Croydon (as the common people hold) presageth death, as the plague; and it hath been observed to fall out so. The rising of Bourns in places where they run not alwayes, we have before proved to be caused by great wet years, which (according to Hippocrates' observation) are generally the most sickly; and if they prove hot as wel as wet (because heat and moisture are great disposers to putrefaction) they prove also malignant and for the most part pestilential. And the reason why the rising of this bourne doth not always presage the Plague, is because all wet years do not prove hot." Causes and effects of Bournes.

Childrey. Hertfordshire Bourne.

Under the head of Hertfordshire he says:

"There is near St. Albans a brook called Wenmere, or Womere, which never breaketh out but it foretelleth dearth and scarcity of corn, or else some extraordinary dangerous times shortly to ensue, as the common people believe."

Childrey. Yorkshire Vipseys.

Under the head of Yorkshire, he says:

"Near Flamborough Head (saith Camden) it is reported that there are certain waters called Vipseys, which flow every other year out of blind springs, and run with a very violent stream through the low land, into the sea. They rise (they say) from many springs meeting together within the ground, which makes their stream so forcible on a sudden. When they are dry it is a good sign; but when they break out they say it is a certain sign of dearth to follow."

Richard Burton's "Admirable Curiosities, Rarities, and Wonders in England, Scotland, and Ireland," 1682.

Bourne near St. Albans.

In a book called "Admirable Curiosities, Rarities, and Wonders in England, Scotland, and Ireland," by R. B——, published in 1682, under the head of "Hartfordshire" he says: "There is a Brook near St. Albans called Wenmere or Wo.ner which never breaketh out but it foretelleth scarcity of corn or else some extraordinary dangerous times to ensue as the vulgar believe."

Leland's "Itinerary," 3rd edition. Dr. Robert Plot.

Nailbourne near Canterbury.

In the second volume of Leland's "Itinerary," 3rd edition, page 168, a notice of Dr. Robert Plot's account of a designed journey through England and Wales is given, in which he speaks as matters for consideration, "of the Nailbourn near Canterbury; a Rivulet which they have but once in seven or ten years, it's Channel is always apparent and has a bridge or two over it, but there never runs any water (though there fall great Rains) but once in seven or ten years which is a notorious Truth."

Dr. Robert Plot in his "Natural History of Oxfordshire," published in 1677, says, pages 29-30: Dr. Robert Plot's "Natural History of Oxfordshire," 1677. Land springs.

"That *Land-springs* and such as run but once perhaps in many years, have their rise and continuance from plentiful showers, I think we have little reason to doubt, since we have them not at all, or but very weak in any Summer, or the dryer Winters: such are those that foretell (and naturally enough) the scarcity and dearness of Corn and Victuals; whereof that of *Assenton*, near *Henly* upon *Thames* is one of the most eminent that I know of in England; and no question is the same mentioned by *Johannes Euseb Nierembergius,* in his book (as he calls it) of the *Miracles of Nature.* By which, I suppose, he must mean the *Chiltern* Country of *Oxfordshire, there are,* says he, *many Springs which in fertile years are always dry; but before any defect, as the Harbingers of an approaching dearth, these waters get loose, and as it were breaking prison they quickly unite into a forcible stream.* And so they did lately, An 1674, with that violence that several mills might have been driven with the Current; and had not the town of *Henly* made some diversion for them, their *Fair Mile* must have been drowned for a considerable time. Of these there are many in the County of *Kent,* which I know not for what reason they call *Nail-bourns* there, and prescribe them (some will) a certain time for their running as once in seven, ten or fifteen years. But the certain natural principle of such Springs altogether depending upon an uncertain cause, no heed is to be given to such kind of stories, they being equally as vain as the persons that broach'd them."

Assenton Bourne.

Bournes of Chilton, County of Oxfordshire.

Many Nail-bournes in Kent.

In Harris' "History of Kent," published in 1719, reference is made to several Bourne flows, for instance:— Harris' "History of Kent," 1719.

Drelingore Bourne (Alkham).

Alkham. "In this parish is an Eylebourn rising in a bottom, at a place called Dillingdore*, whose Irruption the Inhabitants will have to be certain presage, either of some great Mortality, or Dearth and Scarcity of Provisions. Indeed from no apparent Head or Spring, it sends out sometimes such vast Quantities of water, that a Vessel of considerable burden may be borne by the Stream, which usually goes down to Chilton, and so by the Dover River finds an outlet into the sea."

Bourne flow Langley, near Maidstone, 1472.

Langley.† "The spring or bourn here in the Park did newly break out of the Earth in the year 1472 as did another the same year in Lewesham."

Bourne flow, Lewisham, 1472.

Then he refers to Addington, near Maidstone, and says:

Addington, near Maidstone, Bourne flow.

"Here is an Eyle-bourn at this place which people call Ere-well, breaking out once in Seven or Eight years, which they will have to presage Deaths and Dearths, and I know not what. When it comes they dig a Dyke for it and turn it along by the Highway-side; and when the water mingles with that of their little Trout Rivulet it makes these Trouts Red, which otherwise are White."

Lewisham Bourne, 1472.

He also says: An Eylebourn or Nailbourne broke out in 1472 at Lewsham.

Ospringe Bourn, 1674.

Ospringe. "In February 167$\frac{3}{4}$ one began here but dried up before Michaelmas following, and another arose in February 1712 about a hundred yards above the Spring-Head and with so great a stream as that it was troublesome to the Road and the Surveyors of the Highways were forced to cut through several pieces of

* Now called Drelingore.

† Near Maidstone.

land to convey the Water away. But this Eylebourn also was gone by Michaelmas."

He also says: "A famous Eylebourn which rises in this parish (Petham) which runs a little way before it falls into the ground; whence perhaps came the parish's name Petham, the place of the Pit or Hole; But now and then it goes with a very strong stream, quite down into the Greater Stoure at Shanford Bridge." Petham Bourne.

In Aubrey's "Natural History and Antiquities of the County of Surrey," published 1723, vol. iii., page 17, he says, under the head of Caterham or Katerham: "Between this place and Coulsdon, in the Bottom commonly called Stoneham Lane, issues out sometimes (as against any change in our English Government) a Bourn, which overflows, and runs down in Smitham Bottom to Croydon. This is held by the inhabitants and neighbourhood to be ominous, and prognosticating something remarkable approaching as it did before the happy Restoration of King Charles the Second of ever glorious memory in 1660. Before the Plague of London in 1665, and in 1688 the Æra of another change of the Constitution." Aubrey's "Surrey," 1723.

No doubt this Bourne refers to the Bourne which usually breaks out now from the Merstham Tunnel and disappears in the ground at Red Lion Green, Smitham Bottom.

At page 47 he also refers to the Croydon Bourne as follows: "A little below, in a grove of Ew-trees, within the Manor of Westhall in the Parish of Warlingham as I have frequently heard, rises a Spring, upon the Approach of some remarkable alteration in Church or State, which runs in a direct Course between Little Hills, to a place called Foxley Hatch and there dis- Croydon Bourne.

appears and is no more visible till it rises again at the end of Croydon Town near Haling-Pound, where with great rapidity it rushes into the river near that Church. I must not here forget to observe, that the part of this county where this rises and passes along is so very dry that the Rusticks are obliged to drive their cattle a great Way for water. It began to run a little before Christmas, and ceased about the end of May at that glorious Æra of English Liberty the year 1660. In 1665 it preceded the Plague in London and the Revolution in 1688."

Hasted's "History of Kent," 1798.

Bournes at Bishopsbourne, Kingston, Barham, and Drelingore.

In Hasted's "History of Kent," published in 1798 by Edward Hasted, F.R.S. and S.A., there are several references to Bourne flows as at Bishopsbourne, Kingston adjoining Bishopsbourne, and Barham. He also describes a nailbourne that rises from some springs at Drelingore "which" (he says) "in very wet and windy weather increase to the height of ten feet and run through the lands to the head of the River Dour at Chilton, commonly beginning in February and ending in March or April, at which time the wells of fifteen or sixteen fathom depth are full; and the country people entertain a notion that this water has a subterraneous communication with the waters called Liddon Spouts in the cliffs at Hougham at least four miles from hence."

Liddon Spout.

He refers again to Lyden Spouts and the belief that the Nailbourne at Drelingore in Alkham communicates subterraneously with these spouts.

Great storm in Canterbury 1272.

He further says that in Canterbury in 1272 there occurred: "A great storm of thunder and lightning, and a sudden inundation; the waters breaking forth seemingly from the caverns of the earth, overflowed the greatest part of the city where they were never before known to come."

Whether this was really a true Bourne flow or a flood there may be some doubt, as, on the 8th January, 1776, he describes another flood at Canterbury. Both of these floods did much damage in washing down houses and causing considerable loss of life.

Storm in Canterbury 1776.

He also says: "There is a nailbourne or temporary land spring such as are usual in the parts of this country eastward of Sittingbourne, which run but once perhaps in several years then failing and continuance having no active periods, the breaking forth of them being held by the common people to be a forerunner of scarcity and dearness of corn and victuals. This at Ospringe when it breaks out rises about half a mile southward of Whitehill, near Kennaways in the road to Stalisfield, and joining the above mentioned rivulet, which it considerably increases, flows with it into Faversham Creek. In February 1674, it began to run but stopped before Michaelmas. It broke forth in February 1712 and ran with such violence along the high road, that trenches were cut through the lands adjoining to carry the water off, but it stopped again before Michaelmas. It had continued dry till it broke out afresh in 1753, and continued to run till Summer 1778 when it stopped and has continued dry ever since."

Ospringe in 1674 and 1712.

Ran from 1753 to 1778.

He also says, referring to Boughton under Blean, that the westernmost of the two streamlets flowing in this place is a nailbourne. He also mentions the nailbournes of Liminge, Drelingore (Alkham), Addington near Maidstone, and at Petham.

Nailbournes Boughton under the Blean, Liminge, Drelingore (Alkham), Addingion near Maidstone, Petham

In Manning and Bray's "History and Antiquities of the County of Surrey," published in 1814, under the head of Merstham a statement appears to the following effect:

Manning and Bray's Surrey 1814.

"At considerable intervals of time a stream bursts out from the foot of Merstham hill, commonly called *the Bourne*, and after a very short course falls into and swells the little stream* which has already been noticed. It generally succeeds wet unfavourable seasons, and lasts for some months. It is doubtless occasioned by the grand reservoir in some neighbouring hills being overcharged, the pressure from whence occasions an overflow in this branch of the syphon, and the efflux continues through the first convenient aperture until the proper level be restored."

Chauncy's Hertfordshire, 1826.

In Sir Henry Chauncy's "Historical Antiquities of Hertfordshire," published in 1826, reference is made to the Hertfordshire Bourne, in which he says:

"There is a small brook called Wenmer or Womer which sometimes breaks forth, and 'tis observed fore-runneth a dearth, or some extremity of dangerous import."

Brayley's Surrey, 1841.

In Brayley's "History of the County of Surrey," published in 1841, there is the following reference made to Bourne flows:

"In Surrey, outbursts of water from the chalk occur at the Bourne Mill near Farnham; near the church at Merstham; and at the spring near the church at Croydon. Occasional outbursts take place at the Bourne near Birchwood House; where during the spring of 1837 the water flowed in great abundance to Croydon, and continued six weeks. In the same year a rivulet burst forth in Gatton Park, between Merstham and Reigate.'

Brayley's Surrey, 1848.

In Brayley's "History of Surrey," edited and revised by Edward Walford, M.A., in 1848, reference is made to a Bourne near Lewes, Bourne Mill, Farnham, at the churches of Merstham and Croydon, and occasional burstings near Birchwood and Gatton Park.

Royal Agricultural Society's Journal.

In the *Journal* of the Royal Agricultural Society, vol. xv., there is a Paper by Mr. Clare Sewell Read

* A branch of the Mole.

upon "Farming in Oxfordshire," in which reference is made to a Bourne flow, where it is stated at page 193: "Some springs at the foot of the hills burst out in wet seasons and flow with great rapidity for months and are not seen again for years. The spring at Assenden, after having been dry since 1842, sent forth a very considerable stream during the chief part of last year" (1853). **Assenden Bourne.**

With reference to the cause of Bourne flows, it should be observed that these Bournes have always been involved in much mystery by some persons in the earlier periods of history, although it was clearly understood by some philosophers that their appearance, as mentioned by Childrey and others, was simply due to gluts of rain. All kinds of suggestions have been made with reference to the cause of the Croydon Bourne, namely, that it was due to some lakes of water in the distant downs, which are emptied in a mysterious manner by some peculiar syphon action, or that the Bourne communicated with a large store of water in the Godstone Quarries, which was discharged when these quarries had filled to a certain extent. **Cause of Bourne flows.** **Volume of Water in Godstone Quarries.**

On January 31st, 1877, the Author wrote a letter to the *Croydon Chronicle* with reference to the mythical allusion, which has been frequently referred to at different, times, with regard to the connection between the amount of water in the Godstone Stone Quarries and the flow of the Bourne at Croydon, wherein reference was made to the statement that when there was a volume of water varying from 11 million gallons to 15 million gallons stored in Godstone Quarries, the Bourne would commence to flow. In consequence of these statements, the Author had all the high-water marks which had been put up from year to year by an old man who worked in these quarries, of the name of Hill, levelled and reduced to **Letter to *Croydon Chronicle*. 1877.** **Level of water in Godstone Quarries.**

ordnance datum, when it became manifest that there were years when there has been a large quantity of water stored in the Godstone Quarries, aud no appearance of the Bourne has taken place, as in the year 1849, when the height of the highest water in Godstone Quarries was 460·09 feet above ordnance datum, and no flow of the Bourne occurred, while in the year 1866, which is the largest flow of the Bourne that has been gauged, the highest water in Godstone Quarries was 462·31 feet above ordnance datum. In the year 1876, when the Bourne flowed, the water rose in Godstone Quarries to 443·12 feet above ordnance datum, whereas in the year 1854, when there was a very low water year in the country and there was no Bourne flow, the highest water in Godstone Quarries rose to 462·75 feet above ordnance datum, clearly showing that there is no direct connection between the volume of water in the Godstone Quarries, as has been repeatedly asserted, and the flow of Bourne. The highest water level in these quarries in the 1877 when the Bourne flowed, was 461·63 feet above ordnance datum; in 1881 it was 458·58 above ordnance datum, and in 1883, 456·75 above ordnance datum.

Highest water level in Godstone Quarries.

The greatest height of water recorded in Godstone Quarries was in 1853, when it rose to 467·45 feet above ordnance datum, which was at the time of a large Bourne flow at Croydon. In the year 1866, the time of the largest flow of the Bourne that has been gauged, the water in these quarries rose to a height of 462·31 feet above ordnance datum.

Volume of water in Godstone Quarries indication of height water in ground.

It may be ordinarily taken that the volume of water in Godstone Quarries is an indication of the height of the water in the ground, and there are times when it may be used as an aid in judging of the likely appearance or not of a Bourne flow. It is possible also since these quarries have been worked to a greater extent than in the earlier years that the water does not now rise so high in them as formerly was the case, and this circumstance must be taken into account, but at the same time their capacity for holding water has been increased.

These quarries, which are located in the upper green sand formation, have ceased to be worked as quarries and are now devoted to the cultivation of mushrooms.

Godstone Quarries ceased to be worked.

Bourne flows are peculiar to the chalk formation and are indicative of the large volume of water which at times is yielded by this formation. All Bourne flows are due to the large amount of rain that falls in the higher portions of the district raising the level of the ground water which flows down the valleys in a wave-like form.

Bourne flows are peculiar to the chalk formation.

Due to large amount of rain falling in higher portion of district.

Underground water is subject to exactly the same laws and influences as water flowing over the ground, but is slower in its movements, and it has been observed in all river areas in which the streams are visible that flood waters descend from the highest to the lowest parts of the districts, that is, the floods are generated in the higher parts of the district, where there is the most rain and the least interference with it as regards diminution by evaporation and other causes. A Bourne flow is nothing more than a flood in the underground water passing down from the higher to the lower portions of the district swelling out of its ordinary underground channels over the surface by reason of the general elevation of the underground water line.

Laws governing flow of underground water.

Bourne flow is a flood in the underground water.

It has often been observed in connection with the Croydon Bourne flow that when the flow is small in passing down the valley the water enters the ground and disappears from sight, as the passages are there

In small Bournes at Croydon water disappears in the ground.

large enough for its conveyance without appearing at the surface. The largest surface flow of the Bourne always occurs immediately below the "Rose and Crown" at Coulsdon, from which point down the valley it diminishes.

Croydon drainage area and how discharged.

The Croydon drainage area, which supplies the Bourne and the underground waters to the Croydon branch of the River Wandle, contains an area of 24 square miles. Of this area in ordinary times 14 square miles should discharge their waters from Purley Junction down the Brighton Road Valley directly into the head of the Wandle at Croydon, while 8 square miles drain unde the intervening high grounds and discharge into Waddon Mill Pond; the waters of the remaining 2 square miles have been diverted by the Oxted Railway Tunnel. In times of the Bourne flow a large proportion of the flow passes in the direction of Croydon and a lesser volume flows to Waddon; at all other times, unless interfered with by pumping, the yield of the respective areas is identical.

Author has kept records of water discharged from Oxted Tunnel since 1881.

The Author has kept continuous records of the waters discharged from the Oxted Tunnel since the year 1881, and he also knows exactly the quantity of water that has been discharged both from the Croydon area and the Waddon area for many years past, the records of which are kept up to date.

Investigations of amount of water yielded by chalk.

Rainfall Stations established.

In making an investigation of the amount of water that is yielded by the chalk formation on this particular Croydon area, the Author found it necessary to establish as many rainfall stations as could be secured, and wherever he could get observers he established a rainfall station, which were continued for a considerable period, and in this way more than twenty rainfall stations were established in the district and its immediate neighbourhood, and have been maintained for a sufficient period until he was able to determine what was the law which governs the fall of rain in the various portions of the area surrounding Croydon. On the completion of the observations at the end of the year 1887 some of these rainfall stations have been continued, for wherever the observers were desirous of continuing the observations they were left in the possession of the rain-gauges, and the records from these gauges were taken over and have been published by this Society since 1887.

Difference in rainfall at top and bottom of drainage area.

As showing the enormous difference in the rainfall at the top and bottom of the drainage area of the Croydon branch of the River Wandle, it may be mentioned the gauge which the Author maintained at Botley Hill Old Toll Bar at the top of the drainage area at an elevation of a little over 870 feet above ordnance datum that in ten years, 1878 to 1887, the average rainfall at this station was found to be 34·68 inches per annum as against 24·68 inches the rain collected at Brimstone Barn at the bottom of the area at an elevation of 130 feet above ordnance datum.

Mr. H. S. Eaton's Investigations.

For the five years 1881-85 Mr. Henry Storks Eaton, M.A., F.R.Met.Soc., investigated the temperature and rainfall of Croydon and its neighbourhood, and prepared and presented a report for the Meteorological Committee of this Society. In these five years the average rainfall at Botley Hill was shown to be 31·94 inches, and at Brimstone Barn 23·25 inches. In Table IX. of the report then presented 21 rainfall stations are used; 15 of these stations were stations established by the Author for investigating the question of water supply in this neighbourhood.

When it is considered that the temperature in all the higher parts of the district is considerably lower than at the lower parts of the same district, it follows that the amount of evaporation would be less in the higher districts, and therefore the quantity of rain percolating the ground would be proportionately greater in the higher districts. The Author succeeded in establishing a Meteorological Station under the care of the late Mr. W. Foster, of Henley, Chelsham, at an elevation of 610 feet above ordnance datum, which was kept going for 33 months in the years 1881, 1882, and 1883. In this time Mr. Eaton calculated the diminution of temperature in ascending the North Downs was one degree for every 231 feet of elevation.

Water in deep wells in higher district rise first.

Owing to the very much larger amount of rain which falls on the higher district, and its less liability to waste, it has been found that the water in the deep wells in the higher parts of the district always begins to rise before the water in the wells in the lower part of the district. This may appear rather curious to some persons that the top of the basin should begin to fill before the bottom, but when it is considered that a much larger amount of water percolates into the ground in the higher district, and that there is considerable resistance offered by the strata to the water flowing rapidly away from the upper part of the basin, it is sufficient to account for what really occurs which enables the Bourne flow to be predicted some considerable time before it breaks out.

Yield of strata constant under same conditions.

It may be taken as an absolutely ascertained fact that with the same height and fall of the water in the ground the quantity of water yielded by a particular area will always be the same, and knowing the height to which it is necessary for the water to rise before a Bourne will make its appearance, this height may probably be determined some two or three weeks earlier by the rise of the water in a well in the upper portion of the district to what it would be at a point near where the Bourne usually breaks out. Consequently with a continuity of observations, and knowing the level of the waters of the upper wells, there is no reason why any person in any district should not be able to predict with absolute certainty as well as the Author has done from year to year, the exact time when a Bourne will occur, and its probable volume when it breaks out.

Prediction of Bourne flows.

The period of high water in a well at Cambrian House, Caterham, has been ascertained to be from twenty to forty-five days before the time of high water in a well at the "Rose and Crown," Coulsdon, lower down the valley, and located close to the place where the Croydon Bourne first breaks out. The Author also ascertained that when the water in the well at Cambrian House well rose to a level of 340 feet above ordnance datum there would be a small Bourne flow in Caterham Valley, and when the water in this well rose to 370 feet above Ordnance datum, then the flow would increase and extend up the valley and there would be a flow in Marden Park.

Cambrian House well.

"Rose and Crown" well.

Level of water to produce Bourne flow.

The owner of Cambrian House well objected after a time to his well being measured, and covered it over, and would not suffer any provision to be made for its future measurement.

The following table gives the years when it has been reported that the Croydon Bourne has flowed, and gives the name of the person on whose authority the statement is made:

Table of Croydon Bourne flow.

TABLE OF CROYDON BOURNE FLOWS.

Year.		On the authority of
1472.*	Mentioned by John Warkworth, D.D.	
1660.	Mentioned in Aubrey's "Surrey."	
1665.	,, ,,	
1668.	,, ,,	
1818.	Copious . . .	Mr. C. W. Johnson.
1821.	Copious . . .	,,
1824.	Very Copious . .	,,
1829.	Moderate . .	,,
1836.	Moderate . .	,,
1837.	Abundant . .	Mr. E. W. Brayley.
1840.	Moderate . .	Mr. C. W. Johnson.
1841-2.	Copious . . .	,,
1852-3.	Copious . . .	,,
1860-1.	Moderate . .	Mr. James Fenton.
1863.	Small . . .	C. W. Johnson, F.R.S.
1866.	Very large . .	Mr. Baldwin Latham.
1873.	Moderate . .	Mr. Thomas Walker.
1876.	Moderate . .	Mr. Baldwin Latham.
1877.	Very large . .	,,
1878.	Small . . .	,,
1879.	Moderate, but flowed for long period .	,,
1880-1.	Copious . . .	,,
1882.	Moderate . .	,,
1883.	Copious . . .	,,
1887.	Moderate . .	,,
1889.	Small . . .	,,
1891-2.	Moderate . .	,,
1893.	Moderate . .	,,
1895.	Just rose to surface	,,
1897.	Moderate . .	,,
1903-4.	Very large . .	,,

* This would be 1473 new style.

It is by no means certain, however, that the Croydon Bourne has not flowed very many times and has not been recorded, especially in the earlier periods, and it will be noted that in making a collection of the dates when Bournes have flowed out of Orpington Gravel pits, the dates of which were supplied to the Author some years ago by Dr. Alfrey, of St. Mary's Cray, when there has been a Bourne flow out of the Orpington Gravel pits there has usually been a Bourne flow at Croydon. The following figures give the dates when a Bourne has flowed out of these Orpington gravel pits, and in all probability the Bourne flowed at Croydon in the same years.

Orpington Bourne flow.

Year	1795	1817	1866
	1799	1825	1873
	1809	1828	1877
	1811	1841	1904
	1812	—	—

According to the Author's observations a flow of the Bourne occurred in the Wickham Valley in the years 1877, 1879, 1881, and 1883, and it has not flowed since the latter year, as large quantities of water are now taken from this valley for the supply of water to London and Croydon. The flow of the Bourne in this valley is usually later than in the Caterham Valley. In the Bourne flow of 1880-81 the Bourne broke out in the Caterham Valley on the 12th December, 1880, but it was not until the 8th February, 1881, that it broke out in the Wickham Valley. There has also always been a flow of the Bourne in the Brighton Road Valley at Smitham Bottom every time there has been a moderate or large flow of the Bourne in the Caterham Valley.

Wickham Valley Bourne.

Smitham Bottom or Marlpit Lane Bourne.

Influence of rain on Bourne flows.

It should be observed that with regard to the influence of rain on a Bourne flow, that it is the rain that falls immediately preceding a Bourne flow which really governs its future appearance and volume. This is very clearly seen from the fact that so great an authority on Bourne flows as the late Mr. Cuthbert Johnson, who stated clearly that there could be no Bourne flow in 1877, having regard to the fact that there had not been 30 inches of rain at Croydon in the preceding year, and that it was only when 30 inches of rain fell during the preceding year that a Bourne flow at Croydon occurred. If, however, rain is tabulated over the six months from October in one year to March in the following year, it will be seen that it corresponds with the volumes of the Bournes which have occurred.

The following figures give the rainfall at Croydon between October and March for all the years of Bourne flows between 1865 and 1904.

TABLE SHOWING THE DISTRIBUTION OF WINTER RAINFALL AT CROYDON IN PERIODS WHEN A BOURNE FLOW HAS OCCURRED.

	1865-6. Inches.	1872-3. Inches.	1876-7. Inches.	1877-8. Inches.	1878-9. Inches.	1879-80. Inches.	1880-1. Inches.	1882-3. Inches.	1886-7. Inches.	1888-9. Inches.	1891-2. Inches.	1892-3. Inches.	1394-5. Inches.	1896-7. Inches.	1903-4. Inches.
October . .	7·19	5·24	1·31	2·22	2·18	·69	7·50	5·70	2·29	1·39	6·01	4·23	5·25	3·34	5·28
November .	2·86	3·50	2·67	5·21	3·89	·20	2·33	2·23	3·34	3·89	2·62	2·42	4·30	1·52	2·37
December .	1·48	4·39	7·43	1·87	1·51	·93	3·06	2·09	4·41	1·48	3·53	1·31	1·71	3·29	2·16
January . .	4·51	4·08	5·53	1·18	2·60	·41	1·13	2·07	1·72	1·14	·56	1·80	1·76	1·77	3·63
February . .	5·11	1·69	1·70	1·49	3·45	2·75	3·05	4·42	·48	2·26	1·66	3·33	·29	2·04	3·05
March . .	2·08	1·55	2·15	1·34	·53	·64	1·55	1·01	1·86	2·14	1·57	·52	1·49	3·96	1·52
	23·23	20·45	20·79	13·31	14·16	6 62	18·62	17·52	14·10	12·30	15·95	13·61	14·80	15·92	18·01
Year preceding	30·79	35·27	27·16	34·16	29·98	30·89	30·57	26·49	26·96	27·74	30·55	25·14	31·41	26·04	38·74

In 1880 there was no Bourne flow at the ordinary period. The flow in this year commenced at the end of the year and continued into 1881.

In September, 1896, there were 7 inches of rainfall in the month.

Fallacy of seven years recurrence of Bourne flow.

We constantly hear that the Croydon Bourne flows every seven years. This is, however, not so, as there is no stated interval for its appearance, and in fact between 1876 and 1883 it flowed every year for eight years in succession.

Coldness of water of Bourne flows.

There are some peculiarities concerning the Bourne flow which have been noted by old observers, one of these being the coldness of the Bourne water compared with ordinary spring water of the chalk. In the Bourne that flowed in 1860-61, of which there is a record in Warren's "Croydon Directory" for the year 1865-66, and in the late Mr. Cuthbert Johnson's paper on the Croydon Bourne flow in Dr. Westall's paper on the advantages to be derived from the adoption of the Local Government Act as exemplified in Croydon, published in 1865, the temperatures of this Bourne are given, showing that it possessed a low temperature when flowing in its natural channel, as compared with its temperature even when it escapes from the mouth of the Bourne culvert at Croydon.

Temperature of Bourne due to temperature of ground.

The Author has taken a large number of temperatures of the Bourne, which confirm the fact that the Bourne flow is a cold water, but this is due entirely to the circumstance that the chalk water is brought up to or near the surface of the ground when the Bourne flows, and that the Bourne ordinarily flows in a cold season of the year when the temperature of the ground at or near the surface is cold, and thus the temperature of the Bourne conforms to the temperature of the ground at the depth at which it is flowing.

Cold season influences temperature of Bourne.

Bourne water not good for irrigation.

In the *Journal* of the Royal Agricultural Society, vol. 15, page 416, there is a statement as to the use of Winterburn waters for irrigation, the quality of which is not held to be so good as that from permanent sources. This no doubt is due to its coldness as compared with permanent springs.

Temperatures and analyses of Bourne flows.

In the year 1881, and at other times, the Author, in conjunction with Messrs. Wigner and Harland, made a prolonged series of investigations both as to the temperature and the analysis of the waters of the Bourne flow and the waters of the wells of the district. The following Table gives the result of one of these investigations, beginning with the waters flowing south from Oxted Tunnel out of the North Downs, the waters in Godstone Stone Quarries, and the waters in the Caterham Valley, down to the mouth of the Bourne Culvert at Croydon. In the whole twenty-one temperatures and separate analyses of the water were taken when the Bourne was flowing on the 3rd February, 1881.

(See next page for Table.)

Table of Temperatures and Analyses of Waters at the Time of a Bourne Flow on 3rd February, 1881. Analyses by Messrs. Wigner and Harland.

	Temperature of Sample when taken ° Fahr.	Grains per Gallon.							Hardness.	
		Total Solids.	Oxygen absorbed in 3 hours at 60°.	Loss on Ignition	Chloride of Sodium.	Nitrogen as Nitrates.	Ammonia.	Albuminoid of Ammonia.	Before Boiling.	After Boiling.
Oxted Tunnel	50·5	30·40	·0272	3·80	2·10	·3150	·0017	·0020	14·7	3·4
Godstone Quarries	45·4	18·00	·0272	4·20	2·12	·2450	·0032	·0015	10·7	2·5
Cambrian House Well	49·5	24·60	none	1·60	2·34	·4970	·0012	·0013	18·8	3·0
Marden Lodge Well	48·2	30·00	·0158	2·80	2·34	·2800	·0022	·0024	18·3	2·5
Bughill Farm Well	49·6	30·80	·0130	3·80	4·33	·7000	·0017	·0019	22·0	3·4
Well Farm Well	48·2	19·00	·0070	1·00	2·34	·3500	·0016	·0024	15·4	2·7
Bourne Flow, Wapses Lodge	41·6	26·40	·0330	3·80	1·87	·3600	·0021	·0014	17·0	3·0
Bourne Flow, opposite Rose Cottage	45·5	31·40	·0286	5·80	4·93	·4900	·0026	·0053	21·0	3·0
"Rose and Crown" Well	48·8	23·80	·0014	3·20	1·87	·3500	·0018	·0019	15·4	2·0
Bourne Flow, Garston House	44·8	24·60	·0040	6·00	2·12	·3500	·0024	·0022	19·6	2·5
Well, Kenley Waterworks	50·2	21·80	·0014	3·60	1·80	·3500	·0044	·0018	16·0	2·6
Bourne Flow, Great Roke Farm	43·5	24·00	·0158	3·40	1·99	·3500	·0019	·0027	18·0	3·2
Bourne Flow, Caterham Junction	43·8	24·20	·0186	6·00	2·15	·3500	·0010	·0014	17·4	3·2
Tudor Cottage Well	47·5	33·00	·0400	5·00	3·39	1·1200	0013	·0025	22·5	4·7
New Sewer, Brighton and Godstone Roads*	43·8	24·40	·0100	3·60	2·46	·3500	·0026	·0056	20·4	3·3
Hayling Lime Works Well	50·0	23·00	·0070	3·60	2·12	·3500	·0014	·0007	16·6	2·3
Water in new Sewer, "Windsor Castle," Brighton Road *	45·0	26·00	·0086	4·00	2·34	·6300	·0037	·0018	21·0	2·7
Croydon Waterworks Old Well	51·0	22·00	none	3·40	2·34	·2800	·0018	·0019	17·2	3·3
Experimental Well, Croydon	50·75	20·80	·0070	3·20	2·22	·3360	·0013	·0017	14·0	2·7
Mouth of Bourne Culvert, Croydon	49·5	22·00	none	3·80	2·12	·3500	·0013	·0008	17·5	2·7
Mouth of New Culvert, Croydon	51·0	22·40	·0040	3·40	2·34	·3300	·0039	·0013	14·0	2·5

Mean temperature on the 3rd February, 1881, at the Author's house at Croydon, was 46·1 degrees.

* This was a new sewer that had recently been constructed by the Croydon authorities and admitted a considerable volume of Bourne water.

The following figures show the temperature of the ground on the 3rd February, 1881, as taken at the Author's house at Croydon: *

Temperature of the ground.

Max. 6 ins.	Min. 6 ins.	2·5 feet.	5 feet.	10 feet.	15 feet.	20 feet.
° 41·0	° 29·0	° 38·2	° 39·5	° 45·1	° 47·7	° 49·9

25 feet.	30 feet.	35 feet.	40 feet.	45 feet.	50 feet.
° 50·3	° 50·5	° 50·3	° 50·10	° 50·0	° 50·10

With reference to the first two temperatures, six inches maximum and six inches minimum, these are registered temperatures and give the highest and lowest temperatures recorded; the other temperatures are daily temperatures taken at 9 A.M. in the day. It will therefore be seen, by comparing the temperatures above ten feet with the temperature of the Bourne where it flows above the surface, that the ground temperature will account for the particularly low temperatures observed in these Bourne flows as compared with the temperatures of the water flowing from Oxted Tunnel and in the wells of the Kenley and Croydon Waterworks.

Another peculiarity has been observed in the Bourne, to which the Author, in 1881, directed attention in a paper read to the British Association at York, entitled "Influence of Barometric Pressure on the Discharge of Water from Springs," where it is pointed out that:

Bourne flows influenced by barometric pressure.

* Mean temperature of the air for the year 1880 at the Author's house at Croydon 49·84° Fahrenheit.

"The country people in Surrey have a saying that when the Croydon Bourne flow is expected in the Caterham Valley a south-west wind or gale favours its appearance, while an easterly wind drives it back. Of course a south-westerly wind usually brings rain, and an easterly wind is a dry wind producing the contrary effect. This explanation will probably account for the Bourne flow and its diminution, but there are also other conditions in connection with these winds that should receive attention and which would influence the flow of the Bourne."

Wind influencing Bourne flows.

Upon investigating the subject the Author found that the flow of the Bourne was particularly subject to variation in flow under atmospheric pressure, and in his paper in 1881 gave the following explanation with reference to this matter. "It may be assumed in reference to underground water that there are three zones in the earth which affect the question of supply, the first of which is comprised in that area measured from the surface of the ground downwards which is subject to periodical wetting and partial drying. The depth of this zone varies no doubt every year, depending upon the amount of rain which percolates and the evaporation subsequently taking place. Then there is a second zone in districts like the chalk formation, in which the water level is removed a considerable distance from the surface, which is always charged with water by capillarity, and from which the water percolating from the upper zone passes on its way to the third or lower zone, which is occupied not only by water held by capillarity of the strata but by water which moves freely through the strata itself. This third or lower zone is the one which furnishes every year the supplies of water which are yielded by the

Conditions under which water exists in the ground.

springs, and the yield of the springs in any one year depends upon the amount of water stored in this zone. In cases where the wells are shallow the middle zone is absent. When replenishment of the springs takes place, it is not the immediate rain that passes into the lower zone, but a given volume of rain percolating drives out an equal quantity of water held by capillarity in the earth, and so rain is held in the earth in some cases for many years before it flows out again as springs, but the flow in any one year is dependent upon the amount of rain previously percolating in that particular season. The mineral constituents of water that has been held so long in the ground vary but slightly from year to year regardless of the volume flowing.

Ground water and strata contain air.

"Water held in the ground contains air and gases and the rocks also contain them. This being so, a reduction in barometric pressure has a tendency to cause this air or gas to escape from or expand in the water, or at other times for the water to retain under high barometric pressure a larger amount or to compress the air or gas present. The effect, therefore, of a fall of the barometer is to aid in the escape of water by reason of the expansion of the gases under low barometric pressure. On the other hand, under high barometric pressure the condensation of the gases leads to the retardation of the flow and the escape of the water.

Observations on Croydon Bourne.

"In order to determine whether or not the actual flow of water from the ground was affected by barometric pressure, the Author commenced a series of observations upon the Bourne flow in the Caterham Valley in the present year (1881). For this purpose he had a gauge dam constructed across the stream, and the quantity of water flowing over was recorded by a self-recording machine. Neglecting periods when there was rain, it was quite clear from the observations that whenever there was a rapid fall of the barometer there was an increase of the quantity of water flowing, while a rapid rise in the barometer caused a diminution in the volume flowing, as the following examples will show.

"1st. The barometer commenced to fall on the 24th February, 1881, and fell until the 28th. The Bourne flow during this time increased from 357·6 cube feet per minute on the 24th to 387·4 cube feet per minute on the 26th. The barometer began to rise on the 28th February, and rose until the 2nd March, and then commenced to fall. The Bourne flow diminished from 379·0 cube feet per minute on the 28th February to 345·3 cube feet per minute on the 1st March There was a very marked depression in the Bourne flow during the period of the rise of the barometer. The prevailing winds during the period of these observations were easterly.

"2nd. On the 11th March, 1881, the barometer commenced to fall, and fell until the 14th, when it commenced to rise. The Bourne flow increased from 511·4 cube feet per minute on the 11th March to 568·2 cube feet per minute on the 14th March. With the rise of the barometer the flow diminished. From the 15th to the 17th during all the period the barometer was rising there was a marked diminution in the Bourne flow. The wind during the period of these observations was north-west and south-east.

"3rd. The barometer began to fall on the 27th

March and fell to the 29th, when it commenced to rise. The Bourne flow increased from 534·8 cube feet per minute on the 27th to 549·1 cube feet per minute on the 29th, and it fell to 502·2 cube feet per minute on the 30th March.

"4th. The barometer fell from the 31st March to the 1st April. The Bourne flow increased from 502·2 cube feet per minute on the 30th March to 525·5 cube feet per minute on the 1st April, and with the rise of the barometer on the 1st April it fell, so that on the 3rd April the flow was but 456·7 cube feet per minute.

"5th. The barometer commenced to fall on the 4th April and fell to the 5th. On the 6th it commenced to rise and remained moderately high until the 10th April. The Bourne flow rose from 456·7 cube feet per minute on the 3rd April to 479·3 cube feet per minute on the 5th April, and fell to 399·8 cube feet per minute on the 10th instant.

"It should be observed that after the 24th March there was a decline in the Bourne flow, which had reached its highest discharge on that day."

Rise and fall of water in deep wells.

The Author also gave further information with reference to the rise and fall of the water in deep wells, showing that whenever there was a fall in the barometer there was a corresponding rise in the water line of the well and *vice versa*; with a rise of the barometer there was a decline in the level of the water in the well, and this was shown in a most marked manner by experiments which were carried out at the boring made for the Croydon Rural District Council at their sewage works at Merton. These results have

Blowing wells at Northallerton.

also since been confirmed by the experiments which have been made at the blowing wells at Northallerton, from which with a falling barometer there is a distinct outflow of air from the well, while with a rise of the barometer there was a distinct inflow of air into the well.

Journal Royal Agricultural Society.

In the fifteenth volume of the *Journal* of the Royal Agricultural Society, page 416, there is a paper on "Farming in Dorsetshire," by Mr. Louis H. Ruegg, which contains a quotation from Mr. John Baveystock Knight, of West Lodge, Piddleton, where it is stated that: "A curious fact in relation to the annual bursting of these springs (winter Bournes) is, that their breaking as it is termed is always accompanied with strong gales of wind generally from the south-west with rain, but without a strong gale they never break however wet the season."

Gales necessary for breaking of Bourne flows.

Experience of present Bourne.

It should be observed that the present Bourne at Croydon rose last November when the barometer was rising and the wind was W. and W.N.W., so that it is not essential that in order to produce a Bourne flow there should be a falling barometer or that the wind should be S.W.

Braithwaite's paper on River Wandle.

In January and February, 1861, a paper by Frederick Braithwaite, M.Inst.C.E., on the River Wandle, was read and discussed at the Institution of Civil Engineers, being the result of a survey "made early in the spring of the year 1853." It is also stated in the paper that "when the springs at Marden Park have flowed about thirty days in the direction of Croydon they commenced flowing in the direction of West Wickham in Kent," and that there is "evidence that the Bourne ran during two entire years, in 1841 and 1842 a period of great rain."

At the time this paper was read a Bourne was flowing at Croydon.

Much importance was attached to the flow of the Bourne in 1852-3, as to its influence was ascribed the great outbreak of fever that occurred at Croydon at the time of the appearance of the Bourne, and continued while the Bourne lasted.

1852-3. Outbreak of fever attributed to Bourne flow.

In the paper and the discussion that followed it, we have for the first time recorded the volume of water flowing at the time of the Croydou Bourne flow. It is stated that the volume flowing in the spring of 1853 before arriving at the Croydon and Epsom Railway was more than 19 million gallons per day, or 2111·1 cube feet per minute. Two gaugings are given of what is called the Bourne Brook, one of 17,625,600 and the other 16,158,780 gallons per day, or 1,958·4 and 1,795·42 cube feet per minute respectively. The flow of the Bourne that rose 1860-1 is referred to, and Mr. Hawksley stated that the flow of the River Wandle was now 20 million gallons per day or 2222·2 cube feet per minute, and Mr. Fenton, the Surveyor of Croydon, stated that the flow under Riddlesdown of this Bourne was at the rate of 1,500 gallons (240 cube feet) per minute, and the flow out of the Bourne culvert at Croydon was 3,500 gallons (or 560 cube feet) per minute. It was also stated by Mr. Hawksley during the discussion on the paper that the sewers of Croydon at this time carried away nearly 2 million gallons per day of spring water (222·2 cube feet per minute).

First record of volume of water flowing.

Gaugings of Bourne Brook.

Flow of Wandle in 1860-61.

Flow of the Bourne 1861.

Leakage into Croydon sewers 1861.

It is also recorded in the Minutes of the Croydon Local Board that the Bourne of 1860-61 was flowing on the 31st of December, 1860, at a point two miles from the town, and that it rose under Riddlesdown in November, 1860.

Date of Bourne flow 1860-61.

The Author's first personal acquaintance with the Croydon Bourne flow was that which occurred in the year

Author's first acquaintance with Croydon Bourne.

1866, when the matter was prominently brought to his attention by reason of a set of plans having been submitted to him for approval (as Surveyor for the Croydon Local Authority) just before the Bourne appeared for the building of the public-house which is now known as the "Royal Oak" in the Brighton Road, the building of which would have completely blocked up the channels of the Bourne, and to which the Author objected, and he was then informed that the Bourne was not likely to flow again, as some works had been constructed in the hills, evidently alluding to the construction of the railway and the adit driven in advance of the Oxted Tunnel; but while the matter was under consideration the Bourne broke out to the surprise of all parties, and as a consequence provision was made for continuing the Bourne channel past the site of the house in question.

Construction of Oxted Tunnel as affecting volume of Bourne flow.

It will not be out of place at this juncture to refer to the construction of the Oxted Tunnel as affecting the volume of the Croydon Bourne flow.

It is not generally known that some years ago, before the present Oxted Tunnel was made, that there was a proposal to make a tunnel through the hills at a low level, 2½ miles long, at Oxted, in connection with the original railway to Dover, but its construction was opposed by the landed proprietors on the chalk range by reason of the likelihood of its drawing off the water. Ultimately an agreement was made with the landed proprietors that they were to be compensated if the water was lost and the Bill passed. This tunnel was to be constructed not only through the chalk, but cut the gault as the present tunnel does. The matter was referred to Sir W. Cubitt, the engineer, who on investigation found that if the tunnel was made, the springs would be tapped, and compensation would have to be paid, and he recommended the Company to have another line surveyed, and the present South Eastern Line through Merstham Tunnel was the result, this tunnel being adopted both by the Brighton and South Eastern Railways.

Present Oxted Tunnel.

The present Oxted Railway Tunnel was carried out without opposition from any of the landed proprietors, who dreaded being damaged by means of the diversion of the underground waters from their estates, or even by any of the riparian owners on the Wandle, although considerable injury has been inflicted on the River Wandle proprietors by reason of the diversion of a portion of the waters from their watershed.

Considerable injury to River Wandle.

Marlpit Lane Bourne.

We may now refer to what the Author has called the Marlpit Lane Bourne, Brighton Road, which has this year again flooded the lands at Red Lion Green, Smitham Bottom, and there disappears into the ground.

The present origin of this Bourne is due to the construction of a culvert which conveys the water from Merstham Tunnel when the springs are high. It is recorded that when sinking the shafts in connection with the Merstham Tunnel, water was met with, which obliged the contractors to drive an adit through the gault below the bed of the tunnel to tap the springs, and that when this was done the springs in the neighbourhood were drained. The Merstham Mill Head was dry for some years till the tunnel was finished. Afterwards the water from the adit from the tunnel was turned into the Old Mill Head, and now the mill works again not from the original springs but from the tunnel.

Merstham Tunnel.

Clayton Tunnel.

It appears also that in the construction of the Clayton Tunnel on the Brighton Line an adit was driven and a large quantity of water was liberated in a similar manner.

Flow from Oxted Tunnel gauged.

The Author has had the quantity of water flowing out of the Oxted Tunnel regularly gauged during the last 24 years, and has found the largest quantity that during that period has flowed away was during the present year, when on the 19th February 326·03 cubic feet per minute flowed away from the Croydon area. The previous largest quantity was 248·8 cubic feet per minute on 20th February, 1883. The quantity of water flowing from the Oxted Tunnel does diminish the volume of the Croydon Bourne, and may prevent some small flows from taking place.

Gaugings of 1866 Bourne.

This 1866 Bourne flow was gauged by the Author on many occasions for the information of Croydon Authorities, and especially their Chairman, the late Mr. C. W. Johnson, F.R.S., who took great interest in such matters. When this Bourne was at its highest point of flow, on the 27th February, 1866, the quantity flowing into the Bourne culvert at the "Windsor Castle," Brighton Road, which was then the upper end of the culvert which had been constructed for the diversion and the prevention of flooding by the Bourne of the lower parts of Croydon, and for lowering the level of the water line under the Old Town of Croydon, was at the rate of 1,800 cubic feet per minute, and the volume flowing out of the mouth of the Bourne culvert into the Wandle on the same day was 3,212 cubic feet per minute, this being the largest flow of the Bourne of which there is any record.

Gaugings of 1873 Bourne.

In the year 1873 there was another Bourne flow at Croydon, and the volume of this flow was gauged by Mr. Thomas Walker, the town surveyor of Croydon, and the quantity of water flowing into the Bourne culvert at the "Windsor Castle," on the 17th February, 1873, was 228 cubic feet per minute, and out of the

Bourne culvert 1,089 feet per minute. On the 2nd March of the same year the quantity flowing into the Bourne culvert was 129 cubic feet per minute, and the flowing out 1,105 cubic feet per minute. On the 1st April, 1873, there was no water flowing into the Bourne culvert, but there was 864 cubic feet per minute flowing out of it.

In the beginning of the year 1876, the Author commenced a hydro-geological survey of Croydon and its neighbourhood, which he has continued from that time up to the present date. In the year 1876 he discovered that there was a Bourne flowing in the Caterham Valley below the "Rose and Crown," but at the time it was declining in flow, and on the 8th of May it was flowing below the "Rose and Crown" at the rate of 73·63 cubic feet per minute. On the 4th of May of that year, the quantity observed to be flowing out of the Bourne culvert at Croydon was 478·7 cubic feet per minute. In consequence of the observations carried on in this year to trace the cause of the Bourne flows, the Author found previous to the next year the conditions had arisen necessary to produce a flow of the Bourne, and as a consequence he made an application to the Croydon Local Authorities for permission to line the Bourne channels in order to gauge the Bourne which was coming out, when owing to the discussion which took place on that occasion, it was stated by the Chairman of the Board, the late Mr. C. W. Johnson, F.R.S., that there could be no Bourne flow in Croydon, as there never was a Bourne flow unless there had been 30 inches of rain in the previous year. This discussion and the assertions then made induced the Author to make some careful calculations, and the consequence was that he wrote a letter to the *Croydon Chronicle* on the 11th of January, 1877,

Hydro-Geological Survey of Croydon.

Bourne flowing in 1876.

Gaugings of 1876 Bourne.

Discussion of Croydon Local Board, 1876.

Author predicted Bourne.

predicting that a Bourne flow would take place immediately below the "Rose and Crown," which would be followed by it breaking out in Marden Park. This Bourne proved to be a large Bourne flow; the flow commenced on the 18th of January, 1877, and on the 14th of February the quantity flowing below the "Rose and Crown" at Coulsdon was 1,745·7 cubic feet per minute, and of the Bourne culvert at Croydon it was 2,120 cubic feet per minute.

Gaugings of 1887 Bourne.

From the year 1877 up to the present time the Author has predicted with perfect accuracy both the volume and date on which all the subsequent Bourne flows have made their appearance in the Caterham Valley. In the whole he has accurately predicted, between 1877 and 1903-4, thirteen Bourne flows, and there have been no Bourne flows or anything approaching a Bourne flow in any of the intermediate years when no Bourne flow has been predicted.

Bourne of 1877 a recurring Bourne.

The peculiarity of the 1877 Bourne was that it was a recurring Bourne, that is, it rose to a high point and then fell and rose again, and subsequently declined. The gaugings of this Bourne flow are shown graphically in Plate No. 2. It should be observed with reference to the rise and fall in the Bourne flow that the water in the wells removed some distance from the Bourne flow show a corresponding rise and fall in their water line with the flow of the Bourne, but the wells near the Bourne channel which are near to the flowing stream of the Bourne, and all wells below the level at which the Bourne breaks out, show no fluctuation in flow, as the overflow by the Bourne prevents the water rising in the ground to a higher point than the natural overflow into the Bourne channel.

Bourne of 1878.

In 1878 a very small Bourne appeared; the Bourne rising on the 30th April reached its highest flow on the 23rd May, when it was 24·49 cubic feet per minute below the "Rose and Crown" at Coulsdon, and ceased to flow on the 18th June. The flow out of the Bourne culvert at Croydon on the 23rd May was 341·3 cubic feet per minute. This Bourne only flowed a short distance down the Caterham Valley and disappeared into the ground.

Bourne of 1879.

The year 1879 was a wet and cold year, very disastrous to agricultural interests. A Bourne rose in the Bourne channel below the "Rose and Crown" at Coulsdon on the 16th February, and commenced to flow on the 17th, and on the 18th was flowing at the rate of 3·16 cubic feet per minute, which increased to 119·44 cubic feet per minute on the 2nd April, after which it fell and rose again to 170·62 cubic feet per minute on the 25th August; it again fell, and rose to 222·12 cubic feet per minute on the 25th September, and ceased to flow on the 18th December. The largest quantity of water flowing out of the Bourne culvert at Croydon was 420·4 cubic feet per minute on the 9th April.

Bourne of 1880

In the year 1880 there was no flow of the Bourne at the usual period when the Bourne flow ordinarily takes place in the spring of the year, but the Bourne rose below the "Rose and Crown," Coulsdon, on the 12th December, or very nearly at the same period of year on which in the preceding year it ceased to flow. On the 15th December it was flowing at the rate of 5 46 cubic feet per minute. It reached its maximum flow below the "Rose and Crown," Coulsdon on the 24th March, 1881, when it was flowing at the rate of 642 cubic feet per minute, and disappeared on the 25th June, 1881, the last gauging on the 22nd June

Gaugings 1880 Bourne

being 1·18 cubic feet per minute. On the 25th December, 1880, the flow out of the Bourne culvert at Croydon was 202·1 cubic feet per minute, and on the 24th March, 1881, it was 515·2 cubic feet per minute.

Flow out of Bourne culvert less than Bourne flow.

It will be observed that in this year for the first time the quantity of water flowing out of the Bourne culvert at Croydon at the maximum period of flow was considerably less than the surface flow in the Caterham Valley below the "Rose and Crown" at Coulsdon, and in this year there was a considerable volume of water which found its way into the new sewers in Brighton Road which had lately been constructed by the Croydon authorities.

Leakage into Sewers.

Bourne of 1882.

In 1882 the Bourne rose on the 12th of January below the "Rose and Crown," Coulsdon, and on the 16th January it was flowing at the rate of 3·34 cubic feet per minute, and increased to 113·8 cubic feet per minute on the 28th c. February, and ceased to flow on the 4th May. The largest flow out of the Bourne culvert was on the 3rd March, when it was 142·9 cubic feet per minute.

Bourne of 1883.

In 1883 the Bourne rose on the 12th of January in the Bourne channel below the "Rose and Crown" at Coulsdon, and on the 14th January it was flowing at the rate of 5·1 cubic feet per minute. On the 7th March it was at its maximum and flowing at the rate of 738·4 cubic feet per minute, and it ceased to flow on the 11th of June of that year. On the 7th March the volume flowing from the Bourne culvert at Croydon was 579·0 cubic feet per minute.

Bourne of 1887.

The next Bourne occurred in the year 1887, when it rose in the Bourne channel below the "Rose and Crown" at Coulsdon, and on the 17th of February it was flowing at the rate of 39 cubic feet per minute.

On the 12th of March at the same place, the flow was 57·48 cubic feet per minute, and on the 16th April it ceased to flow. The largest quantity flowing out of the Bourne culvert at Croydon was on the 27th March, when it was 69·45 cubic feet per minute.

The flow of this Bourne did not extend down the valley more than about half a mile below Kenley railway station where it disappeared into the ground.

After this year the Author did not give so much attention to flows of the Bourne except the prediction of the times of their appearance.

In 1889 there was a small flow of the Bourne in April of which no particular observations were made. **Bourne of 1889.**

In 1891 and 1892 a moderate flow of the Bourne occurred. The Bourne broke out on the 10th December, 1891, and it was reported by the Borough Engineer of Croydon that on the 23rd January, 1892, the flow on the surface had reached to within a few yards of the east side of the main line of railway at Purley. Shortly afterwards it decreased, and the flow on the surface had receded to Foxley Hatch House, a distance of about 350 yards. **Bourne of 1891-2.**

In 1893 another Bourne broke out in the Caterham Valley. This was only a flow of a moderate extent. On the 8th April it was flowing at the rate of 180 cubic feet per minute below the "Rose and Crown." It only flowed down the Valley as far as Little Roke Farm, and there disappeared into the ground. **Bourne of 1893.**

In 1895 another Bourne made its appearance in the Bourne Channel below the "Rose and Crown," but it only just appeared on the surface and lay in the bottom of the channel, and then went back without actually flowing. **Bourne of 1895.**

In 1897 a further Bourne broke out below the "Rose **Bourne of 1897** and Crown," Coulsdon. This Bourne was reported to the Corporation of Croydon on the 12th April, 1897, by reason of the Bourne channels having been filled up, and the necessity of opening them out or making new channels should the flow of the Bourne continue, which fortunately it did not. This was the last flow of the Bourne previous to the flow that is now taking place.

Bourne of 1903-4

The Bourne of 1903-4 broke out below the "Rose and Crown," Coulsdon, on the 22nd November, 1903. The flow was 2·85 cubic feet per minute on the 23rd November. It increased to 284·36 cubic feet per minute on the 5th January last, after which it diminished to 201·81 cubic feet per minute on the 26th January, after which it rapidly increased, and on the 23rd February it was flowing at the rate of 1,494 cubic feet per minute, from which time it has gradually subsided, and on the 10th May, 1904, it was flowing at the rate of 81·27 cubic feet per minute. The largest flow out of the Bourne culvert at Croydon occurred on the 20th February last, when 911·63 cubic feet per minute flowed out, and on the 23rd February the flow was 866·66 cubic feet per minute—a very much smaller quantity than was actually flowing at the "Rose and Crown," Coulsdon—a most unusual thing, showing that the water of the Bourne had been lost and diverted to other channels than those which were originally designed for its reception.

Flow out of Bourne culvert less than volume of Bourne at "Rose and Crown."

Water lost from Bourne.

In 1877 flow out of Bourne culvert more than Bourne at "Rose and Crown."

It will be noted that on the 14th February, 1877, 2,120 cubic feet per minute flowed out of the Bourne culvert, the quantity flowing at that date at the "Rose and Crown" being 1,745·7 cubic feet per minute. With the present Bourne matters are reversed, and the flow out of the Bourne Culvert at Croydon is not more than one-half of the flow below the "Rose and Crown"

With present Bourne, flow out of Bourne culvert not more than half of Bourne flow below "Rose and Crown."

at Coulsdon, and even if the flow of water out of the new culvert which was made a few years ago is added, the total flow into the head of the Wandle at Croydon on the 23rd February of this year was but 1,029·94 cubic feet per minute, a considerably less quantity than was flowing at Coulsdon.

