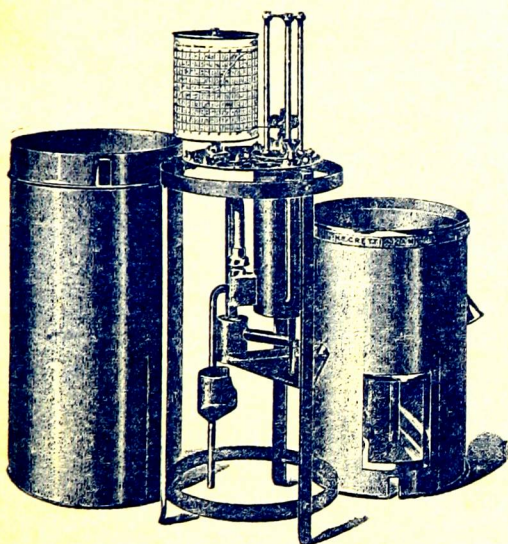


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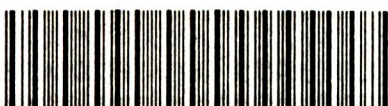
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1913.**

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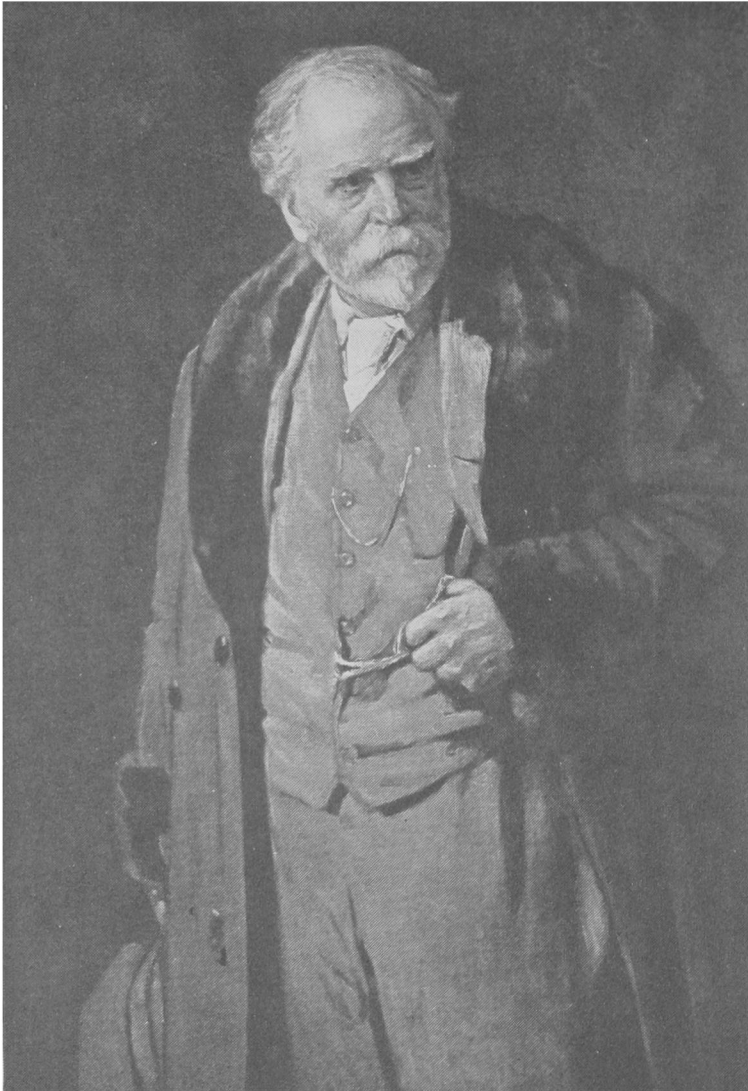
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For Leucealey  
John Murray



# BRITISH RAINFALL, 1913.

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## ON THE DISTRIBUTION OF RAIN

IN SPACE AND TIME OVER THE

BRITISH ISLES

DURING THE YEAR

1913

AS RECORDED BY ABOUT 5,500 OBSERVERS  
IN GREAT BRITAIN AND IRELAND  
AND DISCUSSED

WITH ARTICLES UPON VARIOUS BRANCHES OF RAINFALL WORK

COMPILED UNDER THE DIRECTION OF

HUGH ROBERT MILL

DIRECTOR OF THE BRITISH RAINFALL ORGANIZATION

BY

ROBERT COCKBURN; MOSSMAN

ACTING EDITOR

AND

CARLE SALTER

ASSISTANT DIRECTOR

---

THE FIFTY-THIRD ANNUAL VOLUME

---

WITH MAPS AND ILLUSTRATIONS

LONDON:

EDWARD STANFORD, LTD., 12, 13 & 14, LONG ACRE, W.C.  
1914.

#### ERRATA IN BRITISH RAINFALL, 1907-1912.

In Tables of Evaporation :—

Longitude at Isfield Place, *for* 0°33' 40" E. *read* 0°3' 40" E.

#### ERRATA IN BRITISH RAINFALL, 1912.

- p. [72], line 4 from bottom, *for* Gloucester *read* Clifton.
- p. [216], *for* Albury (Dalton Hall Gardens) *read* Albury (Weston Lodge).
- p. [233], Middlesex 1, Highgate (North Hill Depôt) *for* 3 ft. 10 in., 302 ft. *read* 5 ft. 4 in., 309 ft.
- p. [233], Middlesex 2, Crouch End (Barrington Road) *for* 6 in. ... 140 ? *read* 8 in., 3 ft. 10 in., 122 ft.
- p. [236], Buckinghamshire 3, High Wycombe, *for* 35·45 *read* 35·25.
- p. [297], Yorkshire, W. Riding 7, Doncaster (Hexthorpe Hall) *delete* number of rain days.
- p. [299], Yorkshire, W. Riding, 9, Leeds Museum, *for* 33·53 *read* 34·03.
- p. [308], Northumberland 5, Flotterton, *for* 34·03 *read* 31·31.
- p. [321], Denbigh 1, Cerrig-y-Druidion (Hafod-llan-isaf), *for* 41·20 *read* 42·25.
- p. [321], Denbigh 1, Pentre Voelas (Nant Heilyn), *for* 50·27 *read* 50·53.
- p. [321], Denbigh 1, Cerrig-y-Druidion (Hafod-yr-Onen), *for* 42·31 *read* 42·86.
- p. [333], last line of Table, *for* ,, (Grange) *read* Linlithgow (Grange).
- p. [339], Dumbarton 3, Kilpatrick Hills (Burncrooks Res.) No. 3, *delete the record.*
- p. [349], Aberdeen 2, Aberdeen (King's College), *for* 90 *read* 44.



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## PREFACE.

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THE responsibility for producing this, the Fifty-third volume of BRITISH RAINFALL, rests with Mr. Carle Salter, who has been appointed Assistant Director of the British Rainfall Organization and with Mr. R. C. Mossman, F.R.S.E., who acted temporarily as Editor of the Publications. To these gentlemen is due the credit of the completion of the volume earlier than last year, thus going far towards returning to the practice of ensuring publication before the end of July.

The complete rest for six months which I devoted to a visit to New Zealand, has so far restored my health, that I have been able to contribute to this volume an appreciation of my old master, the late Sir John Murray, one of the Trustees of the Organization, and also the usual Obituary article which contains, I regret to say, the names of many of my own personal friends. I have also written the Director's Report to the Trustees, in which I have given an account of the work of the Organization during the past year, the statistical data for which have been supplied by Mr. Salter.

The plan of the volume remains unchanged. Mr. Mossman has contributed two valuable articles to Part I., dealing respectively with a summary of our knowledge of Heavy Rains in Short Periods and with the remarkable Drought of 1913. The various discussions and summaries compiled by Mr. Salter and Mr. Mossman are indicated in the list of contents by their initials.

H.R.M.

62, CAMDEN SQUARE,  
LONDON, N.W.  
*25th July, 1914.*

I love all that thou lovest,  
Spirit of Delight !  
The fresh Earth in new leaves dressed,  
And the starry night,  
Autumn evening, and the morn  
When the golden Mists are born.

I love Snow, and all the forms  
Of the radiant Frost ;  
I love Waves, and Winds, and Storms—  
Everything almost  
Which is Nature's and may be  
Untainted by man's misery.

*Shelley.*

## FOURTH ANNUAL REPORT OF THE DIRECTOR TO THE TRUSTEES OF THE BRITISH RAINFALL ORGANIZATION.

Adopted at the Meeting of Trustees held at 62, Camden Square, London,  
on July 22nd, 1914. The statistics in this report are revised to  
the date of publication of *British Rainfall*, 1913.

---

**The late Sir John Murray.**—I cannot summarize the year's work of the British Rainfall Organization without first referring to the great loss we have sustained in the sudden death of Sir John Murray. I endeavour elsewhere to give some account of his scientific career, but the first break in the body of the original Trustees demands special notice. Sir John was not only keenly interested in the work of the Organization, but had given much thought to its future development, and only a week before his death he had thrown out a suggestion for associating the Organization, enlarged to include a world-wide study of rainfall, with the Oceanographical Institute, which he proposed to found in London. The loss of such a friend is irreparable, and the sympathy of the Trustees with Lady Murray and the family has already been conveyed to them.

**Application to Development Fund.**—In accordance with a resolution made at the last meeting of Trustees, I drew up an application to the Treasury for a grant from the Development Fund, for the purpose of increasing the utility of *British Rainfall* by extending the annual volume so as to give figures of monthly rainfall in the general table, and in other ways. Stress was laid on the public utility of the work of the Organization in connection with the resources of the country as utilized in many different departments. A reply was received in response to which a supplementary statement was drawn up, under the superintendence of several of the Trustees, giving additional particulars of the bearing of the study of rainfall upon agriculture in this country. The matter is now, I understand, under consideration.

**Routine Work.**—There has been no break in the continuity of the routine work of the Organization during the year. The meteorological observations at 62, Camden Square, both by self-registering instruments and by eye-observations at 9 a.m., 3 p.m., and 9 p.m., have been carried on. The observations, instituted by the late Mr. G. J. Symons, are now complete for a period of fifty-six years, and constitute a unique record of the climate of London. A summary of the observations has been sent to the Meteorological Office by telephone for publication in the *Daily Weather Report*, and a full return for the *Monthly Weather Report*.

The premises at 62, Camden Square have been maintained in good repair and, during the year, the outside of the house has been pointed and repainted.

For the year 1913 the number of postal communications received at Camden Square was 18,538, or 49 more than in 1912. The number of letters and other communications despatched in the course of the year was 12,565, in addition to 12,028 packets sent out on behalf of the Organization through the printers. The number of individual letters sent out, exclusive of circulars and duplicated correspondence, amounted to 1,933.

The number of rainfall returns from all sources received in response to the circular sent out at the end of December, 1913, and to subsequent requests during the early part of 1914, was 5,420; during April and May second applications were sent to 459 Observers, and 229 replies were received, yielding 220 returns. Letters were sent in July in 81 cases to Observers who had not responded to second applications, and from these 39 returns were received. The total number of records appearing in *British Rainfall*, 1913, is 5,370, an increase of 98 over the previous year. The number of old records lost was 308. In addition to the 5,370 records printed, 309 were received which were either imperfect or had to be excluded on account of obvious errors. Complete daily records were received from 3,370 stations, and less complete daily records from 364 others. The work of testing the accuracy of rain gauges and measuring glasses has been considerably increased by the introduction during 1913 of a cheaper form of standard Snowdon gauge, and also possibly by the reduction in the fees for testing referred to in my last report. The total number of rain gauges submitted, from July 24th, 1913, to July 29th, 1914, was 206, and of measuring glasses 287, and certificates were issued in all but six cases.

**The Staff.**—The arrangement referred to in last year's report, by which my duties as Director were carried out during my absence by Mr. Carle Salter, as Assistant Director, and Mr. R. C. Mossman, as Editor of the Publications, has worked in a highly satisfactory manner. I am much pleased to find that the experiment has proved so successful, and I am sure that the Trustees will agree with me in recognising the early completion of *British Rainfall, 1913*, as the best proof which could be given of the ability of my substitutes, and of the loyal co-operation and unfailing diligence of all members of the Staff.

Mr. Mossman undertook the whole responsibility of editing *Symons's Meteorological Magazine*, and co-operated with Mr. Salter in the Editorship of *British Rainfall, 1913*. The various discussions for which he and Mr. Salter are respectively responsible are indicated in the Table of Contents. In the occasional absences of Mr. Salter on inspection or other duties, Mr. Mossman took charge of the general work of the Office, and at all times he assisted in the various pieces of research work which were in progress. I cannot thank him too warmly for his kindness in coming to my assistance in a time of great perplexity, and for the resolute and efficient way in which he mastered a great amount of irksome detail. It is largely on account of the ease of mind which his support of Mr. Salter secured to me that I am now able to resume a measure of responsibility, and I greatly regret that he is obliged to return to Buenos Ayres at an earlier date than he at first anticipated.

On Mr. Carle Salter fell the greater share of responsibility in conducting the various departments of the rainfall work, for which he was well prepared by his 17 years of experience at Camden Square, and I have been able to give my unqualified approval to all that he has done. In recognition of his great services to the Organization at a critical time, I hope that the Trustees will make permanent the temporary appointment of Mr. Salter as Assistant Director.

If this is done, I can look forward to delegating the routine work to him, and thus I may continue as Director to superintend the work of the Organization.

Mr. Lamport has again had complete charge of the monthly observations, the compilation of the data for the discussion of maximum falls, as well as the testing of rain gauges and measuring glasses. He has now carried out these duties for 27 years, and

throughout that time has maintained a standard of unimpeachable accuracy. Mr. H. E. Carter has, as usual, been entrusted with the lion's share of the statistical work; the volume of which is always increasing, and I think it right to call special attention to the cheerful alacrity with which he has responded to increased responsibilities. He has also done the heaviest part of the preparation of the Remarks of Observers, and has assisted with the Magazine, especially in reporting the discussions at the meetings of the Royal Meteorological Society. Mr. D. S. Salter has the whole responsibility of the Cartographical Department, which includes not only the preparation of the numerous maps which appear in *British Rainfall* and *Symons's Meteorological Magazine*, but also a large amount of work in finding and recording the positions of all rainfall stations on large scale maps, plotting the monthly, annual and, in many cases, the daily rainfall, as well as taking part in the various researches and in the professional work. The difficulty of obtaining sufficiently accurate skeleton maps of the British Isles, for the very precise cartometric determination of the volume of rain, has often hampered the work, and I am pleased to find that he has on his own initiative now completed an original reduction of the Ordnance Survey Map. This is a fine piece of work, and will greatly facilitate future measurements. I should be glad if the Trustees would sanction the change of Mr. Carter's designation from Statistical Assistant to Chief Computer, and of Mr. D. S. Salter's from Cartographical Assistant to Cartographer. I much regret that Mr. F. W. Corry, who had been a most efficient and trustworthy shorthand clerk for two years, has resigned. He left on January 20th, 1914, and the duties of shorthand-typist have been filled since February 21st by Miss Greenwood.

**Observers and Special Services.**—The work of the British Rainfall Organization is essentially co-operative, and I have always felt, as Mr. Symons did, that my main duty as Director is to encourage the army of voluntary Observers to adopt uniform methods of obtaining and recording their data, to assist them by calling their attention to possible errors, and by discussing the results systematically to set out the permanent value of the whole in a form available for application to scientific and practical problems. While any Observer may feel that he has done a worthy public service by forwarding an accurate record of rainfall at an early date, there are many who go far beyond this, and to these special

recognition is due. The first position amongst rainfall Observers must be given to the small band of enthusiasts who have kept up their observations throughout the whole period of the publication of *British Rainfall*, and in the list of the survivors of the contributors to *British Rainfall*, 1860-61, given below their names are printed in small capitals :—

R. BURRELL, Esq., Westley, Bury St. Edmunds.  
 W. S. CLARK, Esq., Street, Somerset.  
 D. Doncaster, Esq., York.  
 Dr. W. C. LAKE, Teignmouth.  
 Rev. C. B. Mount, Bath.  
 LORD PECKOVER OF WISBECH, Wisbech.  
 Col. Michael Foster Ward, Slough.  
 J. G. Wood, Esq., London.

The list is shortened this year by the death of Mr. W. Dillworth Howard, grandson of the illustrious climatologist of London, Luke Howard.

Next to the veterans of 1860, honour is due to those Observers who charge themselves with the encouragement of rainfall observations in special districts, as their labours greatly facilitate the work of the Organization. These are so numerous that I fear the following list is incomplete. They include Mr. F. Campbell Bayard, Rev. H. A. Boys, Mr. W. H. Brooks, Mr. A. Collenette, Mr. A. Cross, Mr. R. Stevenson Henshaw, Mr. J. Hopkinson, Mr. D. W. Horner, Mr. A. Lockwood, Mr. C. A. Markham, Miss Marshall, Sir John W. Moore, Mr. L. S. Powell, Mr. A. W. Preston, Mr. B. T. Rowsell, Mr. C. Stirling, and Mr. A. J. Walker.

Special help in the compilation of the rainfall statistics has again been rendered by many scientific and public bodies, including the Meteorological Office, the Royal Meteorological Society, the Scottish Meteorological Society, the Commissioners of Northern Lighthouses, the Shannon Navigation Office, a very large number of Municipal and Waterworks authorities in all parts of the British Isles, numerous Railway and Canal Companies, in particular the Great Central Railway Company, the British Aluminum Company, the Snowdon Power Company, the Croydon and Hertfordshire Natural History Societies, the Cardiff Naturalists' Society, the Dorset Field Club, the North Devon Athenæum, the Mid-Wessex Rainfall Association,

the Cornwall County Council, the City of Nottingham, and the Borough Meteorologists of a large number of towns.

Among provincial newspapers we have been particularly indebted to the *Surrey Advertiser*, the *East Anglian Daily Times* and the *Montgomery County Times*. After appearing for nearly 50 years in the *Norfolk Chronicle* the Norfolk rainfall tables, so ably conducted by Mr. A. W. Preston of Norwich, have been transferred to the *Eastern Daily Press*.

During the last few years arrangements have been made by which the original returns received by many local rainfall organizations are sent regularly for comparison with those received by *British Rainfall*. This comparison has proved helpful in eliminating accidental errors of copying, and has also had the advantage of introducing a large number of Observers whose records had previously been received only at second-hand. It is hoped that further extensions in this direction may be possible. In the case of Mr. Preston's tables of rainfall at stations in Norfolk, those for Northamptonshire collected by Mr. Markham, and the returns received by the *Surrey Advertiser* and the *Montgomery County Times*, the latter collected by Mr. W. H. Brooks, the original returns are sent to the British Rainfall Organization for preservation.

Several Observers have during the year presented copies of those volumes or parts of *British Rainfall* and *Symons's Meteorological Magazine*, which are rare or out of print, thus enabling a few sets to be completed.

**Inspection of Rain Gauges.**—Every opportunity has been taken by each member of the staff to visit rainfall observing stations whenever occasion offers. On account of my long absence from the country I have been unable to inspect many stations, and the total number of gauges visited is, therefore, rather smaller than it has been for several years past. The results of inspection are so valuable that the system ought to be greatly extended. I have visited 4 stations in Argyllshire. Mr. Carle Salter has inspected 111 gauges, distributed in the following counties:—8 in London, 6 in Surrey, 12 in Sussex, 9 in Hampshire, 6 in Middlesex, 7 in Hertfordshire, 9 in Essex, 11 in Cornwall, 6 in Yorkshire, 17 in Brecon, 8 in Denbigh, 3 in Merioneth, 5 in Stirlingshire, 4 in Perthshire. Mr. Carter has inspected 9, of which 8 were in Surrey and 1 in Hertfordshire, and Mr. D. S. Salter 5, of which 3 were



in Surrey, 1 in Hertfordshire and 1 in Oxfordshire. The total number inspected was 129.

All stations which have been visited by any member of the Staff are indicated in the General Tables by †, and the number so marked in the present volume is 734.

Much courteous help in the work of inspecting has been rendered by Observers, and Mr. Salter has been assisted in this way by Mr. L. S. Powell of Ashley, Mr. A. P. Jenkin of Redruth, Mr. F. O. Kirby of Doncaster, and Miss Pringle of Dorking.

**British Rainfall, 1913.**—No changes have this year been introduced in the arrangement of the volume. I think that the modifications made during recent years have resulted in as logical an order of the contents as is practicable. The reasons for this order are to some extent Editorial as it is essential so to arrange the work as to enable the various parts of the book to be proceeded with simultaneously and thus accelerate the production of the volume. The increase in the number of returns dealt with and the more elaborate methods of presenting the facts which have been introduced recently, make it increasingly difficult for the staff to condense the work into the seven months which is allowed for it. Mr. Salter and Mr. Mossman, on whom the whole credit and responsibility of the new volume rests, wish to acknowledge the great help they have received from the printers, Messrs. Shield and Spring, in seconding their efforts to complete the volume at an early date without any relaxation of the traditional safeguards of accuracy. Complaints are often received from Observers who consider that the date of publication is so late as to deprive the volume of much of its interest. The Editors have always found that the main cause of delay is the dilatoriness of a comparatively small number of Observers whose records are not sent in until July, thus preventing the due effect of the splendid promptitude of the great body of Observers who respond in January.

**Symons's Meteorological Magazine.**—Except when the 16th of the month fell on a Sunday, the Magazine, under the temporary Editorship of Mr. R. C. Mossman, has been published without interruption on that date. Although the circulation continues to grow slowly, the increase is not yet sufficient to allow of any permanent expansion in the size, which remains on the

average at 20 pages per month. This restriction of space has frequently prevented the prompt publication of interesting letters from Observers, and in some instances the delay of a month has deprived these communications of their value, so that it was no longer useful to insert them, much to the regret of the Editor. I heartily wish that it were possible to introduce the Magazine to the notice of all those who would be interested in it did they know of its existence. Next year it enters on its fiftieth Annual Volume and the opportunity would be a good one—did funds permit—to effect a permanent enlargement of this—the only periodical in the English language devoted exclusively to Meteorology.

**Supply of Data to the Public.**—The preparation of a map of the rainfall of each month within about a fortnight of its completion has been continued, the records of about 1,000 stations being used for the purpose. Copies of these maps, drawn in lithographic ink ready for transferring to stone, have been sent regularly to the Meteorological Office and have been published in the *Monthly Weather Report*. Other data supplied under this heading has included records of rainfall sent to the Royal Commission on Sewage Disposal, the University College for Wales, to the Associated Newspapers, Ltd., and to various engineers and insurance companies for professional use.

**Scientific Work and Advice.**—In addition to the ordinary routine work, involving the preparation of *British Rainfall* and the monthly numbers of *Symons's Meteorological Magazine*, the amount of correspondence with Observers and intending Observers on points in connection with their observations has, as usual, been very large. Numerous visitors have called at 62, Camden Square, for the purpose of discussing similar matters, and every care has been taken to give helpful counsel wherever possible. Advice has also been given on the construction and maintenance of percolation and evaporation gauges and similar allied branches of rainfall work.

(A.) *Annual Maps.*—Owing to my unavoidable absence comparatively little progress has been made in the work on the standard maps of the annual rainfall of the British Isles. Mr. Carle Salter has revised the isohyetal lines on the annual maps of Ireland back to 1885 and some progress has been made in evaluating the maps for the purpose of calculating the averages.

(B.) *Scientific Papers*.—In my absence Mr. Mossman and Mr. Carle Salter contributed to the Royal Meteorological Society a paper dealing with the Great Rainstorm at Doncaster on September 17th, 1913, and this was read at the meeting on December 17th. Mr. Salter also contributed a short supplement to my investigation of the daily rainfall over the Exe Valley, which was undertaken for the Rivers Committee of the Research Department of the Royal Geographical Society, and he attended the final meeting of the Committee in order to give an account of the whole investigation. Mr. Mossman and Mr. Salter have taken part in the discussion of papers read before the Royal Meteorological Society, and in the informal meetings at the Meteorological Office. They have also served on the Council of the Royal Meteorological Society. Mr. Salter delivered a popular lecture on "Rain," at the Technical College, Colchester.

(C.) *Realm of Nature*.—I have prepared a new edition of the *Realm of Nature*, in the course of which prominence is given to the part played by water in all the phenomena of Nature. The chapters devoted to the atmosphere, including rainfall, have been re-written and enlarged, and I have to thank Mr. Mossman and Mr. Donald Salter for their co-operation in preparing a completely new set of coloured maps, in which the latest data of the distribution of the phenomena dealt with in physical geography have been utilized.

(D.) *Visit to New Zealand*.—During my visit to New Zealand in the early part of 1914, I visited many of the Meteorological Stations in different parts of the Dominion, and was received with much kindness by the Government Meteorologist, Mr. D. C. Bates. At his request I made suggestions, based upon the experience of the British Rainfall Organization, for the development of climatological work in New Zealand. Considering the small population of the Dominion, and the difficulty of communication in many places, the rainfall observations already available are most creditable, and the provisional rainfall maps, drawn by Mr. Bates, show the relation of rainfall to configuration and wind direction in a very striking way. I had an opportunity of pointing out to the Commissioners of the New Zealand Civil Service the importance of improving the detail of these maps by increasing the number of rainfall stations and the resources of the Dominion Meteorologist's Office.

(E.) *Supply of Information*.—During the first 10 days of January a summary of the chief features of the rainfall of 1913 was prepared

and contributed to *The Times*, and during the year letters have been sent to that newspaper on unusual meteorological occurrences in London, on which light is thrown by the Camden Square record. Information has also been freely given to representatives of other newspapers when desired. Among other institutions and individuals to whom information of various kinds has been supplied may be mentioned the University College for North Wales, the Leicestershire County Council, the Grand Junction Canal, the Ashton-under-Lyne Water Works Department, the Royal Observatory of Belgium, M. Henryk Arctowski and Mr. J. Hopkinson. The Camden Square rainfall observations for a short period were in one instance supplied to an Observer for the use of a Judge in giving judgment on a case brought before him.

On several occasions permission has been granted for the reproduction of illustrations appearing in the publications of the Organization, and information has been supplied for the purpose of the preparation of scientific papers and lectures.

The Organization was represented on the Science Committee of the Anglo-American Exposition, 1914, and an exhibit of rainfall maps and apparatus was prepared and set up at Shepherd's Bush. Messrs. Casella & Co. and Messrs. Negretti & Zambra were good enough to assist in making this exhibit representative by the loan of a number of instruments. At the request of the Meteorological Office a set of the publications of the Organization has been lent to form part of the Meteorological Section at the Royal Agricultural Show at Shrewsbury. A standard rain gauge has also been lent for permanent exhibition at the Meteorological Office, South Kensington. The Organization has kept in touch with the principal makers of rain gauges, and has given gratuitous advice on all occasions when an opinion has been asked for.

**Professional Work of Director.**—Under clause 25 of the Trust Deed, I have continued to act as rainfall expert to the Metropolitan Water Board. In this capacity, assisted by Mr. Salter, I have supplied to the Board each month a full report on the rainfall over the valleys of the rivers Thames and Lee, accompanied by appropriate maps, and an annual report has also been supplied for publication. A large number of the rain gauges maintained by the Board were also inspected and reported upon during the year. Reports have also been made on the rainfall of the gathering grounds

of the Birmingham and Birkenhead Water Works, and, in the case of the latter, a complete inspection was made by Mr. Salter during March, 1914. I have also continued to act as Referee under the Abertillery and District Water Act, 1910, and have in the course of the year been consulted and have reported upon the rainfall of certain areas in Scotland and in the West of England. Mr. Salter has given evidence on my behalf before a Select Committee of the House of Lords on a private Bill promoted by the Corporation of Glasgow, and also in the case of a civil action, involving damage by flooding, heard in the Court of Session at Edinburgh. Other professional work of a less important nature has included the preparation of detailed rainfall maps of two districts in North and Central Wales, reports on the mean annual rainfall in certain parts of Wales for the use of the King Edward Memorial Committee for Wales, and regular monthly rainfall tables supplied to the Conservators of the river Thames.

**The General Fund.**—While under no obligation to submit accounts of the General Fund, for the collection and disposal of which I am responsible, and the sufficiency of which to meet all the expenses of the Organization I personally guarantee, I again have pleasure in submitting, in a form comparable with the statements of previous years, a summary of the income and expenditure. By a personal arrangement with Mr. Mossman his services involve no charge upon the General Fund. The Subscription Book, the Ledger, and all other account books are laid before the Trustees, and I shall be glad to show them to any subscriber who calls at the Office for that purpose.

*Receipts on Account of British Rainfall Organization, 1913.*

	£	s.	d.
Subscriptions ... ..	1170	10	9
Sales to Public ... ..	76	15	6
Advertisements ... ..	52	3	0
Certificates ... ..	12	8	0
Supplying Rainfall Data ... ..	11	10	2
Maps and Literary Work ... ..	25	0	0
Interest on Endowment Fund and Bank Account ...	64	18	4
<b>TOTAL ... ..</b>	<b>£1413</b>	<b>5</b>	<b>9</b>

*Expenditure on Account of British Rainfall Organization, 1913.*

	£	s.	d.
<i>British Rainfall and Meteorological Magazine</i> (including Postage) ... ..	522	2	6
Observers and Instruments ... ..	34	14	2
Salaries and Assistance ... ..	682	3	7
Printing, Stationery and Establishment Expenses ...	174	3	9
Extra Postage, Telephone, Petty Cash and Miscellaneous Expenses ... ..	56	9	5
	<u>£1469</u>	<u>13</u>	<u>5</u>
DEFICIT, met by Director ...	<u>£56</u>	<u>7</u>	<u>8</u>

HUGH ROBERT MILL.

62, CAMDEN SQUARE,  
LONDON, N.W.

**TREASURER'S REPORT ON ENDOWMENT FUND.**

## STATEMENT FOR THE YEAR 1913.

RECEIPTS.				PAYMENTS.			
		£	s. d.			£	s. d.
Balance from 1912 ... ..	50	1	5	Purchase of £123 5s. New			
Miss E. Burton ... ..	5	0	0	South Wales 3% Inscribed			
J. W. Woods, Esq. ... ..	5	0	0	Stock ... ..	100	0	0
R. Cooke, Esq. (4th donation)	4	5	0				
F. Druce, Esq. ( " " )	25	0	0				
A. F. Sharman-Crawford, Esq.							
(4th donation) ... ..	10	0	0				
Sums under £2 ... ..	4	18	0	Balance ... ..	4	4	5
	<u>£104</u>	<u>4</u>	<u>5</u>		<u>£104</u>	<u>4</u>	<u>5</u>

On July 22nd, 1914, the Trustees held as the Endowment Fund, £2,151 11s. 3d., North British Railway 3% Debenture Stock, £123 5s., New South Wales 3% Inscribed Stock, and £14 2s. 11d., cash.

FRANCIS DRUCE,

*Treasurer, Endowment Fund.*

62, CAMDEN SQUARE,  
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*July 22nd, 1914.*

# THE BRITISH RAINFALL ORGANIZATION.



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Lewis, The Hon. H. C. ....	1	16	2	Noel, E., Esq. ....	1	10	0
Lingard, T. D., Esq., J.P. ....	1	1	0	Norris, Miss A. H. ....	1	0	0
Little, Mrs. ....	1	0	0	Oakes, Rev. B. Porteous ....	1	10	0
Llewelyn, Sir J. T. D., Bart. ....	1	11	0	O'Brien, Miss A. K. ....	1	10	0
Llewelyn, C. Venables, Esq. ....	1	1	0	Oliver, Mrs. ....	1	0	0
Llewelyn, F. D., Esq. ....	1	17	6	Otter, R. H., Esq., the late ....	1	1	0
Lloyd, R. Lewis, Esq. ....	1	1	0	Ouvry, P. Arnold, Esq. ....	1	0	0
Lodge, L. W., Esq. ....	1	3	0	Padwick, H., Esq. ....	3	0	0
Lomer, Miss. ....	2	10	0	Pain, Percy, Esq. ....	1	1	0
Longfield, R. E., Esq. ....	1	0	0	Palairret, H. H., Esq. ....	2	0	0
Longstaff, Dr. G. B. ....	2	0	0	Palmer, A., Esq., J.P. ....	1	11	0
Lovell, The Earl of ....	1	5	0	Palmer, H., Esq. ....	1	12	6
Lowis, A. E., Esq. ....	1	1	0	Parker, Miss ....	1	0	0
Lowther, The Rt. Hon. J.W., M.P.	1	10	0	Parsons, Miss ....	1	1	0
Macadam, Miss ....	1	0	0	Paterson, Rev. T. M. B. ....	1	5	0
McClean, W. N., Esq. ....	1	1	0	Peal, H. W., Esq. ....	1	0	0
Mace, J. Ellis, Esq. ....	2	7	0	Peckover of Wisbech, Lord ....	5	15	0
McEuen, E. S., Esq. ....	1	15	0	Peel, W., Esq. ....	1	11	0
McEwan, J., Esq. ....	1	1	0	Penfold, Miss ....	1	1	0
Machin, A. V., Esq. ....	1	1	0	Penrose, Dr. F. G. ....	1	5	0
McInnes, E. Esq. ....	1	0	0	Philipson-Stow, Lady ....	1	11	6
McInroy, Col. Chas., C.B. ....	1	1	0	Phipps, Col. R. W. (late R.A.) ..	1	11	6
Maclean of Ardgour, Capt. A. J. N.	1	0	0	Pickard, W., Esq. ....	1	16	0
Macnamara, H. V., Esq. ....	2	0	0	Pink, H. R., Esq. ....	1	1	0
Mainwaring, Col. C. S. ....	1	0	0	Pirie-Gordon, E., Esq., J.P. ....	1	0	0
Mair-Rumley, J. G., Esq. ....	2	2	0	Player, J., Esq. ....	1	1	0
Maitland-Heriot, W., Esq. ....	1	0	0	Plevins, E. N., Esq. ....	2	4	0
Major, R. H., Esq. ....	1	1	0	Pocklington, Miss ....	1	2	0
Malden, E., Esq. ....	1	0	0	Powell, C. M., Esq. ....	1	0	0
Mann, E., Esq. ....	1	0	0	Powell, Legh S., Esq. ....	1	0	0
Mansergh, Lt.-Col. A. W. ....	1	0	0	Preston, A. W., Esq. ....	1	0	0
Mansergh & Sons, Messrs. J., C.E.	2	2	0	Price, C., Esq. ....	2	2	0
Markham, C. A., Esq. ....	1	0	0	Pryor, M. R., Esq. ....	1	0	0
Marling, Capt. W. B. ....	1	10	0	Pullar, Laurence, Esq. ....	5	0	0
Marling, Sir W. H., Bart. ....	1	1	0	Radford, Miss ....	1	0	0
Marshall, Mrs. ....	5	15	0	Radnor, The Earl of ....	1	17	0
Martineau, Miss M. C. ....	1	0	0	Ramsden, R. C., Esq. ....	1	0	0
Mason, Mrs. T. ....	1	0	0	Ramsden, Miss ....	1	1	0
Masterman, Mrs. ....	1	16	0	Rankin, Sir J., Bart., M.P. ....	1	1	0
Matthews, W., Esq., C.E. ....	1	1	0	Ransom, F., Esq. ....	1	5	0
Maw, C. T., Esq. ....	1	1	0	Rashleigh, Miss ....	1	0	0
Mawley, E., Esq. ....	1	2	0	Rashleigh, Rev. A. S. ....	1	0	0
Maxwell, Miss. ....	1	0	0	Rashleigh, E. S., Esq. ....	1	16	0
Mead-Briggs, T. H., Esq. ....	1	1	0	Rawstorne, Mrs. ....	1	2	6

	£	s.	d.		£	s.	d.
Rayner, F., Esq., C.E. ....	1	1	0	Stothert, Percy K., Esq., C.E. ..	1	1	0
Rees, Blethyn T., Esq., C.E. ....	1	1	0	Strachan & Weekes, Messrs., C.E.	1	1	0
Reynolds, E. W., Esq. ....	1	0	0	Strachey, J. St. Loe, Esq. ....	1	1	0
Richardson, R., Esq. ....	1	6	0	Straker, J. H., Esq. ....	1	1	0
Rideout, Rev. G. A. ....	1	0	0	Strutt, G. Herbert, Esq. ....	1	1	0
Ridgeway & Co., Ltd., Messrs. T.	2	2	0	Stunt, W. C., Esq. ....	1	0	0
Robertson, Robert, Esq. C.E. ....	2	0	0	Sturge, R. F., Esq. ....	1	1	0
Robins, F. Sanderson, Esq., C.E. ..	1	0	0	Sturt, Miss K. M. ....	2	0	0
Robinson, Stephen, Esq. ....	1	1	0	Sugden, H. G., Esq. ....	1	5	0
Robson, J. W., Esq. ....	1	5	0	Swinton, A. E., Esq. ....	1	8	6
Rogers, A. E., Esq. ....	1	0	0	Tabor, H. S., Esq. ....	1	0	0
Rogers, H. Esq. ....	1	0	0	Tailyour, W. Stewart, Esq. ....	1	1	0
Rogers, H. K. G., Esq. ....	1	10	0	Tapp, A. March, Esq. ....	1	0	0
Rogers, Col. J. M., D.S.O. ....	1	10	0	Tatham, Leonard J., Esq. ....	1	5	6
Rogers, R. B., Esq. ....	1	0	0	Tatham, M. T., Esq. ....	1	0	0
Rolleston, Col. W. V. ....	1	0	0	Tatton, T. Egerton, Esq. ....	1	15	0
Roper, W. E., Esq. ....	1	1	0	Tawney, Miss E. M. ....	2	2	6
Rose, Sir Philip F. Bart. ....	1	0	0	Taylor, C. E., Esq. ....	1	1	0
Ross, Rev. J. C. ....	1	13	6	Taylor, Capt. E. R. ....	5	0	0
Russell, The Earl ....	1	0	0	Taylor, F. J., Esq. ....	1	0	0
Rutter, H. F., Esq., ....	1	1	0	Taylor & Sons, C.E., Messrs. ....	1	1	0
St. Maur, Lord Ernest ....	1	0	0	Taylor, W., Esq. ....	1	1	0
Sanderson, Mrs. ....	2	0	0	Tempest, J. H., Esq. ....	1	1	0
Schuster, Rev. W. Percy ....	1	1	0	Tew, E. G., Esq. ....	1	0	0
Scott, Sir Benjamin ....	1	1	0	Thomas, J. F., Esq. ....	1	0	0
Scott, C. H., Esq. ....	1	1	0	Thomas, R. E. S., Esq. ....	2	0	0
Scott, John, Esq. ....	1	1	0	Thompson, G. Rodie, Esq. ....	1	0	0
Scott, Lady Mary ....	1	0	0	Thompson, Mrs. Heywood ....	1	1	0
Scott, Mason T., Esq. ....	2	2	0	Thompson, Mrs. H. Yates ....	1	1	0
Searle, G., Esq. ....	2	0	0	Thomson, J., Esq. ....	1	1	0
Sedgwick, W., Esq. ....	1	0	0	Tidswell, R. J., Esq. ....	1	1	0
Selby, C. F., Esq. ....	1	1	6	Topham, Rev. H. G. (1913) ....	1	1	0
Senior, F. G., Esq. ....	1	0	0	Towse, Sir J. Wrench ....	1	10	0
Sharman, N. Pearce, Esq. ....	1	0	0	Travers, Major J. A. ....	1	10	0
Sharman-Crawford, A. F., Esq. ....	2	0	0	Trench, J. A., Esq. ....	1	1	0
Shedden, George, Esq., J.P. ....	2	0	0	Trevelyan, Lady. ....	1	0	0
Shepherd, J. W., Esq. ....	1	0	0	Tritton, J. H., Esq. ....	2	12	0
Simpson, Edward, Esq., J.P. ....	1	0	0	Truell, Rev. W. H. A. ....	1	1	0
Sing, Alex. M., Esq. ....	1	1	0	Tyacke, G. Ashley, Esq. ....	1	2	0
Sing, Roger P., Esq. ....	1	1	0	Urmson, Rev. T. ....	1	15	0
Sligo, The Marquis of ....	1	0	0	Vernon, J. H., Esq. ....	1	1	0
Smith, Rupert T., Esq., C.E. ....	1	1	0	Vint, W. F., Esq. ....	1	1	0
Smith, W. A., Esq. ....	1	1	0	Waddingham, T. J., Esq. ....	2	2	0
Smyth, J., Esq., C.E. ....	1	11	6	Waldegrave, The Earl ....	1	17	6
Smyth, Lady ....	1	10	0	Walker, A. J., Esq. ....	5	0	0
Snowden, Rev. H. C. V. ....	1	2	6	Walker, A. O., Esq. ....	2	0	0
Soames, Rev. H. A. ....	1	1	0	Walker, J. H., Esq. ....	1	0	0
Soames, Capt. R. ....	1	5	0	Walter, Rev. F. W. (2 years) ....	1	0	0
Somerset, His Grace the Duke of	1	1	0	Walters, F. R., Esq., M.D. ....	1	1	0
Southall, H., Esq. ....	1	0	0	Ward, Col. M. F. ....	1	0	0
Southall, J. T., Esq. (3 years) ....	2	0	0	Waterhouse, E., Esq. ....	1	0	0
Spencer, Rev. A. ....	1	0	0	Webb, Capt. F. D. ....	1	0	0
Staines, A. J., Esq. ....	1	5	0	Wedderburn, Dr. E. M. ....	1	0	0
Stansfeld, A. W., Esq. ....	1	0	0	Welch, J., Esq. ....	1	1	0
Stanton, Miss E. R. ....	1	1	0	Welch, W., Esq. ....	1	0	0
Stevenson, Dr. W. Sinclair ....	1	0	0	Welch, W. G., Esq. ....	2	0	0
Steward, J. J., Esq. ....	1	15	0	Weldon, E., Esq. ....	1	1	0
Steward, Mrs. Herbert ....	1	0	0	Weller, G., Esq. ....	1	0	0
Stewart, Sir Mark J. McT., Bt., M.P.	1	1	0	Westminster, His Grace the Duke of	1	0	0
Stewart, Rev. W. E. ....	1	10	0	Weston, G., Esq. ....	1	1	0
Stirling, C., Esq. ....	1	0	0	Weston, J., Esq. ....	1	1	0
Storey, F., Esq. ....	1	1	0	Whitaker, B. I., Esq. ....	1	0	0

	£	s.	d.		£	s.	d.
Whitchurch, J. A., Esq. ....	1	1	0	Wilson, Sidney, Esq.....	1	1	0
White, J. Martin, Esq.....	1	1	0	Wilson, W. A., Esq. ....	1	0	0
White, J. N., Esq.....	1	0	0	Wilson, Mrs. ....	1	1	0
Whittington, C. J., Esq. ....	1	1	0	Wood, J. G., Esq. ....	2	2	0
Widnell, E. H., Esq.....	1	1	0	Wood, L. E., Esq. ....	1	1	0
Wilde, Mrs. ....	1	0	0	Woodforde, Col. W. B.....	1	0	0
Wilkin, Mrs. A. ....	1	6	0	Woodhouse, Miss F. D. ....	1	1	0
Wilkin, F., Esq. ....	2	0	0	Woodruff, Dr. J. W. ....	1	0	0
Wilkinson, W. King, Esq. ....	2	2	0	Woods, J. W., Esq. ....	1	0	0
Williams, Rev. Leonard A.....	1	1	0	Wordsworth, Gordon G., Esq. ..	2	0	0
Williams, Morgan B., Esq., the late	1	0	0	Worthington, W. B., Esq., C.E..	1	0	0
Wilson, Albert, Esq.....	1	15	0	Yool, Mrs. H. ....	1	7	0
Wilson, Alex M., Esq. ....	1	0	0				

Cheques should be crossed "National Bank, a/c British Rainfall Organization, General Fund," and sent to DR. H. R. MILL, 62, Camden Square, London, N.W.

THE PRINCIPAL DONATIONS TO THE ENDOWMENT FUND RECEIVED  
UP TO JULY 22ND, 1914, WERE AS FOLLOWS:—

Boughton, Miss F. H. Rouse .. .. .	£100
Brook, Charles L., Esq. ....	£500
Druce, Francis, Esq. .. .. .	£200
Freshfield, D. W., Esq. .. .. .	£200
Mellish, Lt.-Col. H. ....	£200
Morrison, W., Esq. ....	£215
Murray, the late Sir John, K.C.B., F.R.S. .. .. .	£100

FOR DONATIONS RECEIVED DURING 1913 SEE TREASURER'S REPORT ON P. 20. BETWEEN  
THE END OF 1913 AND JULY 22ND, 1914, THE FOLLOWING FURTHER DONATIONS  
HAVE BEEN RECEIVED:—

	£	s.	d.
Woods, J. W., Esq. (2nd donation) .. .. .	2	2	0
Cooke, R., Esq. (5th donation) .. .. .	4	5	0
Sums under £2 .. .. .	3	11	6
Total .. .. .	£9	18	6

This Fund is invested by the Trustees, and the Income paid into the General Fund. Donations may be sent to FRANCIS DRUCE, Esq., at 62, Camden Square, London, N.W., and cheques crossed, "National Bank, a/c British Rainfall Organization, Endowment Fund."

**The late Sir John Murray, K.C.B., F.R.S.**

*Trustee of the British Rainfall Organization.*

BY HUGH ROBERT MILL.

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FROM the day when, as a schoolboy in Canada, he repudiated a series of high-sounding Christian names with which his parents had endowed him, and retained only the one monosyllable of the group, John Murray was a law unto himself. In later life not all of his acquaintances, scientific or social, understood him, for he dropped into no pigeon-hole of conventional classification, and even to his few friends he was always revealing new recesses of his personality, or flashing new lights on familiar aspects of character, so that none could say that he really knew him as other friends were known. I cannot hope to give a picture of the man as he was, but I must attempt to give some idea of him as he appeared to me during the last thirty years, and especially in the period of our close association in the early days of the activity of the Scottish Marine Station.

I first saw John Murray (in 1878 I think) when he was delivering a lecture on the results of the Challenger Expedition, to the members of the Edinburgh Literary Institute. A thick-set man with a defiant air and a voice of tremendous power. A dominant shaven chin surrounded by confluent auburn moustache and whiskers in the manner of the period. His was a style of speaking I had never heard before—not an echo of the learning of books, but the authoritative tone of one who described what he had himself seen and reasoned out. The account he then gave of the origin of deep-sea deposits was a revelation of the workings of Nature that can never be forgotten. Here was a man, as yet unknown to fame, who tore to pieces the beautiful theories of Maury, and showed beneath them raw facts just wrenched from the abysses of Nature, yet piled already

into a cyclopean structure shining in the dawning light of a new science, and he wound up with a favourite quotation, that flashed the light of poetry on the facts :

“Aid the dawning tongue and pen,  
Aid it hopes of honest men,  
Aid it paper, aid it type,  
Aid it for the hour is ripe.”

Five years later when I came to know him in the old Challenger Office, 32, Queen Street, Edinburgh, it was his amazing power of work and of organizing the work of others which seemed to form the essence of his personality. Whatever difficulty was brought to him by any member of the staff seemed to be solved in a moment by a word or the stroke of a pen, and the atmosphere of the office stimulated one as that of a world where there was no such word as “impossible.”

It was a robust and bracing atmosphere, for the Chief was not given to study the susceptibilities of his subordinates, and not a little courage was required for a new-comer, who had to confess to any difficulty which he could not define. Certain modes of thought or expression were particularly obnoxious to Mr. Murray—he had not yet received the first of his honorary degrees—should anyone venture to begin “I think,” the sentence was not likely to proceed further, it was blocked by “Never mind what you think, say what you know,” or if anything like a complaint at the conditions of working were hinted at, the only comfort to be expected was such as could be extracted from “Go if you like, I’ll get a better man than you for half the money.” The roughness was only skin-deep, in fact, anyone who was likely to profit by contact with an original and unconventional mind, saw through it at once, and found that Murray was always ready to listen to the freest discussion of his own views, and to reconsider any decision against which a precise objection could be stated ; to be sure he did this in a way of his own, he would vehemently oppose every argument and endeavour by all means to shake the confidence of his critic, and as likely as not wind up by saying “Every word you say is utter nonsense and this is a question that even a grown man might hesitate to tackle,” yet the next morning he would begin quite calmly : “There’s a lot in what you said yesterday, I’m not at all sure that you were not right after all.” In those days Murray had no other interests than his scientific

work, and many a trenchant criticism he passed on the folly of those who toiled for riches. He lived at his club, a few doors from the office, and at the little dinners which he gave there for the entertainment of foreign men of Science, the social side of his nature blossomed out with a richness and charm, the effect of which on a stranger whose acquaintance had hitherto been only with the official side, added not a little to the zest of the entertainment. As a student he had attended almost every class in the University of Edinburgh, though without taking a degree (only fools took degrees he used to say provocatively), and his conversation ranged as freely over the domains of literature, philosophy and theology, as of his particular pastures of Science, nor was the evening completed without a few of the fine old sea songs, picked up on the *Challenger*, which he never forgot, and which seemed to me to sound even better when sung by him as a man of 70, when I heard them last, than they did when he was 40. Murray was at his best when on board the *Medusa*, the steam yacht he gave to the Scottish Marine Station, engaged in exploring the depths of the coastal waters of Scotland. Here on the Firth of Forth, or on the Firth and Lochs of the Clyde Sea Area, sometimes alone with his assistants, sometimes with a party of friends, he carried on researches, evolved hypotheses, and discussed all things in "Heaven above, the Earth beneath, and the Waters under the Earth."

Continental men of science have often expressed amazement that Murray had no professorial chair in the University of Edinburgh. It was indeed a wasted opportunity that can never be recalled, but to the happy few, the cruises of the *Medusa*, and later the sounding expeditions on the Lochs, supplied a more liberal education than the formal courses of any university could afford. Gradually one discovered, through incidents too slight in themselves to be recalled individually, that Murray, despite his defiant treatment of red tape bound Government officials, his scathing and relentless exposure of conceit or humbug, and his dictatorial laying down of the law on all matters, was one of the most tender-hearted and open minded of men. He was extraordinarily solicitous to avoid hurting conscientious opinions or beliefs in anyone, always ready to help in any real difficulty, and untiring in promoting the welfare of his assistants. As an example of the lengths to which his consideration went in cases of difficulties that few men would recognize, I recall



his correcting a proof in the *Challenger Narrative*, where he altered the words, "Here ships may be loaded with celerity," to "Here ships may be loaded quickly," remarking as he did so, "Just think of some poor devil of a foreigner turning up his dictionary to find what sort of a cargo celerity was, ten to one he would decide that it was a mis-spelling of celery !"

His appearance in later years, when the resolute chin was veiled by a beard of naval trim, is admirably shown in the fine portrait painted by his friend, the late Sir George Reid, as a labour of love. The reproduction of this portrait, which appears as a frontispiece, presents a more characteristic likeness than any photograph.

As the years went on and honours, not only from Foreign Universities and Societies, accumulated, as his family grew up and new phases of character came into prominence, Sir John Murray's manners lost the brusqueness of his earlier years, and the kindly instincts were less sedulously concealed, yet he was always quick to detect and resent any failure to recognize the disinterestedness of his motives, and he never could tolerate pretension or humbug. If he could not throw his whole heart into any movement and see a clear way to a successful issue, he preferred to leave it alone, and this sometimes led to misunderstanding on the part of less clear-sighted but equally honest fellow workers, but when he had really taken a matter up no powers could prevail against him. The finest example of this was his completion of the publication of the *Challenger Reports* at his own expense when the Government felt unable to proceed further with the volumes, and this he did at a time when he was still a comparatively poor man.

The scientific work of Sir John Murray was based upon and centred round the voyage of *H.M.S. Challenger*, carried out between 1872 and 1876, for the scientific exploration of the ocean. As one of the naturalists on board, Murray's time was largely occupied with deep sea dredging and the study of marine animals. On the return of the Expedition he assisted Sir Wyville Thomson in arranging the collections and distributing them to specialists all over the world, and on Sir Wyville's death in 1882 he became the head of the Challenger Office and Editor of the Reports. While the extraordinary width of his scientific knowledge enabled him to keep pace with the studies of all the specialists employed, he paid special attention personally to the investigation of the deep sea deposits,

in connection with which he published a series of remarkable papers setting forth a new theory of the growth of coral islands. After having remained practically unnoticed for several years this theory was made the object of a determined attack by the upholders of Darwin's famous theory of the origin of coral reefs, and the resulting controversy will long be remembered.

Arising from the *Challenger* work Murray carried out a comprehensive series of investigations in physical geography, in which he was the first to attempt a systematic quantitative study of the relief of the Earth's crust and the relation of rainfall to river discharge. He showed the volume of water contained in the ocean, the volume resting on the land in lakes, and flowing over it in rivers, together with the volume of rain falling on the land surface, based upon Loomis's rainfall map of the world and the area of land draining to each ocean. It is on this series of papers, dealing with world-wide physical geography, that Murray's reputation as a geographer mainly rests, although the survey of the fresh water lochs of Scotland which he carried out in collaboration with Mr. Laurence Pullar, is scarcely less important. Down to the time of his death Sir John Murray continued to keep up the Challenger Office in the Villa Medusa, close to his residence, Challenger Lodge, overlooking Granton Harbour, near Edinburgh, and here he received and examined specimens of deep sea deposits from all the Expeditions which followed the *Challenger*. Hither repaired geologists and oceanographers appointed on the staff of every new expedition in which Oceanography had part, so that Sir John was in personal touch with every investigator of whatsoever nationality he might be. It was natural that the enormous advances made during the voyage of the *Challenger* in the methods of oceanographical research should have led Sir John Murray to retain his belief in the sufficiency of those methods even after the work of the International Council for the Study of the Sea and other bodies had introduced methods of greater precision in their researches. But here, as in the case of any other long cherished belief which he held, Murray was always ready to change his mind when new facts of sufficient solidity were put before him. In his Expeditions on the *Knight Errant* and *Triton*, to the Wyville Thomson ridge, in 1880 and 1882, he settled one of the most puzzling problems of oceanographical circulation by the use of the *Challenger* methods of taking deep sea temperature, but from 1884 onwards he

# EVAPORATION IN 1913—(continued).

EVAPORATION.

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County Station	Yorkshire, Ardsley Reservoir 1, 53° 43' 10" N. 1 33 20 W. 395 ft. C.C. Smith, C.E.	Yorkshire, Ardsley Reservoir 2, 53° 43' 0" N. 1 33 30 W. 326 ft. C.C. Smith, C.E.	Yorkshire, Harrogate, Harlow Moor 53° 58' 40" N. 1 33 40 W. 480 ft. C. E. Rivers, C.E.	Yorkshire, Harrogate, Harlow Hill Res. 53° 58' 30" N. 1 33 30 W. 589 ft. A. S. West, C.E.	Peebles, Talla Water, Victoria Lodge 55° 29' 41" N. 3 25 2 W. 904 ft. Leslie & Reid, C.E.	Millthian, Edinburgh University. 55° 56' 30" N. 3 11 30 W. 240 ft. Prof. T. H. Beare.	Mean of Thirteen Stations.
Latitude.....	53° 43' 10" N.	53° 43' 0" N.	53° 58' 40" N.	53° 58' 30" N.	55° 29' 41" N.	55° 56' 30" N.	
Longitude .....	1 33 20 W.	1 33 30 W.	1 33 40 W.	1 33 30 W.	3 25 2 W.	3 11 30 W.	
Altitude.....	395 ft.	326 ft.	480 ft.	589 ft.	904 ft.	240 ft.	
Observer.....	C.C. Smith, C.E.	C.C. Smith, C.E.	C. E. Rivers, C.E.	A. S. West, C.E.	Leslie & Reid, C.E.	Prof. T. H. Beare.	
Size of tank .....	6 ft. x 6 ft.	6 ft. x 6 ft.	6 ft. x 6 ft.	6 ft. x 6 ft.	6 ft. x 6 ft.	6 ft. x 6 ft.	
Capacity (galls.)	450	450	450	450	450	450	
Height of lip } above ground }	3 inches	3 inches	...	flush	3 inches	3 inches	
January .....	in. 0·13	in. 0·09	in. ·44	in. ·14	in. ·74	in. ·00	in. ·13
February .....	·29	·26	·58	·46	·33	·15	·36
March .....	1·03	·79	1·58	1·11	·68	·49	·90
April .....	1·53	1·44	1·74	1·62	2·07	1·25	1·51
May.....	2·37	2·19	2·63	2·29	2·54	1·82	2·48
June .....	3·30	3·03	3·88	3·24	2·81	2·46	3·14
July .....	2·87	2·59	3·07	2·75	3·17	2·47	2·74
August .....	2·41	2·06	2·99	2·63	2·80	2·05	2·53
September .....	1·57	1·50	2·04	1·77	1·54	1·11	1·54
October .....	·67	·69	1·26	·88	1·14	·88	·86
November .....	·48	·29	1·19	·71	·35	·39	·48
December .....	·47	·30	·90	·46	·22	·10	·34
Year, 1913...	16·86	15·05	22·30	18·06	18·39	13·17	17·01
Average, 1908-1913	17·24	...	19·00	...	17·55	14·20	...
Difference ...	— ·38	...	+3·30	...	+ ·84	—1·03	...
Year, 1913...	22·68	22·92	26·63	24·18	47·78	20·84	28·39
Average, 1908-1913	25·17	...	31·40	29·00	47·38	25·61	...
Difference ...	—2·49	...	—4·77	+4·82	+ ·40	—4·77	...

Note.—C indicates condensation.

## THE STAFF OF OBSERVERS.

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IN a body constituted in the manner of the British Rainfall Organization it is inevitable that every year should bring a certain number of changes in the long list of Observers. It is indeed a matter of surprise that these changes should be so few as they are, and we feel that it is no small tribute to the national character that the great bulk of the Observers of rainfall in the British Isles continue to band themselves together in voluntary association, and that so small a proportion of those who have once sent observations for publication should fail to continue to do so. The majority of the records which come to an end do so because of the death of those responsible for them, and it is seldom that a year passes without the gains in our numbers outweighing the losses, so that year by year the total number of Observers steadily increases. Although, as has been frequently remarked, it is easy to lay too much stress upon mere numbers, these do enable us in a measure to gauge the amount of interest taken in the work of the Organization, and though many parts of the country are sadly under-represented, we have reason to believe that on the whole the growth in numbers has gone hand in hand with an improvement in distribution, and that with a few exceptions the representation of the country by its rainfall Observers is better than it has ever been in the past.

The net increase in the number of records appearing in the general tables is this year smaller than in either of the two previous years, but this is merely a return to the normal after a period of exceptionally rapid growth. The increase of 98 is the result of the gain of 406 records and the loss of 308. Of the 406 gains 58 are merely re-appearances of old records which had been temporarily absent from the pages of *British Rainfall*, whilst 348 are entirely new. Of the losses 140 may be regarded as temporary and 168 as permanent. The analysis of the numbers in this manner shows that the observing staff of the Organization was augmented during 1913 by 180 records. The records counted are only those for which the observations for 1913 were complete and sufficiently accurate to warrant publication.

As in every year, several hundreds of imperfect returns were received, and a few which were certainly erroneous and which had to be withheld from publication on that account.

Year.	Total Gain.	Returned.	Real Gain.	Total Loss.	Temporary.	Real Loss.	Net Real Gain.
1906.....	400	58	<b>342</b>	237	40	<b>197</b>	<b>145</b>
1907.....	375	49	<b>326</b>	289	81	<b>208</b>	<b>118</b>
1908.. ...	444	62	<b>382</b>	251	64	<b>187</b>	<b>195</b>
1909.....	426	89	<b>337</b>	290	87	<b>203</b>	<b>134</b>
1910.....	490	81	<b>409</b>	292	73	<b>219</b>	<b>190</b>
1911.....	502	99	<b>403</b>	304	94	<b>210</b>	<b>193</b>
1912.....	498	81	<b>417</b>	300	120	<b>180</b>	<b>237</b>
1913.....	406	58	<b>348</b>	308	140	<b>168</b>	<b>180</b>

The changes in the stations for 1913 chiefly affected England, where there was a gain of 307 to set against a loss of 239, the increase being 2 per cent. of the total number.

1913.	Total Gain.	Returned.	Real Gain.	Total Loss.	Temporary.	Real Loss.	Net Real Gain.
England .....	307	44	<b>263</b>	239	101	<b>138</b>	<b>125</b>
Wales, &c. ...	35	8	<b>27</b>	24	13	<b>11</b>	<b>16</b>
Scotland .....	45	5	<b>40</b>	28	21	<b>7</b>	<b>33</b>
Ireland .....	19	1	<b>18</b>	17	5	<b>12</b>	<b>6</b>
British Isles...	406	58	<b>348</b>	308	140	<b>168</b>	<b>180</b>

In the following list the figures following the name of each county indicate the numbers of records lost and gained, the total number appearing in the present volume, and in heavy type the number of records per hundred square miles of area.

**London** ( $a-2+1=85 \dots \mathbf{73}$ ).—The county of London stands almost exactly as it stood in 1912, and we point again, as we pointed in *British Rainfall, 1912*, to the fact, that the only Metropolitan Boroughs without a station are Islington, Bethnal Green and Shoreditch.

**Surrey** ( $a-21+20=227 \dots \mathbf{31}$ ).—In the south-east of England, of which Surrey is typical, the vast majority of the observing stations are kept by private residents in contrast with the north and west, where a far larger proportion of the observations are made for professional purposes. It is therefore perfectly natural, that in the former, there should be a greater tendency to change, and in Surrey it is quite usual to find 10 per cent. of the total number of stations coming and going in a year. The changes this year are not very important, and leave the representation of the county much as it was. We regret the loss, although only temporary, of two of the high level

stations in the Hindhead neighbourhood, but the representation of the North Downs is enriched by the acquisition of a record at Margery Hall Reservoir, at a level of nearly 700 feet, to the north of Reigate.

**Kent** ( $a-11+8=176 \dots 11.5$ ).—Of the ten losses, eight we hope are only temporary, but Bredhurst and Bitchet Wood were both high level stations in important positions, the loss of which will be severely felt. The new record at Kippington, to some extent, compensates for the latter. We are glad to include Woodchurch, on the borders of Romney Marsh, a district hitherto not well represented.

**Sussex** ( $a-13+11=163 \dots 11$ ).—We regret exceedingly the loss of Clayton on the northern escarpment of the South Downs, though recently established stations in the neighbourhood greatly mitigate it. Mr. G. B. Hamlin, of Preston, has achieved an important improvement on the Downs by the establishment of a gauge on Hollingbury Camp, at an altitude of 575 feet, where it promises valuable results. Of the low level stations, one of the more interesting is Felpham, where we were gratified to find that a record had been kept, without a break, for a period of 20 years.

**Hampshire** ( $a-12+16=168 \dots 10$ ).—This county continues to show improvement, and while none of the losses, half of which are only temporary, can be looked upon as extremely serious, the new records result in a general improvement.

**Berkshire** ( $a-4+6=67 \dots 9$ ).

**Middlesex** ( $a-6+6=65 \dots 28$ ).

There is no important change in these two counties.

**Hertfordshire** ( $a-4+5=81 \dots 13$ ).—The cessation of the valuable record at Stevenage, in spite of efforts to induce some resident to take up the work on the removal of the Observer, is disappointing. We welcome, with pleasure, two useful records from the eastern Chilterns and also that from Hatfield, which satisfies a long-felt want.

**Buckinghamshire** ( $a-3+5=49 \dots 7$ ).—The Swanbourne House observations have not reached us, and the north of the county is thereby weakened. The south, however, continues to improve.

**Oxfordshire** ( $a-6+10=69 \dots 9$ ).—The changes as usual refer principally to the Council Schools, where it is inevitable that frequent interruptions should break the continuity of the observations. Of

the new stations, by far the most important from a geographical point of view, are Chinnor Hill, at an altitude of 800 feet on the north-west of the Chiltern Hills, and Fifield, among the eastern spurs of the Cotteswolds.

**Northamptonshire** ( $a-6+5=66 \dots 7$ ).

**Huntingdonshire** ( $a-0+0=11 \dots 3$ ).

**Bedfordshire** ( $a-5+1=26 \dots 6$ ).—Three of the losses are, we hope, only temporary, but the county is not represented so well as we should like to see it, particularly in view of the mapping of thunder-storm rains.

**Cambridge** ( $a-1+3=55 \dots 6$ ).—Clows Cross is a distinct acquisition in the Fens.

**Essex** ( $a-12+18=111 \dots 7$ ).—The north-west of Essex is seriously affected by the cessation of three important records near Saffron Walden, and although elsewhere the distribution of stations is generally improved, we still require new Observers near the Hertfordshire border.

**Suffolk** ( $a-8+7=73 \dots 5$ ).—Nearly all the records disappearing this year should be available again for *British Rainfall, 1914*. Horham helps to fill the bare patch in the centre of the county to which we have so frequently referred.

**Norfolk** ( $a-10+9=89 \dots 4$ ).—The stimulus given to rainfall observing in East Anglia by the great storm of August 26th, 1912, is no doubt responsible for part of the gain in Norfolk; the losses, though numerically greater, are mostly not permanent. The records at Quidenham and Old Buckenham help materially in the south.

**Wiltshire** ( $a-3+6=67 \dots 5$ ).—The loss of Cherhill deprives us of a useful guide on the west of the Marlborough Downs, but Erlestoke fills an ugly gap a few miles further south. The record kept on the Duke of Somerset's estate at Maiden Bradley, now returns to our pages after a temporary absence caused by the discovery that the old gauge was defective.

**Dorset** ( $a-5+7=78 \dots 8$ ).—The death of Mr. Stilwell during 1913, brought about the cessation of his valuable record at Winterbourne Steepleton, but we are glad to know that the collection of local rainfall statistics, which he carried on in so able a manner on behalf of the Dorset Field Club, is being continued by Mr. R. S. Henshaw. We are sorry to have seen the last of the old record at Longthorns.

Two new stations at Lyme Regis are helpful in a neighbourhood where the distribution of rainfall is of a very puzzling nature.

**South Devon** ( $a-13+12=151 \dots 9$ ).—South Devon cannot claim to have made any great advance during the year, and the losses are, on the whole, about equal to the gains in importance as well as in number. The record at Long Ridge, near Lydford, is very helpful in the west of the Dartmoor plateau, but we have to set against it the loss of Langham Hill, Ivybridge, and of one of the Ashburton group of stations.

**North Devon** ( $a-4+0=51 \dots 5$ ).—Here there is retrogression. Our rejoicings over the new record at Bratton Fleming, in *British Rainfall 1912*, were evidently ill-advised, since we have not been able to obtain any copy of the record for 1913.

**Cornwall** ( $a-8+11=80 \dots 6$ ).—The changes are rather more numerous than usual, and include the loss of the valuable record at Bodmin, kept by the late Prebendary Every, and that at Poughill, one of the few stations in the extreme north of the county. The gauges at Penrhyn and at Drakewalls Place have been moved to other spots within the county. On the whole there is a distinct improvement.

**Somerset** ( $a-7+13=160 \dots 10$ ).—Interest in rainfall observing has always been prominent in Somerset, and but for the need of more stations on parts of Exmoor and the Mendip Hills, the county is fairly well represented. We are glad to add another excellent record at Brushford, where it helps to define the high rainfall of the Exmoor plateau.

**Gloucestershire** ( $a-6+7=111 \dots 9$ ).—We regret not having been able to obtain any copy of the record at Batsford Park.

**Herefordshire** ( $a-2+4=52 \dots 6$ ).—An additional station at Almeley, near the Welsh Border, is very welcome. Kimbolton replaces, in a measure, the old record at Leominster, which terminated in 1913 on the death of Miss Southall.

**Shropshire** ( $a-2+5=49 \dots 4$ ).—The gauge at Clunbury has been removed to Clun, at an elevation of 680 feet, where it will be of even greater value than heretofore. Netley Hall, on the north-eastern slopes of the Longmynd and Pentreheylin, between Oswestry and Welshpool, will improve the distribution in the Upper Severn Valley.



**Staffordshire** ( $a-1+2=46 \dots 4$ ).—We are glad to have a new record from Uttoxeter.

**Worcestershire** ( $a-7+4=53 \dots 7$ ).—The recent extension of the municipal boundaries of Birmingham have brought about some adjustments in the county boundaries in that neighbourhood, and it becomes necessary to transfer certain stations to Warwickshire. This accounts for the apparent large loss in Worcestershire, and the real loss is quite insignificant.

**Warwickshire** ( $a-1+12-53 \dots 6$ ).—The extraordinary revival of interest in rainfall observing, which began in the county of Warwickshire five years ago, shows no sign of diminishing. Five of the gains this year are, however, merely transferred from Worcestershire on account of the revision of the boundaries mentioned above. The representation of the county has been almost doubled since 1909.

**Leicestershire** ( $a-5+6=44 \dots 5$ ).—The most important gain is Melton Mowbray.

**Rutland** ( $a-0+1=8 \dots 5$ ).

**Lincolnshire** ( $a-9+5=85 \dots 3$ ).—Large areas in this county are still very poorly represented, and the loss of Holbeach Marsh still further weakens it in the neighbourhood of the Wash. Two useful records at Caistor also disappear. None of the new records remedy the defects greatly.

**Nottinghamshire** ( $a-1+0=65 \dots 8$ ).

**Derbyshire** ( $a-3+4=118 \dots 11$ ).—The loss of Baslow is serious.

**Cheshire** ( $a--3+7=75 \dots 7$ ).—There is still no evidence of improvement in the south of Cheshire, where new Observers are badly wanted.

**South Lancashire** ( $a-2+5=110 \dots 16$ ).—The termination of the old record at Aughton Springs, near Ormskirk, is largely mitigated by the appearance of a record at the Springfield Pumping Station of the Southport Water Board, which we are able to print for the first time this year.

**Central Lancashire** ( $a-4+4=82 \dots 15$ ).—We regret to see the last of the observations at Chorley. All the four new records are in the same district, not far from Preston, and are helpful in defining the position of the isohyets which surround the Pennine system.

**North Lancashire** ( $a-6+3=66 \dots 11$ ).—We lose Broughton-in-Furness, Finsthwaite and Blawith in the Furness district. Two new mountain stations established by the Lune Conservancy are extremely valuable.

**Yorkshire, West Riding** ( $a-9+26=339 \dots 12$ ).—The record at Broomhead Hall, which appeared for the first time in 1912, has not reached us, but otherwise the losses are not of a serious nature. The record at Chapel Allerton suffered the unusual fate of being stolen from the Observer, and the fact has deprived us of the figures for the year 1914 also. A visit to Doncaster in connection with the great storm of September 17th, 1913, brought to light several new records in that neighbourhood, three of which appear this year. A group of stations belonging to the Harrogate Corporation adds to the representation in the Forest of Knaresborough, but though the West Riding has generally improved, there are no very important acquisitions. The old record at Oughtershaw returns after a temporary absence.

**Yorkshire, East Riding** ( $a-0+3=29 \dots 2$ ).—There are no losses and one valuable gain at Helperthorpe, on the Wolds, but the greater part of that district is still very poorly represented.

**Yorkshire, North Riding** ( $a-2+10=102 \dots 5$ ).—The increase in the North Riding is encouraging, but the majority of the new records come from the districts which are already best supplied with Observers, and though we welcome them none the less on that account, we still lack the observations required in the North York Moors, which district is probably worse represented than any area of equal size in England.

**Durham** ( $a-3+1=47 \dots 5$ ).

**Northumberland** ( $a-3+7=65 \dots 3$ ).—The death of Dr. Hodgkin, during 1913, unfortunately brought to an end the excellent record which he maintained at Barmoor Castle, and this, with the loss of Flodden, leaves the extreme north greatly weakened. Another new station near Haltwhistle removes, we hope permanently, the old gap of which we so frequently complained until the last few years. Another gain of importance is Otterburn Tower, in Redesdale.

**Cumberland** ( $a-5+8=77 \dots 5$ ).—Arthuret, a border station added in 1912, disappears again much to our regret as we had hoped to find it extremely useful. A new mountain record at Mell Fell, overlooking Ullswater, should be of the greatest interest; and one of

the most important new additions which we have had to record for many years is that of Nenthead, near Alston, where we have received complete records back to 1901. A valuable insertion is also that at Renwick, in the Lune Valley. We are glad to be able to record that the feared loss of the famous old record at Seathwaite has been prevented, and the gauge has now become the property of the British Rainfall Organization, by whom the observations will be continued.

**Westmorland** ( $a-2+4=58 \dots 7$ ).—The Shap record was unfortunately interrupted by the illness of the Observer. Low House in Long Sleddale is perhaps the most interesting of the gains.

**Monmouthshire** ( $a-1+6=42 \dots 8$ ).—The only loss, that of Pandy, is one that we greatly regret, as we had found the record of great value in attempting to draw rainfall maps of the Black Mountains district. We are glad to have Tredunnock again, and Griffithstown and Tredegar are valuable additions in the west.

**Glamorganshire** ( $a-3+3=66 \dots 8$ ).—There is practically no change in this county.

**Carmarthen** ( $a-2+1=9 \dots 10$ ).—We hope that both the losses are temporary, but continue to deplore the inadequate number of stations in this large and important county. The return of Llandovery is however very gratifying.

**Pembroke** ( $a-0+1=20 \dots 3$ ).—The only new station is Penfford, an interesting situation on the southern slopes of the Prescelly Hills, where more information is much wanted.

**Cardigan** ( $a-0+2=15 \dots 2$ ).

**Brecon** ( $a-1+7=93 \dots 13$ ).

The Birmingham Corporation have added a group of new high-level stations to their system in the Claerwen Valley.

**Radnor** ( $a-1+6=24 \dots 5$ ).—We are glad to find signs of improvement in Radnorshire. The record at Llandrindod Wells added in 1912 has failed to appear, but we print again Norton Manor and add an extremely useful supplement in Presteigne. The discovery of a record extending over 6 years at Abbey Cwmhir and the new station at Rhayader are matters for congratulation.

**Montgomery** ( $a-3+0=23 \dots 3$ ).—Despite the efforts of one or two local enthusiasts, several records which we believe to have been kept have not been received.

**Flint** ( $a-1+0=15 \dots 6$ ).

**Denbigh** ( $a-4+2=38 \dots 6$ ).—The most serious loss is that of Glynceiriog, in the Glyn Valley, where it will be with difficulty replaced. We have been much interested to find that the old record kept at Cerrig-y-Druidion, by Col. Mainwaring, has now been supplemented by two additional gauges, the records from one of which we are able to print this year. We are also very glad to recover the valuable record at Llyn Bran.

**Merioneth** ( $a-1+3=11 \dots 1\cdot7$ ).—The record at Dr. Williams' School, Dolgelly, was unfortunately lost before transmission to us, but we hope that the station will return to our tables next year. The old record at Henblas, Bala, has been found to be still extant, and we also hope next year to add a new record at the National Schools, where an excellent gauge is now being used. Our knowledge of the peculiar conditions in the Vale of Llangollen is further improved by the station at Llandrillo.

**Carnarvon** ( $a-3+4=48 \dots 8$ ).—We are sorry not to be able to include any figures for the gauge at Diwaunedd, the only rain gauge on Moel Siabod, but we rejoice greatly in at least receiving a complete record from the romantic, but rainy, village of Beddgelert, where we have frequently made attempts to get a gauge established.

**Anglesey** ( $a-1+0=12 \dots 4$ ).

**Isle of Man** ( $a-1+0=7 \dots 3$ ).—The Bishop's Court record has again failed us.

**Channel Islands** ( $a-2+0=17$ ).—Thanks to the energies of Mr. Collenette and Mr. Rowsell the stations in the Channel Islands keep up their numbers. The loss of the record at Fort Doyle, the only station in the north of Guernsey is, however, to be deplored, especially as it was occasioned by the theft of the rain gauge.

#### SCOTLAND.

**Wigtown** ( $a-0+0=10 \dots 2$ ).

**Kirkcudbright** ( $a-0+0=22 \dots 2$ ).

**Dumfries** ( $a-1+2=26 \dots 2$ ).

**Roxburgh** ( $a-1+0=13 \dots 1\cdot5$ ).

**Selkirk** ( $a-0+0=8 \dots 3$ ).

**Peebles** ( $a-0+0=22 \dots 6$ ).

**Berwick** ( $a-0+1=11 \dots 2$ ).

**Haddington** ( $a-0+0=10 \dots 4$ ).

**Midlothian** ( $a--0+1=49 \dots 13$ ).

**Linlithgow** ( $a-1+4=18 \dots 15$ ).

**Lanark** ( $a-0+3=43 \dots 5$ ).

**Ayr** ( $a-1+3=34 \dots 3$ ).

**Renfrew** ( $a-1+1=36 \dots 15$ ).

The changes in the south of Scotland are very trifling and we see no evidence of any advance in the large bare spaces occupying most of the Southern Uplands where considerable doubt exists as to the rainfall conditions. We look for useful results from the new record at Swinton House, and we are glad to include once more three records kept by the Burgh of Bathgate and the valuable station at Forrestburn Reservoir, all of which had failed us for a time. The gauge at Bow Hill, near Dalrymple, has been moved a short distance and will be equally useful in its new position from which we hope to print the records for 1914. Two new stations at Ayr and Girvan add greatly to the precision with which we are able to define the remarkably low rainfall on the coast of Ayrshire, and Langafater Lodge, on the hills above Ballantrae, is in an extremely interesting position. The important group of records from scattered stations under the control of the Edinburgh and District Water Trust is, we are glad to say, again available.

**Dumbarton** ( $a-0+0=21 \dots 8$ ).

**Stirling** ( $a-2+1=32 \dots 6$ ).—Glengyle, near the head waters of Loch Katrine, has been found on inspection to be in Perthshire, and is accordingly transferred to that county. The record from Corrie Reservoir, at a considerable elevation among the Kilsyth Hills, is interesting, but we only have it on the authority of a newspaper.

**Bute** ( $a--0+0=6 \dots 3$ ).

**Argyll** ( $a-5+3=70 \dots 2$ ).—The Loch Fyne group of stations is seriously depleted by the loss of three valuable records, those at Strachur, Otter Ferry and Drimlie. We hope to see the two latter again in our pages next year, and particularly regret the disappearance of Drimlie, since we understand that the record together with that for Stronshira, was posted to Camden Square during January, where, however, it never arrived. The three gains in

Argyll, though too few in number, are all of first importance in regard to geographical position. That at Glenorchy Manse, which has appeared previously, though absent in 1912, and that at Connel Ferry, stand on the threshold of the great unknown in the West Highlands, whilst Ardfarn provides an additional and useful west coast station.

**Clackmannan** ( $a-0+0=5 \dots 9$ ).

**Kinross** ( $a-0+0=3 \dots 3$ ).

**Fife** ( $a-1+5=33 \dots 7$ ).—This county continues to show an improvement, and we are much pleased to have a new station in the Cleish Hills. Lathallan also diminishes the unrepresented area in the east.

**Perthshire** ( $a-8+5=47 \dots 2$ ).—Doune unfortunately disappears, but we are able again to include Gartincaber, where the record was temporarily interrupted by a fire during 1912. Sir Malcolm MacGregor has added a standard Snowdon gauge by the side of the older instrument at Edinchip, from which we printed the records for the first time last year. Duncrub, which reaches us through the Scottish Meteorological Society, lies on the north side of the Ochills, and Kenmore is at the foot of Loch Tay, and helps to confirm the peculiarly small rainfall recorded in parts of Strath Tay. The vast area of the Grampians still remains entirely without a station.

**Forfar** ( $a-0+1=36 \dots 4$ ).—The only change is the addition of the record at Balnaboth, which gave readings of exceptional interest in connection with the storms of May 6th to 9th, during which period 9·09 in. of rain fell.

**Kincardine** ( $a-0+5=19 \dots 5$ ).—We add a valuable group of high level stations in Glen Dye, where they were recently established in connection with a proposal for a new water supply for the City of Aberdeen.

**Aberdeen** ( $a-0+3=32 \dots 1\cdot6$ ).—Two of the gains are in Aberdeen city, but the third makes a useful link in the chain of Deeside stations.

**Banff** ( $a-0+1=7 \dots 1\cdot1$ ).

**Moray** ( $a-0+0=9 \dots 2$ ).

**Nairn** ( $a-0+0=5 \dots 3$ ).

We have often felt great difficulty in constructing maps of the rainfall in these counties, and though we welcome a new record at Drummuir, in Strath Isla, we continue to deplore the general lack of interest in the subject which is apparent in the district.

**Inverness** ( $a-3+3=55 \dots 1\cdot3$ ).—Alvey Manse we hope to see resumed in the near future, and the otherwise irreparable loss of Lochmaddy, the only record on North Uist, would be a calamity, but for the promise of a new station there under the charge of the Lawes Agricultural Trust, which we hope will be permanent, although it was not commenced early enough for the record to appear this year. Two of the three new stations lie in the Spey Valley, and one, Cluny Castle, breaks entirely new ground in the interior.

**Ross and Cromarty** ( $a-3+1=26 \dots 0\cdot8$ ).—We have no improvement where it would be most welcome, and cannot profess to regard the distribution of stations in this great county with any satisfaction.

**Sutherland** ( $a-0+2=13 \dots 0\cdot6$ ).—An excellent record appears from Gobernuisgach, at the head of Strath More, as useful an addition as we could wish.

**Caithness** ( $a-0+0=12 \dots 1\cdot7$ ).

**Orkney** ( $a-1+0=10 \dots 3$ ).

**Shetland** ( $a-0+0=6 \dots 1\cdot1$ ).

## IRELAND.

**Cork** ( $a-2+1=19 \dots 0\cdot7$ ).

**Kerry** ( $a-0+1=11 \dots 0\cdot6$ ).—A new record at Muckross forms a valuable check on that at Killarney, and improves our knowledge of the conditions in an exceptionally interesting district.

**Waterford** ( $a-1+2=14 \dots 2$ ).—The low rainfall in the south of Co. Waterford, hitherto but ill-defined, may be inferred from the observations at the new coast station at Tramore.

**Tipperary** ( $a-1+2=13 \dots 0\cdot8$ ).—The observations at Highlands, near Nenagh, were unfortunately lost before transmission. We gain in distribution considerably by the addition of Templederry and Ardmayle.

**Limerick** ( $a-0+0=6 \dots 0\cdot6$ ).—We are greatly in need of new stations in any part of the west of this county.

**Clare** ( $a-0+0=11 \dots 0\cdot9$ ).

**Wexford** ( $a-1+0=8 \dots 0\cdot9$ ).

**Kilkenny** ( $a-0+0=9 \dots 1\cdot1$ ).

**Wicklow** ( $a-0+1=18 \dots 2$ ).—Carrigoona should give interesting records on the east of the Wicklow uplands.

**Carlow** ( $a-1+0=4 \dots 1\cdot2$ ).

**Queen's County** ( $a-0+0=5 \dots 0\cdot8$ ).

**King's County** ( $a-0+2=8 \dots 1\cdot0$ ). The appearance of two new records from King's County is a welcome feature, since the province of Leinster has otherwise remained practically stationary.

**Kildare** ( $a-1+0=7 \dots 1\cdot1$ ).

**Dublin** ( $a-1+2=30 \dots 8$ ). The changes in this county are unimportant.

**Meath** ( $a-0+0=9 \dots 1\cdot0$ ).

**Westmeath** ( $a-1+1=8 \dots 1\cdot1$ ).

**Louth** ( $a-3+1=3 \dots 0\cdot9$ ).—Two fine old records at Lissrenny and Farndreg, near Dundalk, have unfortunately come to an end, owing to the death of Mr. T. F. Filgate and Mr. J. Barton. The new record from Black Hall, near Drogheda, is a slight reparation, but we find the utmost difficulty in drawing isohyets in this part of Ireland.

**Longford** ( $a-0+0=4 \dots 0\cdot9$ ).

**Galway** ( $a-2+2=7 \dots 0\cdot3$ ).—The death of Mr. Kirwan, at Gardenfield, has caused the cessation of two of his records there, but we are indebted to Mr. R. J. Kirwan for the continuation of one of these records, which were among the oldest established in Ireland. Another record, near Tuam, returns after a temporary absence, and our long-standing grievance against the lack of enterprise in the Connemara region, is largely removed by the establishment of a splendid record at Ballynahinch Castle.

**Roscommon** ( $a-0+0=3 \dots 0\cdot3$ ).

**Mayo** ( $a-0+0=9 \dots 0\cdot4$ ).



**Sligo** ( $a-0+1 = 3 \dots 0\cdot4$ ).

These three counties, with only one rain gauge to every 250 square miles, are still, with Galway, the worst furnished in the United Kingdom. We are glad, however, to see one new record at Sligo.

**Leitrim** ( $a-0+0 = 4 \dots 0\cdot7$ ).

**Cavan** ( $a-1+0 = 5 \dots 0\cdot7$ ).

**Fermanagh** ( $a-0+1 = 4 \dots 0\cdot6$ ).—Irvinestown is a very gratifying addition.

**Monaghan** ( $a-0+0 = 2 \dots 0\cdot4$ ).

**Armagh** ( $a-0+0 = 7 \dots 1\cdot4$ ).

**Down** ( $a-0+2 = 13 \dots 1\cdot4$ ).—Here there are two gains, that at Newcastle giving an interesting example of the comparatively large rainfall, even at low elevations on the shores of Dundrum Bay.

**Antrim** ( $a-0+0 = 17 \dots 1\cdot4$ ).

**Londonderry** ( $a-0+0 = 5 \dots 0\cdot6$ ).

**Tyrone** ( $a-0+0 = 5 \dots 1\cdot4$ ).

**Donegal** ( $a-2+0 = 8 \dots 0\cdot4$ ).—Mr. Digby French, to whose enthusiasm we owed not only his own excellent record at Tamney Rectory, but the upkeep of the old station at Carrablagh, has left the county, and these observations have unfortunately come to an end.

*Number of complete rainfall records published in the volumes of British Rainfall for the undermentioned years.*

Years.	England.	Wales.	Scotland.	Ireland.	British Isles.	Increase over previous year.
1861...	333 ...	9 ...	109 ...	20 ...	471 ...	47
1871...	1038 ...	88 ...	311 ...	67 ...	1504 ...	—5
1881...	1548 ...	131 ...	313 ...	153 ...	2145 ...	41
1891...	2091 ...	168 ...	359 ...	181 ...	2799 ...	23
1901...	2616 ...	253 ...	442 ..	195 ...	3506 ...	13
1911...	3705 ...	397 ...	701 ...	271 ...	5074 ...	198
1912...	3834 ...	429 ...	732 ...	277 ...	5272 ...	198
1913...	3902 ...	440 ...	749 ...	279 ...	5370 ...	98

Difference from 1912—

Increase	68 ...	11 ...	17 ...	2 ...	98 ...	...
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## OBITUARY.

By DR. H. R. MILL.

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ON account of the earlier completion of the annual volume this year, this section on the present occasion deals with eleven months instead of twelve, and the number of losses to record is naturally less in proportion to the whole body of Observers than is usually the case, though, unhappily, the total number for the eleven months exceeds that ever previously recorded in twelve. It is many years since so serious a succession of losses has fallen upon the Organization and this not among the Observers only, but also amongst those whose assistance was given in other ways. The last but one has disappeared of the small band of wealthy friends of Mr. Symons, whose yearly subscription of ten guineas used formerly to be the kernel of our annual finances, and many other old supporters have ceased their help with their lives. With no desire to cast any reflections on the hearty good will of our old friends and supporters, we cannot, with the uncertainty of life so prominently before us, restrain a feeling of regret that more of them have not taken advantage of the Endowment Fund vested in Trustees to make the benefits of their good will permanent. The first of the body of Trustees to be called away, to whose memory a tribute appears in the first special article in this volume, has been Sir John Murray, who had in his life time made a handsome donation to the Endowment Fund. The object of that Fund is to furnish a compensation reservoir, as it were, for insuring the even flow of income at a rate equalling the necessary expenditure of the Organization, and eventually to permit of the increase of expenditure in many desirable directions. We know of several Observers who have made provision for bequests which will insure an annual income not less than their present subscriptions, and we are certain that several in the list which follows had as clear intention to do likewise as had those who promptly dismissed the matter from their minds by a timely codicil.

The following list contains the names of 95 Observers who died during the eleven months. We have obtained the ages of 55, which

TABLE I.—*Percentage Frequency of Heavy Rains in Short Periods up to 2 hours, during the 46 years 1868—1913.**Annual total = 100.*

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
England & Wales, S.E.	0·1	0·3	0·0	1·0	9·2	23·2	32·9	20·3	8·6	3·4	0·6	0·4
„ „ S.W.	0·0	0·3	0·0	2·2	10·3	21·9	27·6	22·3	6·9	6·6	1·3	0·6
„ „ N.E.	0·5	0·5	0·5	0·5	9·0	23·2	41·1	16·3	6·3	2·1	0·0	0·0
„ „ N.W.	0·0	1·1	0·0	1·2	4·6	21·8	41·4	25·3	1·2	1·1	1·2	1·1
England & Wales.....	0·2	0·4	0·1	1·2	9·2	22·7	33·3	20·4	7·4	3·9	0·7	0·5
Scotland .....	1·0	5·1	0·0	0·0	4·1	21·4	24·5	26·5	9·2	4·1	1·0	3·1
Ireland .....	0·0	0·0	0·0	2·0	10·0	16·0	46·0	16·0	2·0	4·0	4·0	0·0
British Isles .....	0·2	0·7	1·0	1·2	8·8	22·4	33·3	20·7	7·4	3·9	0·8	0·6

Taking the country as a whole, it will be seen that the maximum frequency is in July, during which month one third of the whole number of cases is recorded. This is equally true of all the other districts except Scotland, where the maximum clearly falls in August. The July maximum is most marked in Ireland, where 46 per cent. of the cases took place in this month. In England and Wales, N.E. and N.W., the values are also high, reaching 41 per cent., but in England, S.E., the frequency considerably diminishes to 33 per cent., while in England, S.W., the number in July has fallen to under 28 per cent., and in Scotland to 24·5 per cent. In England, S.E., S.W., and in Scotland, the curve from May to September is relatively flat compared to England, N.E. and N.W., and to Ireland, where the July crest is a most prominent feature. In the first named divisions the period of heavy rains in short periods thus begins earlier and lasts later than in the latter divisions, where the late summer maximum is more prominent. These variations in frequency of heavy rains are doubtless closely related to variations in the frequency of thunderstorms in the different divisions of the country. A comparison of the monthly percentage frequency of short period rains in Divisions I. to IV. (England S.E.) with that of thunderstorm frequency in London during 167 years\* gives the following results:—

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year.
Rains, England, S.E..	0·1	0·3	0·0	1·0	9·2	23·2	32·9	20·3	8·6	3·4	0·6	0·4	100·0
Thunderstorms, London .....	0·8	0·4	1·4	6·6	13·3	19·0	25·1	18·8	8·8	3·0	1·6	1·2	100·0

\* Mossman. The Non-Instrumental Meteorology of London. *Quar. Jour. Roy. Met. Soc.*, Vol. 23, p. 289.

It will thus be seen that the month to month variation is somewhat similar in both classes of phenomena.

The almost entire absence of intense rainfalls during the winter months is well brought out, and the exceptional nature of Scotland in this respect is noteworthy. Taking the British Isles as a whole, it will be observed that in the six months from November to April inclusive only 3·5 per cent. of the falls of this nature have occurred, whilst 66·3 per cent. have taken place in the three summer months, June, July and August.

In Table II. is given every instance of a heavy rainfall up to the time limit of 2 hours duration recorded during the months November to March, in the period 1868–1913. The data for England and Wales are arranged in divisions, while the values for Scotland and Ireland are given for the whole country.

TABLE II.—*Heavy Rains in Short Periods Recorded in the British Isles, November to March, 1868–1913.*

England and Wales, S.E.						
Date.	Division.	Station.	Amount. in.	Duration. hr. min.	Rate. per hour. in.	
1875 Dec. 22	II.	Dartford.....	·08	0 3	1·60	
1881 Nov. 24	„	Brighton(Blatchington Rd.)	·13	0 2	3·90	
1884 Jan. 25	„	Acrise .....	·45	0 10	2·70	
1888 Nov. 26	„	Hythe .....	·86	0 30?	1·72?	
1907 Dec. 8	„	Epsom, Ashley Road ...	·16	0 3	3·20	
1910 „ 16	„	Bromley, Ravensfell ...	·14	0 2	4·20	
„ Feb. 20	„	Epsom, Ashley Road ...	·15	0 3	3·00	
1904 „ 2	III.	Culham College .....	·16	0 4	2·40	
1912 Nov. 26	„	Hampton Poyle .....	·33	0 10	1·98	
1905 „ 26	IV.	Norwich, Ipswich Road	·25	0 7	2·14	
England and Wales, S.W.						
1894 Nov. 14	V.	Axminster, Great Trill.	·76	0 20	2·28	
„ „ 14	„	Chedington .....	·70	0 30	1·40	
1899 Feb. 7	VI.	King's Heath, Cambridge Rd.	·10	0 2	3·00	
1900 Dec. 20	„	King's Heath, Cambridge Rd.	·16	0 4	2·40	
1888 Mar. 24	XI.	Chepstow,Shirenewton Hall	·33	0 2	9·90	
1895 Dec. 12	„	Newport, The Castle ...	·41	0 5	4·92	
1898 Nov. 2	„	Pontypridd, Maesderwen	2·24	2 0	1·12	
1913 „ 11	„	Briton Ferry, Brynsiriol	·75	0 15	3·00	
England and Wales, N.E.						
1908 Feb. 22	VII.	Waltham-on-the-Wolds	·16	0 4½	2·13	
1881 Jan. 11	X.	Darlington,Heighington	·41	0 10	2·46	

**England and Wales, N.W.**

1889 Feb. 8	VIII.	Rochdale, Fieldhead ...	·09	0	2	2·70
1899 Nov. 2	,,	Southport .....	·21	0	3	4·20
„ „ 2	,,	„ „ .....	·26	0	7	2·23
1902 Dec. 15	,,	Rochdale, Fieldhead ..	·13	0	2	3·90

**Scotland.**

1898 Dec. 1	XIV.	Maybole, Sauchrie .. ...	1·78	2	0	·89
1900 „ 11	XV.	Oban, Bragleenbeg .....	2·16	2	0	1·08
1905 Feb. 25	,,	Arrochar House .....	1·45	2	0	·73
1884 Dec. 10	XVIII.	Ben Nevis .....	1·30	1	0	1·30
1894 Feb. 2	,,	„ „ „ .....	1·41	2	0	·70
„ „ 6	,,	„ „ „ .....	1·48	2	0	·74
1899 Nov. 26	,,	„ „ „ .....	1·77	2	0	·88
1900 Jan. 22	,,	„ „ „ .....	1·51	2	0	·76
1903 Feb. 19	,,	„ „ „ .....	1·43	2	0	·72
„ „ 22	,,	„ „ „ .....	1·41	2	0	·70

**Ireland.**

1890 Nov. 6	XXIII.	Killybegs .....	1·40	1	0	1·40
„ „ 22	,,	„ „ .....	1·32	1	0	1·32

Dealing with England and Wales it will be seen that of the 23\* falls recorded, 9 occurred in November, 6 in December, 2 in January, 5 in February, and 1 in March. The last mentioned fall occurred at Chepstow, on March 24th, 1888, and took the form of very heavy snow, some of the flakes being nearly 4 inches in diameter yet only a quarter of an inch thick, falling like plates. Two inches of this snow fell in two minutes, and only six inches of it were required to yield one inch of water.

An examination of the weather conditions associated with these heavy winter short period rains showed that they were in general accompanied by a heavy gale and thunderstorms with hail on many occasions. A rather notable exception to this rule was the fall that took place at Dartford, on December 22nd, 1875, when between 1 p.m. and 1.3 p.m. ·08 inch of rain fell “during a sudden and short calm” in the midst of gales from S. and S.W. Doubtless a considerable number of the cases reported were related to line squalls sweeping over the country,

It is worthy of note that of the 23\* falls under discussion, 18 took place in ten minutes or less ; and 13 of these in five minutes or less. Of the remaining five, one lasted a quarter of an hour, and another 20 minutes. There are two of half an hour, and only in one instance

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\* The two entries attached to the Southport fall on November 2nd, 1899, have been counted as one fall throughout this abstract.

throughout the whole period did a fall exceed this duration, the rain in question being that which occurred on November 2nd, 1898, at Pontypridd, when 2·24 in. fell in 2 hours. This was in a memorable storm accompanied by great floods in the Lake District—the heaviest for thirty years.\*

While, as has been pointed out, the English winter records are almost wholly composed of short period rains, mostly of ten minutes or less duration, in Scotland and Ireland exactly the reverse is the case. Of the 10 cases in Scotland one was of an hour's duration, and the remainder of two hours' duration. Ireland appears with only two cases, both lasting an hour. The explanation, of course, is that the falls reported took place in the wet parts of the country and were associated with cyclonic weather.

No less than seven of the ten falls in Scotland refer to the Ben Nevis Observatory, the hourly records of which were carefully examined in this connection during the 21 years 1884-1904.

In Table III. is shown the total number of cases recorded in each year, during the period 1868-1913, for each of the groups of divisions into which the country has been divided. The total for the whole of the British Isles is also given along with the total number of stations from which records have been received. In the last column is given the percentage which the total number of heavy rains recorded, formed of the whole number of reporting stations furnishing records of rainfall in the British Isles. The average frequency over the whole period of 46 years was exactly 1·0 per cent., the years of maximum frequency being 1878 with 2·3 per cent., 1874 with 2·1 per cent., and 1899 with 2·0 per cent. The years of minimum occurrence were 1868, 1869 and 1885, in each of which the frequency fell to 0·3 per cent. Of the 46 years, 20 showed a frequency above, and 19 below, the average, while the remaining 7 were just the average. The mean percentage frequency given in Table III. is shown on the following diagram, using the values smoothed in three year groups by Bloxam's method. This curve suggests that heavy rains in short periods over the British Isles are subject to a cycle. There are prominent maxima in 1873 and 1898, in the middle of which was a minimum about 1886. After 1898 the frequency fell steadily till 1908, since when the values have shown an increase.

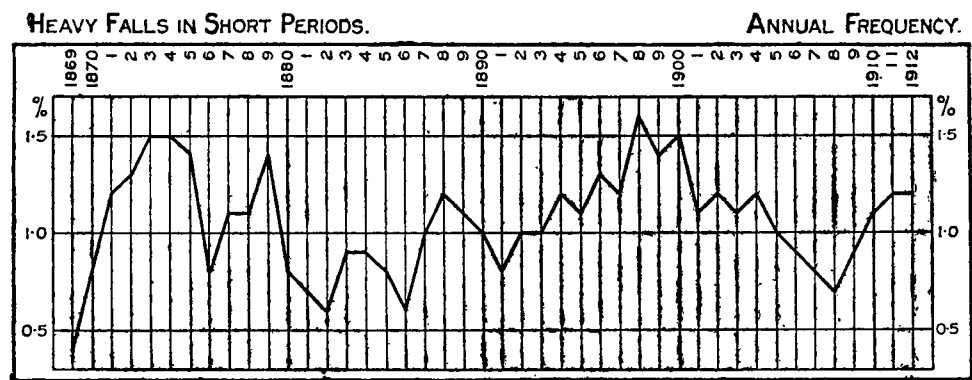
As has been remarked, the falls of short period rains were divided

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\* See *British Rainfall*, 1898, p. [27]-[29]

into two classes as regards duration, viz., those lasting up to an hour, and those exceeding an hour up to two hours. Taking the whole of the British Isles, 318 out of 1,441 recorded cases were of the longer duration, or 22 per cent., the average for England and Wales being 21 per cent., while in Scotland the mean was 39 per cent., and in Ireland 22 per cent. The frequency of falls exceeding an hour and less than two hours was lowest in England and Wales, S.E., viz., 19 per cent., in England, S.W., the average was 24 per cent.,

(Fig. 2.)



The number of noteworthy Heavy Rainfalls in Short Periods reported during each year is expressed as a percentage of the total number of Observing Stations during that year. The curve has been smoothed by averaging each year's value with that of the preceding and the following years.

England, N.E., and England, N.W. 21 per cent. Taking the values by months for England and Wales, and for England and Wales, S.E., we obtain the following monthly percentage frequency which the falls exceeding an hour's duration formed of the whole number up to two hours' duration. For Scotland and Ireland there are not enough cases to render the comparison of any real significance, but attention may be called to the August values in Scotland where the number of cases in the two groups is exactly equal.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
England & Wales	0	0	0	13	25	21	22	19	22	14	11	0	21
" S.E.	0	0	0	17	39	29	18	21	28	9	0	0	19

The entire absence of sustained intense rainfalls during the winter in England and Wales may, we think, be accepted as conclusively demonstrated. The high values for England S.E. during May and September, and the relatively small number of instances in July and August, are also an interesting feature.

TABLE III.—*Number of Heavy Rains in Short Periods reported  
in each Year from 1868 to 1913.*

	ENGLAND AND WALES.				ENG- LAND.	SCOT- LAND.	IRE- LAND.	Total.	Total No of Stations at work.	Per cent of Total Records.
	S.E.	S.W.	N.E.	N.W.						
1868 ..	2	1	0	0	3	1	0	4	1375	0.3
1869 ..	1	3	1	0	5	0	0	5	1472	0.3
1870 ..	2	2	0	1	5	4	0	9	1509	0.6
1871 ..	5	6	4	3	18	2	1	21	1504	1.4
1872 ..	13	4	4	4	25	0	0	25	1630	1.5
1873 ..	6	1	5	2	14	3	0	17	1696	1.0
1874 ..	26	0	4	0	30	5	2	37	1727	2.1
1875 ..	12	9	1	2	24	0	1	25	1835	1.4
1876 ..	5	3	2	1	11	0	1	12	1982	0.6
1877 ..	5	3	0	1	9	0	0	9	2059	0.4
1878 ..	21	14	6	4	45	1	1	47	2071	2.3
1879 ..	3	4	3	0	10	1	1	12	2069	0.6
1880 ..	9	5	7	0	21	2	3	26	2114	1.2
1881 ..	3	4	1	2	10	0	0	10	2145	0.5
1882 ..	1	4	0	1	6	2	2	10	2338	0.4
1883 ..	12	4	4	1	21	2	1	24	2433	1.0
1884 ..	13	5	7	2	27	3	1	31	2463	1.3
1885 ..	6	1	1	0	8	0	0	8	2486	0.3
1886 ..	7	4	4	6	21	1	0	22	2488	0.9
1887 ..	6	4	1	0	11	5	1	17	2555	0.7
1888 ..	21	9	3	4	37	2	1	40	2590	1.5
1889 ..	18	3	7	6	34	1	0	35	2708	1.3
1890 ..	7	4	3	0	14	2	2	18	2776	0.6
1891 ..	13	4	8	1	26	4	0	30	2799	1.1
1892 ..	9	2	2	2	15	0	1	16	2850	0.6
1893 ..	16	11	5	4	36	2	1	39	2987	1.3
1894 ..	11	4	8	3	26	3	2	31	3043	1.0
1895 ..	10	15	5	8	38	1	2	41	3084	1.3
1896 ..	11	6	5	1	23	2	1	26	3219	0.8
1897 ..	43	10	2	5	60	0	0	60	3318	1.8
1898 ..	8	14	4	1	27	2	1	30	3404	0.9
1899 ..	34	26	5	1	66	3	2	71	3501	2.0
1900 ..	17	11	8	4	40	9	0	49	3493	1.4
1901 ..	14	8	4	2	28	6	1	35	3506	1.0
1902 ..	24	5	1	2	32	3	0	35	3636	1.0
1903 ..	28	17	1	0	46	5	5	56	3829	1.5
1904 ..	16	10	5	3	34	0	0	34	3982	0.9
1905 ..	28	7	5	2	42	4	0	46	4096	1.1
1906 ..	26	7	4	1	38	2	1	41	4259	1.0
1907 ..	11	10	1	1	23	1	3	27	4345	0.6
1908 ..	18	11	2	1	32	2	3	37	4538	0.8
1909 ..	24	4	3	0	31	3	1	35	4681	0.7
1910 ..	38	10	7	2	57	3	0	60	4962	1.2
1911 ..	31	19	11	1	62	0	7	69	5074	1.4
1912 ..	28	2	20	2	52	4	1	57	5272	1.1
1913 ..	34	10	6	0	50	2	0	52	5370	1.0
Total ..	696	320	190	87	1293	98	50	1441	..	..
Average	15.1	6.9	4.1	1.9	28.0	2.1	1.1	31.0	2984	1.0



# METEOROLOGICAL OBSERVATIONS AT CAMDEN SQUARE, LONDON, IN 1913.

## SHADE TEMPERATURE.

1913.	MEAN DAILY.			MAXIMUM DAILY.					MINIMUM DAILY.				
	1913.	Diff. from Average.	Mean.	Highest Reading.	Date.	Lowest Reading.	Date.	Diff. from Average.	Highest Reading.	Date.	Lowest Reading.	Date.	
January .....	41.2	+2.7	46.0	52.3	23	37.5	13	+2.5	46.6	5	27.3	13	
February .....	41.0	+1.3	46.9	55.1	4	39.3	14, 20	+0.6	46.2	4	24.1	23	
March .....	45.0	+2.9	52.0	59.3	6	42.8	17	+2.7	48.1	5	26.0	18	
April .....	48.0	-0.1	56.6	68.5	29	43.2	11	+0.6	51.4	28	26.0	13	
May .....	56.7	+2.7	67.8	84.4	26	55.3	4	+2.3	58.3	30	35.3	7	
June .....	61.1	+1.0	72.2	85.4	17	64.3	24	+0.5	58.2	29	43.6	9	
July .....	60.2	-3.3	70.2	78.9	28	60.4	23	-1.7	58.8	18	44.3	8	
August .....	61.8	-0.5	72.2	82.6	28	63.3	19	-0.2	60.9	22	45.2	25	
September .....	58.9	+1.2	68.9	78.2	27	59.5	1	+2.6	59.6	5	43.0	16	
October .....	53.4	+3.3	61.5	70.3	2	51.4	24	+3.5	53.6	2	36.7	25	
November .....	47.8	+4.3	54.3	59.9	11	47.2	23	+3.1	53.1	18	29.8	23	
December .....	41.7	+2.0	46.2	55.3	9	35.1	30	+2.3	50.8	1	26.9	25	
YEAR .....	51.4	+1.4	59.6	85.4	June 17	35.1	Dec. 30	+1.5	60.9	Aug. 22	24.1	Feb. 23	

These Tables of meteorological observations are compiled from the readings taken at 9 a.m. and 9 p.m. The average, when quoted, is in every case for the 50 years 1860-1909. The rainfall is from the 8-inch rain gauge of the Meteorological Office pattern; the radiation temperature from a black-bulb maximum thermometer in vacuo at a height of 4 feet above the ground, and from a link-bulb minimum thermometer laid on short

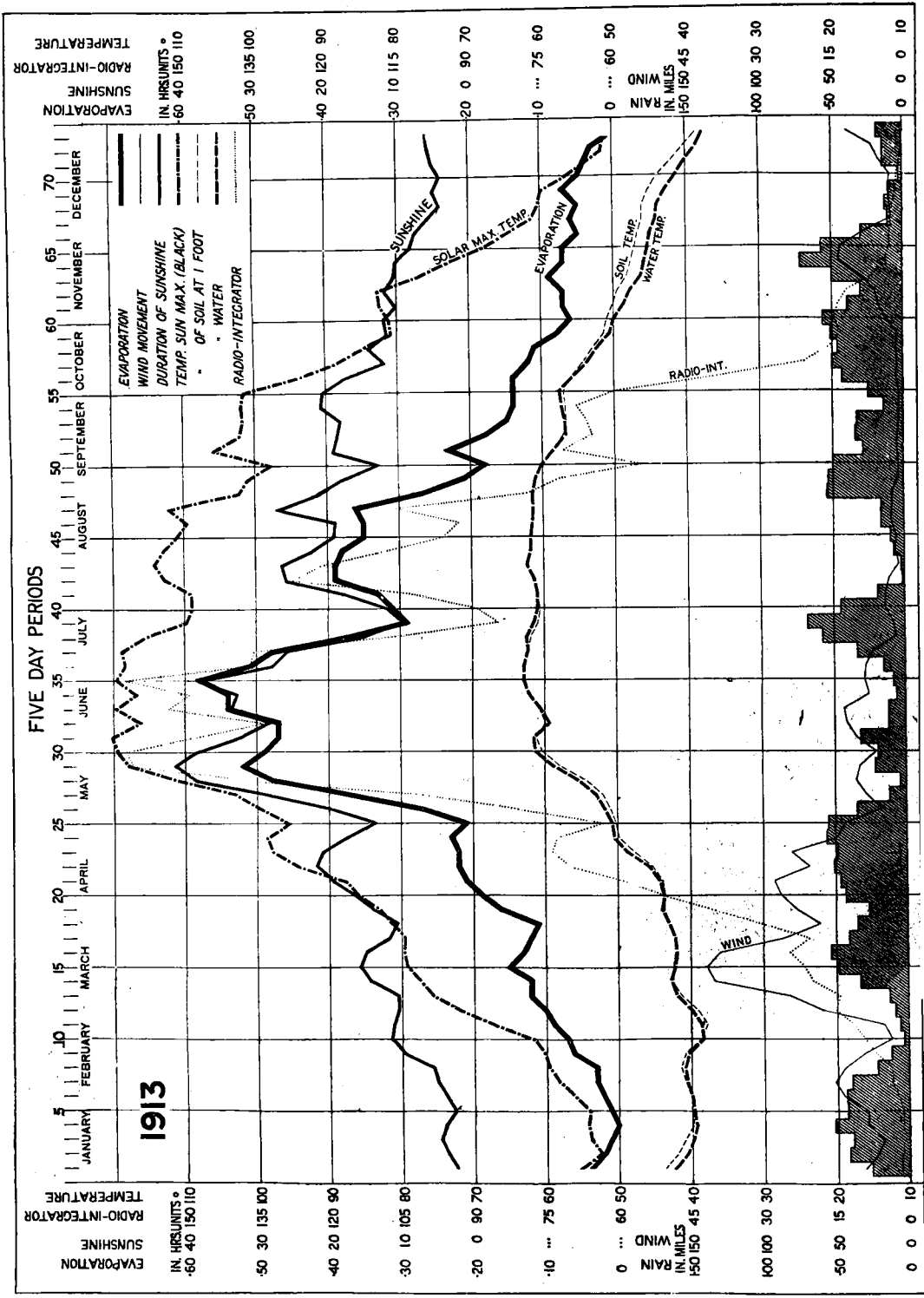
METEOROLOGICAL OBSERVATIONS AT CAMDEN SQUARE, LONDON, IN 1913.

1913.	RAINFALL.						Evapor- ation.	RADIATION TEMPERATURE.			SUNSHINE.		EARTH TEMPERATURE.		
	Total duration. on day.	Max. dura- tion in one day.	Total amount. in.	Diff. from Average. in.	Max. amount in one day. in.	No. of Rain Days.		Mean max. in Sun. Black bulb.	Mean min. on Grass.	Radio- Integra- tor. Units.	Total. duration. hrs.	Max. in one day. hrs.	Mean at 1 foot. °.	Mean at 4 feet. °.	Mean at 10 feet. °.
January.....	68.8	11.0	2.57	+ .57	.50	17	53.9	31.6	7.8	24.8	6.0	40.9	45.1	49.0	
February....	28.0	8.0	.79	— .81	.25	12	63.3	30.0	44.4	44.4	7.3	39.5	43.5	48.0	
March .....	47.2	7.5	2.29	+ .54	.32	21	77.6	33.5	122.8	78.1	7.5	42.3	43.4	47.0	
April .....	54.4	9.5	2.72	+ 1.10	.48	21	92.0	36.8	372.0	112.3	9.9	45.6	44.8	46.5	
May .....	25.5	8.7	1.72	— .13	.60	11	108.7	43.4	751.3	189.0	11.7	54.7	49.1	46.9	
June .....	6.1	2.5	.58	— 1.74	.19	7	118.3	48.0	888.4	199.8	12.3	61.4	55.2	48.5	
July .....	35.4	6.7	2.31	— .05	.56	12	111.6	51.2	641.6	100.6	9.9	61.3	57.4	50.7	
August .....	22.4	5.1	1.43	— .92	.52	11	110.3	51.3	613.0	140.4	10.6	61.8	58.0	52.1	
September ..	44.8	11.2	1.75	— .44	.46	11	101.9	48.7	395.7	111.3	8.8	57.9	57.4	53.1	
October .....	52.8	8.7	3.11	+ .48	.71	15	86.2	43.8	123.4	77.9	5.9	53.1	55.0	53.3	
November...	43.9	8.1	2.35	+ .01	.67	17	71.8	38.2	32.7	54.5	5.2	47.4	51.4	52.8	
December ...	23.7	9.7	.79	— 1.34	.27	8	55.8	32.7	5.2	31.7	4.4	42.9	48.1	51.7	
YEAR.....	453.0	11.2	22.41	— 2.73	.71	163	87.6	40.8	3998.3	1164.8	12.3	50.7	50.7	50.0	

grass and freely exposed to the sky. The radio-integrator was described in *British Rainfall, 1907*, p. 44. Earth temperature is taken by spirit thermometers suspended in iron tubes of 1 inch internal diameter driven into the soil. They are read once daily at 9 a.m. The shade temperature is from thermometers on a Glaisher stand, the mean daily temperature being the mean of the maximum, minimum, 9 a.m., and 9 p.m. readings.



# EVAPORATION FROM A WATER SURFACE AND OTHER METEOROLOGICAL PHENOMENA.



## RECORDS OF EVAPORATION AND PERCOLATION.

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WHILST the number of records of rainfall received for publication increases in a regular manner year by year, the almost stationary condition of affairs in connexion with the measurement of evaporation continues to be a matter for regret. Two additional records, neither of which can be said to add anything to the representative nature of the table, are all that can be set this year against the loss of the record at Downholland, one of the very few stations where observations of evaporation had been carried on with standard apparatus for as long as 15 years. The six-foot tank which was used at Downholland will, however, continue in use elsewhere, as we understand that Mr. Baxendell, of the Fernley Observatory, Southport, under whose charge the observations were taken, has had it removed temporarily to Hesketh Park, where its indications will be critically compared with those of the three-foot tank at present installed there.

The supplementary record at Ardsley Reservoir is purely temporary, the intention being after a short time to remove the tank to a new site some 18 miles distant, and situated at about 1,000 feet above sea-level, where it should give extremely useful results. We are glad to know that a record has recently been commenced at Billingshurst, in Sussex, by Mr. S. C. Russell, and should be available for *British Rainfall, 1914*.

The list of stations from which records of percolation are received continues unchanged, and although the information available is extremely limited, it forms a useful supplement to the observations of direct evaporation. It will be observed that, generally speaking, the evaporation, as calculated by deducting the amount of percolation from the rainfall, is smaller than that arrived at by direct measurement. This must be attributed to the fact that water having once been withdrawn from the percolation gauge for measurement, is no longer available for re-evaporation, no evaporation being thus possible when the soil in the gauge is denuded of water. In a state of nature

in this country some moisture is practically always available for evaporation from the soil, and every growing plant plays a part in drawing it to the surface, though in times of drought the supply may not be so great as the demand, and evaporation, although not ceasing, may be considerably reduced. In the evaporation tank on the other hand an unlimited supply of water is available for evaporation, a condition unlikely to occur in nature except over an actual water surface such as a lake or marshy land. It is therefore probable that the measurement of evaporation from a free water surface gives rather too high a value when applied to the loss over a land surface, and we are inclined to the belief that, in general terms, the amount of loss taking place over the land where no exceptional circumstances exist, would be most closely arrived at by assuming it to lie between the indications of a percolation gauge and those of an evaporation tank.

*Evaporation at Camden Square, 1885-1913.*

	Jan. in.	Feb. in.	March. in.	April. in.	May. in.	June. in.	July. in.	Aug. in.	Sept. in.	Oct. in.	Nov. in.	Dec. in.	Total. in.
1885.	·20	·38	·86	1·71	1·98	2·77	3·29	2·25	1·13	·77	·17	·11	15·62
1886.	·23	·13	·53	1·59	1·78	2·93	3·12	1·86	1·46	·63	·27	·12	14·65
1887.	c·07	·29	·76	1·72	1·79	3·68	3·76	2·54	1·25	·78	·21	·07	16·78
1888.	·07	·37	·48	1·16	2·71	2·24	1·44	1·90	1·17	·60	·43	·03	12·60
1889.	·03	·18	·62	1·07	1·76	2·97	2·34	1·96	1·52	·42	·29	c·13	13·03
1890.	·08	·19	·50	1·44	2·63	2·14	2·33	2·02	1·27	·79	·31	·04	13·74
1891.	·03	·16	·73	1·35	1·66	2·83	2·34	1·67	1·00	·62	·20	·22	12·81
1892.	·05	·09	·60	1·88	2·65	3·05	2·84	2·20	1·01	·36	·02	·20	14·95
1893.	c·03	·01	·92	2·33	3·06	3·62	3·12	2·85	1·48	·70	·11	·01	18·18
1894.	c·04	·28	·83	1·17	2·10	2·48	2·49	1·91	·97	·37	·20	·11	12·87
1895.	·14	·64	·36	1·26	3·06	3·31	3·07	2·12	1·27	·54	·19	·07	16·03
1896.	·16	·24	·64	1·57	3·06	3·21	3·63	1·96	·68	·47	·18	·00	15·80
1897.	·23	·21	·76	1·23	2·99	2·48	3·60	2·49	·99	·63	·26	c·14	15·73
1898.	·19	·37	·51	1·28	1·56	2·10	2·96	2·53	1·73	·45	·11	·16	13·95
1899.	·04	·28	·52	1·24	2·34	3·67	4·03	3·78	2·01	·45	·41	·11	18·88
1900.	·03	·16	·80	1·46	2·35	2·85	4·25	2·61	1·61	·89	·24	·15	17·40
1901.	·13	·24	·60	1·98	3·25	3·85	3·37	3·19	1·42	·64	·31	c·05	18·93
1902.	·16	·15	·71	1·75	1·78	2·33	3·30	1·71	1·47	·69	·28	·27	14·60
1903.	·26	·39	·97	1·57	2·24	2·79	3·35	2·53	1·51	·86	·29	·12	16·88
1904.	c·09	·26	·54	1·68	1·81	3·32	4·06	2·86	1·20	·50	·26	·02	16·42
1905.	·17	·35	·65	1·14	3·19	2·49	3·65	2·23	1·24	·78	·09	·16	16·14
1906.	·06	·21	·73	1·90	1·90	3·53	3·65	3·46	2·38	·78	·27	·16	19·03
1907.	·21	·38	1·02	1·27	1·93	2·47	2·65	2·24	1·72	·49	·27	·19	14·84
1908.	·05	·27	·56	1·32	2·23	3·77	2·75	2·47	1·25	·48	·29	·14	15·58
1909.	·14	·30	·30	1·85	2·93	1·70	2·60	2·23	·84	·76	·17	·16	13·98
1910.	·22	·17	·80	1·43	2·52	2·57	2·00	2·12	1·42	·76	·19	·10	14·30
1911.	·15	·32	·59	1·77	2·58	3·34	4·60	3·19	1·96	·64	·37	·02	19·53
1912.	·24	·16	·79	2·34	2·44	2·49	2·55	1·69	1·41	·39	·33	·12	14·95
Average	·11	·25	·67	1·55	2·37	2·89	3·11	2·38	1·37	·62	·24	·09	15·65
1913.	·10	·32	·77	1·25	2·49	3·13	2·15	2·09	1·07	·61	·36	·32	14·66
Diff.	—·01	+·07	+·10	—·30	+·12	+·24	—·96	—·29	—·30	—·01	+·12	+·23	—·99

NOTE.—c indicates condensation.

Compared with the average for 28 years at Camden Square the evaporation during 1913 was  $\cdot99$  in. in defect, practically the whole of this deficiency being traceable to the comparatively small loss during July, normally the month of greatest evaporation. In no other month of the year did the evaporation differ from the average by more than  $\cdot30$  in. June was the only month with a loss of as much as 3 inches, but the evaporation was deficient throughout the remainder of the summer. The relation of the principal meteorological elements during the year may be seen by reference to the accompanying plate, in which we give as usual curves showing the temperature, duration of sunshine, wind movement and the indications of the Wilson radio-integrator. The high temperature of the early summer and the cold weather of July are distinctly reflected in the evaporation curve, which exhibits a notable subsidiary maximum at the 29th pentad and a remarkable falling off from the 35th pentad to a minimum at the 39th. The curve most closely in sympathy with the evaporation curve was, as usual, that of duration of sunshine, as will be seen by the coincidence of the minima on both curves at numerous points. The radio-integrator curve also follows that for evaporation closely in the summer, but less so in the winter months. There is, as usual, little relation between the evaporation and wind movement curves.

In the general table of evaporation results we are now able to quote homogeneous averages for a period of 5 years for 10 out of the 13 stations, and at Camden Square the average for these 5 years differed by only 1 per cent. from the average of 28 years. The total for the year was below the 5-year average at seven out of the ten stations, the deficiency varying from  $\cdot38$  in. at Ardsley, near Wakefield, to  $1\cdot90$  in. at Otterbourne. At Harrogate there was an excess of  $3\cdot30$  in. over the average, but the high value is not borne out by the record at Harlow Hill Reservoir. There was also more than the average evaporation at the Talla station in Peebles-shire, though at Edinburgh the total was  $1\cdot03$  in. deficient. It is difficult without more complete observations to understand large local variations of this nature, but it is worthy of note that the total rainfall of the year at these two stations showed a similar relationship to the average of the five years, being  $4\cdot77$  in. in defect at Edinburgh and  $\cdot40$  in. in excess at Talla.

*Table of Rainfall, Percolation and Calculated Evaporation at Park Hill House, Stanhope Road, Croydon. Mr. Baldwin Latham, M.Inst.C.E.*

NOTE.—The percolation gauges are covered with a natural growth of grass.  
Size of percolation gauges 3 ft. square and 3 ft. deep.

1913	Rainfall. Level of Gauge 265·00 ft. above O.D.	Percolation Gauge. <i>Chalk</i> . Level of Gauge 264·00 ft. above O.D.		Percolation Gauge. <i>Gravel</i> . Level of Gauge 264·00 ft. above O.D.	
		Percolation.	Calculated Evaporation.	Percolation.	Calculated Evaporation.
	in.	in.	in.	in.	in.
January .....	3·73	3·243	·49	3·132	·60
February .....	·94	·976	C ·04	·798	·14
March .....	3·19	1·627	1·56	1·318	1·87
April .....	3·04	1·290	1·75	·668	2·37
May .....	1·31	·562	·75	·173	1·14
June .....	·26	—	·26	·009	·25
July ..	1·60	—	1·60	—	1·60
August .....	2·26	—	2·26	—	2·26
September .....	1·81	—	1·81	—	1·81
October .....	4·18	·011	4·17	·566	3·61
November .....	2·90	2·623	·28	2·545	·36
December .....	1·16	·720	·44	·674	·49
Total .....	26·38	11·052	15·33	9·883	16·50

NOTE.—C indicates Condensation.

*Observations made at Park Hill House, Stanhope Road, Croydon.  
Mr. Baldwin Latham, M.Inst.C.E.*

1913	Evaporation from 12 in. Evaporator floating in Water.	Condensation in 12 in. Evaporator floating in Water.	Average daily Temperature of Water at 9 a.m. in 12 in. Evaporator floating in Water.	Evaporation from 5 in. Evaporator fully exposed in Air.	Average daily Temperature of Water at 9 a.m. in 5 in. Evaporator fully ex- posed in Air.	Temperature of the Dew Point at 9 a.m.
	in.	in.	°	in.	°	°
January .....	·350	·040	38·9	1·090	39·1	38·5
February .....	·580	—	38·6	1·590	38·0	36·2
March .....	1·290	·015	43·7	3·045	43·5	40·5
April .....	1·680	—	48·7	3·540	51·5	41·7
May .....	3·120	—	59·4	6·410	64·9	48·9
June .....	3·630	—	64·1	6·960	70·0	51·7
July .....	2·660	—	61·7	4·370	62·8	53·1
August .....	2·625	—	63·3	4·705	65·4	54·4
September .....	1·680	—	60·3	3·280	62·9	54·5
October .....	1·105	—	53·8	2·225	53·8	50·3
November .....	·735	·035	46·9	1·575	45·7	44·6
December ..	·505	·025	40·1	1·000	39·6	38·0
Totals .....	19·960	·115	...	39·790	...	...
Means .....	...	...	51·6	...	53·1	46·0



*Table of Rainfall and Percolation at the South Hants Water Company's Pumping Stations, at Timsbury and Twyford, Hants. Mr. Wm. Matthews, M.Inst.C.E.*

NOTE.—The percolation gauges are covered with a natural growth of grass.  
Size of percolation gauge 3 ft. square and 3 ft. deep.

1913.	TIMSBURY.			TWYFORD.		
	Rainfall. Level of Gauge 96·39 ft. above O.D.	Percolation Gauge. <i>Chalk.</i> Level of Gauge 89·75 ft. above O.D.		Rainfall. Level of Gauge 138·72 ft. above O.D.	Percolation Gauge. <i>Chalk.</i> Level of Gauge 137·49 ft. above O.D.	
		Percolation.	Calculated Evaporation.		Percolation.	Calculated Evaporation.
	in.	in.	in.	in.	in.	in.
January .....	4·66	4·36	·30	5·47	5·56	c ·09
February .....	1·10	1·36	c ·26	1·46	2·01	c ·55
March .....	2·88	1·71	1·17	3·93	2·86	1·07
April .....	3·08	1·49	1·59	3·15	1·70	1·45
May .....	2·54	1·68	·86	3·00	1·66	1·34
June .....	·37	—	·37	·40	—	·40
July .....	1·30	·01	1·29	1·20	—	1·20
August .....	1·28	·01	1·27	1·15	—	1·15
September .....	2·76	·01	2·75	2·77	—	2·77
October .....	4·68	·02	4·66	4·56	·07	4·49
November .....	3·02	2·30	·72	3·46	3·06	·40
December .....	1·76	1·41	·35	1·91	1·60	·31
Total .....	29·43	14·36	15·07	32·46	18·52	13·94

*Table of Rainfall and Percolation at Windwhistle House, Grayshott, Hampshire. Mrs. Lyndon.*

660 feet above Sea Level. Gauge 3 ft. × 3 ft. × 3 ft.

1913	Rainfall.	Percolation.	Calculated Evaporation.
	in.	in.	in.
January .....	5·57	5·34	·23
February .....	1·45	1·97	c ·52
March .....	3·96	2·84	1·12
April .....	3·45	2·13	1·32
May .....	3·44	2·42	1·02
June .....	·47	—	·47
July .....	2·73	—	2·73
August .....	1·35	—	1·35
September .....	3·88	·77	3·11
October .....	5·78	4·14	1·64
November .....	3·21	3·34	c ·13
December .....	1·87	1·63	·24
Total .....	37·16	24·58	12·58

NOTE.—c indicates condensation.

*Table of Rainfall, Percolation and Calculated Evaporation at Rothamsted Experimental Station, Harpenden.*

*Mr. E. J. Russell, D.Sc.*

Altitude 420 feet.

1913.	Rainfall.	PERCOLATION AND CALCULATED EVAPORATION THROUGH SOIL.					
		20 in. deep.		40 in. deep.		60 in. deep.	
		Percolation.	Calculated Evaporation.	Percolation.	Calculated Evaporation.	Percolation.	Calculated Evaporation.
	in.	in.	in.	in.	in.	in.	in.
January .....	3·16	3·046	·11	3·115	·04	3·124	·04
February .....	·95	·658	·29	·767	·18	·785	·16
March .....	2·41	·833	1·58	·891	1·52	·886	1·52
April .....	3·04	1·409	1·63	1·528	1·51	1·537	1·50
May .....	1·72	·748	·97	·880	·84	·836	·88
June .....	1·15	·003	1·15	·021	1·13	·025	1·13
July .....	1·19	—	1·19	·001	1·19	·001	1·19
August .....	1·45	—	1·45	—	1·45	—	1·45
September .....	1·38	·181	1·20	·162	1·22	·124	1·26
October .....	3·38	2·249	1·13	2·082	1·30	2·026	1·35
November .....	2·86	2·422	·44	2·372	·49	2·283	·58
December .....	·79	·379	·41	·360	·43	·302	·49
Total .....	23·48	11·928	11·55	12·179	11·30	11·929	11·55

*Table of Rainfall, Percolation and Calculated Evaporation at Rosebank Berkhamsted, Herts. Mr. E. Mawley, F.R.Met.Soc.*

401 feet above Sea Level.

Gauge 3 ft. × 3 ft. × 2 ft. 6 in. deep.

1913.	Rainfall.	Percolation and Evaporation. (Soil—disintegrated clay and flints.)			
		Sub-soil Gauge. (Covered with short grass).		Surface-soil Gauge. (Without vegetation).	
		Percolation.	Calculated Evaporation.	Percolation.	Calculated Evaporation.
	in.	in.	in.	in.	in.
January .....	4·10	3·535	·57	4·166	c ·07
February .....	·89	·748	·14	·812	·08
March .....	2·38	1·255	1·13	1·264	1·12
April .....	2·83	1·467	1·36	1·585	1·25
May .....	1·85	·959	·89	1·056	·79
June .....	·72	—	·72	—	·72
July .....	1·39	—	1·39	—	1·39
August .....	1·19	—	1·19	—	1·19
September .....	1·33	—	1·33	·220	1·11
October .....	3·56	·147	3·41	2·620	·94
November .....	3·04	2·292	·75	2·846	·19
December .....	·77	·320	·45	·552	·22
Total .....	24·05	10·723	13·33	15·121	8·93

NOTE.—c indicates condensation.