No doubt Bourne waters have gone into Croydon sewers.

There can be no doubt that the waters of the Bourne have been transferred from the ordinary channels of the Bourne into the Croydon sewers, as it will be noted that since the year 1880, the volume of water flowing out of the Bourne culvert at Croydon does not appear to bear anything like the proper ratio which it should bear to the volume flowing immediately below the "Rose and Crown" at Coulsdon. In order to test this, the Author tried to ascertain what was the volume flowing in the Croydon sewers, but as the Corporation had recently declined to allow the sewers to be gauged, he had recourse to gauging on a dry day the effluent flowing off the sewage farm at Beddington when it was found on the undermentioned dates that the following quantities of water were flowing away.

Gauged Beddington sewage farm effluent.

Quantities flowing off.

On the 11th March, 1904,	about	17½	million	gallons	a day
„ 11th April,	„	10½	„	„	„
„ 5th May,	„	9½	„	„	„
„ 11th May,	„	8½	„	„	„

Effluent is less than volume of sewage.

and as a rule the volume of effluent flowing off this farm is less than the volume flowing on to it owing to the loss from evaporation and a quantity of water flowing away to supply certain springs by leakage into the Thanet sand beds which underlie a portion of this farm. The quantity of water passing into these Croydon sewers is greater than it has ever been before, although the volume of the Bourne flow itself has not been so great as in some previous years.

Notable year for Bourne flows.

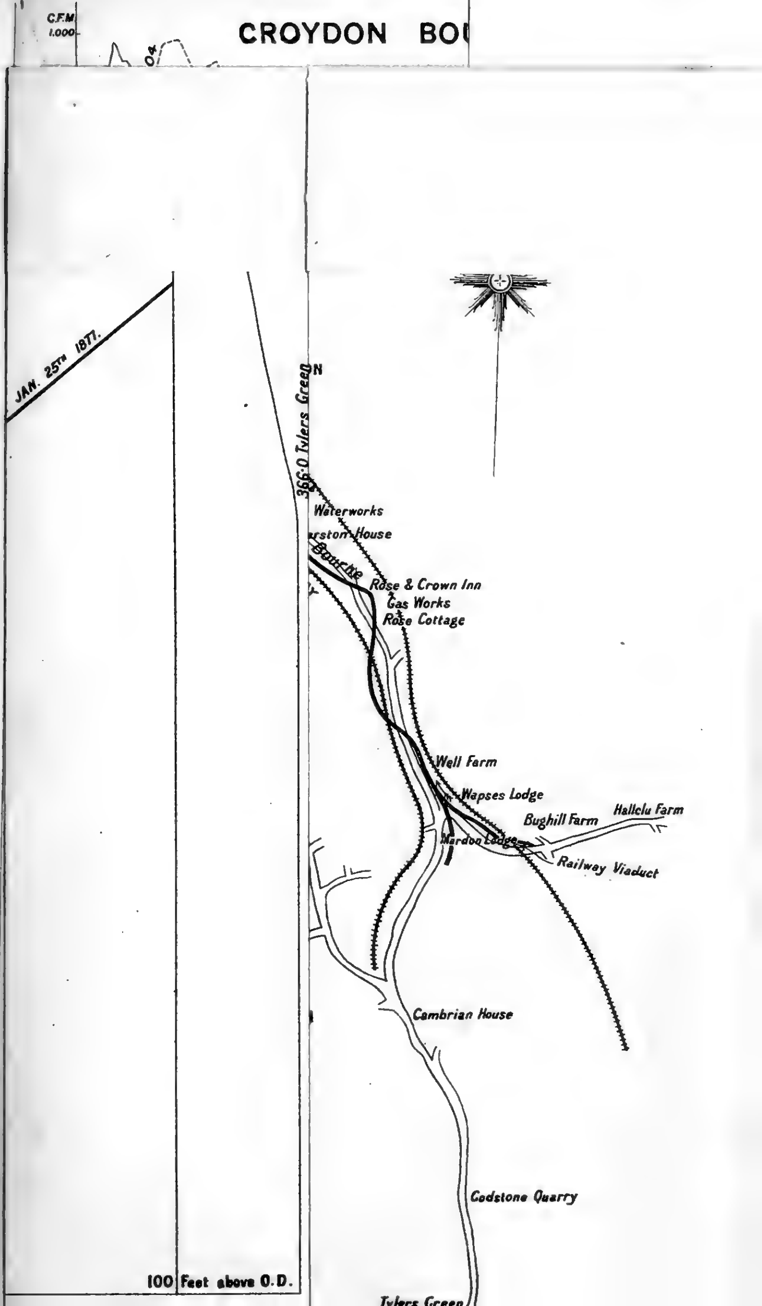
In conclusion I may say that the present year is a notable one for the appearance of Bourne flows, and wherever the chalk formation extends in the counties of Hants (including the Isle of Wight), Hertfordshire, Kent, Oxfordshire, Surrey, Sussex, and Wilts, Bournes have made their appearance in larger volume than usual.

Description of Plates.

Plate No. 1 shows a general plan of the district in which the Croydon Bourne occurs, and also the Marlpit Lane Bourne, and a longitudinal section down the Caterham Valley to Croydon, and Plate No. 2, shows in a graphic form the relative volumes of the Bournes of 1877 and 1904.

Printed by J. B. Nichols & Sons, Parliament Mansions, Victoria Street, S.W.

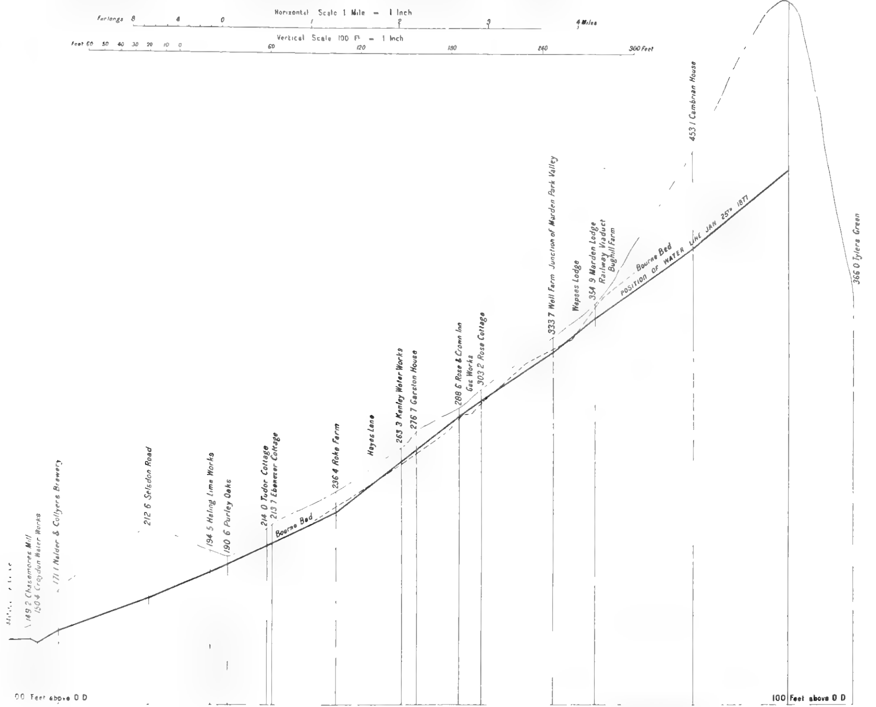
CROYDON BOU



C.F.M
1,000
JAN. 25TH 1877.
100 Feet above O.D.
366·0 Tylers Green
N
Waterworks
rston House
Bourne
Rose & Crown Inn
Gas Works
Rose Cottage
Well Farm
Wapses Lodge
Bughill Farm
Hallclu Farm
Wardon Lodge
Railway Viaduct
Cambrian House
Godstone Quarry
Tylers Green

SECTION OF CROYDON BOURNE FLOW, 1877.

Plate No 1.



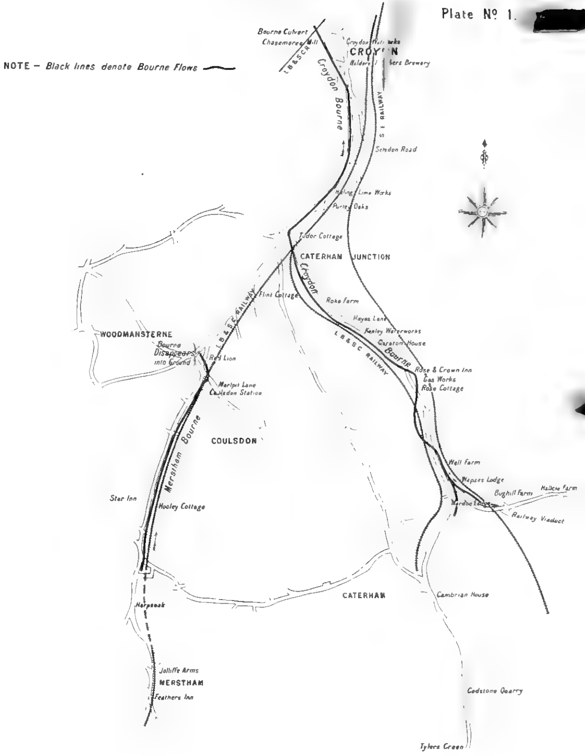
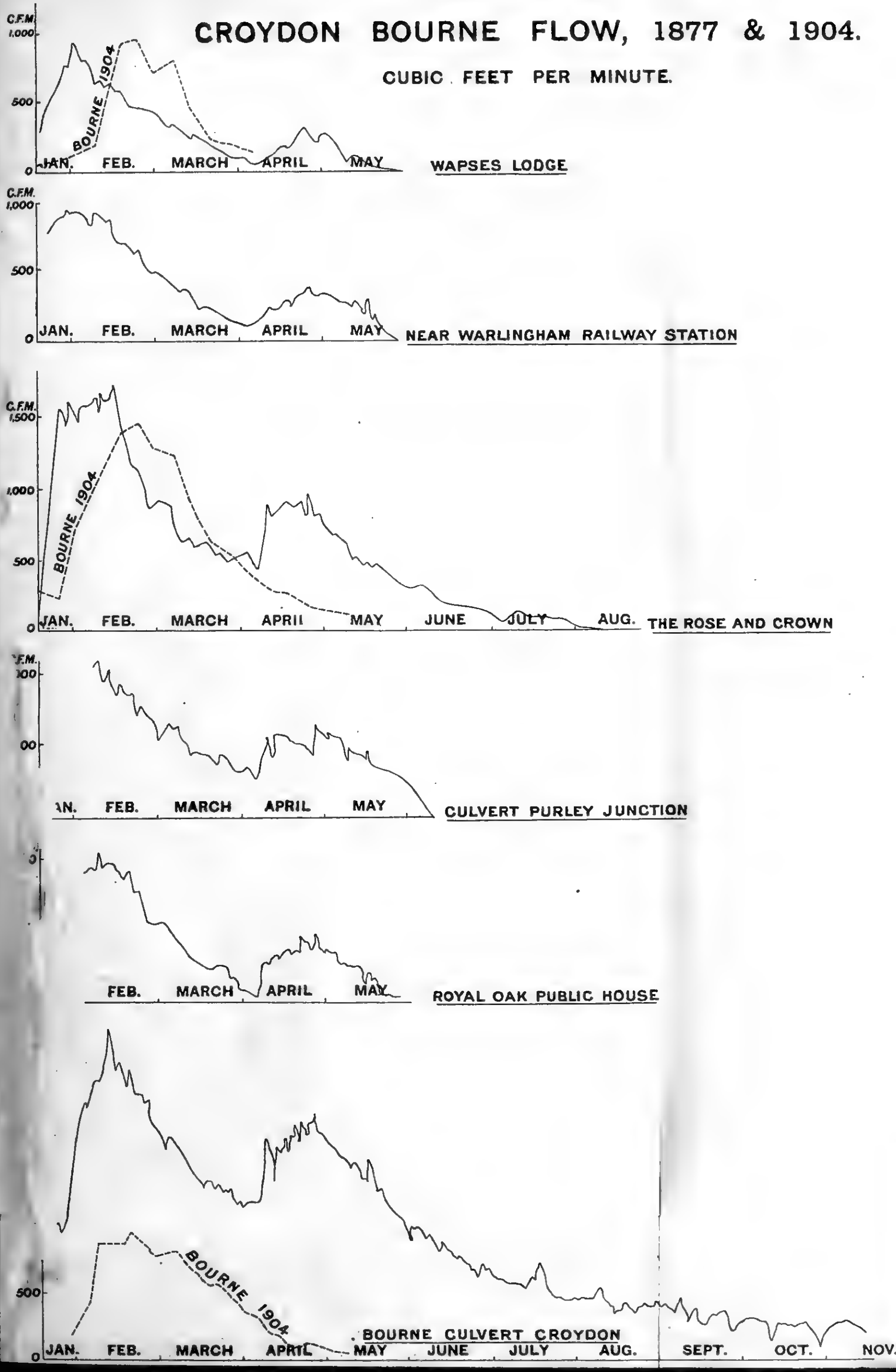
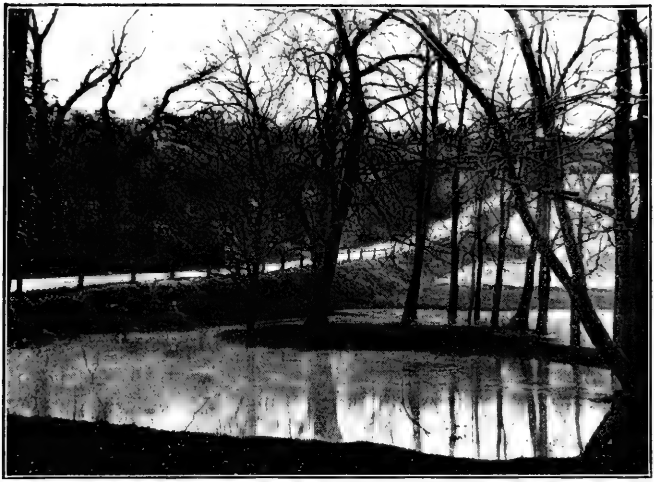


Plate No. 2

DIAGRAM OF CROYDON BOURNE FLOW, 1877 & 1904.

CUBIC FEET PER MINUTE.





Croydon Bourne at Wapses Lodge, February 2nd, 1904.

Croydon Bourne below "Rose and Crown," February 2nd, 1904.

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Croydon Natural History and Scientific Society.

OFFICERS FOR 1904.

PROCEEDINGS & TRANSACTIONS

OF THE

CROYDON

NATURAL HISTORY AND SCIENTIFIC

SOCIETY.

FEBRUARY 16, 1904, TO JANUARY 17, 1905.

CROYDON:

PRINTED FOR THE SOCIETY, BY WEST, NEWMAN AND CO.,

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—

1905.

PROCEEDINGS

OF

THE CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

1904—1905.

Thirty-fifth Annual Meeting,

Held at the Public Hall, Croydon, January 17th, 1905.

The President, F. Campbell-Bayard, LL.M., F.R. Met. Soc., in the chair.

The Council's Report and the Statement of Accounts for 1904 were read and approved.

The following gentlemen were elected Officers of the Society for the ensuing year :—

President.—W. F. Stanley, F.G.S., F.R.A.S.

Vice-Presidents.—F. Campbell-Bayard, LL.M., F.R.Met.Soc.; Dr. H. Franklin Parsons, F.G.S.; W. Whitaker, F.R.S., F.G.S.

Hon. Curator.—N. F. Robarts, F.G.S.

Hon. Lanternist.—J. H. Baldock, F.C.S.

Hon. Librarian.—Alfred Roods.

Hon. Treasurer.—F. J. Townend, 11, Park Hill Rise.

Council.—R. W. Brant; J. Edmund Clark, B.A., B.Sc., F.G.S.; T. F. Clarke; H. T. Mennell, F.L.S.; Dr. T. A. Dukes, B.Sc.; Dr. H. C. Male; T. K. F. Page.

Hon. Secretary.—George W. Moore, 15, Dornton Road, South Croydon.

Anthropological and Archæological Committee.—T. F. CLARKE, Lurline, Blenheim Crescent; H. C. COLLYER, Breakhurst, Beddington; J. M. HOBSON, M.D., B.Sc., Morland Road; A. J. HOGG, 43, Whitworth Road, South Norwood; E. LOVETT, F.R.H.S., West Burton, Outram Road; A. TARVER (Secretary), 7, Stuart Road, Thornton Heath.

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Geological Committee.—W. BRUCE BANNERMAN, F.S.A., F.G.S., The Lindens, Sydenham Road; T. F. CLARKE (Secretary), Lurline, Blenheim Crescent; G. J. HINDE, Ph.D., F.R.S., F.G.S., Avondale Road; A. J. HOGG, 43, Whitworth Road, South Norwood; H. C. MALE, M.D., Cromer Lodge, 74, Birdhurst Road; G. W. MOORE, Bryndhurst, Dornton Road; T. K. F. PAGE, 9, Rosemount, Wallington; H. FRANKLIN PARSONS, M.D., F.G.S., Park Hill Rise; N. F. ROBARTS, F.G.S., 23, Oliver Grove, South Norwood; W. WHITAKER, B.A., F.R.S., F.G.S., Freda, Campden Road.

Meteorological Committee.— F. CAMPBELL-BAYARD, LL.M., F.R. Met. Soc. (Secretary), Cotswold, Wallington; J. EDMUND CLARK, B.A., B.Sc., F.G.S., Aysgarth, Riddlesdown Road, Purley; THOS. CUSHING, F.R.A.S., Chepstow Road; BALDWIN LATHAM, M.I.C.E., Duppas House.

Microscopical Committee. — Rev. R. K. CORSER, 57, Park Hill Road; T. A. DUKES, M.B., B.Sc., 16, Wellesley Road; D. E. GODDARD, Eaglehurst, Wallington; Mrs. H. HALL, Colleendene, Addiscombe Grove; E. LOVETT, F.R.H.S., West Burton, Outram Road; L. REED, F.C.S., Hyrst Hof, South Park Hill; Miss C. WARD (Secretary), 42, Temple Road.

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Photographic Committee.— J. H. BALDOCK, F.C.S. (Lanternist), Overdale, St. Leonard's Road; H. D. GOWER (Portfolio Secretary), 55, Benson Road; R. F. GRUNDY, 8, Havelock Road; A. ROODS, 67, Thornhill Road; A. J. WEIGHTMAN, Endsleigh, 11, Chepstow Road; J. M. HOBSON, M.D., B.Sc., 1, Morland Road; E. A. FELLA, 48, Parsons Mead; J. G. LINCOLN (Secretary), 1, Bank Buildings.

Zoological Committee.—J. H. BALDOCK, F.C.S., Overdale, St. Leonard's Road; H. D. GOWER, 55, Benson Road; ALFRED ROODS, 67, Thornhill Road; A. TARVER, 7, Stuart Road, Thornton Heath; P. B. NASH, 135, Melfort Road, Thornton Heath.

Council's Report, 1904.

The Council regrets to have to report that the number of our members has undergone a further reduction during the past year, and that against 201 at this time last year the number is now 190, *i.e.* 179 adult and 11 junior.

We have lost three members by death:—Mr. W. Tyndall, of Reigate, on January 13th last. Mr. R. McLachlan, whose name will be specially known to entomologists as one of the joint editors of the 'Entomologists' Monthly Magazine,' and by his contributions to the knowledge of the British Neuroptera. He had been a member of this Society since 1886, and died on May 23rd, 1904. Mr. W. C. Wissenden died December, 1904.

Thirty-one members have resigned, chiefly owing to their leaving the neighbourhood, and amongst them we sustain a great loss in Mr. W. Murton Holmes, to whom, on many occasions, we have been greatly indebted for papers. As botanist, geologist, microscopist, or zoologist he was equally ready, and frequently helped us at the ordinary meetings, as well as in sectional work. Fortunately, Mr. Holmes has not gone very far, and may attend occasional meetings. We have 20 new members—17 adult and 3 junior.

At the commencement of the year a special circular was drawn out for circulation to new-coming residents for the purpose of introducing the Society and its objects to their notice, and inviting membership. The issue of this will be continued.

The ordinary meetings have been well attended, and some very interesting papers read, including one on the Croydon Bourne Flows, by Mr. Baldwin Latham, F.G.S., M.I.C.E., which is one of the first detailed accounts of the Bourne, if not actually the first. It gave the statistics of the flow up to date, and being a matter of great interest at the time, the Council considered it should be published at once, and therefore availed itself of Mr. Baldwin Latham's kindness to obtain the paper for printing in the last number of the 'Transactions.' Mr. Latham issued copies of the paper at the meeting in May.

Mr. Campbell-Bayard presented a polariscope to the Society for use with the lantern, and our thanks are due to him for this valuable acquisition. The polariscope was exhibited at the September meeting.

Several papers of local interest have been read, and will appear in the 'Transactions' for the year.

Excursions.

Altogether about a dozen excursions were made, of which two were whole-day excursions, *viz.* on Whit-Monday to Holmwood, Leith Hill, and Wotton—Wotton House being visited by the kind permission of Mr. W. Evelyn; and on August 1st Bank Holiday to Ightham, Ightham Mote, and Tonbridge.

Particulars of all the excursions will duly appear.

Sections.

With the exception of the Anthropological and Zoological Sections, which have been without Hon. Secretaries, all the sections have had meetings, and have been doing very useful work.

The Botanical Section has held a meeting in conjunction with the Microscopical, and one alone, and has also had several special evening excursions.

The Geological Section has had regular monthly meetings, including one with the Microscopical Section, and organized some extra excursions.

The Microscopical Section held three meetings, one alone, and two in conjunction with the Botanical and Geological Sections, respectively.

The Photographic Section, notwithstanding being without a duly appointed Secretary, held three meetings, having been assisted by Mr. Baldock, though at great inconvenience. The portfolios have not been able to be sent out so regularly as before.

The Meteorological Section has issued the rainfall returns with its accustomed regularity, and the report analysing these will be read in due course.

The Museum Committee reports having arranged to lend specimens, as authorized by the Council, for educational purposes. The museum-case in the Town Hall appears to attract attention, and thus answers the purpose for which it was placed there. About eighty-two specimens have been added during the year, exclusive of one hundred Roman coins from the find in Croydon, lent by the Croydon County Council. Loans of archæological and zoological specimens are much needed.

The Zoological Section has been without a Secretary, and it is regretted that no report is to hand.

The Annual Soirée, owing to financial reasons, was not held; but in lieu of it the President provided a lecture, which was given by Mr. A. L. Lewis, on "British Stone Circles" on December 12th.

The need of appointing Secretaries to the Anthropological, Photographic, and Zoological Sections if any work is to be done in these branches is strongly pointed out, and it is hoped that some members will come forward to undertake the duties.

The thanks of the Council are given to all those who, during the past year, have in any capacity assisted in the work of the Society.

The President's Address.

LADIES AND GENTLEMEN,

In addressing you this evening, I feel that, though I have done my best, I have been able to do but little for the Society during the past year, and even for that little my grateful thanks are due to the Council, and also to Mr. Moore, who have in every way so actively supported me.

In my address this evening, I propose, with your permission, to give you my own views as to the aims and work in the future of our Society, which is within three months of commencing its thirty-fifth year.

THE AIMS AND WORK IN THE FUTURE OF A NATURAL HISTORY SOCIETY.

In considering this subject, and looking through the past history of our Society, that glorious old hymn, "Change is our portion here," was very forcibly brought to my mind. Our Society held its inaugural meeting on April 6th, 1870, with a very fine address by Dr. Lee, and it was joined by 116 members in its first year. This number gradually increased until it reached the maximum of 303 on January 13th, 1892, when the number gradually declined until, at the Annual Meeting on January 19th, 1904, it was only 201. We ask ourselves what is the reason of this rise and decline, for we find that in 1871 the population of Croydon was 55,652 persons, in 1891 it was 102,695 persons, in 1901 it was 133,885 persons, and at the middle of 1904 it is reckoned to be 144,419 persons. The neighbouring parishes have also grown in population. It will be noticed that between 1870 and 1892, when the population of Croydon had doubled, the membership of the Society had rather more than doubled; but that between 1892 and 1904, when the population of Croydon had increased 41,724 persons, the membership of the Society had decreased by one-third. Let us look further. The University Extension Movement, which began with Cambridge in 1872, organized series of lectures followed by examinations. This system took some years before it got into working order and became known, and I believe I am not far wrong when I state that at the time our Society reached its high-water mark in 1892, the competition of the University Extension Lectures began to be felt. It will be noticed that these lectures are organized on much the same lines as our own meetings, and the lecturers, like our own members, confine themselves to their own special subjects; but there is this difference, that the extension lecturers, unlike our own members, cater for the young, and then there is the examination at the end of the course, which has attractions for the young. The result of this is that the young man or young woman passing these examinations is very apt to consider that they know everything about the subject, and consequently do not care to join a society which, rightly or wrongly (I think rightly), considers that no one can know too much about a subject, and that a person's education is not finished until he is dead.

The stress of modern life has also something to do with this decline, for after a hard day's work one does not willingly turn out in the evening. As, however, one gets on in life, and other interests grow around us, then perhaps he or she will join the natural history society, if it is still in existence.

It is this competition from the University Extension lectures, and also to a certain degree from the new technical schools and colleges, which is injuring the natural history societies, and which has already destroyed several of them.

It is easy to state all this, but it is difficult to find a cure, though I cannot help thinking that perhaps the remedy is closer at hand than we are aware of. There are three points that I wish to emphasize more especially, and they are :—

1. The most important of all, *viz.* the incorporation of the Society under the Companies Acts as a scientific society. I put this first of all because, as you are all well aware, that if anything happens to a company and it has to go into liquidation, the shareholders are only liable for the uncalled portion of their shares. As you know, our Society is not incorporated, and consequently if anything went wrong, and the Society was dissolved owing any debt, this debt could be recovered from the members existing at the time of the dissolution. If it was incorporated as a scientific society, in which there are no shareholders, if anything happened the property belonging to the Society would only be liable, and not the individual members. This is one great advantage of incorporation. Another is the advantage of sueing and being sued. This power would enable our Treasurer to recover the subscriptions at law, a power which is most valuable to possess, though of course it must be sparingly exercised. I may mention as a fact that all the great societies make use of this power. The advantage of being sued is not perhaps so great, but still the advantage to a creditor having the Society to sue, and not any individual member or members, is very advantageous both to the creditor and to the members. I say nothing as to the added dignity of incorporation, for this is obvious to anyone who considers the subject carefully. With reference to the cost of incorporation, I have

made some enquiries, and have been informed that it is very small, and Mr. Moore has informed me that it would be about £30.

2. That the members of the Society should lay themselves out to give lectures elsewhere if called upon, of course on terms. It is an open secret that the Council have been asked to designate gentlemen willing to give lectures on certain subjects. The Council have willingly done what they were asked; but what I particularly wish to say is, would it not be desirable for the Council to announce this fact to all the world? We have, as you all know, some of the most eminent persons in the United Kingdom amongst our members, and I feel sure that these ladies and gentlemen would only be too pleased to place their great knowledge at the service of others if they were approached in the proper way.

3. That the members should endeavour to attend the sectional meetings in greater numbers, for it is very disheartening to our eminent members that, when they have taken a great deal of trouble over some subject, there are so few present to listen to them and ask them questions.

4. That at the ordinary meetings the Council should see that the papers read are the best of their kind. I wish to emphasize this more particularly, for it is these papers which alone appear in the 'Transactions,' and it is by the 'Transactions' alone that the Society is judged by the public at large. For the last two or three years this has been the aim of the Council. The cost has certainly been heavy, but what has been the result? I do not like to prophesy, but I cannot help thinking that the decline in the membership will shortly be arrested, and that the Society will again increase. You perhaps will ask why this should be. I think that the answer is, that a Society such as ours caters for two kinds of members, the one kind whom I will denominate as the workers, and the others who, though they take an interest in the Society and support it by their contributions, and would probably do more if asked, are unable to work owing to age and other occupations. These members carefully look through and read the 'Transactions.' If they are good, these members show them with pride to their friends, and we are indebted to them for several new members. I need hardly specify what they do if the 'Transactions' are poor. They lose heart, and cease to take any interest, and finally resign. Ladies and gentlemen, we cannot afford to lose them. They are one of our great mainstays. The workers are comparatively few, probably not above one-fourth of our members are workers; but our other members are proud of the workers, and the better the work the greater becomes the reward of the work in the increasing number of those who join for the purpose of helping the workers, dare I

say it, with their contributions to enable them to do more. In this matter I can myself speak feelingly, for without the contributions so willingly given to the Meteorological Section, it would have been impossible to continue the rainfall work. All honour, therefore, I say, to those who contribute to the funds of the Society to enable those who are willing to work to do the work they have set for themselves, without anxiety as to how it is to be paid for.

One of the greatest advantages which a natural history society possesses over the University Extension Lectures and the new technical schools and colleges is the organization of excursions to neighbouring places of interest. These excursions have always been a great feature with natural history societies, and their usefulness is universally acknowledged. They are usually undertaken by the different sections for the purpose of studying the features of the country appealing to the members of the section; and there are also general excursions open to all the members without distinction. It has always seemed to me a great pity that a short paper detailing the results of each excursion is not included in the 'Transactions.' Such papers would be extremely valuable after a time, for as the excursions do not take place to the same spot every year, a comparison of the changes which have taken place since the last excursion should prove of very great value. Such papers would show the appearance and disappearance of geological sections, of plants, of insects, of springs, of old buildings, and other interesting features of the district. The value of these accounts would be greatly enhanced if they could be illustrated by our photographers. The excursions are in charge of some member, who is supposed to have gone over the ground beforehand, and to be able to point out to the persons attending the points of interest to be noted. How much more interested the persons attending would be, if the member conducting the excursion could have had a paper in his hand showing what was observed on a previous occasion. but which has now been altered, or has wholly disappeared. I am aware that some short, may I say very short, accounts of the excursions appear in the reports made by the different sections to the President, but these short reports cannot, as you are all aware, quite convey what would very naturally be more amplified if put in the form of a paper.

I must now conclude my remarks, which I fear are rather dry and wearisome, with the hope that, whether they may be considered right or wrong, they may at least be productive of some ideas which will lead to the rehabilitation of such societies as have become extinct, and to the increase of the prosperity of our own Society, in which we are all so deeply interested.

British Association.

Report of the Conference of Delegates of Corresponding Societies at Cambridge, August, 1904.

(Read Nov. 15th, 1904.)

Following the direction given at the last meeting of delegates at Southport, 1903, reported in the last issue of our 'Proceedings,' 1903–4, p. x, an Organizing Committee was formed from members present to endeavour to discover what local scientific work could be best done by the separate societies who were represented at the Conference. There were three or four reports only made, leaving the evidence that little interest had been taken in this recommendation of the meeting. On the subject of higher education, strongly recommended, little action had been taken.

The proposition of the desirability that local museums for natural history, antiquarian, and geological collections should be made was again pressed forward, conversationally.

It was proposed, and supported, that it is desirable that kindred scientific societies should be associated with the British Association Corresponding Societies, although such societies should *not* publish reports of their proceedings if the funds of these societies were devoted to the formation of museums or other important scientific work.

The Chairman (Principal Griffiths, of Cardiff) suggested that it is very desirable that a general journal of the work done by the Corresponding Societies should be published monthly.

He proposed that a fund might be formed by the members of the Corresponding Societies at the rate of five shillings for every fifty members in the separate societies. It was suggested that this journal would correlate the work of the several societies, and give direction for concerted action.

The matter was left open for consideration.

One objection made was that the cost of forming a museum absorbed all the spare funds of many societies, and that few societies could afford such a subscription as that mentioned.

A long discussion was taken upon the desirability of reports of proceedings of all learned societies being printed of a uniform size, a principle said to be adopted in U.S.A. The size that the Chairman selected as the most appropriate was that of our own 'Proceedings.'

Wm. F. Stanley.

Summary of Proceedings.

Excursions.

January 13*th.*—Woldingham and the Bourne. Conductor, Mr. W. Whitaker, F.R.S.

April 16*th.*—Banstead Wood. Conductor, Mr. W. Whitaker, F.R.S.

April 18*th.*—New Cross Gate. Conductor, Mr. N. F. Robarts, F.G.S.

April 30*th.*—Kew Gardens. Conductor, Mr. H. T. Mennell, F.L.S.

May 14*th.*—Beddington Caves and Subway. Conductor, Mr. T. K. F. Page.

On Saturday, May 14th, by the kind permission of Mr. Trollope, about thirty members of the Society inspected the sand caves close by the Plough Inn, Beddington Lane. They are cut into the Thanet sand deposit which forms the hill on which is placed the new cemetery of Beddington and Wallington. The larger of the two caves consists of a tunnel some ten feet or so in diameter, whose main branch runs some three hundred feet or so into the hill. They are apparently of artificial origin, and it has been suggested that this tunnel formed part of a passage, largely subterranean, which connected a Roman villa situated on the flat land, now occupied by the Croydon sewage farm, with the Roman fortified camp of Noviomagus placed on the Woodcote Hill, such passage being intended for use in time of danger when the dwellers on the plain would desire to seek the greater safety of the military camp on the uplands.

After leaving the caves, the party paid short visits to the cutting in Sandy Lane and to the Almshouses in Bute Road; and then, at the kind invitation of the President, took tea in his garden at Wallington, and examined with respect and awe the numerous scientific contrivances which he has in use there to catch and record the fleeting vagaries of the English weather.

May 19*th.*—Botanical. Mr. Lloyd's Garden, Coombe Wood. Conductor, Dr. Franklin Parsons, F.G.S.

May 23*rd*, Whit Monday (whole day).—Holmwood, Leith Hill, Wotton, and Dorking. Conductor, the President.

This excursion was favoured by good weather, and a good number of members attended. On arriving at Holmwood Station the party went across fields to Anstiebury, the site of an old Roman camp, the traces of which are clearly defined. On the way some water was passed, but all attempts to obtain Mollusca were in vain. From Holmwood to the borders of Leith Hill past Coldharbour the route lay over the Wealden Beds, but on passing through the latter place the change to the Lower Greensand (Hythe) Beds was apparent. Some of the party went up Leith Hill by the more direct route from Coldharbour, so as to enjoy the burst of view obtainable over Surrey and Sussex by approaching the summit from the high ground to the north, while others followed the road round through the plantation underneath the summit. The rhododendrons were well out in flower, and several yellow azaleas were seen. After mounting the hill to the foot of the tower and having lunch, the route through the wood to Friday Street was taken; and on the way several shallow pits, dug to obtain the hard silicious bands of stone for road mending, were seen. The road led through Friday Street, along by the artificially maintained stream to Wotton, where, by kind permission of Mr. John Evelyn, a visit was paid to the picture gallery and museum containing the MS. of the famous Diary and Evelyn's 'Sylvia'; also to the Rose Garden and Temple. From Wotton the road was taken to Dorking through Westcott, where tea was had. The route covered one of the most picturesque and varied parts of Surrey.

June 4th.—Grays, Essex, and Deneholes Conductor, Dr. H. C. Male, B.Sc.

On June 4th a visit was made to these well-known deneholes. The day was fortunately fine, and fourteen members joined the excursion.

On arriving at Grays Station, a walk of a mile and a half north-east brought the party to Hangman's Wood, where, in the space of a few acres, some seventy of these ancient pits are to be found.

Mr. Jonathan Seabrooke, of Grays, had kindly made all arrangements for our visit, and had provided men, windlass, ropes, candles, &c., to allow of our descending and seeing the pits.

The bottom of the pits is about eighty feet from the surface. They are excavated in the chalk, which is here covered by about fifty feet of Thanet sand, and above this by some six feet of gravel, equivalent to that of Dartford Heath.

Most of the shafts leading to these pits have now fallen in, only some four or five remaining open, the most accessible being selected for our descent.

Each complete denehole consists of a central chamber some sixteen to eighteen feet in height, which branches out into six other chambers, arranged in a double trefoil manner, the floor from end to end in some instances attaining seventy feet in length. Though originally distinct, each denehole communicating with the surface by a separate shaft, the partitions between neighbouring deneholes have in many cases been opened up, so that a number of adjoining chambers can be visited from the one shaft.

Mr. T. V. Holmes, a former President of the Essex Field Club, who with Mr. W. Cole made an extensive exploration of these pits in 1884, and again in 1887, was kind enough to accompany the party. Mr. Holmes explained the position and extent of the excavations, and their probable use as store-houses or places of refuge, and gave reasons against their being simply ancient chalk-pits or flint workings, as has been from time to time asserted. Their age is uncertain, though it is probable, as their name suggests, that they were used as shelters in the time of the Danish invasions in the eighth and ninth centuries. They are possibly, however, of a much earlier date, tradition taking them back to Roman or Pre-Roman times.

After spending a couple of hours in exploring the pits, the members were invited by Mr. Seabrooke to tea at his house, and the remaining time was spent in rambling about his garden and interesting grounds.

A vote of thanks to Mr. and Mrs. Seabrooke was proposed by Mr. Moore for their kindness and hospitality, and the members returned to town after a pleasant day.

June 16*th*.—Botanical. Farthing Downs.

July 16*th*.—Hayes, Keston, and Holwood Park. Conductor, Dr. Franklin Parsons, F.G.S.

July 21*st*.—Botanical. Hayes Common. Conductor, Dr. Franklin Parsons, F.G.S.

August 1*st*, Bank Holiday (whole day).—Wrotham, for Ightham Mote and Tonbridge. Conductor, Mr. G. W. Moore.

As on a previous excursion to this neighbourhood, train was taken from Beckenham Junction to Wrotham, whence the party, to the number of about ten, walked to Ightham, visiting Ightham Church on the way. This church is old, dating from the twelfth century, and very interesting, but not much time was available. It contains several old brasses. Passing through Ightham village, the route followed was through Ivy Hatch, whence the road descended through an exceedingly pretty high banked lane by the side of the gardens of the Mote to the entrance. Permission had been obtained from T. C. Collyer Fergusson, Esq., to visit the house, and though there was not much time, owing to the gardener who showed the party round having to attend a local flower show, the place was found exceedingly interesting.

The house is probably the best remaining example of one of the old moated and partially fortified houses formerly existing in the country. From all accounts the original building dates back to just before 1200, and some remains of this are found in the offices. Originally built by Sir Ivo de Haut, the house passed later into the hands of Sir Robt. Brackenbury, but was restored to the De Haut family by Henry VII.

From the Mote the party went to Shipbourne, where tea was had, and thence through a pleasant woodland and field route to Tonbridge.

September 17*th.*—Fungus foray.

In addition to the above, some special excursions subsequently arranged by the Geological Section were also made, *viz.* June 20th and 24th, July 27th, and November 5th, particulars of which will be found in the Geological Section Report.

Evening Meetings.

Feb. 13*th.*—Reading of the Meteorological and Botanical Committees' Reports.

March 15*th.*—"A Chat about Surrey Churches," by Dr. J. M. Hobson, B.Sc.

April 19*th.*—"Note on the New Cross Cutting, L.B. & S.C.R.," by Mr. N. F. Robarts, F.G.S. (See Trans., Art. 12.)
Exhibition of lantern views—"A Trip to Switzerland," by Mr. C. L. Faunthorpe.

May 17*th.*—"The Croydon Bourne-Flows," by Mr. Baldwin Latham, M.I.C.E., F.G.S. (This paper was published in the 'Transactions' for 1903.)

Sept. 20*th.*—Vacation notes; and exhibition of specimens with lantern and the polariscope presented by the President, Mr. F. Campbell-Bayard, F.R.Met.Soc. (See Trans., Art. 13.)

Oct. 18*th.*—"Description of some Fossils from a Croydon Garden," by Dr. G. J. Hinde, F.G.S. (See Trans., Art. 15.)
"Some Surrey Wells," fourth contribution, by Mr. W. Whitaker, F.R.S. (See Trans., Art. 14.)

Nov. 15*th.*—Report of British Association Meeting at Southport, by Mr. W. F. Stanley, F.G.S. (See 'Proceedings,' p. xlv.)
Notes on "Bermondsey Abbey" (illustrated by lantern-slides), by Mr. N. F. Robarts, F.G.S. (See Trans., Art. 16.)

Dec. 20*th.*—Paper on the "Economy of Growing Canadian Poplars on Waste Lands for the Manufacture of Paper," by Mr. W. F. Stanley, F.G.S. (See Trans., Art. 17.)
"Notes on a Section of Woolwich and Reading Beds, New Cross Gate," by Mr. N. F. Robarts, F.G.S. (See Trans., Art. 18.)
"Day Darkness in the City, 1897–1904," by Mr. J. E. Clark, B.A., B.Sc.

Reports of Sections for 1904.

Botanical Committee.

The Botanical Committee during 1904 have continued the investigation of the flora of the commons near Croydon, have exhibited botanical specimens at the Society's ordinary meetings, and added specimens to the herbarium. A joint meeting with the Microscopical Section has been held, and excursions have been made on Saturday afternoons and Thursday evenings.

Taking the first of these subjects:—A few additions have been made during the year to the lists of the flora of the commons near Croydon, the most notable being the maiden pink (*Dianthus deltoides*) on Shirley Hills—an old record believed to have been lost, but still present in small quantity; and *Rosa spinosissima*, reported by Mr. J. E. Clark, from Coxley Plantation, Riddlesdown, very near to an old recorded but lost locality for the plant. The numbers at present stand:—

Hayes and West Wickham Commons	342	species.
Keston Common	277	,,
Shirley Hills	184	,,
Croham Hurst	255	,,
Mitcham Common	461	,,
Riddlesdown	101	,,
Worms Heath	52	,,
Farthing Down	107	,,

With regard to the joint meeting of the Botanical and Microscopical Sections, it was felt to be a decided success, which should be repeated this year. It was held on Thursday, March 24th. An address on "Mosses" was given by Dr. Parsons. Living, dried, and microscopical specimens were shown by the lecturer and members of both sections.

The Saturday afternoon excursions were held as under:—

April 30th to Kew Gardens.

July 16th to Keston and Holwood.

September 17th to Ballard Lane and Addington Hills. Fungus Foray.

The first Saturday excursion was to Kew on April 30th, and was under the direction of Mr. Henry T. Mennell. The day was fine, and the attendance very good. There is nothing very fresh to report with regard to this well-known but always freshly interesting resort. The Alpine Garden naturally claimed our first and special attention. This and the herbaceous ground near to it appeal to the horticulturist and all interested in their own gardens as much as to the botanist. The house containing the choicer alpines, not planted out, was gay with many beautiful species of primulas, gentians, &c. The house devoted to the carnivorous plants, our native representatives of which are the sundews, or *Droseræ*, also claimed special attention, and the rest of the time was spent in the pleasure grounds and wilder parts of the Gardens.

The second Saturday excursion was to Keston and Holwood Park on July 16th. *Salvia verticillata*, an introduced species resembling in foliage the native *S. verbenaca*, was found on a roadside bank by Hayes Common. In Colyer's Wood, between Hayes and Keston—actually in Bromley parish—where the caper-spurge, *Euphorbia Lathyris*, had occurred in some plenty in previous years, only dead stems of last year were found, but young seedlings of this curious plant were seen in the adjoining potato field, where also later in the year the thornapple (*Datura Stramonium*), another plant formerly cultivated, was found. In the wood on the other side of the road—Padmall's Wood, in Keston parish—the lily of the valley was found, and it was also abundant in Holwood Park. The lesser skullcap, *Scutellaria minor*, also grew in Padmall's Wood. In the ponds in Holwood Park and on their borders a number of aquatic and moisture-loving plants and several species of ferns grew in luxuriance—*e. g.* the white and yellow water-lilies, the bog-bean, *Typha angustifolia*, *Osmunda regalis*, &c.; these have no doubt been planted where they now are, but some of them may be the descendants of plants formerly native in the neighbourhood, the *Osmunda* being mentioned in old records at Keston Heath and Hayes Common. Several notable trees were seen to which names have been given; thus a large beech tree with twelve trunks springing from one base is called the "Twelve Apostles," and two ancient oaks bear the names of "Pitt's Oak" and "Wilberforce's Oak." Another well-known object is a yew and an oak tree, the trunks of which have completely coalesced.

The third Saturday excursion, usually known as the fungus foray, took place on Sept. 17th. The route taken was by Ballard's Lane to Shirley Hills, and fifty species were collected and identified, a larger number than on any previous occasion. Among the more noteworthy species were:—*Agaricus* (*Tricholoma*) *humilis*, *A.* (*Collybia*) *confluens*, *A.* (*C.*) *dryophilus*, *A.* (*C.*) *protractus*, *A.* (*Mycena*) *filopes*, *A.* (*M.*) *tenerrimus*, *A.* (*Galera*) *embolus*, *A.* (*Psathyrella*) *atomatus*, *Paxillus atrotomentosus*, *Gomphidius viscidus*, *Boletus aurantiformis* (so named at Kew), *Polyporus chioneus*, *Arcyria punicea*.

The Thursday evening excursions were as under:—

On May 19th, under the leadership of Dr. Parsons, a visit was paid to the Rock Garden of Coombe Wood, Coombe Road, by the kind invitation of Mr. Arthur Lloyd, who conducted the party over it. The extremely skilful imitation of natural rockwork, and the great success with which it is laid out to suit the needs of so many rare and beautiful alpine and other plants, were much admired. The free flowering of some of these plants, generally very shy in cultivation, is very noticeable. The beautiful *Gentiana verna* is an example of this, growing in large patches covered with its brilliant blue flowers.

The second Thursday evening excursion was on June 16th to Farthing Down, conducted by Mr. Jas. Ed. Clark, B.A., B.Sc. Starting about 6.15 from Coulsdon Station, a party of twenty-eight first followed the hedge which forms the north-eastern boundary of the common land. It was noted that most of the fine yews had been appropriated to the private side of the barbed wire fence, erected this last winter along the hedge above the first field. Beyond this the path running along the lower side of the hedge was followed, the hedge agreeably tempering the strong wind, which elsewhere was rather too obtrusive on what in other respects was an almost perfect sunny summer evening. Our botanical finds included some very fine patches of the compact deep-blue milk-wort (*Polygala calcarea*), census number 18. Ripe wild strawberries were also abundant. During the ramble at the further end no fewer than seven orchids were found: tway-blade, spotted, pyramid (in bud), fragrant, butterfly, and fly. The dropwort (*Spiræa filipendula*) was barely in bloom, but promised this year also to be unusually fine. The party returned over the top of the Down to Coulsdon Station, having spent a very enjoyable two hours in the ramble.

The following is a list of the plants observed and noted down by Dr. Parsons:—*Reseda lutea*, *Polygala vulgaris* (blue, pink, and white), *P. calcarea*, *Lychnis dioica*, *Linum catharticum*, *Ilex aquifolium*, *Euonymus europæus*, *Rhamnus catharticus*, *Anthyllis vulneraria*, *Hippocrepis comosa*, *Onobrychis viciæfolia*, *Spiræa filipendula*, *Pyrus Aria*, *Viburnum Lantana*, *Asperula odorata*, *Cnicus acaulis*, *Cichorium Intybus*, *Crepis taraxacifolia*, *Centaurea scabiosa*, *Primula acaulis* and *veris*, *Melampyrum pratense*, *Lamium maculatum*, *Plantago media*, *Euphorbia amygdaloides*, *Taxus baccata*, *Listera ovata*, *Orchis pyramidalis*, *O. maculata*, *Ophrys apifera*, *O. muscifera*, *Habenaria conopsea*, *H. chloroleuca*, *Carex Goodenovii*, *Briza media*, *Agaricus gambosus* (in large rings), *Æcidium crassum* (on buckthorn).

The third Thursday evening excursion was on July 21st, when a small party, under the guidance of Dr. Parsons, visited the gravel-pits in the valley near Hayes Station, in which a number of interesting plants are to be found. Some of these are such as are found native on dry gravelly and sandy soils, as *Hypericum humifusum*, *Malva moschata*, *Lepidium campestre*, *Jasione montana*, *Senecio sylvaticus*, *Scleranthus annuus*, and *Filago minima*; with a few damp-loving species, as *Ranunculus Flammula* and *Gnaphalum uliginosum*. Most of the finds, however, consisted of introduced species, garden escapes, and plants of cultivated ground; among these was the fuller's teasel (*Dipsacus Fullonum*), distinguished from the wild teasel by its glaucous lobed leaves and white flowers seated among strong hooked scales. On account of these hooked scales the heads are used by clothiers for raising the "nap" of the cloth. Other species were *Melilotus officinalis*, *Saponaria Vaccaria* (more plentiful than in 1903), *Erysimum cheiranthoides*, *Alyssum incanum*, *Lepidium ruderale*, *Lychnis Githago*, *Potentilla norvegica*, *Œnothera biennis*, *Erigeron canadensis*, *Senecio viscosus*, and some obvious garden escapes, as *Helianthus tuberosus* (Jerusalem artichoke), and *Nicotiana affinis*. Some of these were mentioned from the same locality in our report last year.

Some botanical notes were also made at the general excursions of the Society.

At the excursion to Leith Hill on Whit Monday, May 22nd, the ferns *Lastrea Filix-mas* and *L. dilatata*, *Athyrium filix-fœmina* and *Lomaria spicant* were fairly plentiful in the old camp, Anstiebury; *Ranunculus Lenormandi*, a form of water crowfoot commoner in the north than in the south of England, was found at Coldharbour; in the boggy ground above Friday Street grew the bog violet and the orange club-shaped fungus, *Mitrula paludosa*, parasitic on *Sphagnum* moss; and by the stream below Friday Street grew the golden saxifrage (*Chrysosplenium oppositifolium*), the peppermint (*Mentha piperita*), the monkey flower (*Mimulus luteus*)—these two no doubt escaped from gardens above; also *Œnanthe crocata*, and the moss *Rhyncostegium ruscifolium*.

In addition to the plants already mentioned, the following less common species have been observed in the neighbourhood during the past year:—

Helleborus viridis.—Pebblecombe Hill, Betchworth.
Galium anglicum.—Upwood, near Caterham.
Eupatorium cannabinum.—Green Wrythe Lane, Carshalton.
Ruscus aculeatus.—Hedge at West Wickham.
Carex strigosa.—Gatton Park. C. E. S.
Barbarea intermedia.—Roadside near Buckland. C. E. S.
Salvia pratensis.—Another plant on Reigate Hill, looking native! R. M. Prideaux.
Cynoglossum montanum.—Ashstead! R. M. P.
Verbascum lychnitis.—Roadside near Cane Hill Asylum. C. E. S.
V. blattaria.—Roadside near Kingswood! J. B. Crosfield.
Carex tomentosa, L.—Near Chertsey! E. F. Shepherd.
(! = specimen seen by C. E. Salmon.)

The following fungi have been observed during the year:—

Agaricus (*Clitocybe*) *tabescens.*—Peteridge Wood, Reigate. (Verified at Kew. This species is not marked as British in Massee's 'European Agaricini.')
A. (*Omphalia*) *fibula.*—Mitcham Common.
A. (*Omphalia*) *umbelliferus.*—Leith Hill.
A. (*Omphalia*) *pyxidatus.*—Shirley Hills.
A. (*Phaliata*) *spectabilis.*—Keston Common and Botley Hill.
A. (*Flammula*) *sapineus.*—St. Paul's Cray Common.
A. (*Hypholoma*) *appendiculatus.*—Peteridge Wood, Reigate.
A. (*Hypholoma*) *lacrymabundus.*—Sanderstead.
A. (*Hypholoma*) *velutinus.*—Addington.
A. (*Panxolus*) *egregius.*—Croydon, on dung-heap. (Named at Kew. New county record.)
A. (*Psathyrella*) *disseminatus.*—Croydon, on damp plaster.
Coprinus niveus.—Carshalton, on horse-dung.
Cortinarius collinitus.—Addington Woods.
C. elatior.—Colyer's Wood, near Hayes.
C. tabularis.—Keston Common.
Paxillus panuoides.—Keston Common.
P. leptopus.—Keston Common.
Boletus piperatus.—Shirley Hills.
Thelephora terrestris.—Shirley Hills.
Peziza vesiculosa.—Mitcham Common.
P. aurantia.—Chelsham. (This species, which formerly occurred every autumn at Shirley and Coombe Lane, has not been seen there for some years past.)

The meteorology of the year 1904 in relation to vegetation has presented less notable features than some of its predecessors. The year has been a dry one, more than three inches below the average of the preceding ten years; January, February, May, and December being the only months in which the rainfall has been above the average. There was not, however, any drought severe enough to damage vegetation, though there was a very destructive fire on Hayes Common during the dry weather. The temperature of the year was about half a degree above the average.

January and February were wet and mild, but March was cold and dry. The dates of opening of the early spring flowers mentioned in the list of last year, except the very earliest, were some three or four weeks later than in the exceptionally forward spring of 1903. There was a good bloom on apple and other fruit trees, and an absence of destructive frosts in April and May, so that the fruit crop was exceptionally abundant. The hay crop was also abundant and well made. The corn crop was fair, but that of hops failed in many places.

May was wet, but June, July, and August were dry; July being a hot month. The autumn was dry and cold, with frequent fogs. The first frost to damage tender vegetation was on Oct. 15th; this affected especially the lower grounds, plants on higher levels being untouched. Fungi were fairly plentiful in September, but rather scarce later in the season. The number of plants remaining in flower was small; and had the annual soirée been held at the usual time in November, but a poor show only could have been made as compared with that in 1903.

Mr. J. E. Clark reports the following garden flowers in bloom on Christmas day (at Lile Garth, Ashburton Road):—Three roses, chrysanthemum, viola (yellow), Christmas rose, yellow jasmine, polyanthus, primrose, white knapweed. Ten species compared with nine last year.

Mr. Mennell reports that he never remembers such a dearth of flowers at Christmas in his garden on Park Hill. A few pansies, laurustinus very sparingly, were the only flowers actually out on Christmas day. The Christmas rose (*Helleborus niger*) followed a few days later, and the female flowers of the hazel on New Year's Day.

Mr. J. E. Clark reports that during December he noted the following wild plants in bloom:—*Ranunculus repens* (buttercup), *Veronica agrestis*, *Stellaria media* (chickweed), *Ulex europæus* (gorse), *Potentilla* sp. (cinquefoil), *Scabiosa* sp., *Matricaria inodora*, *Senecio vulgaris* (groundsel), *Bellis perennis* (daisy), *Taraxacum officinale* (dandelion), *Primula acaulis* (primrose), *Poa annua*.

The following circular, received from the South-Eastern Union of Scientific Societies, was referred to the Botanical Section:—

"Wild Plant Protection.

"The Council is desirous of eliciting information as to the danger of the extermination of wild flowering plants and ferns, and as to any means other than educational of checking the same. Will you therefore kindly bring the matter before your Society at an early date, and inform the Council whether in the opinion of your Society—

(1) Any particular species or groups which are in your district are in present danger of extermination.

(2) If so, from what cause.

(3) Whether your Society is of opinion that any legislative or other action should be taken to check such extermination."

In reply, the Section are of opinion that:—

(1) The species most in danger of extermination are—

a. The primrose.

b The *Orchidaceæ.*

c. The ferns, except *Pteris aquilina.*

(2) *a.* The primrose is in danger chiefly from hawkers, who dig the plants up for sale. It has disappeared, or almost so, from accessible woods and places in the immediate neighbourhood of Croydon, though it still exists in woods from which the public are excluded.

b. The *Orchidaceæ* are endangered by the digging up of their roots by hawkers for sale, and by other persons, in the generally vain hope of getting them to grow in their gardens; and also occasionally by the destruction of their habitats. Thus *Aceras anthropophora* appears to have been eradicated at Box Hill; of the two stations in this neighbourhood for *Herminium Monorchis*, one at White Hill has been destroyed by building, and the other at Warlingham by extension of a chalk-pit. At Keston, the station for *Spiranthes autumnalis* is in danger from the making of a new street. (Other plants incur similar dangers of accidental extinction in a neighbourhood where building is so rapidly progressing as around Croydon; thus *Phyteuma orbiculare*, which grew in the same place with *Herminium Monorchis* at Warlingham, has disappeared with it; and *Sambucus Ebulus* is in danger of extinction through building operations at South Norwood. The breaking up of pasture into arable land, and the draining of wet places, are operations which cause the loss of wild plants in many districts, but are less operative in this neighbourhood.)

c. The ferns, other than the brake, are in this neighbourhood such a vanishing quantity as to be no longer an object to the hawker, though any chance specimens that may appear are speedily rooted out by the private collector to plant on his rockery. The following species appear to have been lost to the neighbourhood of Croydon during the past fifteen years:—

Lomaria Spicant.—A few small plants formerly in the side of a ditch at Shirley Hills, now gone.

Asplenium Trichomanes.—Formerly grew on a hedge-bank—a somewhat unusual situation—at Crofton Lane, Orpington; not seen for several years.

A. Ruta-muraria.—Formerly grew in some plenty on a wall at Addiscombe Road, Croydon; perished during a dry summer, owing to ivy having grown over the top of the wall, thus depriving it of its supply of moisture.

Scolopendrium vulgare.—In an old well at West Wickham; the lid of the well is now fastened down, and the plants will probably perish.

Lastrea dilatata.—Gone from the station at Addington mentioned last year.

Polypodium vulgare.—Formerly at Croham Hurst; not found recently.

(3) It is difficult to suggest any measures, beyond the preservation of commons and open spaces, for the protection of the disappearing members of our native flora, however much we may regret their loss. Building and other industrial operations cannot be stopped for their sake, and a strict watch against trespass is not to be expected where

only wild flowers and not game have to be protected, nor is it desirable that the nature-loving members of the public at large should be debarred from places to which they now have access on sufferance so long as they do not abuse their opportunities. It is unlikely that any measure like that for the protection of wild birds would be passed by Parliament.—E. F. Klaassen.

Microscopical Committee.

This Section has only held three meetings during 1903, as it was considered wiser not to have too many, in order that those held should have a chance of being well-attended. Two of these sectional meetings have again been joint, as it was felt that the Microscopical Section best fulfilled its mission by acting chiefly as a helper to the other Sections.

On Wednesday, February 18th, a meeting of the Section was held, when Mr. Murton Holmes gave a short explanation of polarised light. Numerous specimens of crystals and other slides suitable for the polariscope were shown.

On Thursday, March 24th, a joint meeting of the Botanical and Microscopical Sections took place, when Dr. Franklin Parsons gave a most interesting address on "Mosses," illustrated by a very large number of living specimens, and also by microscopic slides.

On Tuesday, November 18th, there was a joint meeting of the Geological and Microscopical Sections, when a number of microscopes, with polariscopes, were on view, and a great many beautiful specimens, both mineralogical and palæontological, were shown under polarised light.

Geological Committee.

The Committee beg to report that the meetings of the Section have been well attended, an average of ten members and visitors having been present at the nine meetings which have been held, whilst at the committee meetings, nine in number, an average of six members have been present.

Seven excursions have been held, as follows :—

January 13*th*.—To Woldingham, under the guidance of Mr. W. Whitaker, F.R.S., for the purpose of inspecting the flow of the Bourne.

The party numbered about fifteen. The Bourne was found to commence in the field below Bughill Farm, and to be flowing over the road under the viaduct.

At Wapses Lodge the water had risen to a considerable height above the culvert.

At Kenley gasometer the water was nearly over the footpath, and a strong stream was flowing through the garden of the "Rose and Crown" Inn.

Several photographs of the water and stream were taken. The party walked down to the trams at Purley.

April 16*th*.—To Chipstead, under the guidance of Mr. W. Whitaker, F.R.S.

The party, numbering twenty-four, met at Chipstead Station and walked round Banstead Wood.

At the summit of the hill the conductor gave a short description of the local geology, and Mr. Robarts called attention to the probable British trackway from Chipstead to Woodcote.

The gravels at the top of the hill were examined, and found to consist of large, almost unrolled flints, pebbles (tertiary ?), ironstone, and chert, in a clayey matrix. There was no sign of current bedding.

The party then divided, some going to visit a supposed denehole, under the guidance of Mr. H. C. Collyer, whilst the remainder of the party completed the original route, walking down the valley to Stoat's Nest Station, examining the gravels in the valley, which were found to consist of flints more rolled than those of Banstead Wood, with a smaller percentage of chert, pebbles (tertiary ?) and ironstone.

April 18th.—To New Cross Gate, to see a section in the London County Council's Tramway Yard, under the guidance of Mr. N. F. Robarts, F.G.S.

Six members were present, who examined the section, which commenced in sands below the Paludina bed of the Woolwich and Reading Beds, or else that bed had thinned out between the station and the L. B. & S. C. R. cutting about six hundred yards to the south-east, and south of New Cross Station. The beds were exposed down to the pebble-bed (Woolwich and Reading series), but the bottom of that bed was not shown, although it had been passed through to the Thanet Sand in a trial boring.

June 20th.—To Mr. George Young's Gravel Pit in Sydenham Road, Croydon.

Mr. W. Whitaker, F.R.S., conducted the party, consisting of ten members. Mr. W. Bruce Bannerman, F.G.S., to whom the pit belonged, was also present, and gave information.

The section showed 1 ft. 6 in. to 2 ft. soil, above about 15 ft. of gravel and 1 ft. 6 in. of sand resting on London Clay, from which last were taken some iron pyrites and pyritised wood. In the gravel a quartzite pebble was found by Dr. Hinde. The gravel was formed almost entirely of subangular flints and a few "Blackheath" pebbles, but no sandstone, ironstone, or other tertiary remains, except the quartzite, were noticed.

June 24th.—To Messrs. Hall and Co.'s gravel pits at Beddington Lane, under the guidance of Mr. W. Whitaker, F.R.S.

Seven members were present, who examined the gravels.

July 27th.—To the grounds of Earlswood Asylum, under the guidance of Dr. H. Franklin Parsons, F.G.S., for the purpose of seeing the limestone of the Wealden Beds containing fossils. The stone was not seen *in situ*, but lay about in heaps. It was found to contain *Paludina* and *Unio.*

Four members and a friend were present.

November 5th.—To Honor Oak Hill, under the leadership of Mr. W. Whitaker, F.R.S. Seven members and friends were present.

The party walked over the hill and noted the landslip in London Clay, almost upon the watershed forming the boundary between Surrey and Kent. The slip showed a vertical face of about twelve feet, and extended for about three hundred yards. A small remnant of the gravel once covering the district was noticed on the top of the hill.

Owing to the paucity of new sections opened during the year, there has been less to report than usual, but whilst new drains were being made in Plough Lane the Marsupites zone in the Chalk was discovered, which had not previously been noted in this district.

A few geological photographs have been added to the Society's geological album.

Some photographs have been sent to the Committee of the British Association for recording geological sections.

The thanks of the Committee are tendered to the following gentlemen, for permission to visit various sections at the excursions:—Mr. E. Riley, Consulting Architect, London County Council; Mr. George Young; Mr. W. B. Bannerman, F.G.S.; and Mr. H. Hall.

Museum Committee, 1904.

On behalf of the Museum Committee I beg to report, that in accordance with the Resolution of the Council, dated January 14th, 1904, "That the Museum Committee be empowered to lend specimens from the Carpenter Collection for educational purposes, for a term not exceeding twelve months," the Committee have offered loans of specimens to the Croydon Education Committee, to the School of the Convent of the Ladies of Mary, and to North Park College, which offers have been gratefully accepted.

A few specimens have been lent to North Park College, but arrangements have not yet been completed for handing specimens to the Education Committee, or the Convent School, owing to the large amount of cleansing which will be necessary, before they are delivered. It is hoped that arrangements for this will shortly be completed.

The Loan Museum still appears to answer the intention of the Society by attracting the attention of visitors to the Free Library.

The number of specimens received during the year has been eighty-two, exclusive of about one hundred Roman coins found in Croydon, lent by the Croydon County Council, the total thus being in excess of the previous year.

Loans of Archæological and Zoological objects suitable for exhibition are still much wanted.

The thanks of the Committee are tendered to the following members of the Society, who have made loans during the year:—Messrs. J. H. Baldock, F. Churchill, H. D. Gower, Miss Gwatkin, Messrs. W. G. Hinde, W. M. Holmes, E. A. Martin, F.G.S.; H. Franklin Parsons, M.D., F.G.S.; N. F. Robarts, F.G.S.; also to the Croydon County Council, Messrs. D. A. McAdam, A. J. Potter, and C. Morgan Smith, who are not members.—N. F. Robarts, *Hon. Sec.*

Members Elected, 1904.

January 19*th.*—Madame F. du Pont, Madame Ediltrude (M. E. Everitt), Miss Ivy L. Clayforth (Junior), Miss E. Baird Johnstone, Stanley E. Hall, George O. Silverlock.

March 15*th.*—Peter Anderson, F. E. J. Stone, Miss Dorothy F. Silverlock.

April 19*th.*—J. Lewis Vincent.

May 17*th.*—T. F. Clarke, T. C. L. Wootton (Junior).

September 20*th.*—Alfred Clark, B.A., William Willox, M.A., M.I.C.E.

December 15*th.*—J. E. Bredall, John Morgan, Miss E. A. Bredall, Miss Annie J. Hinde (Junior).

Donations to the Library, 1904.

From Individuals.—List of British non-Marine Mollusca, Mr. Gower. Nature Notes, Mr. Whitaker. Notes on Westerness Plants and Notes on *Epilobium collinum*, Mr. Salmon. Photographic Lenses, Mr. Baldock. Account of some of the Meteorological Work of the late Jas. Glaisher, F.R.S., Mr. Campbell-Bayard.

From Societies.—The Photographic Journal; Journal of the Royal Microscopical Society; Journal of the Quekett Microscopical Club; Proceedings of the Scottish Microscopical Society; Journal of the Northants Natural History Society and Field Club; The Rochester Naturalist; Proceedings of the Academy of Natural Sciences, Philadelphia; Report of the Fernley Observatory, Southport; Report of the Hastings and St. Leonards Natural History Society; Transactions of the West Kent Natural History, Microscopical, and Photographic Society; Report of the Missouri Botanical Garden; Report of the British Association Meeting, Southport; Transactions of the Manchester Microscopical Society; Transactions of the Norfolk and Norwich Naturalists' Society; History of the Berwickshire Naturalists' Club; Report of the Commons and Footpaths Preservation Society; Report of the Kent and Surrey Commons and Footpaths Preservation Society; Report of the Peterborough Natural History, Scientific, and Archæological Society; Journal of the Manchester Geographical Society; Report of the Yorkshire Philosophical Society.

From Publishers.—The British Journal of Photography; The Amateur Photographer; The Bromide Monthly; The Magic Lantern Journal.

Croydon Natural History and Scientific Society.—Receipts and Expenditure for the Year ending 31st December, 1904.

Receipts.

1904.	£	s.	d.	£	s.	d.
December 31.						
To Subscriptions (1903) received 1904	3	10	0			
,, (1904) ,, 1903	6	2	6			
,, (1904) ,, 1904	87	17	6			
				97	10	0
Donations and Sales on account of Meteorological Section—						
F. Campbell-Bayard, Esq. ...	5	5	0			
Baldwin Latham, Esq. ...	5	5	0			
J. Edmund Clarke, Esq. ...	0	10	0			
Honble. N. Napier	0	2	6			
C. Beadle, Esq.	0	5	0			
G. Phare, Esq.	0	2	6			
Lt.-Col. Kidd	0	10	0			
Dr. G. Bower	0	10	0			
Dr. J. H. Crocker	0	5	0			
W. W. Wagstaffe, Esq. ...	0	2	6			
Underground Water Preservation Association	0	10	0			
Croydon Corporation... ...	0	10	0			
Croydon Rural District Council	0	10	0			
Sutton Waterworks	0	10	0			
Metropolitan Water Board ...	0	10	0			
				15	7	6
Sale of Transactions and Papers				0	7	0
Rent of Lockers in Dark Room				0	7	6
One year's Dividend on Life Membership Investment ...				0	5	4
Balance due Treasurer				12	1	8

Payments.

1904.	£	s.	d.	£	s.	d.
January 1.						
By Balance due Treasurer				2	13	5
Rent of Club Room				10	0	0
Hire of Rooms for Meetings				4	10	0
Cost of Transactions				36	8	6
Fire Insurance paid County Fire Office				1	13	9
Printing Rainfall Returns, Dec. 1903, to Nov. 1904				27	19	0
Photographic Section—						
Rent of Dark Room	10	0	0			
Gas for Lectures, Postages, &c. ...	2	10	5			
Affiliation Fee to Royal Photographic Society	1	1	0			
				13	11	5
Botanical Section, Postages, &c. ...				0	2	3
Geological ,, ,, ...				1	15	5
Printing Monthly Circular and Postages on same				10	13	8
Postages on Transactions				2	19	3
Sec. & Treas. Stationery & Post. Account				5	13	4
Lecture Account—						
Paid A. Lewis, Esq.	3	3	0			
,, Hire of Rooms, and Sundry Expenses	6	0	10			
	9	3	10			
Less Sale of Tickets, &c. £1 14 10						
Received per F. C.-Bayard, Esq., for balance ... 7 9 0—	9	3	10			
Re-fixing & Re-painting Notice Board at Institution				0	8	0
Subs. to—S.E. Union of Scientific Socs.	0	10	0			
,, Com. & Footpaths Preser. Soc.	0	5	0			
,, Photographic Survey of Surrey	0	5	0			
,, Soc. for the Protection of Birds	0	5	0—	1	5	0
Assistant Secretary				5	0	0
Gratuities				1	6	0

SPECIAL FUND ACCOUNT.

£186 9s. 0d. CONSOLS.

	£	s.	d.					£	s.	d.
1904. January 1.					1904. December 31.					
To Balance	30	11	7		By Paid County Fire Office on Museum Case ...			0	2	6
Dividend, January	1	3	3		,, Alterations to Case			0	13	6
,, April	1	3	3		,, Curator's Expenses			0	3	0
,, July	1	3	3		,, Repairs to Sink in Dark Room			0	3	0
,, October	1	3	3		Balance			34	2	7
	£35	4	7					£35	4	7

BALANCE SHEET.

	£	s.	d.			£	s.	d.	£	s.	d.
January 1, 1905.					January 1, 1905.						
To Balance, Special Account	34	2	7		By Balance due Treasurer				12	1	8
Subscriptions for 1905, paid in advance ...	6	0	0		Printing Mr. Latham's paper, "The Bourne Flow," which is chargeable to 1905				6	6	0
					Cash at Bank	20	13	8			
					,, with Treasurer	1	1	3			
									21	14	11
	£40	2	7						£40	2	7

We, the undersigned, having examined the books of the above Society, also accounts and vouchers relating thereto, certify the above are properly drawn up so as to exhibit the true and correct view of the Society's affairs.

F. J. TOWNEND, *Hon. Treasurer.*

6th January, 1905.

W. L. MOORE,
A. MALDEN, } *Hon. Auditors.*

BRONZE PALSTAVE, WARLINGHAM, 1904.

To face p. 59.

TRANSACTIONS

OF

THE CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY.

1904–1905.

11.—Note on Bronze Palstave found at Warlingham.

By C. H. Goodman.

(Read April 19th, 1904.)

In December, 1900, a paper was read before this Society by Mr. Robarts, in which he described some bronze implements found at Beddlestead, in the parish of Chelsham. We have now to put on record another find from the same parish, about a mile eastward of the former position. The Oldhaven Beds on Worms Heath are dug for gravel for local use, and while a man named Levings was engaged in this work he found a bronze palstave under a bed of peat some four inches in thickness. It is $5\frac{3}{4}$ in. long, and weighs 12 oz. The cutting edge is $2\frac{1}{2}$ in. in diameter, with a well-marked central rib, the blade being somewhat strongly pitted. This implement represents an earlier period in the evolution of the axe than those found at Beddlestead, as the latter were socketed and furnished with the well-known loop. It is being preserved by Mr. Lockton, of Warlingham.

12.—Notes on the New Cross Cutting (L.B. & S.C.R.).

By N. F. Robarts, F.G.S.

(Read April 19th, 1904.)

The work of widening this cutting, which has been going on for upwards of a year, has given opportunity for the re-examination of the section which was exposed about sixty years since, when the term Plastic Clay embraced the beds since more specifically divided into the Blackheath or Oldhaven and the Woolwich and Reading Beds. A few notes therefore on the section recently exposed, with a slightly increased list of fossils, may be of interest.

By the courtesy of Mr. Charles L. Morgan, Chief Engineer of the L.B. & S.C.R., I was able, during the summer of last year, to pay frequent visits to the cutting both before and after the members of our Society visited it on 18th April, 1903.

The unfortunately wet season, however, made any examination of the section almost impossible, at times for weeks together, London Clay and Plastic Clay having most undesirable qualities in continuous wet weather. Not only was the face of the section frequently obscured by slips, but the extraction of fossils was impossible unless the clay was moderately dry. Those of our members who have travelled upon the line must have noticed the frequent slips, which hindered the work, at times burying waggons and rails; whilst to all appearance the slips are likely to continue for a long time to come, a great part of the cutting which has been graded having already given way.

These slips are, however, small compared to that recorded by Mr. C. H. Gregory, which took place in 1841.* The line had then been open about four years, when on Nov. 2nd, in the course of about four hours, about 50,000 cubic yards of clay slipped from the western side of the cutting (the inner side of the curve of the road), and "overwhelmed the line of railway for a length of 120 yards, and a depth of 10 or 12 feet." By Nov. 18th both lines were cleared, but on Nov. 22nd both lines were again covered, and traffic was suspended until Dec. 23rd, clay having come forward on both sides of the cutting. On Jan. 7th, 1842, the west side again gave way, and, in spite of relays of men working unceasingly by day and night, it was not until after Feb. 10th that the trains ran through regularly.

* "On Railway Cuttings and Embankments, with an Account of some Slips in the London Clay, on the Line of the London and Croydon Railway," by C. H. Gregory. March 26th, 1844. Inst. of Civil Engineers, vol. iii. p. 135.

What the general manager of the Company would have to put up with if these slips were repeated in 1904, I am unable to conceive, though possibly the engineer would be equal to removing the obstacle more expeditiously than his predecessor.

I might point out that these great landslips followed a year of excessive rain. Our President informs me that 1841 was a very wet year, the rainfall at Greenwich being 33·26 in., and was only exceeded in 1852 and 1903.

The mass of clay was greater in 1841 than in 1903, the cutting then being far deeper and narrower than it has been since the great slip; but the effect of the heavy rains last year show the disposition of the clay to slide after very heavy rains. It was very noticeable last summer how the clay crept forward over the lower bed E, which never seemed to shift.

According to Mr. Gregory, the first slip "was materially assisted by the natural dip of the strata from west to east, and by the fact of the western slope being on the inside of the curve, thus leaving the slope less supported laterally." The following is the section given by Mr. Gregory, the depth of the original cutting at the centre line being about 75 ft., rising to 80 ft. on the western side:—

	FT.	IN.
Yellow clay.		
Blue clay .... 10 ft. to	15	0
Rolled flint shingle	1	10
Fine sand	0	3
Lignite	0	0¼
Fine sand	2	0
Ferruginous sand with fossils	0	4
Loose grey sand with fossils	0	8
Strong blue clay	0	10
Black clay and sand with fossils	0	9
Black dirty sand	0	4
Dark sand with fossils, oysters, &c.	0	6
Stone with fossils	0	6
Decomposed stone and sand with fossils	0	3
Plastic clay.		

The next published record of this cutting is that by Mr. Henry Warburton,* who received from Mr. Simms the following section:—

	FT.	IN.
London Clay, the lowest bed of which, from 10 to 15 ft. thick, is of a blue colour.		
Rolled flint pebbles	1	10
Fine fawn-coloured sand	0	3
Lignite	0	0¼

* "On the Occurrence of a Bed of Septaria, containing Fresh-water Shells, in the Series of Plastic Clay at New Cross, Kent" (Quart. Journ. Geol. Soc. 1845, p. 172).

	FT.	IN.
Fine fawn-coloured sand	2	0
Ferruginous sand with fragments of oyster-shells and Cerithia	0	4
Grey sand with fragments of Cerithia	0	8
Strong black clay	0	10
Black clay and sand with fragments of oysters and Cerithia	0	9
Black sand	0	4
Dark sand with oyster-shells	0	6
	7	6¼
Calcareous stone, with fresh-water shells	0	6
Sand and stone in a rotten state with oysters	0	3
	8	3¼

The shells recorded in addition to the above were *Paludina* and *Unio.*

It will be seen that Mr. Simms copied Mr. Gregory's section, merely verbally altering the description of some of the beds, and giving a few fossils.

Prestwich gives the section as follows* :—

	FEET.
London clay	40
Basement-bed London clay (flint pebbles in ochreous sand)	1 to 2
Yellow sand	2½
Clay and sand with shells occasionally	3
Band of fresh-water limestone (*Paludina*)	0½ to 1
Sand and shells	6
Clayey sand and shells	5

No further record of the section appears to have been published until Mr. Whitaker, in his memoir,† gave the sections published by Messrs. Gregory and Warburton, with some remarks of his own, as follows :—

		FT.	IN.
London Clay	Yellow clay.		
	Blue clay [with many and large pieces of selenite. The lower part laminated]	10 to 15	0
	Flint pebbles [basement bed]	1	10

* "On the Structure of the Strata between the London Clay and the Chalk," &c. (Quart. Journ. Geol. Soc. vol. x. p. 103).

† 'Memoirs of the Geological Survey of Great Britain,' vol. iv. part i. pp. 129–130.

		FT.	IN.
Woolwich Beds	Fine fawn-coloured sand	0	3
	Lignite	0	$0\frac{1}{4}$
	Fine fawn-coloured sand	2	0
	Ferruginous sand with fossils (*Ostrea, Cerithium*)	0	4
	Loose grey sand with fossils (*Cerithium*)	0	8
	Strong blue or black clay	0	10
	Black clay and sand with fossils (*Ostrea, Cerithium*)	0	9
	Black dirty sand	0	4
	Dark sand with fossils (oyster-shells, &c.)	0	6
	[Clayey] calcareous stone with fossils [*Paludina*-bed]	0	6
	Decomposed stone and sand with oyster-shells	0	3
	Plastic clay.		

I took a series of sections on different dates from March 26th to July 10th, the section often varying somewhat during the progress of the work, and according to the position north or south in the section.

The following may be regarded as a fairly representative section :—

A. London Clay	Yellow clay.	
B. Oldhaven Beds	Pebbles in yellow sand, —pebbles very large at base	1 to 2 ft.
C. Woolwich and Reading Beds	Loam and sand	18 in. to 2 ft.
,,	Shelly bed (*Cyrena*)	3 to 4 in.
D.	Clayey limestone (*Paludina*)	9 in.
E.	Glauconitic sandy clay	3 ft. 6 in. to 4 ft.
	Ostrea bed	7 to 9 in.
F.	Green clayey sand, pyritized wood	9 in.

By the kindness of Mr. E. T. Newton, F.R.S., I am enabled to give the following list of fossils which he has determined from specimens collected by himself and others, together with those in my collection, the horizon of same being indicated by the lettering of the section :—

B. *Cliona.*
Ostrea.
Cyrena.
Melania inquinata, Defr.
Odontaspes elegans (found on the surface, not *in situ*).
Pyritized wood.

C. *Cliona.*
Ostrea bellovacina, Lam.
Cyrena cuneiformis, Lon.
Unio subparallela ?, Edw.

D. *Unio subparallela.*
Scrobicularia Condamini, Morris.
Hydrobia Parkinsoni, ? Morris (*Stenothyra*).
Melanopsis buccinoidea, Fer.
Paludina lenta, Brand (*Vivipara*).
Pitharella Rickmanni.
Fish-bone.

E. *Cliona.*
Cyrena intermedia, Melville.
Modiola.
Ostrea bellovacina, Lam.
Cerithium funatum, Mant.
Hydrobia Parkinsoni, Morris (*Stenothyra*).
Melania inquinata, Defr.
Coprolite ?.

F. *Modiola Mitchelli*, Morris.
Ostrea sp.
Cerithium funatum, Mant.
Melania inquinata, Defr.

13.—Notes on the Polariscope presented by the President.

By J. H. Baldock, F.C.S.

(Read September 20th, 1904.)

With reference to the very beautiful present just made to the Society by its President, Mr. F. C.-Bayard, I have been asked to say a few words of explanation as to what polarized light is, and its application to the instrument before us, after which I shall, with the kind assistance of Mr. Gower, show you some of the extremely beautiful results to be obtained by the means of the lantern polariscope.

Most people who possess microscopes which are capable of producing polarizing effects, know that by doing certain things, with certain parts of the instrument, they are able to produce certain effects, but it is very probable that many do not know what happens to enable them to do this.

Distinction between Common and Polarized Light.—Every beam of *common light* appears to consist of an indefinite number of systems of waves, undulating in a determinate plane, always at right angles to the direction pursued by the ray. These waves vibrate in all azimuths around the course of the ray, but may be theoretically resolved into two component vibrations at right angles to each other. Thus, common light may be regarded as composed of two beams of light which are vibrating in planes at right angles to each other.

Polarized light differs from ordinary light in being produced by vibrations in a single plane only. Polarization once impressed on a beam of light continues permanent, whether the subsequent course of the ray is long or short, provided it continue in a *homogeneous* medium.

What is known as the "Nicol's Prism," composed of Iceland spar, calcite, or carbonate of calcium, as it is variously called, is a convenient means of obtaining a polarized beam of light, depending on the principles of double refraction and total internal reflection. It is constructed thus:—A rhombohedron of Iceland spar is bisected in the plane which passes through the obtuse angles; the two halves are then joined again, in the same position, by means of Canada balsam. The refractive index of Canada balsam, 1·549, is less than the ordinary index of Iceland spar, 1·654, but greater than its extraordinary index, 1·483. The section of the Iceland spar prism is cut in such a direction that the ordinarily refracted ray strikes the Canada balsam at an angle greater than its critical angle, and undergoes total internal reflection, while the extraordinary ray, striking the balsam at less than its critical angle, can traverse it. Hence, since the Nicol's prism allows only the extraordinary ray to pass, it may be used, like a tourmaline, either as a polarizer, or as an analyzer.

At this point it may be as well just to state what is meant by ordinary and extraordinary rays. All transparent crystals which do not belong to the regular or cubical system are doubly refracting; when a double refracting crystal, such as the one we are considering, *i.e.* Iceland spar, is placed over a dark dot on a piece of white paper, and looked through, not one dot but two are seen; and if the crystal is rotated, keeping the eye in the same line, one of these dots will appear to revolve round the other, the *ordinary image*, corresponding to the *ordinary ray*, being fixed; while the *extraordinary image*, corresponding to the *extraordinary ray*, describes a circle round it.

Unfortunately, there is now such a scarcity of crystals of Iceland spar, especially of any size and purity, that a perfect crystal of, say, 2 in., would cost £200 or £300, even if it could be obtained at all, which is doubtful. Opticians have therefore been obliged to resort to some other means for polarizing light. In the instrument before you, this has been obtained by means of a number of flat, thin, colourless glass plates, the last one at the back being made of black glass, or blackened, and the whole so arranged that the light from the condenser in the lantern falls on the plates at an angle of fifty-six degrees from the normal, this being what is called the polarizing angle. When, therefore, a ray of light encounters such a bundle, part of it is reflected, and this reflected light is in part polarized, With one plate polarization is only partial, but with ten or twelve plates polarization is tolerably complete.

There are two disadvantages to this form of polariscope, *i.e.* that the lantern has to be turned sideways consequent on the elbow; and the other is that the polarizer cannot be rotated; but these are not very serious objections.

We have now got polarized light, and, with the addition of a second polarizing arrangement called an analyser, which in this case, being much smaller, may be a Nicol's prism constructed as already described, our apparatus is complete.

When the polarizer and analyser are so arranged that the plane of polarization of the two coincides, the light which has passed through the polarizer, which is rather less than half the original light, passes through the analyser in the same plane with little further loss. But when the analyser is rotated around the axis of the beam of light, the plane polarized light which falls on it is resolved into two components, one parallel with, and the other at right angles to, the polarizing plane of the analysing Nicol, the former component passing, and the latter being arrested. As the angle of rotation is increased, the proportion of the latter component increases, and more and more light is arrested, until when the planes of polarization of the polarizer and analyser are at right angles to one another, the light is almost completely stopped, and the field becomes quite dark. Continuing the rotation beyond the right angle, the light gradually reappears. If, now, when the planes are at right angles to one another, we place between the polarizer and the analyser a transparent substance which has the optical property of rotating the plane of polarization, the polarized light which passes through this substance will have its plane of polarization so altered that a portion of it will be able to pass through the second or analysing prism, and will produce on the screen or in the microscope an image of the object, more or less bright, on a dark ground. A similar effect is produced if a doubly refracting substance is placed between the two prisms, the light being resolved into two components, one of which is able to pass.

Frequently, especially when the objects exhibited under the polariscope are thin sections, the images appear brightly coloured, the colours changing to the complementary hue when the analyser is rotated at right angles to its former position. These colours are due to what is called "interference," like the colours of thin films, as of a soap-bubble, though the mechanism producing them is different. In the thin film the light which is reflected from the deeper side of the film has to take a longer path than that reflected from the surface, hence it lags slightly behind, and if it does so to just such an extent that the vibrations in the retarded ray are moving in exactly the opposite direction to the corresponding ray with which it coincides, those particular waves are neutralized. Hence, as white light is made up of an indefinite number of series of waves of different frequencies, each corresponding to a particular colour, if one of these series of waves is cancelled out, the residual light will not be white, but of the colour complementary to that which has been cancelled out. In the case of polarized light a similar effect of colour is produced, owing to the circumstance that the light which emerges from the analyser after having passed through a doubly refracting object is composed of two portions which have travelled at slightly different rates of velocity, hence one portion lags behind another sufficiently to allow the waves of length corresponding to a particular colour to cancel one another, and the light appears of the complementary colour. In either case it is only when the thickness of the reflecting or doubly refracting medium is very small that the paths of the rays coincide with sufficient exactness to produce the interference effect. The colours of selenite films in the polariscope are thus produced. Selenite is a doubly refracting mineral which readily splits up into thin plates, a definite thickness of plates producing a definite pair of complementary colours.

Some curious and amusing slides were exhibited, in which plates of selenite producing appropriate colours had been arranged to form pictures, with leaves and flowers. In one slide a miller was changed into a sweep by the turning of the analyser.

14.—Some Surrey Wells. (Fourth Paper.)

By W. Whitaker, B.A., F.R.S.

(Read October 18th, 1904.)

The total number of recorded well-sections in Surrey was brought up to 302 in my last paper on the subject, published in the 'Transactions' for 1900. We have now thirty-eight more, two thirds of which are in the western part of the county; but one of these is practically a duplicate of a previously published section, so that the total is 339. Of these only three reach to the depth of 500 feet (at Purley, Battersea, and Dulwich), and only two are of special interest.

At Purley a boring has been carried through the Chalk and the Upper Greensand to the Gault, thus for the first time proving the depth to the Gault in that neighbourhood.

At Tatsfield a supply of water has been got for Limpsfield and Oxted by boring through the lower part of the Gault, the Folkestone Beds, the Sandgate Beds, and some way into the Hythe Beds. We have now a definite measurement of the Folkestone Beds, from top to bottom giving a thickness of 211 feet.

The figures for thicknesses and depths stand for feet, unless otherwise stated. Words referring to the classification of the beds, in square brackets, have been added by the writer.

Battersea. *Latchmere Road Baths. No. 2 Boring.* 1901.

Made and communicated by Messrs. A. C. Potter & Co.

40 feet of tubes, of 13 inches internal diameter, fixed into the London Clay, to shut out surface-water, and 260 feet of tubes of 10 inches internal diameter, 9 feet into the chalk.

		Thickness	Depth
Pit, in Made Ground		—	9
[River] gravel		15	24
[London Clay, ? 132 feet.]	Clay, with 6 inches of claystone at the base	$39\frac{1}{2}$	$63\frac{1}{2}$
	Loamy clay	30	$93\frac{1}{2}$
	Sandy clay	$15\frac{1}{2}$	109
	Blue clay, with claystone 129 to $129\frac{1}{2}$ feet down	39	148
	Sandy clay	3	151
	Basement-bed [?]. Conglomerate and shells	5	156

		Thickness	Depth
[Woolwich and Reading Beds, 57 feet.]	Clay and shells	4½	160½
	Mottled clays, brown, green, red, yellow and grey (7 beds)	24	184½
	Grey sandy mottled clay	5½	190
	Grey clay	2	192
	Oyster-shells	3	195
	Grey (1 foot) and brown mottled clays	18	213
[Thanet Sand, 38½ feet.]	Compact sand	6	219
	Running sand	21	240
	Loamy sand	11	251
	Flints	½	251½
[Upper (and ? Middle) Chalk, 265½ feet.]	Hard chalk and flints	98	349½
	Soft chalk and flints, the top 32½ feet, water-bearing	143½	493
	Soft chalk, streaked with grey	9	502
	Hard chalk	15	517

Camberwell. *Honour Oak Pumping Station of the Southwark and Vauxhall Water Co. By Priory Farm, S.E. of Peckham Rye Common.* 1903 ?

Over 107½ feet above Ordnance Datum.

Communicated by Mr. J. W. Restler.

Shaft and cylinders into the Chalk. Galleries driven at a depth of 236 feet, for a length of 3123 feet.

Rest-level of the water 4 feet above Ordnance Datum. Large yield.

		Thickness	Depth
Soil		1	1
[London Clay, 57 feet.]	Yellow clay	4	5
	Coarse yellow clay	19	24
	Blue clay	34	58
[Woolwich and Reading Beds, 42½ feet.]	Fine grey sand	7½	65½
	Clay and shells	11 ?+	76½
	Mottled clay	7 ?−	83½
	Sandy clay and pebbles	6½	90
	Sand and concretions	10½ ?−	100½ ?−
[Thanet Sand, 41 feet.]	Green sand	39	139½
	Flints, dark coated	2 ?+	141½ ?+ (? should be 151½)
Chalk		148½	300

Chiddingfold. *For Mr. S. Barrow.* 1901.

Made and communicated by Messrs. Duke & Ockenden.

		Thickness	Depth
Dug well [? old]		—	92
[Weald Clay.]	Blue clay	21	113
	Sand rock	7	120
	Clay	130	250

Compton. *Heath Nurseries.* 1900.

Made and communicated by Messrs. Duke & Ockenden.
Water-level 48 feet down.

	Thickness	Depth
Dug well [? old] ...	—	50
Sand..................	6	56
Bargate stone	2	58
Sand and clay......	50	108

Cranleigh. *Bog.*

Boring of 3 inches diameter, from $19\frac{1}{2}$ feet downward. (Field 676 of 25 in. Map xxxix–ii. ed. 2, 1896.)

Communicated by Mr. Stephen Rowland, of Yew Tree House. 1901.

	Thickness ft.	in.	Depth
Bog, cleaned out to the depth of	19	6	61 ft. 4 in.
Shaly clay...	4	0	
Red clay, with a slight admixture of blue clay here and there	37	10	

When the bottom of the bog was reached a good flow of water was obtained from several fissures in the shale, and, with a view of increasing the supply, the bore-hole was made, but with no result.

Croydon. *Empress Laundry.* 1902.

Made and communicated by Messrs. Duke & Ockenden.
The only indications of water were at 287 to 296 feet down.

		Thickness	Depth
Made ground		4	4
Gravel		4	8
[London Clay.]	Clay	54	62
	Rock	6	68
	Clay	8	76
	Sand	13	89
	Sand and clay	3	92
	Clay	16	108
	Rock	2	110
	Clay	3	113
[? London Clay and Reading Beds.] Green sand and clay		121	134
[Thanet] Sand		43	177
Chalk		133	310

Croydon. *Lambeth Water Co. Selhurst (Thornton Heath rather).* 1901.

Shaft, made and communicated by Messrs. Docwra.

		Thickness	Depth
[London Clay.]	Yellow clay	$57\frac{3}{4}$	$57\frac{3}{4}$
	Dark sand, with pebbles	$\frac{1}{4}$	58
[Oldhaven Beds 16 feet.]	Light-coloured sand ...	5	63
	Dark sand..................	11	74
[Woolwich and Reading Beds, 31 feet.]	Blue stone..................	1	75
	Shells and sand	4	79
	Dark clay	2	81
	Shells and sand	5	86
	Blue clay	$\frac{1}{2}$	$86\frac{1}{2}$
	Mottled clay...............	$15\frac{3}{4}$	$102\frac{1}{4}$
	Light-coloured sand ...	$\frac{1}{2}$	$102\frac{3}{4}$
	Sand and pebbles	$2\frac{1}{4}$	105
[? Woolwich & Thanet.]	Green sand	19	124
	Thanet sand...............	38	162
Chalk		78	240

This differs in details from the account of the trial-boring (printed in the 'Transactions' for 1894–5, p. 137). The London Clay is made a little thinner, the Oldhaven Beds a little thicker, and the depth to the Chalk 3 feet less.

Croydon. *Surrey Ironworks (Messrs. Measures), Pitlake.* 1902.

(Within 100 yards of the Ice Co.'s well, described in 1901.) Bored and communicated by Messrs. Duke & Ockenden.

		Thickness	Depth
[River Drift.]	Sand and gravel............	15	15
[Woolwich and Reading Beds, 40 feet.]	Blue clay	22	37
	Yellow clay	11	48
	Green sand and clay ...	7	55
[Thanet Sand, 50 feet.]	Green and white sand	3	58
	White and black sand...	$12\frac{1}{2}$	$70\frac{1}{2}$
	Black sand	27	$97\frac{1}{2}$
	Sand and clay	$7\frac{1}{2}$	105
Chalk and flints		195	300

Another account mades the depth to the Chalk 118 feet.

Dorking. *Messrs. Young's Brewery.*

Made and communicated by Messrs. Isler & Co.
Water-level 4 feet down. Supply 6000 gallons an hour.

		Thickness	Depth
Lower Greensand.	Pit	—	6
	Running sand	146	152
	Sandstone and running sand	3	155
	Red sand and sandstone	6	161
	Red sand	3	164
	Sand and sandstone	21	185

Dorking. *Holmwood. Brickfield. Abandoned.*

Made and communicated by Messrs. Duke & Ockenden.

[Weald Clay.]	Blue clay ...	107	155 feet.
	Red clay ...	17	
	Blue clay ...	31	

Dorking. *Shellwood Farm. For the Duke of Northumberland.* 1897.

Made and communicated by Messrs. Duke & Ockenden.
Bored to 170 feet. Water-level 68 feet down.

Dulwich. *Constance Road Workhouse, East Dulwich.*

Communicated by Mr. W. M. Binny.
65 feet above Ordnance Datum.
Boring of 12 inches diameter.
Standing water-level about 100 feet down.

Some water met with 40 feet down rose to within 30 feet of the surface. This was shut out by an iron lining tube, driven down to a depth of 190 feet.

On the first test a large quantity of the Thanet Sand, with water at the rate of 7000 gallons an hour, made its way into the bore-hole. The sand was shut out by driving the lining tubes into the chalk; but the yield of water was thereby reduced considerably. The water was pumped for a week continuously, and samples then taken were reported as suitable for domestic purposes.

		Thickness	Depth
Made Ground		3	3
[London Clay.]	Brown clay	12	15
	Blue clay	$19\frac{1}{2}$	$34\frac{1}{2}$
	Clay and shells	$1\frac{1}{2}$	36
	Sand and gravel [? pebbles]	3	39
[Woolwich Beds, $52\frac{1}{2}$ feet.]	Clay	24	63
	Brown clay	10	73
	Flints [? pebbles]	$3\frac{1}{2}$	$76\frac{1}{2}$
	Sand	$12\frac{1}{2}$	89
	Flint [? pebbles]	$2\frac{1}{2}$	$91\frac{1}{2}$
[Thanet].	Fine grey sand, with water	44	$135\frac{1}{2}$
[Upper and ? Middle Chalk.]	Chalk with layers of flint ...	$67\frac{1}{2}$	203
	Hard chalk without flints ...	306	509

Total depth given as 504.

Elsted. *London and South Western Railway.* 1898 and 1899.

Two wells, made and communicated by Messrs. Duke & Ockenden.

The first a dug well to 36 feet, bored to 149.
The second, water-level 30 feet down.
Blue clay, with 8 inches of rock at 24 feet, to sand $118\frac{1}{2}$ feet.

Farnham. *Castle Brewery.* 1901.

Made and communicated by Messrs. Duke & Ockenden.
Dug 62 feet, and then bored for 79 feet.
Water-level 45 feet down.

Farnham. *United Breweries Co.* 1896.

Made and communicated by Messrs. Duke & Ockenden.
Dug well (6 feet diameter) 16 feet. Bored to 132 feet.
Water-level in well 12 feet down, in bore-tube 10 feet down.

Farnham. *Wrecclesham. Mr. G. F. Roumieu's, Willey Park.* 1898.

Made and communicated by Messrs. Duke & Ockenden.
Dug well 30 feet, the rest bored. Water-level 154 feet down.

Clay	217	250 feet.
Clay and sand	15	
Sand	18	

Farnham. *Upper Hall Schools.*

Information and specimens, from Messrs. Duke & Ockenden.
Shaft 50 feet, the rest bored.

Gravel and Bagshot Sand	64	114 feet.
London Clay	50	

Farnham. *Runfold. For Mr. G. F. Roumieu.* 1900.

Made and communicated by Messrs. Duke & Ockenden.
Dug well 20 feet, the rest bored.
Well full of water. Water-level in bore-hole 57 feet from the surface.

[Gault.]	Clay	84	330 feet.
[Folkestone Beds.]	Sand	246	

Frimley. *Ridgemount, Black Down Hill.* 1896.

Communicated by Dr. A. Haviland.
Above the 350 feet contour-line [? is there such ?].
Water stood 7 feet [? from bottom].

	Thickness	Depth
Plateau gravel	6	6
Sand, varying only in colour	75	81
Clay, with sand sometimes	3	84
Sand	between 15 and 20	? 100
Bluish sand, having a sulphurous smell	5	? 105

On visiting the well a few days after the above report was taken, it was found that the thick colour of the water had disappeared, and the offensive smell had gone.

Godalming. *Munstead Heath (south-eastward from the town). Mr. P. N. Graham's.* 1896.

Made and communicated by Messrs. Legrand & Sutcliff.
Water-level 155 feet 8 inches down (May).

		Thickness FT.	Thickness IN.	Depth FT.	Depth IN.
Pit (the rest bored)		—	—	6	0
[? Folkestone Beds.]	Red sand	5	0	11	0
	Yellow sand, with ironstone from 33¾ to 34 feet down	24	0	35	0
[? Hythe Beds, 162¼ feet.]	Buff stone, with ironstone from 51 ft. 6 in. to 51 ft. 8 in. down	24	6	59	6
	Grey limestone	6	1	65	7
	Buff sand	3	6	69	1
	Grey limestone	1	2	70	3
	Buff sand and layers of Bargate Stone	10	11	81	2
	Bargate Stone	1	9	82	11
	Buff sand and layers of Bargate Stone	24	7	107	6
	Sand and sandstone layers	7	6	115	0
	Light-buff sand	7	0	122	0
	Stiff buff sandy marl	23	6	145	6
	Greenish sand	4	6	150	0
	Grey calcareous sandstone	0	4	150	4
	Greenish buff sand	1	2	151	6
	Greenish buff sandy marl	39	6	191	0
	Buff clayey sand	6	3	197	3

Godalming. *Shackleford, W.N.W. of the town.* 1899.

Made and communicated by Messrs. Duke & Ockenden.

[? Hythe Beds.]	Sandstone	29½	82 feet.
	Clay and sand	15½	
	Sandstone	37	

Gomshall. *Mr. Gilligan's Tannery.*

From Mr. J. F. Blake's notes.

	Thickness FT.	Thickness IN.	Depth FT.	Depth IN.
Ballast	4	0	4	0
Yellow sand	66	0	70	0
Green sand	1	0	71	0
Light-green sand	10	0	81	0
Dark green sand, almost black, with slight layer of rock (about one inch) below, where first spring was found	36	0	117	0
Dark red sand	11	0	128	0
Slight layer of rock, about 3 inches, where second spring was found, underneath 12 inches of fine transparent pebbles				
Sharp sand				

[There seems to be some doubt as to the last two beds, but there is a note that the boring reached to 140 feet.]

SECOND WELL. November, 1888.

Tubed to 139 feet. Water rose and overflowed above 2 feet above the ground.

		Thickness		Depth	
		FT.	IN.	FT.	IN.
[Drift ?]	Ballast	4	0	4	0
[Lower Greensand. Division doubtful.]	Folkestone red sand, highly charged with water	66	0	70	0
	Green sand, very wet	1	0	71	0
	Red sand, highly charged with water	57	0	128	0
	Blue clay (as in first well)	1	0	129	0
	Shingle containing small pebbles	1	0	130	0
	Light-coloured rock	1	2	131	2
	Dark green sand	5	6	136	8
	Light-coloured rock	2	4	139	0
	Quartz and shingle, interspersed with very thin layers of chert	14	0	153	0
	Soft rock	4	0	157	0
	Hard rock	1	0	158	0
	Green sand	4	0	162	0
	Very hard rock	2	0	164	0
	Clay mixed with chalk	4	0	168	0
	Very hard rock	2	0	170	0
	Soft rock	1	0	171	0
	Blue clay	2	3	173	3

Gomshall. *Southbrook Farm.*

MSS. of the late J. H. BLAKE.

	Thickness		Depth	
	FT.	IN.	FT.	IN.
Ballast, gravel, and sand	8	0	8	0
Yellow sand	13	0	21	0
Rock (6 inches), and then sand and rock	48	0	69	0

Guildford. *Waterworks.* 1904.

Boring of 13½ inches diameter. (Pit of about 5 feet at top.)

Communicated by MR. C. G. MASON, Borough Surveyor.

		Thickness	Depth
Made ground		6½	6½
[River Drift.]	Dark sand	1	7½
	Clean sharp sand	4	11½
	Sand and ballast [gravel]	6	17½
	Ballast [gravel], sand, and chalk	7	24½

		Thickness	Depth
Upper and Middle Chalk.	Chalk and flints	21	45½
	Chalk with less flints	39	84½
	Grey chalk [? marl-layer]	1½	86
	Chalk and flints in layers	29	115
	Chalk and flints, with grey layers	23	138
	White chalk	49½	187½
	Chalk marl	4½	192
	Grey chalk	59	251
	Grey chalk marl	5	256
	White chalk	4	260
	Grey chalk	28	288
	White rock chalk	24	312
	Rock chalk with flints	6	318
	Melbourn rock	11	329

Apparently the Upper Chalk goes to 138 feet, and then the Middle Chalk is reached, if the identification of the bottom bed as Melbourn Rock be right.

Guildford. *Near the Wey, about half a mile north of the railway station. For the Woking Water Co.* 1899.

Made and communicated by Messrs. Legrand & Sutcliff. Overflowed (September).

		Thickness	Depth
[? Alluvium.]	Soil	3	3
	Clay	2	5
[River Drift.]	Sand and gravel	10	15
Blue [London] Clay. A little sand and shells in the lowest 15 feet. Pebbles at the base		52	67
[Reading Beds, 73 feet.]	Brown and blue clay	6	73
	Coloured [mottled] clay...........	51	124
	Green sand	15	139
	Pebbles and flints	1	140
Chalk and flints		167	307

Guildford. *West Surrey Dairy Co.*

Boring made and communicated (1901) by Messrs. Isler & Co. Lined with 90 feet of tubes, of 4 inches diameter, 2 feet down.

Water-level 73 feet down.

		Thickness	Depth
Well (old)		—	74
[Upper Chalk.]	Chalk	7	81
	Chalk and flints ...	60	141
	Flints	6	147
	Hard chalk	3	150
	Chalk and flints ...	100	250

Haslemere. *Dene Park.* 1901.

Made and communicated by Messrs. Duke & Ockenden.

Water first struck at 70 feet. A small quantity at 93. Increased at 100–110. Water-level, when at rest, 98 feet down. Infiltration 300 gallons an hour.

		Thickness	Depth
[Hythe Beds.]	Sandstone	87	87
	Clay and sandstone	9	96
	Blue rock. Sandstone and clay alternating	14	110
[? Atherfield.]	Blue clay	9	119

Hindhead. *Wey Valley Waterworks.* 1899.

Made and communicated by Messrs. Duke & Ockenden.

Shaft 215 feet, the rest bored.

Water-level 203 feet down.

		Thickness	Depth
[Hythe Beds.]	Sandstone	238	238
	Blue rock	3	241
	Sandstone	6	247
	Blue clay	1½	248½
	Sandstone	33½	282
	Rock	1	283
	Sandstone	12½	295½

Horley. *Albert Brewery (Messrs. Youell & Elkin).* 1895.

Made and communicated by Messrs. Isler & Co.

Dug 3 feet, the rest a boring of 6 inches diameter.

Water overflowed at the rate of about 9 gallons a minute. Pumping goes on at the rate of 2000 gallons an hour.

		Thickness	Depth
[? All Weald Clay.]	Weald clay	11	11
	Stone	8	19
	Blue marl	41	60
	Blue marl and stone	19½	79½
	Stone	1½	81
	Marl	2	83
	Marl and stone	5	88
	Marl	6½	94½
	Marl and stone	91	185½
	Sandstone *	25½	211
	Marl and stone	2½	213½
	Sandstone	8	221½
	Marl	3½	225
	Marl and stone	4½	229½
	Marl	5½	235

* A letter from Messrs. Youell & Elkin (Nov. 1895) describes this 25 feet bed as limestone, and adds that an adequate supply came from it.

		Thickness	Depth
[? All Weald Clay.]	Marl and stone	16	251
	Marl	4	255
	Marl and stone	9	264
	Marl	1	265
	Marl and stone	2½	267½
	Marl	21	288½
	Sandstone	½	289
	Stone	1½	290½
	Sandstone	4	294½
	Marl and sandstone ...	2½	297
	Marl	3	300

Lambeth. *Commercial Road. Charing Cross and Strand Electricity Supply Corporation.*

Made and communicated by Messrs. Isler & Co.

Lined with 30 feet of tubes, of 13½ inches diameter, 6 feet down; and with 225 feet, of 10 inches diameter, 5 feet down.

Water-level 121 feet down. Yield 10,000 to 15,000 gallons an hour.

		Thickness	Depth
[Alluvium.]	Blue clay	20	20
[River Drift.]	Gravel	12	32
Blue [London]	Clay	99	131
[Reading Beds, 71 feet.]	Mottled clay	6	137
	Grey sand with pebbles	31	168
	Mottled clay	8	176
	Green sand and pebbles	26	202
[Thanet Sand.]	Dark sand	19	221
	Flints	1	222
[Upper] Chalk	....	178	400

Lambeth. *Workhouse, Renfrew Road, Lower Kennington Lane.*

Made and communicated by Messrs. Isler & Co.

Lined with 170 feet of tubes, of 13½ inches diameter, a foot down.

Water-level 100 feet down. Supply 10,500 gallons an hour.

		Thickness	Depth
Made Ground	....	5½	5½
[River Gravel.]	Ballast	13½	19
Blue [London]	Clay	60	79
[Reading Beds, 68 feet.]	Grey sand	27	106
	Blue clay	1½	107½
	Mottled clay	12½	120
	Conglomerate	5	125
	Green sand and pebbles	22	147
Grey [Thanet] sand	....	23	170
Chalk and flints	....	230	400

Liphook. *Mr. Rapley's.* 1890?

From Mr. W. Topley's MSS.

	Thickness ft.	Thickness in.	Depth ft.	Depth in.
Hassock. Yellow impure clayey sands overlying buff and finer grained sands	14	0	14	0
Rag and sand-rock	1	2	15	2
Hassock. Yellow clayey impure sands like those above	4	10	20	0
Bargate. Not hard, unfit for building	1	7	21	7
Hassock. Yellow and impure clayey sands	4	9	26	4
Bargate. Harder and better stone than that above. Used for garden-walks	1	6	27	10
Hassock. With two courses of Bargate stone, about 3 inches thick	2	6	30	4
Bargate. Very hard; breaks with a conchoidal fracture	1	2	31	6
Hassock. Hard and compact [but with] brown impure sands	4	10	36	4
Bargate. Very hard. Upper layers siliceous (not acted on by hydrochloric acid)	1	8	38	0
Hassock	2	0	40	0
Bargate. Very hard, from under which water came	3	0	43	0

The Bargates not regularly bedded, but in lenticular and more or less rounded concretions.

Purley. *East Surrey Waterworks. Between the Brighton and Caterham Roads, westward of the railway station.*

About 215 feet above Ordnance Datum.

Made and communicated by Mr. R. Batchelor (with notes from specimens in the Company's office at the works, in brackets).

		Thickness	Depth
	Soil and Gravel [Valley Drift]	$5\frac{1}{4}$	$5\frac{1}{4}$
	[Upper, Middle, and Lower Chalk.] Chalk and flints	$451\frac{3}{4}$	457
[Lower Chalk, ? at base Upper Greensand.]	Chalk marl, base firm	10	467
	Clay (dark chalk marl at 476 feet; light-coloured greenish sand, with glauconite-grains, ? chalky, at 478)	12	479
[Upper Greensand, 35 feet?]	Green sand, fine (like the last, but finer, at 480 feet. Pale green sand at 482, 484, rather greener, 486, 488, and 490)	12	491
	Rock	1	492
	Dark greensand rock (light-grey fine sand at every 2 feet, from 492 to 510, getting clayey going downward, and at 512 a sandy clay)	22	514
[Gault.]	Clay (sandy clay, every 2 feet, from 514 to $521\frac{1}{2}$)	8	522

A large supply of water has been got at these works.

Puttenham. *The Priory (Messrs. Bell Stewart & Co.).* 1900.

Boring made and communicated by MESSRS. LEGRAND & SUTCLIFF.

Water-level $63\frac{1}{2}$ feet down (October).

Well (old), the rest bored	$68\frac{1}{2}$	121 feet.
Sand (Folkestone Beds)	$52\frac{1}{2}$	

Tatsfield. *East of Titsey Wood. Boring for the Limpsfield and Oxted Water Co.* 1900.

From a statement furnished by the foreman to Mr. Landale (Chairman).

(All below 305 feet and all in these brackets communicated by MR. R. F. GRANTHAM.)

When the boring was $296\frac{1}{2}$ feet deep, water stood at the depth of 89 feet. On Nov. 17th, at over 305 feet, it was $86\frac{1}{2}$ feet. Dec. 14th, 78 feet down (end).

10,000 gallons an hour, day and night, were pumped for a fortnight, and Mr. Grantham thinks that more could have been got with a permanent pump (Aug. 1901).

		Thickness FT.	IN.	Depth FT.	IN.
	Soil, clay and loam mixed	10	0	10	0
[Gault.]	Blue clay	41	6	51	6
	Loamy sand (clay)	15	0	66	6
[Folkestone Beds, 211 ft.]	White sand (water first met with at 89 feet)	26	0	92	6
	Pale yellow sand (buff)	37	6	130	0
	Yellow sand	20	0	150	0
	Rock, hard (ironstone)	1	6	151	6
	Yellow sand	12	6	164	0
	Rock, hard (ironstone)	1	0	165	0
	Yellow sand	19	0	184	0
	Pale yellow fine sand (buff)	41	0	225	0
	Yellow sand, a shade coarser [than above] (darker buff)	40	0	265	0
	Dark yellow sand	12	6	277	6
[? Sandgate Beds.]	Blue clay (dark) and green sand, mixed	6	6	284	0
[Hythe Beds.]	Hard rock [Specimen simply dark sand, not rock]	66	0	350	0

An account from MESSRS. ISLER & Co. differs in details, making the thickness of the Gault and of the Sandgate Beds a little less, that of the Folkestone Beds and of the Hythe Beds a little more.

Upper Norwood. *Brewery, Chapel Road, midway between Knights Hill Road and Elder Road.* 1901.

Communicated by SIR B. BAKER.

192 feet above Ordnance Datum. Shaft, of 5 feet diameter,

116 feet, with perforated tube of 11½ inches diameter, of 84 feet. Supply about 100 gallons an hour. Temperature of the water 54½° (September).

		Thickness FT.	Thickness IN.	Depth FT.	Depth IN.
? Undescribed		21	0	21	0
[London Clay.]	Clay	174	6	195	6
	[Basement Bed.] Pebbles	2	3	197	9
	Oyster-shell rock	0	6	198	3
	Pebble and dark sand	1	2	199	5
[Woolwich and Reading Beds, 67⅓ feet.]	Sand	8	8	208	1
	Blue clay and shells	5	5	213	6
	Sand	7	5	220	11
	Rock, sand and shells	5	9	226	8
	Clay and marl (hard)	7	1	233	9
	Clay	10	9	244	6
	Pebbles and sand	7	6	252	0
	Sand (hard)	11	6	263	6
	Sand (hard) and pebbles	3	3	266	9
[Thanet Sand, 29¼ feet.]	Sand	25	0	291	9
	Flints	4	3	296	0
Chalk and sand		?4	0	300	0

Wandsworth. *Public Baths, High Street.*

Made and communicated by Messrs. A. C. Potter & Co. Supply 5000 gallons an hour.