*Table of Rainfall and Percolation, also Calculated Evaporation therefrom, compared with Evaporation from a Free Water Surface at Harlow Hill, Harrogate. Harrogate Corporation.*

Rain gauge 589 feet above O.D., and percolation gauge 589 feet above O.D.

1913.	Rainfall.	Percolation.	Calculated Evaporation.	Evaporation from Free Water Surface.
	in.	in.	in.	in.
January ... ..	3·14	2·55	·59	·14
February .....	·87	·80	·07	·46
March .....	3·21	1·25	1·96	1·11
April .....	3·03	·97	2·06	1·62
May .....	2·18	1·22	·96	2·29
June .....	1·46	·19	1·27	3·24
July .....	·98	—	·98	2·75
August .....	1·13	·06	1·07	2·63
September .....	1·25	·01	1·24	1·77
October .....	2·86	·28	2·58	·88
November .....	2·40	1·06	1·34	·71
December .....	1·67	·88	·79	·46
Total .....	24·18	9·27	14·91	18·06

EVAPORATION IN 1913.

County Station .....	London, Camden Square. 51° 32' 20" N. 0 8 10 W. 111 ft. H. R. Mill, D.Sc. 6 ft. x 6 ft. 450 3 inches	Surrey, Croydon, Park Hill Ho. 51° 22' 12" N. 0 5 32 W. 264 ft. Baldwin Latham, C.E. 1 ft. diameter 5 4 in. above water	Sussex, Isfield Place 50° 56' 50" N. 0 3 40 E. 41 ft. Major H. King. 4 ft. x 4 ft. 250 3 inches	Hampshire, Otterbourne 51° 0' 28" N. 1 19 55 W. 112 ft. E. C. Rodda, C.E. 6 ft. x 6 ft. 450 3 inches	Devon, Torquay W. W., Kennick 50° 38' 30" N. 3 41 20 W. 835 ft. S. C. Chapman, C.E. 6 ft. x 6 ft. 450 3 inches	Lincoln, Revesby Water Works 53° 9' N. 0 3 W. 130 ft. J. Shaw. 6 ft. x 6 ft. 450 2 inches	Lancashire, Southport, Hesketh Pk. 53° 39' 10" N. 2 58 0 W. 37 ft. J. Baxendell. 3 ft. x 3 ft. 112 3 inches
Latitude .....	in. .10	in. .31	in. .61	in. 0.47	in. 0.29	in. .16	in. .17
Longitude .....	.32	.58	.53	.38	.26	.21	.32
March .....	.77	1.27	1.07	.62	.55	.72	.97
April .....	1.25	1.68	1.66	1.45	1.21	1.40	1.28
May .....	2.49	3.12	2.70	3.00	2.84	2.09	2.12
June .....	3.13	3.63	3.14	3.12	3.62	2.49	3.03
July .....	2.15	2.66	2.53	2.61	3.79	1.84	3.10
August .....	2.09	2.63	2.66	3.01	3.23	1.66	2.63
September .....	1.07	1.68	1.51	1.78	1.39	1.50	1.51
October .....	.61	1.10	.97	.82	.87	.63	.67
November .....	.36	.70	.62	.46	.03	.38	.32
December .....	.32	.48	.22	.33	.22	.22	.25
Year, 1913...	14.66	19.84	18.22	17.11	17.72	13.30	16.37
Average, { 1908-1913}	15.50	19.60	19.05	19.01	19.01	14.71	...
Difference ...	— .84	+ .24	— .83	— 1.90	— 1.29	— 1.41	...
{ Year, 1913...	22.41	26.38	34.24	29.81	42.52	19.82	28.89
{ Average, { 1908-1913}	25.14	28.84	31.23	30.19	43.42	25.73	33.28
{ Difference ...	— 2.73	— 2.46	+ 3.01	— .38	— .90	— 5.91	— 4.39

Note.—C indicates condensation.

recognized the advantage of the newer types of thermometer and water bottle for researches in shallow water, and took part in improving them. Later, in the Lake Survey, in Scotland, he encouraged the use of the most recent and elaborate limnological apparatus, and finally in 1910 he adopted the new methods of deep sea research with his whole heart. He threw himself into the investigations of the *Michael Sars* in the North Atlantic, with all the fervour of a young man and, despite his 70 years and the warnings of many friends, he undertook the voyage in the little craft, reviling the discomfort but revelling in the discoveries which she brought to light.

He had always taken the keenest interest in Antarctic Exploration and to his efforts the revival of Antarctic research at the end of the nineteenth century was largely due. He would undoubtedly have taken the leading part in an organized system of British Antarctic Exploration had his view of the necessity for a financial provision of at least £150,000 been approved. He resolutely declined to be responsible for organizing any Expedition which should have to set out in debt, or under a leader whose mind was distracted and plans hampered by financial anxiety.

To schemes for the advancement of the Natural Sciences which he considered to be soundly planned, Sir John Murray was always ready to give his approval and help. Chief amongst these was the Meteorological Observatory on Ben Nevis, of which he was one of the founders, but he shared with Dr. Buchan the view that it was more helpful to science to obtain an exhaustive series of accurate observations extending over a definite period than to endeavour to set up a permanent institution of less efficiency.

Sir John Murray became a Trustee of the British Rainfall Organization when the steps were taken in 1910 to place that body on a permanent basis. He attended all the meetings of Trustees and took the deepest interest in the work. Had he lived it is probable that he would have brought forward a scheme of which he frequently spoke and last referred to in a letter written only a week before his death. His idea generally speaking, was that the Organization should be extended to deal with world-wide rainfall and brought into relation with a proposed Oceanographical Institute which it was his ambition to found in London. How far this plan had been worked out I do not know, but it was certainly engaging his mind

when, on the 16th March, 1914, a motor accident instantaneously cut short the unabated energies of his long and forceful career.

Sir John Murray was the author of a small volume on "The Ocean," and an account in collaboration with Dr. Johan Hjort entitled "The Depths of the Ocean," but although he wrote many scientific papers his literary productions do not form a measure of his influence on the science of his time. Murray was always most generous in allowing his assistants and colleagues to describe the work in which he was engaged with them under their own names, and although I have abstained in this notice from mentioning any of these as it is impossible to make the list complete, yet there are many now engaged in different branches of science who owe to his example and precept the best part of their education. But with it all Murray's position amongst men of science was peculiarly his own. In the hierarchy of natural knowledge his priesthood was of the order of Melchizedek, he was no man's disciple and he founded no school.

## THE DRY SUMMER OF 1913.

BY R. C. MOSSMAN, F.R.S.E.

THE summer of 1913 was as remarkable for deficiency of rainfall as that of 1912 was for heavy rains. Taking the country as a whole the period covered by the dry spell embraced the two months of July and August, but in some parts of the country a remarkable deficiency of rain prevailed over other periods, of varying duration, to which a passing reference will be made, though the greater part of this article is devoted to the dry period in July and August.

Before giving a condensed abstract of the rainfall data for the two months in question it is desirable to refer to some of the leading features relating to other meteorological concurrents. This information has been compiled from the data given in the *Monthly Weather Reports* of the Meteorological Office, referring to July and August, and in Figs. 1, 2 and 4 the data relating to the departure from the average of Pressure, Temperature, and Sunshine are shown graphically, while Fig. 3 contains the rainfall of the two months expressed as a percentage departure from the average. The number of stations used in drawing the lines of equal departure from the available average for the various climatic elements was as follows :—

Element.	No. of Stations.	Period of Average.	No. of Years.
Barometric Pressure .....	29	1871—1905	35
Air Temperature .....	122	1871—1905	35
Sunshine .....	48	1881—1905	25
Rainfall .....	103	1875—1909	35

*Barometric Pressure.*—The mean barometric pressure in both July and August differed markedly from the normal. Not only was it everywhere in excess of the average, but pressure instead of rising from north to south, increased from east to west, with the highest pressure off the west of Ireland, and the lowest over the North Sea. A few shallow depressions were recorded from

time to time. In July only two were observed, the first formed across Scotland on the night of the 13th-14th, and filled up at 6 p.m. on the latter day off the north-east of England. The second was formed on the 21st off the north-west of Ireland, it dispersed on the following morning in the neighbourhood of the Bristol Channel. In August the British Isles were practically free from cyclonic disturbances. The greatest excess of pressure during the two months as compared with the normal was  $\cdot 20$  in. in a line running north-east from the north-west of Ireland to Orkney. The excess of pressure fell off to the south-east and it was only  $\cdot 10$  in. above the average in a line extending from Cornwall to the coast of Suffolk. On the south coast from Dorset to Kent the pressure was only  $\cdot 08$  in. above the average. Over the country generally there was an excess of northerly and easterly winds, whereas the normal gradient is for southerly and westerly winds during the months of July and August.

*Temperature* was very generally under the normal being over  $3^{\circ}$  below the average on the Norfolk coast and Thames Estuary,  $2^{\circ}$  below the normal over the south-eastern counties, south of Spurn Head, while over the rest of the country generally the temperature was not anywhere much more than  $1^{\circ}$  under the average. In a few isolated patches it was above the normal, namely in the south of Ireland, the south-west of England, the central and western Highlands and the north of Scotland. Over most of the areas described the excess did not reach  $1^{\circ}$ , but at such widely separated places as Strathpeffer and Killarney the excess amounted to  $2^{\circ}$  and  $1^{\circ} \cdot 6$  respectively.

*Sunshine*.—One of the most marked features of the months of July and August was the pronounced absence of sunshine over England and the eastern half of Scotland. Over the whole of East Anglia and the east Midlands sunshine was less than three-quarter's of the average, falling to but little above 60 per cent. of the average at Rothamsted, Worksop, and London. In all western districts it was above the normal, the greatest excess about 30 per cent., being noted at Valentia.

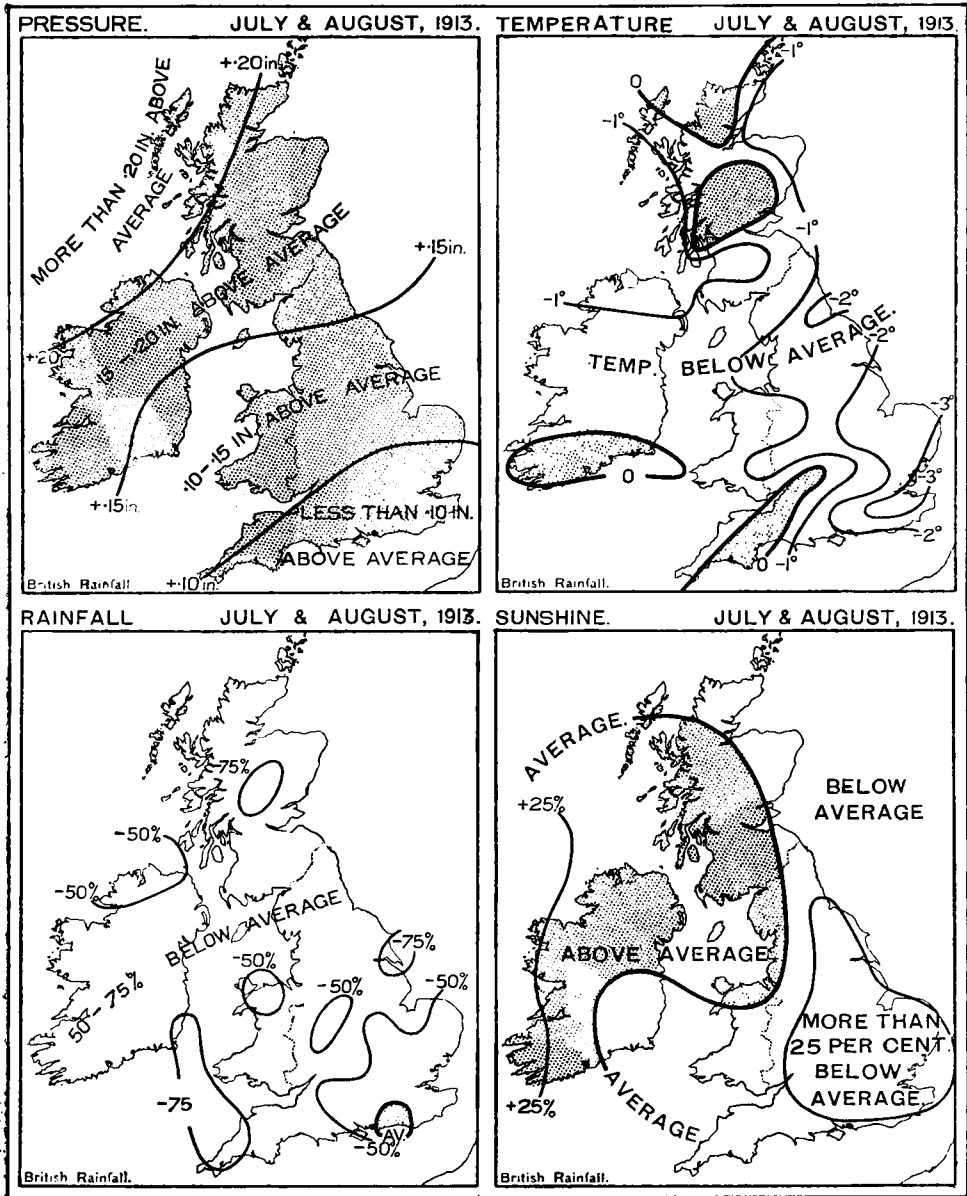
*Rainfall*.—This will be discussed in detail later, but attention may here be drawn to Fig. 3, in which the combined rainfall of July and August at 103 well distributed stations is shown, expressed as a percentage departure from the average. The most noticeable feature of this map, excluding the south-eastern counties of



England, is its extreme flatness. The only part of the British Islands with a rainfall above the average was a small area in Sussex, where heavy thunderstorms occurred in both months. More than half the

(Fig. 1.)

(Fig. 2.)



(Fig. 3.)

(Fig. 4.)

JULY—AUGUST, 1913. DEPARTURES FROM NORMAL.

average rain fell in the south-eastern counties, and over a small portion of the Midlands. The only other areas with more than half the average were in the north of Ireland and North Wales,

where values from 55 to 69 per cent. of the normal were recorded. The linear arrangement of these comparatively wet patches between Donegal and Kent is worthy of remark. Over the rest of the country the rainfall ranged from slightly more than a quarter to less than half the average. Three dry patches with less than a quarter of the average fall are apparent, the largest being an irregular area presumably extending from Wexford to Cornwall, whilst other regions with equally small amounts lay over central Scotland and in the neighbourhood of the Humber. It may be remarked that the relatively wet area over the south-east of England was also the region of most deficient sunshine, lowest temperature, and relatively small excess of barometric pressure. On the other hand two of the driest areas were also those in which mean temperature was above the average, though the dry area near the Humber was in the cold sunless zone. The west of Scotland and Ireland, where so pronounced a deficiency of rainfall is a most unusual phenomenon, are the districts in which the sunshine was most in excess of the average.

Reference must here be made to the unusual absence of widespread thunderstorms, which doubtless explains the remarkable uniformity of the percentage deficiency of rainfall over the greater part of the country, and the equally pronounced scarcity of "rain splashes."

The deficiency of rainfall for the two months did not vary much in the four great divisions. England had a deficiency of 53 per cent., Wales 54 per cent., Scotland 64 per cent., and Ireland 66 per cent., while over the United Kingdom as a whole there was a deficiency of 60 per cent. The greatest deficiency of any individual station was 81 per cent. at Balquhiddy, while the only station of the 103 reporting more than the average was Patching, near Arundel, with an excess of 26 per cent.

#### *Comparison with Previous Years.*

The combined July and August rainfall during each year of the past half century has been examined by means of the data referring to the United Kingdom, given in the annual volumes of *British Rainfall*. The general character of the rainfall of the months of July and August, taken separately, was first ascertained and all cases in which the rainfall of these months was notably deficient

were extracted. The years of marked shortage of rainfall were 1864, 1869, 1887, 1899, 1911, and 1913. Although standing out prominently in popular imagination for heat and drought the Julys and Augusts of 1887 and 1911, taking the country as a whole, were the least remarkable of the six dry periods mentioned. In the following table are given the July and August rainfall values for each

*Dry July—August Periods, 1864—1913.*

		No. of Stations.	July. ins.	August. ins.	July and August.	
					ins.	Per cent of Average.
1864.	England .....	58	1·02	1·50	2·52	43
	Wales .....	14	1·72	2·29	4·01	51
	Scotland .....	45	3·09	2·37	5·46	70
	Ireland .....	27	1·34	1·99	3·33	45
United Kingdom ...		144	1·79	1·94	3·73	54
1869.	England .....	60	0·90	1·52	2·42	41
	Wales .....	14	1·68	2·19	3·87	49
	Scotland .....	44	2·25	1·76	4·01	51
	Ireland .....	29	2·10	1·54	3·64	50
United Kingdom ...		147	1·62	1·66	3·28	48
1887.	England .....	101	1·36	1·92	3·28	56
	Wales .....	22	2·40	2·73	5·13	65
	Scotland .....	59	3·31	2·85	6·16	78
	Ireland .....	51	2·78	3·13	5·91	80
United Kingdom ...		233	2·26	2·50	4·76	69
1899.	England .....	101	1·75	1·21	2·96	50
	Wales .....	22	2·08	1·70	3·78	48
	Scotland .....	59	3·50	1·60	5·10	65
	Ireland .....	50	2·84	2·62	5·46	74
United Kingdom ...		232	2·46	1·66	4·12	60
1911.	England ..	130	·53	2·00	2·53	43
	Wales ....	24	·75	3·92	4·67	59
	Scotland ..	79	3·35	3·09	6·44	82
	Ireland. ....	66	3·25	2·54	5·79	79
United Kingdom ...		300*	1·90	2·56	4·46	65
1913.	England. ....	132	1·23	1·52	2·75	47
	Wales .....	23	1·31	2·35	3·66	46
	Scotland .....	78	1·14	1·69	2·83	36
	Ireland .....	67	1·10	1·41	2·51	34
United Kingdom ...		301*	1·19	1·60	2·79	40

\* Including the Isle of Man.

of the four great divisions, and for the country as a whole, as well as percentage values for the two months combined.

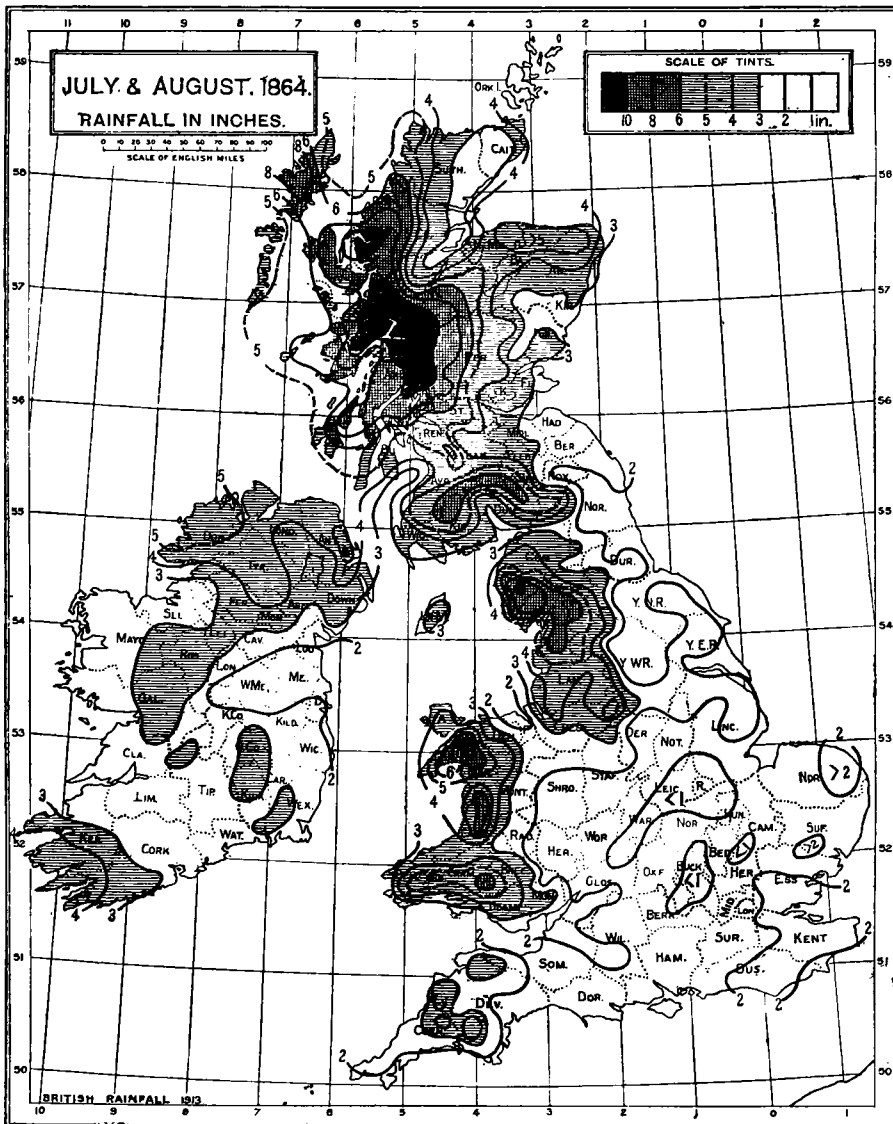
In the remarks that follow it must be particularly noted that we are dealing only with the six years specified above. Individual Julys or Augusts in other years may possibly have been drier, but a mere glance at the final figures shows the very exceptional character of the combined rainfall of July and August, 1913, with only 40 per cent. of the average fall. The nearest approach to this low amount occurred in 1869, with 48 per cent. followed by 1864 with 54 per cent. of the average. The hot summers of 1887 and 1911 were relatively unimportant, the former having 69 per cent. and the latter 65 per cent. of the average.

Dealing with the countries separately we find, as regards England that the 1913 value of 47 per cent. of the average was higher than in the years 1864, 1869, and 1911, the lowest of all being 41 per cent. in 1869. In Wales, Scotland, and Ireland the two months were drier in 1913 than in any of the years under consideration. Wales, with 46 per cent. of the average, was 2 per cent. drier than the next driest year, 1899, and in Scotland and Ireland, which had respectively only 36 per cent. and 34 per cent. of the average, no other year approached the remarkable dryness of 1913. Reference to the Observers' notes in Part II. of this volume will sufficiently indicate the phenomenal character of the dry summer in parts of Scotland, and it is worth while, in passing, to point out the extreme rarity of a deficiency of rainfall in the combined months of July and August, which are relatively wet months, especially in eastern districts, where the annual maximum of rainfall is attained in summer.

It may be of interest to summarise briefly the leading features of the rainfall of July and August in 1864, 1869, and 1913, the combined rainfall of which is given in three maps. Maps were also prepared for the months separately.

1864.—In July and August of this year the most noticeable feature was the dryness of the English Midlands, including parts of some of the southern counties, where in places the total rainfall was under an inch. Among other dry regions was also the Vale of York. In Northumberland and much of the south coast of England the rainfall was generally less than 2 inches. In July nearly a quarter of England had less than half an inch, and in August also this was the case in considerable areas in the Midlands.

In Scotland the smallest amounts, rather over 2 inches, were noted on the east coast from Dundee to Berwick, the dryness being more remarkable in August than in July. This was also the case in the normally rainy areas of the west, where few stations had more than 5 inches during August. The west Highlands were, however, relatively the wettest part of the British Isles, and a large area,



including part of the Outer Hebrides, had more than 10 inches during the [two months. A small area in North Wales also had this amount. During the two months the north of Ireland was relatively wet, the absence of rain being, however, specially noticeable on the east coast, where less than 2 inches fell, increasing again

in the south-west to 4 inches. Most of the Irish Midlands and the west coast and much of the east coast also had less than an inch of rainfall during July, though all parts of the country had more than that amount in August.

1869.—In this year the most remarkable deficiency of rain took place in parts of Devon and Cornwall, where less than an inch of



rain fell in places. Less than two inches of rain fell over a large inland area in England, on the south and south-east coasts, on the eastern seaboard of Scotland, and over a small part of the east of Ireland. In Ireland the rainfall in general increased steadily from east to west, exceeding 5 inches on the west coast. In July

there were many areas in England east, south-west, central, and north-east, over which less than .50 in. fell, and the same amount fell at many sheltered places on the east coast of Scotland. Part of the south-east of England appears to have been affected by a local storm which gave relatively high values over a belt extending from the Isle of Wight to the Wash.\*

In August the most noticeable dryness occurred on the south coast, which in general had less than an inch, the deficiency being most pronounced over the estuary of the Exe, where less than half an inch fell. The areas with as much as 3 inches in the Pennines and in North Wales were unusually restricted, and no part of South Wales appears to have had this amount. In Ireland the rainfall was remarkably low and uniform, the fall being hardly anywhere above 2 inches, and the general rainfall of the whole country was only 1.57 in. In Scotland a considerable portion of the eastern areas had less than an inch during August, this dry region extending far to the west in the valleys of the Forth and Clyde, and spreading also both north and south into the uplands.

1913.—In July and August, 1913, local rainstorms caused a relatively large rainfall in parts of the south and south-east of England. Large areas with less than two inches occurred in the east of Scotland, the east of England, parts of the south and south-west of England, and in the east and south of Ireland. In parts of these areas less than 1.50 in. of rain was noted. A notable feature was the relatively small rainfall in the normally wet areas in England, Scotland and Wales, and also the comparative uniformity of the fall over Ireland, with the exception of one or two rather wetter patches in the west and north.

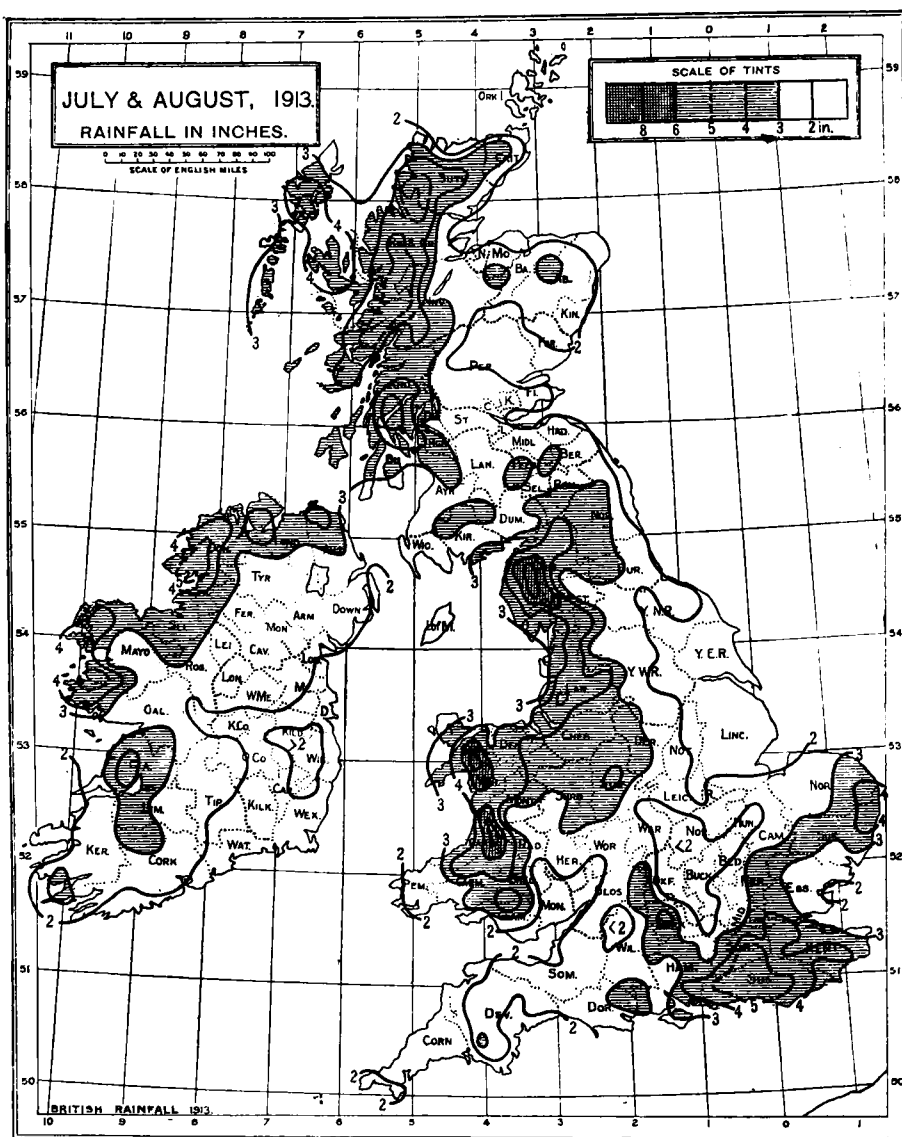
The comparative wetness of the south-east of England, culminating in Sussex, was a conspicuous feature of both July and August. Speaking generally the south of Ireland, the south-west of England, the east Midlands of Scotland, and the east coast of Great Britain from Lincolnshire northwards, were the driest areas in July, whilst in August the English Midlands and the east coast of Ireland had least rain. With the exception of the small areas affected by thunderstorms, and the high land in the west, the whole of the British Isles had less than 2 inches in each month, whilst in the uplands, where such an occurrence is exceedingly rare, less than

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\* See *British Rainfall, 1911*, pp. [152], [176].

3 inches of rain fell practically everywhere in July, and over a not much more extended area in August. There is no doubt that of the two months July was the more remarkable for wide-spread deficiency of rainfall.

Whilst the months of July and August were, as has been shown,



the most noteworthy of the year in respect of small rainfall, in some parts of the United Kingdom other remarkably dry periods occurred, which are worthy of passing notice. The areas embraced in these particular cases were, however, not sufficiently large to warrant a special comparison with past years.



The general rainfall for June to August, 1913, over the Thames Valley, above Teddington, calculated from the mean of 24 stations, was 3·32 in, this being the lowest for any similar period since homogeneous records were first compiled in 1883. The nearest approach to this low rainfall during these 31 years occurred as recently as 1911, when the general rainfall was 3·54 in., and other years with less than four inches were 1885, 1887, 1898, and 1899. The average summer rainfall over the period 1883-1912 was 7·02 in., so that 1913 had only 47 per cent. of the average fall. On the other hand the wettest summers in the period under review were those of 1903 and 1912, with rainfalls of 12·45 in, and 12·07 in., being respectively 77 per cent. and 72 per cent. in excess of the average.

Two of the longest records available in the British Islands are those kept at Rothesay, in the Island of Bute, and at Kendal, in Westmorland. The Rothesay register began in the year 1800, while the Kendal record is complete since the year 1806, and the monthly totals for the years 1788 to 1796 are also available. We have carefully examined the records for July-September throughout these long periods. As the site of the gauges at both these places has been changed from time to time the records are not strictly comparable for the whole period, but nevertheless the data for the three months, July to September, 1913, are sufficiently remarkable to warrant being placed on record.

At Rothesay the total rainfall for these three months was 6·45 in., being the lowest on record for this station during a period of 114 years, the nearest approach to this occurring in 1870, when 6·80 in. fell.

At Kendal the rainfall at Ellergreen was 6·49 in. in 1913, but 1870 was slightly drier, giving a total of 6·08 in., the driest in 108 years 1806-1913, and far drier than anything recorded in the eight years 1788-1796, for which records are also available. As, however, the mean rainfall at Ellergreen for the three months under discussion, was 7 per cent. more than that shown from the gauge in use in 1870, taking years common to both series, we are justified in the assumption that had the station then in operation been at work in 1913 a value of about 6 inches would have been recorded. Without laying undue stress on this point we may compromise the matter by the statement that in the Kendal district the drought during the three months July to September, 1913, was equalled in these months only in 1870 during the last 108 years.

## MONTHLY AND ANNUAL FREQUENCY OF HEAVY RAINS IN SHORT PERIODS 1868 to 1913.

BY R. C. MOSSMAN, F.R.S.E.

SINCE 1868, a short summary has been given in each volume of *British Rainfall* of the occurrence of heavy rains in short periods, as reported by the Observers. The scale of intensities of rainfall of sufficient importance to justify inclusion in the list has varied from time to time, according as more information on the subject became available, but in the present inquiry we have adhered to the most recent and reliable basis of examination, viz., the table that appeared in *British Rainfall, 1908*, page [75]. This table only covers falls up to one hour, but the cases extracted from the tables given in *British Rainfall (1868-1913)* have been extended so as to include falls up to two hours, a distinction being made between cases covering an hour or less, and those of more than an hour and up to two hours.

After the elimination of all the cases prior to 1908 which fell short of the intensity then adopted, the data were copied out year by year, for each of the 23 divisions of the British Isles utilized in the General Tables of rainfall in Part III. of *British Rainfall*, the information extracted being the date, the actual fall, and the rate of fall per hour. As the number of cases in each division was, in the majority of instances small, these were subsequently combined so as to give results for large divisions of the country. The repartition adopted was as follows :—

Divisions.	District.	No. of cases.	Per cent. of total number.
I. to IV.	England and Wales, S.E.	696	48
V., VI. and XI.	„ „ S.W.	320	22
VII. to IX. and X. (East)	„ „ N.E.	190	13
VIII. and X. (West)	„ „ N.W.	87	6
XII. to XIX.	Scotland .....	98	7
XX. to XXIII.	Ireland .....	50	4
	United Kingdom .....	1441	100

In the above table, cases which figured several times in the table

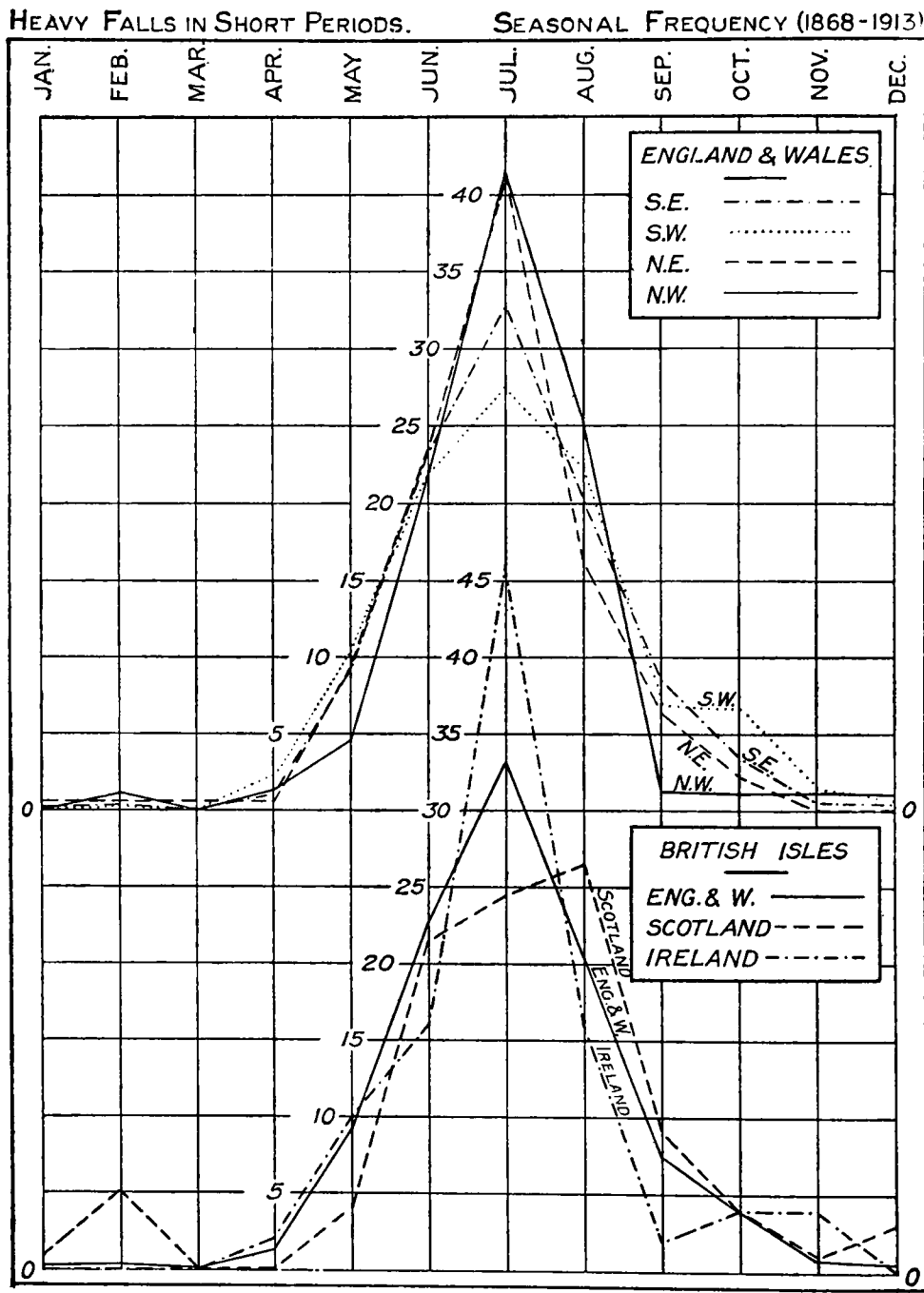
of heavy rains given in *British Rainfall*, have been treated as one fall. A few instances of heavy rains not given in *British Rainfall*, but afterwards reported, are also included. In the south-east of England, which has always been the area over which the distribution of Observers has been densest, no less than 48 per cent. of the instances occurred, leaving only 52 per cent. for the rest of the British Isles.

The difficulties involved in this inquiry are many, and the general lack of homogeneity is so obvious, and has been so often referred to in the section in *British Rainfall* which treats of this subject, that it is superfluous to amplify details in the present instance. There is consequently no pretension that this investigation is final, since it has been restricted to an examination of the data in so far as they bear on questions regarding the variation from year to year, and through the months of the year, as affected by geographical distribution. We hope, when a convenient opportunity affords, to discuss in some detail the occurrence of short period rains as affected by height above sea level and other physical factors. This would involve, as an essential preliminary, the plotting on a large scale map of each of the 1441 cases recorded.

No attempt has been made to give for the various groups *average* values of actual duration and intensity by months or years, since the unequal lengths of the periods and the circumstance that an arbitrary minimum of intensity has necessarily been adopted, below which instances of short period heavy rains are excluded, renders mean values obtained by combining all the cases recorded of no real significance. One object in submitting this notice is to show the importance of continuing this class of observation in greater detail, and to get more Observers to make the small effort of obtaining a measurement during, and immediately after, heavy thunderstorms or other torrential rains, which would in the aggregate greatly enhance the utility of a subsequent investigation on similar but more comprehensive lines than has been possible in the present instance.

An analysis of all the cases recorded shows the following monthly values of percentage frequency for the different divisions and for the British Isles as a whole (Table I.,) the results being graphically shown in the following diagram. In order to minimize the inequalities in the number of stations existing in the divisions adopted, the numbers for each month have been expressed in the form of percentages of the annual totals.

(Fig. 1.)



The average number of Heavy Falls occurring in each month from 1868-1913 is expressed as a percentage of the average number for the year.

yield the high average of 74 years. Following precedent, we give below a special list of those Observers whose age we know to have exceeded 80, and it includes 20 names, one being a nonagenarian.

*Observers deceased in 1913-1914, of 80 years of age or more.*

Rev. John Richardson, M.A.	...	...	90 years.
Mr. F. J. Mitchell, F.G.S., F.S.A.	...	...	89 „
Mr. M. B. Williams, D.L., C.E.	...	...	89 „
Rev. Prebendary T. H. R. Shand, M.A.	...	...	87 „
Mr. T. E. Ravenshaw, J.P.	...	...	86 „
Mr. Charles Ashby	...	...	85 „
Major-General G. W. Hanson	...	...	83 „
Mr. Charles Jones, C.E., F.S.I.	...	...	83 „
Colonel C. H. France-Hayhurst	...	...	82 „
Mr. William Lucas	...	...	82 „
Mr. E. B. Marten	...	...	82 „
Mr. Frederick Turner	...	...	82 „
Mr. W. D. Howard	...	...	81 „
Mr. Thomas Lester	...	...	81 „
Mr. R. D. Marshall	...	...	81 „
Mr. John Dale	...	...	80 „
Mr. Henry Kirwan, J.P.	...	...	80 „
Mrs. James Kitson	...	...	80 „
Mr. H. S. Poole	...	...	80 „
Colonel John Stewart, R.A., C.I.E.	...	...	80 „

Amongst these veterans, one, Mr. W. Lucas, of Hitchin, left a rainfall record of the astonishing duration of 62 years, he having begun to observe in 1850, though it chanced that his record was not known to Mr. Symons when the earliest volume of *British Rainfall* was published. There are indeed, longer records in existence, but not many and not by the same Observer throughout. Mr. Hayward also left a record of 58 years and there was one other which just fell short of a half century. The list of records of thirty years' duration and

*Records of Thirty years and upwards.*

Mr. William Lucas	...	The Firs, Hitchin	...	62 years.
Mr. Richard Hayward	...	Chitterne House, Wilts	...	58 „
Mr. F. J. Mitchell	...	Llanfrehfa Grange, Mon.	...	49 „
Mr. S. Ford	...	Cowfold, Horsham	...	47 „
Mr. Henry Kirwan	...	Tuam, Co. Galway	...	47 „
Col. C. H. France-Hayhurst	...	Bostock Hall, Cheshire	...	43 „
Mr. R. N. Hooper	...	Stanshaws Court, Chipping Sodbury	...	42 „

*Records of Thirty years and upwards—(continued).*

Mr. Thomas Colquhoun	...	Rockfort, Buncrana	...	39 years.
Mr. Charles Jones	...	Ealing, Middlesex	...	38 „
Mr. J. Milne	...	Archiestown, Morayshire..	...	36 „
Rev. Robert Thomas	...	Cabourne, Lincs.	...	36 „
Rev. Preb. J. J. G. Every	...	Castle Hill, Bodmin	...	35 „
Mr. John Dale	...	The Park, Macclesfield	...	34 „
Mr. Thomas Lester	...	Firbank, Penrith	...	34 „
Mr. E. B. Marten	...	Pedmore, Stourbridge	...	34 „
Mr. T. H. Baker	...	Brown Street, Salisbury..	...	33 „
Mr. George Galpin	...	Clarendon Court, Bourne- mouth	...	33 „
The Lady Knightley of Fawsley	...	Fawsley Park, Daventry..	...	33 „

longer kept by Observers whose deaths we have to record this year includes the large number of 18 entries, and this, it must be remembered, refers to the losses sustained in eleven months instead of twelve as is usual.

The notes which follow are reminiscent rather than biographical, and aim merely at recalling some trait of character which has struck us in the course of personal acquaintance or in correspondence. In a few instances we have to thank surviving friends for notes of the careers of Observers who were not personally known to us.

THE DUKE OF ARGYLL, K.G., K.T., who died on May 2nd, 1914, at the age of 69, filled many public positions of the highest importance, and inherited much of the wide interest in intellectual and artistic pursuits of his father, the Eighth Duke. As the husband of H.R.H. Princess Louise his tenure of the Governor-Generalship of Canada was the first precedent for the Association of a member of the Royal Family with the Vice-Regal power in the Overseas Dominions. Both as a highland chief and as a Governor his personal interest in the people for whose welfare he was responsible found expression in the innumerable ways instinctive to a generous, sympathetic and unassuming nature. His love of nature, which found expression in his many writings, was rather for the poetic than the scientific aspect of things, but as the President of the Royal Geographical Society he helped to promote geographical research, and on his Inveraray estate he maintained a series of rain gauges in an exceptionally interesting locality. He was much interested in the introduction of plants and animals from other countries. The

late Duke frequently referred appreciatingly to the work of the British Rainfall Organization, and the kindly interest he showed in my work during the last quarter of a century makes this tribute to his memory more than a formal duty.

MR. T. H. BAKER, who died at Salisbury on the 16th January, 1914, had been a rainfall Observer for 33 years. His interest in weather study was derived, as in so many cases, from his occupation as a farmer. He occupied Mere Down Farm, near Salisbury, for 42 years, and during that time he took an enlightened interest in the science of agriculture and was a frequent correspondent of *The Times*, regarding the state of the crops in his district. He wrote a work entitled "The Records of the Seasons" and had acquired a considerable reputation as an antiquary.

SIR ROBERT STAWELL BALL, F.R.S., at one time Royal Astronomer of Ireland, later Lowndean Professor of Astronomy and Geometry in the University of Cambridge, and always the prince of popular lecturers, was so much associated with the story of the Heavens, that it seems almost an act of presumption to claim him as a meteorologist. Astronomers, however, have traditionally been saddled in this country with observations on the state of the atmosphere, and Sir Robert Ball supplied us for many years with the rainfall observations from Dunswick Observatory and for a time with those from Cambridge Observatory, before the latter were taken over by the Botanical Department of the University. His permanent reputation rests mainly upon his mathematical work, though he will be remembered by the present generation as a singularly successful exponent of astronomical discovery in popular language. He died on the 25th November, 1913 at the age of 73.

MR. HARRY BEVIR, who died at Wootton Bassett, on the 18th January, 1914, was born at Cirencester in 1831, and after undergoing a legal training in the office founded by his father in his native city, he took up a practice in Wootton Bassett in 1874. He enjoyed a high reputation as a lawyer, as Clerk to several local councils, and for the last 18 years as Official Receiver in Bankruptcy for the Swindon district. He was a strong Conservative, a devoted Churchman and Churchwarden, and he had a long and distinguished Masonic career, commemorated in 1907 by the presentation of his

portrait painted by Mr. Herman G. Herkomer. Since 1881 Mr. Bevir took regular daily observations of rainfall which were supplied to our pages in earlier years through the Wiltshire Rainfall Association, a body which performed excellent services in its time.

MR. JOHN DALE, who died in February, 1914, at Macclesfield, aged 80, was a perfect type of the meteorological enthusiast, who without the advantages of means, social position, or scientific education, was able, by the strenuous following out of a true instinct for weather study, to confer substantial benefits on his own community, and establish a claim to remembrance in the scientific world. Mr. Dale was Secretary to the Useful Knowledge Society at Macclesfield in 1880, and as such was then in charge of meteorological observations which had been carried on since 1850 on the Society's premises. The erection of the School of Art, in 1880, rendered the former site unsuitable for continued observations, and Mr. Dale induced the Corporation to provide a site in the Public Park, Mr. Brocklehurst, Chairman of the Parks Committee, generously providing a set of instruments at his own expense. For 34 years Mr. Dale continued to give friendly supervision to the observations kept by the Park keeper, Mr. Roscoe, and made out the full returns each month for transmission to Camden Square and the Royal Meteorological Society. I had the pleasure of seeing Mr. Dale in Macclesfield some years ago and was struck by the affectionate solicitude with which he watched over the observations. It is a satisfaction to know that though never remunerated for his services Mr. Dale received from the Macclesfield Town Council a formal vote of thanks for his services, and the Corporation recognized with pride that he had secured for them the continuance of a record which gave to that town the almost unique distinction of possessing an unbroken series of observations extending over 65 years.

COLONEL CHARLES HOSKEN FRANCE-HAYHURST, of Bostock Hall, Cheshire, who died on April 7th, 1914, was one of the many Crimean veterans who have rendered service by the patient accumulation of a long and careful series of rainfall observations, in this instance extending over 43 years. He was the eldest son of Canon T. France-Hayhurst, of Bostock Hall: he served in the Crimea, being present at the battles of Alma and the siege of Sevastopol. From 1883 to 1892 he commanded the 1st Cheshire Militia, and had been honorary



colonel of the battalion since 1892. He was Sheriff for Cheshire in 1879, took an active part in local affairs, and was the oldest member of the Tarporley Hunt.

MR. RICHARD HAYWARD, who died at his residence, Chitterne House, Salisbury Plain, on October 17th, 1913, at the age of 76, carried on a rainfall record from 1855, although the earlier years were not recorded in *British Rainfall*. The great age of this record and the attention bestowed upon it should have resulted in a most valuable series of observations, but, unfortunately, the rain gauge employed was a roughly constructed and ill exposed instrument, and I found it impossible to induce the late Observer to supplement it by one of an approved type. Length of observation, the keenest interest in observing, and the most careful compilation of records are all, we need hardly say, of little avail when the instruments employed are untrustworthy.

MR. CHARLES GILBERT HEATHCOTE, for many years Stipendiary Magistrate of Brighton, died on the 15th November, 1913, at the age of 72. He was the third son of the late John Moyer Heathcote, of Conington Castle, Peterborough, and was born at Conington. He was educated at Eton, and at Trinity College, Cambridge, of which he was a scholar. He obtained a first-class Classical Tripos in 1862. He was called to the Bar at the Inner Temple, and practised on the Norfolk Circuit. He was keenly interested in various forms of sport, particularly mountaineering and lawn tennis. He had been a member of the Alpine Club from 1864, and kept up his interest in the club all his life, attending its meetings every year. He was one of the Founders of the All-England Lawn Tennis Club, and acted frequently as judge at the earlier Wimbledon tournaments. After leaving Brighton in 1902 he lived at Kilместon Manor, Alresford, Hampshire, was a J.P. for that county, and took a part in its judicial and educational work. Here also he commenced rainfall observations, and we are glad to learn that the record he established is being continued by his son.

MR. WILLIAM DILLWORTH HOWARD, who died in London, at the age of 81, on 9th December, 1913, was one of the numerous descendants of the famous climatologist of London, Luke Howard, whose names have figured in the annals of *British Rainfall*. Like so many

members of the Society of Friends, Mr. Howard took up the observation of rainfall at an early age, and his observations at Tottenham, in continuation of those of his illustrious grandfather, appeared in the first volume of *British Rainfall*, 1860-61. Mr. Howard, who followed chemistry as a profession, was a life-long friend and generous supporter of successive Directors of the British Rainfall Organization, though he did not himself conduct observations during the last fifty years of his life.

MR. HENRY KIRWAN, J.P., of Gardenfield, Tuam, Co. Galway, who died on 18th November, 1913, at the age of 80, was a resident Irish landlord, who devoted his life to the improvement of his estate and the welfare of his neighbours. He took a leading part in all schemes of public utility in his neighbourhood, and had the reputation of being a courageous and independent magistrate, while remaining an extremely popular man with all classes and creeds. Mr. Kirwan took a keen interest in rainfall observing and kept his record at Gardenfield for 47 years, a very remarkable period, and we believe that the record has never failed to appear in *British Rainfall* since 1869. Mr. Kirwan took the observations personally until within two months of his death, and we are happy to say that his son, Mr. Robert J. Kirwan, County Surveyor of Sligo, has made arrangements for continuing the Tuam record.

LADY KNIGHTLEY OF FAWSLEY, widow of the late Lord Knightley of Fawsley, commenced to record rainfall at Fawsley Park, near Daventry, in 1880, and for thirty years was one of our most interested correspondents. Although her activities lay mainly in other spheres, Lady Knightley took a large and enlightened interest in various branches of science, and she was one of the many rainfall Observers who took part in the South African meeting of the British Association in 1905. In her own county she filled all the public positions open to a woman, having been a district councillor, a churchwarden, and chairman of her parish council. A strong Conservative and Imperialist in politics, she was equally convinced of the justice of the demand for the enfranchisement for women, and of the uselessness and wickedness of the method of militancy. She was interested in all schemes for the welfare of women, and took a prominent part in the Emigration movement, having been President of the British

Women's Emigration Association and Editor of *The Imperial Colonist*. Lady Knightley died on the 2nd October, 1913.

MR. WILLIAM LUCAS, The Firs, Hitchin, who died on the 5th of May, 1914, at the age of 82, was by no means the oldest man amongst the thousands of Observers of rainfall in our books, but he had, we believe, the distinction of having kept up personal observations for a longer period than any other. Mr. Lucas was a constant correspondent, and his annual letters accompanying his returns were always sure to contain something fresh and tersely expressed about his views on weather and the world's progress. As an illustration of his style and an indication of his readiness to revise his point of view, I cannot do better than quote *in extenso* the last we received from him. A quaint characteristic of Mr. Lucas was that he did not use a cheque book, but always sent his subscription in the form of an order on his banker written on a torn half sheet of note paper.

1st January, 1911.

"I send you my Annual Subscription and return for the year, but I shall not send any more returns. Ever since 1849 have I been keeping them, and learn less of the prospects of weather each year. I feel sure that this cursed Marconi telegraphy has undone our weather permanently. As a farmer, a fox-hunter, and as a fisherman, no one has longed more to get into the secret of the weather, but after 60 years I am more at sea than ever."

31st December, 1911.

"I am ashamed to write to you after my cursed folly in believing in the "Marconi Scare," and that summers were abolished, and here we have had the most tropical period ever dreamed of, but, alas, another record I was going to establish, I hoped—the wettest December—has just missed fire; however, our springs will be secured by a month of over 5 inches.

Again expressing my shame that I should be the victim of old wives' tales."

MR. FRANK JOHNSTONE MITCHELL died at his residence, Llanfrechfa Grange, near Newport, (Mon.) on the 11th of October, 1913. He had the longest personal record of rainfall in Wales, having kept up observations continuously for 49 years. Mr. Mitchell was an ardent meteorologist and frequently wrote to the Press on weather topics.

Mr. Mitchell, who was in his 90th year, was born in London and educated at St. John's College, Cambridge. He went to live at Newport in 1853, when he became one of the partners of the Dos

Nail Works. Afterwards he was Chairman of Messrs. J. J. Cordes and Co. (Limited), but he retired from business ten years ago. Mr. Mitchell actively interested himself in Church work in Newport. In 1876 he founded the Mission Church of St. John the Baptist, and in 1898 he secured the formation of the parish of St. John the Baptist by providing an endowment and a vicarage. He also rebuilt, at a cost of several thousand pounds, the parish church of Llanfrehfa Lower, near Newport. He was Deputy-Lieutenant for Monmouthshire, High Sheriff in 1868, and a county magistrate. He was greatly interested in antiquarian research. Mr. and Mrs. Mitchell celebrated their golden wedding in January, 1910.

DR. ROBERT TRAILL OMOND, who died in Edinburgh on the 27th January, 1914, at the age of 56, built his own monument in the Meteorological Records of the Ben Nevis Observatory, of which institution he was the Superintendent from its foundation in 1883 to 1895. Long residence in the terrible climate of that mountain top undoubtedly aggravated, if it did not induce, the illness from which Dr. Omond suffered and of which he eventually died. There never was a more devoted Observer, nor a more painstaking student of meteorology, and the concentration of his efforts to the aim first of directing the Observatory and second of elaborating and publishing the results, have ensured the coupling together to all time of the names of the man and the mountain. He was one of the pioneers of upper air observations, and by devoting himself to what, at that time, appeared a circumscribed and unattractive field of work, he lost the opportunity of an easier life and a wider appreciation of his personal gifts. Close as my association with Omond's scientific work was in the early days of the Ben Nevis Observatory and of the Scottish Marine Station, the lasting memory that remains with me is of his invincible cheerfulness. He was the most humorous man I ever knew and in conversation it used to be a peculiar joy with him to lead strangers to suppose that the stammer which he could never overcome was assumed as a joke. His letters were always delightful, although latterly the crippling of his hands by chronic arthritis must have made writing very painful. Dr. Omond was honorary secretary of the Scottish Meteorological Society from 1903, and last year received the honorary degree of Doctor of Laws from the University of Edinburgh.

DR. HENRY FRANKLIN PARSONS died on October 29th, 1913, at his residence, Oakhyrst, Park Hill Rise, Croydon, where he had kept rainfall records for 17 years. He was 67 years of age and had retired from his position in the Medical Department of the Local Government Board on reaching the age limit in 1911. Dr. Parsons had had a distinguished career as a Medical Officer of Health in Yorkshire before joining the Local Government Board. He was President of the Croydon Natural History and Scientific Society, the services of which to the study of rainfall in Surrey and surrounding districts are well known.

SIR WILLIAM HENRY PREECE, K.C.B., F.R.S., although he only commenced the personal observation of rainfall in his 79th year, had long been interested in the work of the Organization, and never failed to enquire about it at the Meetings of the British Association of which he was a constant frequenter.

Sir William, who died at Penrhos, Carnarvon, on 6th November, 1913, in his 80th year, had served the Telegraph Department of the Post Office as Electrical Engineer for many years. He will be remembered as one of the greatest pioneers of wireless telegraphy, having utilized this method for communicating between Mull and the mainland during the breakdown of a cable, some years before Mr. Marconi's application of Hertzian waves, and he was the first to assist Mr. Marconi with the opportunity of making experiments in Great Britain.

COLONEL JOHN STEWART, C.I.E., of Ardvorlich, Perthshire, died on the 8th January, 1914, in his 81st year. He entered the Bengal Artillery in 1851, and was employed during the Indian Mutiny in forwarding supplies to Sir Henry Havelock's field force for the relief of Lucknow garrison, receiving the Mutiny Medal 50 years later. After the restoration of peace he founded the great Government Harness Factory at Cawnpore, which furnishes the whole Indian Army with leather equipments. On succeeding to the Ardvorlich estate he retired from India in 1888, and settled down at his ancestral seat. He was an ardent Unionist and an excellent landlord.

MISS L. A. SUTER, who died on the 10th December, 1913, at the age of 78, continued the rainfall record at Hunmanby in the East Riding of Yorkshire, on the death of her brother-in-law, Rev. T. S.

Ackland, who died at the age of 75 in 1893. Though distressed at the want of interest in these observations locally, Miss Suter kept them up most perseveringly, in spite of failing health, almost to the end of her life, and it is gratifying to know that the work will henceforth be carried on by a member of the late Mr. Ackland's family.

MR. MARTIN JOHN SUTTON was born at Reading in 1850, and, at the age of 16, he entered the famous seed business founded by his father and uncles. Five years later he was made a partner and since 1887 he had been the head of the firm of Sutton and Sons. He was one of the most prominent agriculturists of his time, and devoted no less attention to the welfare of agricultural science than to the improvement of agricultural produce through the researches and investigations carried out on his seed farm at Reading. He was one of the leading supporters of the Royal Agricultural Society, and a strong upholder of the practice of holding the Annual Shows in different parts of the country. Mr. Sutton took a large part in Church work and gave much attention to the problem of religious education. He served as Mayor of Reading in 1904, and presented the town with a statue of King Edward. Mr. Sutton died suddenly in London on the 14th December, 1913.

*Observers deceased to June 30th, 1914.*

Small capitals designate Observers with 30 years' records.

Ainslie, Charles Alexander, J.P.	Swinton Bank, Peebles.
Alford, T. ... ..	Hagley Park Gardens, Hereford.
Anderson, Rev. J. ... ..	Alvie Manse, Aviemore.
Anstruther, Miss L. S. ... ..	Hope Lodge, Moffat.
*Argyll, The Duke of, K.G., K.T., G.C.V.O., G.C.M.G. ... ..	Inveraray Castle, Argyll.
Ashby, Charles ... ..	Cambria House, Staines.
*BAKER, T. H. ... ..	Brown Street, Salisbury.
*Ball, Sir Robert Stawell, D.Sc., LL.D., F.R.S. ... ..	Cambridge.
Barwell, Rev. Canon Arthur Henry Sanxay ... ..	Bletchingley House, Surrey.
Bennett, W. ... ..	Rangemore Gardens, Burton-on-Trent.
*Bevir, Harry ... ..	Wootton Bassett, Swindon.
Bigg-Wither, Col. A. C. ... ..	Tilthams, Godalming.
Bloomfield, Rev. Edwin Newson	Guestling Rectory, Hastings.

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\* See Biographical Note *ante*.

*Observers deceased to June 30th, 1914—(continued).*

Bosanquet, Adm. George Stanley	Bitchet Wood, Sevenoaks.
Bradshaw, Lieut.-Col. Oswald	
Mosley       ...     ...     ...	Lansdown House, Merrow, Guildford.
Brunton, James   ...     ...     ...	Broomlands, Kelso.
Cameron, Miss   ...     ...     ...	Rutherford House, West Linton.
Cawdor, Rt. Hon. Earl, P.C., D.L.	Stackpole Court, Pembroke.
COLQUHOUN, THOMAS, J.P.   ...	Rockfort, Buncrana.
Crawley, Francis ...     ...     ...	Stockwood, Luton.
*DALE, JOHN       ...     ...     ...	The Park, Macclesfield.
Daubeny, Major Walter Augustus	Hill Place, Bishops Waltham.
De Freyne, The Lord   ...     ...	French Park, Co. Roscommon.
Dixon, Caleb S., C.E.   ..     ...	Birstwith, Leeds.
Dowding, H.       ...     ...     ...	Farnham Castle Gardens, Surrey.
Dunlop, William Hamilton   ...	Doonside, Ayr.
Dyne, Rev. William Tylden, M.A.	Evercreech Vicarage, Bath.
EVERY, REV. PREB. JOHN JAMES	
GLENCROSS   ...     ...     ...	Castle Hill, Bodmin.
Field, Miss Grace ...     ...     ...	Hampstead, London.
Filgate, T. F.       ...     ...     ...	Lissrenny, Ardee.
Ford, Alfred       ...     ...     ...	Gawthorpe Hall, Burnley.
FORD, S.       ...     ...     ...	Cowfold, Horsham.
Fowler, Rev. James   ...     ...	Templeton Rectory, Tiverton.
*FRANCE-HAYHURST, COL.	
CHARLES HOSKEN   ...     ...	Bostock Hall, Cheshire.
GALPIN, GEORGE   ...     ...     ...	Clarendon Court, Bournemouth.
Glanville, Miss Mary Agneta   ...	Langham Hill, Ivybridge.
Gray, Rev. Robert Daniel Horace	Selham Rectory, Sussex.
Hanson, Major-General George	
William       .     ...     ...	High Field, Tiverton.
Harrison, Capt. Jasper Nicolls,	
late R.M.L.I.   . .     ...     ...	Saling Grove, Essex.
*HAYWARD, RICHARD   ...     ...	Chilterne House, Wilts.
*Heathcote, Charles Gilbert   ...	Kilmeston House, Alresford.
Holmes, Thomas Barton, J.P.   ...	Hornsea, Hull.
HOOPER, ROBERT NATHANIEL ...	Stanshaws Court, Chipping Sodbury.
*Howard, William Dillworth   ...	Regent's Park, London.
Inman, Rev. Simon, M.A.       ...	Finsthwaite Vicarage, Lancs.
JONES, CHARLES, C.E., F.S.I.   ...	Ealing, Middlesex.
Kennard, J.       ...     ...     ...	Courts Hill, Haslemere, Surrey.
Kidston, Capt. Archibald Glen...	Gwernyfed, Breconshire.
*KIRWAN, HENRY, J.P.   ...     ...	Tuam, Co. Galway.
Kitson, Mrs. James       ...     ...	May Lodge, Scarborough.
*KNIGHTLEY OF FAWSLEY, THE	
LADY       ...     ...     ...	Fawsley Park, Daventry.
LESTER, THOMAS   ...     ..     ...	Fir Bank, Penrith.
Lloyd, Herbert   ...     ...     ...	Pontardawe, Glamorgan.

*Observers deceased to June 30th, 1914—(continued).*

Lovejoy, H. F. ... ..	Northgate House, Totnes.
*LUCAS, WILLIAM ... ..	The Firs, Hitchin.
Lyon, S. ... ..	Cricket St. Thomas, Chard.
Malcolm, George ... ..	Fernie-knowe, Fort William.
Marshall, Reginald Dykes ... ..	Castlerigg Manor, Keswick.
MARTEN, EDWARD BINDON ... ..	Pedmore, Stourbridge.
Martin, Thomas ... ..	Lee Moor, Devon.
Mellor, W. M. F. ... ..	Rooklands, Torquay.
MILNE, J. ... ..	Archiestown, Morayshire.
*MITCHELL, FRANK JOHNSTONE	Llanfrechfa Grange, Monmouth.
Morton, Alex. ... ..	Cullen House Gardens, Banffshire.
Moss, John Snow ... ..	Wintershill Hall, Bishops Waltham.
Newbery, Henry Christian, M.A.	Haverhill Vicarage, Suffolk.
*Omond, Robert Traill, LL.D.,	
F.R.S.E. ... ..	Church Hill, Edinburgh.
Otter, Robert Henry, M.A., J.P.	Queenwood, Chertsey.
*Parsons, Dr. Henry Franklin	Park Hill Rise, Croydon.
Perkins, Joseph ... ..	Westbury Gardens, Petersfield.
Poole, Henry Sanderson ... ..	Fairfield, Cobham.
*Preece, Sir William Henry, K.C.B.,	
F.R.S., LL.D. ... ..	Penrhos, Carnarvon.
Ravenshaw, Thomas Edward, J.P.	South Hill, Worth, Sussex.
Richardson, Rev. John, M.A. ...	Sandy Rectory, Bedfordshire.
Roberts, Rev. Robert Jones, M.A.	Hopesay Rectory, Salop.
Shand, Rev. Prebendary Thomas	
Henry Rodie, M.A. ... ..	Clayton Rectory, Hassocks.
Smith, Miss Janet C. ... ..	The Mount, Halse, Taunton.
Smyth-Osbourne, John Smyth	Ash, Iddesleigh, Devon.
Southey, Rev. Henry Willes, M.A.	Bengeo, Hertford.
*Stewart, Colonel John, R.A., C.I.E.	Ardvorlich, Perthshire.
Strange, John Thomas ... ..	Firlands, Sulhamstead, Berks.
*Suter, Miss L. A. ... ..	Hunmanby, Yorks.
*Sutton, Martin John, J.P. ...	Earley, Reading.
THOMAS, REV. ROBERT ... ..	Cabourne Vicarage, Lincs.
Turner, Frederick ... ..	Parkside, Ipswich.
Vincent, H. B. ... ..	Royal Victoria Hotel, Swanage.
Vincent, Sir William, Bart, M.A.	D'Abernon Chase, Surrey.
Ward, Mrs. Henry ... ..	Rodbaston, Penkridge.
Warwick, G. ... ..	Facombe Manor Gardens, Andover.
Whish, George Henry Martin ...	Kensington, London.
Whiting, Richard M. ... ..	Credenhill, Hereford.
Williams, Morgan Bransby, D.L.	Killay House, Swansea.
Wilson, John ... ..	Thornton Hall Gardens, Lanarkshire.
Winn, Rev. William Henry, M.A.	Dunsfold Rectory, Godalming.
Wyndham, Henry, C.E. ... ..	Thornton Heath, Surrey.



**BRITISH RAINFALL, 1913.**

**PART II.**

**RAINFALL AND METEOROLOGY**

**OF**

**1913.**

## EXPLANATION.

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THE Observers' Remarks on the Days and on the Year as a whole are given as far as possible in the words of the Observers themselves, and the signature of the Observer is added to each Note on the Year. The designation of "F.R.Met.Soc." is added to the names of those Observers whose interest in Meteorology has led to their becoming Fellows of the Royal Meteorological Society.

It is understood that the Notes refer in each case to extreme or exceptional rather than to normal phenomena. The Notes on the Days are occasionally supplemented by short extracts from the newspaper press or by illustrations. The completeness or incompleteness of this picture of the weather of the year depends upon the interest which the Rainfall Observers of each district take in the meteorological incidents of their locality, and on their willingness to communicate the outcome of their observations in a suitable form. The Notes supplement, but do not supersede, those published monthly in *Symons's Meteorological Magazine*.

It is necessary to point out that when phrases such as "gale," "cloud-burst," and similar expressions, are used in the Notes these are in every case the Observer's own words, and may possibly not refer to the phenomena technically so called.

The various discussions of the Rainfall of the Year as regards heavy falls in short periods and on rainfall days, droughts, and rain spells, and the general distribution of Rainfall over the British Isles for each month and for the year, are prepared by the Editor after considering all sources of information which have been published or are available for publication.

In order to save space by avoiding frequent repetitions, the names of the Counties are omitted in the Daily Remarks, the numerals of the Divisions only being retained. The following abbreviations are employed :—

Bar.	-	Barometer.	R	Rain, Rainfall.
E.		East.	S	Snow.
H		Hail.	S. -	South.
L		Lightning.	T	Thunder.
Max.		Maximum (temperature).	Temp.	Temperature.
Met. Mag.		<i>Symons's Meteorological Magazine.</i>	Ther. -	Thermometer.
Min.	-	Minimum (temperature).	TS	Thunderstorm.
N.	-	North.	TSS	Thunderstorms.
			W.	West.

## OBSERVERS' REMARKS ON THE WEATHER OF 1913.

With occasional quotations from the Newspaper Press.

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### NOTES ON THE DAYS OF 1913.

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These Notes should be read in conjunction with those on Heavy Rains in 1913, and reference should also be made to *Symons's Meteorological Magazine*, Vol. 48.

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#### JANUARY.

1st.—*Bisham* (II). A flood, which had been high for some time, reached its highest—the last rain of any quantity (·30 in.) having fallen on December 28th, showing that it takes from 2 to 3 days for the waters from above to reach this part of the river.—*Swaffham Prior* (III). Aconites and snowdrops in flower before New Year's Day.

5th.—*Warlingham* (II). Wind at 50 miles per hour at 3 p.m.

6th.—*Llyn Llydaw Copper Mill* (XI). Heavy R ; 3·87 in.

9th—12th.—*Lynturk* (XVII). Severe gale, with 15 to 18 inches of S.

10th—11th.—*Rosthwaite* (X). Sixteen inches of S.

10th—15th.—*Dunrobin* (XIX). Strong E. gale, with high sea ; much damage done to trees.

11th.\*—*Burnham Beeches* (III). Heavy S, with strong wind. Roads blocked.—*Sparkhill* (VI). S from 8.30 a.m. ; 4 inches deep at 7 p.m.—*Rugby* (VI). Nine inches of S. *Blaby* (VII). Very heavy S, with high wind. S began to fall about 10 a.m. and continued the whole day. It was so heavy that all telephone wires in this district were broken down.—*Woodhall Spa* (VII). Heavy S, snapping all the telephone and telegraph wires for miles around.—*Spilsby, Hagnaby Priory* (VII). S began to fall at 10 a.m. and continued for 12 hours, 6 inches falling.—*Southwell* (VII). Heavy S for 15 hours, to a depth of 6 to 8 inches, with E.S.E. gale. Many cedars were broken down.—*Mansfield* (VII). S fell from 10 a.m. to midnight, and was about 12 inches deep where undrifted. Many roads were blocked by

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\* See also *Met. Mag.*, February, 1913, p. 10.

drifts for some days.—*Chellaston* (VII). E. gale and severe S storm yielding 1·14 in.—*Carke-in-Cartmel* (VIII). Heavy fall of S. Furness Railway blocked at Bootle between Barrow and Whitehaven.—*Liverpool, Knotty Ash* (VIII). S from 8 a.m. till evening, total depth 2 inches.—*Broughton-in-Furness* (VIII). S storm passed over from N.E. to S.W. Depth on level 12 or 13 inches, with heavy drifts in many places.—*Hampson-in-Ellel* (VIII). S storm and gale from E. Many lanes were blocked for several days.—*Meltham* (IX). Continuous R from 7 a.m. to midnight.—*Morley* (IX). Strong E. wind and S for 23 hours, producing great drifts.—*Wetherby* (IX). Severe S storm; depth 11 inches.—*Leyburn, Bolton Hall* (IX). S 12 inches deep on level.—*Fontburn* (X). S 18 inches deep.—*Seathwaite* (X). Blizzard. Drifts 7 and 8 feet deep.—*Dalry* (XII). S 15 inches deep.—*Dalbeattie* (XII). S 10 inches deep. Much damage was done to plantations.—*Cargen* (XII). Strong S.E. gale with S all day. Depth 1 foot, and drifts 6 and 7 feet deep.—*Maxwelton House* (XII). Severe storm of wind and S; average depth 13 inches.—*West Linton* (XIII). Severe S, lying where undrifted 8 inches deep, with drifts of from 2 to 4 feet.—*Loanhead* (XIII). S.E. gale and 10 inches of S.—*Meggernie Castle* (XVI). S 16 inches deep.—*Blairgowrie, Ballintuim* (XVI). Record fall of S. Vans which went to Kirkmichael in the afternoon were unable to leave till the Friday following. Even people with plenty of money were without butcher meat for a week or more.—*Braemar, Derry Lodge* (XVII). S 17 inches deep.

11th.—12th.—*West Witton* (IX). S 15 inches deep.—*Marchmont House* (XIII). S 5½ inches on 11th and 7 inches on 12th.—*Crosswood* (XIII). Six inches of S between 7 a.m. and night. S.E. gale and much drifting.—*Dunkeld, Snaigow* (XVI). Very heavy S about 28 inches deep on the flat with S.E. to E. wind.—*Blair Atholl* (XVI). S 15½ inches on 11th and a further fall of 9 inches on 12th.

11th—13th.—*Harlow* (XIII). Six inches of S. Strong S.E. wind and a good deal of drift on 11th; on 12th and 13th moderate wind and no drift.—*Blairgowrie* (XVI). The heaviest S storm for 30 years. Depth 2 feet 6 inches. Some S remained to the end of the month.—*Kenmore* (XVI). Severe S storm from N.E. began at 9 a.m. on 11th and S was still falling with a S.E. wind at 9 a.m. on 13th. At 8 p.m. on 11th undrifted S was 20 inches deep; at 9 a.m. on 12th it was 26½ inches, and at 9 a.m. on 13th 31 inches. Trees were broken down by the weight of S.—*Bridge of Dye* (XVII). Depth of fresh S 10, 2 and 4 inches respectively.

12th.—*Hodsock Priory* (VII). S 7 inches deep.—*Harperrig* (XIII). About 4 inches of S fell during the night. Wind S.E.—*Stronvar* (XVI). S 20 inches.

12th—13th.—*Ebberston* (IX). Heavy S from 1 p.m. on 12th continuing through night, the depth at 9 a.m. on 13th being  $6\frac{1}{2}$  inches.

13th.—*St. Pancras, Camden Square* (I). Thick fog in morning ; traffic much hindered.—*Hedsor* (III). Dense fog.—*Havering* (IV). Thick fog, S and R.—*Mansfield* (VII). Thick fog.—*Balquhiddier, Edinchip* (XVI). S 22 inches deep.—*Cloverhill* (XXIII). S  $2\frac{1}{4}$  inches deep.

14th.—*Lewisham* (I). Glazed frost and streets like glass..

16th.—*Lyme Regis* (V). TS with H.

18th.—*St. Pancras, Camden Square* (I). Thick fog in morning, clearing about 11 a.m.—*New Malden* (II). Dense fog until noon.

19th.—*Shrewton* (V). H, T and L.—*Chickerell* (V). TS at night.—*Winterbourne Steepleton* (V). Squally with heavy R ; L and T with R and H in evening.

20th.—*Warlingham* (II). Heavy showers, T and L in evening.—*Ticehurst* (II). Heavy H showers between 3 and 6 p.m.—*Lyme Regis* (V). TS in early morning.

22nd.—*Hemel Hempstead* (III). S 3 inches deep at 9 p.m.—*Rugby* (VII). Three inches of S.—*Pen-y-Gwryd* (XI). Heavy R after noon ; 3·88 in.

23rd.—*Conway Valley* (XI).

“The River Conway submerged the valley through which it flows for a distance of ten miles, and, rushing through a 30 yards gap caused by a previous flood in the embankment protecting Trefriw Spa and valley, spread over thousands of acres.”—*The Times*.

26th.—*Loch Lomond* (XV).

“An exceptionally keen frost since Friday night resulted in Loch Lomond being frozen over from Boturich Castle shore to Inch Murrin Island, a mile and a half distant, while from the Boturich shore to Balmaha, a distance of five miles, the loch was also covered with ice a quarter of an inch thick. It is 18 years since the loch was frozen over.”—*The Times*.

27th—28th.—*Castle Forbes* (XXI). Continuous R for 23 hours.

29th.—*St. Pancras, Camden Square* (I). *New Malden* (II). *Blisworth* (III). Damp fog.

30th—Feb. 1st.—*Harperrig* (XIII). Five inches of S following severe S. gale.

31st.—*Caterham Valley* (II).

“The ‘woe waters,’ otherwise known as the Bourne Flow, reappeared in

Caterham Valley after a lapse of 12 months, whereas the average interval for many years has been about five years.”—*The Times*.

31st.—*Pentland Hills, Crosswood* (XIII). Heavy S from 5 a.m. till 2 p.m. when depth was 5 inches. A further 2 inches fell between 3.15 and 8 p.m.—*Bucklyvie* (XV). TS at 9.50 p.m. with vivid L.

31st—Feb. 1st.—*Harlaw* (XIII). S  $6\frac{1}{2}$  inches deep. Wind N.W.

## FEBRUARY.

1st.—*Carlisle, Rickerby* (X). H storm and distant T.—*Buchlyvie* (XV). S 6 inches deep.—*Stronvar* (XVI). S  $7\frac{1}{2}$  inches deep.—*Dunkeld* (XVI).

“The driver of the Post Office motor vehicle from Dunkeld to Amulree had a trying journey. Six miles from Dunkeld he stuck fast in the snow, and on proceeding on foot he was nearly overcome. On reaching a farm prompt steps were taken to restore circulation. On returning to his motor van he found it invisible, the snow having drifted completely over it.”—*The Scotsman*.

3rd.—*Glenelg* (XVIII). One of the highest river floods ever seen here through the melting of the S on the hilltops.

5th.—*Warlingham* (II). Pear trees in full bloom.

7th.—*Mansfield* (VII). Strong gale with R caused the Rufford pit accident, three miles from here. A shelter was blown into the levers for stopping the engine, which caused overwinding, and 14 lives were lost.—*Southport* (VIII). Unusually severe S.S.W. gale, the max. hourly velocity being 64 miles, or force 11 on the Beaufort scale, at 10 p.m.—*Hampson-in-Ellel* (VIII). Great gale from S did much damage.—*Drumchapel* (XV). Bar. rose 1.02 in. between 9 a.m. and 9 p.m. after having fallen .70 in. in the previous 12 hours.—*Plockton* (XVIII). Heavy gale. Bar. fell to 28.5 in.—*Waterford, Whitfield Court* (XX). During a gale the rain gauge was blown clean out of the ground.—*Rathmines* (XXI). Fierce S.W. gale in evening.—*Fanad* (XXIII). Violent S.W. gale. The captain of a steamer was washed overboard near Tory Island.

7th—8th.—*Castle Forbes* (XXI). Gale on evening of 7th and early on 8th, doing damage to woods on this estate.

10th.—*St. Pancras, Camden Square* (I). Daffodils and crocuses in bloom.

11th.—*Goldsborough Hall* (IX). Dense fog all day.

11th—12th.—*Maxwelton* (XII). Thick fog.

11th—13th.—*Ross* (VI). Thick fog, becoming lighter at midday on 13th.—*Southwell* (VII). Continuous thick fog.

11th—14th.—*Stoke Bishop* (VI). Dense fog.

12th.—*St. Pancras, Camden Square* (I). Thick fog in morning, especially from 9.30 to 11 a.m.—*New Malden* (II). Dense fog until 5.30 p.m.—*Southport* (VIII). Thick fog at intervals all day.

12th—13th.—*Rathmines* (XXI). The densest fog for many years.

13th.—*Manor Park* (IV). Very thick fog at 11 p.m.—*Polapit Tamar* (V). Dense fog all day.—*Southport* (VIII). Thick fog in forenoon.

13th—14th.—*Gogerddan* (XI). The thickest fog for many years on each afternoon after fine mornings.

14th.—*Broadford* (XX). Dense fog in forenoon.

15th.—*St. Pancras, Camden Square* (I). Overhead fog in morning which became so heavy from 10.30 a.m. to 1 p.m. that the appearance was as a very dark night. Street lamps could be seen for a considerable distance, but the darkness was intense.—*Mumbles* (XI).

“The foghorn at the Mumbles Lighthouse stopped . . . after sounding continuously for 111 hours during the fog. This is the longest period that this foghorn has so sounded.”—*The Times*.

17th.—*Ardingly* (II). S fell yielding .08 in., the only measurable fall in the year.

19th.—*Totland Bay* (II). Gooseberries in full bloom.

### MARCH.

2nd.—*Pen-y-Gwryd* (XI). Heavy R ; 3.03 in.

4th.—*Drumnadrochit* (XVIII). Gale at night. Sharp TS from 11.20 p.m. to midnight, with blue L.

6th—7th.—*Braemar, Derry Lodge* (XVII). S 3 and 6 inches deep.

7th.—*Carlisle, Rickerby* (X). Distant T and very large H.

8th.—*Lewisham* (I). S with one loud peal of T.

14th.—*Beith* (XVI). S and T.

15th.—*Chellaston* (VII). Severe S.W. gale with R, S and a TS.—*West Witton* (IX). S 4 inches deep at 9 a.m.—*Gosforth* (X). S 8 inches deep.—*Marchmont* (XII). S 3 inches deep.—*Callander, Leny* (XVI). S 9 inches deep and much more on hills. Nearly all gone a week later.

15th—16th.—*Fanad* (XXIII). Heavy S on both days. TS in evening of 16th.

15th—17th.—*Balquhiddier, Edinchip* (XVI). S for three days, the depth on the 18th being fully 12 inches.

16th.—*New Malden* (II). Squall and a fall in temp. of 6° in one minute at 3.30 a.m.—*Bishops Castle* (VI). S 6 inches deep.—*Waltham-*

*on-the-Wolds* (VII). Heavy S.—*Stronvar* (XVI). S 9 inches deep.—*Milford* (XXIII). S  $4\frac{1}{2}$  inches deep.

17th.—*London* (I).

“ At the time of a terrific clap of thunder the roof of 117, Warwick Street, Eccleston Square, S.W., a three-storeyed house with a basement, occupied by Mr. and Mrs. John McGreery, was struck by lightning. A hole was made in the roof, the chimneys wrecked, and débris fell into the bed-room, while some of the bricks forming the chimney stacks crashed through the house to the basement with such force that the kitchen stove was badly damaged. The slates on the roof were scattered and fell into the roadway, some passers-by having narrow escapes.”—*Daily Telegraph*.

—*Burnham Beeches* (III). S 4 inches deep.—*Hingham* (IV). S fell all day.—*Sparkhill* (VI). S fell early to a depth of 5 inches.—*Waltham-on-the-Wolds* (VII). Heavy S from 5 to 9 a.m., the equivalent of .64 in. of R falling. From 10 to 11 a.m. a second fall on top of previous white S, now heavily impregnated with a dark purplish tint like volcanic ash, produced an ashy sediment. The beauty of the previous fall was quite blotted out, although nearly 8 inches lay on the ground.—*St. David's* (XI). A slight TS with some sleety S.—*Stronvar* (XVI). S 10 inches deep.

20th.—*Hingham* (IV). T, H and R.—*Meltham* (IX). TS and H.

20th—23rd.—*Codford St. Mary, Stockton House* (V). TSS daily, though there were only two TSS between March 23rd and end of September.

21st.—*Lewisham* (I). Distant TSS during morning and TS in the afternoon.—*Chickerell* (V). TSS at 4.30 a.m. and also in the afternoon.—*Forthampton Court* (VI). Heavy T at 7 p.m. followed by gale. *Upton-on-Severn* (VI). TS at night.

22nd.—*Lewisham* (I). TS at 5 p.m. followed by very heavy H for 10 minutes.—*Warlingham* (II). TS at 4.30 p.m. Wind blowing at 51 miles per hour.—*Worthing* (II). Heavy gale.

“ Shortly before midnight about 200 yards of the pier at Worthing was swept away. During the winter work has been in progress on the pier, the intention being to enlarge the shore end of the structure preliminary to the erection of an arcade leading into a shore-end pavilion. It was the swaying of a big crane used for lifting the ironwork into position that gave the assembled crowds on the front the first indication of danger. A few minutes later loud reports were heard above the noise of the gale, and three-fourths of the pier disappeared, isolating the pavilion and landing-stages at the far end. The electric arc lamps were extinguished by the severing of the supply cables, and the lamps on the parade and in the town were extinguished.



The pier was built in 1862 and represented a capital outlay of something like £17,000. Only the pavilion and the landing-stages at the far end now remain, and the damage done is established at about £10,000.

At daylight the beach for a distance of nearly a mile was strewn with timber planking, iron seats, and other wreckage from the pier. The roadway along Worthing Parade and the adjacent streets were flooded to a depth of from one to two feet."—*The Times*.

—*Haileybury* (III). TS from S. at 5.20 p.m. High gale at night.  
—*Blisworth* (III). Heavy TS with L and R at 5 p.m. S.W. gale in night.—*Rousdon* (V). Fierce S. gale at night; wind blowing at 50 miles per hour at 9.30 p.m.—*Cockburn Hill* (XIII). Heavy S did great damage to trees.

22nd—23rd.—*Crosswood* (XIII). Sudden and heavy fall of S commencing about 11.30 p.m. on 22nd and continuing till 11 a.m. on 23rd. The depth was 12 inches, and there was little drifting except on high ground.—*Harperry* (XIII). S commenced at 10.15 p.m. on 22nd and ceased at noon on 23rd; the average depth in undrifted places was 14 inches.—*Harlaw* (XIII). Between 10 p.m. on 22nd and 11.30 a.m. on 23rd 11 inches of S fell.—*Edinburgh* (XIII). During night 3 inches of S fell.

29th.—*Tottingworth Park* (II). TS and H for 10 minutes at 2.30 p.m.

31st.—*St. Pancras, Camden Square* (I). Thick fog until evening.

#### APRIL.

4th.—*Hampton Poyle* (III). Remarkable S storm and rapid fall of temp. at 10.30 a.m. The temp. at noon was 31°.

7th.—*Libury Hall* (III). Late in the evening it was noticed that the pavements, after a fall of R, had the appearance of diluted ink, and in the morning of the 8th the rain-water in the gauge was of a blackish colour very similar to diluted ink. Unfortunately no analysis was made.

11th.—*Burnham Beeches* (III). S 4 inches deep.—*Peterborough, Ashfield* (III). Heavy S.—*Hingham* (IV). Heavy S at night. Shrubs laden to ground in the morning.—*Hethersett* (IV). Heavy S 5 inches deep on morning of the 12th. This was followed by a sharp frost, and the currant and plum blossom was covered with frozen snow.—*Hodsock Priory* (VII). S all day from 7.30 a.m.; an inch deep.—*Chellaston* (VII). Heavy S.—*Wirksworth* (VII). S fell continuously from 7.45 a.m. to 5.15 p.m., yielding .28 in.—*Morley* (IX). S for 18 hours.—*Gosforth* (X). S 8 inches deep.—*Cargen* (XII). S from 6.45 a.m. to 1.30 p.m., followed by R.—*Lincluden* (XII). S 2 inches

deep.—*Marchmont* (XIII). S 4 inches deep. Commenced 10.30 a.m.—*Cardross* (XV). S for 10 hours; depth 2 inches.—*Buchlyvie* (XV). Three inches of S.—*Aberfeldy* (XVI). S all day, being 3 inches deep.—*Strathtay* (XVI). About 3 inches of S.—*Ballintuim* (XVI). Four inches of S.—*Kenmore* (XVI). S  $3\frac{1}{2}$  inches deep.—*Perth* (XVI). S 2 inches deep.—*Braemar, Derry Lodge* (XVII). S 6 inches deep.—*Fortrose* (XVIII). S from 8 a.m. to 3.30 p.m., lying 3 inches deep.

11th—12th.—*Aberlady* (XIII). The heaviest fall of S here at one time for many years past.

12th.—

“Snow commenced to fall in East Herts before noon, and continued without intermission for eight hours. Much damage was done in lambing quarters, and all farmwork was brought to a standstill.

In East Essex the heaviest fall of snow experienced during the whole winter occurred. It began in the early hours of the morning, and after a short cessation commenced again at 10 a.m. and continued throughout the day, the fall being considerably more than the winter's aggregate.

Snow fell in Leicester and district throughout the greater part of the day, and the weather was most unfavourable for farming operations. The young lambs are likely to suffer considerably. There were heavy falls also in South Warwickshire, Shropshire, Cheshire, and Cumberland. For ten hours there was no abatement of the snowstorm in the Peak district. In the dales several inches fell, and on the hills the downfall was very heavy. Remarkable weather was experienced in the West Riding of Yorks. Snow fell all day in the Doncaster district, delaying traffic and causing great inconvenience. The hills and wolds were covered at night. In North Yorks and South Durham the snow lay to a depth of over a foot. All outside work was suspended in the shipyards on the Tees. In Roundhay Park, Leeds, the snow was 2 inches deep.”—*Daily Telegraph*.

—*Edinburgh* (XIII). A fall of 2 inches of S.

16th.—*Cardross* (XV). S and heavy H.—*Drumchapel* (XV). S, H and R.

17th.—*Hoar Cross* (VI). T, L, S, R and H.

22nd.—*Temple House* [*Marlow*] (II). During a heavy TS .45 in. of R fell in 35 minutes.

24th—25th.—*Ballyfin* (XXI). Heavy S.

25th.—*Cashel, Ballinamona* (XX). Heavy S, lasting about 4 hours, which covered the ground to a depth of several inches. It, however, did not last long, being nearly all melted next day. I never remember such a heavy fall so late in the spring, and in fact it is very unusual to have S at all here so late, one gentleman telling me that he did not remember seeing any so far on in the season since 1893, when there was a fall in May.—*Clonmel* (XX). A heavy S storm from 1 to

3 p.m. No record of such a heavy S fall in April before.—*Timoney Park* (XX). Six inches of S fell.—*Ballymahon* (XXI). Nearly 3 inches of wet S.—*Moorock Lodge* (XXI). Violent S storm.—*Longford* (XXI). Heavy S.

26th.—*Torquay* (V). Terrible S. to S.S.W. gale.

29th.\*—

“Severe thunderstorms were experienced in London and the South of England. The storm in London, which was at its height about 9 o'clock in the evening, was accompanied by exceptionally vivid flashes of sheet lightning and heavy rain. The temperature of the evening had been close and moist, and when the storm burst the streets in some parts of the West-end were crowded. Shortly after 9 o'clock Ludgate Hill presented a remarkable spectacle. Water rushed down in a large volume, but with the culverts clear the inconvenience of flooded streets was only temporary. In High Holborn the water was at one time 4 inches deep at the kerb. A horse attached to a Post Office mail van became restive during the heavy rain and fell, with the result that the van came in collision with a motor-omnibus. No serious damage was, however, done.

At Bournemouth a storm broke over the town shortly after 5 o'clock, and in the space of half an hour half an inch of rain had fallen. . . .

A thunderstorm of great severity also passed over Newport, Ryde, Cowes, and other parts of the Isle of Wight last evening, and at East Cowes the lightning cut the telephone wires and scattered them in all directions.”—*The Times*.

—*Lewisham* (I). After a beautiful, warm, summer-like day, a heavy TS came up in the evening, and loud peals of T followed by brilliant blue and greenish flashes of L. R fell heavily for about 40 minutes, amounting to .31 in.—*St. Pancras, Camden Square* (I). TS from 8.40 to 9.45 p.m., with heavy R and very vivid and almost continuous L.—*Warlingham* (II). TS with brilliant sheet L and heavy R at 8.30 p.m.—*Byfleet* (II). From about 8 to 9.30 p.m. a TS, which may be described as magnificent. The L was grand and of a remarkably blue colour; the flashes were in series of from 3 to 6, and the T was almost continuous. The storm appeared to approach from the E.—*Maidstone, Rumwood* (II). Very heavy TS with brilliant sheet L for an hour and a quarter.—*Sutton Scotney* (II). Severe TS started at 6 p.m., and R fell incessantly with vivid L until 8.10 p.m.—*Oakley Rectory* (II). Violent T with blue L and 1.20 in. of R between 7 and 9 p.m.—*Portsmouth* (II). Violent TS from 6.45 to 8 p.m., with .75 in. of R.—*Fareham, The Mount* (II). Severe TS from 6.30 to 8 p.m.; .86 in. of R fell in 50 minutes.

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\* See also *Met. Mag.*, May, 1913, pp. 68, 69, 70.

—*Bishops Waltham, The Palace House* (II). In 1 hour .74 in. of R fell.—*Liss, Kippences* (II). Violent TS in the evening. Extremely vivid sheet L of a blue colour; .92 in. of R fell in an hour and 20 minutes. A strong sulphurous smell was noticeable out of doors.—*Wokingham, East Heath* (II). In 1 hour .71 in. of R fell.—*Temple House [Marlow]* (II). In 1 hour .61 in. of R fell.—*Abingdon, Caldecott House* (II). Heavy R; 2.12 in. fell in 5 hours.—*Abingdon, Donnington* (II). Exceedingly heavy R during a TS; 1.78 in. of R fell in a little over 1 hour. It caused a flood in the town to a greater extent than had occurred before in the memory of any living inhabitant. Great damage was done to agriculturists and gardeners.—*Great Gaddesdon* (III). Severe TS, 8.30 to 10 p.m.—*Chalfont St. Giles* (III). TS, mainly between 7.30 and 9.30 p.m.—*Oving* (III). Heavy TS, with exceptionally vivid L, from 8 to 9.30 p.m.—*Oxford, Radcliffe Observatory* (III). TS, with heavy R, from 7.15 to 9.15 p.m. Total R 1.42 in.—*Oxford, Banbury Road* (III). TS from 7 to 9.30 p.m. R 1.33 in., the heaviest in April in 25 years.—*Hampton Poyle* (III). Terrific TS between 7.20 and 10 p.m. R 1.38 in. Roads flooded.—*Swerford* (III). Heavy TS, with H, at 7.15 p.m.—*Bodicote* (III). During a TS 1.38 in. of R fell in 2 hours.—*Caversham, Rectory Road* (III). Heavy storm from 7.45 to 9 p.m., with vivid L, but absence of “crashing” T. R .65 in., causing partial flooding.—*Pyrton Hill* (III). Severe TS from 8 to 9 p.m., with brilliant L.—*King's Sutton* (III). Violent TS from 7 to 10 p.m.—*Blisworth* (III). Very heavy T, L and R from 8 to 10 p.m.—*Higham Bury* (III). TS from 9 to 9.30 p.m.—*Hingham* (IV). Tempest at night, with much L.—*Winchcombe* (VI). Heavy TS at night.—*Hidcote* (VI). Heavy TS after 8 p.m.—*Lechlade* (VI). Heavy TS at 6 p.m.—*Cirencester* (VI). Sharp TSS at 5 p.m. and 8 to 9 p.m.—*Stow-on-the-Wold* (VI). Severe TS from 7 to 9 p.m. Vivid L and heavy and continuous T. The R fell in heavy and sporadic downpours.—*Hoar Cross* (VI). Heavy T and vivid L; 1.01 in. of R fell in  $2\frac{1}{2}$  hours.—*Oakamoor* (VI). TS from 9 to 11 p.m., following a warm cloudy day, with a moderate S.E. wind and max. temp. of 60°. The most interesting feature was the type of L which was very blue or violet, not much forked and of long duration, some flashes being very multiple, the longest consisting of 6 branches. The T was not loud except about three claps which shook the house, yet most of the L seemed to be within about 2 miles. The storm came on abruptly and ceased abruptly, but hovered over the district for about 2 hours. If anything it seemed to travel from

S.W. to N.E. It seemed worst on the N.E. side where a sheep or two were killed.—*Mayfield* (VI). TS from 8.30 to 10.30 p.m.—*Sparkhill* (VI). Severe TS lasting 2 hours.—*Bidford, Moor Hall* (VI). TS at 8 a.m., lasting 2 hours.—*Farnborough (Warwickshire)* (VI). Terrific storm of T, L and R. The village was flooded.—*Mansfield* (VII). TS from 9.30 to 10.30 p.m. The T was nearly continuous for half an hour.—*Ashbourne* (VII). T and L from 8 to 11 p.m.—*Chellaston* (VII). Violent TS at night.—*Wirksworth* (VII). Heavy TS at 10 p.m.—*Rochdale, Fieldhead* (VIII). In 45 minutes 40 in. of R fell.—*Wuth-on-Dearne* (IX). Violent TS at 11 p.m., which did much damage to buildings.—*Meltham* (IX). TS from 10 to 11 p.m., with very heavy R.—*Gogerddan* (XI). Heavy R storm between 10 and 11 p.m. Roads in parts were quickly flooded.—*North Wales* (XI).

“Serious damage to crops and property was reported from various parts of North Wales in consequence of the heavy floods. The Rivers Dee, Severn, Wye, and Clwyd have overflowed their banks, and thousands of acres of crops and pasturage are inundated. Sheep and cattle have been carried down by the floods.”—*The Times*.

#### MAY.

4th.—*North Cudbury* (V). Shade max. 47°·5. No previous May had a colder day in 16 years.—*Drumchapel* (XV). TS, 1.30 to 2 p.m.

5th—9th.—*Kenmore* (XVI). Severe R storms, measuring 4·99 in. Loch Tay and the river were flooded.

6th—9th.—*Aberfeldy* (XVI). R 5·38 in. River in flood.—*Ballintuim* (XVI). R 5·11 in. Severe floods, the height of the river on 9th being almost a record.—*Balnaboth* (XVI). Total R 9·09 in., of which 3·02 in. fell on 8th.—*Forfar, Lilyfield* (XVI). 4·36 in. of R fell causing serious flooding in the lower parts of Strathmore, especially to the potato crop.—*Dunrobin* (XIX). Strong E. gale with high sea and spindrift doing great damage to fruit and other trees owing to the salt spray. Such an untimely storm has not been experienced for 40 years.

6th—10th.—*Perth* (XVI). River Tay in flood, a most unusual occurrence in May. Farmers suffered severely, especially on the E. side.

7th—10th.—*Ballater* (XVII). Rivers Dee and Don in flood.

8th.—*Lyme Regis* (V). Strong gale from S.—*Tamney* (XXIII). Violent E.S.E. gale, shifting to S.S.E. in evening. Several trees broken

8th—9th.\*—*Coupar Angus* (XVI). Heavy flooding. The oldest inhabitants had not seen the flood mark so high.—*Lynturk Manse* (XVII). The two days' R 3·47 in. was the highest for 48 hours recorded here. Great floods on lower reaches of Don and Dee.—*Drumblade* (XVII). R 2·35 in. The R a mile or so to the S.W. must have been much greater, as the Little Drumblade burn near here was flooded to a greater extent than any of the neighbours remember.

8th—11th.\*—*Aberdeen, Cornhill Road* (XVIII). Over 3 inches of R fell, much less than at most stations on the Deeside. This place being on the hill towards the River Don on the north, the R storm seemed to pass round it to the W. and S.W.—*House of Schivas* (XVII). R 3·10 in. causing the highest flood in the river remembered in May.

11th.—*Ware* (III).

“Shortly before 1 p.m. during a thunderstorm, the steeple of Christ Church, Ware, was struck by lightning. The structure was thrown considerably out of the perpendicular, and much masonry was dislodged. The congregation was assembled at the time, but at once dispersed, several people leaving the building in a fainting condition.”—*Daily Telegraph*.

12th.—*Strathmore* (XVI).

“An inland sea, 2½ miles broad at the widest part, has formed between Crathie Bridge, Meigle, and Isla Bridge, and Coupar Angus, in Central Strathmore. From the Haugh of Bothrie farmsteading a circle a mile in radius could be described without touching dry land. Bardmony Bridge, over the Isla, is isolated, with 3 feet to 5 feet of water on its approach from the north, the flood stretching for nearly a mile to the south. At Haugh of Bothrie there were 6 feet to 8 feet of water in the farmhouse and steading, and at Bogley 2 feet to 3 feet, the occupants of the premises having to seek shelter elsewhere. A post was washed up at Coupar Grange with a metal plate attached, inscribed, “Roman Camp, rock cut steps leading to bridge.”—*The Times*.

18th.—*Balerno, Cockburn Hill* (XIII). Very heavy H.

19th.—*Drumnadrochit* (XVIII). S flakes and H.

22nd.—*Lochgoilhead* (XV). Extraordinarily sudden blast of wind and H lasting about 15 minutes.

26th.—*Bulvan* (IV). H stones over an inch in diameter.—*North Cadbury* (V). Shade max. 86°, the highest in May in 17 years' observations.—*Bishops Castle, Castle Street* (VI). TS with heavy R; ·95 in. fell in 20 minutes.—*Bishops Castle* (VI).

“One of the heaviest storms of recent years visited Bishop's Castle and did serious damage. Thunder and lightning, accompanied by huge hail-

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\* See also *Jour. Scot. Met. Soc.*, Vol. 16, p. 193.

stones and heavy rains, continued for the space of an hour. Houses and shops were flooded, and after the water had subsided a considerable depth of mud remained behind. The streets were torn up, and the heavy iron coverings over the manholes were lifted and carried away. The cellar at the "Six Bells" was flooded to such an extent that it was necessary to call upon the services of the fire engine to pump the water out. The damage to gardens was extensive, plants and vegetables being practically destroyed. A large field of barley belonging to Mr. Bason, Heblands, had the surface soil swept away, and a field belonging to Mr. W. Probert was treated in the same ruthless manner by the storm. Scores of window panes were shattered by the hailstones. The damage to the streets is 'very extensive.'—*Wellington Journal*.

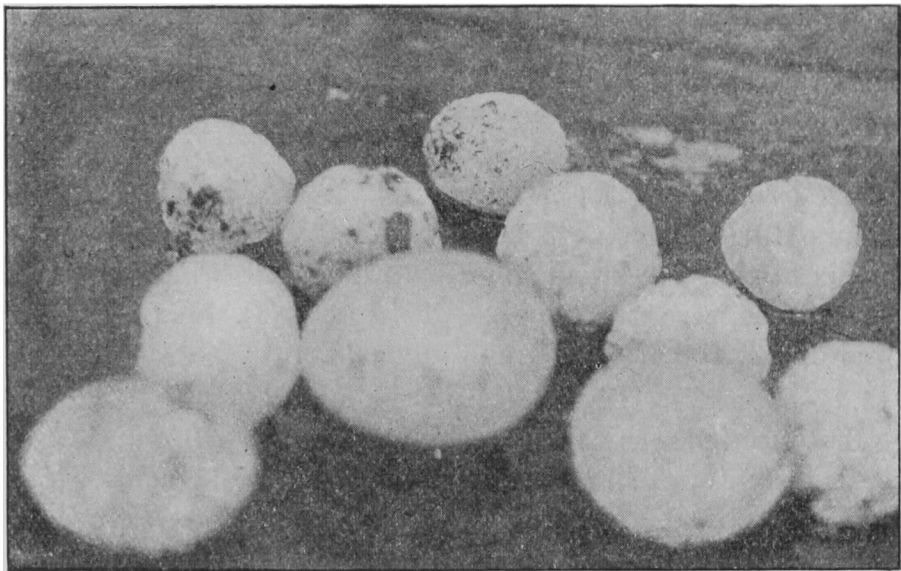
—*Castle Caerinion, Sylfaen Gardens* (XI). A terrific TS lasted about four hours, during which .88 in. of R fell. Within two miles of this station six cattle were killed and a barn damaged, while an oak, ash, and other trees were struck by L.—*Welshpool* (XI). Max. temp. 76°·5, followed during the afternoon by a severe TS.

27th.\*—*Sheerness* (II). TS lasting 20 minutes, with .68 in. of R. Large H stones fell,  $\frac{5}{8}$ th to  $\frac{7}{8}$ th inch in diameter.—*Wokingham, East Heath* (II). Heavy TS, when .94 in. of R fell in 1½ hours.—*Oxford* (III). TS at 5.30 p.m. lasting about half an hour.—*Waresley Park* (III). TS with H stones, which did much damage to glass.—*Harston* (III). Tremendous H storm with vivid L. Some of the H stones were 1¼ inch in diameter. A good deal of glass was broken, and gooseberries and plums were knocked off the trees.—*Stapleford House* (III). Heavy TS in the afternoon, lasting not more than 20 minutes, with much H, which did an enormous amount of damage—*Cambridge, Herschel House* (III). TS and H, with .24 in. of R in about 40 minutes. Big H stones in the villages round.—*Dengie, Land Wick* (IV). Heavy R; 1.16 in. during TS in 45 minutes.—*Great Yeldham* (IV). H storm which came from the W.S.W. apparently like a TS with a peculiar whirring sound and lasted for 8 minutes only. The melted ice gave .33 in. of water. These H stones, many of which were as big as hens' eggs, were of a peculiar rosette formation at the edge and slightly convex and concave, and were apparently congealed masses of ordinary H stones. Needless to relate the devastation was great, crops were smitten to the ground, glass-houses all smashed, tarred felt roofing cut to ribbons, corrugated iron riddled, tiles and windows smashed in thousands, shrubs and trees will carry the cuts of the stones as long as they live. Man and beast were bruised, and

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\* See also *Met. Mag.*, June, 1913, p. 91.

among other animals killed on my own farm I saw rooks, wood-pigeons, full grown hares, partridges, pheasants, rabbits, rats and various small birds, wild ducks, farm-yard fowls and 3 cygnets.—*Halstead, Wickham St. Pauls* (IV). In the accompanying photograph the egg used for comparison is a common hen's egg. The stones



HAILSTONES GROUPED ROUND A HEN'S EGG.

*Photograph by Mr. F. H. Marriott.*

were much larger when they fell, but wasted a lot before being photographed. One of them, when melted, gave just over 2 oz. of water, but it probably weighed 4 oz. when it fell.—*Halstead* (IV). Large pieces of H fell, passing through slated roofs.—*Haverhill* (IV). About 4 p.m. heavy H storm for about 20 minutes. Most of the stones were about the size of a nutmeg and some as big as walnuts. Reports from the district say that one was picked up  $6\frac{1}{2}$  inches in circumference, and another report that they weighed 12 or 13 to the pound. Much damage was done to glass and crops from Yeldham, 7 miles S.E. of here, to Linton, 8 miles west.—*Foleshill, Foxford* (VI). H for a short time of an unusual size.—*Tuxford* (VII). Very severe H and TS in early morning.—*East Markham* (VII). On the edge of severe TS. In about 20 minutes .27 in. of R fell. No R fell 1 mile W.—*Ormesby* (IX). In 13 minutes .47 in. of R fell.

29th.—*Muswell Hill* (III). Heavy TS with vivid L.—*Glanmire* (XX). Heavy fog and R.

29th—30th.—*Wokingham, East Heath* (II). Midnight TS, when



·54 in. of R fell in about one hour.—*Darrynane Abbey* (XX). Heavy R caused great floods on 30th.

30th.\*—*St. Pancras, Camden Square* (I). Heavy TS in early morning, and ·27 in. of R between 1.30 and 1.40 a.m.—*Gravesend, Thong* (II). TS with heavy H, some stones being an inch and a half long.—*Haileybury* (III). TS at 2 a.m.—*Bennington* (III). TS at 2 a.m.—*Meltham, Harewood Lodge* (IX). TS from 3.50 to 4.30 p.m. In  $4\frac{1}{2}$  minutes from 3.56 to 4.0 $\frac{1}{2}$  p.m. ·21 in. of R fell.

31st.—*Mickleton* (VI). Rather sharp H storm with L at 2.16 p.m. In 10 minutes ·16 in. of R fell.—*Waltham-on-the-Wolds* (VII). Heavy H followed by R and dry H for 5 minutes. In the school playground a pile of H was washed together 1 foot high, covering 4 square yards. At 4 p.m. much remained.

## JUNE.

6th.—*Lynturk Manse* (XVII). TS with large H and 1·00 in. of R. Especially heavy R in first half hour from 12.25 p.m.—*Drumblade* (XVII). In 1 hour practically an inch of R fell.

8th.—*St. Pancras, Camden Square* (I). Sharp R storm at 2.50 p.m. when ·16 in. fell in 5 minutes.—*Englefield Green, Harvest Road* (II). Sharp squall about 2.30 p.m. with ·20 in. of R in 6 minutes, of which about ·18 in. fell during the first 4 minutes.

8th—9th.—*Arisaig* (XVIII). Incessant R accompanied by a strong gale which destroyed the foliage of all trees exposed to it, and even young branches.

9th.—*Gogerddan* (XI). Heavy showers during day. At night there was a strong gale with heavy R. Low ground was quickly flooded.—*Pen-y-Gwryd* (XI). Heavy R, 4·42 in., and exceptionally heavy R showers at 10 p.m.—*Llyn Llydaw, Copper Mill* (XI). Heavy R, 4·62 in.—*Mull Quinish* (XV). S.W. gale with torrents of cold R.—*Drumnadrochit* (XVIII). River in flood.

10th.—*Beith* (XVI). Terrific storm of wind and R.—*Aberfeldy* (XVI). River Tay in flood.

13th.—*Castletown* (XIX). Ground frost caused some blackening of potato shaws.

15th.—*Hythe* (II). Bright meteor seen in the N. at 8.10 p.m.

16th.—*Lexden* (IV). Partial drought of 38 days, with ·21 in. of R, terminated.

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\* See also *Met. Mag.*, June, 1913, p. 92.

17th.—*Haileybury* (III). TS about 5.15 p.m., with .47 in. of R in about an hour. Heavy R occurred to E. and W., and Haileybury seems to have been between several TSS which travelled roughly from S. to N.—*Libury Hall* (III). A torrential R. Within less than one hour, between 5 and 6 p.m., 1.04 in. fell.—*Bishops Stortford* (III). From about 4 to 7 p.m. 1.30 in. of R fell during a TS.—*Eye* (III). TS lasting from 5.30 to 7.30 p.m., with 1.10 in. of R.—*Great Paxton* (III). R 2.90 in., of which 2.80 in. fell in an hour and a half.—*Brampton Grange* (III). From 4.45 to 6 p.m. 2.12 in. of R fell. The worst TS ever experienced here.—*Milton Bryant* (III). Heavy TS commenced with a sudden and tremendous clap of T at 10 a.m., others followed quickly. Heavy R fell in adjoining parishes at 11 a.m., and literally washed up roads. We were a quarter of a mile outside the line of this storm.—*Stapleford House* (III). The severest TS remembered. T all morning; about 3.30 p.m. this must have been the centre of several storms, T and L being continuous all round for about 30 minutes. During that time 1.35 in. of R fell, and later R made up the total to 1.62 in.—*Cambridge, Herschel House* (III). TS and .99 in. of R in about 50 minutes, from 3.30 to 4.20 p.m.—*Crowland, Bank House* (III). R fell for about 55 minutes, with much L and heavy T, the gauge registering 2.21 in. The L shook the spire on the Postland Road Board Schools, and damaged the house.—*Elsenham* (IV). TSS from 3 to 3.30 p.m., and from 5.30 to 6.30 p.m. R 1.86 in. *North Weald, Canes* (IV). Heavy TS in the neighbourhood, but no R within half a mile of this place.—*Feering* (IV). Very severe TS; several houses in the village were struck.—*Braintree, Black Notley* (IV).

“The dead bodies of three men were found in an open shed in a field at Black Notley, near Braintree. The men had evidently been killed by lightning during a storm which passed over the district early in the evening. The three men—John Gilbey, 74, a farmer, his son Thomas Gilbey, 45, and Walter Smith, 23—had been haymaking in the field, and had apparently gone into the shed to take shelter from the storm. Their faces were blackened, but otherwise their bodies were not disfigured.”—*Daily Telegraph*.

—*Hawkedon* (IV). Severe TS, with heavy R and H. R 1.76 in.—*Elveden* (IV). During a TS at noon 2.85 in. of R fell in 58 minutes.—*Hingham* (IV). Severe TS.—*Codford St. Mary, Stockton* (V). Short TS at 6.30 a.m.—*Belvoir Castle* (VII). Very heavy R; .84 in. fell in 25 minutes during a TS.—*Huddersfield Cemetery* (IX). TS, 2.20 to 2.40 p.m.; .20 in. of R fell in 3 minutes.—*Morley* (IX). TS, with .18 in. of R in 15 minutes.—*Waterford* (XX). Thick fog.

18th.—*Balruddery* (XVI). Sharp TS in evening.—*Fortrose* (XVIII). TS from 3 to 11.15 p.m.

20th.—*Tottingworth Park* (II). From 11.50 a.m. to 1.18 p.m. .46 in. of R fell. Large H fell on other side of valley about  $\frac{1}{4}$  mile away. Temp. fell 21° during storm, from 69° to 48°.

23rd.—*Fortrose* (XVIII). TS from 3 to 3.30 p.m.

24th.—*Motherwell, Dalzell* (XIV). Severe TS accompanied by heavy H, lasting  $1\frac{1}{2}$  hours. Some of the pieces of ice measured 1 inch by  $\frac{3}{4}$  inch. None fell about half a mile distant. The damage to small fruit was great as most of it was cut from the bushes. The R measured 1.60 in.—*Buchlyvie* (XV). TS, with H and heavy R, in afternoon.—*Perth* (XVI). Severe T, L and R from 3.30 to 5 p.m.—*Fort Augustus* (XVIII). In about half an hour after 11.30 a.m. .50 in. of R fell.

27th.—*Lawford, Dale Hall* (IV). Severe TS, with H stones as large as walnuts, and heavy R measuring .93 in. in a little over 20 minutes.

## JULY.

6th.—*Reigate, Laglands* (II). In 3 hours from 1.30 to 4.30 p.m. 1.03 in. of R fell.—*Drumchapel* (XV). TS at 4 p.m.

8th.—*Heathfield* (II). Min. temp. on grass 31°·5.—*Rhyl* (XI). At 4.15 a.m. part of this town was visited by a whirlwind or tornado. The part was a narrow strip a quarter of a mile wide, running from N.W. by N. to S.E. by S., so clearly defined that torrential R fell on one side of some streets leaving the other side quite dry. The cloud above, of inky blackness, was also clearly defined. The wind and R lasted for about 1 minute. The wind seemed to shake the houses in its track. Chimney pots and tiles were displaced. A postman on duty saw the cloud approaching and gave its direction as from about N.N.W., *i.e.*, from the sea. Seagulls caught in it were blown about in circles in a direction contrary to that of the hands of a watch, as if they could not get out of it. The whirlwind visited Rhuddlan, 3 miles away, being of short duration, and doing some damage to gardens and property; the R was terrific.

10th.—*Lewisham* (I). A remarkable storm came up from the N.W. just before 3 p.m.; although the T and L were very slight the R and H fell with tropical intensity, .72 in. falling within 27 minutes. Some of the H stones were extremely large and cut the broad-beans and flowers in the garden very much. The clouds were a grand sight.—

*St. Pancras, Camden Square* (I). Unusually dark at 2 p.m., making artificial light necessary; sharp TS with L and R from 2.20 to 3.30 p.m.—*Linton Park* (II). TS with heavy R; .92 in. fell in 1 hour.—*Langley, Rumwood* (II). TS with very heavy R, .66 in. falling in 20 minutes.—*Brighton, Withdeane* (II). R 2.15 in., of which 1.45 in. fell in 2 hours 14 minutes.—*Ardingly, Lywood House* (II). In 8 minutes .54 in. of R fell.—*Heathfield, The White Cottage* (II). In the 15 minutes ending 0.15 p.m. .61 in. of R fell.—*Watford* (III). TS from 2 to 3 p.m.—*Boxmoor* (III). TS from 2 to 3.30 p.m., with large H stones.—*Barnet, Summerhill* (III). In an hour .75 in. of R fell during a TS.

13th.—*Rousdon* (V). Remarkable visibility; Start Point, Portland Bill and shipping in Channel very distinct.

14th.—*East Grinstead, Brockhurst Observatory* (II). The morning was moderately fine; but a TS with heavy R occurred during the afternoon, and a much more violent one in the night which lasted for several hours, accompanied by torrential R. The cloud-burst was very partial, as at Cranston Road not nearly so much R fell as here, where 2.25 in. was measured at 9 a.m. next morning.—*Shenington* (III). R 1.21 in. Three miles away no R fell.—*Rounton Grange* (IX). In 2 hours 1.12 in. of R fell.—*Kenmore* (XVI). TS with very local R.

15th.\*—*Mayfield, Five Ashes* (II). TS from midnight to 3 a.m., with H. R 2.36 in.—*Hurst Green, Boarzell* (II). Very severe TS and H from 2 to 3 a.m.; 2.00 in. of R fell, the bulk in three quarters of an hour.—*Ticehurst, Myskyns* (II). Violent TS from 1.30 to 3.30 a.m. About 2 inches of R fell between 2 and 3 a.m.

22nd.—*Buchlyvie* (XV). Magnificent sunset and afterglow lasting till nearly midnight.

23rd.—

“The east coast was swept by a gale which did a certain amount of damage. At Hunstanton the yacht *Una* was driven ashore, and bathing huts on the south beach suffered severely. At the Sandringham annual flower show tents were blown down and the exhibits had to be removed to the out-buildings of York Cottage. Off Filey two yawls began to drag their anchors, and in the attempt to rescue the crews the Filey lifeboat was swamped and nearly wrecked, six oars being broken. At South Shields, where a large number of people had erected canvas tents and wooden bungalows, there was a very high tide, and a number of women had to be rescued.”—*The Times*.

29th.—*Lewisham* (I). R clouds unusually bright at 10 p.m. looking as if they were highly charged with electricity.

30th.—*St. Martins, Les Blanchés (Guernsey)* (XI). Severe TS with

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\* See also *Met. Mag.*, August, 1913, pp. 126 and 127.

2.09 in. of R and H between 5 and 7.30 a.m. Only one heavier fall on record during 20 years.

### AUGUST.

3rd.—*Colinsburgh* (XVI). Warmest day of the year, shade max. 81°. —*Glanmire* (XX). A large meteor falling from a position N.E. from here was seen at 10.56 p.m. It gave off a bluish light and a distinct whirring noise, as if a circular saw was running into metal and wood, was heard for a few seconds.—*Dublin* (XXI). Brilliant meteor seen at 10.55 p.m.

4th.—*Darlington* (X). Partial drought of 31 days ended. R .25 in.

6th.—*Walton-on-the-Naze* (IV). Heavy R; .21 in. fell in 15 minutes at 1 p.m., and .41 in. fell between 6.15 and 7.10 p.m.

7th.—*Lewisham* (I). Slight TS; between 8 and 8.30 p.m. .14 in. of R fell in 15 minutes.—*Warsash* (II). Heavy storm of R at 2 p.m.; .61 in. registered in 20 minutes. No T. Road surfaces washed away by sudden and violent R.—*Teignmouth* (V). Absolute drought of 29 days terminated. — *Dilwyn* (VI). — *Wilmslow* (VIII). — *Rathmines* (XXI). Absolute drought of 17 days terminated.

8th.—*Codford St. Mary, Stockton House* (V). Absolute drought of 18 days terminated.—*Colinsburgh* (XVI). Absolute drought of 26 days terminated.—*Ballinacurra* (XX). Absolute drought of 17 days terminated.—*Fethard-on-Sea* (XXI). A heavy shower ended an absolute drought of 17 days.

9th.—*Ticehurst, Three-legged-cross* (II). Severe H storm did damage to fruit and hops, estimated at £200 to £300 on one farm.—*Wangford, Reydon Grove* (IV). R 2.66 in., of which 2.60 in. fell in 2 hours between 3.30 and 5.30 p.m. Severe TS and tremendous H, which was very local, and covered a track only half a mile in width. Much damage to crops.—*Moretonhampstead* (V). Partial drought of 35 days terminated.

11th.—*Carmunnock, Carnbooth* (XIV). Absolute drought of 21 days terminated.

16th.—*Bishops Cannings* (V). R 1.77 in. which fell within 2 hours. Several houses were flooded, and the courtyard was ankle deep in water.—*Llandrindod Wells* (XI). TS from 3 to 4 p.m.

20th.—*Sunderland, West Hendon House* (X). Partial drought for 45 days with .32 in. of R, ended.—*Carmunnock, Carnbooth* (XIV). Partial drought of 30 days, with .18 in. of R, terminated.

21st.—*Rochdale, Fieldhead* (VIII). In 15 minutes .23 in. of R fell.—

“Conditions in the North are serious. Two departments of a mill at Barrow have been shut down because of the lack of water, and the same fate threatens the whole mill unless rain falls. Ullswater fell an inch last week, and the water level is three inches lower than the mark which was cut in the rock nearly half a century ago to show what was then a record drop. The regular domestic supply of water at Bolton-by-Bowland, in Yorkshire, has failed completely, and in many other parts the consumers have been put on half rations.

The great mountain bogs in Snowdonia have been drained almost dry, and mountain streams like the Ogwen can now be crossed in places dryshod. In fact, the Dee and all the Welsh rivers are lower than they have been for years past. The Tay, which is generally about eight feet deep in Perthshire, is now showing practically a bed of arid stones.”—*Standard*.

22nd.—*Lerden* (IV). Partial drought of 30 days, with ·20 in. of R, terminated.—*Ellon, House of Schivas* (XVII). During a storm ·04 in. of R fell in 6 minutes, ·10 in. in 25 minutes, ·18 in. in 50 minutes and ·41 in. in 2 hours.

23rd.—*Lynmouth, Rock House* (V). Between 4.10 and 4.30 p.m. ·35 in. of R fell.

24th.—*Gorleston-on-Sea* (IV). TS at 3 p.m. passing from W. to E.; very vivid L followed loud T right overhead. The storm effects over the sea were grand. R fell in torrents for 22 minutes. At Yarmouth, 1½ miles away, H fell heavily.

25th.—*Worplesdon* (II). A whirlwind was reported as lifting rick covers 30 feet in the air.

27th.—*Gorleston-on-Sea* (IV). Remarkable parhelion at 9 a.m., and large solar halo with two brilliant mock suns.—*Buchlyvie* (XV). Magnificent afterglow.

28th.—

“A butter famine exists in the Midlands as the result of the prolonged drought. Very little farmers’ butter was on sale at yesterday’s market at Nottingham. Only about half the usual quantity was on offer, and prices advanced sensationally, as much as eighteenpence per pound being obtained by some dairies, an increase on the usual rate at this time of the year of nearly 50 per cent. Farmers complain that very little cream is being produced, the milk being remarkably poor through thin pasture and the general scarcity of feeding.”—*Standard*.

29th.—*Tottingworth Park* (II). Dark cloud with a whirlwind preceded by a TS from 8 to 10 a.m. No damage done.—*Melltham* (IX). TS from 7 to 7.30 p.m.—*West Witton* (IX). TS all night.—*Horsley* (X). Severe TS during night.

30th.—*New Malden* (II). Thick fog early.—*Lyme Regis* (V). TS from 2.45 till 6 p.m.—*Pawston* (X). TS from 7 to 9 a.m.—*Ancrum*

(XII). T about 1.30 a.m., and from 7 to 9 a.m., when .60 in. of R fell.—*St. Andrews* (XVI). Between 10 a.m. and noon .80 in. of R fell during a severe TS, which was preceded by a fog and followed by a brisk N.E. wind.

30th—31st.—*Folkestone, Cupel Lodge* (II). Severe TS from N.E. from 5 to 6 p.m. on 29th, and heavy R on 30th, the totals being 1.24 in. and 1.18 in. respectively.—*East Preston* (II). Between about 7.30 p.m. on 30th and about midnight, or a little later, on 31st, the R was 3.57 in., a continuous fall of about 30 hours' duration.

31st.—*Folkestone* (II).

“The water, rushing down many inclines, found its level in that part of the town known as Old Folkestone, and rose in the cellars and basements with alarming rapidity.

In some of the hotels, which were full of visitors, business had to be suspended. At one the cellars were flooded to a depth of six feet, and the proprietor was cut off from his stock. The rush of water also extinguished the gas.

At another hotel directly opposite the harbour, water poured into the kitchen to such an extent that the late dinners which were being cooked for visitors had to be abandoned. At other business premises a similar state of affairs prevailed.

The position of some of the people living in poorer tenements was pitiable. All night and yesterday the corporation fire engine pumped water from the basements and the cellars.

At Sandgate and Seabrooke the effects of the sudden downpour were also seriously felt. The rain ran down the slopes of Shorncliffe like a cataract, drains being clogged and several small cottages flooded. Gravel was washed down from the hills, and this filled up the tram lines to such an extent that the service had to be suspended.

So much water accumulated in a dip of the road at Seabrooke that the passenger motors running between Hythe and Folkestone were obliged to make a detour. Several private motor-cars travelling from London and elsewhere endeavoured to run through the water, but their engines were stopped.”—*Daily Express*.

## SEPTEMBER.

4th.—*Princetown* (V). A very severe TS passed over Princetown. On the night of the 3rd the wind was very high, and increased in violence toward morning of 4th. T and L commenced about 2 a.m.; the worst part of the storm happened at 7 a.m., torrents of R falling. L killed 8 bullocks in one spot here.

12th.—*Pen-y-Gwryd* (XI). Heavy R after 3 p.m.; 3.85 in.

13th—14th.—*Castle Forbes* (XXI). Almost continuous heavy R for 16 hours.

13th—15th.—*Ellon, House of Schivas* (XVII). R 2·40 in., causing great delay to harvest and considerable damage to early cut crops.

14th.—*Lochgoilhead* (XV). At 4.30 p.m. sudden S gale, TS, H and low temp., lasting half an hour.—*Ennistymon* (XX). R 2·21 in., the greatest daily fall since observations began in 1900.

15th.—*Oundle School* (III). Extraordinary H storm, extending about 7 miles in a N.W. direction, about  $\frac{1}{2}$  mile in width. Jagged lumps of ice, 1 to  $1\frac{1}{4}$  in. in diameter, covered the ground to a depth of 8 to 9 inches, and in places lay until the third day. In 20 minutes the H yielded ·52 in.—*Aasleagh* (XXII). R 3·41 in.

16th.—*Tenterden* (II). TS. Tower struck at about 2.30 p.m.—*Maidstone, Linton Park* (II). TS with heavy R, ·49 in. fell in half an hour.—*Tottingworth Park* (II). TS, with ·36 in. of R in 20 minutes.—*Chelluston* (VII). Terrific TS and H in afternoon.—*Audlem* (VIII). About 2 p.m., after a particularly fine morning, what seemed to be merely a shower of R came up; very soon, however, it was accompanied by a TS. Without the slightest warning there was a terrific crash, and a blinding flash of light, immediately after which a cloud of smoke was seen rising from the ground in the Vicarage garden, and not more than 40 feet from the house itself. Examination showed that a tree had been struck at that point, and the L had travelled along a neighbouring clothes-wire and dislodged some bricks in a bakehouse at the further end. No less than 20 panes of glass were smashed in the Vicarage windows alone. The whole storm lasted less than half an hour.—*Newcastle, Town Moor* (X). In an hour and a half 2·65 in. of R fell.—*Newcastle-on-Tyne, Jesmond* (X). The R of 2·18 in. occurred in the space of 2 to 3 hours, and caused many streets to be flooded to a depth of 2 to 3 feet, doing much damage to property in basements of houses.

“Flooding occurred at numerous points in the city, miniature lakes, two feet deep, being formed in different thoroughfares. A torrent of water swept through St. Thomas’s churchyard, burst through the floors and windows of Lovaine Hall, and flooded it to a depth of 4 feet. Business men, in order to gain their offices, had to take off their shoes and stockings and wade knee deep to a higher level. The Royal Grammar School was flooded, and the summer vacation has been extended for a week.”—*Standard*.

17th.†—*Burton-upon-Strather* (VII). From 10 a.m. to 11.10 a.m.

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\* See also *Met. Mag.*, October, 1913, p. 165.

† See also *Met. Mag.*, November, 1913, p. 180; January, 1914, pp. 222, 235; and *Quarterly Journal*, R.Met.Soc., Vol. 40, pp. 33-42.



·89 in. of R fell.—*Wroot, S. Level Pumping Station* (VII). TSS lasting from 6 a.m. to 5 p.m., during which time 1·92 in. of R fell.—*Sturton-le-Steeple* (VII). T at 8 a.m., H at 9.30 a.m. The upper air currents were light from E., and the lower light from N.W.—*Scrooby* (VII). TSS, with 4 distinct showers, from 8 to 9 a.m., from 10 to 11 a.m., from 3 to 3.30 p.m. and from 6 to 6.30 p.m.—*Mosbrough* (VII). In 2 hours 1·31 in. of R fell. R began about 9.30 a.m. and quickly became a torrential downpour. The heaviest part of the storm was from 9.30 to 11.30 a.m., when 1·04 in. fell. There was much L but the T was not heavy. The low lying meadows at Killamarsh and along the Rother Valley were flooded.—*Tickhill, Sandbeck Park* (IX). R measured at 9 a.m. ·48 in. It was then thundering heavily with very vivid L, and about 9.30 a.m. there was a terrific crash of T. The only damage done was to a high elm tree which was struck, and a piece of bark and wood, about 6 inches in width, was taken clean out from the top to the bottom of the tree, some of it being hurled quite 20 yards away. The R then came down in torrents for about 2 hours, and when it had subsided somewhat 1·58 in. was measured. R continued, more or less, during the rest of the day.—*Tickhill* (IX). T, L and 1·75 in. of R.—*Doncaster, Wadworth Hall* (IX). R commenced in the early morning. The heaviest fall was between 2.30 and 3.30 p.m., when T was frequent and loud. There was a brief pause at 5 p.m. The total fall was 3·27 in., constituting a record. There was flooding of water tanks and cellars, but not of the ground floors as on July 21st and 22nd, 1898.—*Sheffield W.W., Redmires* (IX). R commenced at 5.30 a.m., and was very heavy from 7.30 to 11.30 a.m. It was almost fine from 11.30 a.m. to 0.30 p.m., and also from 3 to 4 p.m. Then very heavy R for one hour, from 4 to 5 p.m. Better and worse from then to 10 p.m. and after. R 1·38 in. Wind, N.E.—*Sheffield W.W., Crookes* (IX). R started from 6 to 7 a.m. and gradually became heavier as the day advanced. The heaviest R fell in the morning, but it was wet all day. Some T in the morning. Wind N.E. R 1·82 in.—*Sheffield, Weston Park* (IX). R 1·94 in., chiefly between 7.30 a.m. and 5 p.m.—*Sheffield W.W., Dale Dyke* (IX). R started about 6 a.m. and was very heavy up to 3 p.m. It abated slightly for about 1 hour, and was again very heavy throughout the rest of the day. T 4 times, with L from 9 a.m. to noon. R 1·67 in. Wind N.E.—*Mexborough* (IX). R started at 7 a.m., and at 9 a.m. ·26 in. was registered. From 9 a.m. to 5 p.m. 2·13 in. fell, and R ceased about 4 a.m. on 18th, ·57 in. more being measured at 9 a.m.