		Thickness	Depth
Made Ground		6	6
[River Drift.]	Sand and ballast	6	12
[London Clay, 172½ feet.]	Blue clay, with claystones at the depths of 29 to 29½, 50 to 50¼ feet	38¼	50¼
	Clay	45¾	96
	Loamy clay, 6 inches of claystone at the bottom	9	105
	Clay	68	173
	Sandy clay	10½	183½
	Hard pebbles and shells [basement-bed]	1	184½
[Woolwich and Reading Beds, 60½ ft.]	Clay and shells	8½	193
	Mottled clays, brown, yellow, red and grey (four beds)	34	227
	Grey sandy clay	6	233
	Pebbles and sand	11	244
	Clay and pebbles	1	245
[Thanet Sand, 30½ feet.]	Dead sand	9	254
	Sand	12	266
	Loamy sand	9	275
	Green-coated flint	½	275½
[Upper Chalk.]	Dense chalk and flints	96	371½
	Soft chalk and flints, water-bearing	79½	451

Windlesham. *Highams.*

Boring, from bottom of old well, made and communicated by Messrs. Merryweather.

Abandoned, not sufficient water.

		Thickness	Depth
Old well.	Strata not known	—	39
[Bracklesham Beds.]	Loam	4	43
	Green loam	5	48
	Green sand	5	53
	Green sand with seam of light-coloured clay	6	59
	Light-coloured clay or marl	6	65
	Tough clay	6	71
	Tough mottled clay	6	77
	Hard mottled clay	5	82
	Mottled clay	4	86
[Bagshot Sand, 108 feet.]	Green loam	27	113
	Green sand	25	138
	Sandstone	4	142
	Running sand	3	145
	Live sand	14	159
	Green sand and pebbles	7	166
	Dark sand	5	171
	Live sand	14	185
	Dark loam	9	194

15.—Description of some Fossils from a Croydon Garden.

By George J. Hinde, Ph.D., F.R.S.

(Plates I. and II.*)

(Read October 18th, 1904.)

I wish to call the attention of the Society to some fossils, now exhibited, which have been collected in my garden at South Croydon from time to time during the last eighteen years. The garden is situated on the higher part of the west slope of the valley along which the Brighton Road runs. The Chalk is here near the surface, and is only covered by a layer of soil about a foot in thickness. This surface soil consists of chalky *débris* commingled with a brownish sandy loam, the residue of the Eocene Tertiary deposits which once spread over the area. The fossils are found in this surface soil, and they have evidently been weathered out of the Chalk where they now occur. There is no evidence for assuming that they have been brought to their present position from a distance, though in some cases, perhaps, they may have been washed down from the higher part of the slope by the action of rain.

The fossils are, for the most part, rounded bodies ranging from the size of a mustard seed to that of a large playing marble; they are of a greyish tint, much resembling water-worn pebbles of Chalk, and to an ordinary observer they would doubtless appear of this character, and would not be considered worth picking up to look at. Until very lately they do not seem to have been noticed by geologists in the Chalk of this neighbourhood, and there is no mention of them in the lists of fossils in the Chalk of the railway cuttings between Croydon and Oxted, so carefully drawn up by the late Caleb Evans, unless, perchance, they are included in the term *Coscinopora*.†

But that these bodies are altogether different from mere Chalk pebbles can be proved by examining them with a lens, their surfaces will then be seen to consist of a very fine reticulation or network formed by the junction of small bodies with four arms or rays (Pl. II., figs. 2, 4). These are connected so as to bound small rounded holes which are the apertures of canals radiating from the centre of the fossil. On splitting open a specimen the canals appear as fine straight lines (Pl. I., fig. 6). When well

* By the kind permission of the Council of the Royal Microscopical Society, these plates have been reproduced from the Journal of the Society for February, 1904.

† Geologists' Association, 1870, p. 30.

preserved, moreover, the outer surface of these fossils is studded over with minute slightly projecting spines (Pl. II., figs. 1, 8, 9), more readily perceived by a rasping sensation when the finger is rubbed over them than with a lens.

The interior of the fossils is generally solid, for the canals and other microscopic interspaces have now been filled up by calcite, or by an infiltration of silica. The frequent occurrence of this latter substance has given rise to an impression that the fossils were originally of silica, but it is now definitely known that when unaltered by fossilization the skeleton mesh-work is of carbonate of lime.

A closer study of the structure of these fossils can only be made by means of sections sufficiently thin to be transparent under the microscope. These, however, as a rule, only show a confused mass of delicate fibres closely interwoven together, and until a clue is obtained to the character of the individual constituents of the fibres and the manner in which they are united together, it is very difficult to understand the nature of the organism. As a consequence much division of opinion has arisen in the past among palæontologists respecting these fossils, and they have in turn been referred to various groups of the animal kingdom.

By some fortunate circumstances, mentioned later on, some specimens were sent to me which proved conclusively that these fossils were sponges with a spicular skeleton of carbonate of lime. The spicules consist of four arms or rays (Pl. II., fig. 5); one of these is elongate, tapering to a fine point, and furnished with lateral prickles or spurs; at the base of this long or apical ray there are three short, curved, divergent rays with blunt terminations. These individual spicules are connected together to form the skeleton of the sponge in such a manner that the elongate apical ray is always directed towards the outward growing surface of the sponge, and remains free or partially free (Pl. II., figs. 1, 8, 9); while the three short basal rays of the spicule are firmly welded by their truncate ends to adjacent spicules, and form a porous mesh-work which bounds the radial canals (Pl.II., figs. 1, 2, 4). The union of the basal rays is so close and intimate, that in microscopic sections of the fossils the individual spicules can be seldom distinguished (Pl. II., figs. 6, 9), but they are shown on the surface of well-preserved specimens (Pl. II., figs. 2, 4).

A very perfect specimen of one of these sponges in an early stage of growth was sent to me by Mr. H. Muller, of Eltham, Kent. It is hardly as large as an ordinary pin's head, and is embedded in a fragment of flint. As shown in the figure (Pl. II., fig. 1), the outer surface is bristly, with the apical rays of the spicules all directed outwards, whilst the short basal rays are fused together. The further growth of the sponge is produced by the formation of successive layers of spicules, which overlap each other and grow together so intimately that the full-grown sponge has a firm, stony character, which enables it to resist disintegration. Mr. Muller's specimen, which he supposed to be a radiolarian, furnished me with an important clue to the real structure of these fossils.

In their perfect condition these sponges appear to have been provided with a thin outer layer which covered the stony resistant skeleton just described. This dermal layer is composed of small spicules of various forms, some simple rods, others with three or four rays (Pl. II., figs. 3, 7). These spicules are only commingled or interfelted together, and not welded as the spicules of the sponge-body. Rarely is any definite arrangement shown, but in one instance they are concentrically disposed round a pore-like opening (Pl. II., fig. 10). Owing to the absence of any definite connection in the component spicules, this outer covering seems to have readily fallen to pieces after the death of the organism, and very rarely are portions of it preserved on the outside of the fossils. Out of a total of about 3000 specimens* I have only detected it in 18, some of which are figured (Pl. I., figs. 7, 8, 15, 20, 25). In none of the Croydon specimens is it shown.

These Chalk sponges were first referred to the genus *Millepora* by the late Professor John Phillips in 1829; since then they have been placed in various genera, according to the views held of their affinities, until at last, in 1878, Professor Steinmann proposed a distinct genus for their reception, and gave it the name of *Porosphæra*. He considered the fossils, however, to be hydrozoa, and not sponges. Several species have been described; they are all closely allied, and most of them are represented in the collection exhibited.

Porosphæra globularis is the commonest form; it is usually rounded like peas or marbles, but sometimes oval, loaf- or cushion-shaped, and without any distinctive base (Pl. I., figs. 1–10).

P. nuciformis is typically pear-shaped, occasionally also melon- or loaf-shaped, with longitudinal ridges and shallow grooves which converge to the obtuse pole of the sponge (Pl. I., figs. 11–18).

P. Woodwardi is oval or rounded, with well-marked branching canals which converge to one or more points on the surface. It has a concave and rugose base (Pl. I., fig. 19). This species has only been found in the Grey Chalk of Dover and in Dorset.

P. pileolus is thimble- or inverted cup-shaped, sometimes hemispherical, with a deeply concave, cup-shaped base, and thick walls (Pl. I., figs. 20–21*a*).

P. patelliformis is limpet-shaped, with peaked summit, a deeply

* The large majority of these were collected by my friend Dr. A. W. Rowe, F.G.S., during his well-known researches in the zones of the White Chalk of the English coast, and I am greatly indebted to him for the opportunity of examining them.

concave or occasionally flattened base, and relatively thin walls (Pl. I., figs. 22–26*a*).

P. arrecta is conical or pillar-shaped, the base concave, with thin margins (Pl. I., figs. 27–28*a*).

Up to the time of writing I have obtained from my Croydon garden 683 specimens of *Porosphæra*; 624 of these belong to *P. globularis*, 32 to *P. nuciformis*, 24 to *P. pileolus*, and 3 to *P. patelliformis*. The smallest specimen found is only 4 mm., whilst the largest is 27 mm. in diameter. The Chalk of this locality has hitherto been included in the zone of *Micraster coranguinum*, but the comparatively large size of many of these sponges and the occurrence in the same area of *Offaster pillula*, Lam., indicate the possibility that it may be in the next higher zone of *Marsupites*. This supposition is strengthened by the late discovery of *Marsupites* and *Uintacrinus* in the Chalk at Beddington.*

Specimens of *Porosphæra* may be found sparingly in most exposures of the Chalk in Croydon, when carefully searched for, and I have picked them up in fields, more particularly round the base of Croham Hurst, where the Chalk is near the surface. They are, however, more numerous and more readily met with in the Chalk cliffs at Margate, Dover, Newhaven, near Brighton, the Isle of Wight, and in Dorset; also near Flamborough, Yorkshire. Specimens obtained direct from the Chalk are, as might be expected, in a better state of preservation than those which have been weathered out on the surface of fields.

Recent calcisponges with a skeleton of fused spicules, like that of *Porosphæra*, were unknown till 1892, when Prof. Dr. Döderlein, of Strassburg, announced the discovery of a sponge of this character from the Japanese Sea, to which he gave the name of *Petrostroma Schulzei*. The full description and figures which appeared five years later† distinctly showed a close resemblance in structural characters to *Porosphæra*, and I was enabled to confirm this by an examination of a fragment of the recent sponge, kindly given to me by Dr. Döderlein.

Shortly after, in 1898, I received from Mr. T. S. Hall, M.A., of the University of Melbourne, Australia, a small insignificant-looking fossil from beds of Tertiary age near Geelong, which he thought might be some sort of a sponge. To my great surprise it was a calcisponge with a spicular structure similar to that of the Chalk *Porosphæra* and the recent *Petrostroma* from the Japan Sea. It was so beautifully preserved that the details of the skeleton-mesh could be seen as distinctly as in recent specimens, and I made it the type of a new genus, *Plectroninia*.‡

* Geological Mag., dec. v. vol. i. 1904, p. 482.

† Zoolog. Jahrbuch, Bd. 10, 1897, p. 15.

‡ Quart. Journn. Geol. Soc., vol. 56, 1900, p. 51.

The unexpected discovery of the recent Japanese sponge and the Tertiary form from Australia with structures so closely related to those of the Chalk *Porosphæra* clearly establish that this latter genus is a calcisponge with the skeleton spicules fused together. Dr. Rauff has placed these sponges in a separate order, the *Lithonina.**

There is one feature of more general interest in connection with these Chalk sponges which may be mentioned. Many of the rounded and pear-shaped specimens have a cylindrical hole or perforation, which in some cases extends only for a short distance and terminates blindly, but more frequently it passes quite through the specimen, so that it is a genuine bead (Pl. I., fig. 1). At one time these perforations were thought to be artificial, and due to human agency; but it is now generally admitted that they are natural, and probably arise from the sponge after having passed through the early, mobile stage of its existence, fixing itself on and growing round the stem of a seaweed or some other marine organism not capable of preservation in the fossil state. On the decay and disappearance of the supporting body the more resistant sponge would be left with the hollow cast, which subsequently becomes filled with the soft chalky matrix as we now find it.

Both in this country and in the North of France these sponge-beads have been found in association with the remains of the "River Drift" folk; and it has been surmised by Sir John Evans, the late Sir Charles Lyell, and other writers, that these prehistoric inhabitants may have used them for personal adornment. To show their suitableness for this purpose I have strung those picked up in my garden—seventy-seven in number—and it will be seen that the necklace which they form might well prove attractive to a primitive race.

In addition to *Porosphæra*, described above, the same beds of Chalk in this part of Croydon contain another kind of sponge so generally similar in form and size to *Porosphæra*, that the two are frequently confounded with each other. The form referred to much resembles a small weathered flint pebble; some specimens, when broken open, are found to be of nearly solid flint, with slight traces of spicular structure; in others there is a comparatively thin outer layer of flint completely enclosing a loose central core or kernel of porous flint, which is the cast of the sponge. These sponges have a siliceous skeleton of irregular, four-rayed warty spicules connected into a mesh-work; thus very distinct from the skeleton of *Porosphæra*. The late Prof. v. Zittel placed them in the Lithistid genus *Plinthosella*. Proportionally they are less numerous than *Porosphæra*, but 225 specimens have been collected in the same garden area.

* Palæontographica, Bd. 40, 1893, pp. 203, 204.

EXPLANATION OF PLATE I.

The figures are of natural size, except where otherwise indicated.

Fig. 1. *Porosphæra globularis*, Phillips, sp. Large oval specimen, with tubular perforation. Zone of *Micraster cor-anguinum*; South Croydon, Surrey. Collection of G. J. Hinde.

,, 2. Ditto; showing overlapping layers of growth. Zone of *Marsupites*; Margate, Kent. Collection of Dr. A. W. Rowe, F.G.S.

,, 3. Ditto; loaf-shaped. Zone of *Belemnitella mucronata*; Ballard Cliff, Dorset coast. Collection of Dr. Rowe.

,, 4. Ditto; cushion-shaped specimen. Zone of *Bel. mucronata*; Ballard Cliff. Collection of Dr. Rowe.

,, 5. Ditto; of average size. Zone of *Actinocamax quadratus*; Cliff, east of Brighton. Collection of G. J. Hinde.

,, 6. Ditto; median section, showing the arrangement of the radial canals. Upper Chalk. Collection of G. J. Hinde.

,, 7. Ditto; completely enveloped with a spicular dermal layer. Zone of *B. mucronata*; Ballard Cliff. Collection of Dr. Rowe.

,, 8. Ditto; partially covered with an uneven dermal layer. Same zone and locality as the preceding. Collection of Dr. Rowe.

,, 9, 10. Ditto; loaf-shaped specimens, showing faint indications of surface grooves. Zone of *Marsupites* (*Uintacrinus* Band); Thanet coast. Collection of Dr. Rowe.

,, 11. *Porosphæra nuciformis*, v. Hagenow, sp. Viewed from above, showing the convergence of the grooves at the summit. Zone of *Marsupites* (*Uintacrinus* Band); Margate. Collection of Dr. Rowe.

,, 12. Ditto; side view. Zone of *A. quadratus*; near Newhaven. Collection of Dr. Rowe.

,, 13. Ditto; showing closely-arranged grooves. Zone of *A. quadratus*; Winchester. Collection of Dr. Rowe.

,, 14. Ditto; with prominent apex. Zone of *A. quadratus*; Sussex coast. Collection of Dr. Rowe.

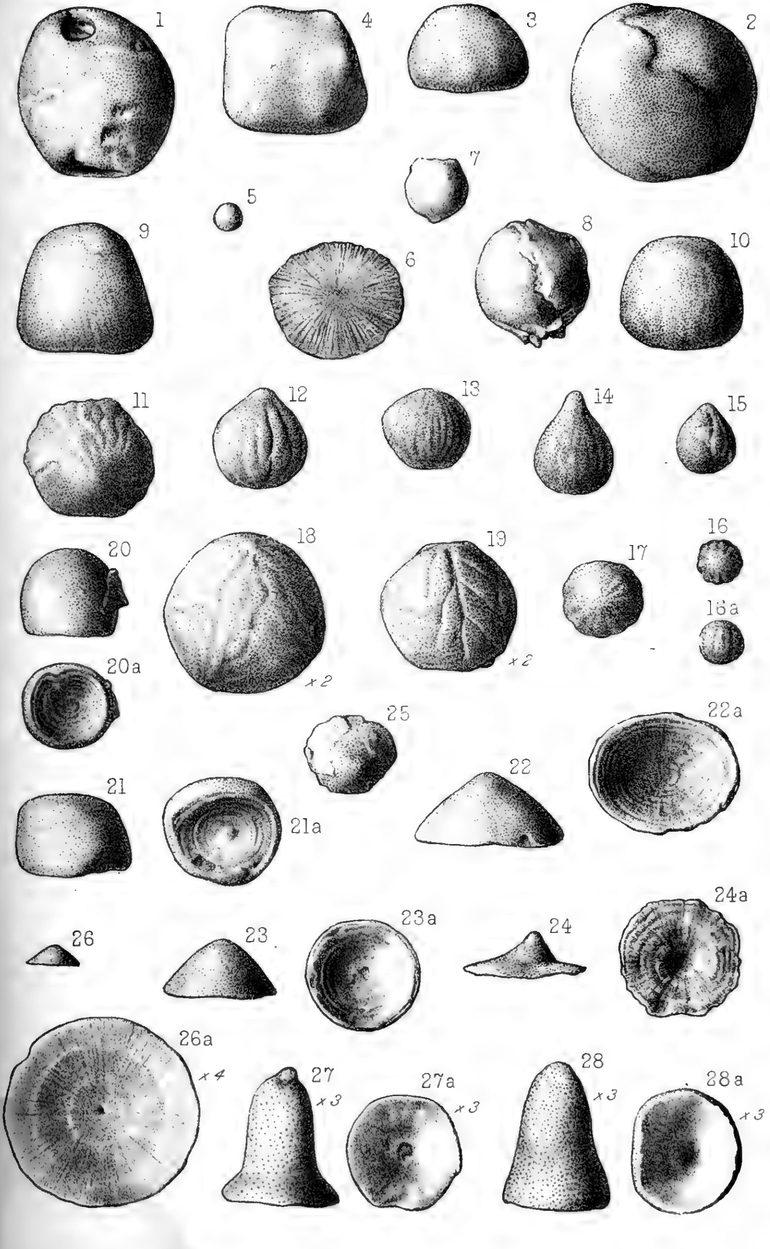
,, 15. Ditto; with fragments of the dermal layer. Zone of *A. quadratus*; near Newhaven. Collection of Dr. Rowe.

,, 16, 16*a*, Ditto; viewed from above and in profile. Zone of *Marsupites* (*Uintacrinus* Band); Thanet coast, Kent. Collection of Dr. Rowe.

,, 17. Ditto; viewed from above. Same zone and locality as the preceding. Collection of Dr. Rowe.

,, 18. Ditto; with surface grooves and ridges radiating from several centres. × 2 diam. From same zone as the preceding; Sussex coast. Collection of Dr. Rowe.

,, 19. *Porosphæra Woodwardi*, Carter, sp. Showing the branching surface canals. × 2 diam. Zone of *Holaster subglobosus*; Dover. Collection of Dr. Rowe.



G.M.Woodward del.et lith

West,Newman imp.

POROSPHÆRA FROM THE ENGLISH CHALK.

Fig. 20, 20 *a*. *Porosphæra pileolus.* Thimble-shaped specimen, with a fragment of dermal layer on the exterior; the base (20 *a*) showing concentric bands of growth. Zone of *A. quadratus*; near Newhaven. Collection of Dr. Rowe.

,, 21, 21 *a*. Ditto. Zone of *Marsupites* (*Uintacrinus* Band); Thanet coast. Collection of Dr. Rowe.

,, 22, 22 *a*. *Porosphæra patelliformis*, sp. n. Viewed in profile (22); the deeply concave base (22 *a*) showing concentric lines of growth and faint radial lines. Zone of *A. quadratus*; Sussex coast. Collection of Dr. Rowe.

,, 23, 23 *a*. Ditto; a conical specimen, viewed in profile (23); the base with faint concentric lines of growth (23 *a*). Zone of *Marsupites* (*Uintacrinus* Band); Thanet coast. Collection of Dr. Rowe.

,, 24, 24 *a*. Ditto; a depressed specimen, viewed in profile (24); the base with concentric and radial lines (24 *a*). Same zone and locality as the preceding. Collection of Dr. Rowe.

,, 25. Ditto; viewed from above, showing some fragments of the spicular dermal crust. Same zone and locality as the preceding. Collection of Dr. Rowe.

,, 26, 26 *a*. Ditto; a small specimen, viewed in profile, natural size (26); and the concave base, with rod-like spicules radiating from the centre to the margins, enlarged 4 diam. (26 *a*). Zone of *Terebratulina gracilis*; East Cliff, Dover. Collection of Dr. Rowe.

,, 27, 27 *a*. *Porosphæra arrecta*, sp. n. Viewed in profile (27), and showing the base (27 *a*), enlarged 3 diam. Zone of *Rhynchonella Cuvieri*; Branscombe Cliff, South Devon coast. Collection of Dr. Rowe.

,, 28, 28 *a*. Ditto; showing the exterior and the basal aspect, enlarged 3 diam. Zone of *Marsupites* (*Uintacrinus* Band); Thanet coast. Collection of Dr. Rowe.

EXPLANATION OF PLATE II.

Fig. 1. *Porosphæra globularis*, Phill., sp. A small specimen, preserved in flint, showing the spicular structure of the exterior. × 50 diam. Upper Chalk; near Sidcup, Kent. Collection of Mr. H. Muller.

,, 2. Ditto; portion of the outer surface, showing the arrangement of the skeletal spicules bounding the apertures of the radial canals. × 40 diam. Zone of *Belemnitella mucronata*; Ballard Cliff, Dorset coast. Collection of Dr. Rowe.

,, 3. Ditto; three-rayed spicules of the dermal layer. × 100 diam. Zone of *Actinocamax quadratus*; Scratchell's Bay, Isle of Wight. Collection of G. J. Hinde.

,, 4. *Porosphæra nuciformis*, v. Hag., sp. Portion of the surface, showing the skeletal spicules and the radial canal apertures. × 40 diam. Zone of *A. quadratus*; Cliff, east of Brighton.

,, 5. *Porosphæra pileolus*. A four-rayed mesh spicule, the apical ray armed with lateral prickles. From a microscopic section near the margin of the specimen. × 200 diam. Zone of *Micraster cor-anguinum*; South Croydon. Collection of G. J. Hinde.

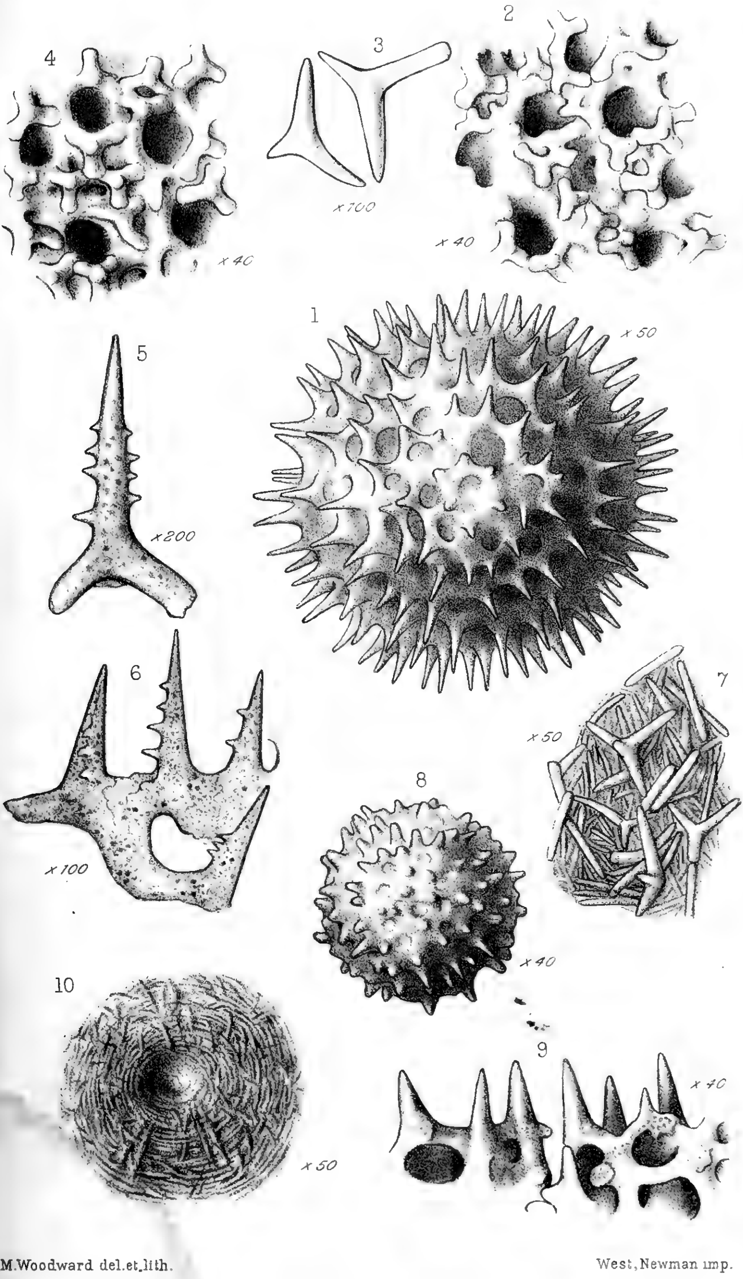
,, 6. *P. globularis*. A portion of the skeletal mesh, showing its structure of four-rayed spicules, the basal rays of which are now fused together. × 100 diam. Zone of *M. cor-anguinum*; South Croydon. Collection of G. J. Hinde.

,, 7. Ditto; a fragment of the dermal layer, showing three- and four-rayed spicules irregularly intermingled. × 50 diam. Zone of *B. mucronata*; Ballard Cliff, Dorset coast. Collection of Dr. Rowe.

,, 8. Ditto; a small specimen preserved in chalk, showing blunted apical rays of spicules projecting from the surface. × 40 diam. Upper Chalk, Gravesend, Kent.

,, 9. Ditto; the skeletal mesh near the margin of a specimen preserved in flint, showing the curved facial and the projecting apical rays of four-rayed spicules. × 40 diam. Upper Chalk; Chatham. Jermyn Street Museum.

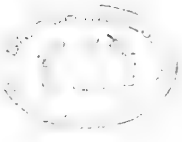
,, 10. Ditto; portion of the outer surface of the dermal layer, showing rod-like spicules arranged concentrically round a central pore (?). × 50 diam. Zone of *Belemnitella mucronata*; Ballard Cliff, Dorset coast. Collection of Dr. Rowe.



G. M. Woodward del. et lith.

West, Newman imp.

POROSPHÆRA FROM THE ENGLISH CHALK.



1 2 3 4 5 6

RELICS, BERMONDSEY ABBEY.

1. Pinmaker's Tool.
2. Pilgrim's Bottle.
3. Birdcage Water-Holder, Modern?
4. Thirteenth Century Jug.
5. Seventeenth Century Apothecary's Jar.
6. Mediæval Bottle.

To face p. 95.

16.—Notes on Bermondsey Abbey.

By N. F. Robarts, F.G.S.

(Read November 15th, 1904.)

Some recent excavations on the site of Bermondsey Abbey led to an offer by Mr. C. Morgan Smith to lend to our Loan Museum some specimens of pottery, &c., which had been found during the work of building some houses for the South Eastern Railway. At the same time Mr. Smith kindly offered to place any information he possessed at my disposal if I would write some notes upon the specimens and other discoveries, an offer I was very glad to avail of.

It would, I thought, be of interest to this Society if I could at the same time give a little information about the Abbey of Bermondsey, respecting which I then had no knowledge, an ignorance which possibly I shared with other members. I have accordingly collected some information relative to this "forgotten Monastery," as Sir Walter Besant called it, and beg to submit a few particulars which should be of interest to our Society in view of the very intimate connection which existed between the Abbey of Bermondsey and the parish of Croydon.

Bermondsey, probably best known to most of us by its market gardens, now almost extinct, and its tanneries with their distinctive aroma, as we pass them on the railway, is so different from what it was even one hundred years ago, that I think we should first try to realize the original environment of the Monastery.

Founded very shortly after the Norman Conquest in A.D. 1089, the Priory of Bermondsey stood about half a mile south of the Thames, half a mile from where now stands London Bridge, and half a mile from the Kent or Dover Road. The conventual buildings stood on a flat meadow through which ran sundry watercourses, giving the neighbourhood the name of Bermond's Ey or Island. The etymology of Bermond is disputed, and need not detain us, but the Ey is doubtless the Saxon word for island.

We must remember that the south side of the river was more or less a marsh, probably often flooded, the only road being the causeway leading from the bridge near St. Mary Overie's to where St. George's Church now stands, from which branched off the Dover Road, whilst the causeway itself continued straight on to the higher ground of Clapham.

The only approaches to the Monastery were by the present Tooley Street leading from the bridge to the Monastery, or by the country path—now Long Lane—from the junction of the Dover Road with the causeway.

There would have been a few houses along the causeway, the forerunners of the famous inns of the Borough, and possibly a few fishermen's huts along the river-bank; but the City of London, guarded by the Tower at its eastern boundary, ended almost opposite the Monastery, and stood on the high gravel cliff overlooking the marshy meadows on the south side of the river, protected by the South work, as the Roman embankment was called, now giving us the district known as Southwark.

Four hundred and fifty years later the environment of the Monastery had altered very little—there were several large houses in Tooley Street near the bridge; St. Thomas's Hospital and the large inns stood near or in the Borough High Street, and probably houses had begun to creep along the Dover Road and gather near the parish church of St. Mary Magdalen of Bermondsey, but the country aspect was still prevalent, and even at the beginning of the last century the fields were still open, as you can tell for yourselves if you now walk through the length and breadth of Bermondsey, for you will hardly find a house more than a hundred years old whilst the wilderness of bricks and mortar, most of it squalid, did not then exist.

The site where the Monastery stood lies directly south of the present Tower Bridge. To the north-west stood the parish church of St. Mary Magdalen; Bermondsey Square, or what is left of it, marks the position of the main court of the Abbey; whilst Abbey Street, between Long Walk and the wall of the parish churchyard, occupies the place where stood the conventual church.

The farm buildings are kept in memory by Grange Walk and Grange Road, and the site of part of the conventual burying-ground is occupied by the new dwellings belonging to the South Eastern Railway Company. Crucifix Lane—by some said to be a corruption of Christopher Lane, but which I prefer to think commemorates a crucifix erected there—led to the Abbey; and Pickle Herring Wharf was doubtless connected by a road with the Abbey for it was the landing-place for the Abbey's supply of sea fish.

It is therefore comparatively easy to locate the position, although hardly a stone now remains to show the site of what was once one of the three most famous and powerful monasteries in England.

The founder of the Monastery was one Alwin Child, a citizen of London, who in 1081 built a church in Bermondsey, which he dedicated to the Saviour.

A few years later, in 1089, he annexed to it a Convent of Cluniac monks, four of whom were sent here in that year, at the instigation of Archbishop Lanfranc, from the Priory of La Charité sur la Loire, to which priory Bermondsey became subordinate as a cell.

The Cluniacs were a most rigid sect of Benedictines, so called from their Abbey at Clugni.

Bermondsey was therefore an alien priory acknowledging the jurisdiction of, and collecting revenues for, the Priory of La Charité sur la Loire, thus encouraging the export trade—an economical proceeding which afterwards led to difficulties.

Reference is made to, in 'Domesday,' Alwin Child's church where it is described as "Nova et pulchra Ecclesia," but no traces of this church have been preserved.

In 1094 William Rufus endowed the monastery with the Manor of Bermondsey, and from this date we may trace the rise in power and influence of the prior and monks until the dissolution of the monastery by Henry VIII. The grant of the manor was confirmed by Henry I. in 1127, who also gave to the priory the Manors of Rotherhithe and Dulwich, and William Maminot at the same time gave it a moiety of the Manor of Gravesend.

At this date also began a connection between the monastery and Croydon, which lasted for upwards of four hundred years, for in the twenty-seventh year of his reign Henry I. granted to the priory the Manor of Whaddon, or Woddens, in Croydon, which they kept possession of until the 14th of Richard III., when they exchanged it to the Archbishop of Canterbury for the Rectory of Croydon. The priory became so closely related with various properties in Surrey, that it may interest you if I refer to its different Surrey possessions more particularly.

In 1144 William de Watteville gave the convent the Manor of Warlingham with the consent of Robert, William, and Otwell, his sons, which manor in the 11th of Edward II. the monks had licence to devise to Robert de Kelesey for life; and in 1152 the convent appears to have had two carucates of land at Legham, in the parish of Godstone, in Surrey, probably given to them at about that date. In 1159 King Henry II. confirmed to the priory the donation of the church of Camberwell and others; and Henry III. granted the monks a market every Monday at their manor of Charlton, in Kent, and a fair on Trinity Sunday yearly. I should mention that this fair had no connection with the celebrated "Horn" fair at Charlton.

In 1173 the priory received from King Henry II. a charter of free warren over all their lands in Surrey.

In the reign of Edward III. the priory of Bermondsey was sequestered with other alien priories for the use of the Crown; but Richard III. re-established it, and subsequently, in 1380, for a fine of two hundred marks, enfranchised it, thus enabling its members to purchase and possess lands in their own right. In 1399 Henry IV. converted it into an abbey, and thus the monks were more fortunately placed than other alien priories when in 1408 Henry took for his household expenses all the revenues of alien priories and the income of all vacant bishoprics and abbeys.

No doubt the parent priory of La Charité raised protests against this fruitful source of income passing out of its possession; and indeed we learn a little later, in 1457, that the Abbot of Cluni sent over three monks to the King, to substantiate his claims to the House of Bermondsey.

The ambassage was unsuccessful; the King would hardly give them a hearing; one of the monks died here, the other two returned home, one of them having first written the following letter to the Abbot of St. Albans:—

"For the rest, be it known to you, my Lord, that after having spent four months and a half on our journey and following our Right with the most serene Lord the King and his Privy Council, we have obtained nothing; nay, we are sent back very disconsolate, deprived of our Manors, our Pensions alienated, and what is still worse, we are denied the obedience of all our Monasteries, which are 38 in number: nor did our Legal Deeds, nor the Testimonies of your Chronicles avail us anything, and at length after all our pleading and expenses, we return home moneyless, for in truth after paying what we have eaten and drunk, we have but five crowns left, to go back about 260 leagues. But what then? We will sell what we have, we will go on; and God will provide. Nothing else occurs to write to your Paternity; but that as we entered England with joy, so we depart thence with sorrow; having buried one of our Companions—viz. the Archdeacon, the youngest of our Company. May he rest in Peace. Amen."

Poor monks! Henry VIII. was not the only king who found it advantageous for himself and the commonwealth to reduce the powers and revenues of the religious orders.

In 1338 the church of this house appears to have been dedicated afresh, with several of its numerous altars. The cloister and refectory were either built or rebuilt by Prior Dunton in 1380, who covered the nave of the church with lead, and made new with glass the windows of the presbytery in 1387.

In 1397 the prior and convent had a grant of the hundreds of Brixton and Wallington (which then included Croydon), with the return of writs, &c., within the same, which was afterwards confirmed to them by letters patent of King Henry VI.

In 1430 Abbot Thelford covered the cloister with slate, "cum petra vocata slat." This is interesting as being, as far as I know, the first time the use of slate is recorded. One wonders whether they were Horsham slates, or Welsh.

The various transactions respecting property in Surrey appear to have been as follows:—

In 1318, 11th & 12th Edward II., the convent agreed with Walter Reynolds, Archbishop of Canterbury, for the purchase of two acres of land in Croydon of the yearly value of two shillings (I wonder where that land is situate), with the advowson of the rectory there; and in 14th Edward II., for the rectory itself and advowson of the vicarage, in exchange for a hide of land at Withflete, with the mills valued at ten marks per annum, and other appurtenances in Southwark, and a yearly rent of £28 13s. 11d., formerly given them (13th Henry I.) by Robert Marmion; but this sale was never concluded.

In 1390, 14th Richard II., the priory, with consent of William Courtney, Archbishop of Canterbury, patron, John Godewyke, then rector, obtained a grant of the Rectory of Croydon in exchange for the Manor of Woddens or Whaddon, in that parish, the said Monastery to be exempted from all tithes arising and becoming due to the said rectory in future. It was agreed by indenture annexed that, in presenting to the vicarage on every future vacancy, the archbishop should nominate two clerks, whereof the convent should present one for institution. Amongst those instituted were—Richard Bondon (7th Aug. 1402); John Scarburgh, *alias* Causton (20th Jan. 1408); Henry Carpenter (30th Oct. 1487); William Shaldo (3rd Dec. 1487).

In 1307 they had also a certain portion of the tithes of Cheyham, in Surrey, in lieu of which they received of the rectory a pension of two marks.

In 1497, on 4th June, the Abbot and Convent of St. Saviour's, Bermondsey, conceded (*pro hac vice*) to the archbishop the nomination to the parochial church of Croydon, vacant by the death of Mag. William Shaldo, when Roland Phylippis was collated to the vicarage by Archbishop Morton.

By an indenture, Monday, the first week in Lent, the 14th of King Henry II., it was agreed that the collation and patronage of the vicarage of Croydon should remain in the archbishop and his successors, and that upon a vacancy the archbishop and his successors should name two proper persons to the prior and convent, one of whom they should choose and present to the said vicarage. Probably because the annual value of the church was 100 marks, and the manor only 80 marks per annum.

Thus matters continued until the dissolution of the Convent of Bermondsey, at which time the great tithes as parcel of the possessions of the church were granted by the Crown, and the right of presentation reverted to the see of Canterbury, and is now a peculiar belonging to it.

As regards other advowsons, the first the convent possessed was that of the church of St. Saviour's at Bermondsey (it must be remembered that, so far, I always speak of the original St. Saviour's, not St. Mary Overie's, which now goes by the name of St. Saviour's); this was confirmed to them by Henry I., 1127.

In 1158 William de Watteville gave them the advowson of the Rectory of Warlingham, a chapelry of Chelsham, in Surrey, which was confirmed to them by the King the year following, which in the 28th Ed. I. they obtained the bishop's, and in 8th Ed. II. the King's licence to appropriate. They continued in possession of these until the dissolution.

In 1159, 5th Henry II., the advowson of the rectory of Beddington was given to the priory by Inglegram de Furteneys and Sybil de Watteville (sister of William aforesaid and wife of Alan Pirol), which grant was confirmed to them by the King the same year, and afterwards by King Edward III.

In the 38th Henry III., anno 1246, they recovered an annual pension of 100s. payable to them out of this rectory, and also two marks sterling for tithes of lands in the said parish formerly belonging to Richard Huscarle, which was continued to them as a pension in lieu of the said tithes.

The Abbey possessed a cell at Derby.

The first abbot was John Attilburgh, made prior in 1390, and abbot in 1399. As an abbey the house continued for over two hundred years, until on 1st Jan. 1538 it voluntarily surrendered its estates, the abbot getting a pension of £333 6s. 8d. per annum (500 marks), and the six monks £38 13s. 4d. between them, and £7 6s. 8d. was distributed in other annuities. Thus ended the Abbey of St. Saviour's, Bermondsey, and we must now follow the fortunes of the building, apart from the prior and monks.

In 1541 Henry granted the site of the Abbey to Sir Robert Southwell, Master of the Rolls, at a yearly reserved rent of 10s., who at once conveyed it to Sir Thomas Pope, Kt., and Elizabeth his wife in fee, who is said to have taken down the church and its adjacent building and erected a dwelling house as mansion of the manor from the materials. This was henceforth called Bermondsey House. I doubt if Sir Thomas Pope really pulled down the whole of the buildings, except the church. It seems much more likely that he pulled down part and rebuilt with all modern improvements. The house is said to have been surrounded by a property of about twenty acres in extent.

Important transactions took place at various times at this Monastery. In 1154 King Henry II., after his first coronation, held his Court there when he treated with his nobles on the state of the kingdom.

In the reign of King Henry III., many of the nobility having taken the cross upon them, met at this house to deliberate on the order of their journey.

The Bishop of Winchester, who then lived at Winchester House, Southwark, on the river-bank near to St. Mary Overie's, claimed an annual procuration or entertainment for one day; but in 1276 this was contested, and a compromise was made that the prior and convent, on the first coming of the Bishop of Winchester to Bermondsey after his installation, should meet him as their diocesan, in procession, and in lieu of the entertainment should pay him and his successors five marks in silver for that time at his house in Southwark, and in every succeeding year two and a half marks at Michaelmas, and, if he went beyond sea, should meet him in procession on his return.

One important connection which the Monastery had with Southwark and with present day charity must not be omitted.

In 1213, Richard, Prior of Bermondsey, with the consent of the convent, built adjoining to the walls of the Monastery an almshouse or hospital for converts and poor boys, in honour of St. Thomas of Canterbury. It was under the government of the almoner, and was exempt from episcopal jurisdiction. This was the origin of the well-known St. Thomas' Hospital now at Westminster, though no longer the hospital of St. Thomas of Canterbury. There seems to be some little doubt whether the hospital we know as St. Thomas' was thus founded, or whether it was founded by the Priory of St. Mary Overie; but I think that at all events the credit rests with Bermondsey, though it is *possible* St. Mary Overie had a share in the present foundation, as in 1212 the monks of St. Mary Overie erected a temporary building after their monastery was burnt down, which was subsequently used as a "hospitium"; and in the reign of Henry III., Peter des Roches, Bishop of Winchester, incorporated it with the almonry founded by Prior Richard of Bermondsey, and called it "The Spital of St. Thomas the Martyr of Canterbury." After the dissolution, Henry VIII. conveyed the hospital to the Corporation of the City of London, who called it St. Saviour's Hospital; the name did not, however, catch on, and eventually a compromise was entered into, and the name of St. Thomas retained—but as St. Thomas the Apostle, and not that of the "holy blisful martir"—thus meeting the views of the Protestant portion of the community.

But I must leave the history of the Abbey, and consider it in its more material aspects.

There is no known engraving which accurately represents the Abbey or Abbey Church. I am informed by Mr. Frowde, the courteous chief librarian of Bermondsey Free Library, who has assisted me in gaining sundry particulars of the Abbey, that the plan of the buildings published in many books on Bermondsey is imaginary. We know nothing of the architecture of the conventual church, which probably contained all styles from Norman to Perpendicular. In the excavations for the foundations of the South Eastern Railway Model Dwellings certain stones were discovered, which, before being carted away—no one having sufficient interest to preserve them—were happily photographed by Mr. C. M. Smith. One portion of a column of Purbeck marble is still in a house in Grange Walk, if anyone wishes to secure it; and I believe, though I have not seen them, there are some Saxon ornaments in the great wall near the churchyard.

A general view of the remains in 1805, taken from the steeple of St. Mary Magdalen, gives us some little idea of the style of Bermondsey House, which no doubt incorporated certain of the old monastic buildings.

The only portion now standing is Nos. 6 and 7, Grange Walk, in the front wall of which are the staples on which the east gate of the Abbey hung; the wall facing the street is very thick—some three or four feet—and no doubt formed part of a very substantial gateway.

There was until a few weeks ago a mediæval wall dividing the S.E.R. Model Dwellings from No. 66, Abbey Street. I went to photograph it, and found the workmen were just building a new wall, to make the yard look nice I suppose, and they had cut away a portion of the old brickwork so as to reface it. I did my best to photograph it, and you can see in the photograph by the difference in the size of the bricks the junction of old and new work. The face is now put on, and until No. 66 is in its turn pulled down no more of the old wall can be seen.

Engravings remain in Wilkinson's 'Londina' of the (1) east view of the gateway; (2) the interior of a room adjoining those under the hall of Bermondsey Abbey (House ?); (3) the inside and outside of the hall; (4) the inside of one of the rooms under the hall. Wilkinson thinks that the view of the inside and outside of the hall is probably of the hall or refectory of the Monastery, as its appearance seems older than Sir Thomas Pope's time.

According to Walford's 'Old and New London,' the east gate of the monastery was removed early last century (it really was taken down in 1805), and nearly all that was left of the old buildings shared the same fate, and Abbey Street was made upon the site.

The Neckinger Road marks the ancient watercourse formerly navigable as far as the precincts of the Abbey; whilst Walford says that the church of St. Mary Magdalen stands on the site of the ancient conventual church. This I think is incorrect.

There is no doubt that in 1810 the present churchyard was enlarged by annexing to it a strip of land sixteen feet in width that formed a part of the conventual burial ground. There is in the church part of a stone coffin which was then found about six feet from the surface, in front of the 'White Bear' tavern. The lid possesses no ornament, but has a raised beading passing down the centre. This, according to Mr. E. B. Price,* is a rough

* Brit. Arch. Journal, vol. ii. p. 170.

sandstone, but I make it to be carboniferous limestone; at all events I noticed on it a trilobite and plenty of encrinite stems, and this leads me to what originally attracted my attention to Bermondsey Abbey—the discovery of chalk coffins or graves. I find that the above writer records that about forty feet from the stone coffin was discovered a massive wall, which appears to have been the south wall of the Abbey church. Eighteen inches from the south side of this wall and at a depth of 7 ft. 9 in. was found a grave formed of carefully hewn blocks of chalk. The flooring of the grave was concrete, formed of finely screened gravel mixed with lime three inches thick; the grave was twelve inches in depth, and contained a human skeleton completely embedded in a mass of brown loam. There was no lid or other covering. Mr. Price records chalk graves of the Anglo-Saxons found by Sir Christopher Wren in the foundations of St. Paul's Cathedral. I think the Anglo-Saxon date may be incorrect.

In the foundations of the model dwellings mentioned above Messrs. Smith, the contractors, found four chalk graves containing human remains, showing that the conventual burial ground extended to the other side of Abbey Street.

These were somewhat similar to the grave recorded by Mr. Price; but, instead of being plain at the head, as shown in Mr. Price's illustration, these were built round for the head in the same shape as the stone coffin now in St. Mary Magdalen's.

The graves recently found were at a depth of about six feet, and the bodies had been buried in sand. There were no lids, or any stones under the skeletons. The bodies had—as you see from the photographs—been laid on their backs, and simply surrounded and protected by chalk blocks. The skeletons were re-buried at Nunhead Cemetery by the Bermondsey County Council; but Mr. Smith has preserved the blocks of chalk, and I hope that the Scientific Committee of the Croydon Council—the Roads Committee—will secure them for the Borough Museum at Grange Wood, where months ago it was reported they were to be placed.

Mr. C. H. Read, F.S.A., has placed the date of these graves as thirteenth century, which is confirmed by the jug exhibited on the table, which Mr. C. M. Smith informs me was found in one of the graves, which I am advised at the British Museum is of late thirteenth century work. I think we may therefore fairly conclude the burials to be those of members of the convent in the thirteenth century.

In the progress of the excavations the other pottery upon the table was found.

The small pot has been suggested to be a modern water-pot for a bird-cage, the hole in the handle being for the insertion of a piece of wood to keep it in its place.

The small cup is, I think, an apothecary's jar of about the seventeenth century.

I must not conclude without some reference to the famous Rood of Bermondsey. This is said to have been found upon the banks of the Thames, and caused the Abbey to be one of the famous places near London for pilgrimages.

Prayers said before the shrine were considered very precious. In 1465 John Paston wrote to his mother: "Go visit the Rood of North door & St. Saviour in Bermondsey among while ye abide in London, & let my sister Margary go with you to pray to them that she may have a good husband or she come home again." I don't know if the prayer was answered.

It is recorded that on the demolition of the Abbey church Sir Thomas Pope caused the Rood of Grace to be removed and "set up on the common in Horseleydown," at the end of the present Crucifix Lane.

We read that in 1538 (? 1559), in the mayoralty of Sir Richard Graham, as follows: "M. Graham, may^r. On Saynt Matthies day thapostull the xxiiii^th day of February Sonday did the Bishop of Rochester preche at Polls Cross & had standyng afore hym all his sermon tyme the pictur of the Roode of Grace in Kent & was gretely sought with pilgrims and when he had made an ende of his sermon the pictur was torn all to peces, then was the pictor of Saynte Saviour that had stand in Barmsey Abbey many yeres in Southwarke takyn doon." We must remember that the word "picture" at the above date was used for statues and carvings, as well as paintings.

So few remains of the Abbey have been preserved, that I must not conclude without alluding to a beautiful piece of plate, now in St. Mary Magdalen's, which I cannot better do than by reading the description given by Rev. T. S. Cooper in the "Church Plate of Surrey" ('Surrey Arch. Journ.').

"Not earlier than the fifteenth century, and not very early in that.

"15 Cent. Plate. — This remarkable and most interesting piece of plate is said to have belonged originally to Bermondsey Abbey, and to have come into the possession of the parish church at the dissolution of that monastery in 1537. That it once belonged to the Abbey seems very probable, but, since no mention of it occurs in Ed. VI.^th's 'Inventory of Church Goods,' it can hardly have come into possession of the parish so early as is supposed. On the reverse side of the boss is an indented lion's head, uncrowned, which I had thought from its resemblance to the head of the lions or leopards of the royal arms as used by Henry III. and onwards might be a Goldsmiths' Hall mark, but which Mr. Cripps thinks 'is much more like an ownership mark'; in this case it would be a stamp used in the Abbey.

"In the centre of this beautiful plate is represented a lady about to place a helmet on the head of a kneeling knight. To the right may be seen his charger's head. The background is filled in with dome-topped gateway and fortified walls, and two trees, one a palm, the other trefoil-headed. The whole is no doubt from some current picture, probably of a legend of the Crusades: the costumes therefore would be no safe guide to the date of the plate. Round the boss is a band in silver gilt in vine foliage and grapes of early design; and on the rim spirally twisted lobes alternately concave and convex, with foliage ornament in the spandrils. The marks of the compasses inside the lobes are very distinct." *

In the garden of the vicarage of St. Mary Magdalen's is the jamb of one of the fireplaces from Bermondsey House.

One curious relic has recently been found on the site of the Abbey—a small box made of thin pewter, about 7 in. long by $1\frac{1}{2}$ in. deep by about $2\frac{1}{2}$ in. wide at one end and 2 in. at the other (I speak from memory), somewhat of the shape of a coffin. On the inside of the lid, which apparently had been soldered on, are some ruled lines of dots forming a chess-board pattern in squares of about $\frac{1}{2}$ in. There are also one or two letters stamped on the metal. The ruling appears to have been upon the metal originally, and has no connection with the object of the case itself, the metal having simply been cut from a ruled sheet when required for making the case or casket. The British Museum authorities I understand cannot identify the use of the case. I suggest it was a reliquary to contain some precious object.

I hope I have not tired you with this description of one of our famous Abbeys. To walk through Bermondsey now and to try to picture what it was a hundred years ago, when the fields were still open; to go back further and try to imagine it in the early part of the sixteenth century, when the Abbey was in its glory; when the Monastery of St. Mary Overie existed in Southwark, when the great houses of Winchester and Rochester stood in the Borough, and the famous inns down the High Street were full of guests; or to think of it still earlier, when the Monastery of Bermondsey stood isolated in green fields surrounded with streams in the fourteenth century, and the 'Tabard' was cared for by that right merry man the Hoste, who with the Merchant and the Cook, the Wife of Bath and the Monk, with the Somnour and the Miller and the rest of the jovial crew, a rollicking party, tempered only by the gentle presence of the Prioresse and the Clerk of Oxenford and the poore Parsoun of a towne, went down the Kent Road past St. Thomas a Waterings, leaving St. Saviour's of Bermondsey on their left—is a pleasant occupation, and one which may afford some of us, at all events, a pleasant relief to necessary business walks and occupations.

* 'The Church Plate of Surrey,' Rev. T. S. Cooper, M.A., F.S.A.

17.—Economy of Growing Canadian Poplars upon Waste Lands for the Manufacture of Paper.

By William F. Stanley, F.G.S.

(Read December 20th, 1904.)

From the low profits upon farming, in competition with imported produce, many low-lying lands are found not worth cultivation. These lands are commonly in the market, offered to be sold at a low price. My object in the present paper is to bring before the notice of this section the commercial value of such lands for the growth of poplar-trees, which would be available for the manufacture of paper, if works were established near where the poplars were grown.

There is one condition necessary for the success of paper-making, which is, there must be a clear stream of running water for the necessary water supply. In some cases, where there is a good fall in the stream, this would also be available for supplying the whole or part of the power required in the manufacture.

As regards the growth of poplar-trees, the experience upon which this paper is founded are my own observations during twenty-three years.

In 1879 I purchased six acres of poor clay-land at a low price, which had formerly been a brickfield. By filling the pits I made the land undulating, and built my house upon it. As the part of the plot, where there was original soil, was bounded by buildings on two sides, I planted a band of quick-growing poplars (*Populus Ontariensis*), to the extent of about two acres, to hide the buildings. I was afterwards surprised at the rapid growth of the trees. During a short stay in Belgium I took great interest in the manufacture of excellent paper from the same kind of poplar, and afterwards took particular interest in the growth of the poplars I had planted, to test as far as possible the commercial possibilities of growing poplars for paper-making in this country.

To make this proposition clear, I think it would be well to give my idea of the success of a commercial scheme with the above premises, founded upon my own data; for this I propose, as a speculation, that about a thousand acres of poor clay-land should be acquired, having a clear stream running through it, with mill-power, if possible. Such land, I have been told, has been sold for seven pounds an acre.

I would suggest forming a syndicate, engaging a subscribed capital of £50,000 to provide outlay upon the following conditions:—

A First Call of £22,000.

	£
To be invested in 1000 acres of suitable clay-land, to cost within £10 an acre, say	10,000
Provide poplars for planting at four feet apart, 2500 per acre, at 35s. per 1000. (The market price according to printed catalogue)	4,500
Labour, ploughing the land once, and planting, at 30s. per acre	1,500
Cost of administration, six years, allowing one year of this time to get the plantation in working order	1,000
Interest, ten per cent. on capital, five years (less bank interest on deposit account)	5,000
	£22,000

The administration is put at a low price, in that there would be very small cost after the planting was complete, for which £4,500 would be sufficient. Practically the land might be then left to itself, unless it could be let as a game preserve or otherwise, to pay for the superintendence.

After the fifth year a paper-mill would have to be built, which would cost £25,000 with machinery fitted; but it would be well to make a second call of capital, £28,000, making the total £50,000.

In the sixth year, or the fifth year after the 2,500,000 poplars were planted on the 1000 acres of land, these trees would have attained the average growth of 8 ft. in height by 3 in. diameter, and weigh about 9 lb. each = 10,000 tons. If we subtract about one-third of this for one-third of the trees being felled for paper-making, say 3,000 tons,—this would provide material to produce about 1000 tons of finished paper, placing the value of this at three-halfpence per pound, £14,000.

If we now set down £7,000, or half the above, for cost of manufacture with the material supplied, we have a clear profit of £7,000, or over twelve per cent. interest on the investment for the first year of manufacture.

When the trees are thinned out they grow much more rapidly, so that after the fifth year they increase nearly an inch per year in diameter. If we continue to take one-third of the trees standing every year, I find this would establish about a uniform amount of timber per year to be used in the manufacture of the paper. In twenty-two years there would be left only 3333 trees standing, or about supply for four years, of the trees originally planted.

Taking my own trees, after twenty-one years' planting, that were left standing about six to the acre, or about 30 ft. apart, these measured 18 to 20 in. diameter for about 10 ft. of butt. weighing about 12 cwt. each, or equal to 3600 tons. This, if taken for 1000 acres, would be enough, allowing for continuous growth for four years' supply, in the interval of which other trees would be coming on, or other timber, oak or ash, might have been planted advantageously for profit, and new land acquired to continue the supply of poplars for the mill.

If the land were resold it would fetch about cost value, to buy new land. With a moderate amount of water-power, if this power were not sufficient to work the mill during the summer-time, the top wood of the trees would supply supplementary power if this were burnt in a suitable wood-burning boiler, such as are commonly in use in the United States of America. If part of the land were very wet, willow might be grown, forming an excellent material for tough paper. There is no doubt other commercial products would be derived from the same lands upon which the poplars were grown.

18.—Notes on a Section of Woolwich and Reading Beds, New Cross Gate.

By N. F. Robarts, F.G.S.

(Read December 20th, 1904.)

The erection of buildings at New Cross Gate by the London County Council, in connection with their tramway system, necessitated considerable excavations, in the spring of this year, in the hill to the south of New Cross Road, which exposed to view a section of the Lower London Tertiaries which I think should be recorded, to supplement particulars which have already been given of the neighbouring well-known section in the New Cross cutting of the London, Brighton and South Coast Railway.

Owing to the kind permission by Mr. E. Riley, Superintending Architect of the London County Council, of free access to the works, I was enabled to make several visits whilst they were in progress and examine the section in detail.

The ground occupied by the tramway buildings is about 600 yards north-west of the northern end of the section in the L.B. & S.C.R.'s New Cross cutting described in the paper I laid before the Society on 19th April, 1904.

The ground south of the New Cross Road dips from south to north, falling about 22 ft. 6 in. in 580 ft., the distance from the frontage to the retaining wall in the rear of the premises.

The ground required to be levelled, which led to a section being made above the level of New Cross Road of about 22 ft. 6 in. in depth, whilst the foundations showed about 6 ft. more, and bore-holes a still greater depth.

The beds seemed to change their character as they went north of the railway cutting, being less clayey and more sandy, whilst the dip being south-easterly the lower beds of the series are brought to the surface at New Cross Gate.

The excavation being rectangular enabled the south-easterly dip of the beds to be easily traced.

The following section fairly represents the southern side of the excavation :—

		FT.	IN.
A.	Soil	0	6
B.	Orange sand	2	0
	Clay with sandy partings	10	0
	Yellow sand	2	0
	Sandy clay	1	6
	Orange sand	2	0

		FT.	IN.
C.	Shell bed (*Cyrena*)	1	6
D.	Oyster bed	1	6
E.	Shell bed (*Cyrena*)	1	0
F.	Mottled clay	1	3
	Yellow clay	1	9
G.	Pebbles	2	0
	Sand		

The fossils in this section were almost all contained in the three shell beds overlying the mottled clay, but there were traces of leaf-remains in the clays of B.

Mr. E. T. Newton, F.R.S., has kindly examined the fossils for me, and determined them as follows :—

B.—Clay............	*Cyrena*, sp.
	Melania.
C.—Shell bed. ...	*Cyrena cuneiformis.*
	Cerithium.
	Melania.
D.—Oyster bed.	I preserved no specimens from this bed, which was a hard shelly rock, composed almost entirely of *Ostrea tenera.*
F.—Shell bed. ...	*Ostrea bellovacina ?*
	Cerithium funatum.
	Cyrena cuneiformis.

Comparing this section with that at Loampit Hill,* the upper beds appear to almost reach the lowest beds exposed in the L. B. & S. C. R.'s New Cross cutting, so that the sections at that place and this give us practically a complete section from the lower beds of the London Clay to the Thanet Sand.

I am favoured by Mr. Riley with the following sections from bore-holes made at the works :—

40·02 ft. above O. D.	FT.	IN.
Mould	1	11
Sandy clay	5	9
Blue clay and shell	4	0
Mottled clay	5	0
Clay and ballast	1	6
Gravel........................	5	0
Green sand and clay ...	2	0
Pebbles and green sand	4	6
Green sand	5	0
Blue sandy clay	3	0
Grey sand..................	2	0
FT.	39	8

38·40 ft. above O. D.	FT.	IN.
Made ground...............	5	0
Blue clay and shell	4	0
Mottled clay	3	6
Gravel.........................	8	6
Pebbles & green sandy clay	10	0
Grey sand	9	0
FT.	40	0

* 'Memoirs of the Geological Survey' (1872), vol. iv. pt. i. p. 127.

The pebble-bed contained some pebbles of very considerable size. The two shell beds, consisting chiefly of *Cyrena*, were both a hard rock.

It would be desirable to watch for sections in the neighbourhood which may show if any beds intervene between the lowest in the railway cutting and the highest in the present section.

I wish to record my thanks to Mr. E. Riley, for the particulars of the sections in the bore-holes and permission to visit the works; and to Mr. E. T. Newton, F.R.S., for kindly naming the fossils.

19.—Report of the Meteorological Committee, 1904.

Prepared by the Hon. Sec., Francis Campbell-Bayard, F.R. Met. Soc.

(Read February 21st, 1905).

The same arrangements under which the daily rainfall of the district round Croydon has been observed and tabulated have been continued throughout the year 1904. The number of stations in the printed list is 97, and there are four additional stations—*viz.* Camberwell Cemetery, Forest Hill; Camberwell Green; Camberwell Town Hall; and Leyton Square, Camberwell—the records of which are complete, with the exception of a very few days which have been interpolated, for the whole year, and which will be found at the end of this Report. These 101 stations are under the superintendence of 77 observers. Two changes have occurred: Mr. Grant removed from Harp's Oak Cottage, Merstham, to Hale Edge, South Nutfield, at the end of March; and Mr. Jordan ceased observing at Woodfield Avenue, Streatham, at the same time. It is a pleasure for the Committee to be able to inform the members that a new station at Streatham has been established at "The Pumping Station" by Mr. J. W. Restler, the engineer of the Southwark and Vauxhall District of the Metropolitan Water Board, to whom the Committee are greatly indebted for some valuable records. The observations at Farningham Hill have been temporarily interrupted, owing to illness in Mr. Waring's family. Mr. J. E. Clark is leaving Ashburton Road, Croydon, and has already established a new station at Purley; and Mr. Spencer C. Russell has established a new station at Epsom, a place not represented in the printed return; and Mr. W. Oxtoby has also established a new station at Grove Vale, East Dulwich, a place not hitherto represented. These additional returns will involve a slight extra cost in printing for the Society, which it is hoped will not be objected to, seeing that there is no similar publication in the United Kingdom or, I believe, elsewhere in the world.

Appendix I. to this Report contains a list of the observers, with particulars relating to the stations and gauges, and also the monthly tables of daily rainfall, of which a sufficient number have from month to month been pulled for the use of the Society. These printed tables contain the records of all observers, with the exceptions already mentioned, reporting to the Committee.

Appendix II. contains a record of all falls of rain of 1·00 in. and upwards, extracted from the monthly tables in Appendix I.

The rainfall of the district for the year is very different to that

TABLE I.

THE RAINFALL OF 1904 AS COMPARED WITH THE AVERAGE OF THE TEN YEARS 1891–1900.

STATIONS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Knockholt (F. G.) ……	+2·86	+1·81	—0·70	—0·11	+0·84	—1·20	—0·77	—0·82	+0·01	—1·13	—1·49	+0·91	+0·21
Dorking ……	+2·67	+1·89	—0·43	+0·18	+0·94	—0·84	—0·93	—0·78	—0·46	—1·43	—1·97	—0·35	—1·51
Caterham ……	+2·79	+1·52	—0·13	+0·06	+1·15	—1·14	—1·39	—0·87	—0·90	—1·34	—1·83	—0·42	—2·50
Banstead ……	+2·91	+1·76	—0·51	+0·15	+0·92	—1·18	—0·40	—0·92	—0·84	—1·36	—1·66	—0·23	—1·36
Addington Hills ……	+2·51	+1·67	—0·25	—0·06	+0·55	—1·18	—0·74	—0·76	—0·80	—1·34	—1·37	+0·05	—1·72
Nutfield (O. G.) ……	+2·03	+0·91	—0·15	+0·08	+1·13	—0·91	—1·44	—0·92	—0·58	—0·75	—1·64	+0·17	—2·07
Reigate Hill ……	+1·51	+1·18	—0·36	+0·17	+0·91	—0·84	—1·61	—0·77	—0·89	—1·14	—1·85	—0·17	—3·86
Sevenoaks ……	+1·57	+1·46	—0·67	—0·40	+0·76	—1·34	—1·10	—0·48	—0·57	—1·64	—1·71	—0·12	—4·24
Forest Hill (Waterworks)	+1·01	+0·90	—0·02	+0·02	+0·62	—0·81	—0·55	—0·69	—0·45	—1·29	—0·71	—0·02	—1·99
Addington (Pumping St.)	+2·92	+1·71	—0·14	—0·12	+0·45	—1·31	—0·82	—0·71	—0·68	—1·38	—1·69	—0·10	—1·87
Abinger (The Hall)……	+2·76	+1·69	—0·54	—0·12	+1·20	—1·32	—1·10	—0·76	—0·57	—1·40	—2·16	—0·03	—2·35
Redhill* ……	+0·56	+1·64	—0·10	+0·35	+1·20	—0·64	—1·36	—1·11	—0·78	—1·26	—1·94	—0·13	—3·57
Bickley ……	+1·48	+1·43	—0·12	—0·29	+0·76	—1·12	—0·43	—0·73	—0·62	—1·33	—1·29	+0·02	—2·24
D'Abernon Chase ……	+1·69	+1·58	—0·26	—0·04	+1·11	—0·18	—0·54	—0·78	—0·48	—1·36	—1·29	+0·04	—0·51
Addington (Park Farm)	+3·05	+1·71	—0·17	—0·10	+0·55	—1·12	—0·79	—0·66	—0·76	—1·33	—1·54	—0·16	—1·32
Leatherhead……	+2·64	+1·45	+0·12	+0·09	+0·89	—0·54	—1·13	—0·38	—0·57	—1·32	—1·51	—0·12	—0·38
Sutton (Waterworks)*…	+1·73	+1·41	—0·25	+0·16	+0·96	—0·86	—0·40	—0·57	—0·84	—1·37	—1·42	—0·29	—1·74
Forest Hill (Newfield H.)	+0·97	+0·92	—0·24	—0·09	+0·58	—0·80	—0·73	—0·82	—0·50	—1·38	—0·83	+0·28	—2·64
Orpington……	+1·97	+1·81	—0·24	—0·28	+0·50	—1·00	—0·82	—0·55	—0·63	—1·28	—1·54	+0·13	—1·93
W. Norwood……	+0·96	+0·72	—0·29	—0·04	+0·59	—0·93	—0·75	—0·70	—0·52	—1·36	—0·96	—0·13	—3·41
Oxshott……	+1·70	+1·31	—0·20	+0·07	+1·16	—0·46	—0·35	—0·76	—0·53	—1·34	—1·10	+0·13	—0·37
Beckenham*……	+1·54	+1·57	—0·03	—0·15	+0·80	—0·79	—0·60	—0·65	—0·61	—1·21	—1·16	+0·26	—1·03

THE RAINFALL OF 1904 AS COMPARED WITH THE AVERAGE OF THE TEN YEARS 1891–1900 (*contd.*).

STATIONS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
Nunhead	+0·31	+0·38	—0·02	—0·20	+0·46	—0·62	+0·05	—1·00	—0·61	—1·24	—0·74	+0·17	—3·06
Sidcup	+1·04	+1·35	—0·14	—0·28	+0·82	—1·22	+0·01	—0·78	—0·56	—1·48	—0·95	+0·22	—1·97
Croydon (Duppas House)	+1·81	+1·27	—0·17	+0·08	+0·97	—0·94	—0·87	—0·69	—0·76	—1·37	—1·41	—0·06	—2·14
Wimbledon Hill*	+1·20	+0·83	—0·21	—0·09	+0·94	—0·75	—0·65	—0·55	—0·86	—1·58	—1·00	—0·04	—2·76
Greenwich	+0·91	+1·00	—0·13	—0·20	+0·66	—0·88	+0·18	—0·76	—0·56	—1·25	—0·61	+0·09	—1·55
Croydon (Waddon N. R.)	+1·88	+1·15	—0·04	+0·13	+1·03	—0·92	—0·90	—0·63	—0·73	—1·15	—1·22	+0·05	—1·35
Wallington	+1·95	+1·32	—0·18	+0·21	+0·95	—0·64	—0·48	—0·86	—0·55	—1·34	—1·31	—0·20	—1·13
Croydon (Brimstone Bn.)	+1·76	+1·14	—0·09	—0·17	+0·78	—0·82	—0·95	—0·64	—0·46	—1·21	—1·23	—0·09	—1·98
South Norwood*	+1·53	+1·50	—0·01	+0·06	+1·01	—0·83	—0·73	—0·51	—0·61	—1·11	—1·07	+0·43	—0·34
Beddington	+2·04	+1·27	—0·19	+0·18	+0·98	—0·83	—0·68	—0·72	—0·73	—1·45	—1·43	—0·25	—1·81
Richmond*	+0·76	+0·60	—0·17	—0·40	+1·37	—0·76	—0·04	—0·65	—0·46	—1·56	—0·87	—0·37	—2·55
Brixton..................	+0·67	+0·97	—0·07	+0·21	+0·79	—0·83	—0·39	—0·82	—0·79	—1·30	—0·96	—0·11	—2·63
Wimbledon (Sew. Wks.)	+0·61	+0·69	—0·44	—0·09	+0·55	—0·06	—0·63	—0·60	—0·87	—1·31	—0·89	—0·13	—3·17
Raynes Park	+0·85	+0·69	—0·40	—0·23	+0·70	—1·01	—0·65	—0·84	—1·05	—1·65	—1·25	—0·44	—5·28
New Malden.............	+0·63	+0·35	—0·29	—0·35	+0·73	—0·88	—0·68	—0·48	—1·07	—1·28	—0·82	+0·12	—4·02
Esher	+1·37	+1·18	+0·02	—0·22	+0·79	—1·36	—0·17	—0·84	—0·63	—1·28	—0·76	—0·06	—1·96
Kingston (Sew. Works)	+1·10	+1·01	—0·13	—0·33	+0·96	—0·88	—0·52	—0·84	—0·77	—1·47	—1·04	—0·01	—2·92
Surbiton	+1·07	+0·90	—0·06	—0·31	+0·90	—1·05	—0·34	—0·67	—0·83	—1·36	—0·88	+0·29	—2·34
Wilmington	+1·21	+1·31	+0·18	—0·22	+0·61	—1·01	—0·52	—0·55	—0·66	—0·75	—0·84	+0·26	—0·98
Battersea (Waterworks)	+0·16	+0·73	—0·12	—0·17	+0·35	—0·52	—0·46	—0·56	—1·05	—1·36	—0·51	—0·08	—3·59
Deptford	+0·74	+0·90	—0·07	—0·11	+0·62	—0·64	+0·01	—0·63	—0·55	—1·27	—0·41	+0·03	—1·38

of the previous year, 1903, in which we had an excess of rain varying from 20·74 in. at Leatherhead to 9·82 in. at New Malden. In this year, by way of contrast, we have a deficiency at every station, with the exception of Knockholt, which has an excess of 0·21 in., which varies from 5·28 in. at Raynes Park to 0·34 in. at South Norwood.

With respect to this year's rainfall, I have prepared Table I., which consists of 43 stations from amongst the 48 whose averages for the ten years 1891–1900 are given in the Meteorological Sub-Committee's Report for 1900, the stations for which the individual records are not the same being marked with a *. On looking at this table and comparing it with a similar table in the Report for 1903, we note the very large excess of rain in January and February, which for January varied from 3·05 in. at Addington Park Farm to 0·16 in. at Battersea Waterworks, and for February from 1·89 in. at Dorking to 0·35 in. at New Malden, as against in January, 1903, 0·86 in. at Addington Park Farm to 0·00 in. at Caterham; and in February, 1903, of +0·29 in. at Knockholt to −0·68 in. at Raynes Park. In March, with the exception of 3 stations at which there were small excesses—*viz.* Leatherhead, Esher, and Wilmington—there was a deficiency which varied from −0·70 in. at Knockholt to −0·01 in. at South Norwood. In April the deficiency was much smaller than in March, and there were 16 stations showing an excess. May had an excess at every station which varied from 1·37 in. at Richmond to 0·35 in. at Battersea Waterworks. June has a deficiency at every station, varying from 1·36 in. at Esher to 0·46 in. at Oxshott. July also has a deficiency at every station except four —*viz.* Nunhead, Sidcup, Greenwich, and Deptford, which have very small excesses—varying from 1·61 in. at Reigate Hill to 0·04 in. at Richmond. August, September—with the single exception of Knockholt, which has the slight excess of 0·01 in.—October and November have considerable deficiencies, especially October, where the deficiency value is over an inch at every station, with the single exception of Wilmington, where it is 0·75 in. December is a month of somewhat variable conditions, 18 stations having an excess; the values range from +0·91 in. at Knockholt to −0·44 in. at Raynes Park.

That the year has been a dry one as a whole has been shown by Table I.; but that there should be a very large number of rainy days—in fact, nearly as many as the extremely wet year of 1903—will probably come as a great surprise. For this purpose Tables II., III., and IV.—giving the number of rainy days at Wallington, Greenwich, and Reigate Hill, as compared with the average 1891–1900—have been constructed.

TABLE II.

NUMBER OF RAINY DAYS AT WALLINGTON, SURREY.

Average of 10 years	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year.
1891–1900	18	14	13	11	11	11	10	15	12	16	16	17	164
1903	17	12	19	12	14	13	14	19	15	25	20	13	193
1904	24	21	17	13	18	8	10	9	15	17	17	21	190

TABLE III.

NUMBER OF RAINY DAYS AT GREENWICH OBSERVATORY, KENT.

Average of 10 years	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year.
1891–1900	16	12	14	11	12	12	12	15	12	16	15	16	163
1903	16	11	18	12	16	11	13	18	16	27	15	11	184
1904	24	20	15	12	18	8	11	10	13	17	11	21	180

TABLE IV.

NUMBER OF RAINY DAYS AT REIGATE HILL, SURREY.

Average of 10 years	Jan.	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year.
1891–1900	18	13	14	11	11	11	13	14	12	17	16	19	169
1903	22	14	21	13	13	13	15	20	17	23	15	11	197
1904	18	21	16	11	16	8	9	11	12	15	13	18	168

In considering these three tables, it will be at once seen that the Wallington and Greenwich tables are in many respects similar, whilst the Reigate Hill table is different. It is very evident that, from the number of rainy days both at Wallington and Greenwich, the relative falls must be much smaller. The only anomalous reading is that of November at Greenwich, which gives a total of no less than six days smaller than Wallington. When, however, we come to consider the Reigate Hill record, we have an entirely different state of circumstances. The yearly number of rainy days is actually one below the average, and no less than twenty-nine below 1903. It is very difficult to account for this, though possibly owing to the station being situated on the escarpment of the North Downs, though not at the highest point, the slighter rains were driven over the station, thereby causing a loss of rainy days, but not affecting the aggregate amount of fall by much. In studying the individual months, it will be noticed that both at Wallington and Greenwich there were in January and December a large number of rainy days, whilst at Reigate Hill the number was only about the average. At all three stations February had a large number of rainy days. The other months are somewhat alike at all three stations, though the number of rainy days is on the whole smaller at Reigate Hill than at Wallington and Greenwich, except in August, when Reigate Hill had a number slightly larger than the other two stations.

The number of falls of one inch and upwards given in Appendix II. are only eight, and are relatively very small, the highest being 1·55 in. on July 25th at Greenwich. It will be noticed how small also is the area of the different falls.

TABLE V.

Duration of Rainfall at Duppas House, Croydon, 1904.

Level of gauge, 162·00 O. D. Mr. Baldwin Latham, M.Inst.C.E.

1904.	Rainfall in inches.	Number of Days ·01 or more fell.	Duration of Rainfall in Hours.	Mean Duration of Rainfall in inches per hour.
January	3·63	22	122·25	·0297
February	3·05	19	71·60	·0426
March	1·52	16	46·90	·0324
April	1·26	11	26·96	·0465
May	2·44	16	61·55	·0396
June	·80	9	20·32	·0394
July	1·26	11	19·98	·0631
August	1·655	10	31·86	·0519
September	1·215	12	43·07	·0282
October	1·885	15	58·62	·0322
November	1·405	14	37·91	·0371
December	2·435	19	57·26	·0425
Total	22·555	174	598·28	·0377

Mr. Baldwin Latham has most kindly furnished me with a table (Table V.) giving the duration of rainfall at Duppas House, Croydon. If we study this very valuable table we shall note how small the rate of fall has been. The total number of hours during which rain fell is 598·28 hours, which gives the actual number of days of twenty-four hours each as 24·9 days, and the actual annual rate of fall as ·0377 in. per hour. The greatest rate of fall took place in July, which has ·0631 in. per hour, and the next in August, which has ·0519 in. per hour; whilst the lowest rate of fall occurred in September, which has ·0282 in. per hour, and in January, which has ·0297 in. per hour. In 1902 the total number of days of twenty-four hours each was 22·0 days, and the rate of fall ·039 in. per hour; and in 1903 there were 31·5 days, with a rate of fall of ·0512 in. per hour.

In conclusion, the Committee desire to thank those, fifteen in number, who have given donations in aid of this rainfall work, which, as far as the Committee can learn, is unique; and they would like to mention that the whole of these donations is expended in the printing of the returns, no payment being made to any observer, or any member of the Committee, all of whose services are voluntary.

Camberwell Cemetery, Forest Hill, Surrey.

Observer—W. Oxtoby. Gauge (self-recording) 8 in. in diameter.

Height of gauge above ground, 2 ft. 2 in.
Height of station above sea-level, 160 ft.
Time of observation, 9 a.m.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1·77	1·58	1·10	0·73	1·88	0·79	1·30	1·02	0·75	1·33	1·35	1·68	15·28

The Green, Camberwell, Surrey.

Observer—W. Oxtoby. Gauge (self-recording) 8 in. in diameter.

Height of gauge above ground, 2 ft. 2 in.
Height of station above sea-level, 17 ft.
Time of observation, 9 a.m.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
2·07	2·09	1·45	1·03	2·02	0·86	1·74	1·18	0·96	1·34	1·50	1·86	18·10

THE TOWN HALL, CAMBERWELL, SURREY.

Observer—W. OXTOBY. Gauge (self-recording) 8 in. in diameter.

Height of gauge above ground, 49 ft.
Height of station above sea-level, 21 ft.
Time of observation, 9 a.m.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1·91	2·07	0·99	0·89	2·10	0·72	1·75	1·54	0·91	1·48	1·35	1·73	17·44

LEYTON SQUARE, CAMBERWELL, SURREY.

Observer—W. OXTOBY. Gauge (self-recording) 8 in. in diameter.

Height of gauge above ground, 2 ft. 2 in.
Height of station above sea-level, 14 ft.
Time of observation, 9 a.m.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
2·07	2·06	1·30	0·96	2·01	0·69	1·00	1·24	0·78	1·17	1·48	1·70	16·46

APPENDIX I.

CROYDON NATURAL HISTORY AND SCIENTIFIC SOCIETY

(Meteorological Committee.)

No.	Stations.	Observers.	Size of Gauge.	Height above Ground.		Height of Statn. ab. Sea-level.
			IN.	FT.	IN.	FT.
	Holmbury St. Mary (Ioldwynds)	F. Cornish	5	1	0	530
	Abinger (The Rectory)	Miss Brodie-Hall	5	1	0	381
	Abinger (The Hall)	The Lord Farrer	8	2	0	320
	Dorking (Denbies)	J. Beesley	5	0	6	610
5	Redhill (Linkfield Lane)	Mrs. Stephenson	5	1	0	350
	Nutfield (The Priory, old gauge)	J. Moffatt	8	1	2	468
	Nutfield (The Priory, new gauge)	J. Moffatt	8	1	2	331
	Buckland (Hartswood)	R. W. Clutton	5	1	0	174
	Reigate Hill (Nutwood Lodge)	H. E. Gurney	5	1	0	440
10	Upper Gatton (The Park)	F. Druce	5	1	0	600
	Merstham (Rockshaw Lodge)	T. W. Hill	5	1	0	475
	Harp's Oak Cottage	R. C. Grant	5	1	0	454
	Chipstead (Shabden Park)	J. Crerar	5	1	0	550
	Chaldon (The Rectory)	Rev. G. E. Belcher	5	1	0	542
15	Caterham (Metropolitan Asylum)	P. E. Campbell, M.D.	5	1	0	610
	Westerham (Hill Estate)	W. Morris	5	1	0	539
	Westerham (The Town)	W. Morris	5	1	0	380
	Knockholt Beeches (Field Gauge)	W. Morris	5	1	0	785
	Knockholt Beeches (Tower Gauge)	W. Morris	5	24	6	812
20	Chevening (The Park)	C. Sutton	5	1	0	360
	Sevenoaks (St. John's Hill)	W. W. Wagstaffe	5	1	10	380
	Chelsham (Fairchildes)	A. S. Daniell	8	1	0	600
	Warlingham (Egremont)	H. Rogers	5	1	0	614
	Kenley (Hazelea)	Mrs. Carr-Dyer	5	1	0	282
25	Kenley (Place Fell)	J. V. Brett	5	1	0	300
	Sanderstead (The Red House)	Capt. Carpenter, R.N.	5	1	0	320
	Burgh Heath (The Reservoir)	Sutton Dis. Water Co.	5	1	0	580
	Hedley (The Hurst)	Mrs. Lyall	5	1	3	450
	Leatherhead (Downside)	A. Tate	5	1	0	250
30	D'Abernon Chase	Sir W. Vincent, Bart.	5	1	0	280
	Oxshott (Beverstone)	W. H. Dines	5	1	0	212
	Banstead (The Hall)	Mrs. Maitland	8	1	0	488
	Sutton (Carshalton Road)	Sutton Dis. Water Co.	5	1	0	110
	Sutton (Sewage Works)	C. Chambers Smith	8	1	0	94
35	Benhilton (Angel Hill)	J. C. M. Stanton	5	1	3	125
	Carshalton (Sewage Works)	W. W. Gale	5	1	0	118
	Wallington (Maldon Road)	F. Campbell-Bayard	5	4	1	140
	Beddington (Riverside)	S. Rostron	5	1	0	120
	Croydon (Brimstone Barn)	Croydon Corporation	5	1	0	130
40	Croydon (Waddon New Road)	Croydon Corporation	5	1	0	146
	Croydon (Duppas House)	Baldwin Latham	8	1	0	158
	Croydon (Windmill Road)	A. Malden	5	1	6	174
	Croydon (Park Hill Rise)	H. F. Parsons, M.D.	5	1	0	250
	Croydon (Ashburton Road)	J. E. Clark	5	1	0	188
45	Croydon (Avondale Road)	Dr. G. J. Hinde	5	1	0	225

No.	Stations.	Observers.	Size of Gauge.	Height above Ground.		Height of Statn. ab. Sea-level.
			IN.	FT.	IN.	FT.
	Addington Hills (The Reservoir) ..	Croydon Corporation	8	0	9	473
	Addington (Park Farm)	W. Whalley	5	1	0	268
	Addington (Pumping Station)....	Croydon Corporation	8	1	0	331
	West Wickham (Wickham Court)	Sir H. F. Lennard, Bt.	5	1	2	300
50	Hayes (Hayes Place)	W. Beale	8	1	0	350
	Orpington (Kent Water Co.)	W. Morris	5	1	0	220
	Farningham Hill (Hill House) ..	A. J. Waring	5	3	0	300
	Southfleet (Kent Water Co.)	W. Morris	5	1	0	82
	Chislehurst (Hawkwood)	Miss Edlmann	5	1	0	300
55	Bickley (The High Field)	J. Batten	5	1	2	295
	Bromley (The Palace)	Coles Child	5	1	0	187
	Bromley Common (Elmfield)	Rev. J. P. Faunthorpe	5	0	9	240
	Beckenham (Wickham Road) ..	E. Scovell..........	5	1	2	155
	Anerley (The Town Hall)	H. W. Longdin......	8	40	0	191
60	South Norwood (Woodvale)	E. Dean	5	1	0	216
	Beddington Corner (Millgreen Rd.)	G. Miller	5	5	0	77
	Morden (Steel Hawes)	Miss R. Hames......	5	5	2	100
	Wimbledon (Sewage Works)	C. H. Cooper	5	1	0	58
	Wimbledon (The Downs)	Francis Fox	5	1	0	162
65	Wimbledon (The Windmill)	Jesse Reeves........	5	1	0	172
	Raynes Park (Pumping Station) ..	C. H. Cooper	5	1	0	47
	New Malden (Sewage Works)	T. V. H. Davison....	5	1	0	45
	Worcester Park (Manor Lodge) ..	F. D. Outram	5	1	9	120
	Esher (Sewage Works)..........	A. J. Henderson	5	1	0	40
70	West Molesey (Chelsea Water Co.)	H. Wrinch..........	5	1	0	32
	Surbiton (Chelsea Water Co.)....	H. Wrinch..........	5	0	6	25
	Kingston (Sewage Works)	T. Stevens..........	5	1	0	25
	Kingston (County Hall)	E. Underwood	5	0	9	31
	Richmond (The Terrace)	J. H. Brierley	8	1	6	109
75	Putney Heath (The Reservoirs) ..	H. Wrinch..........	5	1	0	180
	Wandsworth Com. (Patten Road)	F. J. Brodie	5	1	0	100
	Streatham (Woodfield Avenue)...	F. Jordan	5	1	0	120
	West Norwood (Thornlaw Road) ..	W. Marriott	5	1	0	220
	Up. Norwood (Dulwich-wood Park)	T. P. Caldicott	5	1	2	276
80	Up. Norwood (Fox Hill Gardens)	W. H. R. Ryves	5	0	9	300
	Forest Hill (Dartmouth Road) ...	L. W. F. Behrens ..	5	1	0	220
	Forest Hill (S. & V. Water Co.) ..	J. W. Restler	5	1	0	344
	Sidcup (Hatherley Road)	Lionel Burrell, M.D.	5	1	2	160
	Wilmington (Kent Water Co.)....	W. Morris	5	1	0	25
85	Dartford (West Hill House)	Lieut-Col. C. N. Kidd	5	1	3	100
	Greenhithe (H.M.S. Worcester) ..	Cap. D. Wilson-Barker	5	5	0	30
	Eltham (High Street)	W. Morris	5	1	0	245
	Nunhead (S. & V. Water Co.)....	J. W. Restler	5	4	0	176
	Brockwell Park	Lond. County Council	8	1	0	140
90	Brixton (Acre Lane)	F. Gaster	8	1	0	77
	Clapham Park (New Park Road) ..	D. W. Horner	5	1	3	128
	Battersea Park	Lond. County Council	5	9	6	12
	Battersea (S. & V. Water Co.) ...	J. W. Restler	5	3	0	21
	Telegraph Hill	Lond. County Council	5	8	6	135
95	Greenwich (Royal Observatory) ..	Astronomer Royal ..	8	0	5	155
	Deptford (Kent Water Co.)	W. Morris	5	1	0	20
	Southwark Park	Lond. County Council	5	10	0	9

Note.—The observations are taken at 9 a.m., except at Kingston (County Hall) (7.30 a.m.), Reigate Hill, Croydon (Ashburton Road), Addington (Park Farm), Greenhithe, and Brixton (8 a.m.), and Sevenoaks, Battersea Park, and Southwark Park (10 a.m.).

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..		..		·03	·03	..	·01	·03	·03	..	..	·03	·01	·01	..	..	..	·02	..		..	..	..	·0
2	·02	·08		·06		·04	·05	·11	..	·06	·02	·09	·09	·05	·09	·10	·07	·04	·03	..	·03		·11	·08	·10	·0
3	·10	·10		·10		·13	·15	·15	·15	·17	·16	·20	·18	·15	·13	·14	·06	·19	·16	·19	·19		·14	·16	·14	·1
4	·19	·23		·32		·12	·18	·17	·16	·17	·16	·16	·16	·17	·19	·13	·18	·17	·11	·17	·12		·18	·14	·16	·1
5	..	..		..		·01	·01	..	..	·01	..	·01	..	..	..	..	..	..	..	..	·01		..	·01	·01	·0
6	·02	..		..		..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..		..	..	..	
7	·11	·08		·08		·03	·08	·06	·07	·11	·08	·09	·09	·09	·10	·11	·07	·14	·06	·11	·07		·13	·09	·10	·0
8	·12	·10		·08		·18	·20	·14	·12	·10	·09	·08	·08	·07	·07	·10	·09	·07	·06	·09	·13		·07	·05	·04	·0
9	·13	·06		·07		·07	·07	·08	..	·06	·05	·06	·09	·07	·07	·13	·08	·10	·06	·12	·06		·08	·05	·04	·0
10	·20	·22		·25		·19	·21	·28	·19	·20	·21	·20	·21	·22	·25	·28	·23	·28	·20	·28	·23		·28	·25	·24	·2
11	·13	·10		·13		·03	·06	·04	·09	·09	·07	·08	·07	·08	·06	·07	·05	·07	·04	·07	·04		·07	·05	·04	·0
12	·31	·30		·26		·26	·29	·32	·21	·31	·29	·32	·25	·36	·33	·39	·50	·36	·17	·31	·38		·35	·27	·06	·2
13	·56	·43	MONTHLY REPORT.	·30	MONTHLY REPORT.	·62	·62	·60	..	·28	·45	·28	·25	·30	·32	·69	·70	·61	·46	·94	·51	MONTHLY GAUGE.	·27	·21	·41	·2
14	·14	·03		·06		·06	·05	·03	·06	·09	·07	·08	·09	·03	·07	·08	·08	·05	·04	·07	·05		·10	·09	·07	·0
15	..	..		..		..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	·02		..	..	..	
16	..	..		..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	·0
17	·10	·10		·05		·10	·12	·09	..	·11	·11	·09	·10	·11	·11	·10	·09	·08	·07	·10	·06		·12	·10	·10	·0
18	·12	·11		·07		·06	·06	·06	·07	·08	·06	·06	·05	·06	·07	·09	·08	·07	·04	·09	·09		·08	·05	·05	·0
19	·04	·02		..		·06	·06	·05	·09	·04	·04	·04	·04	·07	·06	·08	·06	·06	·05	·03	..		·07	·05	·06	·0
20	·04	..		·08		·03	·03	·01	..	·04	·04	·04	·03	·06	·04	·01	·02	·02	·01	·05	·03		·05	·04	·05	·0
21	..	..		..		..	·01	..	..	·01	..	·01	·01	..	..	..	..	..	..	..	..		..	·01	..	·0
22	..	..		..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	·0
23	..	..		..		·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	·01	..	·
24	..	..		..		..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..		..	..	..	·
25	·02	·08		..		..	..	..	·04	..	..	·01	..	..	·01	·02	..	..	..	..	·04		·02	..	·02	·0
26	·29	·30		·28		·14	·25	·23	·19	·29	·24	·30	·26	·38	·28	·16	·17	·18	·11	·03	·11		·28	·26	·21	·1
27	·96	·80		·96		·44	·73	·77	·71	1·06	·75	·92	1·03	·85	·90	·69	·67	·51	·33	·65	·53		·95	·73	·83	·7
28	·44	·57		·38		·36	·38	·38	·47	·40	·40	·42	·35	·44	·47	·43	·46	·70	·46	·54	·31		·44	·34	·30	·2
29	·24	·26		·40		·25	·36	·30	·22	·27	·30	·28	·34	·34	·35	·24	·22	·35	·23	·42	·28		·36	·42	·43	·4
30	·80	·75		·95		·61	·72	·91	·65	·71	·80	·85	·71	·90	·90	·73	·75	·79	·69	·67	·69		1·04	·83	1·02	·8
31	·46	·60		·30		·40	·50	·19	·32	·25	·37	·25	·42	·40	·54	·43	·33	·37	·10	·37	·14		·95	·82	·40	·4
*	5·54	5·32	5·20	5·18	2·98	4·23	5·23	4·98	3·82	4·94	4·79	4·92	4·91	5·23	5·44	5·21	4·96	5·21	3·48	5·32	4·12	4·96	6·14	5·11	4·88	4·4
†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for January is 1·92 ins.* **January, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew.Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	..	·01	..	·05	·03	·05	·04	·06	..	·02	·03
2		..	·05	·07	·02	·08	·05	·03	·01	·06	·07	·08
3		·21	·04	·08	·08	·13	·11	·07	·09	·10	·12	·10
4		·18	·30	·21	·22	·15	·13	·11	·11	·14	·11	·12
5		..	..	..	..	..	..	..	..	..	·01	..
6		..	..	..	..	..	..	..	..	..	..	..
7		·08	·06	·03	·03	·10	·03	·05	·02	·04	·04	·04
8		·06	·03	·04	·03	·06	·03	·03	·02	·05	·05	·04
9		·07	·07	·04	..	·04	·03	·04	·02	·03	·03	·03
10		·16	·23	·23	·22	·20	·17	·20	·16	·20	·19	·18
11		·06	·03	·05	·03	·07	·03	·03	·02	..	·03	·03
12		·22	·20	·20	·22	·30	·25	·24	·22	·25	·23	·23
13		·19	·22	·16	·16	·22	·19	·15	·14	·25	·16	·18
14		·10	·12	·12	·12	·10	·06	·04	·06	·05	·06	·06
15		..	..	..	..	..	..	..	..	·04	..	..
16		..	..	..	..	..	..	..	..	..	..	..
17		·03	·05	·02	·03	·09	·06	·06	·04	·10	·06	·08
18		..	·06	·08	·05	·10	·04	·04	·03	·03	·04	·04
19		·10	·01	·02	..	..	·03	·04	·03	·05	·03	·04
20		·07	·06	..	·06	·08	·04	·06	·04	·09	·05	·05
21		..	..	..	..	..	..	..	..	..	..	..
22		..	..	..	..	..	..	..	..	..	..	..
23		..	..	..	..	..	·01	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..
25		..	..	..	..	..	..	..	..	..	·01	..
26		·26	·22	·16	·12	·17	·12	·10	·08	·15	·14	·16
27		·83	·73	·47	·47	·99	·48	·37	·36	·35	·62	·67
28		·29	·31	·25	·25	·25	·28	·23	·21	·30	·24	·24
29		·34	·32	·16	·17	·55	·39	·34	·29	·25	·37	·34
30		·91	·90	·84	·76	1·08	·87	·58	·85	·75	·78	·76
31		·44	·43	·35	·33	·27	·20	·37	·20	·30	·29	·34
*	5·20	4·60	4·45	3·58	3·42	5·06	3·65	3·22	3·06	3·58	3·75	3·84
†	..	..	..	..	..	..	..	..	..	..	..	..

Day of Mo.	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	·03	·05	·02	·02	·02	·02	·01	..	·01	·02	..	..	·0[illegible]
2	..	·07	·06	·07	·09	·08	·11	·09	·11	·09	·06	·10	..	·0[illegible]
3	·18	·06	·10	·09	·09	·10	·11	·11	·11	·11	..	..	·15	·1[illegible]
4	·08	·15	·11	·09	·10	·10	·12	·12	·13	·13	·25	·22	·12	·1[illegible]
5	..	..	..	..	..	..	·01	·01	..	..	..	..	..	·0[illegible]
6	..	..	..	..	..	..	..	..	·01	..	..	..	..	..
7	·03	·04	·04	·04	·04	·05	·07	·07	·09	·10	·07	·10	·07	·0[illegible]
8	·02	..	·04	·03	·02	·03	·04	·05	·05	·04	·02	·03	..	·1[illegible]
9	·02	·02	·03	·02	·02	·02	·04	·04	·04	·04	·02	·04	·02	·0[illegible]
10	·15	·16	·17	·16	·16	·17	·20	·18	·23	·25	·24	·20	·18	·2[illegible]
11	·02	·03	·03	·02	·02	·02	·04	·03	·03	·05	·01	·03	·02	·0[illegible]
12	·21	·24	·23	·24	·23	·21	·29	·25	·25	·26	·28	·20	·17	·1[illegible]
13	·15	·16	·16	·15	·18	·23	·24	·23	·32	·22	·30	·28	·20	·2[illegible]
14	·04	·05	·04	·04	·05	·05	·06	·05	·05	·05	·04	·05	·04	·0[illegible]
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·06	·09	·09	·08	·08	·08	·09	·09	·10	·09	·08	·15	·08	·07
18	·03	·04	·03	·04	·04	·06	·04	·05	·09	·07	·04	..	·05	·04
19	·04	..	·04	·04	·04	·05	·05	·06	·06	·06	·02	..	·04	·01
20	·04	·04	·05	·05	·04	·03	·04	·05	·05	·05	·03	·11	·02	·02
21	·03	..	..	..	·01	·05	..	·02	..	..	..	..	..	·05
22	·02	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	·02	·02	·02	..	·01	..	..	..	..
26	·12	·20	·15	·14	·14	·13	·19	·17	·19	·22	·21	·17	·21	·15
27	·62	·60	·61	·58	·63	·62	·86	·74	·75	·77	·65	·65	·64	·55
28	·21	·22	·22	·22	·20	·29	·24	·23	·41	·28	·25	·24	·30	·39
29	·25	·33	·32	·27	·31	·28	·43	·38	·32	·42	·43	·42	·37	·25
30	·60	·75	·70	·70	·76	·74	·70	·80	·98	·98	·93	·82	·71	·58
31	·40	·36	·36	·34	·35	·52	·53	·49	·74	·65	·70	·44	·34	·23
*	3·32	3·64	3·63	3·43	3·62	3·95	4·54	4·34	5·11	4·95	4·65	4·25	3·73	3·57
†	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·01	..	·05	..	·01	·02	..	..	..	·05
2	·03	..	·04	·07	..	·05	·05	·09	·05	·01
3	·13	·16	·07	·07	·16	·06	·08	·09	..	·03
4	·11	·09	·11	·10	·10	·11	·06	·09	·12	·13
5	..	..	..	..	..	..	·01	..	·09	..
6	..	..	..	..	..	..	..	..	..	·01
7	·04	·06	·05	·03	·11	·04	·04	·04	·02	·03
8	·09	·04	·03	·04	·04	·02	·01	·04	·02	·05
9	·03	·02	·02	·04	·02	·02	..	·02	·08	·03
10	·18	·14	·13	·12	·14	·13	·11	·02	·11	·17
11	·01	·01	·01	..	·02	·02	..	·16	·02	·03
12	·18	·24	·24	·24	·26	·23	·10	·25	·20	·23
13	·19	·19	·16	·16	·20	·16	·12	·19	·16	·17
14	·01	·03	·04	..	·04	·05	·08	·05	·06	·09
15	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..
17	·06	·10	·09	·09	·09	·08	..	·08	·06	·07
18	·05	·07	·05	·07	·06	·05	·08	·05	·02	·03
19	·04	·06	·04	·06	·05	·05	·05	..	·04	·02
20	·03	·02	·02	·04	·04	·04	..	·10	·04	·03
21	·02	..	..	..	..	..	·04	·01	..	·02
22	..	..	..	..	..	..	..	..	..	·03
23	..	..	..	..	..	..	..	..	..	·02
24	..	..	..	..	..	..	..	..	..	·05
25	..	..	..	..	..	..	..	..	..	·27
26	·06	·12	·13	·10	·11	·11	..	·08	·07	·09
27	·32	·46	·48	·44	·55	·47	·29	·41	·35	·27
28	·29	·19	·21	·18	·21	·19	·38	·23	·22	·21
29	·20	·22	·26	·27	·32	·26	..	·21	·36	·20
30	·48	·60	·69	·63	·75	·61	·66	·55	·70	·56
31	·16	·20	·31	·27	·35	·46	·33	·37	·19	·29
*	2·72	3·02	3·23	3·02	3·63	3·23	2·49	3·13	2·98	3·19
†	..	..	..	..	..	..	..	..	..	..

Day of Mo.	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·01	·01	..	·03	..	·02	·04	..
2	·01	·04	..	·01	·02	·03	·03	..
3	·07	·07	·04	·08	·12	·08	..	·04
4	·07	·09	·06	·09	·04	·10	·25	·17
5	..	·01	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..
7	·03	·03	·10	·03	·01	·03	·03	·04
8	·01	·12	·17	·02	·01	·02	·05	..
9	·01	·03	·04	·03	·02	·04	·06	·05
10	·19	·19	·16	·18	·14	·18	·14	·18
11	·01	·02	·02	·03	·02	·02	·03	·02
12	·21	·23	·25	·22	·19	·21	·25	·23
13	·18	·17	·20	·14	·09	·12	·11	·18
14	·03	·04	·03	·06	·03	·06	·08	·07
15	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	·01	..
17	..	·02	·04	·05	..	·03	·03	·02
18	..	·05	·08	·04	·05	·04	·05	·06
19	·01	·03	·03	·01	..	·01	..	..
20	·05	..	·02	·06	·04	·05	·04	·04
21	..	..	..	..	..	..	..	..
22	·01	..	..	·01	..	..	..	..
23	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..
25	..	·02	..	..	..	..	·02	·03
26	·05	·06	·10	·07	·04	·08	·07	·03
27	·26	·33	·26	·30	·18	·35	·32	·27
28	·25	·24	·24	·22	·19	·24	·25	·29
29	·12	·19	·10	·17	·08	·16	·08	·09
30	·32	·46	·40	·48	·44	·64	·72	·56
31	·31	·44	·42	·44	·36	·36	·30	·37
*	2·21	2·89	2·76	2·77	2·07	2·87	2·96	2·74
†	..	..	..	..	..	..	..	..

Day of Mo.	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·07	..	·02	·07	·04	..	·0[illegible]
2	·02	..	·07	·02	·01	·03	..	·0[illegible]
3	·09	·07	·10	·07	·09	·10	·11	·0[illegible]
4	·12	·10	..	·11	·08	·08	·06	·0[illegible]
5	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..
7	·03	·03	·03	·04	·04	·04	·04	·03
8	·02	·01	..	..	·02	·02	·01	·02
9	·04	·03	·05	·04	·03	·02	..	·02
10	·17	·19	·15	·17	·17	·18	·17	·19
11	·03	·02	·04	·03	·02	·03	·02	·03
12	·22	·25	·16	·24	·27	·24	·18	·25
13	·13	·18	·17	·05	·13	·25	·17	·18
14	·07	·04	·08	·03	·04	·06	·04	·04
15	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..
17	·03	·03	..	·03	·03	·04	·06	·07
18	·06	·04	·08	·04	·04	·04	·04	·06
19	·02	·01	..	·02	·02	·06	·03	·04
20	·04	·05	·03	·06	·04	·03	·05	·05
21	..	..	..	..	·02	..	..	..
22	..	..	..	..	..	..	..	·0[illegible]
23	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..
25	..	·02	..	·02	·01	..	..	..
26	·05	·06	·08	·05	·03	·05	·10	·07
27	·30	·36	·22	·26	·27	·18	·29	·29
28	·23	·25	·33	·28	·22	·30	·17	·2[illegible]
29	·08	·12	·08	·11	·11	·08	·11	·14
30	·62	·85	·68	·61	·39	·47	·43	·4[illegible]
31	·30	·13	·37	·23	·43	·17	·09	·33
*	2·70	2·91	2·72	2·53	2·58	2·51	2·17	2·65
†	..	..	..	..	..	..	..	..

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for Jan. is 1·92 ins.* January, 1904.

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..		·09	..	·04	..	·06	..	·01	..	..	·04	·04	..	..	..	·02	·01	..
2	·09		·02	·06	·03	·05	..	..	·04	·03	·05	·05	·01	·06	·04	..	·05	..	..
3	·12		·11	·10	·10	·12	·11	·05	·09	·10	·10	·11	·11	·10	·10	·02	·08	·08	·07
4	·09		·09	·06	·10	·09	·09	·01	·10	·06	·08	·06	·08	·08	·02	·04	·08	·07	·05
5	..		..	·01	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
6	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	·05		·05	·04	·05	·05	·03	..	·08	·05	·04	·05	·05	·05	·03	·03	·05	·05	·04
8	·02		·04	·03	·12	·07	·08	·05	·10	·01	·02	·02	·01	·02	..	..	·04	·02	..
9	·03		·03	·02	·03	·02	·01	·01	·03	·01	·02	·03	·02	·03	·02	·04	·02	·02	..
10	·16		·17	·17	·11	·13	·15	·08	·10	·11	·18	·15	·18	·16	·10	·10	·16	·15	·12
11	·02		·02	·02	·01	·01	..	..	·09	·01	..	·01	·02	·03	·01	..	·02	·02	..
12	·24		·26	·27	·24	·22	·25	·09	·27	·12	·23	·26	·25	·31	·22	·24	·29	·24	·30
13	·16	MONTHLY REPORT.	·20	·23	·18	·25	·23	·18	·22	·13	·20	·24	·21	·05	·05	·16	·16	·16	·06
14	·04		·03	·04	·05	·02	·03	·02	·04	·01	·02	·04	·04	·03	·02	·04	·04	·03	·02
15	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·08		·05	·07	·10	·04	·05	·03	·08	·02	·07	·05	·08	·05	·03	·05	·06	·05	·03
18	·06		·06	·05	·05	·03	·03	·03	·07	·03	·02	·04	·04	·02	..	·04	·05	·03	·03
19	·06		·04	·03	·05	·02	..	·02	·06	..	·02	·04	·02	·03	..	·05	·02	·03	·02
20	·05		·05	·04	·03	·02	..	·02	·06	·06	·04	·05	·06	·04	..	·06	·05	·05	·05
21	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..
22	..		..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
23	..		..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
26	·10		·08	·10	·07	·07	·08	·02	·07	·03	·07	·05	·07	·04	·02	·05	·04	·04	·03
27	·33		·30	·28	·33	·29	·23	·03	·35	·13	·28	·19	·25	·24	·16	·10	·28	·22	·18
28	·22		·22	·22	·17	·22	·20	·15	·19	·12	·22	·28	·22	·18	·12	·16	·18	·18	·19
29	·15		..	·10	·19	·17	·22	·02	·14	·07	·08	·05	·12	·15	·07	·29	·10	·08	·14
30	·58		·42	·34	·56	·51	·40	·06	·44	·22	·51	·34	·33	·42	·26	·44	·43	·29	·40
31	·23		·28	·35	·09	·15	·15	·05	·29	·23	·22	·26	·25	·21	·16	·22	·29	·36	·14
*	2·88	3·03	2·61	2·63	2·70	2·56	2·40	·92	2·93	1·55	2·47	1·41	2·46	2·30	1·43	2·13	2·53	2·19	1·87
†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

NOTES.

(January, 1904.)