Continuous T and L. No marked flooding.—*Campsall, Campsmount* (IX). R commenced during the night of 16th to 17th, and a deluge fell on 17th till the evening. There was a succession of TSS, apparently from all directions.—*Langsett* (IX). R started from 9 to 10 a.m. and was steady with occasional stoppages till 8 p.m. Heavy R from 8 to 11 p.m. Distant T with sheet L between 8 and 10 p.m. Wind E. R 1·58 in.—*Wath-upon-Deerne* (IX). TSS from 7 a.m. to 9 p.m. R 2·62 in.—*Bolton-upon-Deerne* (IX). R commenced about 7 a.m. and continued till 8 p.m., more falling between 11 p.m. and 2 a.m. on 18th. The fall up to 9 a.m. was 2·53 in. R fell very heavily about 8 a.m., 11 a.m. and 3.30 p.m. There was T and L the greater part of the day, but not heavy. Very little flooding.—*Doncaster, Hexthorpe Hall* (IX). Very heavy TS, with 4·46 in. of R. The R fell chiefly between 4 and 8 p.m., when it was torrential. Many houses in the district had 3 feet of water in cellars.—*Brodsworth Gardens* (IX). Between 9 a.m. and 4 p.m. the R amounted to 3·12 in., and between 4 p.m. and 9 p.m. 2·34 in. fell, a total of 5·50 in.—*Barnsley, Burntwood Hall* (IX). Distant T and continued R all morning. After 0.30 p.m. the R was abnormal, continuing all afternoon, and 3·17 in. was measured at 9 a.m. on 18th. The barograph chart showed no exceptional features.—*Doncaster, Wyndthorpe* (IX). R began about 6 a.m. and 50 in. was measured at 9 a.m. T all day and distant L, but the storm was only near about 5 p.m., and the bulk of the R fell between 5 and 6 p.m. when 4·98 in. had fallen. Between 6 p.m. and 9 a.m. on 18th 52 in. fell.—*Hemsworth* (IX). R commenced about 9.30 a.m. and was fairly continuous and torrential at times, especially between 6 and 9 p.m. L struck and fused the power cables at Coke Ovens about 3 p.m. — *Castleford* (IX). R storm came on between 3.30 and 6 a.m. There was no T or L. A great many shops in the town had their cellars flooded. The drains were so full that the water came out almost like a fountain. The water subsided very quickly, and the ground was practically dry again by noon.

18th.—*Stow-on-the-Wold, Quar Wood* (VI). During a local storm 85 in. of R fell in 45 minutes. Less than a mile away it was quite dry, harvest being uninterrupted.—*Alderney, Le Huret* (XI). At 5 a.m. very heavy R fell, lasting from half an hour to 45 minutes, during which 2·00 in. fell.

29th.—*Ashburton* (V). Thick fog.

30th.—*Chickerell* (V). Heavy TS in afternoon towards Dorchester

and Abbotsbury, but none here though the T was often loud.—*Lyme Regis* (V). TS with much forked L from 3 to 5.30 p.m.

### OCTOBER.

2nd.—*New Malden* (II). TS, with 1.20 in. of R in 24 minutes.—*Hedser* (III). TS, with torrential R from noon to 1 p.m. when 1.08 in. fell.—*Penn, Rayners* (III). Heavy TS began at 1.55 p.m., the R lasting to 3.35 p.m. Gauge taken immediately rain ceased gave 1.23 in. No drains, gutters or stackpipes could take the water.—*Newport Pagnell, The Croft* (III). The heaviest TS for years. About 1.25 in. of R must have fallen in half an hour. At a distance of 3 or 4 miles S. and E., no R fell.—*Oxford, Banbury Road* (III). TS with H and .44 in. of R in 25 minutes. The total R, 1.87 in., fell in 15 hours.—*Swerford* (III). The worst October TS within living memory.—*Blisworth* (III). The longest and heaviest T, L and R for some years, lasting from 4.30 to 9.30 p.m. R 1.60 in.—*Christow* (V). In about 30 minutes .62 in. of R fell.—*Forthampton Court* (VI). Violent T and vivid L from 6.30 to 7.45 p.m., probably the most vivid L seen in this district for many years.—*Hereford, Quarry House* (VI). Heavy TS; 1.03 in. of R fell after 5 p.m.—*Blockley, Upton Wold* (VI). Very heavy R, 2 inches practically all falling in less than 2 hours, accompanied by very vivid L and heavy T; a storm more in keeping with July or August than October.—*Alvechurch* (VI). Exceptionally severe TS, with very heavy R and a good deal of damage by L.—*Bidford, Moor Hall* (VI). Severe TS from 6 p.m. to midnight.—*Farnborough (Warwickshire)* (VI). Very heavy TS.

2nd—3rd.—*Radford Semele* (VI). Heavy TS on 2nd: on 3rd 1.80 in. of R fell from 6.30 to about 9 p.m.

3rd.—*Little Saxham* (IV). From 0.15 to 0.45 p.m. .29 in. of R fell.—*Norwich, Ipswich Road* (IV). In less than half an hour 1.25 in. of R fell.—*Dilham* (IV). In an hour, during a TS, 2.00 in. of R fell.—*Dilham, The Rookery* (IV). Very heavy TS at midday. Torrents of R for about half an hour, total .70 in.—*Worstead, Lyngate Cottage* (IV). TS, yielding .75 in. of R in 18 minutes.—*Crediton, Okefield* (V). In one hour during the afternoon 1.45 in. of R fell, the greater part of it in half an hour. It scarcely rained a few miles away.

4th—5th.—*Clonakilty* (XX). T, L and 2.15 in. of R, most of which fell between nightfall and midnight.

4th—8th.—*Hucknall Torkard* (VII). Heavy R from N.E. started about 1 a.m. on the morning of 5th, and yielded up to the 8th

a total fall of 4.25 in. The R was accompanied by T and L on afternoon of the 5th, and the fall was the heaviest (occurring on 4 consecutive days) measured here since readings were commenced in January, 1881.

5th.—*Hingham Hall* (IV). Thick fog, T, H and 2.44 in. of R in 21 hours.—*Chellaston* (VII). TS and very heavy R. Total fall 1.14 in.

5th—7th.—*Southwell* (VII). From 8 a.m. on 5th to 4.45 p.m. on 7th, a period of  $56\frac{3}{4}$  hours, 4.03 in. of R fell. Of this very little fell between 8 a.m. and 6 p.m. on 5th.—*Mansfield* (VII). A great R storm commenced at 3 p.m. on 5th and lasted until 5 p.m. on 7th, the total R being 2.96 in.

6th—8th.—*Rousdon* (V). Several waterspouts travelling seaward from Lyme Bay towards Portland.

7th.—*Little Sarham* (IV). Heavy R from 9.15 a.m. to 0.30 p.m., .38 in. falling.—*Kenton* (V). In 6 minutes from 9.12 to 9.18 a.m. .28 in. of R fell.—*Cirencester, Dollarward House* (VI). In 5 minutes .20 in. of R fell.—*Droitwich* (VI). A cyclonic storm travelling S. by E., accompanied by T and L, caused damage to trees, houses and other property. It lasted from 4 to 4.20 p.m., but the R, which measured .71 in., continued a little longer.—*Flotterton* (X). Very heavy R and flood.

8th.—*Waltham-on-the-Wold* (VII). Between 1.25 and 4 p.m. 2.15 in. of R fell. Houses were flooded, drains stopped and roads full of water. Some H fell and there was vivid L.

20th.—*New Malden* (II). Between 2 and 2.6 a.m. .15 in. of R fell.—*Tramore* (XX). Fine lunar rainbow at 10.30 p.m.

23rd.—*Medstead* (II). Thick fog at 10 a.m.

24th.—*Betchworth* (II). Dense fog at night.

25th.—*St. Pancras, Camden Square* (I). Thick fog in morning.—*Medstead* (II). Dense fog at 11 a.m.

26th.—*Lewisham* (I). Heavy R and dense fog with great darkness at noon, lasting over half an hour.—*St. Pancras, Camden Square* (I). Thick fog in morning followed by steady R in afternoon and evening.

26th—31st.—*Temple House [Marlow]* (II). L every night.

27th.\*—*Torquay* (V). TS with southerly gale about 3.30 to 4 p.m.—*Kenton* (V). Severe TS from 3.40 to 4.10 p.m.—*Exmouth, Nidderdale* (V). Severe TS, with a record fall of .47 in. of R in 10 minutes at 4 p.m.—*Kentchurch* (VI). Incessant L from 6 to 7 p.m., with half a

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\* See also *Met. Mag.*, February, 1914, p. 1.

gale from S. The storm was generally 7 to 8 miles to W., and on reaching Church Stretton was accompanied by a whirlwind which apparently was a feature of the same storm in Glamorganshire earlier in the evening.—*Clun* (VI). TS between 6.30 and 8.30 p.m. Brilliant and incessant L made a dark night almost as light as day, and the T was practically continuous for an hour and a half. The storm approached this neighbourhood from S.E., passed into W., and moved away to N.E.—thus describing part of a circle in its course. A very high wind blew for most of the time indicated, approaching in force to a hurricane in certain districts, where, for instance, whole plantations of larch trees were mowed down flat, roofs blown off, etc. Church Stretton, which is about 12 miles from here in a direct line, suffered most in this respect. A wood in this neighbourhood had a narrow lane cut through it, every tree in the line of the wind being uprooted. There was no great R in this parish, only .60 in., but this amount fell in a few minutes.—*Wistanstow Rectory* (VI). A line squall passed within a mile to the E. of this station, doing an immensity of damage. The storm-affected strip was about  $\frac{1}{4}$  mile wide; the line was from Hay, in Herefordshire, to Culmington Manor, Acton Scott, Ragdon, Church Stretton, Leebotwood, Shrewsbury, Peckforton Castle, Widnes. A great number of forest trees were uprooted, and houses badly damaged.—*Rochdale, Fieldhead* (VIII). In 15 minutes .18 in. of R fell.—*Tredegar, Llyswe dog* (XI). There was an unusually heavy TS, lasting from about 5 to 6.45 p.m., which was very local. The R for 24 hours ending 9 a.m. on 28th was:—Llyswe dog, .83 in.; Redesdale (325 yards W. of Llyswe dog), .98 in.; Colliery Offices (300 yards W. of Redesdale), 1.23 in.; Shon Sheffrey's Well ( $2\frac{3}{4}$  miles N. of Colliery Offices), 1.77 in.—*Cardiff* (XI). South Wales was visited by a terrific storm of tornado character, accompanied by much L. A large number of houses were wrecked at Treharris, Abercynon and other places. Trees were uprooted and telegraph poles blown down. The course of the storm was almost due N., beginning near Barry and passing almost to Chester, the area affected being very narrow, in places not exceeding 100 yards.—*Cathedine* (XI). Terrible TS. No damage done here.—*Presteign* (XI). Violent TS, with strong S. wind, at 6 p.m.—*Welshpool* (XI). Severe TS.—*South Wales* (XI). The following examples of the force of the wind are quoted from the *South Wales Daily News*.

“ A hayrick, several tons in weight, carried through the air for a mile. Half a corrugated iron roof carried for several miles through valleys, across

villages, and over mountain tops, and the tins of the sheets detached and wrapped round posts as a doctor wraps a bandage round a broken wrist. A garage lifted from one field and put into the next. Half a ton of brick chimney carried *en masse* several hundred yards through the air. An ash tree, 60 feet tall and weighing about two tons, whipped from the ground to the south of Cilfynydd and carried over mountain and vale close to Abercynon, two and a half miles away. A four-ton oak conveyed clean through the air for nearly a quarter of a mile. Roofs from houses have been torn off by the score, and bedroom floors have been ripped out by the dozen; great thick stone walls, weighing hundreds of tons, have been thrown several yards from their base, and the trees in 15 woods and coppices have been felled as with the woodman's axe. Solid steel standards for carrying electric power, and telegraph posts have been lifted clean from their sockets and placed prone many yards away. Outbuildings have been taken up almost bodily and then deposited on house tops and carried across the mountain. The roofs and windows of nearly a score of chapels have been destroyed, and in one case the roof was lifted off, and a large part of the organ was gripped from the floor and carried upward and outward, and left upon the mountain-side. Single bricks and slates you find by the thousand scattered over the open fields and mountain-sides, in some cases miles away from the houses from which they have been ripped.

The insides of several hundred houses are dismantled more completely than if they had been bombarded with lyddite. Here you have the roof off and the bedroom floors vanished with the partition walls running at right angles to the window, swung round as on a pivot facing the window, and the wall facing the window twisted round so that the end and not the front faces that way. In some cases you find window frames jammed in doorways, and doors and doorways in the place of the window frames. Furniture you find in shops beyond recognition. Brass and iron bedsteads are twisted and curled like coils of wire, table legs and pieces of chairs you find protruding from holes which they have made in the walls, and table-tops and chests of drawers studded with fragments of brick and slate and looking glasses. . . . By a miracle, explained by the torrential rain which drove everybody off the streets and roads, only six people have been killed and about 100 injured. But many hundreds of houses have been ruinously damaged, and over 200 families have lost beyond repair most of their furniture, and all their bedding and bedclothes and wearing apparel."

28th.—*New Malden* (II). TS, with .12 in. of R between 7.15 and 7.20 p.m.—*Cholderton* (V). Sharp TS with gale.—*Shrewton* (V). Sharp TS at 5 p.m.—*Mildenhall* (V). T, L and H.—*Cheltenham*, *Swindon* (VI). Water in gauge muddy. L very bright and yellowish as if the air were laden with dust.—*Cirencester* (VI). Sharp TS from 4.15 to 6 p.m.

29th.—*Phillack* (V). S.E. gale and the highest tide remembered for many years past.—*Morland* (X). Heavy TS.—*St. David's* (XI). We were visited with a tornado at 5 a.m. (of short duration

and ceasing suddenly) going from W. to E. doing considerable damage, especially at a place called Priskilly some 12 miles from St. David's, where it tore down some acres of trees. It was accompanied by very large H, breaking a number of window panes in this vicinity.—*Hawick, Branksholme* (XII). Severe TS between 5 and 6 p.m., with brilliant L.—*Musselburgh* (XIII). TS with vivid L about 6 p.m.—*Lounhead* (XIII). TS from 6 to 7.30 p.m.—*Balerno, Cockburn Hill* (XIII). Severe TS about 6 p.m., with very vivid L.—*Ballintuim* (XVI). TS with very vivid L.—*Kinloch* (XVI). Severe TS from 7 to 8 p.m.—*Perth* (XVI). Severe T and L from 6.30 to 7.30 p.m.

30th.—*Sturminster Marshall* (V). Between 1 and 3.30 p.m. .58 in. of R fell.—*Warwicksland* (X). Terrific TS from 4 to 7 p.m.

31st.—*Drumnadrochit* (XVIII). A beautiful meteor descending at an angle of 20° a little W. of N., seen at about 10.30 p.m.

## NOVEMBER.

1st.—*St. Pancras Camden Square* (I). Thick fog early.

4th.—*St. Pancras, Camden Square* (I). Thick fog in morning.

10th.—*New Malden* (II). At 11.36 p.m. .11 in. of R fell in 4 minutes.—*Watford* (III). At 11.58 p.m. there was a vivid flash of L with a single tremendous peal of T in about a second. There was no indication of an approaching or receding storm except heavy R.

11th.—*Englefield Green* (II.) Sharp squall of wind and R about 4 p.m. Heavy R with L again from 11.30 to 11.45 p.m., with about .30 in.—*Brighton* (II). Heavy TS from 5.50 to 9.45 a.m. produced 1.17 in. of R.—*Portsmouth* (II). At 4 p.m. .45 in. of R fell in 45 minutes.—*Little Saxham* (IV). Heavy R from 9 to 11 a.m., .65 in. falling.—*Thetford Water Works* (IV). In 3 hours .62 in. of R fell.—*Shepton Mallet Grammar School* (V). Heavy TS with violent R and H at 7.10 p.m., but of short duration.—*Angersleigh, Leigh Court* (V). TS.—*Meltham* (IX). At 9 a.m. both the halo of 22° and the large halo of 46° were visible; also a small part of the upper tangential arc to the small halo. The larger halo was conspicuous on both sides of the sun, but not above it. This halo of 46° is extremely rare.—*Briton Ferry, Brynsiriol* (XI). In 15 minutes .75 in. of R fell.

11th—13th.—*Dibden* (II). T and very vivid L.

12th.—*West Sussex* (II).

“The districts of Arundel and Littlehampton were visited by terrific storms of rain, the like of which have never been experienced within the memory of the oldest residents. Many roads were flooded, and in the

Arundel district especially the hilly roads were converted into raging torrents. The storms continued at intervals during the morning, and left off with the same suddenness with which they commenced. At times the downfall was so heavy that one could hardly see objects a few yards ahead."

—*Sussex Daily News*.

—*Mayfield* (II). TSS from midnight to 1 a.m., and in the afternoon. R 1.33 in.—*Llanleir* (XI). Great gale and floods.—*Pen-y-Gwryd* (XI). Heavy R; 3.28 in.

27th.—*St. Andrews* (XVI). Gorgeous sunset.

27th—30th.—*Bennington* (III). Afterglows each evening, especially beautiful and rich on 29th.

28th—29th.—*Lincluden* [*Dumfries*] (XII). The temp. in the night did not fall below 50°.

29th.—*North Cadbury* (V). Wonderful sunset glow. At 4.5 p.m. the light passed from yellow to gold, apricot and crimson. At 4.35 p.m. the west escarpment of our hills glowed as with a soft yellow sunshine, and the autumn foliage, still gorgeous, seemed on fire. At 5.35 p.m. the glow was still perceptible.

## DECEMBER.

4th—5th.—*Ipstones* (VI). About 5 inches of S fell, but melted at once.

5th.—*West Witton* (IX). Three and a half inches of S.

6th.—*Colinsburgh* (XVI). Lowest shade min. of year, 23°.

12th.—*Saxton* (IX). Remarkably brilliant lunar corona, with the prismatic colours very bright; having a striking resemblance to the one sketched by Dr. Wilson in the Antarctic and figured in the recently published book on Captain Scott's last journey. Old men in this village stated that they had never seen anything like it.

14th.—*Rochford* (VI). A ripe wild strawberry picked from the roadside.

17th.—*Waltham-on-the-Wolds* (VII). Bright aurora from 11 p.m. to midnight. Bows brightly marked and embracing 60° of horizon.

23rd.—*Sleights* (IX). Partial drought of 33 days, with .24 in. of R, terminated.

24th.—*Darlington* (X). Absolute drought of 17 days terminated.

25th.—*Barnt Green, Upwood* (VI). As many as 90 kinds of flowers were in bloom in the garden, including snowdrops, forsythia, daphne mezereum, anemone (garden), snowdrop anemone, anemone japonica, roses, violets, snapdragons, alpine milkwort and winter heliotrope. A foxglove in a field hedge had a good spike of bloom, and gorse on



a neighbouring bank was quite showy.—*Sunderland, West Hendon House* (X). Partial drought for 29 days, with ·20 in. of R, ended.

26th.—*Ticehurst* (II). S. gale began in late afternoon, worst at about 11 p.m.—*Shifnal* (VI). TS with S.—*Waltham-on-the-Wolds* (VII). From 11.50 p.m. to midnight, ·25 in. of R fell, with some H.

26th—28th.—*Fortrose* (XVIII). Four inches of S.

27th.—*Marchmont* (XIII). Between 7.30 a.m. and 1.30 p.m. 2 inches of S fell.—*Cardross* (XV). H, T and L.

27th—30th.—*Kelso* (XIII). Heavy S most of the time.

28th.—*Princetown, Two Bridges* (V). Heavy gale from N., with TS and 3 inches of S.—*Llanleuar* (XI). Gale, with H and T.—*Gogerddan* (XI). Heavy S and large H, accompanied by T and L in evening.—*Lampeter* (XI). Severe TS with S at night, the only TS of 1913.—*Trallwn* (XI). TS and S.—*Llanerchymedd* (XI). TS and H from 7 to 9 p.m.—*Aberdeen* (XVII). S 3 or 4 inches deep.—*Portree* (XVIII). Heavy S.

28th—29th.—*Princetown* (V). Heavy S storm.—*Pembridge, Marston* (VI). The high wind blew S into balls of 6 to 8 inches in diameter.—*Lowdham* (VII). From half to one inch of wet S fell.—*Thirsk, Brynkellhow* (IX). Continuous L after dark on 28th, and also during the night. On 29th, at 8.15 a.m., TS for over half an hour, accompanied by heavy S. At Kepwick the TSS were so violent that many farmers put back their horses in the stable till it was over.

29th.—*Ebberston* (IX). Four inches of S.—*Ilderton, Lilburn Tower* (X). R 1·08 in., chiefly melted S.—*Llanfrechfa Grange* (XI). S two inches deep.—*St. Davids* (XI). TS, with heavy H.—*Blaenau-hydfer* (XI). About 4 inches of S.

29th—30th.—*Southwell* (VII). About 3 inches of S.—*Gosforth* (X). S 6 inches deep.—*Swinton House* (XIII). About 4 inches of S on 29th, the depth being 6 inches on 30th. The heaviest fall for five years.

30th.—*Marchmont* (XIII). S 5 inches deep.

31st.—*Eastbourne, Arundel Road* (II). The only S of the year fell.—*Hodsock Priory* (VII). S 5 inches deep.—*Llangynhafal* (XI). The coldest day recorded for December in 15 years. Max. 32°, min. 18°·2, grass min. 14°. — *Earlston, Cowdenknowes* (XIII). About 9 inches of S, with 20° of frost in morning.—*Girvan, Sunnyside* (XIV). Marigolds in full bloom now and all through the summer without a break. Marigolds and wall-flowers still budding.

## NOTES ON THE YEAR, 1913.

(Notes on the months are included in those on the year.)

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When an average is referred to in these Notes without a statement of the number of years on which it is based the figure should not be accepted as necessarily comparable with the average of any other station.

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### ENGLAND AND WALES.

#### DIVISION I.—LONDON.

ST. PANCRAS, CAMDEN SQUARE.—In only three months, April, June and December, did the R differ from the average by so much as 1 inch. June was the driest month, the R being only  $\cdot 58$  in., or 25 per cent. of the average. October, with 3·11 in., had the largest R, though the excess over the average was only  $\cdot 48$  in., or 18 per cent. December was unusually dry, the R being 1·34 in. below the average. At the end of May the aggregate R, from January 1st, was 1·27 in. above the average, but the deficient R of June caused the aggregate of the first 6 months to fall below the average, and the aggregate remained below the average through the latter half of the year. The total R was 2·73 in., or 11 per cent., below the average of 50 years. In spite of the deficient R the number of rain days, 163, was exactly equal to the average. The greatest divergence from the average was in March, April and December, with, respectively, 7 above, 8 above, and 7 below, the average. There was only one absolute drought, for 16 days from July 22nd to August 6th. A partial drought extended from July 20th to August 21st, 33 days with  $\cdot 32$  in. of R. There were no rain spells, the longest period of consecutive rain days being 11, from March 13th to 23rd, and from November 4th to 14th. The duration of R was 453 hours, or 23·2 hours above the average. January, with 68·8 hours, had the greatest duration of any month. The only other months with so much as 50 hours' duration were April and October, with 54·4 and 52·8 hours respectively. The duration in June, 6·1 hours, was the least recorded in any June in the past 33 years. No other month

had less than 20 hours, but February, May, August and December had all less than 30 hours. The greatest duration on one day was 11·2 hours on September 1st. The total duration of sunshine was 1164·8 hours, and was the lowest in the 10 years over which the record extends. June was the sunniest month with a duration of 199·8 hours, May coming next with 189 hours. In not one of the first three or the last three months did the duration of sunshine amount to 80 hours, and in January it was only 24·8 hours. Though the amounts were small the number of days with recorded sunshine, 292, was unusually great. There were only 7 sunless days between April 12th and October 4th, and during this period 66 successive days, from May 10th to July 14th, had recorded sunshine. The total evaporation from a free water surface amounted to 14·66 in., or ·99 in. below the average of 28 years. The evaporation in December, ·32 in., was the greatest ever recorded in that month. Temp. was high, but without any days of exceptional warmth. The mean temp. was at least 1° above the average in every month except April, July and August. The mean temp. of April and of August was only slightly below the average, while that of July was 3°·3 below the average. October and November were unusually mild, their mean temp. being 3°·3 and 4°·3 above the average respectively. Only in 1881 has November had a higher mean temp., and there was no instance in the previous 56 years of October and November together having so high a mean temp. The mean annual temp. was 51°·4, or 1°·4 above the average. Frosts occurred in the screen on 36 days and on the grass on 72 days. The latest spring frost was on April 17th, both in the screen and on the grass; the earliest autumn frost was on November 23rd in the screen, and on November 9th on the grass.—*Hugh Robert Mill, F.R. Met. Soc.*

## DIVISION II.—SOUTH EASTERN COUNTIES.

### SURREY.

REDHILL, STATION ROAD.—As regards wet days, March takes the record with 21, January and April 20 each. October was the wettest month with 4·28 in., January coming next with 4·22 in. June was the driest month both with regard to rain days and fall, 5 and ·39 in. respectively.—*W. H. Fowler.*

SUTTON, CAMBORNE ROAD.—The year was remarkable on account of absence of fog and S, and for the warmth of the weather during

the autumn. Ripe strawberries were picked in the open on October 25th, and a variety of summer flowers was picked in the open on November 30th, such as mignonette, periwinkle, pentstemon, stocks, roses, wallflower, jasmine, and the blossom of strawberries, raspberries, loganberries and apples.—*Fred. C. Edw. Wright.*

HASLEMERE, HAZELHURST.—R 4·30 in. above the average of 22 years, rain days 19 above the average. No true rain spells, though nearly approached on various occasions. No actual drought, but a partial drought of 34 days, with ·18 in., from July 20th to August 22nd. The R of January was 6·18 in., the most recorded for January except in 1906 (7·45 in.). The aggregate was in excess of average at the end of every month throughout the year, most in excess at end of November (6·31 in.). Sunshine was deficient every month except June and December; the whole year being 356·6 hours short, or nearly one hour per day. An unusually mild autumn, with roses and carnations in flower on Christmas day.—*T. P. Newman, F.R.Met.Soc.*

EWHURST, CONEYHURST.—R ·28 in. below the average of 25 years.—*J. Russell.*

ALBURY, WESTON LODGE.—The most noticeable feature of the year was the very small amount of bright sunshine during the summer, and the absence of TSS. The summer was very cool, 80° being recorded on only two occasions. The min. temp. during the winter was also very moderate.—*Harold Agar.*

WEST BYFLEET, HOLLYWOOD.—Both the early months and the autumn months were unusually mild. The summer was as dry as that of 1911, but not nearly so hot. The R from May to August was 4·62 in., as against 4·61 in. in 1911.—*Allanson Bailey.*

WEYBRIDGE, STATION ROAD.—Meteorologically an uneventful year. The R was below the average; January, March, April and October, being the only months in excess. There was a marked absence of both winter cold and summer heat; the max. temp. reached 80° or above on 7 days only, of which 4 were in May. A rather remarkable feature was the total absence of TSS in June, July and August: there were in fact but two TSS during the year, on April 29th and May 29th. The autumn was exceptionally mild; there were no frosty nights in October and only 4 in November. December was very fine.—*H. K. G. Rogers.*

**KENT.**

TENTERDEN, VIEW TOWER.—The total sunshine was 1552 hours, or nearly 500 less than that of 1911, and 123 less than in the wet year of 1912. The mean temp.,  $50^{\circ}\cdot7$ , was a degree higher than in 1912, and, thanks to the warm winter and autumn and the warm nights, was actually within a degree of 1911.—*J. Ellis Mace.*

ULCOMBE PLACE.—The extreme mildness of the autumn (September 23rd to December 22nd), during which no frost occurred, caused not only a remarkable and, in my recollection of 40 years, unprecedented extension of the flowering season of many plants, notably roses, but also of premature blooming of some species, *e.g.*, *laurustinus* and winter heliotrope (*petasites fragrans*). Beautiful half-opened roses, and mignonette, were cut up to Christmas Day.—*Alfred O. Walker.*

**SUSSEX.**

BOGNOR, LIDSEY LODGE.—The R was the greatest in 30 years, except in 1903 when 35·43 in. fell.—*Herbert Neale.*

WORTHING, VICTORIA PARK.—The R was 7·39 in. above the average of 60 years, and the number of rain days was equal to the average for the previous 10 years. January and October were the wettest months ; and February, June and December were the driest. The heaviest daily R was 2·47 in. on September 1st. The mean temp. for the year was  $51^{\circ}\cdot7$ , being  $2^{\circ}$  above the normal. The mean temp. for November,  $49^{\circ}\cdot3$ , was the highest for the month since 1892, and was over  $5^{\circ}$  above normal. The number of hours of bright sunshine was 1600·2, or 240·5 hours below the average of 10 years.—*R. H. Wilshaw, F.R.Met.Soc.*

**HAMPSHIRE.**

HYTHE, HEATHFIELD, DIBDEN.—The unfavourable weather in the spring proved very disastrous to the apple crops in this neighbourhood. Hay crops were splendid, and corn and root crops were good. December, up to the 10th, was unsettled and mild, and then set in dry, there being R only on 13 days. From the 19th frosts continued to the end except on 26th and 27th.—*Jesse Reeves.*

STOCKBRIDGE, ASHLEY.—The Somborne stream which had begun to flow in earnest about December 21st, 1912 (see *British Rainfall, 1912*, p. [35]), was, 10 days later, flowing above Tanner's Pond. By the end of January considerable portions of the road to Winchester

and the adjoining fields at Little Somborne were completely under water, and this continued during the whole month. At Tanner's Pond the current had not quite ceased to flow from the field above by the end of June, whilst it practically ceased to flow from the pond towards the end of August. The first indication of a fresh rise occurred between November 1st and 15th. A flow, however, had not commenced at Tanner's Pond before the year ended.—*Legh S. Powell, F.R.Met.Soc.*

PETERSFIELD, FAIRLEY.—The R was slightly below the average of 22 years, and the rain days were 13 in excess. The R of the first quarter was nearly 50 per cent. above the average, due to the excessive fall of January, which was more than twice the average.—*A. W. Leachman.*

OAKLEY, UPPER WOOTTON.—A week's rain in the middle of harvest caused all harvest operations to cease, during which time the oats in 48 hours sprouted in the shocks. There was no frost to mention all the winter of 1912-13. The summer was remarkable for the lack of sunshine.—*Wm. Roberts Thomson.*

### DIVISION III.—SOUTH MIDLAND COUNTIES.

#### MIDDLESEX.

ISLEWORTH, MANDEVILLE HOUSE.—The mildest year in my 34 years' records. Absolute min. temp. 26°. Hardly any really bad weather, but the disastrous drought of June, followed by the fall in temp. which took place in July, caused the year to be a very bad one in gardens and orchards. October and November were very fine and mild.—*A. Worsley.*

WILLESDEN.—I have been most impressed by what one might term the "easy-going" character of the year. Both R and evaporation were moderate. There was neither prolonged excessive heat nor great cold. The absence of dense (brown-black) fog was remarkable. In the early part we had some few dark gloomy days; but even at the worst the atmosphere was tolerably transparent, in striking contrast to the decade 1881-91. Between December 18th and 22nd both temp. and pressure were favourable to fog formation, but we had only some haziness.—*William Godden.*

DYRHAM PARK [BARNET].—The R was nearly 10 inches less than in 1912, and 3½ inches less than in 1911; but vegetation suffered less

than during the same period of 1911 owing to the great heat of that year. No extremes of temp. and no heavy R owing to a marked absence of TSS.—*Herbert Juniper.*

### HERTFORDSHIRE.

WATFORD, WEETWOOD.—R about 4·50 in. below the average, being very frequent with few heavy falls. June was much the driest month; February and August were also very dry, and January and October very wet.—*John Hopkinson, F.R.Met.Soc.*

BERKHAMSTED, ROSEBANK.—From October, 1912, to February, 1913, the total R was  $13\frac{1}{4}$  inches, or a quarter of an inch in excess of the average for the same 5 months in the previous 57 years, which is equivalent to an excess of R on each acre in this district of 7,010 gallons. At the same time in the previous year there was an excess of 117,630 gallons per acre. During the summer half of the year, ending September,  $9\frac{1}{4}$  inches of R fell, which is  $4\frac{1}{4}$  inches in defect of the average quantity for the same 6 months in the last 57 years. With the exception of April all the months were more or less dry, while the 3 summer months and September were very dry.—*E. Mawley, F.R.Met.Soc.*

### BUCKINGHAMSHIRE.

HEDSOR.—The winter and early spring were characterized by exceedingly mild weather, a total absence of severe frost, and by copious R in January and March, vegetation at the close of the latter being fully a month in advance of an ordinary season. April was somewhat cold and wintry till 15th, then fine and seasonable till the close, and throughout May, but at the end of the latter month severe drought set in, which lasted until the beginning of September. There was, however, an absence of great heat, except at the end of May, the sky being persistently clouded and temp. low. The autumn was fine and warm, with still quiet weather and plentiful R in October and November. Wintry at the close of the year.—*Boston.*

WRAYSBURY, ELMSLEA.—The R on the whole was fairly normal, with a marked absence during the summer months of TSS, which are usually so frequent in the Thames valley.—*Philip C. Pearson.*

### OXFORDSHIRE.

CAVERSHAM, EASTFIELD.—The summer was of a rare type, dry and cold, especially June and July, owing to lack of sunshine; and there was a remarkable prevalence of E. winds through the summer months and September.—*C. M. Powell, F.R.Met.Soc.*

**NORTHAMPTONSHIRE.**

RUSHDEN, ALFRED STREET SCHOOL.—Very little S fell during the whole year, two heavy falls on January 11th and 22nd, and light falls only on 7 other days. Very mild and open ending to the year, frosts being recorded on 16 nights only. Fewer severe TSS than usual.—*Samuel Saddler.*

**HUNTINGDONSHIRE.**

ST. NEOTS, GREAT PAXTON.—R 1·99 in. above, and rain days 3 below, the average of 20 years.—*A. G. Cane.*

**BEDFORDSHIRE.**

GREAT BARFORD HOUSE.—A splendid year for Bedfordshire land. The dull dry summer months, and fine autumn were just what was required, whilst the closing days of the year brought hard frost.—*J. Arnold Hitchchurch.*

**CAMBRIDGESHIRE.**

ELY, THE PALACE.—Very dry February and December. Frosts in March and April cut fruit blossom, especially pears and plums. Continued dull periods experienced during the year, also a partial drought in May.—*A. Sewell.*

**DIVISION IV.—EASTERN COUNTIES.****ESSEX.**

SOUTHEND, BROADWAY.—Practically no S and absence of severe frosts during winter. T was prevalent in May during a hot period, with max. temp. 83°·1 on 27th. August was very dry with only ·16 in. of R, and October very wet, commencing with a terrific TS at 11 p.m. on the 1st. There was a marked absence of fog in November and December and yet fairly calm weather closed the year.—*Herbert J. G. Ralph.*

**SUFFOLK.**

IPSWICH, ROOKWOOD, COPDOCK.—The year was featureless as a whole. A cold dull July, a dry August, and a very mild, wet, November, with a marked absence of frost all through both spring and autumn, being the only outstanding points deserving of comment. December was very dry and ended with two of the coldest days of



the year. The mean max. temp. of the year was  $56^{\circ}7$ ; the mean min.,  $42^{\circ}7$ ; and the mean temp.,  $49^{\circ}7$ ; all were very near the 10-year average. Sunshine, 1450 hours, was very deficient, being as much as 200 hours below the average; and the R, 21.71 in., was some 3 inches short.—*F. L. Bland*.

### NORFOLK.

EMNETH.—In remarkable contrast to 1912, the year was distinguished by R below the average, an absence of strong winds, moderate temp. and plenty of sunshine, even in November and December.—*F. M. Bland*.

## DIVISION V.—SOUTH WESTERN COUNTIES.

### WILTSHIRE.

TISBURY, FONTHILL HOUSE.—The year was principally remarkable for the cold, wet spring and dry summer, also for a nearly complete absence of T or heavy storms. The autumn was mild and very genial for all crops to mature; and there were no early autumn frosts to do serious damage.—*H. H. Mills*.

CODFORD ST. MARY, STOCKTON HOUSE.—The year was remarkable for the extreme mildness of the spring and autumn, and the coldness of the summer. The lowest temp. in the first 6 months was  $26^{\circ}$  in the screen on February 23rd, and the highest  $81^{\circ}$  on June 16th. This was the only time the temp. rose to  $80^{\circ}$ . In June, July and August the temp. was  $70^{\circ}$  and above only on 34 days, and above  $75^{\circ}$  only on 10 days.—*G. Knowles*.

WARMINSTER, RYE HILL.—From May 13th to August 30th, 110 days, only 2.65 in. of R fell on 38 days, no day reaching a quarter of an inch.—*Stiles E. Jefferys*.

### DORSETSHIRE.

WIMBORNE ST. GILES, ST. GILES HOUSE.—Mean temp.  $50^{\circ}5$ . Duration of sunshine 1564 hours. Highest temp.  $84^{\circ}$  on June 17th; lowest temp.  $20^{\circ}$  on April 13th.—*W. E. Axford*.

### DEVONSHIRE.

TOTNES, STAVERTON.—The year was marked by a remarkably fine summer, perfect for the hay and corn crops. Also by several

dry spells, viz., 10 days in February, 15 days in May, 19 days in July, and 10 days in December, without R.—*J. A. Devenish*.

ASHBURTON, DRUID HOUSE.—R 5·24 in. above the average of 48 years.—*J. S. Amery*.

PRINCETOWN, TWO BRIDGES.—One of the finest years ever known on Dartmoor. After a wet January, a dry February with one short spell of cold weather in the middle of the month. A mild spring. A summer dry and sunny, yet with no great heat, followed by a perfect autumn. No TSS of any severity, and few gales. Chrysanthemums were picked in the open as late as December 20th. The first S to whiten the ground was on December 28th.—*T. C. Bridges*.

MORETONHAMPSTEAD RECTORY.—The R was 2·23 in. above the average for the last 12 years. R fell on 213 days, or 13 below the average.—*Stanley D. Dewey, F.R.Met.Soc.*

EXMOUTH, MANOR GROUNDS.—Remarkable for the wet winter and spring. From January 1st to May 14th 12·45 in. of R fell. This was followed by a record period of dryness, May 14th to August 25th, during which 103 days only 1·05 in. of R fell.—*Samuel Hutton*.

EXETER, ELMFIELD HOUSE.—A very dry summer. From May 15th to August 30th inclusive only 1·04 in. of R fell.—*W. B. Heberden F.R.Met.Soc.*

TIVERTON, ST. PETER STREET.—The year was on the whole a good one for farmers. A fine harvest for both hay and corn, and although roots were poor, owing to the drought in the summer, yet the long, mild autumn, lasting to December 19th, made grass plentiful. The year began very mild, 70 wild flowers being gathered on January 1st, but frosts came late in the spring and cut the blossom, so that apples, etc., were scarce. Frost came on December 19th and continued, with only one exception (December 27th), to the end of the year. We do not generally have such cold weather till January. S fell in the night of December 28th, and lay on the fields till the close of the year.—*M. E. Gill*.

OTTERY ST. MARY, MANOR HOUSE.—The chief feature of the year was the prolonged drought which lasted from May 13th till August 26th. During this period only 1·50 in. of R fell. The ill effects of this small supply were accentuated by the smallness of the quantity which fell on each occasion. The maximum fall was ·17 in., and only on 3 occasions was more than ·10 in. registered. The

result was that even the surface of the soil was never moistened as the R almost always fell well after sunrise.—*W. A. Willock.*

PARRACOMBE.—Remarkable for drought from June 13th to October 18th. At no period since records have been kept had the springs been as low as they were on October 26th.—*J. F. Chanter.*

INSTOW.—There were no extremes of weather. Two periods of absolute drought from February 10th to 23rd, and from July 22nd to August 7th, inclusive. July was very dry, yet with small amounts of R on 9 days. An exceptionally mild autumn, particularly during the equinoctial period. One severe gale only, during the night of December 23rd, and a short but very heavy squall between the hours 2 and 4 a.m. of December 26th. Little frost during the spring months. After Christmas it became colder. There has been a remarkable absence of T and L; and during the last three months a quite unusual amount of sunshine.—*Mary J. Lock.*

#### CORNWALL.

EMPACOMBE [DEVONPORT].—R 1·43 in. above the average of 24 years. On account of the wet spring the grass and hay crops were very plentiful, but the dry summer was most detrimental to the root crop especially on the coast, where it was almost a failure. Cattle and wool made high prices, and on the whole the year was a good one for agriculturists.—*J. Sandercock.*

ANTONY VICARAGE.—Very wet to May 14th, so much so that the year from May 15th, 1912, to May 14th, 1913, exceeded previous records, the R reaching a total of 56·03 in. From that date the year was abnormally dry, so much so that the 12 months to January, 1914, had the least R for any 12 months, being 32·60 in. During 15½ weeks from May 14th there was under 2·25 in.; less than ½ inch in 6½ weeks to August 9th; less than  $\frac{1}{10}$  inch in 31 days to August 9th. The weather was rather cool till about July 20th. Thereafter till Christmas the temp. was much in excess of the normal. The coolness of the east of England compared with the warmth of the west in 1913, was in marked contrast to the extreme heat of the east of England compared to the warmth of the west in 1911.—*Allan Clover.*

#### SOMERSETSHIRE.

STON EASTON.—R 3·37 in. below the average of 45 years, and though R fell on 203 days as against 207 days in 1912, the fall in 1913 was 16·06 in. less than in that year.—*H. E. Hippisley.*

EDINGTON.—While the winter, spring and autumn were wet, the middle of the year was exceedingly dry. The dry summer, however, was not sufficient to compensate for the other wet periods, so that there was a total excess of nearly 4 inches of R. The rain days show a considerable decrease on 1912, but only two months, July and August, had less than 10 rain days. The 15 weeks from mid-May till the end of August were intensely dry, only 3·66 in. falling during the whole period. On the other hand rain fell on 30 days which is by no means a very small record. The remainder of the year was distinctly wet both in quantity and number of days. There was, after the spring months, a general absence of great wind disturbances. In temp. the year was a remarkably moderate one, there being no severe cold nor great heat. In spite of the very dry summer, temp. seldom rose above 80°, the highest reading being 82°.—*A. C. F. Luttrell.*

CLEVEDON BOWLING GREEN.—January was very wet, the R being 3·41 in. above the average of 35 years. The open weather of October and November was carried on into December, the last few days of which month gave us some 7° of frost ; notwithstanding this, roses continued to bloom right up to the end of December and on January 1st, 1914, a small posey of roses was cut.—*Alfred B. Trestrial.*

#### DIVISION VI.—WEST MIDLAND COUNTIES.

##### GLOUCESTERSHIRE.

CLIFTON, PEMBROKE ROAD.—The year was noteworthy for the very wet January, and absence of frost and S except for a few days after Christmas, the prolonged summer drought and the remarkably mild autumn, extending to the middle of December. January, with nearly 6 inches of R and 25 rain days, was the wettest in 40 years, with the single exception of January, 1872, which exceeded it by about half an inch. The combined R of June, July and August, 3·23 in., was but little more than a third of the 40 years' average, and was a record minimum for that period. Although the total R of the year was 2·85 in. below the average, the number of rain days was 25 above it. This is accounted for by the large number of days with a very small amount of precipitation.—*Robt. F. Sturge, F.R.Met.Soc.*

##### HEREFORDSHIRE.

WOOLHOPE, THE HYDE.—The total R was 31·38 in. on 177 days. The average R for the last 22 years inclusive taken in the same place,

was 26·90 in. on 181 days; not only showing the R this year, in the aggregate, to have been above the average, but the average daily fall to have been above normal. We are situated in a comparatively small valley surrounded by hills, with one narrow valley outlet, also two gorge outlets, consequently the R is below that of the surrounding districts on the E., S. and W., but practically the same as on the N. side, over the hills.--*J. A. Thompson.*

HEREFORD, HOLMER HALL.—Fine sunny summer, but no great heat. Farmers did well except with apples and roots. Very little T. Autumn was extraordinarily warm and dry, roses being in bloom up to Christmas. Much drought between May 14th and August 7th, only 1·56 in. of R falling on 22 days.—*Michael Hopton.*

LEDBURY, ORCHARDLEIGH.—The R in March, 4·38 in., was the highest on record during the last 40 years. May was the hottest for 70 years. A very dry summer, though dull, with only 1·56 in. of R in June and July. In October 5 inches of R fell in the first 7 days, including 2·38 in. on the 2nd. Great absence of frost in October, November and December, so that gardens remained gay longer than usual.—*Miles A. Wood.*

LEDBURY, PUTLEY COURT.—The season throughout was the worst for the cultivation of stiff soil I ever experienced; it was water-logged for months, then followed drought in June and the land could not be cultivated till the drought began. The latter was so severe that in a fortnight the land was as iron and no plough or implement would make any impression on it. The fruit trees became thoroughly unhealthy, and it was by far the worst fruit crop here that I have known in over 30 years; every variety was very poor.—*John Riley.*

### WORCESTERSHIRE.

TENBURY, ROCHFORD RECTORY.—Not so wet a year as 1912, but 5·35 in. above the 19 years' average. There was a considerable lack of sunshine, even in the finest months. December was exceptionally mild up to about 24th. A wild strawberry, quite ripe and sweet and much larger than the normal, was picked on the roadside on 14th, and many blooms were to be seen in the hedge-rows. Considerable absence of TSS, most occurring in October.—*John Tomson.*

DROITWICH.—Crocus and snowdrop well in flower on February 2nd. Rambler roses, primulas, primroses and fuschias were flowering in the

garden on November 30th. On Christmas Eve a bunch of rambler roses (Dorothy Perkins), and a well-developed Madame Berard rose were picked. The weather became colder after December 21st, with min. temp. below freezing point.—*Hy. Hulse.*

### WARWICKSHIRE.

WORMLEIGHTON HALL.—A drier summer even than 1911; but with less sun and evaporation, its effects were not so noticeable in vegetation. The last three months were unusually mild with an almost total absence of frost.—*F. W. Burnett.*

## DIVISION VII.—NORTH MIDLAND COUNTIES.

### LEICESTERSHIRE.

BELVOIR CASTLE.—The total sunshine for the year was the lowest since 1894, with the exception of 1912 which had 77 hours less.—*W. H. Divers.*

### LINCOLNSHIRE.

LOUTH, WESTGATE.—A remarkably dry year. Only twice in the previous 41 years have we had so small a fall of R, viz., in 1884 when it was 20·50 in., and in 1905, 20·80 in. The average for the same period is 28·97 in., which makes this year show a deficit of 6·30 in.—*Fred. Fawcsett.*

### NOTTINGHAMSHIRE.

BEESTON, WEST END.—R 2·30 in. less than the average for the last 30 years.—*Francis Rothera.*

LOWDHAM, CHILWELL NURSERIES.—Though very dry during May, June and July, there was a great absence of sunshine, so that field crops were not earlier than usual. The heavy fall in October brought the total R about up to our average. It was unusually mild, dry, and sunny during November and the first part of December — *J. Duncan Pearson.*

HUCKNALL TORKARD, FORGE MILLS.—A year of average R, over one sixth of the total falling on four consecutive days in October.—*John D. Walker.*

WORKSOP, HODSOCK PRIORY.—Mild and very dull, with a dry summer, though with very little hot weather. Only 3 years out of the previous 36 had a higher mean temp., and July and August were

the only two months that were not warmer than the average. The highest temp. was  $83^{\circ}\cdot7$  on August 3rd, and  $80^{\circ}$  was also reached on one day in June. On the other hand there were two short but sharp spells of frost, both accompanied by deep S, one was in January and the other at the very end of the year, giving a minimum of  $10^{\circ}\cdot2$  in the screen and  $-4^{\circ}\cdot1$  on the S on December 31st. The deficiency of sunshine was larger than in any previous year except 1912.—*Henry Mellish, F.R.Met.Soc.*

### DERBYSHIRE.

ASHBOURNE WATER WORKS.—The R was rather below the average for this district over 16 years of observation. The summer fall from June to September was very low, and almost ideal summer weather was the result. The autumn was exceptionally mild. Wild flowers were blooming in great variety right up to December, and wild fruits also were still hanging in profusion to the end of November. Mushrooms, in half grown state were gathered up to December 17th.—*James W. Twigg.*

### DIVISION VIII.—NORTH-WESTERN COUNTIES.

#### LANCASHIRE.

BLUNDELLSANDS, MYRA.—R  $\cdot75$  in. below the average of 38 years. The driest February here for 18 years ; the wettest April for 24 years, and the driest August for 11 years. An extremely mild autumn and early winter, as shown by the fact of the first frost in the screen not being recorded until December 30th. — *Hugh Montgomery, F.R.Met.Soc.*

CARTMEL FELL SCHOOLHOUSE.—The driest year since 1901, when  $47\cdot82$  in. of R fell. R below the average for 21 years.—*R. J. Cragghill.*

### DIVISION IX.—YORKSHIRE.

#### WEST RIDING.

BURNTWOOD HALL.—Much of the R fell at night, between 6 p.m. and 6 a.m. ; the greatest fall in 24 hours occurred on September 17th, accompanied by continued T. S at no time remained long. There was very much less fog than in former years, and also fewer strong winds which are a feature of the weather here in most years.—*John Dymond.*

MELTHAM, HAREWOOD LODGE.—R about 4 per cent. below the average ; after the wettest March and April in my record, a prolonged

period of dry weather set in from the middle of June to the end of October, with R little more than half the average. The year was a mild one with no extremes of temp., the summer being cool, but the autumn fine and warm; there were scarcely any TSS, and a deficiency of sunshine.—*Charles Lewis Brook, F.R.Met.Soc.*

HUDDERSFIELD, BANK FIELD, GOLCAR.—There was not a TS during the year, and the R was very much below the average.—*J. R. Sykes.*

HORBURY, HIGHFIELDS.—Remarkable for the very long dry period, extending from May 9th to the end of the year. October broke the extreme drought with 3·2 in. of R, but from May 9th to October 30th the R which fell was so slight that ordinary field drains never received any of it, and all ponds dependent upon such supply were dried up from about the middle of June. Even with October's R, and after it, the drought continued and ponds and ditches were still empty, or nearly so, at the end of the year, springs depending on R being very small or still dry in these parts. The whole summer was dreadfully short of sunshine, and the number of dull days with drizzle or slight R, but no other relief from the drought, was very great indeed.—*John H. Green.*

HALIFAX, HALL INGS, SOUTH OWRAM.—R less than the average for preceding 23 years by 6·91 in.—*George E. Aspinall.*

PUDSEY, FULNECK.—The year was remarkable for sunshine and absence of TSS. Of the latter only two were within 1½ miles. The sun shone more or less every day except 5, from May 9th till September 3rd.—*Emma C. Lawford.*

BIRSTWITH, SWARCLIFFE.—We were short of R in the last half of the year, and very short of water. Many springs were still dry on January 1st, 1914, and many farmers were still carting water for their stock.—*C. S. Greenwood.*

#### NORTH RIDING.

WEST WITTON, IVY HOUSE.—January was decidedly unsettled and wintry, with 15 inches of S and a min. temp. on grass of 9°·9 on 14th. February was fairly fine but cold; March gave 7·67 in. of precipitation with S, sleet, mist and H. April was also decidedly wet. May, June, July and August may be described as seasonable. September, October and November constituted a really fine autumn, and December brought winter, with 3½ inches of S on the 5th. Hay and



corn were housed in excellent condition though the crops were not large. One of the most prolific years for mushrooms I remember. Garden produce did well, potatoes being excellent.—*Jas. B. Espiner, F.R.Met.Soc.*

LEYBURN, BOLTON HALL.—R .06 in. above the average of 42 years.—*F. Scrivener.*

## DIVISION X.—NORTHERN COUNTIES.

### DURHAM.

DARLINGTON, CLEVELAND PARADE.—One of the most noteworthy facts was the remarkably even bar. for over one third of the year. The range of pressure did not exceed one inch from April 28th to September 12th, both inclusive.—*Walter W. Willmott.*

SUNDERLAND, WEST HENDON HOUSE.—The R was 3.15 in. below the arithmetical average, and 2.81 in. below the geometrical mean for the 46 years, 1860-1905. It is remarkable that the fall for the first half of the year was 3.71 in. above the arithmetical average, and for the last half year was 6.64 in. below. January was the wettest month, with 3.74 in., and February the driest, with .55 in. R exceeded 1 inch on one day only, viz., April 28th, with 1.05 in. S fell on 17 days in the year, the maximum depth of  $2\frac{1}{2}$  inches being on March 17th; this was also the maximum for the winter 1912-13. The duration of time that R fell was much below the average. There was a great excess of S.E. winds during the year. The wind force was much above the average in November, following a quiet period in the previous 4 months. The year was more foggy and cloudy than the average. July was very cloudy, in spite of which the alternation of land and sea breezes was very frequent that month. Solar halos and T and L were rarely observed during the year. I did not notice any very fine pink or red sunset during the first half of the year, although such were very numerous in the latter half.—*T. W. Backhouse, F.R.Met.Soc.*

### NORTHUMBERLAND.

TYNEMOUTH, PERCY PARK.—Duration of sunshine 1108.5 hours on 279 days.—*J. Edward Burnett, F.R.Met.Soc.*

MORPETH, LONGWITTON HALL.—Most unusually small R. Springs which in ordinary years by the middle of November, or at the latest by the end of that month, have quite recovered from the summer

drought, this year were as low as they were at the end of August. For instance a small pond, supplied direct from a spring, which at the end of the year usually has 5 to 6 feet of water in it, and is running over, had only 18 inches to 2 feet of water in it, the normal amount at the end of August. I have known the spring over 30 years and have never seen it so low in December or November.—*Cecil H. S. Perceval.*

WOOLER, DODDINGTON VICARAGE.—The spring and early summer were for the most part cool, the wind blowing between N.E. and S.E. for almost 6 months; the land in consequence did not work well, the weather not being favourable to the action of the earth bacilli. In July the R was abnormally low. The harvest in the early districts was slow owing to the heavy dews. The weather in the autumn was remarkable; there was a small R and almost an entire absence of frost. The weather in December, up to Christmas, was phenomenal, this being due to the prevalence of the W. wind, which is in this part of the country a wind which brings little R, so that the autumn in Glendale was mild and at times balmy. The growth of good nourishing grass in the late summer and early autumn was quite remarkable.—*J. G. Shotton.*

### CUMBERLAND.

PENRITH, GREYSTOKE.—April was the wettest recorded here for about 65 years. After the middle of June the year was exceptionally dry until about the middle of November.—*H. Walker.*

THRELKELD, BLENCATHRA SANATORIUM.—A fine summer, with low R and considerable droughts in July, August and September. Rather remarkable for the lateness in the arrival of any considerable R, so that the deep seated mountain springs reached their minimum flow about October 15th. Very few TSS.—*W. Goodchild.*

SEASCALE, WHINTHWAITE.—The R was 1·43 in. below the average of 24 years.—*Robert Hellon.*

WHITEHAVEN, IRISH STREET.—R ·08 in. below the average for the years 1875-1909. A very mild autumn.—*Eldon Pratt.*

### WESTMORLAND.

MORLAND [PENRITH].—After a very wet early part of the year we had the smallest R and the finest August, September and October ever known, as also the mildest autumn.—*M. F. Markham.*

KENDAL, VICARAGE TERRACE.—A fine, warm summer, but not so hot as 1911. Temp. reached 80° in the shade on 6 days. Remarkable cloud forms, and splendid colouring at sunset, all through October, November and December.—*G. F. Braithwaite.*

KENDAL, POTTER FELL RESERVOIR.—There was an abnormal amount of R in March, April and May. The R of the first 6 months was 9 inches above the average. This was followed by 3 months of comparative drought, no R being recorded on 69 days out of 92. We were very short of water for 12 weeks as no R came until well into October. Afterwards the R was about the average, and the year ended with rather more than the average, the second 6 months having about 8 inches less than the average R.—*Charles Cropper.*

#### DIVISION XI.—MONMOUTH, WALES AND THE ISLANDS.

##### MONMOUTH.

PORTSKEWETT, SUDBROOK.—The R was about the average. As compared with the exceptional R of 1912, it rained on 13 days less in 1913, with 12·19 in. less R. July was the driest month, ·31 in. only being registered in the 6 days on which R fell.—*W. K. Laurence.*

##### GLAMORGAN.

YSTALYFERA, WERN HOUSE.—R 11·84 in. above the average of 20 years.—*James Williams.*

NEATH, BRYNTIRION.—The R was above the average for the last 30 years. From the middle of May to the end of September, however, the R was deficient and the water supply of this town ran short. Although we had a fine summer it was by no means hot; the hottest day was June 29th, when the temp. in the shade was 82°. On 2 other days I registered 80°.—*Edw. Ll. Green.*

COWBRIDGE, FONMON CASTLE.—R 4·56 in. below the average for 29 years.—*O. H. Jones.*

PORT TALBOT, TWYN-YR-HYDD, MARGAM.—The outstanding feature of the year's R was that although the total was above the average the summer was very dry, and the reservoirs empty till well on in October.—*Godfrey Lipscomb.*

##### PEMBROKE.

ST. DAVIDS.—The year was particularly prosperous for farmers' stock of all kinds, which sold at good prices. Hay and corn were

good and secured in excellent condition, especially the former. The autumn was very mild, with many flowers in bloom.—*D. F. Williams.*

### CARDIGAN.

LAMPETER, FALCONDALE.—The first 6 months were wet and cold, but the end of the year was dry and mild. April and June were cold and wet. July was very sunless. September was wet and dull.—*Wm. Taylor.*

### BRECON.

BRECON, FFRWDGRECH.—The excessive wet in March and April delayed the sowing of corn until about May 15th, and would have caused a small disaster to farmers had a severe drought ensued. The 5 days' rain in early June saved an unusual loss to most crops. May to September constituted what was locally considered a rather unusually fine summer, with sufficient R to produce good crops on farm and garden.—*John D. Douglas Evans.*

### RADNOR.

PRESTEIGNE.—March and April were both wetter than any corresponding month during the last 11 years, while July and August were the driest July and August during the same period. The R of January and May has in each case only been exceeded on one occasion, viz., January, 1906, with 5·26 in., and May, 1903, with 3·86 in.—*N. Y. Lower.*

### DENBIGH.

CERRIG-Y-DRUIDION, BWLCH-Y-BEUDY. — From May 10th to October 4th was very dry, with great sun heat, and the springs were dried up in a way I have not seen for years. The village had no water for weeks.—*C. S. Mainwaring.*

DENBIGH ASYLUM.—The year was remarkable only for the extreme mildness of the autumn. Flowers, blossoms and ripe raspberries until Christmas. Roses in practically perfect condition were pulled on Christmas Day in the open garden.—*W. Barker.*

### MERIONETH.

ABERDOVEY.—R excessive, being about 3 inches above the average.—*W. J. Eves.*

**ANGLESEY.**

LLANGWLLOG, TRESCAWEN.—The R was considerably below the average. Very fine weather for the hay harvest in July and end of June, and magnificent weather in August and September, into October, and a fine corn harvest, *i.e.*, as to weather conditions. We had some very heavy gales, but not as bad as in many years.—*J. H. Prichard-Rayner.*

**ISLE OF MAN.**

DOUGLAS.—The weather during August was very fine. The temp. was normal, the sunshine well above the average, and the R exceptionally sparse for the time of the year. On no occasion since meteorological observations were first taken in Douglas, in 1878, has there been such a small amount of R, and a total absence of R for so many days in August, except in 1880.—*Frank Cottle.*

**GUERNSEY.**

ST. MARTIN'S, LES BLANCHES.—On the whole a wet, unsettled and very gloomy year. The R was .52 in., and rain days 9, above the average of 20 years. January, with 5.91 in., was the wettest month, and was also the wettest month of that name in the 20 years, 1894-1913. The spring months, March to May, were mild and unsettled, with rain days largely in excess of the average; the summer, June to August, was both very cold and very dry, with a marked absence of sunshine; and the autumn, September to November, proved mild and wet, but with a pleasantly sunny October, the R notwithstanding.—*Basil T. Rowsell.*

**SCOTLAND.****DIVISION XII.—SOUTHERN COUNTIES.****WIGTOWN.**

WHITHORN, CUTROACH.—The most remarkable feature was the wonderfully long, fine summer. The first three months had R above average; and November specially so, with 6.22 in. of R. The longest period of absolute drought was from July 21st till August 9th. There was extremely little sultry weather, and an almost entire absence of frost, which only began at the very end of the year.—*John G. Martin.*

**KIRKCUDBRIGHT.**

DALBEATTIE, LITTLE RICHORN.—In March and April R was above the average, and seed sowing was much interfered with. The summer was dry and warm. Water became very scarce and many springs dried up. The autumn proved fine, and winter set in very genial and mild, only 3 frosty nights being recorded in October; November was mild throughout, and December was comparatively mild to the 27th, when frost set in with S.—*Wm. Kerr.*

JARDINGTON [DUMFRIES].—The R was just 1 inch below the average of the last 20 years. There was very little S, the heaviest fall being 6 inches on January 11th.—*J. Rutherford.*

**DUMFRIES.**

MONIAIVE, MAXWELTON HOUSE.—R 2·13 in. above average.—*E. Laurie.*

LOCHMABEN, ESTHWAITE.—The outstanding feature was the unequal incidence of the R. From January 1st to June 12th, 163 days, the R gave an excess of 5·66 in. over the average of 19 years. This excess was followed by a period of abnormal shortage, extending from June 12th to October 27th, 136 days, the R for which was only 7·17 in., a deficiency of 7·96 in. This serious shortage, whilst not materially injuring crops, had a serious effect upon gravitation and other water supplies. Streams and rivers were lower than in the dry summer of 1911, and several springs and pump wells that held out in 1911, failed this year.—*W. J. Halliday.*

**ROXBURGH.**

KELSO, SPRINGWOOD NURSERIES.—We had 4 inches less R than the average of the preceding 8 years, and fully 6 inches less than the year 1912. During harvest the weather was, unfortunately, dull and muggy. The autumn months were exceptionally dry and mild, particularly November and December, and until the 27th of the latter month; then a heavy S storm started, continuing more or less until the 30th.—*Messrs. Laing and Mather.*

MELROSE, ASYLUM—R ·52 in. below, and rain days 6 above, the average of 31 years.—*A. C. Pattman.*

## DIVISION XIII.—SOUTH EASTERN COUNTIES.

**BERWICK.**

SWINTON.—Perhaps the most remarkable feature of the year was the extreme dryness of July, which at the time seemed likely to spoil the turnip crop, but the autumn was exceptionally mild and the roots continued to grow giving an excellent crop. The S at the end of December attained to a depth of 6 inches, and is said to have been the heaviest fall here for 5 years.—*A. E. Swinton.*

**MIDLOTHIAN.**

BALERNO, COCKBURN HILL.—A very fine, dry year with the exception of March when the R was 6·26 in. on 27 days. The only hurtful element was a spell of remarkably cold wind from W. and S.W. which blew for about 10 days at the beginning of June, and withered some crops and plants so that they never properly recovered.—*Robert Cross.*

**LINLITHGOW.**

LINLITHGOW, PRESTON HOUSE. The first half of the year was remarkably cool, damp and sunless, and the latter half beautifully fine, although at no time abnormally hot. The hottest day was on July 2nd, when the temp. touched 80° in the shade. The lowest temp. was 13° on January 14th; the lowest max., 33°, was on the same date. There was almost an entire absence of T during the whole year. The greatest S was on January 31st and February 1st, 5 inches falling on both days. Not a drop of R fell from July 21st until August 9th. From July 7th to August 20th inclusive, only ·54 in. was recorded, and that in slight showers on 7 days only. The first frost of any consequence, in autumn, was registered on December 5th, when the temp. fell to 20°.—*Charles Blair.*

LINLITHGOW, GRANGE.—The main feature of the year was the deficiency of R in July and August, which caused great trouble owing to failure of water supply in this district. Harvest was very good and well got in over the Lothians, and there was no heavy R before middle of September.—*H. M. Cadell.*

## DIVISION XIV.—SOUTH WESTERN COUNTIES.

**LANARK.**

BUSBY, THORNTON HALL.—Total bright sunshine 1099 hours, or 200 below the average.—*John Wilson.*

**AYR.**

LOCH FINLAS.—The level of this loch was reduced during October to the lowest point in the history of the water works. The drought was the longest experienced for very many years, although the annual R was well above the average.—*John Young.*

NEW CUMNOCK, AYR SANATORIUM.—The summer was exceptionally fine, June, July, August and September being beautiful months. The winter was mild.—*Edward E. Prest.*

**DIVISION XV.—WEST MIDLAND COUNTIES.****DUMBARTON.**

ALEXANDRIA, THE RECTORY.—A year remarkable for the dry summer and early autumn. Loch Lomond, which reached almost the highest level ever known in December, 1912, receded in September, 1913, to the lowest within living memory, and remained in this condition for many weeks.—*J. Eldon Ellison.*

DRUMCHAPEL.—The most remarkable feature was the abnormally small R for the summer and autumn. From the end of May until the end of October the total fall was only 8·31 in., probably a record for this district. November was wet, but December was again very dry. November was abnormally warm, the mean temp. being nearly 5° above the average. There were no gales of any importance during the year. The harvest was early and was mostly secured in good condition.—*F. C. Thomson.*

**STIRLING.**

POLMONT, VELLORE.—The first three and the last two months accounted for more than half the year's R which was 3 inches under the average, the summer months being warm and dry. The crops all over were good in this district and with fair prices, and the farmers were well satisfied.—*W. Brown.*

FALKIRK, ARDENLEA.—The outstanding feature was the small R during part of July and August. From July 14th to August 15th, 32 days, there fell only ·26 in. ; and from July 7th to August 20th, 45 days, it was only ·45 in. Vegetation suffered a good deal during the first half of the period, but recovered during the second half owing to the air being more moist. Autumn and winter were very mild, there being almost no frost at the end of the year till the first week in December, and again during the last week. As usual here



we had almost no S in the end of the year. The first S came on December 27th, but it almost all melted and left only slight sprinklings at places.—*John Aitken.*

BUCHLYVIE, THE MANSE.—The year 1913 ranks among the dry ones, the R being 8·03 in. below the average of 24 years. March, April, June and November were wet; March being the wettest month of the year. The other months, with the exception of January and May, which had ·06 and ·07 in. respectively above the average, had much below their average R. On several farms water was very scarce, the springs being dried up. The summer was fine, with moderate temperature and cool nights. Beautiful sunsets were unusually frequent. The wet March delayed seed sowing. Harvest time was favourable, and cereals and potatoes were secured in fine condition.—*John A. Macdonald.*

### ARGYLL.

DUROR, THE RECTORY.—From June 9th to October 11th was the driest summer and autumn remembered in this district.—*E. J. Benwell.*

MUASDALE, KILLEAN MANSE.—The unusually long period of drought in July and August, causing a scarcity of water in some places, and the persistently rainy weather in November and the greater part of December, were the outstanding features.—*D. J. Macdonald.*

KILBRIDE, CRAIG COTTAGE.—In August and September all Loch Fyne side was short of water. Many houses and farms had to send 2 or 3 miles for drinking water, and on some farms there was hardly enough water for the cattle. The storm of wind and R from June 7th to 10th, from S. to S.W., was the worst summer storm ever remembered.—*Philip Barne.*

DALMALLY, MANSE OF GLENORCHY.—R below the average. There were three outstanding S storms; in January, March and April. The January storm was accompanied by a fierce S.E. gale and great drifting. The early summer, indeed the whole season, was very wet till near the middle of June; afterwards on the whole dry and sunny till about the middle of October, with shortage of R in July and August. From the middle of October till the end the year was very wet.—*Farquhar MacRae.*

MULL, QUINISH.—The cold, wet and stormy character of the winter of 1912-13 continued with hardly any intermission until June 9th, when it blew a hard gale from S.W. with torrents of cold R. As a result hill sheep, in the west highlands of Scotland, suffered as they have never done before within the memory of man. It is quite safe to report that from a quarter to half of the hill sheep were lost. July and August were remarkable for the amount of sunshine with cool, drying winds, mostly from N.W. Harvest was well got in in September. The fine weather broke on October 13th, and the remainder of the month and all November were wet and very mild. Roses in full bloom, and cowslips and primroses in flower right up to the end of the year.—*James N. Forsyth.*

#### DIVISION XVI.—EAST MIDLAND COUNTIES.

##### FIFE.

ST. ANDREWS, QUEEN'S GARDENS.—A remarkably fine year from June onwards, and seeming drier than it really was, as the R so often fell in the night. No great heat and an unusual amount of E. wind. The sunrises and sunsets during December were remarkably beautiful. The number of rain days recorded, 159, was less than in any year since this record commenced.—*I. J. R. Macadam, F.R.Met.Soc.*

CALLANDER, LENY.—An abnormal drought ; in July only .30 in. of R, the lowest recorded here in July in over 50 years. Apart from this reading the next lowest was in 1868, when the amount was .80 in.—*J. Hamilton Buchanan.*

BRACO, NETHER CAMBUSHINNIE.—With the exception of February 1901, when the R was only .25 in., July of this year had by far the least R, .65 in., for any month during the last 18 years.—*J. W. Stirling.*

ABERFELDY, DALL AVON.—Total R for June, July and August, 3.02 in. The Tay was at the lowest level on record, the previous record being said to be in 1826. Most of the springs in the district ran dry, and continued so well into the autumn.—*N. Douglas Mackay.*

KENMORE MANSE.—This district experienced extremes in weather. Deep S in January, beginning on 11th, and on 13th lying to a depth of 31 inches. Cold S again in March, and very heavy floods from May 5th to 9th resulted in great loss of lambs and sheep at lambing time. Drought set in on June 28th and continued till September 11th. Loch Tay fell below the level of 1826, the year of short corn, by 6 inches.—*William A. Gillies.*

COUPAR ANGUS.—With the exception of February we experienced heavy R and very much flooding of all our north of Scotland rivers up to July, after which the R was deficient. Our autumn floods were conspicuous by their absence. The R was about  $3\frac{1}{2}$  inches above the average of 30 years. The wet months were January, March, May and June, and the deficient months February, July and December.—*John Robertson.*

#### FORFAR.

FORFAR, LILYFIELD.—The first six months were much wetter than the normal ; January, March and May having more than 5 inches of R. The second half of the year was much drier than it has been in any year of this century, July and August being very warm and bright, and exceptional in the amount of sunshine. November and December were uncommonly mild.—*D. M. Mackie.*

ARBROATH, DISHLAND HILL.—With the exception of February the first five months were rather wet, and all comparatively mild. The summer months were fine without excessive heat, and the latter months, with the exception of the first and last weeks of December, were unusually mild and open.—*James Campbell.*

#### DIVISION XVII.—NORTH EASTERN COUNTIES.

##### ABERDEEN.

ALFORD, LYNTURK MANSE.—The chief feature was the low R, 27·41 in., or 5·59 in. below the average of 12 years ; every month of the last 6, except September, being under the average, and most of them very much so. The total R had only once been so low in 13 years, viz., 25·61 in. in 1904, when there was also scarcity of water, though apparently not so great, possibly because the previous year in that case was much above the average, while 1912 was only slightly beyond it.—*James B. Duncan.*

ELLON, HOUSE OF SCHIVAS.—With the exception of May and September the R was considerably less than usual, especially in February and October. The river Ythan was in greater flood than seen for many years in May, when 3·10 in. fell from 8th to 11th inclusive. The result was a serious loss of fresh sown seed, and, ultimately, a very short straw crop on riverside fields. A noteworthy fact is that S only fell on 8 days. The absence of S for the last two winters decreased the water supply seriously, and water was very

scarce towards the end of October, in many places being very scanty even in the middle of December. The lowest temp. in shade was  $15^{\circ}$  on December 30th, the highest,  $79^{\circ}$ , on July 14th. The highest in June was  $76^{\circ}$  on the 14th, and in May  $70^{\circ}$  on the 23rd, which is very high for this district in May.—*Haddo*.

DRUMBLADE, PUBLIC SCHOOL.—The consequence of the uniform dryness of the season was a shortage in the water supply for domestic and water-milling purposes. The school water supply was fairly well maintained, thanks to an addition obtained at the end of the dry season of two years ago, but at the farm steading of Loanhead, about 40 or 50 feet higher and 400 or 500 yards distant, water for household purposes and stock-watering had to be carted a distance of a mile from July till the end of the year.—*G. Harper*.

#### BANFF.

ABERLOUR, THE ORPHANAGE.—In this locality 1913 was thought to be the driest year since 1868. Total duration of sunshine 1371 hours.—*John G. White*.

#### MORAY.

GRANTOWN-ON-SPEY.—The driest year since I began to keep a record of R on January 1st, 1867, 46 years ago. R 11·14 in. below the average of 50 years.—*Wm. Duncan*.

ARCHIESTOWN, BENVIEW.—A long, dry, warm summer and autumn. Drought lasted from June 12th till September 7th, 86 days, when only 3·08 in. of R fell. Vegetation had about enough at this elevation, but nothing went to the subsoil to feed wells, and many were still dry at the end of the year.—*John Milne*.

#### NAIRN.

CAWDOR CASTLE.—The year, taking it all over, was a beautiful one. Drought was experienced during July and August, but not to the extent of proving disastrous to crops, all of which were excellent.—*David Chapman*.

### DIVISION XVIII.—NORTH WESTERN COUNTIES.

#### INVERNESS.

LOCH NESS, DRUMNADROCHIT.—The harvesting months, July to October inclusive, gave an aggregate of 7·20 in. of R on 52 days. Although the R for the year was not nearly the lowest, the number of

wet days was the smallest recorded for the past 28 years. A feature of the year was the late growth amongst weeds and garden flowers, a fact much commented upon in the public prints, also the late appearance of migrating birds. A rail or corncrake, in poor condition, was reported to me by a competent observer as being picked up alive at end of year.—*Angus Grant*.

GLENELG MANSE.—The driest year since I began to keep a record 15 years ago. The summer and early autumn months were very fine. The only month with much R was November, a month also of high winds.—*Alex. Mactaggart*.

ARISAIG HOUSE.—July, August, September and up to October 12th gave a long and continuous spell of excellent harvest weather, such as we seldom see at this time on the west coast.—*Wm. Grant*.

### ROSS.

ALNESS, ARDROSS CASTLE.—The R was considerably below the average, and no heavy fall of note occurred during the year. Spring was cold; the summer fine and comparatively dry; autumn also was good, and the closing months were open generally. S lay on corries of Wyvis, N.E. side, as late as July 20th, but no heavy falls of S occurred till December 28th, when 1 foot lay on the ground. Gales were common in March, June, October, November and December. The first swallow was seen on April 28th, and the cuckoo first heard on May 1st, a few days earlier than usual.—*William L. Minty*.

LOCH CARRON, PLOCKTON.—The outstanding feature was the very long, cold and wet spring, and the want of sunshine throughout. The wet spring was followed by a long summer, *i.e.*, the R was comparatively small, but there was no great heat. The late autumn was very stormy and wet, November being the most stormy and wet in the last 5 years. The storms of November and December were almost entirely from the N.W., instead of the usual S.W., indeed the wind blew from the N.W. almost without intermission during these months.—*C. P. Anstruther Mackay*.

### DIVISION XIX.—NORTHERN COUNTIES.

#### SUTHERLAND.

LOCK STACK, ARDCHULLIN.—Duration of sunshine 988·3 hours.—*J. Munro*.

**CAITHNESS.**

THURSO, BUCKIES.—Remarkably dry, with a fair amount of sunshine. Many springs throughout the country were dry for many months, the greater number of which have never been known to fail before; some were dry from June till October.—*J. H. M. Davidson.*

**ORKNEY.**

POMONA, KIRKWALL.—The summer in this county was the finest ever remembered. The R, except in the last two months, was much below the average. The weather during summer was very steady, and the sunshine was below normal. Many wells were dry that had not been known to fail before, and farmers in many instances carted water who had never had to do so before.—*Archie G. Spence.*

SHAPINSAY, BALFOUR CASTLE.—A beautiful year all through till October. March and April were very fine spring months and a dry seed time. May and June had warm, showery weather; and July, August and September were exceptionally dry, the harvest being unusually fine. November and December were wet, with stormy winds and with two falls of S, but very little frost.—*Wm. Liddell.*

**IRELAND.****DIVISION XX.—MUNSTER.****CORK.**

DUNMANWAY, THE RECTORY.—The R was the heaviest of any year since observations began in 1904, and this was the more remarkable as the summer, from June 23rd to September 11th, was exceptionally dry and warm. The only TS of any severity was on the night of October 4th.—*Arthur Wilson.*

MIDLETON, BALLYNACURRA.—The heaviest year's R since observations began in March, 1904; exceeding the average by 9·28 in., and the previous heaviest, in 1910, by 3·82 in.—*John H. Bennett.*

GLANMIRE, LOTA LODGE.—The dry months, June, July and August, were wedged in between two very wet periods, and the R for the whole year was considerably over the average. The autumn was remarkable for the number of rain days, there being only 16 fine ones from September 20th to the end of November, and for its abnormal mildness. The year ended with a cold snap, there being 14° of frost on December 30th and 16° on 31st, but we had no S.—*A. F. Sharman-Crawford, F.R.Met.Soc.*

MALLOW, SUMMER HILL.—Notwithstanding an exceptional period of drought during the summer and early autumn, 1913 was the second wettest year recorded here during the last 24 years. R 6·82 in. over the average. The outstanding features were the exceptional drought already referred to, and the abnormal R of the last four months. The drought lasted from the middle of May until practically the middle of September. From May 13th to September 11th inclusive, there were no less than 81 days without R, while the remaining 42 yielded only 6·42 in. of R, of which a considerable proportion was due to a single TS with 1·85 in. on August 29th.—*J. F. Williamson.*

### KERRY.

DARRYNANE ABBEY.—Though there were no exceptional falls the total R was 118 per cent. of the average for 24 years, and the heaviest since 1890, the next being 60·23 in. in 1904 ; there were two heavier falls in the wet decade, 1870-79, namely, 1872, 67·02 in., and 1877, 61·08 in. The year on the whole was very mild. There was no S, and until after mid-December no cold, except an occasional day.—*D. O'Connell.*

KENMARE, DUNKERRON CASTLE.—The drought during the end of June, July, August and the first part of September, was quite exceptional. Nobody remembered so long a time of dry weather. Many of the usual sources of water supply failed.—*Louise Palmer.*

### WATERFORD.

PORTLAW, MAYFIELD.—January, with 9·40 in. of R, was the wettest during the 73 years that the record has been kept here. July, with ·21 in., was the driest ; and also the combined months of July and August, with 1·26 in., were the driest during the same period. The total R was 4·62 in. over the average.—*John Anderson.*

### TIPPERARY.

NENAGH, CASTLE LOUGH.—R about 2·50 in. above the average for 35 years, but the number of days with R below the average. The year was chiefly remarkable for the absence of TSS, and there were no falls of R of over 1 inch in 24 hours.—*S. G. J. Parker-Hutchinson.*

CLONMEL, BRUCE VILLA.—The wettest January on record here since 1864. May was the wettest for 24 years, 3½ inches falling in the first 8 days. July had only ·42 in., and there is no record of such

a dry July since 1865. December was the driest here for 30 years.—*Joseph H. Grubb.*

### CLARE.

ENNISTYMON HOUSE.—R nearly 5 in. above the average. Owing to the fine July and August, the harvest was one of the finest ever known in Co. Clare. Hardly any frost during the year.—*H. P. Macnamara.*

BROADFORD, HURDLESTOWN.—The R was 11·64 in., and the rain days 8, above the average for 28 years.—*W. A. Bentley.*

## DIVISION XXI.—LEINSTER.

### WEXFORD.

FETHARD-ON-SEA.—The outstanding features of the weather of 1913 were the dryness of the summer and of December. The total R from June 23rd to September 11th, 80 days, was 1·68 in. For the four months, May 11th to September 11th, it was 4·82 in. In December the total fall was 1·28 in. The summer was remarkable for the entire absence of TSS.—*W. F. A. Ellison.*

### WICKLOW.

RATHNEW, CLONMANNON.—Notwithstanding the very dry summer the R was 1·43 in. above the average of 11 years. From June 10th to September 11th only 2·13 in. of R fell, but from September 12th to November 20th 11·69 in. fell.—*W. H. A. Truell.*

BRAY, FASSAROE.—June, July and August being dry, turnips were a poor crop, also mangolds ; hay light and straw short. The wettest January on record since the register began, the nearest being 10·27 in. in 1860.—*R. M. Barrington.*

### CARLOW.

HACKETSTOWN RECTORY.—The year gave a general impression of being much drier than 1912, though there was less than half an inch in the difference between the total recorded R for the 2 years. This was mainly owing to the enormous fall of 8·05 in. in January ; while February, June, July, August and December were all unusually dry. There was scarcely any T during the year, and not a single flash of L sufficient to attract attention. There was a considerable fall of S on January 3rd, but it only remained on the ground a few hours. There



was no other S except a heavy shower on night of December 27th.—*C. S. S. Ellison.*

### KING'S COUNTY.

EDENDERRY, JONESTOWN.—A wet year until the middle of May. A very fine summer, not too hot, and a wet autumn. The year finished with nearly a week of hard frost.—*W. Dunne.*

### DUBLIN.

RATHMINES, LEINSTER ROAD.—January was the wettest in a record beginning in 1882, and July the driest. In December from 8th to 25th only .02 in. of R fell. Taking the year all round the principal features were the absence of TSS, and the dryness of the summer, which was the driest since 1887.—*E. H. Cannon.*

### DIVISION XXII.—CONNAUGHT.

#### GALWAY.

KNOCKBOY HOUSE.—A wet year on the whole, though July and August were exceptionally dry. No month in the year had 6 inches of R, a feature which is uncommon here. The chief meteorological peculiarity was the freedom from extremes of heat or cold. The thermometer only rose above 70° on a very few days in the summer, while, on the other hand, frost was registered on only 6 occasions, the lowest temp. for the year being 27°.—*Douglas H. Thompson.*

#### MAYO.

NEWPORT, BURRISHOOLE HOUSE.—The R was 4.71 in. over the average of the last 16 years, and the greatest fall with the exception of the year 1903, when 65.10 in. was registered.—*H. M. Anketell Jones.*

AASLEAGH HOUSE.—R below the average, which is 91.96 in. More rain days recorded than ever.—*Sligo.*

WESTPORT HOUSE.—The wettest year since the record has been kept, viz., 11 years, 1903-1913.—*Sligo.*

### DIVISION XXIII.—ULSTER.

#### ARMAGH.

LURGAN, BELLE VUE.—R .40 in. above the average of 10 years. An unusual feature was that the total for the first six months, 15.58 in.,

exceeded that of the last six by an inch. The autumn half of the year has usually much the larger R. August, with only  $\cdot 79$  in., was 3 inches below the average of the previous 10 years, and the lowest on record for 30 years. May was decidedly cold and the summer temp. generally rather below the average.—*Samuel A. Bell.*

#### DOWN.

WARRENPOINT, CLONALLON.—An average R, January being the wettest month. There were some very dry spells during June, July, August and September, and two periods of absolute drought. There was a good deal of high wind in March, April, October and November, and severe frosts in December, though the first part of that month was particularly mild.—*A. W. Mansergh.*

#### ANTRIM.

BELFAST, QUEEN'S UNIVERSITY.—R  $3\cdot 32$  in. above the average of 47 years.—*G. Robinson.*

#### TYRONE.

SION MILLS, SION HOUSE.—The R was slightly below the average. The earlier months, with the exception of February, were very wet and cold, with harsh winds. June, July, August and part of September were very dry, but no very high temp. was recorded,  $75^{\circ}$  on June 17th and August 2nd being the max. in the shade. The autumn months and half of December were mild, with R about the average. The latter half of December was cold, with sharp frost in the last few days.—*G. I. Herdman.*

#### DONEGAL.

DUNFANAGHY, ST. HELEN'S.—The abnormally small R of July and August is remarkable. That of July,  $1\cdot 89$  in., was 51 per cent., and that of August,  $1\cdot 57$  in., only 32 per cent., of the average for 11 years. The latter was almost exactly half of the R of the next driest August, that of 1911, which was  $3\cdot 06$  in.—*J. J. MacGrath.*

## THE DISTRIBUTION OF RAINFALL IN TIME.

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UNDER this general title are included the articles on the frequency of rain days during the months and the year, followed by those on the Droughts and Rain Spells. The duration of rainfall in 1913, as determined from the records of automatic rain gauges, is then treated, succeeded by a summary of heavy rains in short periods. The section devoted to heavy falls on rainfall days, as it has been developed in recent volumes, belongs more to the distribution of rainfall in space than in time, and the same applies to the features of the year's rainfall discussed under the headings of Monthly and Seasonal Rainfall.

The "rainfall day" which so frequently forms the basis of our discussions refers to the period of twenty-four hours commencing at 9 a.m., in which the amount of rain, as recorded, is not less than .01 in. When less than half this quantity is found in the rain gauge the day is regarded as rainless, even although a small quantity may have fallen. The importance of adhering to the above definitions has been so frequently remarked that its reiteration may seem superfluous to many readers, but although cases of reading the gauge at other hours than 9 a.m., or of employing an instrument which does not admit of the measurement of .01 in., are becoming increasingly rare, there are still many instances in which important records cannot be utilised, just when the results would have been of the greatest interest, on account of the lack of absolute uniformity.

In order to restrict the various investigations within reasonable limits, a selection of stations has to be made from the thousands of places at which observations are taken. Stations from 40 to 50 miles apart, to the number of 100, have accordingly been chosen for special analysis, and these are shown on the accompanying index map.

As far as possible, the same stations are used year after year, but at times, owing to the removal of the Observer, by death or otherwise, it is necessary to replace an old-established record by a

new one for the purpose in view. This occasionally disturbs the general distribution of the stations employed, since it is necessary, for the satisfactory handling of the problems involved in the geographical distribution of rainfall, to maintain, as far as practicable, a uniform representation of all parts of the country.

DISTRIBUTION OF RAINFALL IN TIME  
INDEX MAP OF STATIONS



## RAIN DAYS IN 1913.

A DISCUSSION in considerable detail of the geographical distribution of the normal number of rain days over the British Isles deduced from the average values of about 100 representative stations for 20 years was given in *British Rainfall, 1911*. This was accompanied by a map which is again inserted, in order that the map for 1913 may be compared with it. As far as possible the same stations have been used as in previous years, but in constructing the map for 1913 the data from the 100 chosen records have been supplemented by utilising the numbers of rain days at about 1,000 additional stations, so that the lines of equal rain frequency may be drawn with greater detail.

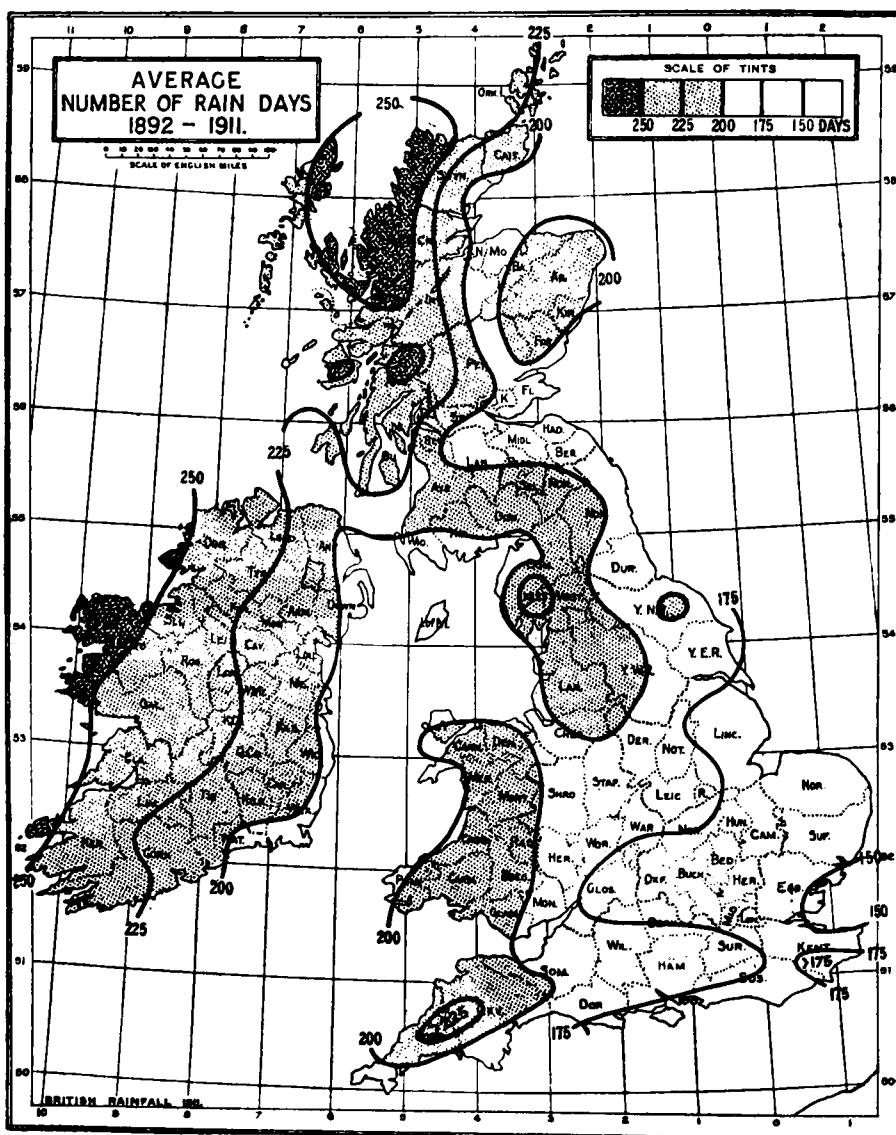
The values given in the accompanying Table I. refer only to the

TABLE I.—*Number of Rain Days, 1903-1913, compared with the Average of 1892-1911.*

Year.	ENGLAND & WALES. Average 187.			SCOTLAND. Average 216.			IRELAND. Average 223.			BRITISH ISLES. Average 204.		
	Rain Days.	Diff. from Aver.	Per cent. of Aver.	Rain Days.	Diff. from Aver.	Per cent. of Aver.	Rain Days.	Diff. from Aver.	Per cent. of Aver.	Rain Days.	Diff. from Aver.	Per cent. of Aver.
1903	211	+24	113	244	+28	113	252	+29	113	229	+25	112
1904	188	+ 1	101	219	+ 3	101	231	+ 8	104	206	+ 2	101
1905	186	— 1	99	222	+ 6	103	221	— 2	99	203	— 1	100
1906	192	+ 5	103	226	+10	105	231	+ 8	104	210	+ 6	103
1907	203	+16	109	232	+16	107	240	+17	108	218	+14	107
1908	189	+ 2	101	221	+ 5	102	228	+ 5	102	206	+ 2	101
1909	195	+ 8	104	216	0	100	209	—14	94	204	0	100
1910	209	+22	112	221	+ 5	102	233	+10	104	218	+14	107
1911	175	—12	94	209	— 7	97	202	—21	91	191	—13	94
1912	212	+25	113	228	+12	106	235	+12	105	222	+18	109
1913	190	+ 3	102	212	— 4	98	220	— 3	99	203	— 1	100

especially selected stations. It will be seen that in 1913 the deviations from the normal numbers of rain days were very slight. Taking the Kingdom as a whole, the values practically agree with the average. In England and Wales there was an excess of two per cent., and in Scotland and Ireland a defect of two and one per cent. respectively,

the sum of the percentage deviations from the normal, taking the aggregate of the three countries, being only five per cent. In this respect 1913 shares with 1908 and 1905 in what may be termed the "steadiness" in the frequency of rain days during the past 11 years.



In England and Wales, speaking generally, the geographical distribution of the number of rain days differed but little from the average. It is, however, worthy of notice that the deficiency of rain on the east coast was not associated with a deficiency in the number of rain days in this locality.

In Ireland the most noticeable features were the comparatively

restricted area covered by the region reporting 250 rain days, which it will be seen is confined to a narrow strip of the Atlantic seaboard. The lines of 225 rain days and of 200 rain days both lay to the west of their usual position.



In Scotland, as compared with the average, the region with more than 250 rain days was confined to an insignificant portion of West Inverness-shire, in the centre of the small area covered by the line of

250 rain days. This area was much less than the average. More than 250 days with rain also occurred in part of the Outer Hebrides. In the eastern half of Scotland the area with 200 or more rain days was restricted to the high land in the vicinity of the Grampians, the infrequency of rain days on the east coast being also a marked feature. In this, the east coast of Scotland differed from the east coast of England where the deficiency of rain during the year was associated with an average number of rain days.

The maximum number of rain days, dealing with the whole country, was 269 at Darrynane, Co. Kerry, while the minimum, rather under 150, was noted in the Fen district and in part of the Thames Estuary, being in harmony with the average conditions in these districts.

From Table II. it is quite clear that the months with the greatest frequency of rain days were March and November, and although we have no monthly normals for purposes of comparison, there is no doubt that the former month was the more noteworthy of the two in this respect. The least number of rain days, taking the Kingdom as a whole, was noted in July and August, and the infrequency of rain days from June to September over most of the wet areas in the north-west of England and Scotland doubtless explains the general departures from the normal frequency of days with rain referred to in the preceding paragraphs.

In the last column of Table II. is given the mean amount of rain per rain day, obtained by dividing the total annual rainfall by the number of days with rain. Taking the United Kingdom as a whole this averaged  $\cdot 20$  in., ranging from  $\cdot 22$  in. in Scotland and  $\cdot 20$  in. in Ireland to  $\cdot 19$  in. in England and Wales.

As regards individual stations the maximum per rain day varied from  $\cdot 45$  in. at Dungeon Ghyll,  $\cdot 44$  in. at Treherbert, in Glamorgan-shire, and  $\cdot 43$  in. at Glenleven to  $\cdot 11$  in. per day at Hull and  $\cdot 12$  in. per day at Cambridge, Swaffham, Thirsk, Sunderland and Grantown, all, it will be noted, in the east of Great Britain.

In general terms the rainfall of 1913 was markedly in excess of the normal in the south-western half of the British Isles, and equally markedly in defect in the north-eastern half. The number of days on which rain fell was however, as the foregoing remarks indicate, close to the average in all parts of the country, thus showing that the excess or defect in the amount of the rainfall during the year must be attributed to variations in intensity rather than in frequency.



TABLE II.—*Number of Rain Days in 1913.*

STATION.	COUNTY.	Jan.	Feb.	Mar.	Apr.	May	June	July.	Aug.	Sep.	Oct.	Nov.	Dec.	Total.	Total Rain-fall.	Amount per Rain Day
ENGLAND & WALES.																
St. Pancras, Camden Square ...	London	17	12	21	21	11	7	12	11	11	15	17	8	163	22·41	in. .14
Tenterden, View Tower .....	Kent	21	10	24	19	10	10	14	11	14	18	16	11	178	26·06	·15
Brighton, Ditchling Road .....	Sussex	21	8	22	19	10	10	14	9	12	19	23	14	181	36·64	·20
Totland Bay, Aston House .....	Hampshire	23	11	20	17	11	9	13	7	11	20	20	10	172	31·30	·18
Petersfield, Ditcham Park .....	"	22	10	23	19	12	10	12	12	12	19	20	13	184	38·72	·21
Newport Pagnell, The Croft ..	Buckinghamshire	18	10	18	17	12	9	13	12	13	16	22	12	172	22·50	·13
Goring, Elmcroft .....	Oxfordshire	17	17	23	19	15	8	13	11	14	16	19	13	185	23·83	·13
Cambridge, Botanic Gardens ...	Cambridgeshire	17	11	17	16	11	7	15	11	11	15	15	12	158	18·67	·12
Shoeburyness .....	Essex	19	8	22	14	9	7	14	8	11	15	14	12	157	19·73	·13
Colchester, Hill House, Lexden	"	20	8	20	14	10	8	13	8	11	14	16	11	153	19·45	·13
Beccles, Sotterley Hall .....	Suffolk	19	10	19	17	14	12	12	9	10	13	19	13	167	23·98	·14
Swaffham, The Paddocks .....	Norfolk	20	11	21	19	10	11	12	11	12	13	21	14	175	21·74	·12
Salisbury Plain, Shrewton .....	Wiltshire	26	18	19	19	15	9	10	11	13	17	20	15	192	28·81	·15
Dorchester, Wollaston House...	Dorsetshire	24	10	22	20	15	7	7	9	12	20	19	14	179	36·00	·20
Ashburton, Druid House .....	South Devon	25	12	22	21	20	11	7	12	16	21	21	16	208	57·22	·28
Bude, The School House .....	Cornwall	29	9	25	17	19	11	6	10	16	20	26	19	203	31·71	·16
St. Austell, Trevarna .....	"	29	8	22	20	21	15	11	9	18	18	26	21	218	45·41	·21
Angersleigh, Leigh Court .....	Somerset	25	13	21	22	16	14	11	11	14	22	23	15	207	35·95	·17
Simonsbath .....	"	29	10	26	22	21	18	13	12	17	15	29	21	233	65·90	·28
Mickleton, Bank House .....	Gloucestershire	16	12	18	19	14	8	11	10	13	16	16	12	165	23·86	·14
Clifton, Pembroke Road .....	"	25	16	22	18	17	9	14	13	15	16	25	21	211	32·53	·15
Hereford, Holmer Hall .....	Herefordshire	23	15	19	19	18	7	10	14	17	19	21	9	191	27·01	·14
Shifnal, National School .....	Shropshire	19	12	21	20	18	10	10	13	16	15	18	17	189	28·95	·15
Mayfield House [Ashbourne] ...	Staffordshire	22	11	24	19	17	15	7	12	13	16	23	12	191	29·55	·15
Blaby, Whetstone Road .....	Leicestershire	21	13	21	20	13	10	9	10	13	16	22	9	177	24·44	·14
Market Deeping, Wilthorpe ...	Lincolnshire	16	10	19	15	11	10	9	9	9	12	16	9	145	19·74	·14
Spilsby, Ashby Road .....	"	19	10	17	20	14	12	8	8	10	12	15	9	154	22·03	·14
Worksope, Hodsock Priory .....	Nottinghamshire	19	15	19	17	9	13	8	8	12	18	17	9	164	22·34	·14
Northwich, Winnington .....	Cheshire	17	14	20	18	18	15	12	12	11	16	24	14	191	26·74	·14
St. Michael's-on-Wyre Vicarage	North Lancashire	5	15	21	18	16	18	14	10	11	17	26	14	201	33·51	·17
Settle, The Terrace .....	Yorkshire, W.R.	20	13	27	19	19	17	13	13	14	13	25	18	211	41·96	·20
Meltham, Harewood Lodge ...	"	24	15	28	22	17	15	12	8	16	16	26	21	220	42·88	·19
Hull, Pearson Park .....	" E.R.	21	15	20	18	15	11	10	6	11	16	22	14	179	20·49	·11
Thirsk, Mount St. John .....	" N.R.	22	12	19	18	11	12	9	8	13	14	20	11	169	20·97	·12

TABLE II.—*Number of Rain Days in 1913—(continued).*

STATION.	COUNTY.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.	Total.	Total Rain-fall.	Amount per Rain Day
[ 74 ]																
BRITISH RAINFALL, 1913.																
in.																
ENGLAND & WALES—(con.)																
Sleights Brook Park.....	Yorkshire, N.R. ... 5	20	11	20	16	17	12	9	10	15	17	18	10	175	25·97	·15
Sunderland, West Hendon House	Durham..... 2	20	12	19	17	17	14	10	14	17	16	21	11	188	22·80	·12
Haltwhistle, Bellister Castle...	Northumberland ... 2	18	12	24	17	14	19	12	6	11	17	25	17	192	33·81	·18
Glanton Pyke Gardens.....	" ... 6	19	15	23	18	16	15	9	15	12	16	18	13	189	26·52	·14
Kirkby Stephen, Redman House	Westmorland ..... 1	18	13	25	20	11	14	13	13	11	14	23	14	189	42·20	·22
Dungeon Ghyll .....	" ..... 2	24	16	26	21	21	20	12	13	12	18	29	23	235	106·71	·45
Treherbert, Tyn-y-waun .....	Glamorgan ..... 6	26	13	26	19	21	16	10	13	13	22	27	19	225	98·97	·44
Carmarthen, The Friary .....	Carmarthen ..... 2	27	12	27	20	23	14	12	11	17	20	26	19	228	50·78	·22
Fishguard, Goodwick Station...	Pembroke ..... 2	29	11	27	20	17	13	11	10	15	21	25	18	217	44·36	·20
Aberystwyth, Gogerddan.....	Cardigan ..... 2	23	10	27	19	21	17	14	12	15	20	26	22	226	56·63	·25
Birmingham W.W., Tynynydd	Radnor ..... 1	26	13	25	21	23	16	12	13	19	20	26	21	235	62·77	·27
Lake Vyrnwy.....	Montgomery..... 5	22	10	23	21	21	11	11	10	12	18	23	17	199	48·61	·24
Bodfari Henblas .....	Flint ..... 2	19	12	21	20	20	15	13	14	13	19	23	14	203	27·00	·13
Abersoch.....	Carmarvon..... 4	24	12	23	17	18	10	14	8	12	20	23	15	196	43·53	·22
Lligwy .....	Anglesey .....	25	11	20	17	18	13	12	9	11	19	23	16	194	32·41	·17
England & Wales	(Mean of 49 stations)..	22	12	22	19	16	12	11	11	13	17	21	14	190	35·63	·19
ISLE OF MAN.																
Douglas, Clypse, Onchan .....	Isle of Man .....	19	14	24	20	22	17	12	10	12	19	25	14	208	39·58	·19
SCOTLAND.																
Whithorn, Cutroach .....	Wigtown .....	21	15	22	18	17	15	11	11	10	16	22	17	195	36·28	·19
Jardington [Dumfries] .....	Kirkcudbright ..... 5	19	11	26	21	22	16	8	7	10	20	24	19	203	38·34	·19
Meggat Water, Cramilt Lodge..	Selkirk ... .. 2	20	15	25	20	19	19	9	14	12	18	25	21	217	50·30	·23
Marchmont House .....	Berwick .....	17	16	24	14	14	10	9	14	12	15	19	15	179	26·07	·15
Motherwell, Dalzell Gardens ..	Lanark .....	16	12	27	17	22	18	8	9	12	16	25	18	200	30·14	·15
Girvan, Pinmore.....	Ayr .....	22	15	24	19	22	20	12	12	13	21	28	21	229	46·85	·20
Buchlyvie, The Manse .....	Stirling .....	21	16	23	21	24	20	8	12	13	22	25	19	224	43·69	·20
Rothsay, Glenburn .....	Bute .....	23	15	24	19	23	19	12	14	14	21	28	21	233	49·42	·21
Loch Awe, Ford .....	Argyll .....	6	21	25	21	23	21	11	14	14	20	28	24	239	73·06	·31
Campbeltown, Witchburn .....	" ..... 10	25	16	21	21	19	21	15	10	13	19	29	21	230	44·38	·19
Islay, Eallabus .....	" ..... 14	28	17	22	18	20	18	13	12	15	22	30	24	239	47·02	·20
Mull, Ulva.....	" ..... 14	20	16	24	21	23	20	12	15	16	21	25	24	237	63·94	·27
Cupar, Rankeillour .....	Fife .....	19	13	20	14	12	13	5	9	12	15	19	11	162	25·30	·16
Aberfeldy, Dall Avon .....	Perth .....	24	15	27	19	17	18	5	9	13	18	21	17	203	39·38	·19

Fettercairn, The Burn .....	Kincardine .....	23	13	21	16	14	18	7	13	16	21	18	12	192	34·81	·18
Cromar, Logie Coldstone School .....	Aberdeen .....	1	22	11	20	18	17	8	15	16	17	14	18	193	27·60	·14
New Deer Schoolhouse .....	" .....	4	17	16	14	12	15	11	12	13	18	17	17	172	26·12	·15
Gordon Castle .....	Moray .....	2	14	19	14	16	15	12	13	12	13	16	17	174	22·04	·13
Muckerach Lodge [Grantown] .....	Inverness .....	3	15	23	19	18	17	7	15	16	13	19	21	200	23·70	·12
Fort Augustus, St. Benedict's .....	" .....	6	18	25	16	21	17	8	9	12	16	26	19	205	45·50	·22
Loch Nevis, Inverie .....	" .....	12	20	26	18	25	22	14	13	14	18	27	22	238	85·58	·36
Glenleven, Kinlochmore .....	Inverness .....	17	22	26	20	23	21	10	14	15	17	25	24	234	100·26	·43
Skye, Dunvegan .....	" .....	18	20	25	21	24	20	14	11	13	20	27	27	242	75·65	·31
Glencarron Lodge .....	Ross .....	9	16	23	13	23	24	13	14	16	23	25	25	238	87·20	·37
Invershin .....	Sutherland .....	1	12	15	24	13	16	13	16	11	12	22	20	190	29·36	·15
Loch Stack, Ardochullin .....	" .....	5	12	18	25	23	20	16	19	15	19	26	24	235	71·02	·30
Thurso, Buckies .....	Caithness .....	3	17	15	25	16	20	13	15	16	17	22	23	211	31·45	·15
Scotland .....	(Mean of 27 stations) ..	19	15	24	18	20	18	10	13	13	18	24	20	212	47·20	·22
IRELAND.																
Skibbereen Rectory .....	Cork .....	6	28	21	17	17	16	3	9	15	24	27	15	204	54·95	·27
Mallow, Longueville .....	" .....	9	27	23	14	21	16	6	8	15	24	26	19	211	45·49	·22
Darrynane Abbey .....	Kerry .....	4	30	29	23	25	23	14	13	22	23	30	22	269	60·23	·22
Waterford, Brook Lodge .....	Waterford .....	3	25	25	17	15	11	5	9	15	19	19	10	182	40·42	·22
Cahir, Bengurragh .....	Tipperary .....	3	26	27	20	21	17	9	9	18	19	29	20	227	42·59	·19
Carrigaholt Castle .....	Clare .....	3	29	25	21	21	19	14	10	19	19	29	21	240	41·75	·17
Broadford, Hurdlestown .....	" .....	3	28	28	19	23	20	14	12	19	17	26	22	240	48·05	·20
Gorey, Courtown House .....	Wexford .....	4	24	20	15	16	11	7	11	16	18	18	9	178	33·80	·19
Abbey Leix, Blandsfort .....	Queen's County .....	2	26	26	22	18	14	13	11	20	21	22	13	219	40·59	·19
Dublin, FitzWilliam Square ..	Dublin .....	2	21	22	19	17	13	13	10	13	17	21	12	191	28·84	·15
Kells, Headfort .....	Meath .....	4	22	20	19	20	14	11	8	18	19	22	16	201	36·58	·18
Moate, Coolatore .....	Westmeath .....	1	22	21	21	25	14	11	10	16	14	22	17	207	38·05	·18
Ballynahinch Castle .....	Galway .....	3	28	27	22	27	23	15	12	20	22	30	22	263	67·08	·26
Woodlawn .....	" .....	4	24	21	24	21	19	11	11	19	19	28	20	232	45·78	·20
Crossmolina, Enniscroe .....	Mayo .....	2	28	29	22	22	18	19	13	16	22	26	22	253	60·21	·24
Collooney, Markree Observatory ..	Sligo .....	2	23	24	21	25	17	12	12	14	16	26	21	223	45·64	·20
Mohill Rectory .....	Leitrim .....	5	24	19	23	25	16	13	10	16	20	24	19	222	44·24	·20
Loughgall, Manor House .....	Armagh .....	5	19	21	19	22	16	11	8	11	15	21	15	190	31·57	·17
Seaforde .....	Down .....	2	24	22	18	21	14	11	10	13	17	21	13	196	40·31	·21
Bushmills, Dundarave .....	Antrim .....	3	21	20	20	17	14	9	10	15	17	25	21	201	31·76	·16
Omagh, Edenfel .....	Tyrone .....	3	22	23	22	22	16	14	10	13	16	25	21	219	40·64	·19
Dunfanaghy, Horn Head .....	Donegal .....	3	24	25	21	25	16	15	14	15	18	28	23	242	47·82	·20
Killybegs, Rockmount .....	" .....	5	25	27	21	24	21	14	10	16	19	30	24	248	59·38	·24
Ireland .....	(Mean of 23 stations) ..	25	13	24	20	21	16	12	11	16	19	25	18	220	44·60	·20
BRITISH ISLES .....	( " " ) ..	22	13	23	19	18	14	11	11	14	18	23	17	203	40·86	·20

## DROUGHTS IN 1913.

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As in former years droughts have been divided into two classes, absolute and partial.

THE ABSOLUTE DROUGHT is a period of *more than* 14 consecutive days no one of which is a rain day.

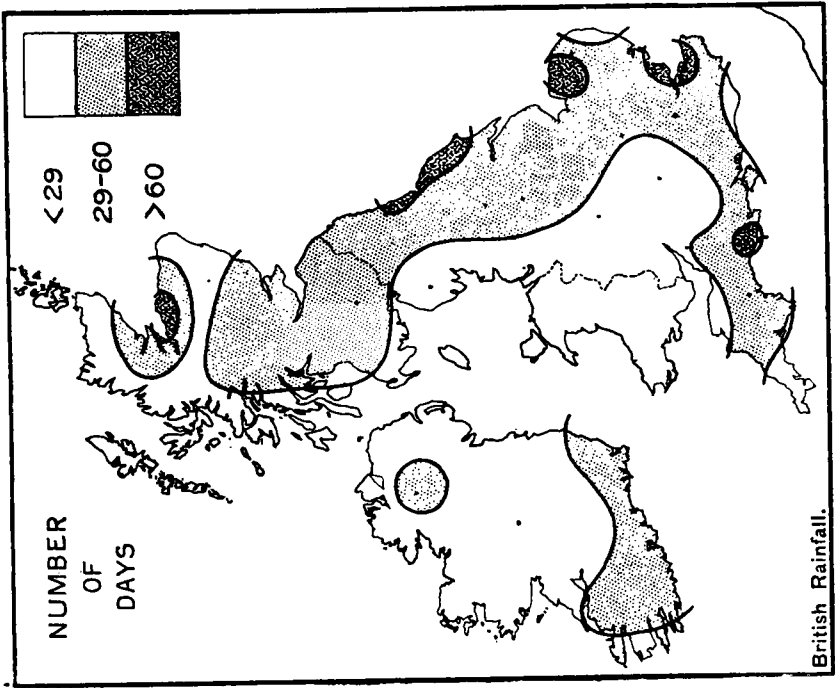
THE PARTIAL DROUGHT is a period of *more than* 28 consecutive days the mean rainfall of which does not exceed .01 in. per day.

The stations utilized for analysis are those given on pages [73-75], and these have been specially selected because they are distributed in an even manner throughout the country. All the absolute or partial droughts taking place at these stations during 1913 have been extracted, and the results are given in detail on pages [79-84] following. The names of the stations where no drought occurred during the year have been omitted from the synopsis so as to save space. A comparison of the values for 1913 with the corresponding averages for the period 1887-1912 shows that both the number of absolute droughts and their mean duration, and the length of the longest drought practically corresponded with the general average. Absolute droughts were rather more widespread than usual viewed from a geographical standpoint, since there were only 33 out of the 100 selected stations without one, against an average of 51. The statistics relative to partial droughts show a similiar agreement with the normal, their number being only 1 below the average, while their duration was exactly the average. The duration of the most long continued partial drought was 6 days above the average, and the number of stations without one was 54 out of 100, or 5 below the normal number.

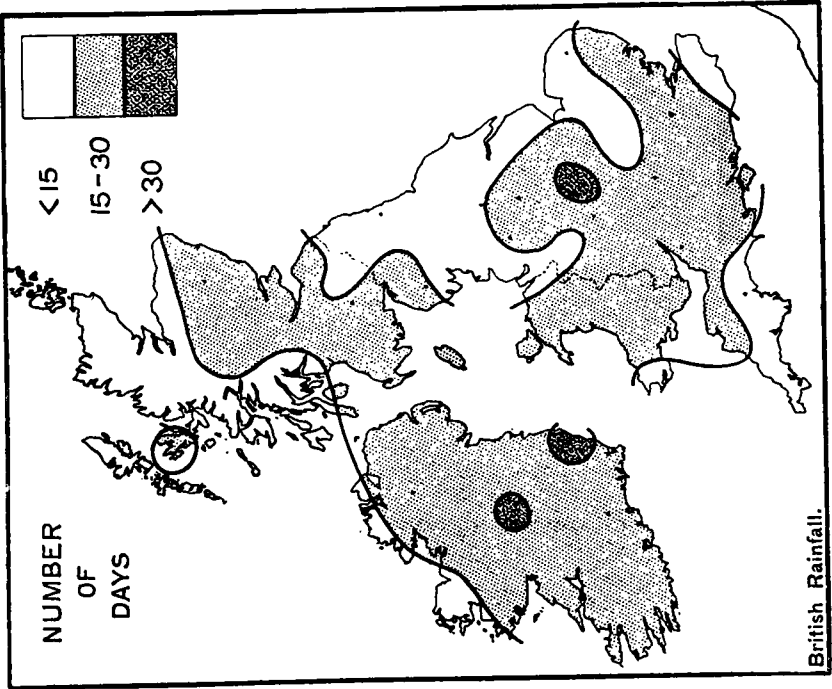
In the sketch maps on page [77] is shown the geographical distribution of absolute and partial droughts during 1913 expressed in terms of the number of days involved. Absolute droughts were unusually widespread, affecting a large part of Ireland and Wales where they are not of frequent occurrence, though a considerable part of the east coast of England was without one. The partial droughts were less abnormal in their distribution.

The only absolute drought of note in the whole year was that which began on July 22nd and which terminated very generally on August 7th. It covered almost the whole of Ireland, the most of Scotland to the south and east of the Caledonian Canal, and a small

PARTIAL DROUGHTS IN 1913.



ABSOLUTE DROUGHTS IN 1913.



area in Skye. It was general in Wales and in England, except on the east coast and in Cornwall. A drought of such wide extent is a most exceptional occurrence. At only four of the selected stations did the rainless spell extend to three weeks or more, the maximum

*Comparative Summary of Droughts.*

	ABSOLUTE DROUGHTS.				PARTIAL DROUGHTS.			
	No. of Droughts at 100 Stations	Duration.		Stations without one.	No. of Droughts at 100 Stations	Duration.		Stations without one.
		Mean.	Greatest.			Mean.	Greatest.	
		days.	days.			days.	days.	
1887	160	21	34	4	116	40	74	18
1888	34	17	20	70	8	42	50	92
1889	84	21	30	26	76	34	45	30
1890	26	18	20	78	6	30	31	94
1891	52	18	34	56	76	36	49	28
1892	72	16	20	50	34	35	64	66
1893	78	20	44	46	106	51	114	20
1894	104	18	31	20	88	37	62	26
1895	104	19	29	32	94	39	64	38
1896	54	18	26	50	98	40	75	32
1897	40	18	20	62	14	40	61	88
1898	62	17	28	54	62	38	77	52
1899	120	21	31	20	82	35	48	40
1900	28	17	21	76	18	32	35	82
1901	112	17	20	20	18	37	56	84
1902	10	17	18	90	4	37	41	96
1903	22	19	25	79	33	34	41	71
1904	12	16	18	88	18	34	41	82
1905	26	17	20	74	59	36	48	60
1906	73	17	25	47	40	36	55	62
1907	56	19	25	51	30	32	41	71
1908	74	18	32	48	52	35	54	68
1909	47	17	23	66	18	37	51	84
1910	32	16	24	70	23	33	42	78
1911	137	19	32	20	137	36	75	19
1912	105	19	32	26	68	37	69	42
Mean	66	18	26	51	53	37	56	59
1913	67	17	26	33	52	37	62	54
Diff.	+1	-1	0	-18	-1	0	+6	-5

NOTE.—The values previous to 1910 have been increased to the equivalent of 100 stations for ready comparison.

duration noted being 26 days at Aberfeldy, where the drought began five days earlier and terminated four days later than was the case generally. The rainless spell of three weeks duration at Dunvegan in Skye is worthy of notice, occurring in a district of high rainfall and in a period of the year in which drought is uncommon. As the map

showing the absolute drought of July and August is virtually a replica of that for the whole year we do not reproduce it.

The other absolute droughts included one from August 24th September 7th, which covered a very restricted area in Ireland in the counties of Westmeath and Armagh, a drought of similar duration in the county of Cork, which commenced on the last day of March and continued till the 14th of April, and a winter drought in the county of Leicester which embraced the sixteen days terminating with Christmas day.

Partial droughts were, with few exceptions, restricted to the months of July and August. As in the case of the absolute droughts the annual map may be taken as representative of the geographical distribution of the summer partial drought, a map of which is, therefore, not given separately. The partial drought of July and August did not extend over the greater part of Ireland, the whole of Wales, and contiguous English counties for some distance to the east. It was also absent in the north-west and north of Scotland, a narrow strip of the coast of England stretching from Norfolk to Sussex, and in the extreme south-west of Cornwall. The maximum duration was 62 days at Dorchester, and 50 days was exceeded in such widely scattered localities as Hull, Aberfeldy, and Waterford. In Scotland and Ireland, with the exception of a partial drought at Gordon Castle from September 18th to October 21st, no other drought was recorded, and this may also be said regarding the greater portion of England and Wales. The only station, out of the 100, reporting three partial droughts was Shoeburyness, one of the normally driest spots in Great Britain, whilst three other English stations report two. It is not necessary to refer to these other droughts in detail since they appear to have been occurrences confined in each instance to a small area and in no case covering an exceptional period.

*Droughts in 1913.*

STATION & COUNTY.	ABSOLUTE DROUGHTS.			PARTIAL DROUGHTS.			
	Began.	Ended.	Last.	Began.	Ended.	Last.	Rainfall.
<b>ENGLAND &amp; WALES.</b>			Days			Days	in.
St. Pancras (Camden Square) ... <i>London—2.</i>	July 22	Aug. 6	16	July 20	Aug. 21	33	·32
Tenterden (View Tower) ..... <i>Kent—I.</i>	None			July 23	Aug. 28	37	·36

*Droughts in 1913—(continued).*

STATION & COUNTY.	ABSOLUTE DROUGHTS.			PARTIAL DROUGHTS.			
	Began.	Ended.	Lasted.	Began.	Ended.	Lasted.	Amount.
<b>ENGLAND &amp; WALES—(con.)</b>			Days			Days	in.
Brighton (Ditchling Rd., Preston) <i>Sussex—3.</i>	July 23	Aug. 7	16	None			
Totland Bay (Aston House) ..... <i>Hampshire—1.</i>	July 20	Aug. 8	20	July 11	Aug. 21	42	·37
Petersfield (Ditcham Park)... .. <i>Hampshire—5.</i>	July 20	Aug. 6	18	July 16	Aug. 21	37	·34
Goring (Elmcroft)..... <i>Oxfordshire—4.</i>	July 22	Aug. 6	16	None			
Cambridge (Botanic Gardens)..... <i>Cambridgeshire—2.</i>	None			July 22	Aug. 21	31	·30
Shoeburyness ..... <i>Essex—5.</i>	July 23	Aug. 9	18	Feb. 3 May 31 July 18	Mar. 5 July 3 Sept. 5	31 34 50	·30 ·33 ·49
Colchester (Hill House, Lexden). <i>Essex—5.</i>	May 13	May 28	16	July 19	Aug. 22	35	·31
Beccles (Sotterley Hall) ..... <i>Suffolk—3.</i>	July 24	Aug. 8	16	None			
Swaffham (The Paddocks) ..... <i>Norfolk—4.</i>	None			May 10 July 24	June 7 Aug. 30	29 38	·29 ·38
Salisbury Plain (Shrewton)..... <i>Wiltshire—3.</i>	July 21	Aug. 8	19	None			
Dorchester (Wollaston House) ... <i>Dorsetshire—3.</i>	July 20	Aug. 8	20	June 8	Aug. 8	62	·45
Ashburton (Druid House) ..... <i>South Devon—4.</i>	None			July 10	Aug. 15	37	·34
Bude (The School House) ..... <i>Cornwall—1.</i>	July 22	Aug. 7	17	June 24	Aug. 7	45	·41
Angersleigh (Leigh Court) ..... <i>Somerset—3.</i>	None			July 10	Aug. 12	34	·30
Simonsbath ..... <i>Somerset—5.</i>	July 23	Aug. 7	16	None			
Mickleton (Bank House) ..... <i>Gloucestershire—4.</i>	July 22	Aug. 8	18	None			



*Droughts in 1913—(continued).*

STATION & COUNTY.	ABSOLUTE DROUGHTS.			PARTIAL DROUGHTS.			
	Began.	Ended.	Lasted.	Began.	Ended.	Lasted.	Amount.
<b>ENGLAND &amp; WALES—(con.)</b>			Days			Days	in.
Clifton (Pembroke Road)..... <i>Gloucestershire—5.</i>	July 22	Aug. 8	18	July 11	Aug. 8	29	·29
Hereford (Holmer Hall) ..... <i>Herefordshire—1.</i>	July 22	Aug. 7	17	None			
Mayfield House [Ashbourne]..... <i>Staffordshire—5.</i>	July 22	Aug. 7	17	July 7	Aug. 9	34	·20
Blaby (Whetstone Road) ..... <i>Leicestershire—4.</i>	July 22 Dec. 10	Aug. 8 Dec. 25	18 16	July 8	Aug. 10	34	·29
Market Deeping (Wilsthorpe). ... <i>Lincolnshire—2.</i>	July 22	Aug. 5	15	July 11	Aug. 21	42	·42
Spilsby (Ashby Road)..... <i>Lincolnshire—4.</i>	None			July 24	Aug. 21	29	·24
Worksop (Hodsock Priory) ..... <i>Nottinghamshire—5.</i>	July 22	Aug. 7	17	July 22	Aug. 21	31	·29
Northwich (Winnington) ..... <i>Cheshire—2.</i>	July 22	Aug. 7	17	None			
Meltham (Harewood Lodge) ..... <i>Yorkshire, West Riding—8.</i>	July 24	Aug. 7	15	July 22	Aug. 21	31	·24
Hull (Pearson Park) ..... <i>Yorkshire, East Riding—3.</i>	None			June 25	Aug. 21	58	·56
Thirsk (Mount St. John) ..... <i>Yorkshire, North Riding—2.</i>	None			July 11	Aug. 20	41	·41
Sleights (Brook Park) ..... <i>Yorkshire, North Riding—5.</i>	None			July 24 Nov. 21	Aug. 21 Dec. 25	29 35	·29 ·35
Sunderland (W. Hendon House).. <i>Durham—2.</i>	None			July 7 Nov. 27	Aug. 20 Dec. 25	45 29	·32 ·20
Haltwhistle (Bellister Castle) ... <i>Northumberland—2.</i>	July 22	Aug. 14	24	July 16	Aug. 20	36	·32
Glanton (Glanton Pyke Gardens) <i>Northumberland—6.</i>	None			July 7	Aug. 4	29	·21
Treherbert (Tyn-y-waun) ..... <i>Glamorgan—6.</i>	July 22	Aug. 8	18	None			

*Droughts in 1913—(continued).*

STATION & COUNTY	ABSOLUTE DROUGHTS.			PARTIAL DROUGHTS.			
	Began.	Ended.	Lasted.	Began.	Ended.	Lasted.	Amount
<b>ENGLAND &amp; WALES—(con.)</b>			Days			Days	in.
Carmarthen (The Friary) ..... <i>Carmarthen—2.</i>	July 22	Aug. 7	17	None			
Aberystwith (Gogerddan) ..... <i>Cardigan—2.</i>	July 22	Aug. 7	17	None			
Birmingham W.W. (Tyrmynydd) ..... <i>Radnor—1.</i>	July 22	Aug. 7	17	None			
Lake Vyrnwy ..... <i>Montgomery—5.</i>	July 22	Aug. 7	17	None			
Abersoch ..... <i>Carnarvon—4.</i>	July 22	Aug. 7	17	None			
Lligwy ..... <i>Anglesey.</i>	July 22	Aug. 7	17	None			
<b>ISLE OF MAN.</b>							
Douglas (Clype Res., Onchan)...	July 22	Aug. 7	17	July 22	Aug. 20	30	·28
<b>SCOTLAND.</b>							
Whithorn (Cutroach) ..... <i>Wigtown—4.</i>	July 22	Aug. 8	18	None			
Jardington [Dumfries]..... <i>Kirkcudbright—5.</i>	July 22	Aug. 8	18	July 7	Aug. 8	33	·33
Meggat Water (Cramilt Lodge) ... <i>Selkirk—2.</i>	None			July 22	Aug. 20	30	·16
Marchmont House ..... <i>Berwick—4.</i>	July 14	July 29	16	July 14	Aug. 15	33	·30
Motherwell (Dalzell Gardens) ... <i>Lanark—4.</i>	July 22	Aug. 7	17	July 7	Aug. 19	44	·42
Girvan (Pinmore)..... <i>Ayr—8.</i>	July 23	Aug. 7	16	July 22	Aug. 19	29	·28
Buchlyvie (The Mause) ..... <i>Stirling—1.</i>	None			July 22	Aug. 19	29	·22
Rothsay (Glenburn) ..... <i>Bute—1.</i>	None			July 22	Aug. 19	29	·17

*Droughts in 1913—(continued).*

STATION & COUNTY.	ABSOLUTE DROUGHTS.			PARTIAL DROUGHTS.			
	Began.	Ended.	Lasted.	Began.	Ended.	Lasted.	Amount.
<b>SCOTLAND—(con.)</b>			Days			Days	in.
Campbeltown (Witchburn)..... <i>Argyll—10.</i>	July 22	Aug. 7	17	None			
Cupar (Rankeillour) ..... <i>Fife—3.</i>	July 20	Aug. 4	16	July 7	Aug. 20	45	·44
Aberfeldy (Dall Avon) ..... <i>Perth—11.</i>	July 17	Aug. 11	26	June 28	Aug. 20	54	·47
Fettercairn (The Burn) ..... <i>Kincardine—1.</i>	July 20	Aug. 4	16	July 7	Aug. 9	34	·29
Cromar (Logie Coldstone School). <i>Aberdeen—1.</i>	July 20	Aug. 4	16	None			
New Deer Schoolhouse ..... <i>Aberdeen—4.</i>	July 20	Aug. 4	16	None			
Gordon Castle ..... <i>Moray—2.</i>	None			July 20 Sept. 18	Aug. 20 Oct. 21	32 34	·29 ·32
Muckerach [Grantown] ..... <i>Inverness—3.</i>	July 18	Aug. 2	16	None			
Fort Augustus (St. Benedict's)... <i>Inverness—6.</i>	July 20	Aug. 4	16	July 15	Aug. 20	37	·31
Glenleven (Kinlochmore) ..... <i>Inverness—17.</i>	None			July 18	Aug. 19	33	·21
Skye (Dunvegan) ..... <i>Inverness—18.</i>	July 22	Aug. 11	21	None			
Invershin ..... <i>Sutherland—1.</i>	None			July 19	Aug. 19	32	·32
<b>IRELAND.</b>							
Skibbereen Rectory.. ..... <i>Cork—6.</i>	July 17	Aug. 9	24	June 23	Aug. 9	48	·47
Mallow (Longueville) ..... <i>Cork—9.</i>	Mar. 31 July 17	Apr. 14 Aug. 6	15 21	July 12	Aug. 20	40	·35
Darrynane Abbey ..... <i>Kerry—4.</i>	July 22	Aug. 7	17	None			
Waterford (Brook Lodge) ..... <i>Waterford—3.</i>	July 22	Aug. 7	17	June 23	Aug. 15	54	·51

*Droughts in 1913—(continued).*

STATION & COUNTY.	ABSOLUTE DROUGHTS.			PARTIAL DROUGHTS.			
	Began.	Ended.	Lasted.	Began.	Ended.	Lasted.	Amount.
<b>IRELAND—(con.)</b>			Days			Days	in.
Cahir (Bengurragh) ..... <i>Tipperary—3.</i>	July 22	Aug. 6	16	None			
Carrigaholt Castle ..... <i>Clare—3.</i>	July 22	Aug. 8	18	July 22	Aug. 19	29	·28
Gorey (Courtown House) ..... <i>Wexford—4.</i>	July 19 Dec. 9	Aug. 7 Dec. 23	20 15	June 20	Aug. 7	49	·44
Abbey Leix (Blandsfort)..... <i>Queen's County—2.</i>	July 22	Aug. 8	18	None			
Dublin (FitzWilliam Square)..... <i>Dublin—2.</i>	July 22	Aug. 7	17	None			
Kells (Headfort) ..... <i>Meath—4.</i>	July 22	Aug. 7	17	None			
Moate (Coolatore) ..... <i>Westmeath—1.</i>	July 22 Aug. 24	Aug. 8 Sept. 7	18 15	None			
Ballynahinch Castle..... <i>Galway—3.</i>	July 22	Aug. 7	17	None			
Woodlawn .... <i>Galway—4.</i>	July 22	Aug. 7	17	None			
Collooney (Markree Observatory) <i>Sligo—2.</i>	July 22	Aug. 7	17	None			
Mohill Rectory ..... <i>Leitrim—5.</i>	July 22	Aug. 7	17	None			
Loughgall (Manor House) ..... <i>Armagh—5.</i>	Aug. 24	Sept. 7	15	None			
Seaforde ..... <i>Down—2.</i>	July 22	Aug. 7	17	None			
Bushmills (Dundarave)..... <i>Antrim—3.</i>	July 22	Aug. 7	17	None			
Omagh (Edenfel) ..... <i>Tyrone—3.</i>	July 22	Aug. 7	17	July 22	Aug. 19	29	·29
Killybegs (Rockmount) ..... <i>Donegal—5.</i>	July 22	Aug. 7	17	None			

## RAIN SPELLS IN 1913.

THE definition of a Rain Spell is :—

A RAIN SPELL is a period of *more than* 14 consecutive days, every one of which is a rain day.