The month has been an extremel wet one, and if we may take th record of Greenwich as fairly repre senting the district, it has not bee exceeded since January, 1894. I has been a mild month. There wa a silver thaw throughout the dis trict on the 2nd, and a glazed fros at Wallington on the 23rd. Th month has been somewhat ur healthy, catarrhal affections bein prevalent, and there were als several cases of scarlet fever of mild type. A thunderstorm occurre in most places on the 13th; and solar halo was seen at Claphar Park on the 5th, and at Greenwic on the 11th, and a lunar halo wa seen throughout the district on th 26th. A very brilliant meteor of reddish hue was seen at Croydo on the 13th at 8 p.m. Hazel ca kins out at Crohamhurst on the 9th and snowdrops opened at Nutfiel on the 29th. The month's rainfa is nearly double the average in mos places. The mean temperature o the month is about 1° above th average, and was at Clapham Par 41°·4, at Chipstead, Wallington, an Croydon (Duppas House) 38°·8, a Worcester Park 38°·2, and at War lingham 37°·6. There were recorde at Wallington 39·3 hours of sun light, which is 2·9 hours or one pe cent. below the January average o the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Se*

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd. la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·13	·17	·22	·15	·14	·11	·14	·08	·14	·14	·15	·13	·16	·17	·20	·18	·18	·15	·12	·18	·34		·25	·23	·18	·18
2	·40	·44	·38	·39	·25	·22	·26	·36	·31	·35	·21	·29	·34	·41	·26	·36	·30	·21	·18	·24	·16		·28	·28	·25	·26
3	·20	·24	·28	·28	·18	·12	·16	·14	·19	·20	·11	·18	·22	·17	·20	·24	·68	·26	·16	·23	·21		·22	·23	·22	·23
4	·09	·07	·08	·07	·12	·10	·09	·08	·09	·10	·10	·10	·08	·10	·13	·08	·08	·10	·08	·12	·10		·13	·08	·07	·06
5	·02	..	..	..	·07	·02	·03	·01	·02	·02	·02	·02	·01	..	·02	·01	..	·02	·01	·06	·03		·03	·01	·03	·01
6	·09	·14	·12	·12	·17	·06	·06	·06	·05	·07	·07	·07	·09	·09	·08	·08	·10	·10	·03	·05	·08		·10	·08	·06	·07
7	·29	·30	·20	·32	·04	·12	·16	·17	·19	·24	·16	·23	·27	·04	·19	·25	·27	·25	·20	·32	·27		·21	·24	·23	·23
8	·05	·06	·03	·05	·59	·02	·02	·03	·02	·03	·02	·03	·02	·01	·02	·02	·08	·03	·02	·08	·07		·02	·03	·02	·02
9	·54	·52	·67	·72	·33	·45	·61	·59	·49	·55	·62	·59	·58	·60	·60	·64	·58	·66	·46	·66	·56		·72	·68	·60	·61
10	·32	·43	·28	·33	·13	·28	·28	·28	·29	·42	·28	·34	·37	·42	·41	·29	·30	·34	·31	·31	·27		·32	·31	·31	·34
11	..	..	..	..	..	·01	·01	..	..	..	..	·01	..	..	..	..	..	..	..	..	..		..	·02	·01	..
12	·74	·80	·93	·90	·72	·47	·69	·65	·57	·71	·65	·69	·78	·64	·61	·58	·65	·67	·35	·68	·49		·67	·68	·70	·74
13	·16	·05	·03	·02	·07	·08	·07	·09	·04	·05	·04	·06	·09	·06	·05	·05	·08	·06	·03	·06	·12		·06	·02	·02	..
14	·06	..	·02	·05	·04	·04	·03	·02	·03	·04	·05	·05	·07	·07	·06	·06	·06	·03	·02	·04	·04		·07	·05	·05	·04
15	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	·01	·04	·02	·01
16	·23	·29	·25	·22	·28	·22	·29	·27	·24	·24	·27	·26	·24	·28	·30	·30	·31	·28	·16	·32	·23		·31	·22	·23	·23
17	·14	·12	·12	·09	·10	·11	·09	·07	·11	·11	·07	·10	·09	·08	·09	·09	·09	·04	·01	·14	·07		·09	·08	·08	·06
18	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..	..	..	..		..	..	·01	..
19	·15	·15	·13	·14	·15	·12	·13	·13	·14	·16	·16	·17	·15	·18	·20	·21	·25	·28	·15	·24	·26		·20	·11	·15	·11
20	·10	·06	·05	·06	·06	·05	·04	·03	·04	·04	·03	·04	·03	·04	·03	·02	·05	·03	..	·03	·02		·02	·02	·02	·01
21	·03	·02	·01	..	·04	·04	·04	·02	·03	·02	·03	·02	·01	·03	·04	·05	·06	·05	·02	·04	·06		·05	·01	·01	·02
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..		..	..	..	..
26	·08	·07	·08	·07	·06	·03	·03	·05	·05	·05	·03	·04	·06	·04	·03	..	..	..	..	..	·02		·05	·02	..	·02
27	·01	..	..	·04	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	·01		..	..	..	..
28	·04	·06	..	·05	..	·05	·05	·04	·05	·06	·06	·03	·05	·05	·11	·10	..	·12	·11	·09	·04		·08	·05	·07	·07
29	..	..	·04	..	·07	·01	·02	·01	·02	·01	..	..	·01	·02	..	·01	·03	·01	·01	·04	·02		·02	·02	·03	·02
*	3·87	3·99	3·92	4·07	3·61	2·73	3·30	3·18	3·11	3·62	3·13	3·48	3·65	3·50	3·63	3·62	4·15	3·69	2·43	3·94	3·47	4·41	3·91	3·51	3·37	3·34
†	9·41	9·31	9·12	9·25	6·59	6·96	8·53	8·16	6·93	8·56	7·92	8·40	8·56	8·73	9·07	8·83	9·11	8·90	5·91	9·26	7·59	9·37	10·05	8·62	8·25	7·81

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for February is 1·50 ins.* **February, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew.Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	MONTHLY GAUGE.	·16	·13	·14	·12	·17	·15	·17	·16	·17	·13	·13	·10
2		·36	·31	·26	·20	·36	·27	·27	·27	·20	·24	·23	·20
3		·28	·23	·23	·24	·23	·25	·22	·23	·30	·21	·18	·16
4		·08	·06	·09	·07	·07	·04	·05	·03	·05	·04	·04	·02
5		·03	·02	·01	·01	·02	·07	·03	·01	·04	·03	·03	·02
6		·09	·07	·05	·05	·09	·05	·06	·05	·06	·07	·07	·06
7		·31	·26	·21	·20	·31	·27	·21	·25	·30	·24	·26	·25
8		·06	·04	·10	·02	·11	·04	·08	·04	..	·01	..	..
9		·58	·62	·62	·58	·61	·64	·62	·61	·87	·57	·59	·53
10		·36	·35	·43	·38	·37	·34	·35	·33	·35	·33	·31	·32
11		·02	..	..	..	..	·01	..	..	..	·01	..	..
12		·93	·66	·52	·50	·79	·52	·46	·44	·55	·63	·67	·57
13		·03	..	·02	·02	..	..	·03	·01	·03	..	..	..
14		·03	·04	·05	·05	·07	·04	·04	·03	·05	·05	·05	·04
15		..	..	..	·01	..	·02	..	..	..	·02	·01	..
16		·36	·21	·25	·20	·23	·19	·18	·17	·17	·20	·19	·18
17		·08	·08	·07	·06	·10	·05	·06	·06	·06	·07	·06	·06
18		..	..	·02	..	..	..	..	..	..	..	..	..
19		·12	·12	·10	·10	·13	·11	·12	·10	·12	·11	·12	·10
20		·05	·04	·07	·05	·06	·02	·03	·01	·02	·01	·01	..
21		..	..	..	·02	..	..	..	..	·02	·01	·01	..
22		..	..	..	..	..	..	..	..	..	..	..	..
23		..	..	..	..	..	..	..	..	..	..	..	..
24		..	..	..	..	..	..	..	..	..	..	..	..
25		..	..	..	..	..	..	..	..	..	..	..	..
26		..	·04	..	·02	..	·03	·02	·02	..	·01	·02	·02
27		..	..	..	..	..	..	..	..	..	..	..	..
28		..	..	..	..	..	·07	·03	·02	·03	·04	·04	·04
29		·11	·08	·03	·02	·11	·01	·02	·01	·03	..	·01	·01
*	3·79	4·04	3·36	3·27	2·92	3·83	3·19	3·05	2·85	3·42	3·03	3·03	2·68
†	8·99	8·64	7·81	6·85	6·34	8·89	6·84	6·27	5·91	7·00	6·78	6·87	6·00

Day of Mo.	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·12	·15	·16	·17	·19	·17	·20	·15	·23	·02	·18	·18	·21
2	·21	·20	·20	·21	·20	·27	·26	·27	·30	·33	·27	·38	·14
3	·16	·18	·17	·22	·26	·19	·22	·32	·27	·30	·30	·21	·26
4	·03	·04	·02	·04	·03	·05	·08	·09	·08	·06	·05	·09	·08
5	·02	·03	·03	·01	·02	·02	·02	·01	·01	..	..	..	·03
6	·06	·08	·05	·05	·06	·07	·07	·08	·08	·06	..	·06	·06
7	·28	·28	·27	·25	·26	·27	·23	·22	·21	·21	·29	·22	·24
8	·01	..	·01	·01	·02	·02	·03	·03	·01	·01	..	..	·03
9	·56	·58	·53	·56	·58	·60	·61	·72	·73	·71	·70	·70	·60
10	·33	·32	·32	·34	·35	·42	·36	·32	·31	·40	·36	·32	·32
11	·01	..	..	..	..	..	..	·01	·01	..	..	..	..
12	·64	·66	·63	·70	·74	·81	·81	·78	·70	·64	·73	·73	·70
13	..	..	·01	..	..	·01	·02	·02	·01	·03	·01	·01	·02
14	..	·05	·04	·04	·04	·05	·04	·03	·04	·01	·04	·03	·05
15	..	·01	..	..	..	·02	·01	·02	·01	..	·01	..	..
16	·25	·21	·17	·22	·23	·24	·22	·26	·25	·28	·29	·29	·28
17	·08	·06	·07	·07	·30	·07	·07	·10	·09	·05	·09	·09	·07
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·11	·12	·10	·10	·12	·13	·12	·14	·13	·15	·13	·10	·11
20	·01	·01	·01	·01	..	·02	..	·01	·01	..	..	..	..
21	..	..	..	..	·01	·02	·02	·02	·02	..	·02	·02	·01
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	·01
26	·01	·02	·01	·01	..	·02	·01	·02	·01	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	·04	·04	·03	·03	·05	·06	·06	·04	·08	·01	..	·10	·11
29	·01	·01	·01	·02	·05	·02	·01	·04	·01	·01	·10	..	·01
*	2·94	3·05	2·84	3·06	3·51	3·55	3·47	3·70	3·60	3·28	3·57	3·53	3·34
†	6·58	6·68	6·27	6·68	7·46	8·09	7·81	8·81	8·55	7·93	7·82	7·26	6·91

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·22	·16	·10	·15	·13	·22	·01	·16	·14	·25	·14	·15	·13
2	·15	·26	·24	·18	·23	·34	·23	·20	·38	·36	·22	·16	·20
3	·21	·24	·30	·23	·31	·23	·23	·20	·18	·33	·15	·20	·17
4	·03	·04	·04	·05	·06	·04	..	·04	·04	·07	·02	·04	·02
5	·01	..	·01	·02	·02	·02	·02	·02	..	·07	..	·01	·01
6	·02	·03	·04	·05	·06	·05	·06	·30	·06	·09	·04	·06	·06
7	·23	·21	·21	·21	·20	·24	·05	..	·25	·27	·16	·18	·18
8	·01	..	·02	·02	·02	·01	·15	·48	·09	·47	·02	·03	·01
9	·57	·56	·59	·51	·62	·52	·45	·33	·55	·37	·41	·47	·42
10	·31	·33	·34	·32	·32	·33	·30	·33	·32	·33	·30	·31	·31
11	..	..	..	·01	..	..	..	..	..	·01	..	..	·01
12	·53	·60	·68	·63	·65	·64	·42	·51	·50	·28	·26	·34	·30
13	..	..	..	..	·01	..	·06	..	·03	·07	·05	·04	·05
14	·02	·06	·08	·06	·05	·05	·02	·07	·04	·05	·06	·06	·06
15	..	..	..	..	·01	..	..	..	..	·28	..	..	..
16	·20	·25	·25	·23	·25	·21	·07	·17	·16	·09	·13	·13	·12
17	·05	·07	·07	·09	·05	·06	·14	·09	·08	·02	·06	·06	·02
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·08	·12	·12	·12	·12	·13	·06	·11	·10	·10	·10	·10	·14
20	·01	..	·01	..	·01	·01	..	..	·01	·03	..	·02	·02
21	·01	·01	·01	·02	·01	·01	..	·02	..	..	..	·01	·01
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·01	..	..	..	..	..	..	..	..	..	..	·02	..
27	·01	..	..	..	..	..	..	..	..	..	..	..	..
28	·08	·05	·05	·07	·05	·03	..	..	·02	..	·01	..	·01
29	·03	·01	·02	·03	·03	·02	·03	·07	·02	·07	·01	·02	·02
*	2·79	3·00	3·18	3·00	3·21	3·16	2·30	3·10	2·97	3·61	2·14	2·41	2·27
†	5·51	6·02	6·41	6·02	6·84	6·39	4·79	6·23	5·95	6·80	4·35	5·30	5·03

Day of Mo.	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·15	·12	·13	·16	·13	·13	·17	·13	·15	·13	·15	·14	·15
2	·18	·12	·21	·20	·19	·15	·15	·11	·14	·17	·27	·31	·17
3	·20	·11	·18	·19	·24	·17	·19	·21	·19	·20	·20	·14	·15
4	·05	·02	·06	·03	·03	·04	·03	·04	·03	·03	·03	·05	·03
5	·02	..	·01	·08	..	·01	·01	..	·01	·01	..	..	·01
6	·04	..	·05	·04	·05	·04	·06	·05	·03	·05	·05	·05	·04
7	·20	·19	·17	·23	·18	·21	·23	·35	·20	·20	·1[illegible]	·16	·21
8	·03	..	·03	..	..	·01	·01	..	·01	·01	·04	·08	·07
9	·48	·37	·69	·47	·41	·48	·56	·53	·42	·45	·42	·39	·43
10	·31	·26	·34	·35	·30	·31	·38	·33	·28	·25	·28	·32	·31
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·30	·17	·35	·39	·52	·36	·40	·38	·38	·36	·25	·25	·32
13	·06	·04	·02	·10	·03	·08	·06	·06	..	·03	·05	·05	·03
14	·04	·03	·03	·05	·05	·05	·05	·06	·08	·07	·08	·05	·06
15	·03	..	..	..	..	..	..	..	..	..	..	..	..
16	·14	·11	·18	·12	·09	·13	·11	·12	·09	·12	·14	·16	·18
17	·04	·04	·05	·05	·05	·06	·06	·06	·04	·06	·07	·04	·06
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·13	·06	·09	·09	·08	·08	·09	·10	·09	·11	·14	·10	·11
20	·02	..	·02	·03	·02	·03	·02	·02	·01	·02	·05	·01	·01
21	·02	..	..	..	·01	..	·01	·02	·01	·02	·03	..	·02
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	·01
26	..	·01	·01	..	·02	·01	·02	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	·01	·02	..	..	·01	·01	..	·02
29	..	..	·03	·05	·01	..	·01	·03	·02	..	·02	..	·01
*	2·44	1·65	2·65	2·63	2·41	2·36	2·64	2·60	2·18	2·30	2·47	2·30	2·40
†	5·21	3·72	5·52	5·59	5·15	5·06	5·55	5·32	4·71	4·88	4·98	4·47	5·05

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for Feb. is 1·50 ins.* **February, 1904.**

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·15	MONTHLY REPORT.	·15	·12	·15	·21	·22	·14	·16	·12	·17	·15	·17	·16	·14	·16	·14	·15	·17
2	·17		·17	·13	·44	·13	·18	·07	·28	·12	·23	·37	·37	·31	·25	·18	·28	·16	·24
3	·20		·15	·14	·16	·23	·20	·04	·22	·14	·15	·17	·18	·20	·16	·17	·21	·16	·04
4	·05		·06	·07	·03	·05	·05	·02	·03	·04	·07	·04	·05	·02	..	·06	·07	·08	..
5	·02		·02	·02	·01	·01	·02	..	·03	·01	·01	..	..	..	·06	·02	·01	·02	·01
6	·04		·06	·07	·03	·03	·03	..	·06	·04	·05	·06	·07	·08	..	·07	·06	·05	·08
7	·22		·19	·19	·19	·15	·13	·05	·21	·13	·24	·18	·21	·23	·14	·22	·19	·19	·17
8	·03		·04	·04	·01	·01	..	·01	·01	·08	·08	·03	·04	·08	..	·12	·05	·08	·19
9	·42		·39	·37	·48	·52	·53	·14	·47	·27	·45	·45	·43	·44	·44	·44	·42	·36	·30
10	·35		·31	·28	·32	·34	·30	·23	·28	·16	·36	·26	·31	·24	·18	·23	·22	·22	·19
11	..		·02	·02	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
12	·34		·33	·30	·61	·52	·44	·06	·45	·13	·31	·29	·30	·32	·20	·26	·32	·25	·21
13	·04		·03	·04	..	..	..	..	·02	·03	·04	·03	·06	·01	..	·03	·06	·05	..
14	·06		·10	·10	·06	·02	·04	·02	·05	·04	·08	·10	·08	·11	·08	·07	·05	·05	·05
15	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·20		·23	·16	·24	·23	·24	·06	·22	·13	·19	·16	·18	·14	·06	·18	·21	·19	·13
17	·08		·08	·07	·08	·06	..	·04	·07	·05	·07	·07	·07	·07	·05	·08	·06	·07	·07
18	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·11		·14	·15	·15	·11	·18	·05	·16	·09	·13	·12	·12	·12	·08	·14	·13	·13	·12
20	·03		..	·02	·01	·01	..	..	·04	·01	..	·02	·03	·02	·04	..	·03	·02	..
21	·02		..	·02	·02	·01	·03	..	·04	..	·02	·03	·01	..	·02	·06	..	·02	..
22	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..		..	..	·01	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..
26	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	·03		..	..	·04	·06	·05	·02	·03	..	..	..	·01	..	..	..	·01	·02	..
29	·03		·04	·02	·02	·02	·02	..	·02	..	..	·02	·01	..	..	..	·01	·01	·02
*	2·59	2·76	2·51	2·33	3·06	2·72	2·66	·96	2·86	1·59	2·65	2·55	2·70	2·55	1·90	2·49	2·54	2·28	1·99
†	5·47	5·79	5·12	4·96	5·76	5·28	5·06	1·88	5·79	3·14	5·12	3·96	5·16	4·85	3·33	4·62	5·07	4·47	3·86

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(February, 1904.)

The first three weeks were mild and wet, and the last week was cold, with frequent snow showers, which yielded little water. Owing to the wet, the cultivation of the land was practically at a standstill. The month has been fairly healthy, though influenza has been prevalent in some parts. There was a thunderstorm with hail throughout the district on the night of the 12th–13th. There was some dust in the gauge at Sanderstead on the 12th. A kingfisher was seen on Abinger Mill Pond on the 7th, and at Nutfield the first crocus opened on the 2nd, and rooks began to build in a desultory way on the old nests on the 15th. Solar halos were observed at Greenwich on nine days, at Nutfield on the 2nd and 19th, and at Upper Gatton on the 11th; whilst lunar ones were observed at Greenwich on the 1st and 2nd, and at Nutfield on the 8th. The rainfall is over one inch above the average. The mean temperature of the month is about one degree above the average, and was at Clapham Park 40°·8, at Croydon (Duppas House) 39°·8, at Wallington, and Worcester Park 39°·4, at Chipstead 37°·7, and at Warlingham 37°·6. There were recorded at Wallington 75·7 hours of sunlight, which is 13·6 hours or five per cent. above the February average of the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd. la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	Reigate Hill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·16	·15	..	..	·13	·13	·08	·12	·15	·12	·09	·12	·14	·17	·39	..	·13	·08	·09	·10		·14	·10	·16	·14
2	·19	·15	·19	·30	·44	·24	·25	·29	·27	·24	·30	·25	·23	·28	·29	·15	·53	·22	·18	·49	·25		·29	·35	·34	·34
3	·06	·08	·07	·08	·07	·05	·04	·04	·07	·09	·07	·07	·09	·15	·05	·08	·06	·08	·08	·07	·05		·10	·09	·12	·12
4	·06	·05	·07	·03	·04	·02	·02	·02	·03	·03	·05	·03	·03	·06	·08	..	..	..	..	·01	..		·04	·03	·04	·03
5	·07	·10	·08	·08	·06	·08	·07	·07	·06	·08	·10	·09	·08	·11	·06	·14	·15	·12	·11	·11	·10		·12	·13	·15	·13
6	·03	..	·02	·02	·03	·03	·04	·03	·03	·02	·02	·01	·02	·03	·07	·02	..	..	..	·05	·01		·02	·03	..	·03
7	·19	·25	·22	·20	·17	·20	·20	·18	·14	·15	·16	·16	·16	·18	·16	·12	·13	·12	·10	·20	·18		·14	·17	·20	·17
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	·01	..	..
9	..	..	..	..	..	·03	·03	·01	..	·01	·03	·01	..	·04	·09	..	..	..	..	..	..		·14	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..		..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		·01	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	·01	..	..
14	..	..	..	..	..	..	..	..	..	·01	..	..	·01	..	·01	..	..	..	..	..	..		..	..	·02	·01
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..		..	..	..	..
19	·07	..	·05	·05	·09	·07	·09	·05	·09	·06	·07	·06	·06	·09	·08	·04	·05	·06	·05	·09	·08		·07	·05	·06	·05
20	..	..	..	..	·01	..	..	·01	..	..	..	..	·01	..	..	..	..	..	..	..	..		..	·01	..	..
21	·06	·10	·05	·06	·03	·03	·03	·03	·03	·04	·03	·03	·04	·03	·04	·03	·02	·03	·02	·03	·03		·05	·04	·05	·04
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..
24	·02	..	..	·04	·03	·03	·03	·01	·03	·05	·03	·04	·02	·06	·05	·04	..	·02	·01	..	·04		·06	·04	·05	·05
25	·09	·12	·11	·12	·12	·11	·11	·14	·06	·11	·10	·10	·10	·05	·06	·02	·07	·05	·04	·09	·02		·06	·05	·06	·04
26	·02	·06	·04	·10	·07	·02	·02	·26	·08	·03	·02	·01	·02	..	..	..	..	..	..	..	..		·01	·01	..	·03
27	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..	..	..	..	..	..		..	..	..	..
28	·26	·26	·30	·31	·28	·17	·22	·24	·25	·32	·24	·30	·25	·30	·29	·18	·17	·20	·11	·11	·10		·29	·25	·24	·21
29	·22	·16	·18	·20	·16	·16	·16	·18	·10	·18	·15	·18	·18	·18	·16	·17	·15	·18	·14	·27	·19		·21	·26	·14	·11
30	·04	..	·02	·10	·22	·20	·22	·22	·16	·14	·31	·18	·29	·36	·23	·21	·20	·20	·16	·28	·15		·18	·27	·33	·26
31	·03	·07	·05	·02	·03	·02	·02	·02	·02	·04	·04	·04	·04	·04	·05	·04	·04	·04	·02	..	·03		·04	·03	·02	·03
*	1·50	1·56	1·60	1·71	1·85	1·59	1·68	1·89	1·54	1·75	1·84	1·65	1·75	2·10	1·97	1·63	1·57	1·45	1·10	1·89	1·33	1·94	1·97	1·93	1·98	1·79
†	10·91	10·87	10·72	10·96	8·44	8·55	10·21	10·05	8·47	10·31	9·76	10·05	10·31	10·83	11·04	10·46	10·68	10·35	7·01	11·15	8·92	11·31	12·02	10·55	10·23	9·60

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for March is 1·47 ins.* **March, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew.Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·68	·02	·12	..	..	·09	·09	·09	·08	·02	·08	·09	·10	·11	·10	·10	·07	·05	·12	·09	·11	·09	·03	..	·09	·09
2	·29	·11	·30	·32	·30	·26	·25	·27	·23	·37	·30	·31	·25	·26	·30	·33	·22	·40	·33	·26	·38	·31	·55	·45	·36	·35
3	·12	·25	·17	·10	·07	·10	·10	·12	·10	·10	·11	·11	·12	·20	·12	·10	·07	·12	·11	·12	·14	·10	·10	·11	·10	·10
4	·02	·11	·04	·05	·05	..	·02	·02	·02	·02	·03	·02	·02	·02	·02	..	·02	·02	·03	·02	·02	·03	..	·01	..	..
5	·09	·03	·09	·07	·10	·12	·09	·10	·10	·10	·11	·10	·10	·13	·11	·11	·10	·10	·11	·12	·16	·14	·11	·14	·13	·13
6	..	·12	·04	·02	·02	..	·02	·02	·01	·02	·03	·02	·02	..	·03	·02	·02	·04	·03	·02	·03	·02	·02	..	·01	·01
7	·18	·17	·17	·12	·11	·20	·15	·15	·14	·12	·14	·15	·15	·18	·17	·16	·16	·16	·18	·14	·17	·15	·12	·15	·11	·13
8	·03	..	..	..	..	..	·01	..	..	·04	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	·02	..	·01	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	·01	..	..	..	·02	·01	..	..	·02	·02	..	·03	·02	·01	·01	·01	·02	·02	..	·01	·01	..	·01	·03
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·07	·06	·03	·05	·05	·09	·04	·05	·04	·05	·05	·04	·05	·05	·05	·04	·05	·04	·06	·05	·01	·05	·04	·11	·05	·08
20	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..
21	·07	·07	·04	·05	·05	·06	·05	·07	·06	·06	·06	·06	·05	·04	·06	·07	·05	·07	·06	·05	·06	·05	·05	·05	·03	·03
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·07	·06	·06	..	·03	..	·03	·05	·03	..	·04	·04	·04	·06	·04	·04	·03	·03	·05	·05	·04	·04	·02	..	·03	·05
25	·05	·12	·11	·10	·08	..	·03	·04	·03	·02	·04	·03	·03	·04	·04	·02	·03	·04	·03	·03	·06	·03	·03	·08	·01	·02
26	·10	·03	·02	..	·05	·13	·01	·04	·01	·03	·02	·01	..	..	..	..	..	·01	·01	·01	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	·29	·23	·22	·22	·15	·20	·12	·12	·12	·09	·13	·14	·12	·14	·14	·13	·15	·16	·23	·18	·22	·23	·19	·19	·16	·14
29	·16	·18	·18	·12	·10	·14	·13	·15	·20	·23	·12	·17	·20	·18	·15	·18	·20	·19	·16	·12	·18	·15	·14	·17	·13	·15
30	·11	·16	·19	·16	·12	..	·25	·20	·21	·19	·23	·20	·14	·16	·16	·11	·12	·14	·27	·15	·19	·25	·18	·23	·24	·22
31	·07	·03	·02	·02	·02	·04	·01	·01	..	..	·02	·02	·05	·01	·01	·01	·01	·01	·03	·02	·02	·02	..	·02	·01	·01
*	2·40	1·75	1·84	1·40	1·31	1·43	1·43	1·51	1·40	1·46	1·53	1·53	1·44	1·61	1·52	1·43	1·31	1·59	1·83	1·46	1·79	1·67	1·59	1·71	1·47	1·54
†	11·39	10·39	9·65	8·25	7·65	10·32	8·27	7·78	7·31	8·46	8·31	8·40	7·44	8·19	8·20	7·70	7·99	9·05	9·92	9·27	10·60	10·22	9·52	9·53	8·73	8·45

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·11	·09	·09	·09	·11	..	·09	..	·05	·04
2	·39	·33	·37	·38	·38	·33	·35	·33	·32	·29	·15
3	·09	·12	·12	·13	·11	·11	·09	·11	·08	·13	·06
4	·01	..	..	..	·02	·01	·01	·01	·01	·01	..
5	·12	·12	·12	·13	·10	·11	..	·11	·10	·09	·09
6	·01	·03	·02	·03	·04	·03	·09	·02	..	..	·02
7	·10	·11	·12	·12	·13	·12	·13	·17	·12	·12	·10
8	..	..	..	..	..	..	·01	..	..	..	..
9	..	..	·01	..	..	..	..	..	..	..	·01
10	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	·01
12	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..
14	·03	·01	..	..	·03	·02	·02	·02	·02	·02	·01
15	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	·01	..	..	..	..	..
19	·08	·07	·09	·06	·07	·05	·04	·05	·04	·04	·04
20	..	..	..	·01	..	..	..	..	..	..	..
21	·03	·04	·04	·05	·04	·05	·10	·09	·03	·07	·06
22	..	..	..	..	..	..	..	..	..	..	..
23	·01	..	..	..	..	..	..	..	..	..	..
24	·04	·05	·03	·06	·06	·05	..	·03	·07	·02	·01
25	·01	·03	·04	·03	·03	·03	·09	·03	·02	·03	·02
26	..	..	..	..	..	..	..	..	·01	·01	..
27	..	..	..	..	..	..	..	..	..	·01	..
28	·04	·12	·13	·13	·15	·12	..	·11	·10	·11	·11
29	·22	..	·16	·17	·14	·16	·15	·14	·20	·17	·09
30	·25	·34	·29	·25	·23	·20	·15	·17	·16	·14	·11
31	·02	..	·01	·01	·02	·02	·02	·01	·01	·01	·01
*	1·54	1·48	1·64	1·65	1·64	1·53	1·25	1·49	1·29	1·32	·94
†	7·05	7·50	8·05	7·67	8·48	7·92	6·04	7·72	7·24	8·12	5·29

Day of Mo.	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·07	·07	·08	·05	·06	..	·06	·07	·04	·03	·07	·06	·05	·11	·05
2	·25	·17	·29	·17	·28	·23	·20	·23	·24	·33	·22	·23	·32	·22	·33
3	·08	·09	·10	·06	·10	·10	·11	·10	·10	·10	·10	·08	·08	·08	·09
4	·02	..	·02	..	·02	·04	·04	·02	·02	·03	·02	·01	·01	..	..
5	·10	·10	·10	·07	·08	·04	·06	·08	·09	·08	·07	·07	·11	·09	·09
6	·02	·02	·02	·01	·02	·02	·02	·02	·01	·03	·03	·03	·01	·02	·02
7	·10	·09	·11	·09	·11	·11	·13	·10	·12	·16	·12	·09	·13	·11	·13
8	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·01	·01	·01	..	..	..	..	..	..	..	..	..	·03	..	·01
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·03	·02	·02	·01	·01	..	·01	·01	·02	..	·03	·02	·01	..	·02
15	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·04	·05	·05	·03	·06	·05	·07	·06	·06	·07	·05	·03	·04	·06	·05
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·07	·08	·07	·03	·05	·03	·05	·05	·07	·05	·08	·08	·09	·08	·08
22	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·04	·04	·03	·03	·02	·03	·03	·03	·03	..	·03	·02	·04	·03	·02
25	·01	·03	·04	·02	·04	·04	·02	·04	·04	·07	·03	·02	·01	·01	·03
26	·02	·04	·02	·02	·05	·03	·03	·02	·02	·04	·01	·03	..	..	..
27	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
28	·14	·16	·12	·11	·11	·12	·19	·17	·19	·18	·19	·19	·12	·10	·08
29	·14	·13	·16	·14	·20	·21	·18	·17	·12	·18	·17	·13	·13	·07	·12
30	·08	·12	·10	·15	·19	·28	·17	·20	·20	·18	·09	·15	·21	·17	·16
31	·02	·03	·02	..	..	·01	·02	·01	·02	·02	·03	·02	·02	..	·01
*	1·24	1·30	1·36	·99	1·40	1·34	1·39	1·38	1·39	1·55	1·34	1·26	1·41	1·15	1·29
†	6·54	6·33	6·57	4·71	6·92	6·93	6·54	6·44	6·94	6·87	6·05	6·14	6·39	5·62	6·34

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for March is 1·47 ins.* **March, 1904.**

Day of Mo.	U. Norwood (Dul.W.Pk.)	U. Norwood (Fox H.Gs.)	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·06	MONTHLY REPORT.	·06	·06	·09	·09	·08	·13	·06	·03	·02	·07	·06	·09	·04	..	·07	·08	·05
2	·33		·23	·26	·34	·32	·32	·32	·35	·02	·38	·29	·28	·27	·12	·25	·31	·30	·22
3	·10		·09	·07	·11	·09	·09	·09	·12	·22	·09	·06	·09	·08	·03	·06	·12	·10	·06
4	·02		·01	·01	..	·01	..	..	..	..	..	..	·01	..	..	..	..	·01	..
5	·12		·09	·07	·12	·15	·10	·07	·12	·09	·08	·08	·10	·11	·06	·09	·11	·10	·10
6	..		·03	·02	·02	·01	·02	..	·02	·03	·05	·03	·05	·02	·01	·04	·01	·02	·02
7	·17		·15	·13	·10	·12	·12	·05	·13	·12	·17	·12	·14	·12	·07	·13	·12	·10	·14
8	..		..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·02		..	·01	·02	·03	·05	..	·03	·02	..	·03	·01	·03	·02	..	..	..	..
10	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·03		..	·03	·02	·02	·02	·01	..	..	·03	·01	·03	·03	·01	..	·02	·02	..
15	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·07		·06	·04	·07	·07	·10	·04	·07	·04	·05	·06	·05	·06	·04	·06	·07	·06	·05
20	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·08		·09	·07	..	·03	·04	·03	·05	·06	·10	·07	·09	·09	·06	·02	·04	·05	·05
22	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..		..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·04		·06	·03	·06	·05	·04	·03	·04	·02	·03	·02	·05	·03	..	..	·02	·02	..
25	·05		·02	·02	·03	·01	·03	·04	·04	..	·03	·03	·02	·01	..	..	·02	·02	..
26	..		..	..	..	..	..	·01	..	..	..	..	..	..	..	·03	..	..	..
27	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	·10		·03	·08	·13	·09	·09	·03	·11	·10	·13	·16	·14	·19	·15	·12	·11	·09	·13
29	·15		·15	·13	·16	·12	·03	..	·15	·11	·10	·10	·12	·17	·15	·11	·09	·10	·15
30	·22		·19	·31	·14	·33	·34	·10	·20	·20	·28	·24	·26	·24	·22	·17	·24	·18	·18
31	·03		·02	·03	·01	·01	·03	·01	·03	·03	·02	·05	·01	·03	..	·06	·02	·02	·01
*	1·59	1·36	1·28	1·38	1·43	1·55	1·50	·96	1·52	1·09	1·56	1·42	1·51	1·57	·98	1·14	1·37	1·27	1·16
†	7·06	7·15	6·40	6·34	7·19	6·83	6·56	2·84	7·31	4·23	6·68	5·38	6·67	6·42	4·31	5·76	6·44	5·74	5·02

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(March, 1904.)

The month may be divided into three parts: from the 1st to 9th wet, with frequent snow showers; from the 9th to 19th fine; and from the 19th to 31st wet, with frequent snow showers. The rainfall is about one-fifth below the average. The month has been somewhat unhealthy, influenza being somewhat prevalent, and there have been several cases of diphtheria in places. There was a thunderstorm with hail on the 29th, and a house was struck by lightning at Wallington. The hail accompanying this thunderstorm was at Croydon half an inch in diameter, and at Sanderstead of the size of hazel-nuts. Owing to the cold weather, vegetation is rather backward. At Sidcup the sallow bloomed on the 20th, and the almond on the 28th. Solar halos were seen at Greenwich on the 13th and 30th, and at Clapham Park on the 22nd; and lunar ones at Greenwich on the 24th, 29th, and 31st, and at Upper Gatton on the 24th. There was dust in the rain gauge at Sanderstead on the 21st. The mean temperature of the month is about a degree and a half below the average, and was at Clapham Park 43°·2, at Croydon (Duppas House) 40°·9, at Wallington 40°·4, at Chipstead and Worcester Park 40°·3, and at Warlingham 39°·0. There were recorded at Wallington 92·3 hours of sunlight, which is 22·7 hours or six per cent. below the March average of the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., Hon. Sec.

The sixty years (1841–1900) average at Greenwich for April is 1·59 ins. **April, 1904.**

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.
2	·11	·10	·05	·14	·09	·06	·09	·07	·06	·13	·10	
3	·10	·09	·10	·13	·09	·08	·11	·01	·08	·08	·05	
4	·04	·04	·04	·06	·10	·06	·09	·06	·08	·07	·08	
5	·09	·08	·08	·10	·08	·08	·08	·08	..	·06	·06	
6	..	..	..	..	..	..	..	..	..	..	..	
7	·09	·07	·07	·08	·06	·05	·05	·05	·05	·05	·05	
8	..	..	..	..	..	..	..	·01	..	·01	..	
9	..	..	..	..	..	..	..	..	..	..	..	
10	..	..	..	..	..	..	..	..	..	..	..	
11	..	..	..	..	..	..	..	..	..	..	..	
12	·34	·30	·33	·32	·40	·37	·41	·36	·41	·42	·36	
13	·04	..	·03	·02	·03	·01	·01	·01	..	·01	·01	
14	·02	·04	..	..	..	..	..	·01	·01	·01	..	
15	·14	·16	·15	·13	·03	·08	·09	·10	·07	·10	·07	
16	..	..	..	..	..	..	..	..	..	..	..	
17	..	..	..	..	..	..	..	..	..	..	..	
18	..	..	..	..	..	..	..	..	..	..	..	
19	..	..	..	..	..	..	..	..	..	..	..	
20	..	..	..	..	..	..	..	..	..	..	..	
21	..	..	..	..	..	..	..	..	..	..	..	
22	·51	·51	·45	·55	·76	·62	·62	·57	·67	·77	·61	
23	..	·02	..	..	·03	·05	·05	·03	·05	·02	..	
24	..	..	..	..	..	..	..	..	..	..	..	
25	..	..	..	..	..	..	..	..	..	..	..	
26	..	..	..	..	..	..	..	·01	·01	·02	..	
27	..	..	..	..	..	..	..	..	..	..	..	
28	..	..	..	..	..	..	..	..	..	..	..	
29	·07	·05	·06	·05	·05	·04	·04	·03	·06	·07	·06	
30	..	..	..	..	·01	·01	..	·01	..	·01	·01	
*	1·55	1·46	1·36	1·58	1·73	1·51	1·64	1·41	1·55	1·83	1·46	
†	12·46	12·33	12·08	12·54	10·17	10·06	11·85	11·46	10·02	12·14	11·22	

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	..	..	..	..
2	·12	·13	·14	·15	·11	·17	·06	·13	·09		·15	·08	·08	·06
3	·08	·06	·06	·05	·05	·04	·04	·07	·03		·06	·07	·09	·06
4	·04	·06	·08	·10	·13	·13	·11	·15	·11		·08	·02	·07	·05
5	..	·07	·08	·07	·09	·09	·05	..	·08		·09	·15	·08	·07
6	..	..	..	..	..	..	..	·03	..		..	..	..	..
7	·04	..	·07	·08	·07	·04	·04	..	·03		·06	·05	·05	·04
8	..	..	·01	..	..	..	..	·02	..		·01	..	..	..
9	..	..	..	..	..	..	..	..	..		..	·01	..	..
10	..	..	..	..	..	..	..	..	..		..	..	..	..
11	..	..	..	..	..	..	..	..	..		..	..	..	..
12	·42	·39	·39	·32	·35	·39	·33	·35	·34		·35	·40	·38	·37
13	..	·03	·01	·03	·04	·04	·02	·03	·02		·02	·01	·01	..
14	·02	..	..	..	..	..	..	..	..		·01	·01	..	..
15	·10	·08	·08	·10	·11	·12	·10	·07	·12		·08	·08	·10	·08
16	..	..	..	..	..	..	..	..	..		..	..	..	..
17	..	..	..	..	..	..	..	..	..		..	..	..	..
18	..	..	..	..	..	..	..	..	..		..	..	..	..
19	..	..	..	..	..	..	..	..	..		..	..	..	..
20	..	..	..	..	..	..	..	..	..		..	..	..	..
21	..	..	..	..	..	..	..	..	..		..	..	..	..
22	·76	·64	·59	·34	·34	·34	·23	·30	·26		·46	·56	·59	·47
23	·01	..	..	..	..	..	..	·01	..		..	·01	·01	..
24	..	..	·02	..	..	..	..	..	..		..	..	..	..
25	..	..	..	..	..	..	..	..	..		..	..	..	..
26	·02	..	..	..	..	..	..	..	..		..	..	..	·01
27	..	..	..	..	..	..	..	..	..		..	..	..	..
28	..	..	..	..	..	..	..	..	..		..	..	..	..
29	·03	·06	·06	·05	·06	·04	·03	·04	·04		·04	..	·02	·01
30	..	·01	..	·01	·01	..	..	·03	..		..	..	..	..
*	1·64	1·53	1·59	1·30	1·36	1·40	1·01	1·23	1·12	1·10	1·41	1·45	1·48	1·22
†	11·95	12·36	12·63	11·76	12·04	11·75	8·02	12·38	10·04	12·41	13·43	12·00	11·71	10·82

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for April is 1·59 ins.* **April, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew. Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·05	..	..	..	..	..	..	..	..	..	..	..	..
2	·09	·09	·06	·03	·03	..	·04	·02	·03	·03	·06	·06	·03
3	·08	·06	·10	·10	·09	·08	·06	·06	·06	·06	·07	·07	·06
4	·04	·06	·06	·06	·05	·06	·06	·05	·04	·05	·06	·06	·05
5	·06	·06	·04	·07	·07	·09	·06	·06	·05	·04	·06	·06	·05
6	·04	..	..	..	..	..	..	..	..	..	..	..	..
7	·05	·04	·04	·04	·04	·05	·03	·04	·05	..	·05	·04	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·54	·37	·24	·20	·25	·22	·35	·31	·31	·10	·37	·34	·34
13	·09	·02	·04	·02	..	·19	·01	..	·03	·35	·01	·01	..
14	..	..	·01	..	·02	..	·01	·03	..	..	·01	·01	..
15	·18	·14	·15	·18	·18	·16	·11	·14	·13	·11	·10	·10	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·60	·52	·45	·38	·35	·64	·55	·48	·47	·54	·61	·59	·40
23	·04	..	..	..	..	..	..	..	·01	..	·01	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·02	..	..	..	..	..	·01	·01	..	..	·02	·01	..
27	..	..	..	..	..	..	..	..	..	·02	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·04	·05	·04	·08	·08	·05	·04	·06	·04	·03	·03	·03	·03
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·92	1·41	1·23	1·16	1·16	1·54	1·33	1·26	1·22	1·33	1·46	1·38	·96
†	13·31	11·80	10·88	9·41	8·81	11·86	9·60	9·04	8·53	9·79	9·77	9·78	8·40

Day of Mo.	Croydon (Wn. N. rd.)	Croydon (Dup. H.)	Croydon (Wdml. rd.)	Croydon (Park Hill)	Croydon (Ashbn. rd.)	Croydon (Avond rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·05	·05	·04	·05	·07	·10	·06	·09	·09	·06	·09	·06	·04
3	·06	·06	·07	·06	·07	·08	·06	·07	·07	·05	·07	·04	·05
4	·06	·06	·07	·05	·07	·07	·07	·06	·07	·07	..	·10	·17
5	·05	·05	·05	·06	·06	·07	·06	·05	·06	·05	·15	.04	·05
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	·03	·04	·03	·03	·03	·05	·03	·07	·05	·03	·04	..	·01
8	..	..	..	..	..	..	·01	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·34	·32	·28	·30	·30	·37	·26	·32	·31	·35	·28	·23	·26
13	..	..	·01	·01	·01	..	·02	..	·01	..	..	·01	·01
14	·01	·01	·01	·01	·01	·02	·01	·02	..	..	..	..	..
15	·10	·09	·11	·09	·12	·08	·12	·12	·10	·13	·18	·17	·13
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·57	·54	·52	·43	·41	·54	·39	·37	·40	·33	·26	·21	·31
23	..	..	..	..	·04	..	..	·01	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	·01	·01	·01	·01	·02	·01	·01	..	..	..	·01	·01
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·02	·03	·03	·02	·03	·03	·03	·03	·02	..	..	·01	·02
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·29	1·26	1·23	1·12	1·23	1·43	1·13	1·22	1·18	1·07	1·07	·88	1·06
†	9·48	9·46	8·93	9·11	10·28	11·35	10·40	11·82	11·40	10·59	10·60	9·61	9·51

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	·01	..	..	·03
2	·02	·03	·05	·05	·05	·05	·02	·04	·02	·02	·05	·05	·05
3	·02	·05	·05	·06	·06	·08	·06	·09	·06	·07	·06	·08	·06
4	·10	·10	·10	·12	·08	·10	·04	·09	·04	·03	·07	·06	·08
5	·05	·05	·05	·05	·04	·05	·03	·06	·06	·06	·07	·05	·07
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	·01	·02	·02	·03	·02	·04	·03	·03	·03	·03	·04
8	..	..	..	..	..	·01	..	..	..	·01	..	..	·01
9	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·31	·19	·19	·20	·22	·21	·21	·25	·32	·24	·18	·15	·14
13	·01	..	..	..	·01	..	..	·01	·01	·01	·01	..	·01
14	..	..	..	·01	..	..	..	..	..	·01	·01	·02	·02
15	·08	·17	·20	·17	·16	·15	·10	·11	·08	·11	·09	·14	·16
16	..	..	..	..	..	..	..	..	..	..	..	..	·01
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·15	·26	·31	·28	·24	·30	·11	·45	·51	·49	·42	·38	·37
23	..	..	..	..	..	·01	·29	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·01	..	..	·01	·01	·01	·01	..	·01	..	..	·02	·01
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	·02	·03	·03	·03	·04	·01	·05	·04	·06	·06	·06	·08
30	..	..	..	..	..	..	·02	..	..	..	..	..	·01
*	·75	·87	·99	1·00	·92	1·04	·92	1·19	1·18	1·15	1·05	1·04	1·15
†	7·80	8·37	9·04	8·67	9·40	8·96	6·96	8·91	8·42	9·27	6·34	7·58	7·48

Day of Mo.	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	·01	..	..	..	..	..	..	..		..
2	·03	..	·03	·02	·05	·05	·04	·04	·03	·03	·05		·03
3	·08	·04	·07	·08	·07	·08	·09	·07	·05	·05	·05		·06
4	·05	·03	·04	·04	·04	·05	·03	·05	·06	·07	·08		·09
5	·06	·03	·05	·05	·05	·06	·05	·05	·05	·07	·08		·06
6	..	..	..	..	..	..	..	..	..	..	..		..
7	·04	..	·03	·03	·03	·03	·03	·03	·02	·03	·05		·03
8	..	..	..	..	..	..	..	..	..	·01	..		..
9	..	..	..	..	..	..	..	..	..	..	..		..
10	..	..	..	..	..	..	..	..	..	..	..		..
11	..	..	..	..	..	..	..	..	..	..	..		..
12	·18	·11	·24	·20	·20	·15	·17	·16	·15	·13	·17		·20
13	·01	..	..	·01	·01	..	..	..	..	..	..		·01
14	·01	..	·02	·03	·03	·01	·02	·03	·03	·02	·02		·01
15	·13	·13	·12	·12	·17	·13	·15	·13	·11	·15	·08		·11
16	..	..	..	..	..	..	..	..	..	..	..		..
17	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..
18	..	..	..	..	..	..	..	..	..	..	..		..
19	..	..	..	..	..	..	..	..	..	..	..		..
20	..	..	..	..	..	..	..	..	..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..		..
22	·38	·32	·37	·21	·28	·23	·30	·28	·24	·39	·44		·50
23	·01	..	..	..	·02	..	..	..	..	..	..		..
24	..	..	..	..	..	..	..	..	..	..	..		..
25	..	..	..	..	..	..	..	..	..	..	..		..
26	·01	..	..	·01	..	·01	..	..	..	·01	·01		·02
27	..	..	..	..	..	..	..	..	..	..	..		..
28	..	..	..	..	..	..	..	..	..	..	..		..
29	·06	·04	·06	·04	·07	·05	·07	·07	·10	·08	·07		·07
30	..	..	..	..	·01	..	..	..	·01	..	..		..
*	1·05	·70	1·03	·85	1·03	·85	·95	·91	·85	1·04	1·10		1·19
†	7·62	5·41	7·95	7·78	7·57	7·29	7·89	7·78	6·90	7·18	7·49		7·53

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for April is 1·59 ins.* April, 1904.

Day of Mo.	U. Norwood (Dul.W.Pk.)	U. Norwood (Fox H.Gs.)	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	MONTHLY REPORT.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	·05		·03	·05	·04	·03	·03	·02	·06	·03	·03	·05	·04	·02	·02	·08	·06	·05	·04
3	..		·01	·02	·04	·03	..	·02	·06	..	·05	·07	·06	·06	·05	·06	·09	·07	·10
4	·12		·14	·14	·11	·13	·20	·09	·13	·09	·15	·13	·10	·11	·07	·09	·12	·08	·09
5	·07		·07	·07	·07	·05	·07	·04	·08	·04	·07	·08	·08	·08	·05	·10	·08	·07	·08
6	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	·04		·03	·02	·02	..	·04	..	..	..	·03	·05	·02	·03	..	·03	·01	·01	·01
8	·01		..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
9	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·22		·17	·16	·18	·26	·22	·26	·14	·14	·23	·22	·24	·17	·13	·18	·16	·15	·14
13	..		..	..	·01	·01	..	·01	..	..	·03	·04	·03	..	..	·02	·01	..	·02
14	·03		..	·02	..	·01	..	..	..	..	·01	..	·01	·01	..	..	·01	..	..
15	·11		·13	·12	·20	·12	·12	·07	·18	·10	·15	·09	·10	·10	·07	·16	·15	·15	·12
16	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·54		·46	·47	·24	·17	·19	·90	·20	·32	·66	·58	·55	·36	·36	·34	·24	·29	·39
23	..		..	·01	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·02		..	·01	..	·02	..	..	·01	..	·01	..	..	·01	..	..	..	·01	..
27	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·07		·06	·06	·03	·01	..	..	·04	·03	·07	·07	·09	·07	·02	·02	·05	·03	·05
30	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·28	1·20	1·10	1·15	·97	·84	·87	1·41	·90	·75	1·49	1·38	1·32	1·02	·77	1·08	·99	·91	1·04
†	8·34	8·35	7·50	7·49	8·16	7·67	7·43	4·25	8·21	4·98	8·17	6·76	7·99	7·44	5·08	6·84	7·43	6·65	6·06

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(April, 1904.)

The month has been warm and dry, with rather more than the average amount of sunshine. The month has been on the whole a healthy one, though cases of diphtheria, scarlet fever, and measles have occurred in places. Vegetation has progressed well, and fruit-blossom, especially on the apple-trees, is very abundant. A thunderstorm occurred throughout the district on the night of the 12th–13th. In portions of the district there was intense darkness between noon and 3 p.m. on the 15th. A parhelion was seen at Greenwich and Croydon on the 20th. The following are the earliest dates on which the following occurred: Cuckoo heard at Chislehurst on the 13th; martins seen at Chislehurst on the 13th; swallow seen at Bromley on the 10th; wryneck heard at Nutfield on the 11th; nightingale heard at Nutfield on the 12th; and chiffchaff heard at Croydon on the 16th. The mean temperature of the month is about 2°·5 above the average, and was at Clapham Park 51°·1, at Croydon (Duppas House) 50°·1, at Wallington and Worcester Park 49°·4, at Chipstead 48°·6, and at Warlingham 47°·8. The rainfall is about half an inch below the average. There were recorded at Wallington 172·3 hours of sunlight, which is 12·4 hours or three per cent. above the April average of the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (PlaceFell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·19	·30	·21	·16	·21	·16	·18	·15	·18	·16	·18		·10	·14	·15	·21	·21	·25	·14	·19	·15		·14	·09	·11	·10
2	·24	·23	·18	·22	·24	·22	·23	·25	·22	·22	·21		·21	·23	·27	·26	·27	·35	·20	·32	·25		·26	·21	·19	·18
3	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
5	·08	·08	·06	·08	·08	·09	·09	·05	·05	·06	·06		·05	·01	·07	·04	·04	·03	·02	·04	·04		·08	·05	·06	·06
6	·18	·07	·06	·02	·05	·05	·05	·06	·07	·06	·08		..	·13	·05	·08	·14	·10	·09	·10	·14		·07	·06	·06	·03
7	..	..	..	..	·02	·02	·02	·01	·02	·02	·02		·08	·04	·04	·11	·06	·06	·05	·07	·08		·04	·03	·04	·04
8	·02	..	..	..	..	..	..	·02	·03	·01	..		..	·01	·02	·02	·02	·05	·05	·05	·05		·02	..	·01	·01
9	·08	·11	·07	·11	·03	·03	·03	·03	..	·07	·06		·02	·07	·08	·08	·03	·03	·02	..	·04		·09	·03	·03	·03
10	·04	..	·05	·08	·05	·04	·04	·04	·10	·05	·14		·08	·04	·07	·03	·07	·09	·09	·12	·09		·07	·06	·09	·08
11	·03	..	..	..	·01	·01	·01	·02	·02	·02	..		·01	..	..	..	..	..	..	..	..		·01	..	..	..
12	..	..	..	..	·01	·01	·01	·01	..	·01	..		..	..	·01	..	..	..	..	..	..		..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	..	..	..	..
16	..	..	..	..	..	..	..	·01	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
20	·76	·60	·62	·68	·50	·47	·46	·58	·49	·50	·44		·46	·44	·41	·42	·42	·35	·31	·34	·27		·43	·40	·42	·36
21	·04	·03	·02	·02	·01	·02	·02	·01	·02	·01	..		·01	·01	·01	·01	·01	·05	·05	..	·03		·01	·01	·02	..
22	..	·02	..	..	..	..	..	..	..	·02	..		..	·01	..	..	..	..	..	..	..		..	..	..	..
23	·16	·10	·13	·12	·10	·09	·09	·07	·10	·14	·12		·11	·12	·13	·11	·13	·13	·08	·11	·10		·13	·08	·10	·08
24	·13	·20	·12	·13	·21	·19	·21	·14	·15	·13	·16		·13	·17	·18	·13	·11	·14	·10	·12	·11		·17	·01	·12	·11
25	..	·30	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
26	1·35	·44	·68	·40	·24	·22	·23	·32	·11	·23	·25		·28	·28	·29	·13	·10	..	..	..	..		·16	·26	·25	·18
27	·02	·43	·19	·15	·37	·34	·34	·20	·34	·29	26		·29	·21	·37	·08	·02	·03	·02	..	..		·28	·28	·22	·36
28	·04	..	..	..	..	..	..	·01	..	·01	..		..	..	..	..	..	..	..	·04	..		..	·01	..	..
29	..	..	..	..	..	..	..	·01	..	·01	..		·01	..	·02	·01	..	·02	·02	..	·01		·02	·02	·03	·02
30	·14	·12	·09	·12	·10	·11	·11	·07	·08	·09	·11		·10	·10	·12	·18	·02	·12	·12	·23	·27		·13	·09	·10	·07
31	·28	·29	·28	·27	·41	·47	·47	·41	·38	·42	·42		·37	·45	·45	·60	·86	·64	·60	·55	·61		·48	·37	·36	·34
*	3·78	3·32	2·76	2·56	2·64	2·54	2·59	2·47	2·36	2·53	2·41		2·31	2·46	2·74	2·50	2·51	2·41	1·96	2·28	2·24	2·22	2·59	2·06	2·21	2·05
†	16·24	15·65	14·84	15·10	12·81	12·60	14·44	13·93	12·38	14·67	13·63		14·26	14·82	15·37	14·26	14·55	14·16	9·98	14·66	12·28	14·63	16·02	14·06	13 92	12·87

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for May is 1·90 ins.* **May, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew. Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·11	·16	·11	·08	·18	·13	·21	·26	·26	·28	·18	·18	·26
2	·20	·21	·19	·22	·19	·19	·17	·16	·18	·20	·20	·18	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	·04	..	..	..	..	..	..	..	..	..	..	..	..
5	·07	·08	·07	·10	·12	·08	·07	·08	·07	·07	·08	·07	·06
6	·05	·05	..	·05	·05	·05	·04	·11	·05	·06	·18	·19	·16
7	·04	..	·04	·02	·03	..	·03	·05	·05	·06	·07	·06	·06
8	..	..	..	..	..	..	..	..	..	..	·01	..	..
9	..	·08	·02	·04	·05	..	·06	·09	·04	·03	·04	·03	·03
10	·09	·07	·10	·08	·07	·14	·05	·03	·07	·08	·07	·07	·08
11	..	..	..	..	..	..	..	·02	..	..	..	..	..
12	·03	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	·54	·53	·58	·63	·58	·51	·50	·53	·52	·45	·41	·40	·40
21	..	..	·02	..	·01	..	·01	..	..	..	·01	..	·02
22	..	..	..	·05	·07	..	..	..	..	..	..	..	..
23	·20	·11	·08	·10	·10	·14	·09	·09	·08	·08	·08	·08	·06
24	·04	·15	·12	..	·05	·12	·10	·10	·10	·12	·11	·10	·13
25	·06	..	..	..	..	..	..	..	..	..	..	..	..
26	·17	·42	·51	·29	·28	·20	·20	·34	·32	..	·22	·19	·19
27	·34	·46	·12	·54	·44	·44	·30	·29	·23	·56	·27	·40	·20
28	..	..	..	..	..	..	..	..	..	..	·01	..	..
29	..	..	..	..	..	·05	·01	·02	·01	·02	·02	·01	·01
30	·18	·09	·09	·08	·08	·15	·06	·08	·06	·05	·09	·07	·06
31	·31	·34	·28	·43	·30	·25	·51	·54	·56	·37	·35	·39	·40
*	2·47	2·75	2·33	2·71	2·60	2·45	2·41	2·79	2·60	2·43	2·40	2·42	2·12
†	15·78	14·55	13·21	12·12	11·41	14·31	12·01	11·83	11·13	12·22	12·17	12·20	10·52

Day of Mo.	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·18	·16	·33	·20	·23	·13	·11	·11	·10	·10	·13	·08	·06
2	·20	·18	·19	·19	·20	·21	·18	·22	·22	·22	·18	·19	·16
3	..	..	..	..	..	..	..	..	..	..	..	..	·01
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	·06	·06	·08	·07	·07	·08	·06	·08	·06	·05	·06	·01	·02
6	·21	·25	·05	·20	..	·05	·03	·03	·03	·02	..	·03	·03
7	·06	·06	·08	·07	·22	·07	·06	·08	·05	·05	·09	·08	·08
8	·01	·01	·01	..	·06	·01	·01	·01	·01	..	·03	·03	·05
9	·03	·04	·04	..	·01	·04	·04	·04	·05	·02	·04	·03	·02
10	·08	·09	·06	·17	·12	·09	·09	·10	..	·09	·10	·14	·19
11	·01	·01	·01	..	·01	..	·01	..	..	..	·03	·01	·02
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	·46	·43	·45	·49	·47	·42	·45	·43	·42	·46	·37	·29	·22
21	..	..	..	..	·04	..	·01	·08	..	·01	..	..	·01
22	..	..	..	..	..	..	..	·09	..	..	..	..	..
23	·07	·08	·06	·06	·07	·11	·09	..	·09	·07	·07	·06	·07
24	·10	·10	·10	·08	·10	·12	·11	·08	·13	·11	·13	·13	·12
25	..	..	..	..	..	..	..	..	..	..	..	..	..
26	·20	·20	·14	·15	..	·17	·15	..	·14	..	..	·01	..
27	·22	·23	·20	·15	·25	·44	·10	·20	·12	·09	·07	·02	·02
28	..	..	..	..	·01	..	·01	..	..	..	..	..	..
29	·01	·01	·01	·02	·02	·03	·03	·03	·03	·02	·05	·03	·03
30	·07	·07	·08	·07	·05	·08	·13	·06	·14	·42	·15	·24	·21
31	·48	·46	·39	·47	·48	·41	·43	·55	·41	·22	·49	·43	·44
*	2·45	2·44	2·28	2·39	2·41	2·46	2·10	2·19	2·00	1·95	1·99	1·81	1·76
†	11·93	11·90	11·21	11·50	12·69	13·81	12·50	14·01	13·40	12·54	12·59	11·42	11·27

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·10	·28	·27	·28	·13	·22	·01	·21	·23	·20	·07	·10	·13	·10	·05	·19	·03	·07	·09	·09	·07	·20	·12	·12		·09
2	·17	·19	·19	·20	·18	·17	·21	·20	·19	·10	·16	·17	·19	·16	·16	·17	·14	·19	·17	·20	·21	·15	·16	·18		·19
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..		..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
5	·02	·04	·04	·05	·05	·06	·06	·09	·09	·07	·06	·06	·05	·06	·06	·07	·06	·03	·08	·06	·08	·04	·06	·07		·07
6	..	·03	·04	·05	·03	·13	·03	·07	·08	·05	·02	·05	·08	·03	·02	·06	·07	·05	·05	·07	·09	·07	·09	·05		·03
7	·09	·07	·05	·05	·07	·05	·03	·06	·07	·05	·03	·03	·04	·03	..	·02	·03	·02	·03	..	·03	·02	·04	·05		·06
8	·05	·03	·04	·03	·03	·03	·01	·01	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	·01		·02
9	·02	·02	·03	·04	·03	·03	..	·05	·02	·09	..	·04	·05	·04	·05	·03	·06	·04	·05	·07	·06	·11	·05	·05		·04
10	·20	·11	·10	·11	·10	·08	·11	·07	·10	·05	·11	·10	·15	·08	·10	·08	·06	·13	·12	·14	·11	·17	·17	·14		·10
11	·02	·02	·02	·03	·03	·02	..	·02	·01	·01	·02	·02	·02	·02	·01	·01	·02	·02	·02	·02	·03	·03	·03	·03		·02
12	..	·06	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
20	·18	·22	·35	·35	·31	·40	·04	·54	·45	·46	·41	·48	·47	·45	·55	·57	·50	·52	·52	·55	·52	·54	·45	·34		·41
21	·04	·01	..	..	·02	..	·35	..	..	·01	·01	·01	·01	·01	·02	·01	·01	·01	..	..	·05	·04	·02	·10		·02
22	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	·02	..	·03	·01	..	·09	·01	..		..
23	·03	·05	·05	·06	·05	·06	..	·07	·08	·07	·06	·08	·05	·07	·06	·09	·10	·09	·08	·09	·10	·10	·08	·10		·08
24	·15	·12	·11	·10	·12	·09	·09	·10	·10	..	·07	·08	·09	·07	·05	·08	·05	·05	·05	·07	·07	·09	·08	·09		·11
25	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
26	..	..	..	·04	..	·02	..	·03	·22	·01	·17	·28	·27	·24	·27	·34	·36	·34	·42	·41	·04	·34	·17	·02		·03
27	..	·04	·06	·08	·07	·09	·08	·14	·51	·67	·28	·43	·44	·44	·20	·32	·34	·31	·22	·24	·62	·37	·29	·21		·13
28	..	..	..	..	..	..	..	..	..	·01	..	..	·01	·01	..	..	·01	..	..	..	..	..	..	..		..
29	·04	·04	·02	·02	·03	·02	..	·02	·01	·01	..	..	·01	..	..	..	..	..	..	..	..	·01	..	·02		·02
30	·19	·24	·22	·18	·16	·20	·02	·18	·11	·25	·10	·11	·13	·09	·06	·07	·07	·08	·08	·09	·05	·10	·12	·10		·11
31	·35	·48	·55	·55	·49	·49	·39	·49	·40	·48	·30	·29	·30	·28	·27	·34	·23	·21	·24	·30	·26	·33	·28	·43		·48
*	1·65	2·05	2·15	2·22	1·90	2·16	1·45	2·35	2·67	2·59	1·87	2·35	2·53	2·18	1·93	2·45	2·16	2·16	2·26	2·41	2·39	2·80	2·22	2·11		2·01
†	9·45	10·42	11·19	10·89	11·30	11·12	8·41	11·26	11·09	11·86	8·21	9·93	10·01	9·80	7·34	10·40	9·94	9·73	9·55	10·30	10·17	9·70	9·40	9·60		9·54

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for May is 1·90 ins.* **May, 1904.**

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilming-ton	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·11		·11	·10	·19	·18	·26	·09	·13	·07	·12	·12	·14	·19	·17	·16	·21	·14	·23
2	·19		·19	·19	·20	·16	·08	·11	·21	·12	·21	·17	·16	·17	·12	·18	·18	·16	·13
3	..		..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	·09		·07	·07	·05	·02	·04*	·01	·03	·05	·09	·06	·07	·04	·03	·10	·06	·07	·05
6	·04		·04	·04	·03	·01	·08	..	·03	·02	·03	·07	·09	·10	·02	·06	·05	·04	·02
7	·07		..	·06	·06	·08	·03	·04	·07	·05	·06	·05	·01	·05	·03	·06	·05	·05	·03
8	·03		·06	·02	·06	·03	..	·02	·04	·01	·02	·02	·02	·01	·02	·04	·03	·03	..
9	·05		·08	..	·05	·04	·04	·01	·07	·03	·02	·05	·05	·20	..	·07	·06	·06	·21
10	·11		·12	·15	·16	·17	·18	·17	·18	·15	·17	·18	·15	·10	·06	·16	·18	·20	·02
11	·03		·03	·03	·02	·01	·04	·02	·02	·03	·03	·02	·03	·05	·02	·04	·02	·02	..
12	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	MONTHLY REPORT.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	·46		·36	·42	·29	·25	·25	·14	·27	·31	·61	·40	·48	·46	·27	·34	·34	·30	·32
21	·02		·02	·02	..	..	..	·04	·02	..	·02	·07	·03	·02	..	·04	·01	·02	..
22	·08		..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..
23	..		·08	·09	·07	·07	..	·06	·08	·07	·11	·09	·10	·10	·06	·10	·08	·08	·07
24	·09		·08	·07	·13	·12	·18	·08	·12	·06	·09	·08	·09	·09	·05	·09	·09	·07	·06
25	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..		·04	·02	·01	·07	..	..	..	..	·03	..	·05	·10	·03	·14	·05	..	·11
27	·13		·09	·09	·05	..	·04	..	·06	·07	·13	·16	·13	·08	·04	..	·09	·10	·07
28	..		..	·01	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
29	·03		·02	·01	·03	·08	..	·02	·02	·01	..	..	·02	..	..	..	·02	·01	..
30	·22		·24	·25	·33	·18	·15	·03	·30	·20	·20	·07	·14	·18	·12	·20	·18	·13	·24
31	·45		·46	·41	·50	·41	·43	·34	·48	·35	·53	·46	·44	·42	·30	·32	·39	·38	·38
*	2·20	2·08	2·09	2·05	2·24	1·83	1·80	1·19	2·14	1·60	2·47	2·07	2·20	2·36	1·34	2·10	2·09	1·86	1·94
†	10·54	10·43	9·59	9·54	10·40	9·50	9·23	5·44	10·35	6·58	10·64	8·83	10·19	9·80	6·42	8·94	9·52	8·51	8·00

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(May, 1904.)

The month was cold and stormy for the first ten days, then fine and warm for nine days, and then rainy and unsettled for the remaining days. The weather on the 27th was very remarkable. There was a thunderstorm between 8 a.m. and 9 a.m. in which, at Sutton, ·26 in. of rain fell; and then at 9.45 a.m. there was another thunderstorm, in which ·26 in. of rain fell in fifteen minutes, and at Sanderstead ·31 in. fell in the same time; then followed intense darkness for about an hour. The month on the whole has been a healthy one. Solar halos have been observed throughout the district on many occasions. Fruit prospects are fairly good, with the exception of of pears, which in places are thin. The horse-chestnut flowered on the 11th, the white may on the 16th, and the red may on the 18th at Wallington. The rainfall of the month is about one-half an inch above the average. The mean temperature is about one degree above the average, and was at Clapham Park 56°·5, at Croydon (Duppas House) 54°·5, at Chipstead 54°·4, at Worcester Park 53°·9, at Wallington 53·°8, and at Warlingham 52°·4. There were recorded at Wallington 157·8 hours of sunlight, which is 42·8 hours or nine per cent. below the May average of the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·12	··	·01	·04	·40	·25	·25	·10	·34	·18	·16	RECORD CEASED.
2	·02	··	··	·02	··	··	··	··	·01	·01	··	
3	··	··	··	··	··	··	··	··	··	··	··	
4	··	··	··	··	··	··	··	··	··	··	··	
5	··	··	··	··	··	··	··	··	··	··	··	
6	··	··	··	··	··	··	··	··	··	·03	··	
7	··	··	··	··	··	··	··	··	··	··	··	
8	··	··	··	··	··	··	··	··	··	··	··	
9	·09	·14	·14	·15	·13	·14	·14	·19	··	·11	·07	
10	··	··	··	··	··	··	··	··	··	··	··	
11	··	··	··	··	··	··	··	·01	··	··	··	
12	··	··	··	··	··	··	··	·01	··	··	··	
13	·01	··	··	··	··	··	··	·26	··	·01	··	
14	·21	·23	·20	·25	·23	·23	·24	·19	·22	·24	·23	
15	·08	·14	·05	·05	·04	·03	·04	·01	·04	·05	·03	
16	··	··	··	··	··	··	··	··	··	··	··	
17	·02	··	·01	··	·03	·02	·01	·03	·01	·02	·02	
18	··	··	··	··	··	··	··	··	··	··	··	
19	··	··	··	··	··	··	··	··	··	··	··	
20	··	··	··	··	··	··	··	··	··	··	··	
21	··	··	··	··	··	··	··	··	··	··	··	
22	··	··	··	··	··	··	··	··	··	··	··	
23	··	··	··	··	··	··	··	··	··	··	··	
24	·13	·14	·12	·15	·13	·12	·12	·08	·13	·13	·13	
25	·08	·03	·11	·23	·13	·12	·13	·12	·11	·13	·08	
26	·06	·02	··	·05	·28	·30	·25	·30	·25	·23	·15	
27	··	··	··	··	··	··	··	··	··	··	··	
28	··	··	··	··	··	··	··	··	··	··	··	
29	··	··	··	··	··	··	··	··	··	··	··	
30	··	··	··	··	··	·01	·01	·01	··	··	··	
*	·82	·70	·64	·94	1·37	1·22	1·19	1·31	1·11	1·14	·87	
†	17·06	16·35	15·48	16·04	14·18	13·82	15·63	15·24	13·49	15·81	14·50	

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·19	·15	·18	·11	·11	·22	·19	·14	·18	MONTHLY GAUGE.	·20	·24	·24	·27
2	··	··	··	··	·01	··	··	··	··		··	··	··	··
3	··	··	··	··	··	··	··	··	··		··	··	··	··
4	··	··	··	··	··	··	··	··	··		··	··	··	··
5	··	··	··	··	··	··	··	··	··		··	··	··	··
6	··	··	·01	··	··	··	··	··	··		··	··	··	··
7	··	··	··	··	··	··	··	··	··		··	··	··	··
8	··	··	··	··	··	··	··	··	··		··	··	··	··
9	·08	·08	·10	·15	·17	·30	·30	·29	·29		·12	·12	·12	·14
10	··	··	··	··	··	··	··	··	··		··	··	··	··
11	··	··	··	··	··	··	··	··	··		··	··	··	··
12	··	··	··	··	··	··	··	··	··		··	··	··	··
13	·01	··	·02	·02	·02	·01	·01	·02	··		··	··	··	··
14	·22	·23	·24	·26	·29	·29	·24	·31	·23		·27	·26	·24	·23
15	·04	·04	·04	·03	·07	·05	·02	·04	··		·04	·03	·03	·03
16	··	··	··	··	··	··	··	··	··		··	··	··	··
17	·02	·02	·02	··	··	··	··	·02	··		·03	··	··	··
18	··	··	··	··	··	··	··	··	··		··	··	··	··
19	··	··	··	··	··	··	··	··	··		··	··	··	··
20	··	··	··	··	··	··	··	··	··		··	··	··	··
21	··	··	··	··	··	··	··	··	··		··	··	··	··
22	··	··	··	··	··	··	··	··	··		··	··	··	··
23	··	··	··	··	··	··	··	··	··		··	··	··	··
24	·10	·13	·13	·10	·13	·09	·08	·11	·08		·12	·10	·10	·09
25	·05	·10	·09	·09	·10	·06	·06	·02	·05		·10	·12	·11	·11
26	·12	·14	·07	··	·16	·10	·10	·22	·24		·10	·03	·06	·05
27	··	··	··	··	··	··	··	··	··		··	··	··	··
28	··	··	··	··	··	··	··	··	··		··	··	··	··
29	··	··	··	··	··	··	··	··	··		··	··	··	··
30	··	··	·13	··	·03	·02	·01	··	·02		··	··	··	··
*	·83	·89	1·03	·76	1·09	1·14	1·01	1·17	1·09	·71	·98	·90	·90	·92
†	15·09	15·71	16·40	15·02	15·64	15·30	10·99	15·83	13·37	15·34	17·00	14·96	14·82	13·79

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for June is 1·94 ins.* June, 1904.

Day of Mo.	Burgh Heath	Hedley	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew. Wks.)	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·19	·86	·12	·80	·73	·10	·38	·27	·28	·44	·47	·31	·30
2	·04	·02	..	..	..	·01	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·13	·18	·19	·15	·16	·10	·10	·09	·09	..	·12	·11	·10
10	..	..	..	·02	..	..	..	..	..	..	..	..	..
11	·04	..	..	..	·01	..	..	..	·01	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	·01	..	..	..	·01	..	·01	..	..	·02	..	..	..
14	·23	·26	·24	·25	·02	·26	·22	·22	·21	·23	·24	·24	·22
15	·04	..	·04	·01	..	·03	·01	..	..	..	·01	·01	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·02	·05	..	..	..	..	..	·01	·01	..	·02	·01	·02
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·11	·12	·12	·12	·10	..	·11	·11	·11	·12	·12	·12	·12
25	·04	·15	·29	·02	..	..	·05	·07	·06	·04	·05	·03	·05
26	·12	·19	·19	·12	·11	·12	·04	·04	·03	·04	·04	·04	·02
27	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·97	1·83	1·19	1·49	1·14	·62	·92	·81	·80	·89	1·07	·87	·83
†	16·75	16·38	14·40	13·61	12·55	14·93	12·93	12·64	11·93	13·11	13·24	13·07	11·35

Day of Mo.	Croydon (Wn. N. rd.)	Croydon (Dup. H.)	Croydon (Wdml. rd.)	Croydon (Park Hill)	Croydon (Ashbn. rd.)	Croydon (Avond rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Orpington	Farningham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·24	·23	·21	·12	·26	·36	·18	·28	·17	·21	·13	·12	·08
2	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·11	·12	·10	·10	·12	·14	·15	·18	·17	·13	·14	·21	·26
10	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	·01	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	·02	..	..	..	·01	·01	·02	·01	..	..	·01	·02
14	·24	·23	·21	·21	·22	·25	·22	·25	·24	·25	·25	·28	·29
15	·01	·01	·01	·01	·01	·03	·01	·03	·02	..	·02	·02	·03
16	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·01	·01	·01	..	..	..	·02	·02	·02	·02	·03	..	·02
18	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·12	·12	·11	·10	·11	·12	·11	·11	·11	·10	·07	·09	·08
25	·04	·03	·12	·07	·13	·05	·03	·04	·04	·10	·14	·12	·05
26	·03	·03	·03	·03	·05	·04	·03	·06	..	·04	·17	·15	·06
27	..	..	..	..	..	..	..	..	·01	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·80	·80	·80	·64	·90	1·00	·77	·99	·79	·85	·95	1·00	·89
†	12·73	12·70	12·01	12·14	13·59	14·81	13·27	15·00	14·19	13·39	13·54	12·42	12·16

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·18	·11	·20	·20	·17	·26	·41	·16	·38	·03	·17	·28	·24	·22	·18	·09	·21	·10	·12	·21	·19	·34	·18	·13		·17
2	..	..	..	..	..	..	..	..	..	..	·68	..	·01	·01	..	..	..	..	..	..	..	..	..	..		..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
6	..	..	..	..	..	·01	..	..	..	..	..	·02	..	..	..	..	..	..	..	·02	..	..	..	..		..
7	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
9	·27	·14	·12	·10	·14	·11	..	·11	·10	·08	·07	·06	·06	·06	·06	·09	·06	·13	·10	·07	·10	·07	·06	·09		·10
10	..	..	..	..	..	..	·10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
11	..	..	..	..	..	·01	..	..	..	..	..	·01	..	..	..	·01	..	..	..	..	..	..	..	·01		·01
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
13	·01	..	·01	·01	·02	·02	..	·01	..	..	..	..	·02	..	·01	..	·01	·04	·02	·01	·02	·04	·01	..		·01
14	·26	·22	·23	·23	·23	·22	·19	·23	·23	·21	·22	·25	·26	·24	·19	·21	·12	·22	·21	·27	·24	·25	·25	·24	RECORD CEASED.	·23
15	·02	..	..	..	·02	..	..	..	..	..	..	·01	·01	·01	..	..	..	..	·01	·01	·02	..	·01	..		..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
17	·01	..	·02	·02	·02	·02	..	·02	..	·01	..	..	·01	..	..	·01	..	..	..	..	..	..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
24	·06	·07	·10	·10	·10	·12	..	·16	·12	·13	·17	·19	·18	·15	·15	·13	·05	·18	·16	·23	·20	·14	·15	·16		·14
25	·05	·13	·12	·09	·12	·11	·18	·17	·06	·12	·15	·13	·12	·12	·09	·05	·03	·06	·10	·12	·09	·06	·10	·12		·09
26	·01	·09	·10	·16	·20	·11	·06	·08	·03	·06	·03	·03	·02	·03	·07	·04	·05	·07	·08	·03	·04	·01	·02	·03		·07
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
*	·87	·76	·90	·91	1·02	·99	·95	·94	·92	·64	1·49	·98	·93	·84	·75	·63	·53	·80	·80	·97	·90	·91	·78	·78		·82
†	10·32	11·18	12·09	11·80	12·32	12·11	9·36	12·20	12·01	12·50	9·70	10·91	10·94	10·64	8·09	11·03	10·47	10·53	10·35	11·27	11·07	10·61	10·18	10·38		10·36

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for June is 1·94 ins.* **June, 1904.**

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·23		·28	·28	·13	·14	·25	·24	·14	·25	·18	·15	·19	·10	·14	·30	·11	·18	·12
2	..		..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..
3	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..		..	..	..	..	..	..	..	..	..	..	..	·04	..	..	..	..	..
6	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	·11		·10	·09	·17	·21	·23	·31	·15	·07	·12	·09	·10	·09	·06	·10	·11	·11	·08
10	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..		..	..	·02	·02	·01	·03	·01	..	..	..	..	..	..	..	·01	·01	..
14	·25		·23	·24	·23	·22	·23	·17	·23	·20	·29	·25	·26	·25	·20	·26	·24	·23	·24
15	..		..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..
16	..	MONTHLY REPORT.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·02		·02	·02	·02	..	..	·01	·01	..	..	..	·01	..	..	..	·02	·01	..
18	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	·12		·13	·13	·10	·07	·07	·05	·10	·10	·17	·13	·17	·11	·07	·14	·11	·10	·11
25	·14		·04	·03	·05	·10	·15	·01	·08	·01	..	·01	·11	·04	·06	..	·06	·06	·02
26	..		·10	·05	·05	·05	·04	..	·15	·10	·04	·03	·02	·14	·13	·20	·04	·04	·02
27	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	·87	·90	·90	·84	·77	·81	·98	·84	·87	·73	·80	·66	·86	·77	·66	1·00	·70	·74	·59
†	11·41	11·33	10·49	10·38	11·17	10·31	10·21	6·28	11·22	7·31	11·44	9·49	11·05	10·57	7·08	9·94	10·22	9·25	8·59

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(June, 1904.)

The month has been very dry, and also cool, though the sunlight is rather above the average. Both the day and night temperatures have been below the average. The thunderstorm on the 1st was general throughout the district, and was especial heavy about D'Abernon Chase and Oxshott. The hay crop has been a good one, and has been got in in splendid order. On the 29th, at Greenwich, there was observed "a solar halo with parhelia and brightly-coloured contact arch and portion of another halo of 45° radius between 5 and 5.30 p.m." The fruit crops are not turning out well. The dog-rose flowered at Beckenham on the 11th, and the lime at Sidcup on the 30th. Diphtheria and scarlet fever were rather less prevalent than usual. The month as a whole has been a healthy one. The rainfall is the smallest June fall since 1895. The mean temperature of the month is about $1\frac{1}{2}°$ below the average, and was at Chipstead 59°·1, at Croydon (Duppas House) 59°·0, at Worcester Park 58°·2, at Wallington 57°·6, and at Warlingham 56°·2. There were recorded at Wallington 218·4 hours of sunlight, which is 12·4 hours or two per cent. above the June average of the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	RECORD OMITTED.	..	..	..	..	..	..	RECORD CEASED.	·02	..	·01	..	..	..	..	·02	..	MONTHLY GAUGE.	..	..	·04	·03
2	·11	·10	·11	·10		·05	·05	·05	·05	·10	·08		·16	·12	·11	·07	·03	·03	·02	·04	·03		·13	·21	·25	·31
3	·23	·12	·33	·37		·28	·23	·10	·35	·47	·26		·12	·29	·32	·47	·26	·27	·24	·15	·18		·23	·13	·10	·04
4	..	..	..	..		..	..	·01	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
5	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
6	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
7	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
8	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
9	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
10	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
11	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
12	..	..	..	..		..	..	·01	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
13	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
14	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
15	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
16	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
17	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
18	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
19	·02	..	·05	·04		·04	·04	·01	·03	·02	·03		·04	·06	..	..	·03	·03	·02	·04	·10		·05	·03	·03	·03
20	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
21	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
22	·01	·02	·02	·02		..	..	·01	·01	·01	..		·01	..	·01	..	..	..	..	..	..		..	..	..	..
23	..	..	..	..		..	..	·01	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
24	..	..	..	..		..	..	·01	..	·01	..		..	..	..	..	..	..	..	..	..		..	..	..	..
25	·16	·22	·38	·25		·25	25	·19	·25	·29	·35		·38	·37	·38	·57	·52	·85	·83	·91	·85		·56	·58	·59	·63
26	·04	·03	·04	·10		·08	·08	·05	·07	·09	·08		·10	·07	·05	·03	..	..	..	..	·01		·04	·04	·08	·04
27	·06	·05	·05	·27		·09	·10	·26	·12	·12	·10		·15	·22	·23	·17	·24	·15	·14	·11	·06		·20	·25	·25	·23
28	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
29	·11	·10	·09	·11		·04	·04	·03	·05	·07	·05		·06	·05	·06	..	..	..	..	..	..		·07	·06	·10	·07
30	·24	·25	·33	·28		·13	·15	·09	·08	·11	·11		·13	·10	·13	·10	·17	·15	·14	·33	·22		·11	·10	·09	·09
31	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
*	·98	·89	1·40	1·54		·96	·94	·83	1·01	1·29	1·06		1·17	1·28	1·30	1·41	1·25	1·48	1·39	1·60	1·45	1·41	1·39	1·40	1·53	1·47
†	18·04	17·24	16·88	17·58		14·78	16·57	16·07	14·50	17·10	15·56		16·26	16·99	17·70	16·43	16·89	16·78	12·38	17·43	14·82	16·75	18·39	16·36	16·35	15·26

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for July is 2·41 ins.* **July, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leatherhead	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew. Wks.)	Benhilton	Carshalton	Wallington	Beddington	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Orpington	Farningham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·04	·06	·05	·15	·15	·18	·06	·08	·06	·06	·06	·04	·05	·04	·04	·06	·02	·03	·04	·03	·03	·01	..	·04	..	..
2	·19	·15	·12	·33	·30	·42	·26	·26	·25	·23	·33	·28	·25	·24	·24	·26	·25	·25	·32	·36	·34	·35	·52	·34	·31	·22
3	·22	·11	·09	·15	·15	·10	·04	·02	·02	·02	·05	·03	·02	·02	·02	·01	·01	·02	·04	·04	·13	·03	..	·02	·03	·05
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	·02	·01	..	·01	..	..	..	·02
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·04	..	·03	·03	·05	·03	·04	·02	·02	·02	·04	·03	·04	·04	·04	·04	·04	·05	·06	·03	·05	·03	·02	·04	·02	·05
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·03	..	·04	..	·01	·01	·02	·03	·01	..	·02	..	..	..	·01	..	..	..	·01	..	..	..	..	..	..	..
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	·35	·35	·24	·35	·35	·43	·53	·51	·53	·55	·58	·54	·45	·50	·49	·52	·50	·53	·61	·51	·54	·57	·57	·65	·82	1·17
26	·13	·09	·08	·12	·15	·07	·07	·08	·07	·05	·05	·03	·03	·02	·03	·02	·01	·01	·03	·02	·01	·01	..	..	..	..
27	·15	·11	·09	·10	·06	·19	·39	·26	·26	·24	·21	·23	·12	·16	·15	·08	·20	·13	·27	·22	·12	·18	·10	·04	·03	·10
28	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·08	·11	·08	·13	·15	·20	·10	·14	·13	·11	·11	·12	·10	·12	·12	·12	·10	·10	·09	·09	·11	·10	·11	·11	·01	..
30	·15	·19	·15	·20	·24	·16	·15	·16	·16	..	·15	·18	·15	·12	·11	·12	·07	·07	·08	·10	·11	·12	·12	·13	·05	·32
31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·38	1·17	·97	1·58	1·61	1·79	1·66	1·56	1·51	1·28	1·60	1·48	1·22	1·26	1·26	1·23	1·20	1·19	1·57	1·41	1·44	1·41	1·44	1·37	1·27	1·93
†	18·13	17·55	15·37	15·19	14·16	16·72	14·59	14·20	13·44	14·39	14·84	14·55	12·57	13·99	13·96	13·24	13·34	14·78	16·38	14·68	16·44	15·60	14·83	14·91	13·69	14·09

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for July is 2·41 ins.* **July, 1904.**

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	·02	·02	·02	·05	·02	·05	·06	·12	·05	·09	·09	·09	·12	·10	·10	·18	·14	·13	·18	·14	·09	·09		·07
2	·28	·31	·24	·24	·35	·24	·11	·22	·20	·33	·21	·23	·33	·22	·20	·34	·34	·43	·27	·31	·19	·45	·37	·29		·30
3	·02	..	·01	·02	·03	·03	·06	·05	·02	..	..	·01	..	·01	..	·03	·02	..	·02	..	·09	..	·01	..		·02
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
12	·02	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·02		·01
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
19	·03	·02	·03	·03	·03	·04	·04	·05	·02	·03	·04	·03	·03	·05	·03	·04	·05	·07	·03	..	·04	·07	·03	·05		·05
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
22	..	..	..	..	·01	..	..	..	·01	·01	..	·01	·01	..	..	..	..	..	·01	..	..	·01	..	..		·01
23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
25	·82	·80	·71	·70	·73	·64	·54	·57	·51	·47	·60	·50	·57	·47	·38	·48	·31	·31	·39	·44	·41	·55	·59	·63		·52
26	..	·01	..	·01	..	..	·01	·01	·02	·04	·03	·04	·06	·05	·11	·14	·23	·32	·16	·14	·13	·12	·05	·04		·03
27	·12	·22	·27	·14	·05	·04	·03	·18	·25	·26	·22	·22	·25	·36	·18	·20	·22	·25	·19	·25	·31	·19	·13	·11		·08
28	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..		..
29	·01	·09	·14	·15	·10	·11	·07	·14	·12	·15	·16	·17	·20	·15	·12	·13	·15	·16	·18	·20	·19	·19	·20	·18		·15
30	·11	·13	·13	·13	·13	·09	·09	·12	·15	·15	·17	·18	·17	·17	·14	·17	·30	·43	·26	·33	·21	·30	·16	·16		·22
31	..	..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
*	1·41	1·58	1·55	1·44	1·45	1·25	1·03	1·39	1·36	1·56	1·48	1·48	1·71	1·57	1·28	1·63	1·72	2·15	1·65	1·80	1·75	2·02	1·64	1·5		1·46
†	11·73	12·76	13·64	13·24	13·77	13·36	10·39	13·59	13·37	14·06	11·18	12·39	12·65	12·21	9·37	12·66	12·19	12·68	12·00	13·07	12·82	12·63	11·82	11·95		11·82

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall *The sixty years (1841–1900) average at Greenwich for July is 2·41 ins.* **July, 1904.**

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·05	MONTHLY REPORT.	·06	·06	·02	..	·01	..	·02	·04	·07	·06	·07	·08	·08	..	·03	·03	·06
2	·27		·26	·24	·18	·22	·26	·12	·14	·29	·25	·15	·25	·40	·29	·32	·30	·26	·25
3	·03		·02	·01	·08	·02	·15	·11	·06	..	·04	·14	..	..	..	..	..	..	..
4	..		..	..	..	..	..	·01	..	..	..	..	..	..	..	..	·01	·01	..
5	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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9	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·01		..	·01	..	·02	·01	..	..	·01	·02	·03	·01	·02	..	..	..	·01	·01
13	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	·06		·06	·05	·04	·04	..	·02	·02	·03	·03	·05	·05	·03	·01	·04	·03	·04	·02
20	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..		..	·01	..	..	..	..	..	·01	·01	..	..	..	..	·02	·01	·01	..
23	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
24	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·05
25	·64		·74	·83	1·27	·68	·78	..	1·20	1·09	·87	·73	·61	·78	·73	1·30	1·55	1·31	1·38
26	·02		·02	·02	·01	..	..	..	·02	·02	·03	·05	·04	·08	·03	·04	·02	·02	·02
27	·04		·06	·08	·13	·24	..	1·00	·12	·04	·06	·08	·07	·02	·01	·05	·04	·03	..
28	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	·15		·14	·15	·09	·01	·02	..	·14	·15	·19	·15	·17	·18	·14	·20	·15	·15	·14
30	·12		·10	·09	·11	·25	·15	..	·15	·10	·20	·16	·19	·20	·05	·11	·08	·10	·20
31	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
*	1·39	1·13	1·46	1·55	1·93	1·48	1·38	1·26	1·87	1·78	1·77	1·60	1·46	1·79	1·34	2·08	2·23	1·97	2·13
†	12·80	12·46	11·95	11·93	13·10	11·79	11·59	7·54	13·09	9·09	13·21	11·09	12·51	12·36	8·42	12·02	12·45	11·22	10·72

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(July, 1904.)

An exceedingly warm and also a dry month. With the exceptions of July, 1899 and 1900, the mean temperature is the highest for July for a great many years. There was an absolute drought between the 3rd and the 19th in many places. The thunderstorm of the 25th was felt all over the district, and was especially severe in the London area. The month has been a healthy one. The dry hot weather has brought forward the corn crops, and the corn harvest began about Abinger on the 29th. Potato disease and the celery-fly are rather bad in parts of the district. The observer at Ashburton Road, Croydon, reports the somewhat rare phenomenon of a "vertical lunar bar" on the 22nd. A solar halo with parhelia was seen at Greenwich on the 31st, and a lunar one with paraselenæ at Greenwich and Croydon (Ashburton Road) on the 24th. The rainfall varies in amount from the mean to about one-half the mean. The mean temperature is about 3° above the average, and was at Croydon (Duppas House) 66°·1, at Chipstead 65°·5, at Wallington 65°·1, at Worcester Park 65°·0, and at Warlingham 63°·6. There were recorded at Wallington 278·7 hours of sunlight, which is 68·6 hours or 14 per cent. above the July average of the fifteen years 1886–1900, and has only been exceeded in 1887 and 1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for August is 2·31 ins.* **August, 1904.**

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd. la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
2	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
3	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
4	·29	·26	·29	·23		·12	·12	·10	·15	·19	·09		·12	·10	·11	·13	·19	·18	·16	..	·09		·10	·08	·09	·07
5	·02	·02	·01	..		..	..	·01	..	·01	..		·02	..	·01	..	..	..	..	..	..		..	..	..	..
6	..	..	..	·03		·01	·02	·01	..	·03	..		..	·02	..	·01	..	..	..	..	..		..	..	..	..
7	..	..	·02	..		·01	·01	·01	·01	·02	..		·02	..	·03	..	·02	·03	·02	..	..		·01	·01	..	·01
8	..	..	..	..		..	..	..	..	..	..		..	..	..	·02	..	..	..	..	..		..	..	..	..
9	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
10	·02	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
11	·26	·22	·23	·19		·21	·21	·26	·14	·15	·18		·11	·11	·13	·13	·18	·12	·11	·16	·22		·12	·12	·10	·08
12	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
13	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	·07	..		..	..	..	..
14	·06	·04	·04	·05		·10	·10	·08	·08	·08	·08		·03	·08	·10	·08	·11	·09	·07	·21	·07		·09	·03	·09	·03
15	..	·03	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
16	·36	·36	·35	·32	RECORD OMITTED.	·22	·22	·24	·13	·28	·21	RECORD CEASED.	·24	·30	·30	·17	·17	·10	·09	·03	·17	MONTHLY GAUGE.	..	·26	..	·19
17	·10	·08	·08	·09		·17	·17	·10	·23	·09	·15		·13	·06	·10	..	·11	·22	·20	·26	·14		·33	·06	·30	·11
18	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
19	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
20	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
21	..	..	..	..		·01	·01	·05	..	·02	..		..	..	·01	·01	..	..	..	..	·01		..	..	..	..
22	·24	·27	·25	·20		·14	·14	·27	·18	·15	·12		·14	·10	·13	·17	·19	·29	·31	·27	·43		·10	·13	·12	·15
23	..	..	..	·07		·02	·02	·03	·03	·04	·04		·04	·04	·04	..	..	..	..	·04	·09		·81	·02	..	..
24	..	..	..	..		..	..	..	·04	..	..		..	..	..	..	..	..	..	..	..		·06	·01	..	·01
25	·10	·10	·07	·05		·02	·02	·01	..	·05	·04		·05	·05	·06	·09	·06	·13	·04	..	·04		..	..	·03	·02
26	..	..	..	..		..	..	..	..	..	..		..	..	·01	..	..	..	..	·06	..		·05	..	..	..
27	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
28	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
29	..	..	..	..		..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
30	·03	·03	·04	·04		·04	·05	·03	·02	·05	·03		·04	·04	·06	·07	..	..	..	..	·08		..	..	·03	·05
31	·61	·58	·71	·60		·54	·53	·40	·56	·64	·57		·66	·63	·69	·24	·64	·75	·66	·76	·55		·81	·78	·80	·81
*	2·09	1·99	2·09	1·87		1·61	1·62	1·60	1·57	1·80	1·51		1·60	1·53	1·78	1·12	1·67	1·91	1·66	1·86	1·89	1·64	2·48	1·50	1·56	1·53
†	20·13	19·23	18·97	19·45		16·39	18·19	17·67	16·07	18·90	17·07		17·86	18·52	19·48	17·55	18·56	18·69	14·04	19·29	16·71	18·39	20·87	17·86	17·91	16·79

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for August is 2·31 ins.* **August, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew. Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	·11	·11	·19	·23	·24	·12	·11	·12	·11	·15	·13	·11	·10	·08	·08	·09	·06	·07	·09	·08	·09	·10	·08	·10	·16	·10
5	·09	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..
6	·03	..	·02	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	·01	·01	·01	·01	·01	..	..	..	..
7	..	..	..	..	..	..	·01	·01	·02	·02	·02	·02	·01	·01	·01	..	·01	·01	·02	·01	·02	·01	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	·10	·24	·14	·17	·14	·15	·07	·10	·09	·08	·08	·07	·06	·06	·07	·07	·06	·07	·09	·07	·09	·09	·08	·12	·06	·11
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·03	·03	·02	·04	·03	·03	·02	·02	·01	·02	·03	·02	·02	·02	·02	·01	·02	·02	·03	·03	·04	·04	·02	·05	·07	·08
15	..	..	..	..	..	..	..	·02	·02	·02	..	..	·01	..	·01	·03	·01	·02	·01	·01	..	..	..	..	·01	..
16	·04	·29	·31	·30	·28	·26	·22	·28	·09	·17	·24	·23	·18	·24	·22	·21	·21	·09	·21	·20	·14	·20	·17	·20	·17	·14
17	·31	·09	·07	·08	·10	·07	·09	·05	·25	·16	·10	·09	·10	·07	·09	·09	·08	·20	·09	·10	·20	·12	·12	·10	·11	·16
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·18	·11	·16	·15	·16	·12	·36	·14	·30	·20	·06	·17	·24	·20	·20	·08	·07	·07	·33	·08	·12	·10	·08	·22	·33	·22
23	·04	·13	·05	..	·01	·01	·01	..	·01	·02	..	·01	..	..	·01	..	·01	·01	·01	·01	..	·01	..	·02	..	·13
24	·04	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	·01	·01	·02	..	·01	..	·01	..	..
25	·06	..	·02	..	..	·03	..	..	..	..	..	..	..	..	·01	..	·01	..	·02	·01	·01	·01	..	..	..	..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·08	·06	·06	·03	·03	·04	·05	·07	·17	·05	·05	·05	·04	..	·06	..	·06	·01	·06	·06	..	·08	..	..	·05	·04
31	·76	·80	·68	·78	·75	·81	·83	·78	·75	·80	·83	·83	·82	1·00	·87	1·00	·95	1·00	·84	·94	1·00	·92	1·02	·83	·67	·56
*	1·87	1·86	1·74	1·78	1·74	1·64	1·77	1·59	1·83	1·71	1·54	1·60	1·59	1·68	1·66	1·58	1·55	1·59	1·82	1·64	1·72	1·70	1·57	1·65	1·63	1·55
†	20·00	19·41	17·11	16·97	15·90	18·36	16·36	15·79	15·27	16·10	16·38	16·15	14·16	15·67	15·62	14·82	14·89	16·37	18·20	16·32	18·16	17·30	16·40	16·56	15·32	15·64

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (CountyH.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
4	·06	·07	·08	·07	·09	·07	·05	·07	·12	·12	·12	·14	·16	·13	·18	·17	·16	·24	·18	·20	·19	·21	·15	·15		·12
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
6	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
7	·01	..	..	·01	·02	·02	..	..	·01	·01	..	..	..	..	..	·01	..	..	..	..	..	..	..	..		·01
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
11	·17	..	·09	·08	·07	·05	·04	·08	·07	·09	·10	·13	·14	·11	·13	·13	·10	·12	·12	·14	·18	·12	·12	·10		·08
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
14	·07	·01	·01	·01	·03	·03	·01	·03	·01	·02	·04	·04	..	·03	·03	·04	·03	..	·04	..	·04	·02	·02	·03		·03
15	·01	..	..	..	·02	·01	..	..	·02	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..		·01
16	·14	·15	·18	·20	·19	·20	..	·24	·24	·08	·25	·27	·36	·32	·30	·32	·27	·21	·27	·30	·10	·20	·19	·14	RECORD CEASED.	·35
17	·14	·11	·11	·11	·10	·10	·31	·09	·10	·33	·11	·10	·12	·09	·10	·09	·09	·12	·11	·07	·28	·10	·13	·21		·10
18	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
21	..	..	·02	·03	·03	..	..	..	..	..	..	·01	..	·01	·04	·03	..	·04	·09	·03	·06	·09	·03	·01		..
22	·29	·16	·19	·10	·20	·09	·04	·15	·09	·20	·18	·23	·40	·17	·10	·12	·15	·11	·17	·24	·22	·17	·48	·20		·11
23	·10	..	..	..	·02	·01	·01	·02	..	·01	·02	·01	·02	·02	..	·01	·01	·01	..	·01	..	..	·02	·02		·02
24	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		·01
25	..	..	..	..	..	·02	·01	·03	..	..	·01	·02	·01	·01	..	..	..	..	·01	·01	..	·01	·01	·01		·01
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
30	·05	·83	·04	..	·03	·03	..	..	..	·05	·30	·06	·05	·07	·03	·07	·01	..	·02	·03	..	..	·04	..		..
31	·56	·14	·83	·77	·75	·77	·35	1·01	·96	·81	·84	·98	·96	·92	·83	·78	·61	·74	·81	·93	·87	·96	·90	·88		·93
*	1·60	1·47	1·55	1·38	1·55	1·42	·84	1·72	1·62	1·72	1·97	2·00	2·22	1·88	1·74	1·77	1·43	1·59	1·82	1·96	1·94	1·88	2·09	1·75		1·78
†	13·33	14·23	15·19	14·62	15·32	14·78	11·23	15·31	14·99	15·78	13·15	14·39	14·87	14·09	11·11	14·43	13·62	14·27	13·82	15·03	14·76	14·51	13·91	13·70		13·60

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall *The sixty years (1841–1900) average at Greenwich for Aug. is 2·31 ins.* **August, 1904.**

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	MONTHLY REPORT.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	·07		·06	·06	·09	·08	·07	·02	·05	·03	·12	·17	·15	·15	·10	·04	·06	·05	·03
5	..		..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	..	..
6	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7	..		..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..
8	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..		..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
11	·09		·05	·06	·09	·07	·08	·06	·07	·04	·08	·08	·11	·08	·05	·06	·06	·04	·05
12	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·03		·03	·03	·01	·03	..	..	·02	·02	..	·03	·04	·02	·01	·04	·03	·02	·02
15	..		..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..
16	·23		·11	·25	·14	·14	·20	..	·18	·23	·38	·09	·30	·28	·18	·22	·24	·19	·27
17	·18		·28	·15	·15	·15	·10	·17	·14	·10	·12	·24	·07	·08	·10	·18	·11	·15	·06
18	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..		..	·01	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..
20	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..		·01	·05	..	..	..	..	..	·01	..	·01	..	·04	·05	·06	·09	·10	·07
22	·10		·06	·04	·16	·22	·20	·17	·16	·03	·08	·25	·23	·29	·16	·05	·12	·03	·02
23	·03		..	..	..	·01	·02	·02	..	..	..	·02	·01	·04	·02	..	·01	·01	..
24	·02		·04	·05	..	..	..	..	..	·03	·01	..	·03	..	..	..	..	..	·01
25	·02		·01	·01	..	..	..	..	..	..	..	·01	·01	·01	..	..	..	..	..
26	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·05		..	·02	·06	·01	..	..	·03	..	..	..	·02	·06	..	..	·04	..	..
31	·86		·88	·89	·78	·62	·63	·49	·81	·56	1·03	·81	·83	·82	·74	·79	·70	·79	·75
*	1·68	1·58	1·53	1·62	1·48	1·33	1·32	·97	1·47	1·05	1·83	1·71	1·81	1·87	1·41	1·44	1·46	1·38	1·28
†	14·48	14·04	13·48	13·55	14·58	13·12	12·91	8·51	14·56	10·14	15·04	12·80	14·32	14·23	9·83	13·46	13·91	12·60	12·00

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(August, 1904.)

The month has been dry, in fact it is the driest August since 1899, and fairly warm, though the nights have been somewhat cold; the observer at Abinger Hall even reporting frosts on the 11th, 20th, and 24th. There was a thunderstorm on the 4th throughout the district, and a slight one in places on the 22nd. Many solar and lunar halos were seen at Greenwich, and a solar one was observed at Upper Gatton and Sutton on the 1st, and at Upper Gatton on the 3rd. The swallows left Nutfield on the 27th. A double rainbow was seen at Sanderstead on the 14th. The month, as a rule, has been a fairly healthy one, though there have been cases of diphtheria and scarlet fever, and some small-pox cases in Croydon and the neighbourhood. Apples and plums have been a fairly good crop. The mean temperature of the month has been slightly above the average, and was at Croydon 62°·7, at Chipstead 62°·3, at Wallington 61°·6, at Worcester Park 61°·5, and at Warlingham 60°·5. There were recorded at Wallington 242·6 hours of sunlight, which is 44·3 hours or 10 per cent. above the August average of the fifteen years 1886–1900, and has only been exceeded in 1887 and 1899. The sunlight on the 3rd, *viz.* 14·2 hours, is the highest daily value for August in my record.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for September is 2·18 ins.* **September, 1904.**

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Do'king (Denbies)	Redhill (Linkfd. la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·02	·01	·01	..	·04	·04	·03	·02	·04	·03	·06	RECORD CEASED.
2	·13	·14	·13	·15	·08	·07	·08	·09	·07	·11	·09	
3	·19	·20	·09	·08	·12	·14	·15	·18	·09	·07	·08	
4	..	..	..	..	..	..	..	..	..	..	..	
5	·02	..	·01	..	..	..	..	..	..	..	..	
6	·34	·33	·31	·30	·21	·22	·23	·18	·19	·19	·19	
7	·20	·18	·11	·20	·15	·12	·13	·14	·13	·15	·14	
8	·16	·20	·25	·15	·10	·09	·09	·07	..	·11	·10	
9	..	..	..	..	..	..	..	..	..	..	..	
10	..	..	..	..	..	..	..	..	..	..	..	
11	..	..	..	..	..	..	..	..	·13	..	..	
12	·10	·12	·13	·13	·08	·07	·07	·06	·09	·09	·08	
13	..	..	..	..	..	..	..	..	..	..	·10	
14	·31	·18	·19	·21	·26	·39	·41	·43	·21	·22	·03	
15	..	..	..	..	·01	..	..	·01	..	·01	·14	
16	..	..	..	..	..	..	·01	..	..	..	..	
17	..	..	..	..	..	..	..	..	..	..	..	
18	..	..	..	..	..	..	..	..	..	..	..	
19	..	..	..	..	..	..	..	..	..	..	..	
20	..	..	..	..	..	..	..	..	..	..	..	
21	..	..	..	..	..	..	..	..	..	..	..	
22	·14	·08	·06	·07	·10	·15	·19	·12	·11	·09	·12	
23	·09	·07	·09	·11	·05	·05	·05	·02	·06	·08	·06	
24	·04	·08	·09	·13	·02	·09	·06	·01	·04	·01	·06	
25	..	..	..	..	..	..	..	..	..	..	..	
26	..	..	..	..	..	..	..	..	..	..	..	
27	..	..	..	..	..	..	..	..	..	..	..	
28	..	..	..	..	..	..	·01	..	..	..	..	
29	..	..	..	..	..	..	..	..	..	..	..	
30	·30	·35	·35	·33	·21	·17	·25	·20	·21	·29	·24	
*	2·04	1·94	1·82	1·86	1·43	1·60	1·76	1·53	1·37	1·45	1·49	
†	22·17	21·17	20·79	21·31	18·31	17·99	19·95	19·20	17·44	20·35	18·56	

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·08	·07	·09	·30	·12	·14	·13	·14	·11	MONTHLY GAUGE.	·12	..	·10	·11
2	·09	·09	·11	..	·12	·14	·13	·13	·11		·12	..	·09	·09
3	·10	·05	·07	·15	·17	·18	·10	·15	·15		·09	·17	·08	·05
4	..	..	..	..	..	..	..	..	..		..	..	..	..
5	..	..	..	..	..	..	..	..	·02		..	..	..	..
6	·20	·20	·20	·28	·26	·25	·22	·24	·25		·22	·16	·16	·16
7	·15	·16	·14	·11	·14	·09	·09	·02	·18		·14	..	·14	·12
8	·13	·09	..	·10	·07	·15	·11	·19	·07		·10	·24	·12	·11
9	..	..	..	..	..	..	..	..	..		..	..	..	..
10	..	..	..	..	..	..	..	..	..		..	..	..	..
11	..	..	..	..	..	..	..	..	..		..	..	..	..
12	·07	·17	·07	·04	·06	·09	·06	·06	·06		·07	·05	·06	·05
13	..	..	..	..	..	..	..	..	..		..	..	..	..
14	·25	·25	·26	·36	·47	·32	·30	·33	·31		·34	·24	·23	·18
15	·01	..	..	..	..	..	..	..	..		..	..	..	..
16	..	..	..	..	..	..	..	..	..		..	..	..	..
17	..	..	..	..	..	..	..	..	..		..	..	..	..
18	..	..	..	..	..	..	..	..	..		..	..	..	..
19	..	..	..	..	..	..	..	..	..		..	..	..	..
20	..	..	..	..	..	..	..	..	..		..	..	..	..
21	..	..	..	..	..	..	..	..	..		..	..	..	..
22	·10	·13	·14	·18	·20	·18	·18	..	·19		·13	..	·10	·08
23	·07	·05	·07	·02	·01	·02	·02	·03	·03		·08	·18	·11	·10
24	..	·04	·04	·16	·20	·32	·34	·11	·21		·04	..	·01	..
25	·01	..	..	..	..	..	..	..	..		..	..	..	..
26	..	..	..	·04	·07	·02	·02	·08	..		..	..	..	..
27	..	..	..	..	..	..	..	..	..		..	..	..	..
28	..	..	..	..	..	..	..	..	..		..	..	..	..
29	..	..	..	..	..	..	..	..	..		..	..	..	..
30	·32	·26	·27	·18	·20	·27	·10	·11	·17		·26	·18	·23	·20
*	1·58	1·56	1·46	1·92	2·09	2·17	1·80	1·59	1·86	1·36	1·71	1·22	1·43	1·25
†	19·44	20·08	20·94	19·47	20·65	20·86	15·84	20·88	18·57	19·75	22·58	19·08	19·34	18·04

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for September is 2·18 ins.* **September, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew.Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim.Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·04	·02	·03	..	..	·05	·06	·10	·08	·10	·10	·10	·10	·11	·13	·10	·13	·13	·12	·15	·12	·15	·18	·14	·09
2	·11	·09	·03	·10	·10	·14	·14	·08	·10	·09	·10	·09	·10	·08	·09	·10	·08	·09	·11	·11	·11	·10	·10	..	·10	·12
3	·12	·07	·09	·08	·08	·12	·17	·12	·12	·12	·16	·11	·09	·11	·11	..	·08	·07	·18	·13	·14	·10	·18	·12	·07	·03
4	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	·01
6	·17	..	·19	·30	·30	·16	·12	·13	·14	·13	·14	·16	·15	·16	·15	·22	·14	·17	·17	·18	·22	·21	·24	·22	·22	·23
7	..	·30	·16	·15	·16	·15	·11	·12	·22	·07	·16	·18	·15	·12	·13	·15	·10	·09	·15	·13	·05	·16	·20	·15	·11	·25
8	·29	·16	·13	·14	·09	·15	·10	·11	·05	·15	·11	·10	·38	·10	·10	·09	·08	·11	·11	·10	·22	·11	·05	·08	·07	·07
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·10	·13	·10	·09	·08	·08	·04	·07	·09	·05	·04	·04	·03	·05	·03	·02	·02	..	·04	·05	·04	·07	·06	·05	·02	·04
13	..	..	..	..	..	..	..	..	..	·03	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·17	·26	·19	·25	·28	·18	·12	·10	·15	·13	·17	·15	·14	·16	·16	·14	·15	·15	·19	·08	·21	·21	·20	·18	·25	·15
15	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	·01
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·08	·08	·06	·02	·02	·07	·03	·02	..	·03	·04	·04	·04	·08	·05	·04	·04	·05	·07	·08	·09	·09	..	·09	·10	·11
23	·10	·12	·13	·15	·12	·11	·12	·14	·10	·13	·12	·09	·09	·09	·09	·08	·07	·08	·09	·09	·08	·07	·15	·07	·04	·02
24	·01	·01	·07	·06	·03	..	·07	·09	·31	·12	·02	·01	·01	·02	·02	·01	·01	·02	·02	·02	·04	·03	·03	·05	·07	·15
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	·01
26	..	..	..	..	..	..	..	..	..	·01	·05	..	..	..	..	..	..	..	..	·01	..	..	..	..	·01	·02
27	..	..	..	..	..	..	·02	..	..	..	·01	..	..	..	..	..	..	·01	..	·01	..	..	..	..	..	·01
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
30	·25	·27	·24	·18	·18	·26	·14	·13	·10	·11	·15	·16	·10	·16	·16	·13	·12	·13	·20	·16	·16	·18	·13	·14	·13	·12
*	1·51	1·53	1·41	1·57	1·44	1·42	1·23	1·17	1·48	1·25	1·38	1·23	1·38	1·23	1·21	1·11	·99	1·11	1·47	1·30	1·51	1·45	1·49	1·33	1·33	1·44
†	21·51	20·94	18·52	18·54	17·34	19·78	17·59	16·96	16·75	17·35	17·76	17·38	15·54	16·90	16·83	15·93	15·88	17·48	19·67	17·62	19·67	18·75	17·89	17·89	16·65	17·08

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·09	·08	·16	·17	·16	·15	·60	·15	·11	·04	·08	·07	·08	·06	..	·04	·02	·01	·02	·03	·04	·04	·08	·16		·16
2	·05	..	·08	·09	·09	·09	..	·14	·08	·07	·08	·07	·08	·07	·10	·08	·07	·08	·07	·08	·07	·09	·09	·10		·10
3	·08	·01	·03	·03	·03	·04	·10	..	·03	..	·06	·04	·07	·05	·12	·11	·05	·26	·09	·17	·12	·01	·02	·02		·06
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
5	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..		..
6	·29	·22	·24	·22	·23	·18	·14	·14	·15	·12	·11	·14	·16	·13	·17	·14	·22	·22	·25	·25	·24	·24	·15	·13		·16
7	·14	·13	·13	·11	·14	·12	..	·15	·13	·11	·09	·15	·16	·12	·10	·11	·14	·16	·11	·14	·12	·16	·15	·11		·10
8	·04	·15	·05	·07	·07	·07	·16	·09	·08	·10	·10	·11	·09	·12	..	·13	·12	·13	·11	·11	·11	·11	·09	·13		·09
9	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..		..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
12	·03	·02	·04	·04	·04	·04	·03	·03	·03	·05	·06	·07	·08	·06	·04	·05	·07	·15	·06	·08	·07	·15	·09	·05		·03
13	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..		..
14	·10	·15	·18	·18	·17	·18	·12	·15	·10	·12	·17	·17	·31	·19	·09	·12	·15	·21	·09	·22	·15	·17	·24	·17		·19
15	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	·02	..	..	..	..	..	..	..		..
16	..	..	..	..	..	..	·01	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
22	·06	·08	·08	·07	·09	·06	..	·05	·01	·01	..	..	·01	..	·17	..	..	..	..	..	..	..	..	..		·01
23	·02	..	·06	·08	·07	·08	·08	·10	·18	·05	·09	·12	·15	·12	·02	·13	·10	·13	·10	·13	·17	·17	·15	·12		·17
24	·15	·04	·03	·03	·04	·01	·04	..	·11	·13	·05	·03	..	·03	..	·04	·03	·04	·03	·03	·04	·07	·02	·03		·15
25	..	..	..	..	..	..	..	·02	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	·01		..
26	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
27	·01	..	..	..	..	..	·01	·01	..	·01	..	..	·01	..	..	..	..	..	..	..	..	..	..	..		·01
28	..	..	..	..	..	..	·01	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
30	·07	·08	·09	·09	·10	·10	·02	·12	·11	·11	·10	·15	·15	·14	·11	·14	·12	·10	·15	·17	·16	·15	·13	·12		·10
*	1·14	·96	1·17	1·18	1·23	1·12	1·32	1·15	1·18	·96	·99	1·12	1·38	1·09	·92	1·09	1·12	1·50	1·08	1·41	1·29	1·36	1·21	1·15		1·33
†	14·47	15·19	16·36	15·80	16·55	15·90	12·55	16·46	16·17	16·74	14·14	15·51	16·25	15·18	12·03	15·52	14·74	15·77	14·90	16·44	16·05	15·87	15·12	14·85		14·93

* The figures in this row give the totals for the month.

† The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for Sept. is 2·18 ins.* **September, 1904.**

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·16	MONTHLY REPORT.	·19	·15	·14	·09	·08	·08	·18	·11	·16	·16	·14	·11	·10	·11	·14	·13	·07
2	·10		·10	·10	·08	·12	·10	·08	·08	·07	·11	·07	·09	·09	·06	·10	·10	·08	·08
3	·05		·04	·06	·02	·01	..	·01	·04	..	·03	·04	·04	·02	..	·05	·03	·03	..
4	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01
6	·17		·16	·16	·22	·21	·10	·15	·21	·13	·18	·13	·15	·12	·08	·16	·15	·12	·12
7	·12		·03	·12	·14	·15	..	..	·12	·15	·11	·14	·11	·19	·11	·14	·16	·12	·11
8	·09		·16	·06	·06	·04	·03	·08	·06	·04	·10	·10	·02	·06	·06	·09	·05	·04	·02
9	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	·05		·05	·05	·05	·04	·05	..	·05	·03	·04	·06	·07	·08	·05	·06	·04	·03	·04
13	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	·18		·20	·25	·15	·14	·14	·04	·18	·15	·23	·14	·19	·16	·08	·19	·18	·16	·12
15	..		..	·01	..	..	..	..	·04	..	..	..	..	..	..	..	·02	·02	..
16	..		..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	·03		·02	·01	·07	·08	·08	·05	·05	..	..	..	·01	..	..	..	·01	..	..
23	·14		·15	·13	·08	·02	..	·01	·09	·10	·19	·11	·16	·16	·12	·11	·09	·14	·15
24	·17		·13	·12	·06	·08	·14	·05	·04	·09	·03	·05	·06	..	..	·10	·10	·13	·14
25	·01		..	·01	..	..	..	..	..	..	..	..	·01	·03	·01	..	..	..	..
26	..		..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..		..	·02	·02	..	..	..	·01	..	..	..	..	..	..	..	..	..	..
28	..		·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·12		·10	·11	·09	·07	·06	·03	·10	·05	·13	·09	·14	·13	·08	·11	·11	·07	·09
•	1·39	1·88	1·34	1·36	1·19	1·06	·78	·58	1·25	·92	1·31	1·09	1·19	1·15	·75	1·22	1·18	1·07	·95
†	15·87	15·92	14·82	14·91	15;77	14·18	13·69	9·09	15·81	11·06	16·35	13·89	15·51	15·38	10·58	14·68	15·09	13·67	12·95

NOTES.

(September, 1904.)