This definition was introduced in order that wet periods might be studied on a basis uniform with that employed in the case of absolute droughts. Eleven years' data have now been accumulated and reference to the annexed table of rain spells since 1903 shows that the characteristic feature of last year viewed in this relation was a smaller number of rain spells than the average, a mean duration of 21 days, this being just the average duration, and a mean fall of .29 in. per day, this amount being in excess of any previous year in the period under review except in 1911 when it was just equalled.

*Comparative Table of Rain Spells at 100 Stations.*

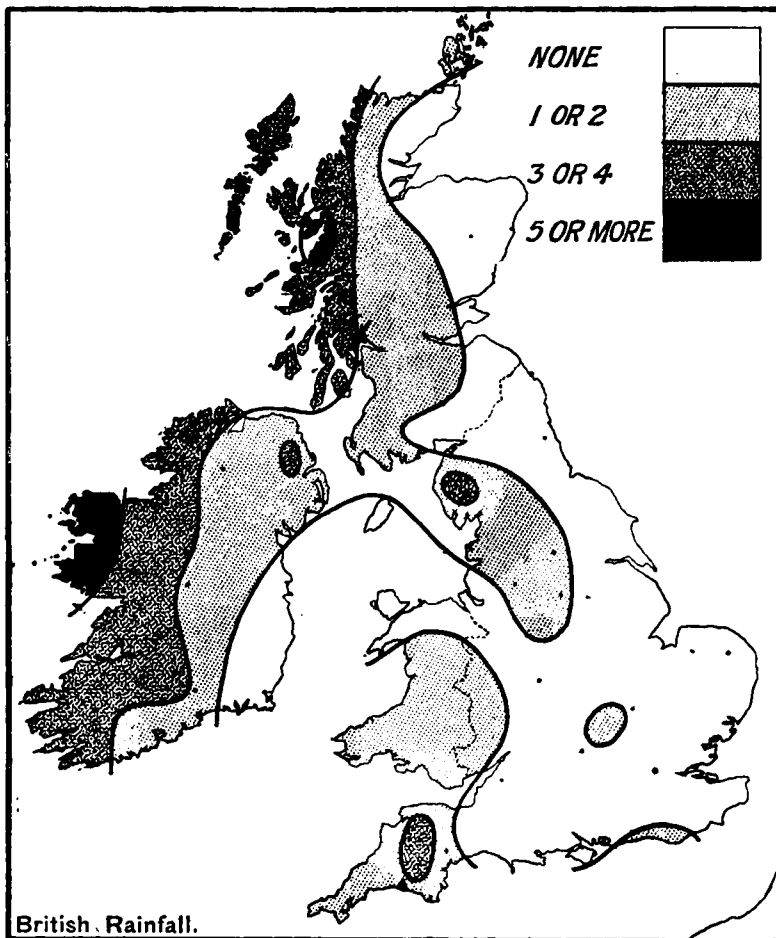
Year.	No. of Rain Spells.	DURATION OF SPELLS.				STATIONS WITH			
		Mean.		Greatest.					
		days.	Mean R per day. in.	days.	Mean R per day. in.	None.	1 or 2.	3 or 4.	5 or more.
1903...	282	22	.28	52	.51	11	41	26	22
1904...	152	19	.22	34	.27	31	51	11	7
1905...	121	19	.24	44	.38	45	39	12	4
1906...	125	21	.25	50	.40	38	47	11	4
1907...	177	21	.25	45	.17	38	30	18	14
1908...	159	19	.24	49	.43	21	59	12	8
1909...	110	19	.26	45	.12	36	52	12	0
1910...	235	21	.25	64	.30	24	34	25	17
1911...	185	22	.29	39	.15	19	50	23	8
1912...	198	22	.27	58	.19	29	32	30	9
1913...	128	21	.29	64	.19	44	34	19	3
Average	170	21	.26	49	.28	30	43	18	9

NOTE.—The values previous to 1910 have been increased to the equivalent of 100 stations for comparison.

The map showing the geographical distribution of rain spells in 1913 indicates that none occurred over the greater part of England, the whole of the east coast of Great Britain and the south-east

coast of Ireland. None were noted in the north of Wales over an area embracing the counties of Anglesey, Carnarvon and Denbigh. One or two spells occurred over practically the whole of the west coasts, and in Wales with the above mentioned exception. The maximum number noted was six in the western half of Connaught, but, with this exception, only at one other station, in West Inverness-shire, were more than four reported at any of the 100 selected stations.

### RAIN SPELLS IN 1913.



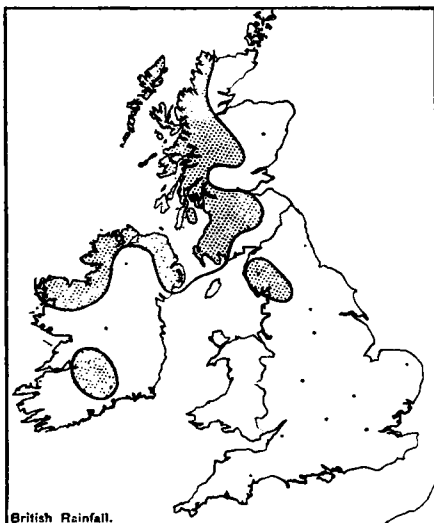
The year opened with a rain spell, which had commenced generally in November or December, 1912, still in progress, though at a few places the rain spell was confined to January. This spell embraced fully the western half of Ireland, a small part of the western highlands of Scotland, another relatively small patch in the Pennines and a portion of South Wales, and the Devon-Cornwall peninsula. The dates of commencement and termination are given in the list in order

to complete the data given in *British Rainfall, 1912*, pp. [81-87], but as, strictly speaking, it cannot be included among the rain spells of 1913 the figures are printed in italics and have been excluded in working the mean for the year 1913.

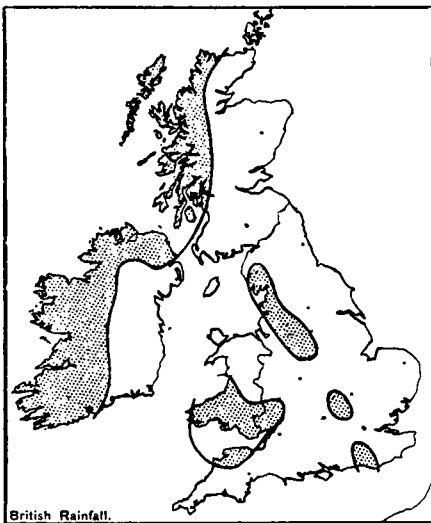
Only two other rain spells in the year need be specially considered, one in March, the other in the late autumn. The geographical extent of these two spells is shown in the accompanying sketch maps.

The rain spell of March was confined mainly to the west and north-west of Scotland, the north of Ireland, a small inland patch in the south of Ireland and to the English Lake District; the rest of the country escaped. The spell commenced generally between February 24th and 28th, and lasted until between March 22nd and 25th.

RAIN SPELL OF MARCH, 1913.



THE AUTUMN RAIN SPELL, 1913.



The autumn rain spell of 1913 was really made up of several time groupings and covered the whole western half of Ireland and the west and north-west of Scotland, while four isolated patches appear in various parts of England and Wales. This rain spell was of long duration in some districts, exceeding 50 days at Islay, in Argyll, at Darrynane and Ballynahinch Castle, the longest spell (55 days) occurring at the first-named station, and embracing the period October 24th to December 17th. At the above stations, and one or two other isolated stations in the extreme west of Scotland and Ireland, the rain spell persisted from the end of October till about the middle of December. The period over which the autumn rain spell prevailed was far from regular, taking the country as a whole, but broadly

speaking fell into fairly regular groupings in different parts of the country. Thus in the south of Ireland there was a limited area in which it occurred over part of the two months October and November, and in Westmorland and parts of south Wales it had the same time distribution. In three narrow patches running N.W. and S.E. and extending from Brighton to Lancashire the rain spell was confined to November, and in portions of the northern half of Ireland and in a small section of Wales this also obtained. There was a rain spell in part of November and December mainly restricted to the west of Ireland and Scotland. This last spell prevailed in general from about November 10th or 12th to December 4th or 5th, and gave some of the

*Rain Spells of a Mean Rate of .40 in. or more per day in 1913.*

Div.	Station.	Began.	Ended.	Lasted.	Total Fall.	Rain per Day.		
						Max.	Min.	Mean.
V.	Ashburton (Druid Ho.)	Apr. 24	May 12	19 days.	7.84 in.	2.14 in.	.04 in.	.41 in.
„	Simonsbath .....	Dec. 22	Jan. 20	30	12.45	1.22	.01	.42
X.	Dungeon Ghyll ...	(1912) Nov. 30	Jan. 8	40	23.93	3.81	.01	.60
„	„ „ „ ...	Jan. 28	Feb. 11	15	13.87	2.86	.01	.92
„	„ „ „ ...	Mar. 1	Mar. 23	23	13.27	1.89	.01	.58
„	„ „ „ ...	Oct. 25	Nov. 21	28	13.73	1.65	.01	.49
XI.	Treherbert .....	Dec. 22	Jan. 8	18	10.24	1.45	.08	.57
„	„ „ „ „ .....	(1912) Oct. 25	Nov. 25	32	17.43	3.03	.01	.54
XV.	Loch Awe (Ford)..	Nov. 30	Jan. 3	35	14.70	1.43	.01	.42
„	„ „ „ „ ...	(1912) Feb. 28	Mar. 20	21	9.83	1.22	.04	.47
„	„ „ „ „ ...	Nov. 10	Dec. 4	25	12.77	1.22	.05	.51
XVIII.	Loch Nevis(Inverie)	Jan. 27	Feb. 11	16	7.77	1.50	.02	.49
„	„ „ „ „	Feb. 28	Mar. 23	24	9.63	.87	.03	.40
„	„ „ „ „	Oct. 18	Nov. 4	18	9.09	1.93	.06	.50
„	„ „ „ „	Nov. 10	Dec. 4	25	14.33	2.02	.07	.57
„	Kinlochmore .....	Feb. 25	Mar. 23	27	13.50	1.12	.02	.50
„	„ „ „ „ .....	Nov. 10	Dec. 4	25	15.38	1.50	.06	.62
„	Skye (Dunvegan)..	Feb. 24	Mar. 23	28	11.19	1.51	.03	.40
„	„ „ „ „ ...	Oct. 12	Nov. 6	26	11.17	1.72	.02	.43
„	„ „ „ „ ...	Nov. 10	Dec. 5	26	10.99	1.32	.05	.42
„	Glencarron Lodge	Oct. 11	Nov. 4	25	13.09	2.69	.01	.52
„	„ „ „ „	Nov. 12	Dec. 5	24	17.77	2.27	.01	.74
XIX.	Loch Stack .....	„ 12	„ 5	24	15.40	3.32	.03	.64

highest mean rates of rainfall per day noted during the year, reaching .74 in. at Glencarron Lodge, .64 in. at Loch Stack, and .62 in. at Glenleven, and extending over 24 or 25 days.



No rain spell occurred anywhere in the months of June or August, and only one instance in May, July or September, pointing to the almost complete absence of disturbed atmospheric conditions for any protracted period during these months.

The appended list contains all cases in 1913 of rain spells at any of the 100 selected stations in which the mean rainfall per day amounted to as much as .40 in. The cases in italic type refer to spells which properly belong to 1912, but which terminated in 1913.

In the list of rain spells the places where none occurred have not been printed. The names of all the stations examined will be found in the Table of Rain Days on pp. [73]-[75].

*Table of Rain Spells, 1913.*

STATION & COUNTY.	Began.	Ended.	Lasted.	Total Rain.	RAIN PER DAY.		
					Max.	Min.	Mean
ENGLAND & WALES.			Days	in.	in.	in.	in.
Brighton (Ditchling Rd., Preston) <i>Sussex—3.</i>	Nov. 4	Nov. 18	15	3.59	.91	.01	.24
Newport Pagnell (The Croft)... <i>Buckinghamshire—5.</i>	Nov. 1	Nov. 15	15	1.65	.51	.01	.11
Ashburton (Druid House) ..... <i>South Devonshire—4.</i>	Jan. 2	Jan. 25	24	8.49	1.38	.01	.35
	Jan. 27	Feb. 10	15	5.24	1.19	.02	.35
	Apr. 24	May 12	19	7.84	2.14	.04	.41
Bude (The School House) ..... <i>Cornwall—I.</i>	Jan. 8	Jan. 23	16	3.21	.47	.02	.20
St. Austell (Trevarna)... (1912) <i>Cornwall—2.</i>	Dec. 22	Jan. 24	34	9.28	1.23	.01	.27
Simonsbath ..... (1912) <i>Somerset—5.</i>	Dec. 22	Jan. 20	30	12.45	1.22	.01	.42
	Apr. 24	May 12	19	7.05	1.17	.03	.37
	Nov. 9	Dec. 12	34	11.36	1.20	.01	.33
Hereford (Holmer Hall) ..... <i>Herefordshire—I.</i>	Oct. 27	Nov. 13	18	2.98	.82	.01	.17
Mayfield House [Ashbourne].. <i>Staffordshire—5.</i>	Nov. 7	Nov. 21	15	2.41	.47	.01	.16
St. Michael's-on-Wyre Vicarage <i>North Lancashire—5.</i>	Dec. 20	Jan. 7	19	2.02	.31	.01	.11
	(1912) Nov. 4	Nov. 20	17	3.33	1.15	.03	.20
Settle (The Terrace)..... (1912) <i>Yorkshire, West Riding—2.</i>	Dec. 23	Jan. 7	16	2.83	.53	.01	.18
	Mar. 1	Mar. 16	16	4.82	1.17	.01	.30

Table of Rain Spells, 1913—(continued).

STATION & COUNTY.	Began.	Ended.	Lasted.	Total Rain.	RAIN PER DAY.		
					Max.	Min.	Mean
ENGLAND & WALES—(con.)			Days	in.	in.	in.	in.
Meltham (Harewood Lodge) ...	Jan. 10	Jan. 25	16	2·74	·73	·01	·17
Yorkshire, West Riding—8.	Nov. 7	Nov. 21	15	4·04	·59	·02	·27
Kirkby Stephen (Redman Ho.)	Dec. 23	Jan. 6	15	3·54	·80	·01	·24
Westmorland—I.	(1912)						
Dungeon Ghyll ..... (1912)	Nov. 30	Jan. 8	40	23·93	3·81	·01	·60
Westmorland—2.	Jan. 28	Feb. 11	15	13·87	2·86	·01	·92
	Mar. 1	Mar. 23	23	13·27	1·89	·01	·58
	Oct. 25	Nov. 21	28	13·73	1·65	·01	·49
Treherbert (Tyn-y-waun) (1912)	Dec. 22	Jan. 8	18	10·24	1·45	·08	·57
Glamorganshire—6.	Oct. 25	Nov. 25	32	17·43	3·03	·01	·54
Carmarthen (The Friary).....	Apr. 24	May 13	20	5·74	1·24	·01	·29
Carmarthenshire—2.	Nov. 4	Nov. 25	22	5·54	1·15	·01	·25
Fishguard (Goodwick Station)..	Dec. 6	Jan. 24	50	11·08	·83	·01	·22
Pembrokeshire—2.	(1912)						
	Nov. 4	Nov. 20	17	3·48	·91	·01	·20
Aberystwyth (Gogerddan) .....	Dec. 17	Jan. 1	16	4·05	·93	·02	·35
Cardigan—2.	(1912)						
	Nov. 27	Dec. 12	16	2·58	·51	·01	·16
Birmingham W.W. (Tyrmynydd)	Dec. 9	Jan. 8	31	10·23	1·19	·01	·33
Radnorshire—I.	(1912)						
	Apr. 24	May 13	20	6·55	1·90	·01	·33
Lake Vyrnwy ..... (1912)	Apr. 24	May 12	19	3·96	·86	·03	·21
Montgomeryshire—5.							
SCOTLAND.							
Whithorn (Cutroach) .....	Feb. 28	Mar. 15	16	3·19	·75	·01	·20
Wigtown—4.							
Meggat Water (Cramilt Lodge)	Mar. 1	Mar. 23	23	5·68	·77	·02	·25
Selkirkshire—2.							
Motherwell (Dalzell Gardens)...	Mar. 1	Mar. 23	23	3·50	·73	·01	·15
Lanarkshire—4.							
Girvan (Pinmore) .....	Jan. 28	Feb. 11	15	3·31	1·09	·01	·22
Ayrshire—8.	Mar. 1	Mar. 16	16	2·80	·63	·01	·18
Buchlyvie (The Manse) .....	Jan. 28	Feb. 11	15	5·90	·98	·01	·39
Stirlingshire—I.							

*Table of Rain Spells, 1913—(continued).*

STATION & COUNTY.	Began.	Ended.	Lasted.	Total Rain.	RAIN PER DAY.		
					Max.	Min.	Mean
SCOTLAND—(con.)			Days	in.	in.	in.	in.
Rothsay (Glenburn) ... (1912) <i>Buteshire—1.</i>	Dec. 1	Jan. 3	34	9·64	·82	·02	·28
	Feb. 28	Mar. 16	17	4·07	·48	·09	·24
	Nov. 9	Dec. 4	26	6·59	·76	·01	·25
Loch Awe (Ford) ..... (1912) <i>Argyll—6.</i>	Nov. 30	Jan. 3	35	14·70	1·43	·01	·42
	Jan. 27	Feb. 11	16	6·17	1·62	·01	·39
	Feb. 28	Mar. 20	21	9·83	1·22	·04	·47
	Nov. 10	Dec. 4	25	12·77	1·22	·05	·51
Campbeltown (Witchburn)..... <i>Argyll—10.</i>	Jan. 26	Feb. 11	17	3·51	·81	·01	·21
	Feb. 28	Mar. 16	17	3·42	·48	·02	·20
	Nov. 1	Nov. 21	21	5·53	·83	·05	·26
Islay (Eallabus)..... <i>Argyll—14.</i>	Jan. 5	Jan. 20	16	2·57	·62	·01	·16
	„ 26	Feb. 11	17	4·42	·74	·02	·26
	Feb. 24	Mar. 18	23	5·48	·71	·02	·24
	Oct. 24	Dec. 17	55	10·31	·73	·02	·19
Mull (Ulva) ..... <i>Argyll—14. —</i>	Feb. 28	Mar. 20	21	8·23	1·06	·01	·39
	Oct. 18	Nov. 4	18	6·81	1·56	·06	·38
	Nov. 10	Dec. 17	38	12·19	·90	·02	·32
Aberfeldy (Dall Avon) (1912) <i>Perthshire—11.</i>	Dec. 6	Jan. 3	29	8·36	1·12	·01	·29
	Mar. 1	Mar. 22	22	4·78	·76	·01	·22
Fort Augustus (St. Benedict's) <i>Inverness-shire—6.</i>	Feb. 25	Mar. 23	27	6·81	·75	·01	·25
	Nov. 12	Dec. 4	23	7·22	·89	·02	·31
Loch Nevis (Inverie) ..... <i>Inverness-shire—12.</i>	Jan. 27	Feb. 11	16	7·77	1·50	·02	·49
	Feb. 28	Mar. 23	24	9·63	·87	·03	·40
	Apr. 24	May 9	16	4·02	·55	·03	·25
	Oct. 18	Nov. 4	18	9·09	1·93	·06	·50
	Nov. 10	Dec. 4	25	14·33	2·02	·07	·57
Glenleven (Kinlochmore) ..... <i>Inverness-shire—17.</i>	Feb. 25	Mar. 23	27	13·50	1·12	·02	·50
	Nov. 10	Dec. 4	25	15·38	1·50	·06	·62
Skye (Dunvegan) ..... <i>Inverness-shire—18.</i>	Jan. 28	Feb. 11	15	5·90	1·32	·05	·39
	Feb. 24	Mar. 23	28	11·19	1·51	·03	·40
	Oct. 12	Nov. 6	26	11·17	1·72	·02	·43
	Nov. 10	Dec. 5	26	10·99	1·32	·05	·42
Glencarron Lodge..... <i>Ross-shire—9.</i>	Feb. 28	Mar. 15	16	5·34	1·22	·04	·33
	May 16	June 13	29	11·43	1·63	·01	·39
	Oct. 11	Nov. 4	25	13·09	2·69	·01	·52
	Nov. 12	Dec. 5	24	17·77	2·27	·01	·74

Table of Rain Spells, 1913—(continued).

STATION & COUNTY.	Began.	Ended.	Lasted.	Total Rain.	RAIN PER DAY.		
					Max.	Min.	Mean
SCOTLAND—(con.)							
			Days	in.	in.	in.	in.
Loch Stack (Ardchullin).....	Jan. 28	Feb. 11	15	4·93	1·02	·01	·33
<i>Sutherland—5.</i>	Feb. 26	Mar. 20	23	6·55	·89	·03	·28
	Nov. 12	Dec. 5	24	15·40	3·32	·03	·64
IRELAND.							
Skibbereen Rectory..... (1912)	Nov. 30	Jan. 3	35	8·49	·88	·01	·24
<i>Cork—6.</i>	Jan. 5	Jan. 23	19	6·22	·81	·01	·33
	„ 26	Feb. 9	15	3·42	·87	·01	·23
	Oct. 25	Nov. 20	27	6·74	·73	·02	·25
Mallow (Longueville) .....	Jan. 5	Jan. 24	20	5·20	1·17	·01	·26
<i>Cork—9.</i>	Nov. 4	Nov. 25	22	5·44	·85	·01	·25
Darrynane Abbey..... (1912)	Nov. 30	Jan. 24	56	15·16	·96	·02	·27
<i>Kerry—4.</i>	Jan. 26	Feb. 11	17	2·59	·45	·01	·15
	Apr. 10	May 13	34	8·21	1·13	·01	·24
	Oct. 25	Dec. 15	52	10·13	·80	·02	·19
Cahir (Bengurragh) ..... (1912)	Nov. 30	Jan. 10	42	8·29	1·50	·01	·20
<i>Tipperary—3.</i>	Feb. 28	Mar. 16	17	2·50	·60	·01	·15
	Apr. 23	May 12	20	5·44	1·04	·04	·27
	Oct. 26	Nov. 26	32	6·81	·87	·01	·21
Carrigaholt Castle ..... (1912)	Nov. 22	Jan. 24	64	12·35	·58	·02	·19
<i>Clare—3.</i>	Jan. 27	Feb. 10	15	2·17	·40	·01	·14
	Apr. 23	May 12	20	4·06	·72	·01	·20
	Nov. 4	Dec. 12	39	6·76	·95	·01	·17
Broadford (Hurdlestown) (1912)	Nov. 30	Jan. 3	35	6·54	·58	·01	·19
<i>Clare—3.</i>	Jan. 5	Jan. 24	20	5·41	1·10	·03	·27
	Feb. 28	Mar. 24	25	4·87	·55	·01	·19
	Nov. 7	Nov. 25	19	4·32	·71	·01	·23
Abbey Leix (Blandsfort).....	Jan. 27	Feb. 10	15	2·53	·52	·01	·17
<i>Queen's County—2.</i>							
Kells (Headfort) .....	Jan. 27	Feb. 10	15	2·81	·66	·02	·19
<i>Mexth—4.</i>							
Moate (Coolatore).....	Jan. 27	Feb. 11	16	3·00	·80	·01	·19
<i>Westmeath—I.</i>							
allynahinch Castle.....	Jan. 9	Jan. 24	16	4·69	·90	·03	·29
<i>Galway—3.</i>	„ 27	Feb. 10	15	3·94	·53	·11	·26
	Mar. 1	Mar. 23	23	5·34	·90	·03	·23
	Apr. 24	May 13	20	5·74	1·06	·01	·29
	Sept. 10	Sept. 24	15	5·57	2·10	·02	·37
	Oct. 25	Dec. 15	52	12·60	1·00	·03	·24

Table of Rain Spells, 1913—(continued).

STATION & COUNTY.	Began.	Ended.	Lasted.	Total Rain.	RAIN PER DAY.		
					Max.	Min.	Mean
IRELAND—(con.)			Days	in.	in.	in.	in.
Woodlawn ..... (1912)	Dec. 4	Jan. 3	31	4·99	·50	·02	·16
Galway—4.	Nov. 4	Nov. 20	17	2·62	·48	·01	·15
	„ 22	Dec. 11	20	3·73	1·65	·01	·19
Crossmolina (Enniscoe)... (1912)	Nov. 22	Jan. 19	59	20·68	1·08	·04	·35
Mayo—2.	Jan. 27	Feb. 10	15	4·63	·89	·05	·31
	Feb. 28	Mar. 23	24	6·63	·66	·02	·28
	July 4	July 21	18	1·47	·27	·02	·08
	Nov. 7	Nov. 25	19	5·70	2·04	·02	·30
	„ 29	Dec. 13	15	3·20	1·39	·02	·20
Collooney (Markree Observatory)	Jan. 27	Feb. 10	15	2·86	·45	·05	·19
Sligo—2.	Mar. 4	Mar. 22	19	4·08	·40	·02	·22
	Nov. 7	Nov. 25	19	4·47	1·10	·03	·24
Mohill Rectory ..... (1912)	Dec. 5	Jan. 3	30	5·07	·41	·02	·17
Leitrim—5.	Jan. 27	Feb. 10	15	2·92	·69	·07	·19
	Nov. 7	Nov. 21	15	2·27	·43	·01	·15
Loughgall (Manor House) .....	Jan. 27	Feb. 10	15	1·44	·27	·01	·10
Armagh—5.	Mar. 1	Mar. 16	16	1·82	·29	·01	·11
	Nov. 6	Nov. 20	15	1·72	·44	·01	·11
Seaforde .....	Feb. 28	Mar. 19	20	2·98	·54	·02	·15
Down—2.							
Bushmills (Dundarave) .....	Feb. 28	Mar. 16	17	2·73	·36	·04	·16
Antrim—3.	Nov. 6	Nov. 21	16	3·67	·87	·03	·23
Omagh (Edenfel) ..... (1912)	Dec. 5	Jan. 3	30	6·42	·55	·02	·21
Tyrone—3.	Jan. 27	Feb. 10	15	3·21	·47	·05	·21
Dunfanaghy (Horn Head) (1912)	Dec. 27	Jan. 10	15	3·24	·67	·03	·22
Donegal—3.	Jan. 27	Feb. 10	15	3·79	·54	·04	·25
	Feb. 28	Mar. 23	24	4·32	·63	·02	·18
	Nov. 12	Dec. 12	31	8·14	1·15	·02	·26
Killybegs (Rockmount) (1912)	Nov. 22	Jan. 3	43	12·40	·80	·02	·29
Donegal—5.	Jan. 27	Feb. 11	16	4·40	·58	·01	·28
	Feb. 28	Mar. 24	25	5·79	·76	·01	·23
	Oct. 25	Dec. 12	49	14·27	1·19	·03	·29

## DURATION OF RAINFALL IN 1913.

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It is now eleven years since a section of *British Rainfall* was first devoted entirely to the discussion of records of the Duration of Rainfall as measured from the traces of self-recording instruments. In the volume for 1903 we were able to print results for five stations, and expressed the hope that we might be able to secure the co-operation of all Observers equipped with the necessary apparatus. Whilst we cannot help being aware that this hope has not been realised to the full, for the number of self-recording rain gauges in use at the present day in the British Isles must number several hundreds, it is gratifying to find that each year new records reach us, and the original five, four of which we owed to the enterprise of a single Observer, have now grown to 34. The care required to keep an automatic rain gauge at work without serious failure throughout the year, and the work of analysing the traces in order to extract the required information, are not small, and we feel that meteorologists owe a debt of gratitude to those Observers who have voluntarily taken upon themselves the task of measuring this very important climatic element.

The distribution of the stations for which records are now available still leaves much to be desired. The vast majority lie in the south and centre of England. The eastern counties are but poorly represented, and we welcome with all the more pleasure a new record from Worstead, in Norfolk. Wales is also somewhat neglected in this respect, and until this year we have only had a single station in the south-west of England, though we now add the interesting results from the two excellent records in Plymouth, sent to us through the courtesy of Mr. J. Paton, engineer to the Plymouth Corporation. We are again able to include the record kept by Mr. J. Smith, at Crathes, in Kincardineshire, and to add an imperfect record from a hyetograph at Blackwater reservoir in Glenleven, where it was recently installed by the British Aluminium Company.

If we were limited to two stations in Scotland we could, perhaps, have selected no more representative spots than these two, but we hope that we may not seem ungrateful in expressing the wish to see records from other parts where as yet we have nothing. Ireland still remains without a station in the tables, though next year there is a prospect of adding a record at Cork, where a hyetograph was erected in December, 1913. We trust that the increasing interest in this subject which has lately grown up may spread across the Irish Sea, and that in the near future records from other parts of Ireland may be available.

In view of the scarcity of observations at wet stations, of which only two or three appear in the list, it is impossible at the present time to form any definite conclusions as to the relations between geographical position and the duration of rainfall. Such records as we have indicate that the duration is undoubtedly the principal factor in determining the amount of rainfall, *i.e.*, the duration is, generally speaking, roughly proportional to the amount recorded. This is shown by the uniformity in the mean rate of rainfall per hour which varies little from  $\cdot 05$  in., and, so far as the records we have go, shows no tendency to be higher at the wetter stations than at the drier. The same uniformity is noticeable in the records of each year back to 1903, and the inference is that on the average the intensity of rain is much the same in all parts of the country. This even holds good at so wet a station as Cray, in Breconshire, where during 1913 83·20 in. of rain fell at a mean rate of only  $\cdot 048$  in. per hour, though whether one may safely assume that the intensity is no greater in a situation such as that of Seathwaite is open to doubt. The only records up to the present made there were obtained in 1899 and 1900, by a gauge of the tipping-bucket type, which is unsuited for measuring the duration during light rain, and it is possible that the mean rate of  $\cdot 108$  in. per hour recorded in the eighteen months during which this instrument was in use may have been unduly high on that account. The question is one well worthy of being investigated and we shall look forward with unusual interest to examining the results from any modern self-recording rain gauge which may be established in the Lake District.

We are now able to compare the records of 32 consecutive years' observations at Camden Square. Judging by the average of that period the total rainfall of the year 1913 was 1·84 in. in defect, but the duration of rain 23·3 hours in excess. It was thus a year of

rather low intensity of fall, in fact three years only since 1881 had a lower rate of fall per hour. This was mainly due to the persistence of comparatively light rain during the winter months, since during January, February and December the mean rate of rainfall per hour

*Comparison of Amount, Duration and Intensity of Rainfall, and Number of Rain Days at Camden Square in 1913 with the Average for 32 years, 1881-1912.*

YEAR.	AMOUNT.		DURATION.		INTENSITY.		RAIN DAYS.	
	Total.	Per cent. of average	Total.	Per cent. of average	Rate per Hour.	Per cent. of average	Total.	Per cent. of average
	in.		hours		in.			
1881	27·92	115	486·3	113	·057	100	152	94
1882	27·14	112	480·7	112	·056	98	165	102
1883	24·40	101	393·5	92	·062	109	164	101
1884	20·35	84	336·8	78	·060	105	150	93
1885	26·64	110	470·0	109	·057	100	165	102
1886	27·01	112	427·2	99	·063	111	176	109
1887	19·21	80	300·3	70	·064	112	140	87
1888	27·74	114	435·7	102	·064	112	173	107
1889	23·85	98	428·5	100	·056	98	169	104
1890	21·23	87	409·5	95	·052	91	161	99
1891	28·15	116	490·3	114	·057	100	178	110
1892	22·61	94	372·5	87	·061	107	158	98
1893	19·80	82	388·0	90	·051	89	148	91
1894	27·94	115	477·7	111	·058	102	185	114
1895	21·47	89	380·0	88	·057	100	137	85
1896	23·52	97	404·3	94	·058	102	159	98
1897	22·86	94	371·2	86	·062	109	164	101
1898	<i>m</i> 17·69	73	<i>m</i> 298·5	70	·059	104	140	87
1899	22·54	93	337·5	79	·067	118	144	89
1900	23·28	96	366·3	85	·064	112	174	107
1901	22·17	91	310·2	72	<i>M</i> ·071	125	<i>m</i> 128	79
1902	20·84	86	352·5	82	·059	104	162	100
1903	<i>M</i> 38·10	157	<i>M</i> 688·5	160	·055	96	179	110
1904	20·65	85	491·8	114	<i>m</i> ·042	74	160	99
1905	22·97	95	456·4	106	·050	88	162	100
1906	24·26	100	420·4	98	·058	102	163	101
1907	23·01	95	418·8	97	·055	96	175	108
1908	23·67	98	500·7	117	·047	82	157	97
1909	26·75	110	576·5	134	·046	81	<i>M</i> 190	117
1910	25·36	105	491·2	115	·052	91	186	115
1911	24·79	102	473·0	110	·052	91	155	96
1912	27·88	115	516·2	120	·054	95	180	111
Average.	24·25	100	429·7	100	·057	100	162	100
1913	22·41	92	453·0	105	·049	86	163	101
Difference from average	— 1·84	—8	+23·3	+5	— ·008	— 14	+1	+1



was no more than .034 in., or .011 in. below the average. The excessive duration in January was a feature at all stations. In many parts of the country it rained for more than 100 hours during this month, whilst at Cray the 12.19 in. of rain occupied 240.3 hours, or nearly one-third of the month. June was generally the month of least duration, though in the north generally July had a smaller number of hours with rain. At Camden Square rain fell in June for only 6.1 hours, the smallest number yet recorded for the month and 26.6 hours less than the average. Of the stations with complete records the smallest number of hours recorded was 315.2 at Cranford, the largest 1715.5 at Cray. Other stations with more than 1,000 hours were Melbury with 1162.2, and Aberclyd, in the Black Mountains, Breconshire, with 1044.1 hours.

Speaking generally the year was one of moderate duration. At most stations the number of hours was below the average of the few previous years, and with a single exception the duration was smaller in 1913 than in 1912, at some stations notably so.

In the article on the number of days with rain in 1913, we called attention to the curious fact that, although during the year the amount of rainfall was markedly high in the south-west of the British Isles, and markedly low in the north-east, there was no large deviation from the average in the number of rain days either in the south-west or the north-east. Of the stations with averages of the duration for 5 years' or more it is, however, interesting to note that the duration appears to have been relatively higher at the more westerly.

*Duration of Rainfall at Camden Square, London, in 1913.*  
Casella's Standard Recording Rain Gauge. 111 feet above Sea Level.  
DR. H. R. MILL, F.R.Met.Soc.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January.....	2.57	68.8	.037	17	.15	4.0
February .....	.79	28.0	.028	12	.07	2.3
March .....	2.29	47.2	.049	21	.11	2.2
April .....	2.72	54.4	.050	21	.13	2.6
May ... ..	1.72	25.5	.067	11	.16	2.3
June .....	.58	6.1	.095	7	.08	.9
July .....	2.31	35.4	.065	12	.19	3.0
August.....	1.43	22.4	.067	11	.13	2.0
September .....	1.75	44.8	.039	11	.16	4.1
October.....	3.11	52.8	.059	15	.21	3.5
November.....	2.35	43.9	.054	17	.14	2.6
December .....	.79	23.7	.033	8	.10	3.0
Year .....	22.41	453.0	.049	163	.14	2.8

*Duration of Rainfall at Park Hill House, Stanhope Road, Croydon,  
Surrey, in 1913. 265 feet above Sea Level.*

MR. BALDWIN LATHAM, M.Inst.C.E., F.R.Met.Soc.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .....	3·73	66·7	·056	22	·17	3·0
February .....	·94	18·2	·052	12	·08	1·5
March .....	3·19	50·7	·063	24	·13	2·1
April .....	3·04	60·6	·050	22	·14	2·8
May .....	1·31	20·5	·064	10	·13	2·1
June .....	·26	3·9	·066	8	·03	·5
July .....	1·60	31·0	·052	13	·12	2·4
August .....	2·26	32·5	·070	12	·19	2·7
September .....	1·81	31·8	·057	11	·16	2·9
October .....	4·18	64·0	·065	20	·21	3·2
November .....	2·90	35·5	·082	22	·13	1·6
December .....	1·16	29·5	·040	13	·09	2·3
Year .....	26·38	444·9	·059	189	·14	2·4

*Duration of Rainfall at Hedgecroft, Walton-on-the-Hill, Surrey, in 1913.*

Negretti & Zambra's Hyetograph. 570 feet above Sea Level.

MR. G. R. CROMPTON, F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January .....	4·51	88·2	·051	23	·20	3·8
February .....	1·33	38·0	·035	13	·10	2·9
March .....	3·10	50·6	·061	22	·14	2·3
April .....	3·16	71·7	·044	20	·16	3·6
May .....	2·25	31·2	·072	12	·19	2·6
June .....	·38	11·7	·032	9	·04	1·3
July .....	2·92	30·2	·097	15	·19	2·0
August .....	1·99	23·1	·086	9	·22	2·6
September .....	1·94	44·0	·044	12	·16	3·7
October .....	4·59	60·7	·076	19	·24	3·2
November .....	3·18	56·1	·057	19	·17	3·0
December .....	1·42	36·0	·039	13	·11	2·8
Year .....	30·77	541·5	·057	186	·17	2·9

*Duration of Rainfall at Edenfield, New Malden, Surrey, in 1913.*

Casella's Recording Rain Gauge. 43 feet above Sea Level.

MR. W. J. CARTER, F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January .....	2·65	92·2	·029	15	·18	6·1
February .....	·84	35·8	·023	9	·09	4·0
March .....	2·46	66·0	·037	22	·11	3·0
April .....	2·70	87·3	·031	21	·13	4·2
May .....	1·83	30·4	·060	10	·18	3·0
June .....	·26	8·8	·030	5	·05	1·8
July .....	1·95	44·8	·044	10	·20	4·5
August .....	1·65	39·6	·042	9	·18	4·4
September .....	1·84	55·8	·033	10	·18	5·6
October .....	4·70	70·2	·067	16	·29	4·4
November .....	1·90	66·9	·028	13	·15	5·1
December .....	1·04	35·6	·029	9	·11	4·0
Year .....	23·82	633·4	·038	149	·16	4·3

*Duration of Rainfall at The Old House, Sevenoaks, Kent, in 1913.*

Negretti and Zambra's Hyetograph. 510 feet above Sea Level.

MR. W. TATTERSALL, F.R.Met.Soc.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .....	3·78	...	...	21	·18	...
February .....	·97	...	...	11	·09	...
March .....	2·93	68·4	·043	25	·12	2·7
April .....	3·20	84·3	·038	23	·14	3·7
May .....	1·39	21·0	·066	12	·12	1·7
June .....	·51	9·0	·058	9	·06	1·0
July .....	3·22	49·5	·065	15	·21	3·3
August .....	1·40	31·8	·044	13	·11	2·4
September .....	1·88	38·5	·049	12	·16	3·2
October .....	5·33	85·4	·062	19	·28	4·5
November .....	3·45	63·7	·054	19	·18	3·4
December .....	1·24	39·0	·032	12	·10	3·2
Year .....	29·30	...	...	191	·15	...

*Duration of Rainfall at Isfield Place, Sussex, in 1913.*

Negretti &amp; Zambra's Hyetograph. 51 feet above sea level.

MAJOR H. KING.

	in.	hours.	in.		in.	hours.
January .....	5·10	112·2	·045	19	·27	5·9
February .....	1·17	21·7	·054	10	·12	2·2
March .....	2·91	57·6	·051	22	·13	2·6
April .....	3·99	66·5	·060	18	·22	3·7
May .....	1·22	27·7	·044	10	·12	2·8
June .....	·77	15·1	·051	7	·11	2·2
July .....	3·13	34·6	·090	12	·26	2·9
August .....	2·20	27·9	·079	11	·20	2·5
September .....	3·34	33·8	·099	12	·28	2·8
October .....	4·98	62·0	·080	18	·28	3·4
November .....	3·96	49·9	·079	18	·22	2·8
December .....	1·47	26·9	·055	10	·15	2·7
Year .....	34·24	535·9	·064	167	·20	3·2

*Duration of Rainfall at Timsbury, Hants, in 1913.*

Negretti &amp; Zambra's Tipping Bucket Recording Rain Gauge.

90 feet above Sea Level. MR. WILLIAM MATTHEWS, M.Inst.C.E.

	in.	hours.	in.		in.	hours.
January .....	4·66	106·4	·044	22	·21	4·8
February .....	1·10	30·0	·037	10	·11	3·0
March .....	2·88	58·9	·049	17	·17	3·5
April .....	3·08	69·3	·044	18	·17	3·8
May .....	2·54	42·3	·060	10	·25	4·2
June .....	·37	15·0	·025	8	·05	1·9
July .....	1·30	22·0	·059	12	·11	1·8
August .....	1·28	24·5	·052	10	·13	2·5
September .....	2·76	59·0	·047	9	·31	6·6
October .....	4·68	60·0	·078	18	·26	3·3
November .....	3·02	49·7	·061	17	·18	2·9
December .....	1·76	42·1	·042	11	·16	3·8
Year .....	29·43	579·2	·051	162	·18	3·6

*Duration of Rainfall at Twyford, Hants, in 1913.*

Negretti & Zambra's Tipping Bucket Recording Rain Gauge.  
139 feet above Sea Level. MR. WILLIAM MATTHEWS, M.Inst.C.E.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January ..	5·47	123·7	·044	23	·24	5·4
February ..	1·46	31·5	·046	12	·12	2·6
March ..	3·93	74·7	·053	20	·20	3·7
April ..	3·15	72·5	·043	18	·18	4·0
May ..	3·00	42·8	·070	14	·21	3·1
June ..	·40	14·1	·028	7	·06	2·0
July ..	1·20	22·2	·054	11	·11	2·0
August ..	1·15	24·9	·046	12	·10	2·1
September ..	2·77	43·3	·064	11	·25	3·9
October ..	4·56	64·4	·071	18	·25	3·6
November ..	3·46	58·0	·060	19	·18	3·1
December ..	1·91	43·5	·044	11	·17	4·0
Year ..	32·46	615·6	·053	176	·18	3·5

*Duration of Rainfall at University College, Reading, Berkshire, in 1913.*

Negretti & Zambra's Hyetograph.  
153 feet above Sea Level. DR. H. N. DICKSON, F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January ..	3·20	63·8	·050	19	·17	3·4
February ..	·89	20·9	·043	13	·07	1·6
March ..	2·10	34·8	·060	22	·10	1·6
April ..	2·49	44·6	·056	19	·13	2·3
May ..	2·33	35·0	·067	12	·19	2·9
June ..	·47	6·0	·078	7	·07	·9
July ..	·83	16·7	·050	10	·08	1·7
August ..	·87	18·2	·048	10	·09	1·8
September ..	1·77	36·3	·049	13	·14	2·8
October ..	4·87	47·3	·103	18	·27	2·6
November ..	2·30	33·9	·068	19	·12	1·8
December ..	1·04	26·0	·040	12	·09	2·2
Year ..	23·16	383·5	·060	174	·13	2·1

*Duration of Rainfall at Mill Hill, Middlesex, in 1913.*

Negretti and Zambra's Hyetograph. 380 feet above Sea Level.  
MRS. H. R. MILL, F.R.Met.Soc., and MR. F. TURNER.

	in.	hours.	in.		in.	hours.
January ..	2·83	60·3	·047	22	·13	2·7
February ..	·86	25·0	·034	14	·06	1·8
March ..	1·94	44·0	·044	22	·09	2·0
April ..	2·84	58·3	·049	23	·12	2·5
May ..	1·68	29·2	·058	13	·13	2·2
June ..	·50	6·4	·078	5	·10	1·3
July ..	2·12	36·2	·059	11	·19	3·3
August ..	·94	21·6	·043	13	·07	1·7
September ..	1·19	28·6	·041	11	·11	2·6
October ..	2·66	45·4	·059	16	·17	2·8
November ..	2·22	41·4	·054	17	·13	2·4
December ..	·88	24·3	·036	11	·08	2·2
Year ..	20·66	420·7	·049	178	·12	2·4

*Duration of Rainfall at Woodford House, Cranford, Northamptonshire,  
in 1913.*

Negretti and Zambra's Hyetograph.

262 feet above Sea Level. MR. E. N. PLEVINS, F.R.Met.Soc.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hour.
January .....	2·88	52·1	·055	18	·16	2·9
February .....	·54	11·7	·046	8	·07	1·5
March .....	2·86	26·1	·110	19	·15	1·4
April .....	2·48	48·0	·052	18	·14	2·7
May .....	1·40	26·6	·053	10	·14	2·7
June .....	·41	9·7	·042	7	·06	1·4
July .....	·93	15·5	·060	11	·08	1·4
August .....	·57	9·8	·058	7	·08	1·4
September .....	1·06	25·9	·041	9	·12	2·9
October .....	3·16	38·2	·083	13	·24	2·9
November .....	2·23	35·7	·063	17	·13	2·1
December .....	·56	15·9	·035	13	·04	1·2
Year ... ..	19·08	315·2	·061	150	·13	2·1

*Duration of Rainfall at Worstead, Norfolk, in 1913.*

Negretti and Zambra's Hyetograph.

55 feet above Sea Level.

MR. ROBERT CROSS.

	in.	hours.	in.		in.	hours.
January .....	2·84	63·2	·045	20	·14	3·2
February .....	·67	19·5	·034	10	·07	2·0
March .....	2·29	43·6	·053	18	·13	2·4
April .....	1·96	37·0	·053	15	·13	2·5
May .....	1·20	22·6	·053	13	·09	1·7
June .....	1·12	12·7	·088	12	·09	1·1
July .....	2·43	31·3	·077	10	·24	3·1
August .....	1·13	14·8	·076	8	·14	1·8
September .....	1·87	18·3	·102	12	·16	1·5
October .....	4·93	46·9	·105	12	·41	3·9
November .....	2·16	30·4	·071	16	·13	1·9
December .....	·71	14·6	·049	10	·07	1·5
Year .....	23·31	354·9	·066	156	·15	2·3

*Duration of Rainfall at Hoe, Plymouth, Devon, in 1913.*

Halliwell Recording Gauge. 117 feet above Sea Level.

MR. JAMES PATON.

	in.	hours.	in.		in.	hours.
January .....	7·66	115·2	·066	28	·27	4·1
February .....	1·35	33·0	·041	12	·11	2·8
March .....	4·04	85·4	·047	22	·18	3·9
April .....	4·33	82·3	·053	18	·24	4·6
May .....	3·13	59·0	·053	18	·17	3·3
June .....	·81	25·4	·032	12	·07	2·1
July .....	·40	7·3	·055	5	·08	1·5
August .....	1·16	25·8	·045	9	·13	2·9
September .....	2·91	31·0	·094	15	·19	2·1
October .....	3·88	51·4	·076	20	·19	2·6
November .....	4·14	77·4	·054	24	·17	3·2
December .....	2·66	71·0	·037	16	·17	4·4
Year ..	36·47	664·2	·055	199	·18	3·3

*Duration of Rainfall at Freedom Fields, Plymouth, Devon, in 1913.*

Negretti &amp; Zambra's Hyetograph. 205 feet above Sea Level.

MR JAMES PATON.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .....	8·34	119·3	·070	26	·32	4·6
February .....	1·46	29·7	·049	9	·16	3·3
March .....	4·44	92·0	·048	22	·20	4·2
April .....	4·36	76·1	·057	17	·26	4·5
May .....	3·51	61·3	·057	15	·23	4·1
June .....	·94	21·1	·045	8	·12	2·6
July .....	·41	7·9	·052	6	·07	1·3
August .....	1·40	20·8	·067	9	·16	2·3
September .....	2·35	28·2	·084	15	·16	1·9
October .....	3·73	45·1	·083	22	·17	2·0
November .....	4·90	77·5	·063	24	·20	3·2
December .....	3·00	66·4	·045	17	·18	3·9
Year .....	38·84	645·4	·060	190	·20	3·4

*Duration of Rainfall at Melbury Reservoir, Parkham, Devon, in 1913.*

Negretti and Zambra's Tipping Bucket Recording Rain Gauge.

516 feet above Sea Level. MR. BALDWIN LATHAM, M.Inst.C.E., F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January .....	8·27	171·6	·048	30	·28	5·7
February .....	2·16	38·8	·056	14	·15	2·8
March .....	7·94	167·7	·047	27	·29	6·2
April .....	7·27	127·4	·057	22	·33	5·8
May .....	3·08	82·0	·038	20	·15	4·1
June .....	3·07	66·3	·046	15	·20	4·4
July .....	·91	31·1	·029	12	·08	2·6
August .....	1·49	45·3	·033	14	·11	3·2
September .....	2·35	56·4	·042	17	·14	3·3
October .....	5·18	83·3	·062	20	·26	4·2
November .....	8·05	155·9	·052	29	·28	5·4
December .....	5·35	136·4	·039	21	·25	6·5
Year .....	55·12	1162·2	·047	241	·23	4·8

*Duration of Rainfall at Dollarward House, Cirencester, Gloucestershire, in 1913.*

Negretti and Zambra's Hyetograph.

366 feet above Sea Level. MR. CHARLES P. HOOKER, F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January .....	5·03	103·6	·049	23	·22	4·5
February .....	1·56	49·1	·032	15	·10	3·3
March .....	3·85	95·2	·040	21	·18	4·5
April .....	4·46	88·6	·050	19	·23	4·7
May .....	2·31	56·8	·041	15	·15	3·8
June .....	·88	13·0	·068	11	·08	1·2
July .....	1·00	15·0	·067	8	·13	1·9
August .....	1·39	21·6	·064	9	·15	2·4
September .....	2·67	63·7	·042	11	·24	5·8
October .....	3·32	64·0	·052	21	·16	3·0
November .....	3·06	70·0	·044	18	·17	3·9
December .....	1·48	69·7	·021	16	·09	4·4
Year .....	31·01	710·3	·044	187	·17	3·8

*Duration of Rainfall at West Bromwich, Staffordshire, in 1913.*

Negretti and Zambra's Hyetograph. 543 feet above Sea Level.

MR. A. D. GREATOREX, M. Inst. C. E.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .....	4·05	41·6	·097	20	·20	2·1
February.....	·80	17·7	·045	10	·08	1·8
March .....	4·85	55·3	·088	21	·23	2·6
April .....	3·47	62·4	·056	19	·18	3·3
May .....	1·98	27·0	·073	14	·14	1·9
June.....	1·48	13·0	·114	11	·13	1·2
July .....	·94	13·5	·070	9	·10	1·5
August .....	1·31	19·7	·067	13	·10	1·5
September .....	1·78	30·6	·058	16	·11	1·9
October .....	3·93	43·3	·091	15	·26	2·9
November .....	2·37	37·4	·063	18	·13	2·1
December .....	1·12	19·3	·058	11	·10	1·7
Year.....	28·08	380·8	·074	177	·16	2·2 -

*Duration of Rainfall at Mayfield House [Ashbourne], Staffordshire, in 1913.*

Casella's Recording Rain Gauge. 374 feet above Sea Level.

MR. GRAHAM C. LAWSON.

	in.	hours.	in.		in.	hours.
January .....	4·50	100·1	·045	22	·20	4·6
February.....	1·06	25·6	·041	11	·10	2·3
March .....	4·54	83·9	·054	24	·19	3·5
April .....	3·99	78·7	·051	19	·21	4·1
May .....	2·59	52·3	·050	17	·15	3·1
June .....	1·73	30·8	·056	15	·11	2·0
July .....	·74	18·8	·039	7	·10	2·7
August.....	1·64	30·0	·055	12	·14	2·5
September. ....	1·61	36·0	·045	13	·12	2·8
October . ...	2·79	52·0	·054	16	·17	3·3
November .....	2·85	66·0	·043	23	·12	2·9
December .....	1·51	23·5	·064	12	·13	2·0
Year.....	29·55	597·7	·050	191	·15	3·0

*Duration of Rainfall at Bournville, Birmingham, Warwickshire, in 1913.*

Negretti and Zambra's Hyetograph. 434 feet above Sea Level.

MESSRS. CADBURY BROS., LTD.

	in.	hours.	in.		in.	hours.
January .....	4·28	100·3	·043	21	·20	4·8
February .....	·99	27·5	·036	13	·08	2·1
March .....	5·36	90·9	·059	20	·27	4·5
April.....	4·38	86·5	·051	20	·22	4·3
May .....	2·03	37·7	·054	12	·17	3·1
June .....	1·47	17·6	·084	9	·16	2·0
July .....	1·36	28·6	·048	11	·12	2·6
August.....	1·19	29·4	·041	13	·09	2·3
September .....	2·06	43·3	·048	15	·14	2·9
October .....	3·22	47·2	·068	17	·19	2·8
November .....	2·92	44·7	·065	20	·15	2·2
December.....	1·25	24·4	·051	10	·12	2·4
Year.....	30·51	578·1	·053	181	·17	3·2

*Duration of Rainfall at the Sewage Pumping Station, Trent Lane,  
Nottingham, in 1913.*

Halliwell Recording Gauge. 85 feet above Sea Level.  
MR. ARTHUR BROWN, M.Inst.C.E., F.R.Met.Soc.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .. .. .	2·89	70·9	·041	17	·17	4·1
February .. . . .	·79	20·4	·038	11	·07	1·8
March .. . . .	3·32	63·2	·052	21	·16	3·0
April .. . . .	2·27	39·9	·057	18	·13	2·2
May .. . . .	2·06	26·5	·078	10	·21	2·6
June .. . . .	·84	16·7	·050	9	·09	1·8
July .. . . .	·80	14·7	·054	10	·08	1·5
August .. . . .	1·60	17·7	·090	9	·18	2·0
September .. . .	1·77	26·6	·066	15	·12	1·8
October .. . . .	3·63	38·0	·095	12	·30	3·2
November .. . . .	1·59	26·7	·059	14	·11	1·9
December .. . . .	·75	9·5	·079	8	·09	1·2
Year .. . . .	22·31	370·8	·060	154	·14	2·4

*Duration of Rainfall at Hodsock Priory, Notts, in 1913.*

Halliwell Recording Gauge. 56 feet above Sea Level.  
LT.-COL. H. MELLISH, F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January .. . . .	2·95	68·9	·043	19	·16	3·6
February .. . . .	·77	25·0	·031	15	·05	1·7
March .. . . .	2·74	51·6	·053	19	·14	2·7
April .. . . .	2·34	46·5	·050	17	·14	2·7
May .. . . .	1·73	33·9	·051	9	·19	3·8
June .. . . .	·60	9·3	·065	13	·05	0·7
July .. . . .	·99	21·0	·047	8	·12	2·6
August .. . . .	1·43	14·3	·100	8	·18	1·8
September .. . .	2·13	31·0	·069	12	·18	2·6
October .. . . .	3·58	38·9	·092	18	·20	2·2
November .. . . .	1·74	26·7	·065	17	·10	1·6
December .. . . .	1·34	23·0	·058	9	·15	2·6
Year .. . . .	22·34	390·1	·057	164	·14	2·4

*Duration of Rainfall at Myra, Blundellsands, Lancashire, in 1913.*

Negretti & Zambra's Hyetograph. 31 feet above Sea Level.  
HUGH MONTGOMERY, F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January .. . . .	3·60	...	...	17	·21	...
February .. . . .	·80	...	...	13	·06	...
March .. . . .	3·00	...	...	25	·12	...
April .. . . .	2·92	...	...	20	·15	...
May .. . . .	2·44	...	...	22	·11	...
June .. . . .	2·10	...	...	15	·14	...
July .. . . .	2·36	...	...	15	·16	...
August .. . . .	2·02	...	...	10	·20	...
September .. . .	2·28	53·5	·043	13	·18	4·1
October .. . . .	2·19	45·5	·048	17	·13	2·7
November .. . . .	3·04	54·0	·054	25	·12	2·2
December .. . . .	2·24	35·3	·063	17	·13	2·1
Year ... .. .	28·99	..	...	209	·14	...



*Duration of Rainfall at Worden Hall, Leyland, Lancashire, in 1913.*

Negretti &amp; Zambra's Hyetograph. 125 feet above Sea Level.

MR. H. NOWELL FFARRINGTON.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .....	3·83	105·5	·036	19	·20	5·6
February .....	1·29	25·5	·051	10	·13	2·6
March .....	3·96	69·5	·057	24	·17	2·9
April.....	4·29	71·7	·060	18	·24	4·0
May .....	3·31	55·1	·060	17	·19	3·2
June ..	2·63	52·3	·050	17	·15	3·1
July .....	2·58	44·8	·058	13	·20	3·4
August .....	2·92	39·7	·074	10	·29	4·0
September .....	1·91	46·5	·041	12	·16	3·9
October .....	1·84	35·2	·052	16	·12	2·2
November .....	4·22	85·7	·049	29	·15	3·0
December.....	2·58	56·7	·046	18	·14	3·1
Year .....	35·36	688·2	·051	203	·17	3·4

*Duration of Rainfall at Hesketh Park, Southport, Lancashire, in 1913.*

Halliwell Recording Gauge. 39 feet above Sea Level.

MR. J. BAXENDELL, F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January .....	3·80	102·3	·037	21	·18	4·9
February .....	1·15	28·3	·041	13	·09	2·2
March .....	3·42	70·8	·048	24	·14	2·9
April.....	3·06	73·2	·042	18	·17	4·1
May .....	2·24	53·7	·042	19	·12	2·8
June .....	2·10	40·2	·052	15	·14	2·7
July .....	1·33	33·1	·040	14	·10	2·4
August .....	1·49	37·9	·039	9	·17	4·2
September .....	2·29	53·7	·043	12	·19	4·5
October ...	2·32	50·0	·046	18	·13	2·8
November .....	3·83	78·1	·049	26	·15	3·0
December ..	1·86	45·9	·041	17	·11	2·7
Year .....	28·89	667·2	·043	206	·14	3·2

*Duration of Rainfall at Huddersfield Cemetery, Yorkshire, in 1913.*

Halliwell Recording Gauge. 410 feet above Sea Level.

MR. J. FIRTH.

	in.	hours.	in.		in.	hours.
January .....	3·87	112·9	·034	20	·19	5·6
February.....	1·35	41·0	·033	15	·09	2·7
March .....	5·72	114·0	·050	26	·22	4·4
April.....	3·70	76·8	·048	21	·18	3·7
May .....	2·56	61·7	·042	16	·16	3·8
June .....	1·89	49·0	·038	12	·16	4·1
July .....	·96	33·7	·029	13	·07	2·6
August .....	1·28	28·6	·045	8	·16	3·6
September .....	2·30	56·4	·041	17	·14	3·3
October .....	2·59	51·9	·050	17	·15	3·1
November .....	3·37	89·3	·038	24	·14	3·7
December .....	3·21	69·7	·046	18	·18	3·9
Year.....	32·80	785·0	·042	207	·16	3·8

*Duration of Rainfall at Town Hall, Skipton, Yorkshire, in 1913.*  
Negretti and Zambra's Hyetograph. 370 feet above Sea Level.  
MR. A. E. W. ALDRIDGE.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .....	4·25	148·2	·029	18	·24	8·2
February .....	1·57	50·7	·032	12	·13	4·2
March .....	5·30	120·7	·044	25	·21	4·8
April .....	3·30	80·6	·041	17	·19	4·7
May .....	2·67	68·8	·039	15	·18	4·6
June .....	1·72	36·0	·048	12	·14	3·0
July .....	·84	39·4	·021	13	·06	3·0
August .....	1·51	35·5	·043	8	·19	4·4
September .....	1·57	42·4	·037	12	·13	3·5
October .....	1·63	34·5	·047	15	·11	2·3
November .....	3·68	100·1	·037	24	·15	4·2
December .....	2·13	70·7	·030	15	·14	4·5
Year .....	30·17	827·6	·036	186	·16	4·4

*Duration of Rainfall at Mount St. John, Thirsk, Yorkshire, in 1913.*  
Halliwell Recording Gauge. 542 feet above Sea Level.  
MR. A. J. WALKER, F.R. Met. Soc.

	in.	hours.	in.		in.	hours
January .....	2·89	121·1	·024	22	·13	5·5
February .....	1·05	30·9	·034	13	·08	2·4
March .....	2·45	56·5*	·043	19	·13	3·0
April .....	3·38	67·1*	·050	18	·19	3·7
May .....	1·78	54·5*	·033	11	·16	5·0
June .....	1·90	29·5	·064	12	·16	2·5
July .....	·58	22·3	·026	10	·06	2·2
August .....	1·00	39·0	·026	8	·13	4·9
September .....	1·34	36·1	·037	13	·10	2·8
October .....	2·21	47·8	·046	16	·14	3·0
November .....	2·20	56·7	·039	20	·11	2·8
December .....	2·01	45·5	·044	11	·18	4·1
Year .....	22·79	607·0	·038	173	·13	3·5

\* Duration partly from Newey Gauge.

*Duration of Rainfall at Mount St. John, Thirsk, Yorkshire, in 1913.*  
Newey Recording Gauge. 542 feet above Sea Level.  
MR. A. J. WALKER, F.R. Met. Soc.

	in.	hours.	in.		in.	hours.
January .....	2·89	123·0	·023	22	·13	5·6
February .....	1·05	32·8	·032	13	·08	2·5
March .....	2·45	58·7	·042	19	·13	3·1
April .....	3·38	67·1	·050	18	·19	3·7
May .....	1·78	55·5	·032	11	·16	5·0
June .....	1·90	28·3	·067	12	·16	2·4
July .....	·58	20·7	·028	10	·06	2·1
August .....	1·00	37·8	·026	8	·13	4·7
September .....	1·34	34·6	·039	13	·10	2·7
October .....	2·21	48·7	·045	16	·14	3·0
November .....	2·20	64·9	·034	20	·11	3·2
December .....	2·01	35·2	·057	11	·18	3·2
Year .....	22·79	607·3	·040	173	·13	3·4

*Duration of Rainfall at Mount St. John, Thirsk, Yorkshire, in 1913.*

Re-constructed Lander and Smith's Recording Gauge.  
542 feet above Sea Level. MR. A. J. WALKER, F.R.Met.Soc.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .....	2·89	110·0	·026	22	·13	5·0
February .....	1·05	27·3	·038	13	·08	2·1
March .....	2·45	44·8	·055	19	·13	2·4
April .....	3·38	57·1	·059	18	·19	3·2
May .....	1·78	47·1	·038	11	·16	4·3
June .....	1·90	26·1	·073	12	·16	2·2
July .....	·58	18·7	·031	10	·06	1·9
August .....	1·00	36·2	·028	8	·13	4·5
September .....	1·34	33·3	·040	13	·10	2·6
October .....	2·21	43·3	·051	16	·14	2·7
November .....	2·20	55·3	·040	20	·11	2·8
December .....	2·01	35·2	·057	11	·18	3·2
Year .....	22·79	534·4	·043	173	·13	3·1

*Duration of Rainfall at Percy Park, Tynemouth, Northumberland, in 1913.*

Negretti & Zambra's Hyetograph. 92 feet above Sea Level.  
MR. J. E. BURNETT, F.R.Met.Soc.

	in.	hours.	in.		in.	hours.
January .....	4·28	101·5	·042	19	·23	5·3
February .....	·48	10·0	·048	8	·06	1·3
March .....	2·35	32·7	·072	18	·13	1·8
April .....	2·59	47·3	·055	16	·16	3·0
May .....	3·31	49·0	·068	15	·22	3·3
June .....	1·12	14·2	·072	15	·07	0·9
July .....	·57	15·5	·037	8	·07	1·9
August .....	·77	16·1	·048	13	·06	1·2
September .....	4·00	34·5	·116	15	·27	2·3
October .....	2·04	27·5	·074	13	·16	2·1
November .....	1·56	32·2	·048	17	·09	1·9
December .....	1·17	18·3	·064	11	·11	1·7
Year .....	24·24	398·8	·061	168	·14	2·4

*Duration of Rainfall at Cray Reservoir, Breconshire, in 1913.*

Halliwell Recording Gauge. 1,030 feet above Sea Level.  
MR. R. H. WYRILL, M.Inst.C.E.

	in.	hours.	in.		in.	hours.
January .....	12·19	240·3	·051	27	·45	8·9
February .....	4·80	86·5	·055	11	·43	7·9
March .....	14·14	269·5	·052	26	·54	10·4
April .....	11·84	183·7	·064	19	·62	9·7
May .....	6·18	148·5	·041	23	·27	6·5
June .....	3·02	79·8	·037	13	·23	6·1
July .....	1·56	90·2	·017	19	·08	4·8
August .....	2·27	70·0	·032	12	·19	5·8
September .....	4·60	83·5	·055	14	·33	6·0
October .....	7·65	148·5	·051	24	·31	6·2
November .....	10·39	180·5	·057	27	·38	6·7
December .....	4·56	134·5	·034	21	·22	6·4
Year .....	83·20	1715·5	·048	236	·35	7·3

*Duration of Rainfall at Aber Clyd, Black Mountains, Breconshire,  
in 1913.*

Negretti & Zambra's Hyetograph. 1,880 feet above Sea Level.