The month has been dry and very cold. It has also been somewhat unhealthy, there having been many cases of influenza, and also in places scarlet fever and diphtheria. Gulls appeared at Nutfield on the 13th. The apple crop has been got in in good condition, and winter vegetation looks well. There were six ground frosts at Greenwich, but only one in the rest of the district, namely, on the night of the 20th–21st. Thunder was heard at Nutfield on the 24th, and a rainbow was seen there on the 14th, and one at Wallington on the 24th. At Greenwich solar halos with parhelia were seen on the 3rd and 28th, and a lunar one with paraselenæ on the 28th. The rainfall is nearly an inch below the average. The mean temperature of the month is about 2° below the average, and was at Chipstead 56°·9, at Croydon (Duppas House) 55°·9, at Worcester Park 55°·2, at Wallington 55°·0, and at Warlingham 54°·8. Fogs occurred on several days between the 15th and 28th. There were recorded at Wallington 180·1 hours of sunlight, which is 19·9 hours or 5 per cent. above the September average 1886–1900. The five days—17th to 21st—had a mean sunlight of over 91 per cent., and the amount 12·2 hours on the 5th has only been exceeded on Sept. 4th, 1899.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for October is 2·83 ins.* **October, 1904.**

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·03	·01	·03	..	·06	·06	·05	·04	·05	·06	
2	·47	·46	·51	·35	·34	·33	·34	·34	·29	·31	·31	
3	..	..	..	..	..	..	..	..	·02	..	..	
4	..	..	..	..	..	..	..	..	..	..	..	
5	·19	·17	·15	·16	·14	·13	·13	·14	·12	·15	·15	
6	·67	·71	·71	·65	·52	1·22	1·22	·64	·64	·70	·77	
7	·10	·11	·10	·05	·30	·08	·06	·04	·18	·10	..	
8	·02	..	..	..	..	..	..	..	..	..	..	
9	..	..	..	..	..	·03	·03	·01	..	·02	·05	
10	·06	·03	·04	..	·05	·03	·03	·03	·06	·03	·06	
11	..	..	·01	..	..	..	..	..	..	..	..	
12	..	..	..	..	..	..	..	..	..	..	..	
13	..	..	..	..	..	..	..	..	..	..	..	
14	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.
15	..	..	..	..	..	..	..	..	..	..	..	
16	·36	·39	·35	·35	·26	·24	·27	·27	·24	·31	·28	
17	·03	..	·02	·03	·06	·03	·04	..	·07	·03	·03	
18	·01	..	..	..	..	..	..	..	..	·01	..	
19	..	..	·01	·03	..	·02	·01	..	..	·01	..	
20	·01	..	..	..	..	..	..	..	..	..	..	
21	·36	·36	·31	·33	·33	·29	·29	·31	·31	·35	·30	
22	·12	·11	·10	·15	·11	·05	·05	·09	·10	·11	·05	
23	·10	·09	·09	·12	·04	·07	·07	·08	·09	·09	·07	
24	..	·02	..	·03	·06	·05	·05	·01	·06	·05	·09	
25	..	..	..	..	..	..	..	..	..	..	..	
26	..	..	..	..	..	..	·01	..	..	..	..	
27	..	..	..	..	..	..	..	..	..	..	..	
28	..	..	..	..	..	..	..	..	..	..	..	
29	..	..	..	..	..	..	..	..	..	..	..	
30	·08	·09	·03	·09	·05	·05	·06	·02	·05	·10	·08	
31	·04	·04	·06	·03	·03	·03	·03	·03	·03	·03	·03	
*	2·65	2·61	2·50	2·40	2·29	2·71	2·75	2·06	2·30	2·45	2·33	
†	24·82	23·78	23·29	23·71	20·60	20·70	22·70	21·26	19·74	22·80	20·89	

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (PlaceFell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·05	·07	·07	·03	·05	·03	·14	·07		·06	·03	·04	·03
2	·28	·30	·30	·32	·30	·32	·30	·28	·29		·30	·27	·30	·28
3	·02	..	..	..	..	..	..	..	..		..	..	..	..
4	..	..	..	..	..	..	..	..	..		..	..	..	..
5	·12	·15	·17	·17	·18	·15	·10	·18	·16		·18	·12	·13	·12
6	·77	·81	·77	·81	·84	·61	·57	·45	·75		·69	·77	·80	·77
7	·04	·03	·06	·11	·18	·29	·27	·62	·13		·11	·04	·06	·06
8	..	..	..	·02	..	..	..	..	..		..	..	..	..
9	·02	..	·02	·01	..	·02	·01	·01	·02		·02	..	·02	·02
10	·04	..	·05	·01	·02	·01	·01	..	·02		·07	·03	·02	·01
11	..	..	..	..	..	..	..	..	..		..	..	..	..
12	..	..	..	..	..	..	..	..	..		..	..	..	..
13	..	..	..	..	..	..	..	..	..		..	..	..	..
14	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	..	..	..	..
15	..	..	..	..	..	..	..	..	..		..	..	..	..
16	·23	·30	·31	·28	·31	·28	·18	·29	·24		·31	·24	·26	·24
17	·06	·02	·05	·07	·03	·07	·03	·08	·03		·03	·08	·02	·04
18	·01	..	..	..	..	..	..	..	..		..	·01	..	·01
19	·01	..	·01	..	..	·02	·01	..	..		..	..	..	..
20	..	..	..	..	..	..	..	..	..		..	..	·02	..
21	·26	·31	·32	·33	·34	·34	·27	·28	·24		·32	·31	·29	·29
22	·11	·08	·08	·07	·05	·08	·07	·07	·05		·08	·08	·10	·09
23	·09	·08	·08	..	·07	·08	·08	·08	·07		·08	·08	·09	·09
24	·11	·07	·06	..	·02	·02	·01	·02	..		·04	..	·03	..
25	·01	..	..	..	..	..	..	..	..		..	..	..	..
26	..	..	..	..	..	..	..	..	..		..	..	·01	..
27	..	..	..	..	..	..	..	..	..		..	..	..	..
28	..	..	..	..	..	..	..	..	..		..	..	·01	..
29	..	..	..	..	..	..	..	..	..		..	..	..	..
30	·10	·10	·10	·06	·05	·08	·09	·05	·06		·10	·07	·10	·07
31	·05	·04	·05	·05	·04	·08	·09	·06	·07		·06	·06	·13	·06
*	2·36	2·34	2·50	2·38	2·46	2·50	2·12	2·61	2·20	2·45	2·45	2·14	2·43	2·16
†	21·80	22·42	23·44	21·85	23·11	23·36	17·96	23·49	20·77	22·20	25·03	21·22	21·77	20·20

* The figures in this row give the totals for the month. † The totals from January 1st

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for October is 2·83 ins.* **October, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew. Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim. Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·07	·03	·02	·03	·04	·06	·03	·04	·04	·05	·04	·03	·03	·04	·03	·03	·03	·03	·03	·04	·06	·03	·04	·05	·03	·04
2	·28	·31	·29	·30	·30	·26	·23	·25	·21	·21	·24	·23	·21	·24	·22	·20	·21	·23	·25	·25	·25	·25	·28	·24	·24	·24
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	·01	·02	..	..	..	..	·01
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..
5	·11	..	·12	·12	·11	·12	·10	·12	·09	·12	·10	·11	·10	·12	·09	·11	·10	·12	·14	·11	·12	·12	·15	·13	·12	·07
6	·77	·86	·70	·49	·46	·72	·66	·60	·66	·63	·70	·64	·66	·75	·70	·68	·70	·60	·72	·71	·74	·76	·93	·80	·76	·70
7	·12	·06	·04	·04	·04	·09	·03	·03	·02	·02	·04	·05	·04	·04	·05	·02	·04	·15	·05	·07	·18	·08	·07	·07	·13	·20
8	..	·01	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	·01	..	..	..
9	·02	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	·02	·01	·02	..	..	·01	·01
10	·07	·01	·02	·02	·02	·05	·03	·04	·03	..	·03	·03	·02	·02	·02	·01	·01	·01	·02	·02	·06	·04	·04	..	·02	·02
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·28	·24	·23	·25	·23	·26	·24	·24	·16	·25	·23	·24	·22	·28	·25	·26	·24	·24	·27	·26	·22	·26	·33	·27	·20	·16
17	·07	·03	·03	·03	·02	·02	·01	·02	·04	·02	·02	·02	·03	..	·02	·01	·01	·04	·02	·01	·06	·02	·01	·03	·04	·04
18	·02	..	..	..	..	·01	..	..	..	..	·02	·01	..	..	..	..	·01	..	·02	·02	..	·01	..	..	·01	..
19	·03	..	..	..	·01	..	·02	·02	..	..	·02	..	..	..	..	·01	..	·01	·01	·01	..	·01	..	..	..	..
20	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·27	·30	·28	·29	·25	·26	·24	·27	·26	·23	·20	·19	·20	·24	·21	·20	·24	·26	·30	·28	·29	·26	·28	·24	·22	·22
22	·15	·17	·10	·10	·10	·13	·08	·09	·09	·08	·08	·07	·06	·08	·06	·06	·06	·07	·08	·07	·07	·06	·07	·08	·03	·03
23	·12	..	·10	·12	·07	·11	·10	·10	·10	·09	·12	·11	·10	·12	·10	·11	·09	·11	·10	·09	·09	·08	·08	·09	·10	·08
24	·10	·05	·05	·08	·06	..	..	·02	·01	·03	·01	..	..	·01	·01	..	..	..	..	·03	·01	·01	..	..	..	..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	..	..	·02	..	..	..	·01	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..
27	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..	..	·01	·01	..	..	..	..	..	..	..
28	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	·01	..	..	..	..
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30	·10	·04	·12	·08	·04	·10	·04	·04	·03	·02	·05	·05	·03	·07	·05	·04	·05	·05	·07	·07	·05	·06	·05	·06	·05	·04
31	·04	·12	·03	·04	·03	·02	·04	·03	·03	·04	·04	·04	·03	·04	·06	·03	·05	·05	·06	·08	·07	·06	·05	·08	·08	·10
*	2·63	2·23	2·13	1·99	1·78	2·21	1·88	1·94	1·77	1·79	1·95	1·82	1·73	2·06	1·89	1·77	1·85	1·98	2·16	2·18	2·30	2·15	2·39	2·14	2·04	1·96
†	24·14	23·17	20·65	20·53	19·12	21·99	19·47	18·90	18·52	19·14	19·71	19·20	17·27	18·96	18·72	17·70	17·73	19·46	21·83	19·80	21·97	20·90	20·28	20·03	18·69	19·04

* The figures in this row give the totals for the month. † The totals from January 1st.

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (TheDowns)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (CountyH.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·02	·04	·03	·04	·04	·03	·12	..	·05	·05	·03	·03	·09	·03	·03	·04	·02	·03	·03	·03	·04	·03	·05	·03		·04
2	·20	·21	·21	·20	·28	·20	·15	·25	·23	·22	·22	·22	·33	·20	·19	·26	·19	·20	·19	·25	·22	·22	·27	·28		·21
3	..	..	..	..	..	..	..	..	..	·01	..	..	..	·01	..	..	..	..	..	..	..	..	..	..		..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..		..
5	·05	·10	·11	·11	·11	·12	·08	·13	·12	·10	·13	·12	·13	·12	·11	·12	·06	·14	·13	·13	·15	·13	·14	·13		·13
6	·73	·81	·78	·70	·72	·64	..	·66	·66	·54	·48	·45	·44	·47	·52	·51	·43	·33	·44	·48	·38	·29	·38	·43		·48
7	·09	·09	·09	·07	·10	·04	·63	·02	·04	·02	·02	·03	·01	·02	·01	·02	·04	·02	·03	·02	·10	..	·02	·08		·01
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
9	·02	·01	..	..	·02	..	..	..	..	..	·01	·01	·01	·01	..	..	..	..	..	..	..	..	..	·01		·02
10	·04	·05	·04	·03	·03	·01	..	..	·04	·03	·03	·03	..	·03	·02	·02	·03	·02	·03	·05	·05	·03	·04	..		·02
11	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
13	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
14	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
16	·12	·22	·25	·25	·24	·26	..	·28	·27	·24	·26	·25	·30	·25	·24	·26	·18	·25	·23	·27	·21	·25	·28	·27		·27
17	·04	·01	·02	·02	·04	·02	·21	·01	..	·01	·02	·03	·02	·02	·01	·02	·02	·02	·03	..	·08	·02	·02	·05		·04
18	..	..	..	..	..	..	..	·01	..	·01	..	..	..	·01	..	..	·01	..	..	·01	..	..	·01	·01		·01
19	..	..	..	..	..	..	·01	..	..	·01	..	..	·03	·01	..	..	..	·01	..	..	..	..	·01	..		·01
20	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
21	·21	·20	·24	·24	·21	·23	..	·21	·25	·25	·21	·23	·25	·23	·24	·25	·28	·24	·25	·27	..	·23	·25	·24		·23
22	·03	·05	·06	·06	·08	·06	·15	·07	·07	·09	·10	·08	·10	·07	·08	·06	·07	·05	·09	·09	·06	·09	·11	·13		·06
23	·07	·08	·08	·09	·07	·10	·17	·10	·12	·09	·09	·09	·09	·08	·07	·09	·09	·13	·08	·09	·12	·12	·09	·10		·13
24	..	..	..	..	..	..	..	·02	..	·01	..	..	..	..	..	..	·04	·01	·02	..	..	..	..	..		..
25	..	..	..	..	..	..	..	·01	..	·01	..	..	·01	..	..	..	..	..	..	..	..	..	..	..		..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	·01	..		..
27	..	..	..	..	..	..	·01	·01	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
28	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
29	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
30	·02	·03	·05	·04	·05	·05	..	·06	·04	·03	·01	·05	·03	·03	·02	·04	·02	·03	·03	·04	·03	·04	·03	·02		·04
31	·05	·08	·07	·08	·07	·06	·08	·06	·02	·03	·04	·04	·05	·02	·02	·03	·03	·06	·03	·07	·04	·08	·06	·04		·07
*	1·69	1·98	2·03	1·93	2·06	1·82	1·65	1·92	1·91	1·77	1·65	1·66	1·89	1·62	1·56	1·72	1·51	1·54	1·61	1·81	1·48	1·53	1·77	1·82		1·77
†	16·16	17·17	18·39	17·73	18·61	17·72	14·20	18·38	18·08	18·51	15·79	17·17	18·14	16·80	13·59	17·24	16·25	17·31	16·51	18·25	17·53	17·40	16·89	16·67		16·70

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for Oct. is 2·83 ins.* **October, 1904.**

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·05	MONTHLY REPORT.	·03	·05	·05	·04	..	·02	·05	·01	·05	·03	·02	·02	..	·03	·03	·02	..
2	·20		·23	·19	·19	·18	·18	·08	·18	·18	·25	·25	·25	·24	·18	·19	·20	·18	·34
3	..		..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	·14		·12	·12	·10	·07	·08	·01	·12	..	·13	·14	·13	·12	·08	·14	·11	·10	·09
6	·55		·53	·49	·73	·78	·82	·45	·56	·51	·59	·44	·48	·41	·37	·44	·52	·49	·46
7	·03		·04	·03	·12	·13	·08	·19	·08	·01	·01	·07	·06	·02	·01	·04	·03	·02	..
8	..		..	..	..	..	·03	·01	..	..	..	..	..	..	..	..	..	..	..
9	..		..	..	..	·02	..	·01	..	·02	·02	·02	·02	·02	..	·05	·02	·01	..
10	·03		..	·02	·03	·02	..	·01	·02	..	..	..	..	..	..	..	·01	..	..
11	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..		..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	·27		·24	·25	·20	·15	·13	·04	·22	·13	·30	·23	·28	·26	·18	·18	·18	·17	·18
17	·04		·04	·04	·03	·14	·03	·01	·03	·01	·02	·05	·02	..	..	·06	·04	·02	..
18	..		..	·01	·01	..	..	..	·02	..	..	..	·01	..	..	..	..	..	..
19	..		..	..	..	·02	..	..	·02	..	·01	..	..	..	..	..	·01	..	..
20	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	·23		·22	·23	·19	·21	·22	·16	·23	·18	·30	·24	·25	·26	·22	·22	·21	·20	·22
22	·09		·06	·07	·05	·02	·03	·02	·08	·06	·06	·09	·09	·15	·07	·10	·08	·07	·04
23	·13		·12	·13	·09	·08	·05	·05	·11	·13	·15	·11	·11	·09	·06	·15	·12	·13	·12
24	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..		..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
28	..		..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
29	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
30	·05		·04	·03	·04	·03	·03	·01	·04	·01	·03	·02	·04	·02	..	..	·05	·02	..
31	·09		·06	·06	·07	·06	·05	·03	·08	·03	·06	·05	..	·05	·01	·06	·06	·06	·01
*	1·90	1·79	1·73	1·74	1·92	1·95	1·73	1·10	1·84	1·28	1·98	1·74	1·76	1·66	1·18	1·66	1·69	1·49	1·46
†	17·77	17·71	16·55	16·65	17·69	16·13	15·42	10·19	17·65	12·34	18·33	15·63	17·27	17·04	11·76	16·34	16·78	15·16	14·41

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(October, 1904.)

The month has been dry and mild, but somewhat unhealthy. Influenza has been somewhat prevalent, and there have been in places a considerable number of cases of diphtheria and scarlet fever. Fogs have been especially prevalent for so early in the season, no less than fourteen days having been noted at Greenwich. Solar and lunar halos have also been somewhat numerous, and have been noticed practically throughout the district. Lightning was seen at Nutfield on the 31st, and there was darkness at Sanderstead on the 11th and 12th. The observer at Sanderstead writes:—"On the 25th, at 10.15 p.m., walking up our hill, I saw a bright-coloured corona round the moon, and immediately outside of it a very bright rainbow-coloured ring (indigo inside). We must have been in a rare frosty mist, for when we got higher it all cleared in a moment, and there was not even a corona left. A few cirrus-cumulus about, but none over the moon." The rainfall is about one inch below the average. The mean temperature of the month is about one degree above the average, and was at Croydon (Duppas House) 51°·2, at Chipstead and Wallington 50°·3, and at Warlingham and Worcester Park 50°·0. There were recorded at Wallington 97·4 hours of sunlight, which is three hours below the October average of the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for November is 2·26 ins.* **November, 1904.**

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd.la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	ReigateHill	Upper Gatton	Merstham	Harp's Oak Cottage
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·01	..	·01	·03	·02	..	..	·01	·01	·02	·02	RECORD CEASED.
2	..	..	..	..	..	..	..	..	..	..	..	
3	..	..	..	..	..	..	..	..	..	..	..	
4	..	..	..	..	..	..	..	..	..	..	..	
5	·01	..	..	..	..	..	..	·01	..	..	..	
6	·38	·36	·34	·37	·30	·28	·28	·25	·34	·39	·40	
7	·34	·33	·32	·33	·30	·33	·33	·32	·29	·29	·37	
8	·09	·07	·09	·08	·08	·07	·07	·03	·07	·09	·08	
9	·01	·08	..	·03	·09	·08	·08	·05	·06	·08	·09	
10	·54	·45	·53	·50	·58	·58	·58	·59	·55	·54	·58	
11	..	..	..	..	..	..	..	..	..	..	..	
12	..	..	..	..	..	·01	·01	..	..	..	..	
13	..	..	..	..	..	·01	·01	..	..	·01	..	
14	..	..	..	..	..	·01	·01	..	..	..	..	
15	..	..	..	..	..	·01	·01	..	·01	..	..	
16	·01	..	..	..	..	..	..	..	..	..	..	
17	·01	..	·03	·04	..	·01	·02	..	..	·01	..	
18	·01	..	·01	..	..	·01	·01	..	·01	·01	..	
19	..	..	..	·04	·02	..	..	..	·01	·01	·03	
20	..	..	..	..	..	..	..	..	..	..	..	
21	·07	·10	·10	·10	·08	·09	·09	·09	·09	·08	·08	
22	·04	..	·03	·08	·03	·02	·02	..	·02	·02	·02	
23	·03	·11	·05	..	·06	·05	·06	·05	·05	·06	·07	
24	..	..	..	..	..	..	..	..	..	..	..	
25	..	..	..	..	..	·01	..	..	..	..	..	
26	..	..	..	..	..	..	..	..	..	..	..	
27	..	..	..	..	..	·01	·01	..	..	..	..	
28	..	..	..	..	..	..	..	..	..	..	..	
29	..	..	..	..	..	..	..	..	..	..	..	
30	..	..	..	..	..	..	..	..	·01	..	..	
*	1·55	1·50	1·51	1·60	1·56	1·58	1·59	1·40	1·52	1·61	1·74	
†	26·37	25·28	24·80	25·31	22·16	22·28	24·29	22·66	21·26	24·41	22·63	

Day of Mo.	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·03	·03	·04	·01	..	·05	·06	·04	·03	MONTHLY GAUGE.	·04	·03	·03	·02
2	..	..	..	..	..	..	..	..	..		..	..	..	..
3	..	..	..	..	..	..	..	..	..		..	..	..	..
4	..	..	..	..	..	..	..	..	..		..	..	..	..
5	..	..	..	·01	..	..	..	..	·02		..	..	..	..
6	·33	·45	·42	·36	·44	·40	·38	·37	·35		·42	·29	·34	·33
7	·35	·30	·40	·43	·40	·52	·42	·55	·41		·44	·40	·38	·39
8	·11	·12	·09	·10	·11	·12	·07	·17	·14		·12	·12	·10	·10
9	·09	·07	·06	·12	·13	·12	·07	·09	·07		·10	·07	·08	·07
10	·62	·60	·60	·57	·61	·50	·42	·50	·56		·57	·45	·47	·45
11	·01	..	..	..	..	..	..	..	..		..	·01	·01	..
12	..	..	..	..	..	..	..	..	..		..	..	..	..
13	..	..	·01	..	..	..	..	..	..		..	..	..	·01
14	..	..	..	..	..	..	..	..	..		..	..	·03	..
15	..	..	..	..	..	..	..	..	..		..	..	..	..
16	..	..	·01	..	..	..	..	..	..		..	..	·01	..
17	·02	..	..	..	..	·06	..	..	..		..	..	·01	·02
18	·01	..	·02	..	..	..	..	..	·02		..	..	·01	·02
19	·02	..	·02	..	·01	..	..	..	..		·03	..	·02	·02
20	..	·03	..	..	..	..	..	·01	..		..	..	..	..
21	·10	·08	·10	·11	·07	·12	·10	·08	·09		·10	·09	·10	·08
22	·02	..	..	..	..	·04	·02	·05	..		·02	·03	·02	·01
23	·08	·04	·09	..	..	·03	·03	·02	·03		·07	·07	·07	·07
24	..	·05	..	..	..	..	..	..	..		..	..	..	..
25	..	..	..	..	..	..	..	..	..		..	..	..	..
26	..	..	..	..	..	..	..	..	..		..	..	..	..
27	·02	..	..	..	..	..	..	..	..		..	..	..	·01
28	..	..	..	..	..	..	..	..	..		..	..	..	..
29	..	..	..	..	..	..	..	..	..		..	..	..	..
30	..	..	..	..	..	..	..	..	..		..	..	·01	..
*	1·81	1·77	1·86	1·71	1·77	1·96	1·57	1·88	1·72	1·48	1·91	1·56	1·69	1·60
†	23·61	24·19	25·30	23·56	24·88	25·32	19·53	25·37	22·49	23·68	26·94	22·78	23·46	21·80

* The figures in this row give the totals for the month. † The totals from January 1st

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for November is 2·26 ins.* **November, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew.Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton	Croydon (Brim.Bn.)	Croydon (Wn.N.rd.)	Croydon (Dup. H.)	Croydon (Wdml.rd.)	Croydon (Park Hill)	Croydon (Ashbn.rd.)	Croydon (Avond.rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump.St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·02	..	·02	·02	·02	·04	·01	·01	..	·02	·02	·01	·01	·01	·02	..	·01	·02	·02	·02	·03	..	..	·02	·03	
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
5	..	·01	..	..	..	..	..	·01	·01	·02	..	..	..	..	..	·01	..	..	..	..	..	..	..	·01	..	
6	·53	·41	·41	·41	·36	·34	·31	·33	·32	·30	·31	·31	·30	·34	·32	·31	·29	·31	·40	·36	·35	·32	·24	·30	·31	
7	·37	·25	·26	·25	·25	·33	·27	·29	·27	·28	·29	·28	·34	·30	·30	·27	·30	·32	·30	·34	·45	·40	·35	·29	·35	
8	·06	·10	·05	·11	·10	·10	·10	·11	·07	·13	·11	·12	·12	·12	·10	·13	·14	·14	·12	·13	·13	·12	·15	..	·11	
9	·15	·03	·03	·06	·05	·08	·06	·05	·03	..	·06	·07	·06	·06	·04	·07	·06	·09	·08	·07	·09	·08	·10	·19	·09	
10	·53	·55	·43	·50	·46	·52	·39	·37	·39	·44	·40	·37	·35	·40	·36	·35	·35	·37	·40	·38	·35	·38	·40	·35	·35	
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
12	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	
13	..	..	..	..	..	..	..	·01	..	..	·02	..	..	..	·01	..	..	..	..	·02	..	·01	..	..	..	
14	..	..	..	..	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	
15	..	..	..	..	..	..	·02	·02	·01	..	·01	..	..	..	·01	..	·01	..	..	·01	..	..	..	..	..	
16	·03	..	..	·02	..	..	..	·02	..	..	..	..	..	·05	..	..	..	..	..	..	..	..	..	..	..	
17	·02	..	·01	·03	·02	..	·01	·02	·01	..	·02	·02	..	·01	·01	·01	·01	·02	·03	·02	..	·01	·03	..	..	
18	·01	·03	..	..	·03	·04	..	·01	..	..	·02	..	..	..	..	·01	·01	·01	·02	·01	·03	..	..	..	..	
19	·02	..	..	·01	..	·01	..	·02	·01	..	·02	·01	..	..	·01	..	..	..	·01	·01	..	..	..	..	..	
20	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	
21	·11	·13	·11	·10	·10	·10	·11	·10	·08	·13	·11	·11	·12	·05	·10	·09	·07	·06	·09	·09	·08	·08	·07	·13	·10	
22	..	..	..	..	·02	..	·02	..	..	·10	·01	·02	·02	·06	·01	..	·01	·04	·03	·02	·02	·01	..	..	·02	
23	·07	·23	·12	..	·08	·10	·06	·14	·13	·03	·08	·10	·10	·10	·10	·12	·08	·11	·09	·10	·10	·08	·11	..	·04	
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
27	..	..	·07	·03	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
28	..	..	..	·02	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	
29	..	..	..	·04	..	..	..	·03	·01	..	·01	..	..	..	..	..	·01	..	·01	·01	..	..	..	..	..	
30	·02	..	..	..	·03	..	·01	..	..	..	..	..	..	·02	..	·01	..	·01	..	..	..	..	·02	..	..	
*	1·94	1·74	1·51	1·60	1·52	1·66	1·39	1·56	1·34	1·45	1·52	1·42	1·42	1·52	1·40	1·38	1·35	1·50	1·60	1·61	1·63	1·50	1·52	1·29	1·40	
†	26·08	24·91	22·16	22·13	20·64	23·65	20·86	20·46	19·86	20·59	21·23	20·62	18·69	20·48	20·12	19·08	19·08	20·96	23·43	21·41	23·60	22·40	21·80	21·32	20·09	

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for November is 2·26 ins.* **November, 1904.**

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·01	·02	·01	·02	·03	·01	·01	·01	..	·01	..	·01	·01	..	·01	·01	·02	..	·01	..	..	..	·01	..		·01
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
3	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
5	·01	..	..	..	..	..	..	·01	..	..	..	..	·01	·01	..	·01	..	·01	..	..	..	..	..	..		..
6	·39	·32	·35	·33	·27	·32	·18	·35	·32	·30	·29	·33	·28	·29	·31	·35	·30	·33	·30	·33	·26	·35	·31	·28		·31
7	·30	·27	·31	·31	·28	·31	·45	·33	·28	·30	·32	·32	·37	·33	·30	·31	·33	·44	·32	·38	·36	·41	·42	·43		·38
8	·09	·15	·13	·14	·11	·13	·14	·14	·11	·12	·14	·13	·15	·12	·09	·10	·10	·13	·12	·13	·10	·12	·14	·13		·14
9	·06	·07	·07	·08	·08	·07	·23	·01	·05	·07	·07	·09	·06	·07	·03	·04	·03	·03	·04	·04	·06	·04	·07	·10		·06
10	·40	·33	·42	·38	·39	·37	·12	·44	·40	·40	·36	·39	·39	·38	·43	·43	·47	·42	·42	·45	·46	·43	·42	·41		·37
11	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	·01	..	..	..	..	..		..
12	..	..	..	..	..	..	..	..	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..		..
13	..	..	..	..	..	..	..	·01	..	·01	·01	..	·01	·01	..	..	..	..	..	..	..	..	·01	..		·01
14	..	..	..	..	..	..	·02	..	..	·01	..	..	..	..	..	..	·02	..	..	..	..	..	..	..		..
15	..	..	..	..	..	..	..	·01	..	·01	·01	..	..	·01	..	..	..	·01	..	·03	..	..	..	..		·01
16	·01	..	..	..	..	·02	..	·01	..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..
17	..	..	·03	..	..	..	..	·01	..	·01	..	·03	·01	..	..	..	..	·01	·01	..	·05	..	·02	..		·02
18	..	..	..	·01	..	·02	·01	..	..	·01	·01	·01	..	..	..	..	..	..	·01	·02	..	..	·01	..		·01
19	..	..	..	..	..	..	..	..	..	·01	..	·02	..	..	..	·03	·02	·01	..	..	..	·03	·02	·02		·01
20	..	..	..	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
21	·08	..	·08	·08	·09	·05	·06	·09	·16	·07	·07	·09	·10	·08	·11	·09	·11	·07	·11	..	·12	·06	·08	·11		·07
22	·02	..	·02	·02	·01	..	·01	..	·02	·01	·01	·03	·01	..	·01	·02	..	·01	..	·02	..	..	·02	·01		·01
23	·02	·15	·12	·11	·07	·12	·05	·03	·12	·03	·10	·11	·12	·03	..	·10	·08	·07	·11	·17	·10	·06	·11	·11		·13
24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		..
27	..	..	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		·01
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..	..	·02	..		..
29	..	..	..	..	..	..	·01	·01	..	·01	..	..	·01	..	..	·02	..	·02	..	..	·03	..	..	..		..
30	·01	..	..	..	..	·02	..	..	·02	·01	..	..	·02	·12	·09	..	..	..	·01	..	..	..	·01	·02		·01
*	1·40	1·31	1·54	1·48	1·33	1·44	1·30	1·47	1·48	1·43	1·41	1·56	1·55	1·45	1·38	1·51	1·48	1·56	1·48	1·57	1·54	1·50	1·67	1·62		1·56
†	17·56	18·48	19·93	19·21	19·94	19·16	15·50	19·85	19·56	19·94	17·20	18·73	19·69	18·25	14·97	18·75	17·73	18·87	17·99	19·82	19·07	18·90	18·56	18·29		18·26

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for Nov. is 2·26 ins.* **November, 1904.**

Day of Mo.	U. Norwood (Dul.W.Pk.)	U. Norwood (Fox H.Gs.)	Forest Hill (Dartm.rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	·02	MONTHLY REPORT.	..	·01	·02	·02	·03	..	·02	..	..	..	·05	..	..	..	..	..	..
2	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	..		·02	·02	·02	..	..	..	..	..	..	..	..	..	..	..	·01	·01	..
6	·32		·07	·32	·37	·44	·39	·25	·42	·34	·40	·32	·33	·41	·33	·40	·38	·36	·35
7	·37		·62	·40	·33	·35	·28	·25	·45	·36	·47	·41	·40	·56	·50	·42	·38	·47	·38
8	·14		·16	·15	·15	·11	·13	·04	·18	·09	·12	·14	·14	·18	·11	·16	·17	·14	·17
9	·08		..	·07	·06	·09	·08	..	·08	·03	·05	·06	·06	·01	·03	·22	·06	·06	..
10	·39		·44	·37	·41	·40	·38	·24	·42	·37	·50	·40	·40	·42	·34	·42	·40	·38	·36
11	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	..		..	..	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13	..		..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14	..		..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15	..		..	·01	·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	·03		·02	·01	·01	..	..	..	..	..	·03	..	·01	..	..	..	..	..	..
18	·01		·01	·01	·01	..	..	..	·01	..	..	..	·01	..	..	..	·02	·01	..
19	·02		·01	·01	..	..	·03	..	·01	·01	..	..	·02	·02	·01	..	·02	·01	..
20	..		..	..	..	..	..	..	·01	..	..	..	..	..	..	·02	..	..	..
21	·07		·06	·09	·08	·08	·04	·06	·08	·07	·09	·01	·11	·09	·05	·09	·07	·07	·07
22	..		..	..	·02	..	·06	..	·03	..	..	·06	..	..	..	..	..	·01	..
23	·12		·18	·12	·05	·04	·05	..	·10	·01	..	·06	..	·08	..	..	·11	·13	·07
24	..		..	..	..	..	..	..	..	..	..	..	..	..	..	·07	..	..	..
25	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
27	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28	..		..	..	..	..	..	..	..	..	·13	..	..	..	..	..	..	..	..
29	..		..	·02	..	..	..	..	..	..	·02	..	..	..	..	..	..	..	..
30	..		..	·01	·03	..	..	·03	·02	..	..	·01	..	..	..	..	·01	..	..
*	1·57	1·59	1·59	1·65	1·59	1·53	1·47	·87	1·83	1·28	1·81	1·47	1·53	1·77	1·37	1·80	1·63	1·65	1·40
†	19·34	19·30	18·14	18·30	19·28	17·66	16·89	11·06	19·48	13·62	20·14	17·10	18·80	18·81	13·13	18·14	18·41	16·81	15·81

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(November, 1904.)

The month has been cold and dry, and extremely foggy, from the 11th to the 19th. The month has been unhealthy, scarlet fever and influenza have been prevalent, with many cases of diphtheria in places. A fine Red Admiral butterfly was seen at Ockley on the 10th, and numerous plants were in flower at Nutfield up to the 22nd. Snow fell on the 22nd and 23rd throughout the district, and the cold from that date till the end of the month was severe. The snow varied from one inch to two inches in depth. A sun-pillar was seen at Epsom at 7.45 a.m. on the 22nd. On the 24th a solar halo was observed in most places in the district. Splendid sunsets were seen at Abinger on the 13th and 14th, and hoar frosts occurred on many days throughout the district. The rainfall varied from one-half to one-quarter below the average. The mean temperature of the month was about 2° below the average, and was at Wallington 42°·1, at Croydon (Duppas House) 41°·8, at Chipstead 41°·7, at Warlingham 41°·5, and at Worcester Park 41°·4. There were recorded at Wallington 65·3 hours of sunlight, which is 14·3 hours or six per cent. above the November average of the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for December is 1·84 ins.* **December, 1904.**

Day of Mo.	Holmbury St. Mary	Abinger (Rectory)	Abinger (The Hall)	Dorking (Denbies)	Redhill (Linkfd. la.)	Nutfield (old gauge)	Nutfield (newgauge)	Buckland	Reigate Hill	Upper Gatton	Merstham	Harp's Oak Cottage	Chipstead	Chaldon	Caterham	Westerham (Hill Est.)	Westerham (Town)	Knockholt (field gau.)	Knockholt (tower ga.)	Chevening Park	Sevenoaks	Chelsham	Warling-ham	Kenley (Hazelea)	Kenley (Place Fell)	Sander-stead
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..	..	..	..	..	..	..	..	..	MONTHLY GAUGE.	..	..	..	..
2	·01	..	·03	..	·03	·02	·02	·01	..	·01	·03		..	..	·02	·08	·02	·05	·05	..	·03		..	·01	·02	·02
3	·02	..	..	..	..	..	..	·01	·01	..	..		..	..	..	..	..	..	..	..	..		..	..	..	..
4	·36	·44	·33	·37	·30	·16	·26	·27	·32	·44	·28		·50	·37	·37	·34	·32	·38	·18	·31	·21		·40	·31	·40	·32
5	·59	·41	·26	·31	·23	·26	·25	·31	·21	·44	·25		·52	·35	·30	·47	·61	·50	·45	·59	·22		·36	·49	·39	·33
6	·86	·85	·77	·82	·78	·80	·82	·84	·77	·79	·74		·91	·80	·85	·88	·76	1·02	·77	·86	·67		·89	·61	·85	·80
7	·11	·08	·13	·07	·13	·15	·18	·16	·12	·13	·11		·12	·13	·09	·13	·13	·12	·11	..	·11		·08	·18	·08	·07
8	·04	·05	..	·08	..	·07	·07	·01	..	..	·02		..	·03	..	..	..	..	..	..	·01		..	..	..	·01
9	·42	·51	·54	·41	·36	·15	·20	·37	·42	·54	·24		·60	·26	·28	·36	·46	·44	·38	·44	·28		·31	·44	·48	·44
10	·04	·03	·09	·15	·08	·05	·04	·05	·07	·11	·05		·11	·11	·10	·06	·05	·08	·06	·07	·05		·08	·06	·11	·09
11	·24	·27	·24	·21	·20	·22	·25	·21	·16	·16	·22		·21	·17	·23	·30	·26	·27	·21	·30	·25		·28	·19	·17	·15
12	·11	·11	·12	·10	·10	·13	·13	·14	·15	·13	·15		·13	·13	·12	·12	·13	·11	·09	·12	·16		·13	·06	·07	·06
13	·10	·07	·31	·10	·10	·03	·05	·03	·01	·03	·01		·03	..	·04	·02	..	..	..	..	·08		·14	·02	·30	·02
14	·47	·43	·36	·40	·40	·50	·57	·52	·42	·37	·49		·55	·43	·45	·68	·71	·65	·52	·70	·62		·44	·54	·17	·34
15	·03	·01	·02	·03	·03	·02	·02	·01	·02	·03	·02		·03	·03	·02	·01	·02	·02	·01	·02	·01		·02	·01	·02	·02
16	·02	..	·01	..	..	·04	·04	·02	·01	·02	·02		·01	·02	·02	·03	·01	·04	·01	·01	·01		·02	..	·01	·01
17	..	·02	..	..	..	..	..	·01	·01	..	..		..	..	..	..	..	..	..	·02	..		..	..	..	..
18	·01	..	·03	..	..	·02	·02	·01	..	·03	·02		·03	..	·03	..	..	·03	·02	·01	·01		·03	·02	·03	·02
19	..	..	·01	·04	·04	·02	·02	..	..	·01	..		..	..	·05	..	..	..	..	..	..		·02	·01	..	·02
20	..	..	..	·02	·02	·01	·01	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	·01	..
21	..	..	..	..	..	·01	·01	..	..	·02	..		..	..	·02	..	..	..	..	..	..		·03	·01	..	·01
22	..	..	..	..	..	·01	·01	..	..	·01	..		·03	..	..	..	..	·05	·04	..	..		·02	..	..	·01
23	·02	..	..	..	..	·01	·01	..	·03	..	..		..	..	..	..	..	..	..	..	·02		..	..	..	·02
24	..	..	..	..	..	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..		..	..	·02	·01
25	·01	·03	..	..	..	·01	·01	·01	..	·01	..		·02	..	·01	·04	..	..	..	..	·01		·02	..	·03	·03
26	..	..	..	..	..	..	..	·03	·01	·01	..		..	..	·01	..	..	..	..	..	..		..	..	..	·01
27	..	..	·03	..	..	·01	·01	·01	..	..	..		..	·02	..	..	·06	..	..	..	..		..	..	..	..
28	·06	·04	·04	·06	·06	·04	·04	·03	·03	·03	·06		..	·07	·03	·04	·04	·07	·05	·07	·03		·05	..	..	·03
29	·04	·02	·01	·03	·03	·04	·03	·01	·01	·03	·02		..	..	·03	·04	..	·04	·01	..	·02		·06	·05	·10	·06
30	..	..	..	..	..	..	..	..	..	..	..		·07	..	..	..	..	..	..	·04	..		..	..	..	..
31	..	..	..	..	..	..	..	·01	..	..	..		..	..	..	..	..	·03	·02	·05	·06		..	..	·01	·01
*	3·56	3·37	3·33	3·20	2·89	2·78	3·07	3·08	2·78	3·35	2·73		3·87	2·92	3·07	3·60	3·58	3·90	2·98	3·61	2·86	3·46	3·38	3·01	3·27	2·91
†	29·93	28·65	28·13	28·51	25·05	25·06	27·36	25·74	24·04	27·76	25·36		27·48	27·11	28·37	27·16	28·46	29·22	22·51	28·98	25·35	27·14	30·32	25·79	26·73	24·71

* The figures in this row give the totals for the month. † The totals from January 1st

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for December is 1·84 ins.* **December, 1904.**

Day of Mo.	Burgh Heath	Hedley	Leather-head	D'Abernon Chase	Oxshott	Banstead	Sutton (Waterwk.)	Sutton (Sew. Wks.)	Benhilton	Carshalton	Wallington	Bedding-ton
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..
2	..	·09	..	·08	·05	·05	·03	·04	·02	·03	·03	·03
3	·03	..	·02	..	..	·02	..	·02	..	..	..	..
4	·30	·18	·24	·15	·15	·30	·15	·16	·10	·14	·19	·20
5	·22	·26	·19	·25	·24	·17	·17	·25	·24	·24	·17	·16
6	·76	1·00	·88	·82	·86	·84	·84	·82	·78	·80	·81	·84
7	·05	·09	·08	·08	·06	·05	·03	·06	·03	·03	·05	·05
8	·09	..	·01	..	·02	..	..	·02	..	..	·01	·01
9	·34	·45	·34	·28	·22	·38	·27	·20	·22	·20	·23	·23
10	·12	·13	·11	·10	·10	·11	·08	·10	·10	·10	·10	·09
11	·20	·20	·15	·12	·14	·20	·11	·09	·08	·09	·10	·10
12	·07	·09	·09	..	·07	·08	·04	·10	·08	·06	·07	·07
13	·04	·45	·10	·05	·07	·05	·03	·09	·05	..	·06	·03
14	·49	·32	·34	·34	·19	·35	·33	·24	·27	·30	·30	·37
15	·02	·04	..	·04	·02	·02	·01	·02	..	·02	·01	·01
16	·03	..	..	·03	..	..	·02	·02	·01	·03	..	..
17	..	..	..	..	..	·04	..	..	..	..	..	..
18	..	..	..	·02	·03	..	·02	·03	·02	·03	·02	·03
19	·05	..	..	..	..	·01	·01	·01	..	..	·02	..
20	..	..	..	..	..	..	..	..	..	..	..	..
21	·02	..	..	..	..	..	..	..	..	..	..	..
22	..	..	..	..	..	..	·01	..	..	..	..	..
23	·02	..	·01	..	..	..	·02	·03	·02	..	·04	·02
24	..	..	..	..	·03	..	..	..	..	..	·01	..
25	·03	·01	·05	..	·02	..	·03	·03	·02	..	·03	·02
26	..	..	..	·04	..	..	·01	·01	..	..	..	..
27	·01	..	·01	·02	..	·04	·01	·02	·01	·05	·01	·01
28	·04	·05	·05	·05	·04	·03	·01	·03	·02	·05	·03	·03
29	·02	·03	·02	·08	·07	·10	·04	·03	..	·02	·05	·03
30	·04	..	..	..	..	..	..	..	..	..	..	..
31	..	..	..	..	..	..	..	..	..	..	..	..
*	2·99	3·39	2·69	2·55	2·38	2·84	2·27	2·42	2·07	2·19	2·34	2·33
†	29·07	28·30	24·85	24·68	23·02	26·49	23·13	22·88	21·93	22·78	23·57	22·95

Day of Mo.	Croydon (Brim. Bn.)	Croydon (Wn. N. rd.)	Croydon (Dup. H.)	Croydon (Wdml. rd.)	Croydon (Park Hill)	Croydon (Ashbn. rd.)	Croydon (Avond rd.)	Addington Hills	Addington (Park Fm.)	Addington (Pump. St.)	West Wickham	Hayes	Orpington	Farning-ham Hill
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	..	..	
2	·03	·03	·04	·03	·03	·03	·02	·01	..	..	..	·01	..	
3	..	..	·01	..	..	..	..	..	..	..	..	·01	..	
4	·16	·19	·18	·16	·18	·22	·30	·26	·33	·33	·33	·24	·23	
5	·15	·16	·17	·16	·18	·11	·27	·31	·35	·43	·52	·39	·31	
6	·82	·88	·80	·82	·79	·78	·84	·80	·89	·81	·91	·86	·87	
7	·03	·05	·05	·04	·06	·06	·05	·05	·08	·09	·05	·06	·07	
8	..	·01	·01	·01	·01	..	·01	·01	..	·01	..	..	·01	
9	·21	·30	·29	·25	·32	·38	·37	·33	·24	·20	·21	·18	·20	
10	·09	·10	·10	·10	·10	·11	·09	·11	·06	·11	·09	·08	·05	
11	·08	·09	·10	·08	·08	·10	·12	·10	·12	·15	·13	·07	·21	
12	·10	·10	·11	·21	·12	·15	·07	·08	·08	·10	·08	·08	·06	
13	..	·03	·04	·03	·03	..	·02	·03	..	·03	..	·05	·01	
14	·35	·40	·36	·28	·33	·37	·37	·34	·34	·37	·40	·33	·39	
15	..	·01	·01	·01	..	·01	·02	·01	·02	·01	..	·01	·01	
16	..	..	..	·01	..	..	..	·01	·02	·01	..	·01	..	
17	..	..	..	..	..	..	..	..	..	..	..	..	..	
18	·02	·03	·04	·03	·02	·02	·03	·04	·04	·03	·03	·04	·03	
19	..	..	..	..	·01	·01	·01	..	..	..	..	..	·01	
20	..	..	..	..	..	..	..	·01	..	..	..	..	..	
21	..	..	..	..	..	·01	..	·01	..	..	..	..	..	
22	..	..	..	..	..	·02	·03	·01	..	·01	·04	..	·02	
23	..	·05	·03	·03	·02	..	..	·02	..	..	..	..	..	
24	..	..	..	..	..	..	·01	·01	·06	..	..	..	..	
25	·05	·03	·03	·02	·02	·03	·03	·03	..	·02	·03	..	·02	
26	..	..	..	..	..	..	..	..	..	..	..	..	..	
27	..	..	·02	·01	..	·01	·01	·02	..	·01	·01	..	..	
28	·03	·03	·03	·02	·04	·04	·03	·03	·05	·03	·05	·13	·05	
29	..	·03	·02	·02	·03	·03	·07	·07	·06	·05	·04	·04	·05	
30	..	..	..	..	..	·01	..	..	..	..	..	..	..	
31	..	..	..	..	..	..	..	..	..	..	..	..	..	
*	2·12	2·52	2·44	2·32	2·37	2·50	2·77	2·70	2·74	2·80	2·92	2·59	2·60	
†	20·81	23·00	22·56	21·40	21·45	23·46	26·20	24·11	26·34	25·20	24·72	23·91	22·69	

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for December is 1·84 ins.* **December, 1904.**

Day of Mo.	Southfleet	Chislehurst	Bickley	Bromley	Bromley Common	Beckenham	Anerley	South Norwood	Beddington Corner	Morden	Wimbledon (Sew. Wks.)	Wimbledon (The Downs)	Wimbledon (Windmill)
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	·03	..	..	·01	..	..	..	..	..
2	·01	..	·04	·04	..	·03	..	·03	..	·01	·03	..	·04
3	..	..	..	..	·01	..	·05	·01	..	·01	·01	..	..
4	·14	·19	·15	·15	·20	·17	·02	·14	·16	·10	·09	·14	·10
5	·40	·35	·28	·26	·36	·16	·07	·16	·27	·25	·15	·16	·15
6	·73	·75	·88	·82	·73	·77	·92	·85	·85	·85	·92	·95	·92
7	·06	..	·05	·05	·06	·04	·02	·03	·04	·03	·02	·03	·02
8	·01	·06	..	·01	..	·01	..	·01	..	..	..	..	..
9	·25	·16	·24	·24	·17	·36	·06	·26	·16	·15	·10	·11	·11
10	·03	·07	·06	·06	·07	·08	·26	·09	·08	·17	·06	·06	·06
11	·17	·10	·08	·07	·10	·07	·02	·08	·10	·07	·09	·12	·12
12	·02	·12	·13	·18	·08	·37	·33	·31	·12	·06	·07	..	·02
13	..	..	·01	·02	·02	·01	..	·02	..	·01	·01	..	·03
14	·45	·36	·38	·35	·36	·32	·28	·30	·29	·27	·26	·36	·27
15	·03	·01	·01	·01	·02	·01	·01	·01	..	·01	·01	·02	·02
16	·01	..	..	..	·01	..	..	·02	·01	·01	..	..	..
17	·01	..	..	..	..	..	..	..	..	..	..	..	..
18	·02	·05	·04	·03	·03	·02	·01	·01	·03	·07	..	·04	·07
19	..	..	..	..	..	..	·02	·03	..	·01	..	..	..
20	..	..	..	..	..	..	·01	..	..	..	..	..	..
21	..	..	..	..	..	..	·01	·01	..	..	..	..	..
22	·03	..	..	..	..	·01	..	·01	..	..	..	..	..
23	·01	..	..	·03	..	..	·03	..	..	..	..	..	..
24	..	..	..	..	..	..	..	·02	..	·01	..	..	..
25	·03	·05	..	·02	·07	·04	..	..	·04	·01	..	·05	·04
26	·02	..	·06	..	..	..	·01	·03	..	·01	..	..	·01
27	·01	..	..	·01	·02	..	..	·07	·02	·10	..	..	·02
28	·04	·04	·04	·05	·04	·05	·04	·05	·02	..	·01	·04	·02
29	·01	·02	·03	·03	·02	·03	..	·02	·02	·01	·02	·03	·02
30	..	..	..	..	..	..	..	..	..	..	..	..	..
31	·03	..	..	..	·01	..	..	..	..	..	..	..	..
*	2·52	2·33	2·48	2·43	2·41	2·55	2·17	2·58	2·21	2·22	1·86	2·11	2·04
†	20·08	20·81	22·41	21·64	22·35	21·71	17·67	22·43	21·77	22·16	19·06	20·84	21·73

Day of Mo.	Raynes Park	New Malden	Worcester Park	Esher	West Molesey	Surbiton	Kingston (Sew. Wks.)	Kingston (County H.)	Richmond	Putney Heath	Wandswth. Common	Streatham	West Norwood
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	..	..	..	..	..	..	..	..	..	..	RECORD CEASED.	..
2	·01	·03	·02	·06	·05	·04	·05	·05	·05	·05	·02		·03
3	..	..	..	·02	..	·01	..	..	..	..	..		..
4	·10	·08	·11	·08	·10	·12	·12	·15	·09	·07	·12		·11
5	·16	·15	·22	·16	·28	·17	·16	·10	·26	·16	·13		·17
6	·90	1·02	·85	·94	·75	1·01	1·05	1·05	·68	·96	1·08		·88
7	·02	·02	·04	·01	·01	·02	·02	·05	..	·02	·03		·01
8	..	..	·01	·01	·01	·01	..	..	..	..	..		·01
9	·11	·10	·15	·10	·06	·13	·15	·15	·14	·12	·11		·16
10	·06	·07	·10	·06	·08	·10	·09	·14	·08	·07	·10		·09
11	·12	·11	·12	·11	·14	·13	·15	·15	·14	·13	·11		·08
12	·04	·06	·08	·06	·02	·09	·06	·08	·03	·03	·03		·07
13	·04	·05	·09	·09	·07	·09	·11	..	·10	·03	..		·01
14	·27	·25	·27	·21	·28	·29	·30	·36	·22	·31	·33		·29
15	·01	·02	·02	·02	·02	·03	·02	·03	·03	·03	·03		·01
16	..	..	..	..	..	..	..	..	..	·01	..		·01
17	..	..	..	..	..	..	..	..	..	..	..		..
18	·03	·02	·02	·02	·02	·02	·03	·02	·02	·03	·02		·04
19	..	..	..	..	..	..	..	..	..	..	..		·01
20	..	..	..	..	..	..	..	..	..	..	..		..
21	..	..	..	..	..	..	..	..	..	..	..		·01
22	..	..	..	..	..	·01	..	..	..	..	..		·01
23	·03	..	..	..	·03	·01	..	·03	..	·03	·01		·02
24	..	..	..	·03	..	..	..	·03	..	..	..		..
25	·02	..	·05	..	·01	·02	·02	..	..	·01	·03		·02
26	..	..	..	·01	..	..	..	..	..	·01	·01		·01
27	·01	..	..	..	..	..	·01	..	..	·02	·01		·01
28	·02	·07	·03	·01	·02	·02	·02	·02	·05	·02	·03		·04
29	·02	·01	·03	·03	·02	·03	·03	·02	..	·02	·04		·04
30	..	..	..	..	..	..	..	·01	..	..	..		..
31	..	..	..	..	..	..	..	..	..	..	..		..
*	1·97	2·06	2·21	2·03	1·97	2·35	2·39	2·44	1·89	2·13	2·24		2·14
†	20·22	17·03	20·96	19·76	20·84	20·34	22·21	21·51	20·79	20·69	20·53		20·40

* The figures in this row give the totals for the month. † The totals from January 1st.

Daily Rainfall. *The sixty years (1841–1900) average at Greenwich for Dec. is 1·84 ins.* **December, 1904.**

Day of Mo.	U. Norwood (Dul. W. Pk.)	U. Norwood (Fox H. Gs.)	Forest Hill (Dartm. rd.)	Forest Hill (S&VWC)	Sidcup	Wilmington	Dartford	Greenhithe	Eltham	Nunhead	Brockwell Park	Brixton	Clapham Park	Battersea Park	Battersea (S&VWC)	Telegraph Hill	Greenwich	Deptford	Southwark Park
	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
1	..	MONTHLY REPORT.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..		·04	·02	·03	·01	·03	..	·04	..	·02	·03	..	·04	·13	·04	·06	·02	..
3	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	·18		·12	·12	·12	·11	·08	·03	·22	·14	·12	·14	..	·06	·03	·11	·09	·09	·06
5	·24		·20	·15	·31	·27	·25	·11	·21	·15	·32	·12	·33	·30	·16	·20	·18	·17	·39
6	·78		·83	·88	·84	·75	·74	·69	·83	·92	1·07	·94	·76	·80	·85	·93	·93	·97	·69
7	·03		·04	·04	·08	·07	·05	·04	·06	·03	·03	·05	·04	·02	·01	·02	·02	·03	·01
8	..		·03	..	·01	..	·03	..	·02	..	..	..	·03	..	..	..	·01	..	·01
9	·22		·26	·20	·16	·16	·12	·12	·16	·13	·16	·12	·13	·10	·08	·18	·26	·17	·10
10	·04		·10	·07	·06	·05	·04	·03	·07	·04	·07	·08	·09	·05	·03	·06	·05	·06	..
11	·11		·06	·08	·10	·14	·12	·09	·08	·06	·09	·11	·09	·13	·08	·08	·07	·07	·08
12	·15		·13	·07	·14	·05	·04	·02	·22	·05	·05	·04	·07	·04	·01	·06	·06	..	..
13	..		..	..	·03	·02	..	..	·02	..	..	..	·09	·14	·01	..	·01	..	·20
14	·32		·30	·29	·41	·39	·34	·25	·45	·28	·40	·31	·23	·19	·25	·32	·32	·29	·06
15	·01		·02	·02	·02	·02	·02	·02	·01	·02	·02	·03	·02	·03	·01	·03	·03	·02	·02
16	·01		..	·02	..	..	..	..	·02	..	..	..	..	..	..	·01	·02	·01	..
17	..		·02	..	..	..	..	·01	..	..	..	..	..	..	..	..	..	..	..
18	·03		·05	·04	·04	·04	·05	·03	·04	·02	·04	·02	·02	·03	·03	·08	·02	·02	..
19	..		..	·01	..	..	..	..	·01	..	..	..	..	..	..	..	·01	..	..
20	..		·01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21	..		·01	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22	..		·02	·02	·02	·02	..	..	·03	·02	..	..	..	..	..	..	·01	·02	..
23	..		..	·02	·01	·02	..	..	·01	·01	..	·01	..	..	..	..	..	..	..
24	..		..	..	..	·01	..	..	·02	..	..	..	·04	..	..	..	..	·01	..
25	..		·04	·01	·03	·03	·05	·06	..	·01	·05	·03	..	..	..	·02	·03	..	·04
26	..		·01	..	..	·02	..	..	·01	..	..	·01	..	..	..	..	..	·01	..
27	·07		·02	·01	·01	..	·03	..	·02	·01	·02	·01	·02	·03	·02	..	·02	·01	..
28	·05		·03	·04	·03	·05	·04	·03	·03	·03	·03	·03	·02	·03	..	·06	·02	·02	·02
29	·05		·05	·05	·04	·03	·03	·01	·06	·04	·03	..	..	·06	·05	·04	·03	·03	·02
30	..		..	..	..	..	..	..	..	..	..	·04	..	..	..	..	..	..	..
31	..		..	..	·02	·01	..	..	..	..	..	..	..	..	..	..	..	..	..
*	2·29	2·62	2·39	2·16	2·53	2·27	2·06	1·54	2·64	1·96	2·52	2·12	1·98	2·05	1·75	2·24	2·25	2·02	1·70
†	21·63	21·92	20·53	20·46	21·81	19·93	18·95	12·60	22·12	15·58	22·66	20·22	20·78	20·86	14·88	20·38	20·66	18·83	17·51

* The figures in this row give the totals for the month. † The totals from January 1st.

NOTES.

(December, 1904.)

The month has been warm, very foggy, and with a rainfall above the average. The most foggy portion was between the 19th and 27th. Owing to the frequent changes in temperature, the month has been an unhealthy one, colds and influenza being very prevalent, and in several places there were many cases of diphtheria and scarlet fever. Snow fell at Reigate, Upper Gatton, and Croydon on the 7th, at Nutfield and Wallington on the 8th, and at Upper Gatton and Greenwich on the 11th. Solar halos were seen at Greenwich and Epsom on the 5th and 11th, and at Upper Gatton on the 11th; whilst a lunar one was seen at Greenwich on the 15th, at Epsom on the 19th, and at Wallington on the 17th. Lightning was seen at Greenwich, Epsom, and Upper Gatton on the 7th. The rainfall varies from the average to about half an inch over the average. The mean temperature is about 1°·8 above the average, and was at Wallington 40°·8, at Croydon and Warlingham 40°·6, at Worcester Park 40°·4, and at Chipstead 39°·8. There were recorded at Wallington 34·9 hours of sunlight, which is 4 hours or two per cent. below the December average of the fifteen years 1886–1900.

F. Campbell-Bayard,
F.R.Met.Soc., *Hon. Sec.*

APPENDIX II.

Falls of 1 Inch and upwards.

January 27th.—Upper Gatton 1·06 in.; Chipstead 1·03 in.

January 30th.—Banstead 1·08 in.; Warlingham 1·04 in.; Kenley (Place Fell) 1·02 in.

May 26th.—Holmbury St. Mary 1·35 in.

July 25th—Greenwich 1·55 in.; Southwark Park 1·38 in.; Deptford 1·31 in.; Telegraph Hill 1·30 in.; Sidcup 1·27 in.; Eltham 1·20 in.; Nunhead 1·09 in.

July 27th.—Greenhithe 1·00 in.

August 31st. — Brockwell Park 1·03 in.; West Wickham 1·02 in.; South Norwood 1·01 in.; Croydon (Waddon New Road), Croydon (Windmill Road), Croydon (Ashburton Road), and Addington (Park Farm) 1·00 in.

October 6th.—Nutfield (old gauge and new gauge) 1·22 in.

December 6th.—Wandsworth Common 1·08 in.; Brockwell Park 1·07 in.; Kingston (Sewage Works and County Hall), 1·05 in.; Knockholt (field gauge) and New Malden 1·02 in.; Surbiton 1·01 in.; Hedley 1·00 in.

CONTENTS.

PROCEEDINGS.

TRANSACTIONS.

Croydon Natural History and Scientific Society.

OFFICERS FOR 1905.

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