THE REFEREES under the Abertillery and District Water Board Act.

1913.	Rainfall.	Duration.	Rate per hour.	Number of rain days.	Rate per rain day.	Duration per rain day.
	in.	hours.	in.		in.	hours.
January .....	7·46	156·6	·048	27	·28	5·8
February .....	2·86	49·4	·058	13	·22	3·8
March .....	9·40	156·7	·060	26	·36	6·1
April .....	6·59	131·6	·050	20	·33	6·6
May .....	4·60	85·3	·054	19	·24	4·5
June .....	1·85	47·0	·039	13	·14	3·6
July .....	1·06	32·8	·032	12	·09	2·7
August .....	3·31	48·9	·067	16	·21	3·1
September .....	4·05	65·8	·062	15	·27	4·4
October .....	8·09	78·1	·103	20	·40	3·9
November .....	6·57	112·4	·058	24	·27	4·7
December .....	2·77	79·5	·035	19	·15	4·2
Year .....	58·61	1044·1	·056	224	·26	4·7

*Duration of Rainfall at Blackwater Dam, Glenleven, Argyll, in 1913.*

Negretti and Zambra's Hyetograph. 1,072 feet above Sea Level.

THE BRITISH ALUMINIUM COMPANY.

	in.	hours.	in.		in.	hours.
January .....	6·00	...	...	19	·32	...
February .....	8·84	...	...	16	·55	...
March .....	10·25	...	...	27	·38	...
April .....	7·60	...	...	21	·36	...
May .....	6·67	...	...	25	·27	...
June .....	7·79	...	...	22	·35	...
July .....	·98	23·3	·042	10	·10	2·3
August .....	3·11	50·3	·062	11	·28	4·6
September .....	4·07	53·8	·076	14	·29	3·8
October .....	8·74	123·2	·071	20	·44	6·2
November .....	14·31	226·3	·063	25	·57	9·1
December .....	9·34	161·6	·058	25	·37	6·5
Year .....	87·70	...	...	235	·37	...

*Duration of Rainfall at Pinewood, Crathes, Kincardineshire, in 1913.*

Negretti and Zambra's Hyetograph. 140 feet above Sea Level.

MR. J. SMITH.

	in.	hours.	in.		in.	hours.
January .....	6·84	104·8	·065	19	·36	5·5
February .....	·88	17·8	·049	9	·10	2·0
March .....	4·46	77·8	·057	20	·22	3·9
April .....	2·81	43·4	·065	13	·22	3·3
May .....	6·03	69·7	·087	16	·38	4·4
June .....	1·46	28·8	·051	15	·10	1·9
July .....	1·83	12·7	·144	10	·18	1·3
August .....	1·38	17·8	·078	13	·11	1·4
September .....	3·81	61·9	·062	16	·24	3·9
October .....	1·24	37·6	·033	18	·07	2·1
November .....	·87	31·9	·027	14	·06	2·3
December .....	1·63	35·2	·046	12	·14	2·9
Year .....	33·24	539·4	·062	175	·19	3·1

## HEAVY RAINS IN SHORT PERIODS.

THIS section continues, as in the past, to be one which we discuss with some feelings of doubt, as it is quite impossible from the nature of the observations to ensure that even a rough approximation to uniformity is arrived at. Even were it practicable to have 100 or more open scale, self-recording rain-gauges at work, uniformly distributed over the country, and to have their records tabulated in a perfectly homogeneous manner, it would hardly meet the situation, because the heavy falls here dealt with commonly occur in the most capricious manner, and, as a general rule, cover a very restricted area. As it is we have to remain satisfied with such information on the subject as is available, largely through the devotion and enthusiasm of the few Observers who systematically keep a look-out for short period falls, and examine their gauges immediately after the occurrence.

As in previous years falls are excluded which do not reach the limits headed "worthy of notice" in Table I., in which is also given

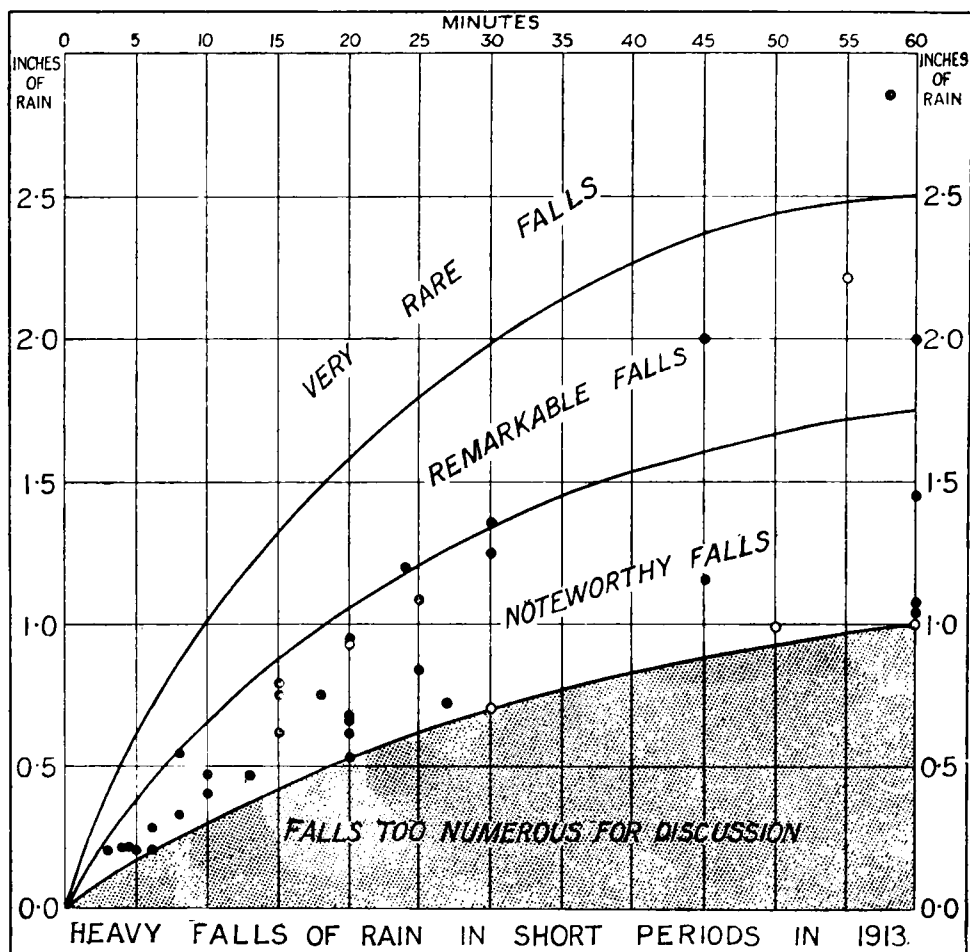
TABLE I.—*Limits of Exceptional Falls.*

Minutes.	WORTHY OF NOTICE.		REMARKABLE.		VERY RARE.	
	Amount.	Rate per hour.	Amount.	Rate per hour.	Amount.	Rate per hour.
	in.	in.	in.	in.	in.	in.
10.....	·30	1·80	·65	3·90	1·00	6·00
20.....	·53	1·59	1·06	3·18	1·58	4·74
30.....	·70	1·40	1·35	2·70	2·00	4·00
40.....	·82	1·23	1·54	2·31	2·26	3·39
50.....	·92	1·10	1·67	2·00	2·42	2·90
60.....	1·00	1·00	1·75	1·75	2·50	2·50

the numerical basis which entitles a fall to be considered "remarkable" or "very rare." The values given in this table have been arrived at from a searching examination of the records of heavy falls in short periods that have taken place since 1878.

In Table III. falls attaining the "remarkable" limit have a single

cross appended, while in the case of "very rare" falls a double cross is affixed. Falls exceeding an hour's duration also have the crosses added when the occurrence has been sufficiently notable. In the diagram below are shown the instances recorded in 1913 which



fall under each of the three categories, falls failing to reach the lower limit being excluded. The latter are those which would fall within the shaded portion of the diagram.

Table II. enumerates all cases recorded since 1868 of falls of one hour or less beyond the limits of "very rare." Only one new record has been added from the 1913 list, namely, a fall of 2.85 in. in 58 minutes, which occurred during a thunderstorm at Elveden Hall, near Thetford, on June 17th. Two other falls, namely, those at Great Paxton, on June 17th, when 2.80 in. fell in 90 minutes, and at Newcastle-on-Tyne, on September 16th, when 2.65 in. fell in the

same period, are sufficiently exceptional to be entitled to the double cross, but they are excluded from the list of historic falls on account of their duration, since the latter is confined to falls lasting for an hour or less.

TABLE II.—*Rainfalls of very rare Intensity lasting for one hour or less.*

Year.	Date.	Div.	Station	Amount.	Duration.		Rate per hour.
				in.	hr.	min.	in.
1912	May 8	XV.	Alexandria .....	·26	0	1½	10·40
1888	Mar. 24	XI.	Chepstow, Shirenewton Hall..	·33	0	2	9·90
1906*	June 17	IX.	Ilkley, Eaton Road.....	·50	0	4	7·50
1893	Aug. 10	VIII.	Preston, Corporation Offices...	1·25?	0	5?	15·00?
"	June 14	XI.	Chepstow, Shirenewton Hall..	·62	0	5	7·44
1906	Aug. 2	II.	Guildford, Piccard's Rough ...	·89	0	8	6·68
1892	July 3	VIII.	Bolton, The Park.....	1·00?	0	9?	6·67?
1902	May 30	III.	Cambridge, Sydney Street....	1·10	0	10	6·60
1878	June 23	I.	St. Pancras, Camden Square..	1·00	0	10	6·00
1912	July 22	VII.	Wirksworth, Manor House ...	1·00	0	10	6·00
1906	Aug. 2	II.	Haslemere, Lower Street.....	1·46	0	15?	5·84?
1878	June 23	I.	St. Pancras, Camden Square..	1·43	0	15	5·72
1875	Aug. 7	II.	Canterbury, Harbledown.....	2·12	0	20	6·36
1878	June 23	I.	St. Pancras, Camden Square..	1·80	0	20	5·40
1897	" 24	III.	Luton Pumping Station.....	1·65	0	20	4·95
1878	" 23	I.	St. Pancras, Camden Square..	2·30	0	28	4·93
1880	July 22	XI.	Cowbridge, Ash Hall.....	2·90	0	30	5·80
1895	June 27	IX.	Middleton-in-the-Wolds .....	2·00	0	30	4·00
1902	Sep. 10	II.	Surbiton, Vronvelin.....	2·00	0	30	4·00
1904	July 27	"	Cooling, Broomy Farm .....	2·66	0	45	3·55
1909	Sep. 29	V.	Ilfracombe Reservoir.....	2·50?	0	45	3·33?
1895	June 26	"	Marlbrough .....	2·71	0	50	3·25
1903	July 18	VI.	Betley Hall [Crewe].....	2·53	0	50	3·04
1905	" 9	III.	Enfield, Carisbrooke.....	2·44	0	50	2·93
1911	May 31	II.	Epsom, Ashley Road .....	2·44	0	50	2·93
1901	July 29	"	Wadhurst, Lower Cousley Wood..	3·25?	0	55	3·55?
1913	June 17	IV.	Elveden Hall .....	2·85	0	58	2·95
1901	July 12	II.	Maidenhead, Lowood.....	3·63	1	0?	3·63?
1903	May 30	"	Beddington Corner.....	3·50	1	0	3·50
1911	" 26	"	Fareham, The Mount .....	3·00	1	0	3·00
1897	July 21	IV.	Ipswich, Bishops Hill .....	2·95	1	0	2·95
1895	June 26	VI.	Worcester, Diglis Lock.....	2·75	1	0	2·75
1909	" 1	XII.	Carsphairn, Shiel.....	2·71	1	0?	2·71?
1873	July 28	XVII.	Fettercairn .....	2·60	1	0	2·60
1889	June 7	II.	Tonbridge, Ferndale.....	2·60?	1	0?	2·60?
1886	July 25	VIII.	Sale, Brooklands.....	2·58	1	0	2·58
1899	" 22	V.	Dorchester Water Works.....	2·56	1	0?	2·56?
1875	" 22	"	Trowbridge, Sunnyside.....	2·53	1	0	2·53
"	June 29	III.	Cardington .....	2·50	1	0	2·50
1886	July 25	IX.	Wakefield, Stanley Vicarage..	2·50	1	0	2·50

\* Did not appear in *British Rainfall*.

Reference to Table III. will show that besides the three "very rare" falls just referred to, there were eight instances in which "remarkable" falls occurred. These took place on seven separate dates, the earliest being June 17th and the latest on October 3rd. Taking the cases in chronological order, the first to claim notice is the fall of 1·35 in. at Stapleford House, near Cambridge, in 30 minutes on June 17th, during what is described as the "severest thunderstorm remembered"; thunder and lightning were said to be continuous all round during the visitation. During the same thunderstorm 2·21 in. fell in about 55 minutes at Crowland, and 2·12 in. in 75 minutes at Brampton, near Huntingdon. On July 15th there were two intense falls, one at Hurst Green and at Ticehurst, in Sussex, 2 inches falling in an hour in each instance. Both occurrences must, unfortunately, be queried, doubt attaching to the time in the first instance, and to the amount in the other. This dubiety, however, in no way reflects on the vigilance or activity on the part of the Observers, since the falls occurred at both places between 2 and 3 a.m. during a violent thunderstorm. The fall of 2·60 in. at

TABLE III.—*Heavy Rains in Short Periods in 1913.*

Date.	Div.	Station.	Amount.	Duration.	Rate per hour.
			in.	hr. min.	in.
June 17 ...	IX.	Huddersfield Cemetery .....	·20	... 3	4·00
May 29 ...	II.	New Malden .....	·09	... 3	1·80
" 27 ...	"	Southwater .....	·21	... 4	3·15
" 30 ...	IX.	Meltham, Harewood Lodge ..	·21	... 4½	2·80
Oct. 7 ...	VI.	Cirencester, Dollarward House	·20	... 5	2·40
" " ...	V.	Kenton .....	·28	... 6	2·80
June 8 ...	II.	Englefield Green, Harvest Rd.	·20	... 6	2·00
July 10 ...	"	Ardingly, Lywood House .....	·54	... 8	4·05
May 27 ...	IV.	Great Yeldham .....	·33	... 8	2·48
Oct. 1 ...	"	Southend-on-Sea .....	·40	... 10	2·40
" 27 ...	V.	Exmouth, Nidderdale .....	·47	... 10	2·82
May 27 ...	IX.	Middlesbrough, Ormesby .....	·47	... 13	2·17
" " ...	II.	Herne Bay Pumping Station...	·79	... 15	3·16
Nov. 11 ...	XI.	Briton Ferry, Brynsiriol .....	·75	... 15	3·00
July 10 ...	II.	Heathfield, The White Cottage	·61	... 15	2·44
Oct. 3 ...	IV.	Worstead, Lyngate Cottage...	·75	... 18	2·50
May 26 ...	VI.	Bishops Castle, Castle Street..	·95	... 20	2·85
June 27 ...	IV.	Lawford, Dale Hall .....	·93	... 20?	2·79?
May 27 ...	II.	Sheerness .....	·68	... 20	2·04
July 10 ...	"	Langley, Rumwood .....	·66	... 20	1·98
Aug. 7 ...	"	Warsash, Hook Vicarage .....	·61	... 20	1·83
Sept. 15 ...	III.	Oundle School .....	·52	... 20	1·56
Oct. 2 ...	II.	New Malden .....	1·20	... 24	3·00 x
" 6 ...	VI.	Kington .....	1·08	... 25	2·59
June 17 ...	VII.	Belvoir Castle .....	·84	... 25	2·02



July 10 ...	I.	Lewisham .....	·72	...	27	1·60
June 17 ...	III.	Stapleford House.....	1·35	...	30	2·70 x
Oct. 2 ...	„	Newport Pagnell, The Croft...	1·25	...	30	2·50
„ 3 ...	IV.	Norwich, Ipswich Road .....	1·25	...	30	2·50
„ „ ...	„	Dilham, The Rookery .....	·70	...	30?	1·40?
Sept. 18 ...	XI.	Alderney, Le Huret .....	2·00	...	45	2·67 x
May 27 ...	IV.	Dengie, Land Wick .....	1·16	...	45	1·55
June 17 ...	III.	Cambridge, Hershel House ...	·99	...	50?	1·19?
„ „ ...	„	Crowland, Bank House .....	2·21	...	55?	2·41 x
„ „ ...	IV.	Elveden Hall .....	2·85	...	58	2·95xx
July 15 ...	II.	Hurst Green, Boarzell .....	2·00	1	0?	2·00?x
„ „ ...	„	Ticehurst, Myskyns .....	2·00?	1	0	2·00?x
Oct. 3 ...	IV.	Dilham .....	2·00	1	0	2·00 x
Oct. 3 ...	V.	Crediton, Okefield .....	1·45	1	0	1·45
„ 2 ...	III.	Hedsor .....	1·08	1	0	1·08
June 17 ...	„	Libury Hall .....	1·04	1	0	1·04
„ 6 ...	XVII.	Drumblade .....	1·00?	1	0	1·00?
„ 17 ...	III.	Brampton Grange .....	2·12	1	15	1·70 x
„ „ ...	„	Great Paxton .....	2·80	1	30	1·87xx
Sept. 16 ...	X.	Newcastle, Town Moor.....	2·65	1	30	1·77xx
June 24 ...	XIV.	Motherwell, Dalzell .....	1·60	1	30	1·07
Aug. 9 ...	IV.	Wangford, Reydon Grove.....	2·60	2	0	1·30 x
Sept. 16 ...	X.	Gosforth, Woodbine Road ...	2·53	2	0	1·27 x
Oct. 2 ...	VI.	Blockley, Upton Wold .....	2·00	2	0	1·00
Aug. 16 ...	V.	Bishops Cannings .....	1·77	2	0	·89
Apl. 29 ...	III.	Oxford, Radcliffe Observatory	1·42	2	0	·71
July 10 ...	II.	Brighton, Withdeane.....	1·45	2	14	·65
Oct. 3 ...	VI.	Radford, Semele.....	1·80	2	30	·72
July 30 ...	XI.	Guernsey, St. Martins .....	2·09	2	30	·84
Oct. 8 ...	VII.	Waltham-on-the-Wold .....	2·15	2	35	·83
July 14 ...	II.	Mayfield, Five Ashes.....	2·36	3	0	·79

Wangford on August 9th and that of 2·53 in. in 2 hours at Gosforth on September 16th were both instances of the typical summer thunder shower, the heavy rain being confined to extremely narrow limits in both cases. A remarkable fall occurred on September 18th in the Isle of Alderney, when, in 45 minutes, exactly 2·00 in. fell. This rain was said by several Observers to have been of a singularly black colour. The remaining “remarkable” falls took place as late as October 2nd at New Malden, when 1·20 in. fell in 24 minutes, while on the following day at Dilham, in Norfolk, 2·00 in. fell in an hour. It will be noted that there was no “remarkable” fall with a time limit under 24 minutes, the absence of “remarkable” falls of shorter duration being doubtless explained by the unusual rarity of summer thunderstorms. Thus, of the 15 cases in Table III. in which the duration did not exceed a quarter of an hour, there were six instances in May and four in October, the months of June to September accounting for only four in all.

## HEAVY FALLS ON RAINFALL DAYS IN 1913.

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A STEADY increase in the number of records available for the investigation of heavy daily rainfalls, together with a perceptible improvement as time goes on in the geographical distribution of the stations, enables this section of *British Rainfall* to approach year by year more nearly to the ideal at which we aim, but which we fear can never be fully realized. For the greater part of England, it is true, it is now possible to construct maps of the rainfall of any one day, or group of days, which may be relied upon as reproducing the actual facts with a substantial degree of accuracy, but for most of Ireland and for much of Scotland and Wales daily rainfall maps can be drawn only in a generalized manner. In the case of maps of the rainfall of a year or a month, much guidance can be obtained in drawing lines where rainfall data are scarce from our knowledge of the principles of relationship between the fall of rain and the contour of the land, but the rainfall of a single day frequently shows so little relation to the land relief that it is necessary to depend entirely on the actual rain gauge readings. It is largely on this account that we use every effort to obtain an increased representation of the outlying areas of the British Isles, where every year many rainstorms must at present go unrecorded and much information of great utility, from a meteorological point of view, be thereby lost.

For 1913, the number of records which we have been able to consult was 4,408, an increase of 93 over the previous year. The information is presented in the usual form, and the lists of records given under each date include all instances in which the maximum daily rainfall of the year at any station reached 2·50 in. or 7·5 per cent. of the year's total rainfall at that station.

The year was at many places entirely free from remarkable thunderstorms, and most of those described in the following pages were extremely local in character. One important example provides

five of the following additions to the historical list of heavy rainfalls printed in *British Rainfall*, 1910, and brought up to date in subsequent volumes. The following records require to be added to the list.

Div.	County.	Station.	Date.	M.
VII.	Nottingham.	Newark Castle Gardens .. ...	Oct. 5, 1913 ...	3·47
IX.	YORK, W.R.	Doncaster, Pumping Station	Sept. 17, 1913 ...	6·06?
	"	"	Brodsworth .....	Sept. 17, 1913 ... 5·50
	"	"	Doncaster, Wyndthorpe ...	Sept. 17, 1913 ... 5·50
	"	"	" Avenue Road ...	Sept. 17, 1913 ... 5·26
	"	"	" Carr Ho. Hospital	Sept. 17, 1913 ... 4·27
XI.	Glamorgan.	Rhondda W.W., Llyn Fawr Res....	Apr. 26, 1913 ...	5·37
	"	"	Treherbert, Tyn-y-waun.....	Apr. 26, 1913 ... 4·45
	"	"	Rhondda, Pont Lluest Wen Res.	Apr. 26, 1913 ... 4·40
	BRECON.	Swansea W.W., Bwlch .....	Nov. 20, 1913 ...	4·24
	Merioneth.	Blaenau Festiniog .....	June 9, 1913 ...	4·13
	Carnarvon.	Penmachno, Gwnfa .....	June 9, 1913 ..	4·00
	"	"	Snowdon, Pen-y-Gwryd .....	June 9, 1913 ... 4·42
XXII.	Mayo.	Aasleagh House .....	Sept. 14, 1913 ...	3·41

The most interesting feature is provided by the records of the great Doncaster storm, which, if the measurement of 6·06 in. at the Doncaster Pumping Station can be accepted, brings the West Riding into the short list of counties which have during the last 50 years had a daily rainfall of 6 inches recorded within their borders. The falls of 3·47 in. at Newark and of 3·41 in. at Aasleagh are curiously enough the first falls of 3 inches ever known to have taken place in the counties of Nottingham and Sligo respectively, the latter no doubt merely from want of Observers. Glamorganshire also had until 1913 no record of a 5 inch daily rainfall.

## Part I.—The Chronicle.

### January 4th.

Although no individual record was sufficiently heavy for quotation, 157 stations, chiefly in the south-west of England, recorded their maximum rainfall for the year. The area over which the rainfall exceeded an inch stretched from Plymouth to Hereford and north-eastwards in a long narrow strip as far as Nottinghamshire. The position of this area coincided in a remarkable way with that occupied at 7 a.m. on January 5th by a small secondary depression which appeared off the south of Ireland on the evening of the 4th and passed away to the north-westward on the 6th.

**January 11th—13th.**

During the existence of a very deep depression in the Atlantic and a well established anticyclone over Scandinavia, a well marked secondary formed in the north of the Bay of Biscay, and spread northward over the southern part of England, subsequently moving slowly to the east. On the 11th heavy snow was general in England and Scotland. It appears to have been most severe in Perthshire, where, during the 11th and the two following days, as much as 30 inches of snow was experienced in some places. The amount measured did not, during any individual day, reach the limit for putting on record here, and the map is rendered somewhat uninteresting by the comparative uniformity of the fall.

**January 22nd.**

Heavy rainfall in Wales. Much flooding occurred in the Conway Valley.

XI. Llantrisant (S. Rhondda Colliery)..... 2·95 in. or 4·1 per cent.

**January 30th.**

Low barometric pressure in Iceland, and high pressure in the Atlantic and in Central Europe, were accompanied by strong south-westerly and westerly winds which brought considerable rain to the west coast of Scotland.

XV.	Ballachulish House .....	2·63 in.	or 3·1 per cent.
„	Mull (Knock) .....	3·30 „	3·8 „

**February 2nd.**

XVIII. Glenleven (Blackwater Dam, N.) ..... 2·65 in. or 3·0 per cent.

**March 1st.**

XV. Mull (Gruline) ..... 2·62 in. or 3·1 per cent.

**March 14th.**

XI. Glynecorwg Colliery ..... 2·82 in. or 2·9 per cent.

**March 22nd.**

Two depressions, one travelling in a north-westerly direction from the Bay of Biscay, the other in a westerly direction across the north of Ireland, apparently coalesced near Berwick on the morning of the



wind from the S.W., and, as might be expected in such circumstances, the rainfall distribution appears to have been determined almost entirely by the configuration of the land. Rain fell in all parts of British Isles except a small district surrounding the Moray Firth, but the fall in the eastern half of Great Britain was less than .50 in., and it was generally close to that amount in Ireland. The fall exceeded an inch over most of Wales, Dartmoor, Exmoor and a considerable part of the Pennines, and reached 3 inches in the centre of the Lake District, on Snowdon and in Glamorganshire. We give a map showing the distribution in England and Wales.

VIII.	Duddon Valley (Seathwaite Vicarage)...	2.59 in.	or 3.5 per cent.
X.	Ambleside (Skelwith Bridge) .....	2.70 „	3.3 „
XI.	Abertillery (Cwmtilery) .....	2.60 „	3.5 „
„	Pontypridd (Maesderwen, Graig) .....	2.80 „	4.6 „
„	„ (Lan Wood Reservoir) .....	2.66 „	4.4 „
„	Porth (Cemetery Road) .....	3.06 „	4.1 „
„	Penygraig (Hendrecafn House) .....	3.25 „	3.6 „
„	Clydach Vale (Caes Newydd).....	3.21 „	3.4 „
„	Ystradyfodwg (Tyntyla Hospital).....	2.55 „	3.8 „
„	Mountain Ash (Darranlas Reservoir) ...	2.50 „	3.6 „
„	Bwlch (Buckland Gardens) .....	3.27 „	5.8 „

#### April 26th.

A large, deep and irregularly shaped depression remained almost stationary off the west coast of Ireland and was accompanied by very disturbed conditions in all parts of the British Isles. In Ireland and Scotland, however, the rainfall was not excessive. More than 1.00 in. fell over a large part of the west of England and Wales, but the amount fell off abruptly to less than .25 in. east of a line passing from north to south, and dividing England into two almost equal parts. The east coast was practically rainless. More than 2 inches fell on Dartmoor, in North and South Wales, and in Borrowdale, but the fall was only remarkable in Glamorganshire, where it exceeded 4 inches at two spots and reached 5.37 at Llyn Fawr, near Treherbert, this being the first recorded instance of a fall of 5 inches in a single day in that county of heavy rainfall. About 180 stations recorded their maximum rainfall for the year on this day, of which 60 were in Wales. We give on p. [119] a map of the most interesting portion of the map of the day's rainfall and measurements have been made of the areas with more than an inch.

## 119 ]

	Area, sq. miles.	General Rainfall, inches.	Volume of Rain, sq. miles × inches.
More than 4 inches.....	25	4·32	108
3—4 inches .....	148	3·45	510
2—3   ,,   .....	960	2·40	2,303
1—2   ,,   .....	10,697	1·33	14,191
	<hr/>		<hr/>
Total more than 1 inch	11,830		17,112

The general rainfall of the area over which more than an inch fell was 1.45 in.

V.	Princetown (H.M. Prison) .....	2·78 in. or 3·1 per cent.	
„	Christow (Laployd) .....	2·60 „	5·3 „
XI.	Nant-y-bwch (Shon Sheffrey's Well) ...	2·66 „	4·1 „
„	Mountain Ash (Darranlas Reservoir) ...	2·50 „	3·6 „
„	Treherbert (Bute Colliery) .....	3·95 „	4·2 „
„	„ (Tyn-y-waun).....	4·45 „	4·5 „
„	Rhondda (Pont Lluest Wen Reservoir)	4·40 „	5·0 „
„	„ W.W. (Llyn Fawr „ )	5·37 „	5·2 „
„	Aberdare (The Mardy).....	3·51 „	4·7 „
„	„ (Abernant House) .....	3·66 „	5·2 „
„	Merthyr Tydfil (Penbryn Filters).....	2·85 „	4·6 „
„	Dowlais (Gwernllwyn) .....	2·56 „	5·4 „
„	Pont Neath Vaughan [Glyn Neath]... ..	2·60 „	3·8 „
„	Nanthir Reservoir [Aberdare] .....	3·56 „	5·2 „
„	Cardiff W.W. (Llwynon Reservoir) .....	2·70 „	4·1 „
„	„ „ (Pont-ar-daf) ..	3·37 „	4·5 „
„	Taff Fechan (Pentwyn Reservoir) .....	2·91 „	3·9 „
„	Cardiff W.W. (Cantref Reservoir) .....	2·64 „	3·3 „
„	Taff Fechan (Neuadd Reservoir) No. 1... ..	2·95 „	3·7 „
„	„ „ ( „ „ ) No. 4... ..	3·40 „	3·8 „
„	„ „ ( „ „ ) No. 4A. ..	3·27 „	3·6 „
„	„ „ ( „ „ ) No. 11. ..	3·80 „	5·1 „
„	Ebbw Vale W.W. <i>West g.</i> No. 3 .....	2·87 „	3·8 „
„	„ „ „ <i>N.W. g.</i> No. 2.....	2·50 „	3·5 „
„	Trecastle (Blaenau-hydfer) .....	3·49 „	3·9 „
„	Brecon (Ffrwdgrech) ..	3·59 „	6·0 „
„	„ (The Laurels) .....	2·91 „	5·7 „
„	Birmingham W.W. (Elan Village) .....	2·67 „	4·4 „
„	„ „ (Nantgwillt) .....	2·65 „	3·9 „

#### April 29th.

Thunderstorms of considerable severity occurred in the south of England and the Midlands, although the amount of rain was not anywhere very exceptional. The chief point of interest in the distribution of rainfall lies in the persistence, in an unbroken line from the Isle of Wight to Perthshire, of a narrow strip with more than ·50 in. of rain on this day. Within this strip a few places in the north had slightly over 1·00 in., but the main culminating area was a tract of land about 130 miles in length, and of an average width not exceeding 7 or 8 miles, stretching from Basingstoke northward to near Ashbourne. The fall reached 2·00 in. at Abingdon, where the storm is said to have caused a flood unprecedented in memory. Such notes as have come into our hands of the time at which this storm took place in different parts of the area affected, show that the rain fell





roughly between 6 and 8 p.m. in the extreme south, between 7 and 9 p.m. in the south Midlands, and between 9 and 11 p.m. in the north Midlands, suggesting propagation from south to north, but north of Yorkshire we have no information as to the time, and it is possible that the rainfall in the north was not associated with any very definite thunderstorm such as that which took place in England. The same remark applies to the rain which fell in Wales and in the east of Ireland on this day. In the map which we reproduce the area with  $\cdot 50$  in. or more has been tinted and emphasizes the peculiar distribution.

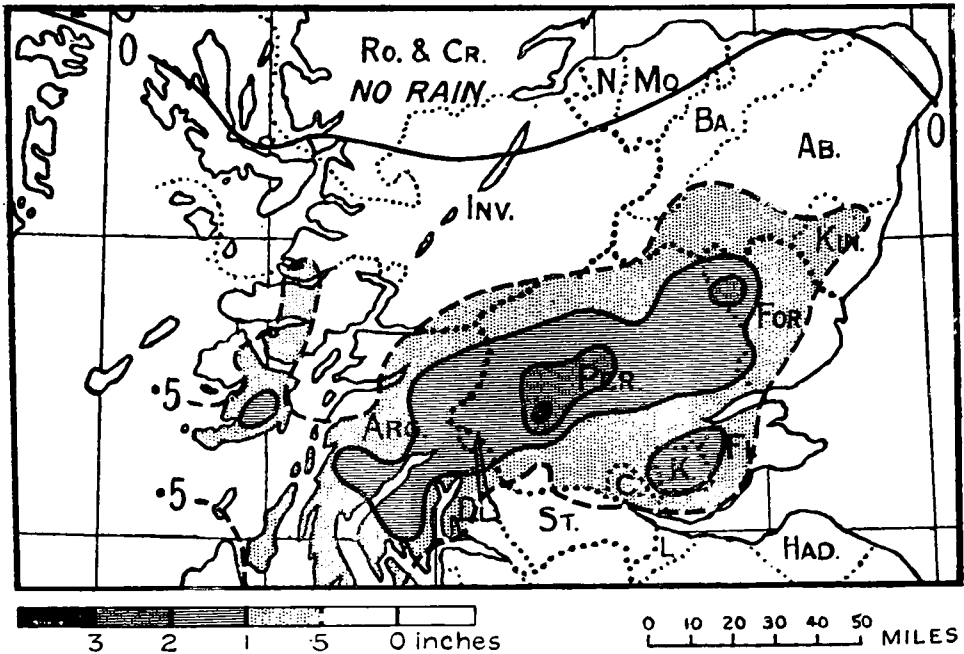
II.	Abingdon (The Square House) .....	1·75 in. or 7·5 per cent.	
	„ „ (Twickenham House) .....	1·92 „	8·6 „
	„ „ (Caldecott House) .....	2·12 „	10·2 „
	„ „ (Sewage Works) .....	1·71 „	8·3 „
	„ „ Union .....	1·99 „	8·0 „
III.	„ (Culham School House).....	2·04 „	8·7 „
	„ „ ( „ College) .....	1·93 „	8·4 „

#### May 6th—10th.

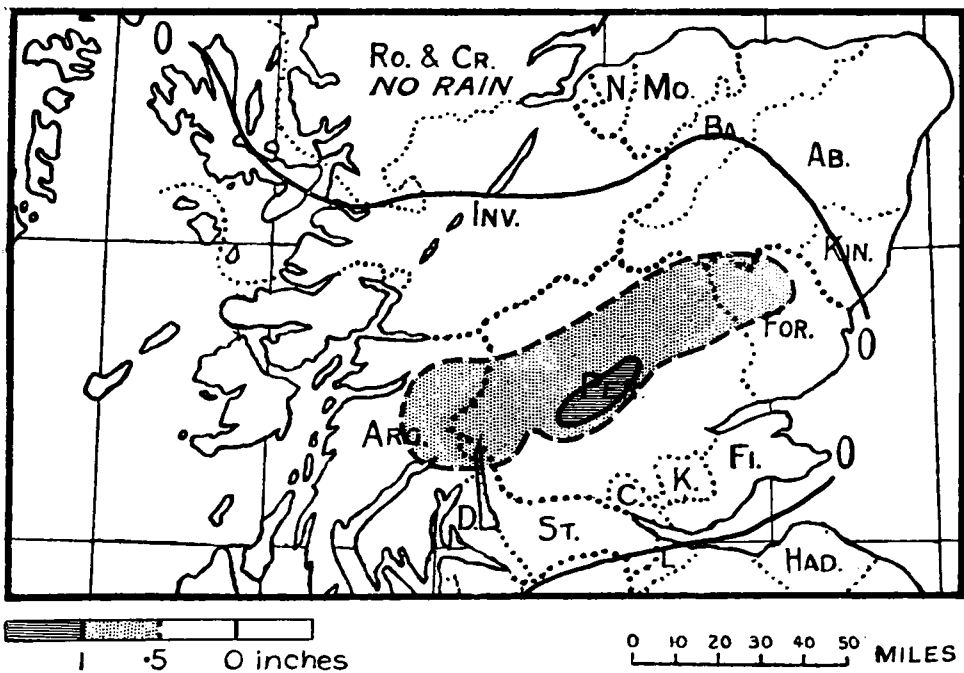
During these five days the pressure distribution was dominated by irregularly moving lows on the west and a fairly stable high pressure area in Scandinavia. Over Scotland the wind was for the most part easterly or south-easterly and of considerable strength. It is difficult to see in these conditions any reason for the succession of very wet days which occurred in central Scotland, and it seems probable that minor disturbances, too small for detection in the ordinary pressure maps, must have influenced the weather in that district. The area affected was sharply defined on the north-west, little rain falling beyond the Spey Valley on any day. On the south-east the line of demarcation ran approximately from Arbroath to Glasgow. The four sketch maps which we give indicate the distribution of rainfall on the 6th, 7th, 8th and 9th separately. It will be observed that there was a tendency for the centre of highest rainfall to shift from south-west to north-east during the period. This was still evident on the 10th when only a small area around Aberdeen had about  $\cdot 50$  in. The greatest individual day's rain took place at Ardvorlich, on the banks of Loch Earn, on the 6th, but this fall was probably very local since less than 2 inches fell a few miles west at Lochearnhead. A strip of country bordering Loch Tay apparently received more than an inch of rain on each of the four

days, from the 6th to the 9th, and the district most severely visited

RAINFALL MAY 6<sup>TH</sup>, 1913.



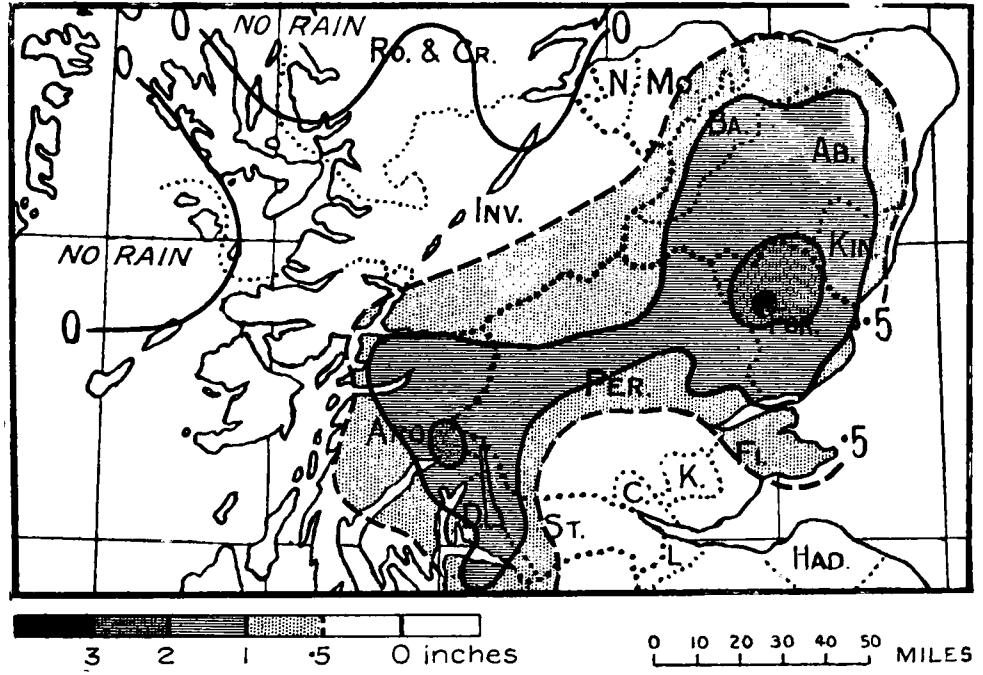
RAINFALL MAY 7<sup>TH</sup>, 1913.



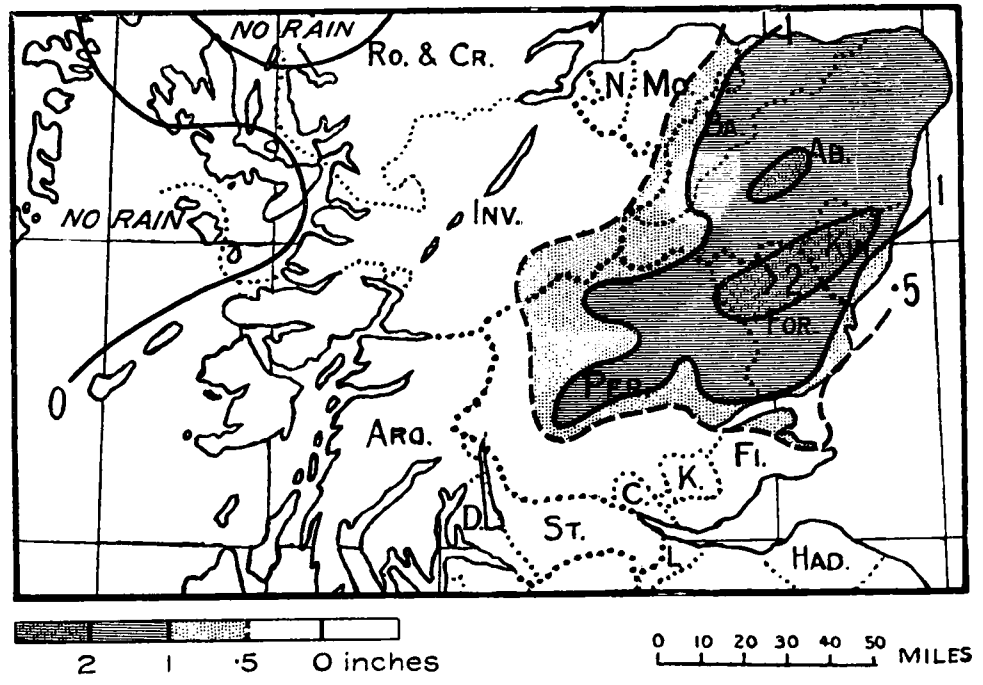
was Eskdale, in Forfarshire, where more than 7 inches fell during the

whole period, and where one station experienced a fall of 9·09 in. in

RAINFALL MAY 8<sup>TH</sup>, 1913.



RAINFALL MAY 9<sup>TH</sup>, 1913.



the four days. The rivers Tay, Don, Dee and Esk were seriously

flooded, and much damage was, done especially in Strathtay. The following short table contains all instances of records of 5·00 in. or more as the total of the period. The district is of course one in which there are comparatively few Observers, and the stations referred to are scattered over an area of several hundred square miles.

*Rainfall of May 6th—9th.*  
*Records of 5·00 in. or more.*

		6th.	7th.	8th.	9th.	TOTAL, 6th—9th.
XVI.	Locheearnhead (Ardvorlich) .....	3·57	1·15	·87	1·00	6·59
„	Aberfeldy (Urlar) .....	2·43	1·15	1·74	1·26	6·58
„	„ (Dall Avon) .....	2·08	·89	1·39	1·02	5·38
„	„ (Dunros) .....	1·84	1·06	1·63	·73	5·26
„	Blairgowrie (Ballintuim House) ...	1·49	·60	1·30	1·72	5·11
„	Kettins School .....	1·88	·75	1·56	1·31	5·50
„	Forfar W. W. (Den of Ogil) .....	·92	·38	2·05	1·82	5·17
„	Glen Prosen (Lednathie) .....	1·91	·66	2·25	2·81	7·63
„	„ „ (Balnaboth Gardens) .....	2·54	·95	3·02	2·58	9·09

We give separately the volume of rain over the area with more than ·50 in. on each of the four days.

<i>May 6th.</i>	Area, sq. miles.	General Rainfall, inches.	Volume of Rain, sq. miles × inches.
More than 3 inches.....	22	3·14	69
2—3 inches .....	303	2·35	713
1—2 „ .....	2,310	1·36	3,152
·50—1 „ .....	4,477	·74	3,291
Total—More than ·50 inch	7,112		7,225

<i>May 7th.</i>	Area, sq. miles.	General Rainfall, inches.	Volume of Rain, sq. miles × inches.
More than 1 inch .....	188	1·10	206
·50—1 inch .....	1,974	·72	1,412
Total—More than ·50 inch	2,162		1,618

<i>May 8th.</i>	Area, sq. miles.	General Rainfall, inches.	Volume of Rain, sq. miles × inches.
More than 3 inches.....	14	3·07	43
2—3 inches .....	361	2·34	845
1—2 „ .....	4,419	1·42	6,266
·50—1 „ .....	4,058	·74	3,004
Total—More than ·50 inch	8,852		10,158

<i>May 9th.</i>	Area, sq. miles.	General Rainfall, inches.	Volume of Rain, sq. miles × inches.
More than 2 inches.....	559	2·34	1,310
1—2 inches .....	3,621	1·49	5,392
·50—1 „ .....	1,957	·76	1,480
Total—More than ·50 inch	6,137		8,182

The general rainfall of the area with more than .50 inch on each day was : 6th 1.02 in., 7th .75 in., 8th 1.15 in. and 9th 1.33 in.

### May 6th.

XVI. Lochearnhead (Ardvorlich) ..... 3.57 in. or 4.5 per cent.

### May 8th.

XVI. Glen Prosen (Balnaboth Gardens) ..... 3.02 in. or 5.5 per cent.

### May 9th.

XVI.	Glen Prosen (Lednathie) .....	2.81 in.	or 5.8 per cent.
XVII.	Crathes (Crossroad, Durris).....	2.66 „	7.5 „
„	„ (Pinewood) .....	2.76 „	8.3 „
„	Alford (Lynturk Manse) .....	2.16 „	7.9 „
„	Insch (Thornhill) .....	1.93 „	7.7 „

### May 26th and 27th.

Although no records were of sufficient importance to justify inclusion in the lists, and the maximum rainfall for the year occurred at only about a dozen stations on the 27th, these two days are worthy of mention on account of the remarkable hailstorms which occurred. On the 26th the neighbourhood affected was the Welsh border, and the most noteworthy storm took place at Bishops' Castle, in Shropshire, where much damage was done by violent rain and hail. On May 27th still more remarkable hailstorms occurred at several places in the east of England, mainly in Cambridgeshire and Huntingdonshire, and in an especial degree on the borders of Suffolk and Essex. In the Halstead district hailstones of a very unusual size fell, and an immense amount of damage was done to buildings, crops and animals. Some interesting details of these storms will be found in the Observers' Notes on pp. [14]–[16].

### June 8th and 9th.

The weather conditions at this time were dominated by a series of depressions of no great intensity passing in an easterly track to the north of Scotland, together with a belt of high pressure to the south of the British Isles, the conditions thus conducing to south-westerly winds; but it seems probable, as is frequently the case, that the rain on both days was associated more intimately with secondary depressions on the outskirts of the main low pressure system. On the 9th heavy rain fell generally in most parts of Wales and over the north-west of England and west of Scotland, giving more than

3 inches in the Lake District and Snowdonia, and more than 4 inches in the wettest parts of both districts.

### June 8th.

XVIII.	Loch Arkaig (Glendessary) .....	2·90 in.	or 2·6 per cent.
„	Glenquoich (Bunchoalie) .....	3·30 „	...

### June 9th.

X.	Borrowdale (The Moraine) .....	4·18 in.	or 4·3 per cent.
„	„ (Grange) .....	3·55 „	4·1 „
„	Rydal (High Close) .....	2·60 „	3·0 „
„	Dungeon Ghyll .....	3·68 „	3·4 „
„	Grasmere (The Wray) ..	3·09 „	3·4 „
„	„ (Michael's Fold) .....	2·87 „	3·3 „
XI.	Machynlleth (The Plas) .....	2·50 „	4·4 „
„	Llangurig (Dernol) .....	2·76 „	4·6 „
„	Blaenau Festiniog (Oakley Quarries) ..	4·13 „	4·4 „
„	Penmachno (Gwnfa) .....	4·00 „	...
„	Snowdon (Pen-y-Gwryd) .....	4·42 „	3·0 „
„	Beddgelert (Council School) .....	3·14 „	3·2 „

### June 17th.

Short and sharp thunderstorms of a very local nature resulted in exceedingly heavy downpours in many parts of Cambridgeshire and north-east Essex. There was also a remarkable detached storm at Elveden, near Thetford, where, out of a total of 3·19 in., no less than 2·85 in. is reported to have fallen in the short space of 58 minutes, one of the most noteworthy instances of intense rainfall ever recorded in the British Isles.

III.	Stanstead Abbots .....	1·89 in.	or 8·6 per cent.
„	Royston (Barley) .....	2·05 „	9·2 „
„	St. Neots (Great Paxton) .....	2·90 „	12·5 „
„	Huntingdon (Brampton Grange) .....	2·23 „	10·3 „
„	Whittlesea Mere ..	1·80 „	9·5 „
„	Little Shelford Manor House .....	1·78 „	8·2 „
„	Stapleford House .....	1·62 „	8·1 „
„	Trumpington .....	1·85 „	8·8 „
„	Grantchester Mill .....	1·69 „	8·7 „
„	Cambridge (Pinehurst) .....	1·56 „	7·9 „
IV.	Elsenham (Gaunts End) .....	1·86 „	8·1 „
„	Arkesden (Wood Hall) .....	1·88 „	8·2 „
„	Hawkedon Rectory .....	1·76 „	7·6 „
„	Elveden Hall .....	3·19 „	14·0 „

### June 18th.

XVII.	Kinloss House .....	1·59 in.	or 7·9 per cent.
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### July 10th.

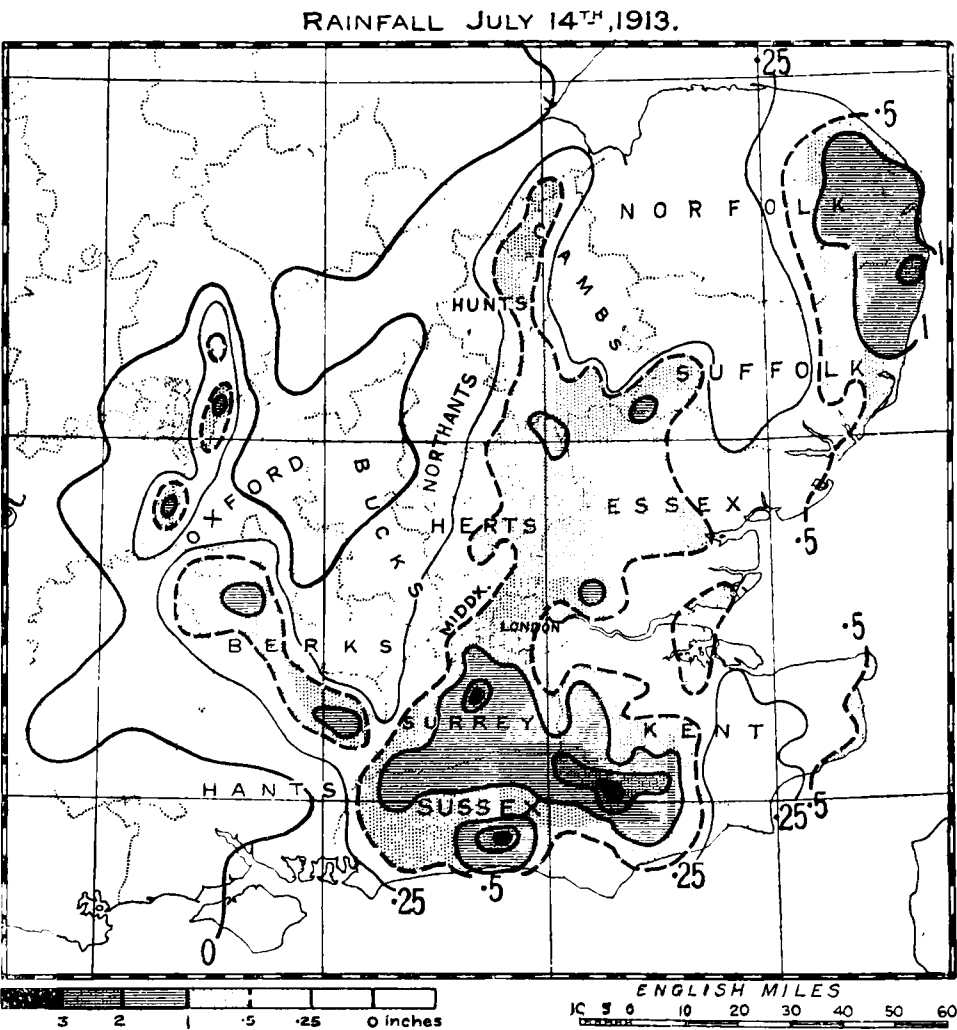
Local thunderstorms, culminating chiefly in Sussex, where exceedingly heavy rain fell for a short time during the afternoon.

The only fall of sufficient quantity to be put upon record, however, took place in Norfolk.

IV. Saxlingham Nethergate ..... 1.99 in. or 9.0 per cent.

July 14th.

Thunderstorms of unusual violence occurred in many parts of the south-east of England. In Sussex, where the rainfall was greatest,



there appear to have been two storms, the less severe during the afternoon of the 14th, and a much heavier one between midnight and about 3 a.m. on the 15th, the rainfall of both being, of course, included in the rainfall day of July 14th. The storms were accompanied by rainfall which was locally very intense, the total reaching



3 inches at Mayfield, at Hassocks and at Ashtead. The one-inch splash stretched unbroken from Haslemere, on the west, to Battle, on the east, and northward to Kingston-on-Thames and Sevenoaks. A separate one-inch area lay to the north of Brighton. Apart from the main centre in Sussex and Surrey the storms affected three radiating strips stretching respectively north-westward to Coventry, northward to Wisbech and north-eastward to North Walsham. The western of these strips was fairly continuous, and at several spots within it the fall exceeded 1·00 in. In the central strip there was less heavy rain, but in the eastern an area of 621 square miles in East Anglia had more than an inch, and slightly more than 2 inches fell near Beccles. The whole of the country, with trifling exceptions, north-west of a line drawn from Spurn Head to the Needles was without rain, and the measurements below refer, therefore, only to the south-eastern portion of England.

	Area, sq. miles	General Rainfall, inches.	Volume of Rain, sq. miles x inches
More than 3 inches .....	18	3·17	57
2—3 inches .....	155	2·38	369
1—2 „ .....	1,794	1·33	2,382
·50—1 inch .....	3,921	·71	2,784
Less than ·50 inch .....	12,220	·20	2,462
Total area with rain	18,108		8,054

The general rainfall of the 18,108 square miles with rain was ·44 in., the volume of precipitation being 116,622 million gallons. The maximum fall for the year occurred on this day at about 200 stations in England.

II.	Ashtead (Barnet Wood Lane) .....	2·50 in. or 9·1 per cent.
„	„ (Oakfield Road) .....	2·24 „ 8·3 „
„	„ (The Hut) .....	3·32 „ 11·8 „
„	Hawkhurst (Hensill).....	2·29 „ 7·7 „
„	Hassocks (Pyecombe) .....	3·20 „ 8·0 „
„	Mayfield (Bishopstone).....	3·50 „ 9·6 „
„	Crowborough (Te Whare) .....	2·98 „ 7·1 „
IV.	Beccles (Sotterley Hall) .....	2·08 „ 8·7 „
„	Lowestoft (Mill Road) .....	1·93 „ 8·5 „
„	„ (Belle Vue Park) .....	1·99 „ 9·1 „
„	Blundeston House .....	1 70 „ 8·0 „

### July 29th.

A thunderstorm brought the maximum fall to every station in the island of Guernsey. One record only can claim insertion.

XI.	St. Saviours (Le Mont Saint) .....	2·40 in. or 7·5 per cent.
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**August 9th.**

Severe hailstorms of a very local nature. Of the 2·66 in. measured at Reydon Grove, no less than 2·60 in. fell in two hours. Remarkable hailstorms occurred in Sussex also.

IV.	Wangford (Reydon Grove) .....	2·66 in. or 11·7 per cent.
„	„ (Ford House) .....	2·12 „ 8·6 „

**August 11th.**

IV.	Parham (The High House) .....	1·50 in. or 7·6 per cent.
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**August 21st.**

A local Lake District rainfall. Seathwaite alone had a total worthy of remark.

X.	Borrowdale (Seathwaite) .....	4·32 in. or 3·5 per cent.
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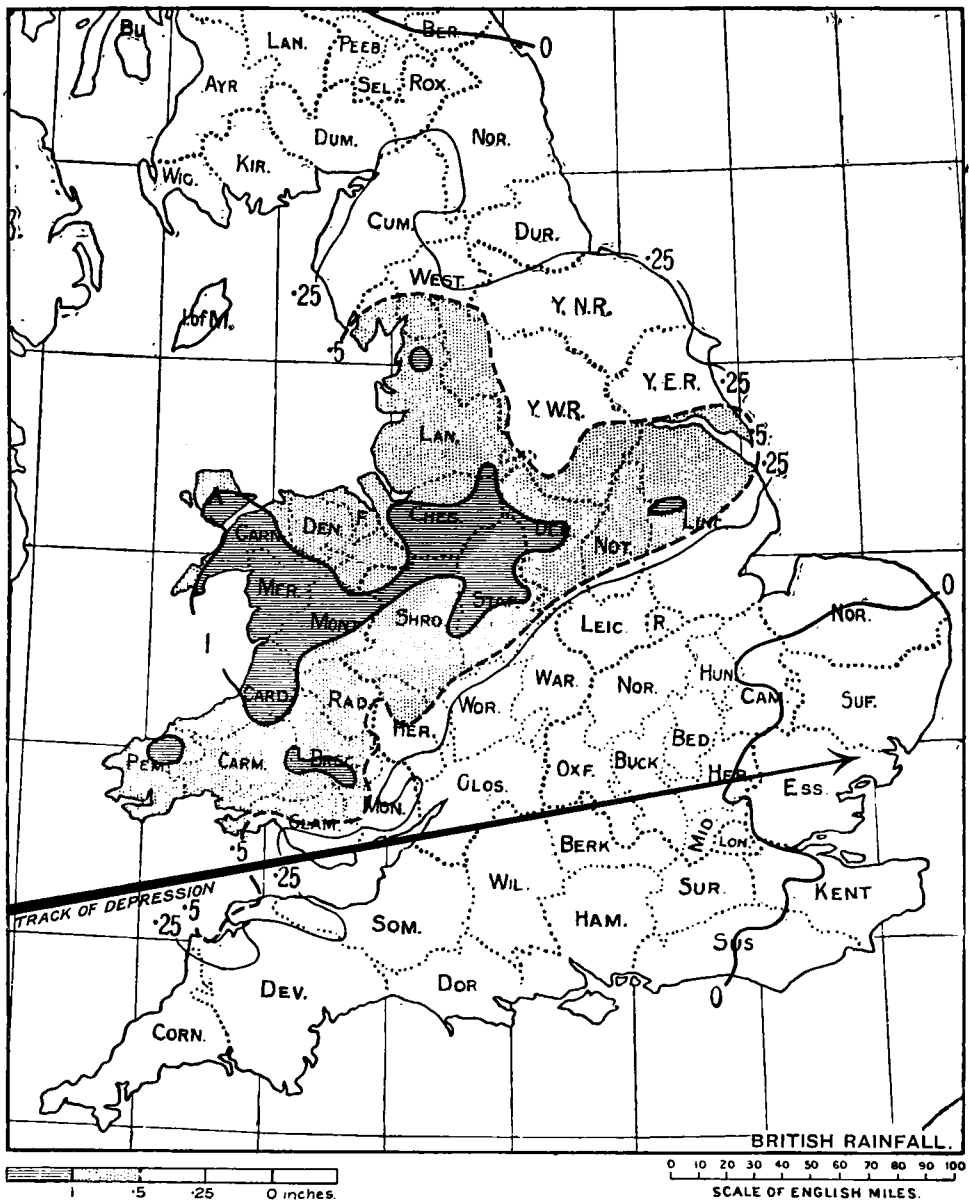
**August 22nd.**

A V-shaped secondary passed on the evening of the 22nd across the south of England in an easterly direction, and was accompanied by a well defined rain-splash, the central line of which was almost exactly parallel to the track of the depression, and lay about 100 miles to the left of it. About 70 stations in England and half a dozen in North Wales recorded their highest rainfall for the year, and, though none were of sufficient magnitude to quote, we reproduce on p. [131] a map of the rainfall for the day as an interesting example of the tendency of rain to fall on the left hand side of the path of cyclonic depressions, to which we have frequently drawn attention.

**August 30th and 31st.**

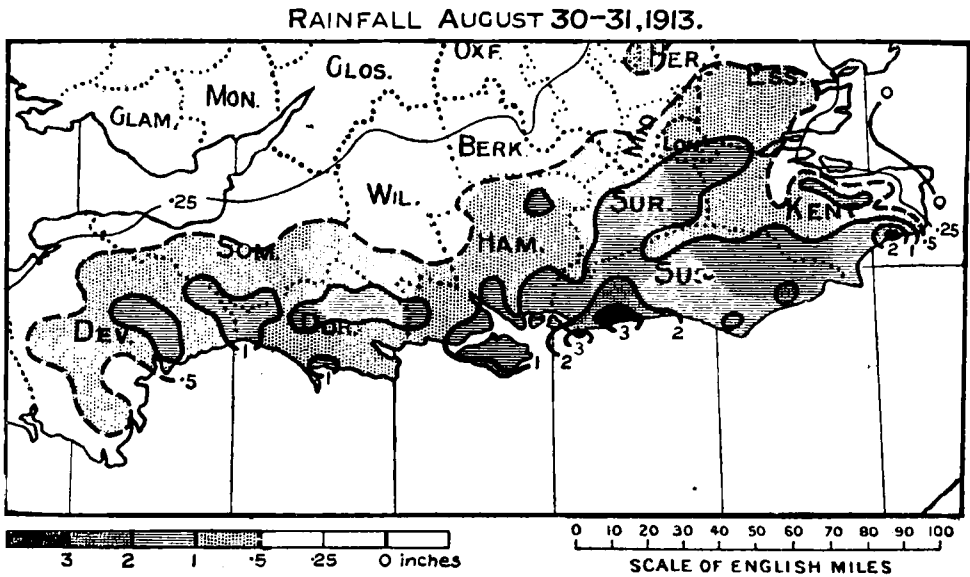
A small and shallow depression hovered round the English Channel throughout these two days, and the atmospheric conditions were of a very unstable nature. Severe thunderstorms occurred in places on the coast of Sussex and Kent. The rain was more general, and in most places heavier, on 31st, but as it is clear that the rainfall of the two days at places merged into one continuous fall, the map has been constructed for the two together. The area with one inch or more of rainfall covered the greater part of a long narrow strip between mid-Devonshire on the west and Dover on the east. It extended inland only about 10 or 20 miles, except in a tongue which stretched northward as far as the Thames, near Gravesend.

Small detached areas, one in north Kent, the other near Basingstoke, also experienced as much as an inch of rain, and on the 31st an isolated storm produced more than 1 inch round Ely. A series of small detached 2-inch splashes occurred on the south coast between

RAINFALL AUGUST 22<sup>ND</sup>, 1913.

Dover and Hayling Island, and the rainfall reached 3 inches or more at Selsey, Littlehampton and Folkestone. In the steeply graded streets of Folkestone and on the slopes of Shorncliffe extensive damage was done by the sudden rush of flood water.

The rain was in most places so divided between the two days that neither day had sufficient by itself to justify quotation as the maximum of the year. Only one record therefore appears in the list for August 30th and one for August 31st, the latter referring to an altogether different area to the main splash, and in order to



supplement these meagre details the following small table includes all records of 3·00 in. or more for the whole period.

*Rainfall of August 30th—31st, 1913.*  
*Records above 3·00 inches.*

	30th.	31st.	30th—31st.
II. Folkestone (Radnor Park).....	1·50	1·72	3·22
„ Selsey (Large Acres) .....	1·65	1·88	3·53
„ Tortington House .....	2·72	1·04	3·76
„ Patching .....	·81	2·32	3·13
„ „ House .....	·83	2·30	3·13
„ Littlehampton (East Preston) .....	...	...	3·57
„ Worthing (Victoria Park).....	·68	2·47	3·15

**August 30th.**

II. Tortington House .....	2·72 in. or 7·5 per cent.
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**August 31st.**

III. Stretham (Dimock's Cote) .....	1·65 in. or 7·6 per cent.
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**September 1st.**

A small depression, possibly representing the later stages of that referred to in the paragraph dealing with August 30th and 31st, was situated over the Netherlands on this day. Widespread rain

fell over the English Midlands, and about 130 stations experienced their maximum fall for the year, but the amount was in no case very remarkable.

VII.	Great Casterton (Walk Farm) .....	2·00 in.	or 8·4 per cent.
„	East Keal Rectory .....	1·49 „	7·6 „
„	Halton Holgate .....	1·85 „	8·2 „

#### September 4th.

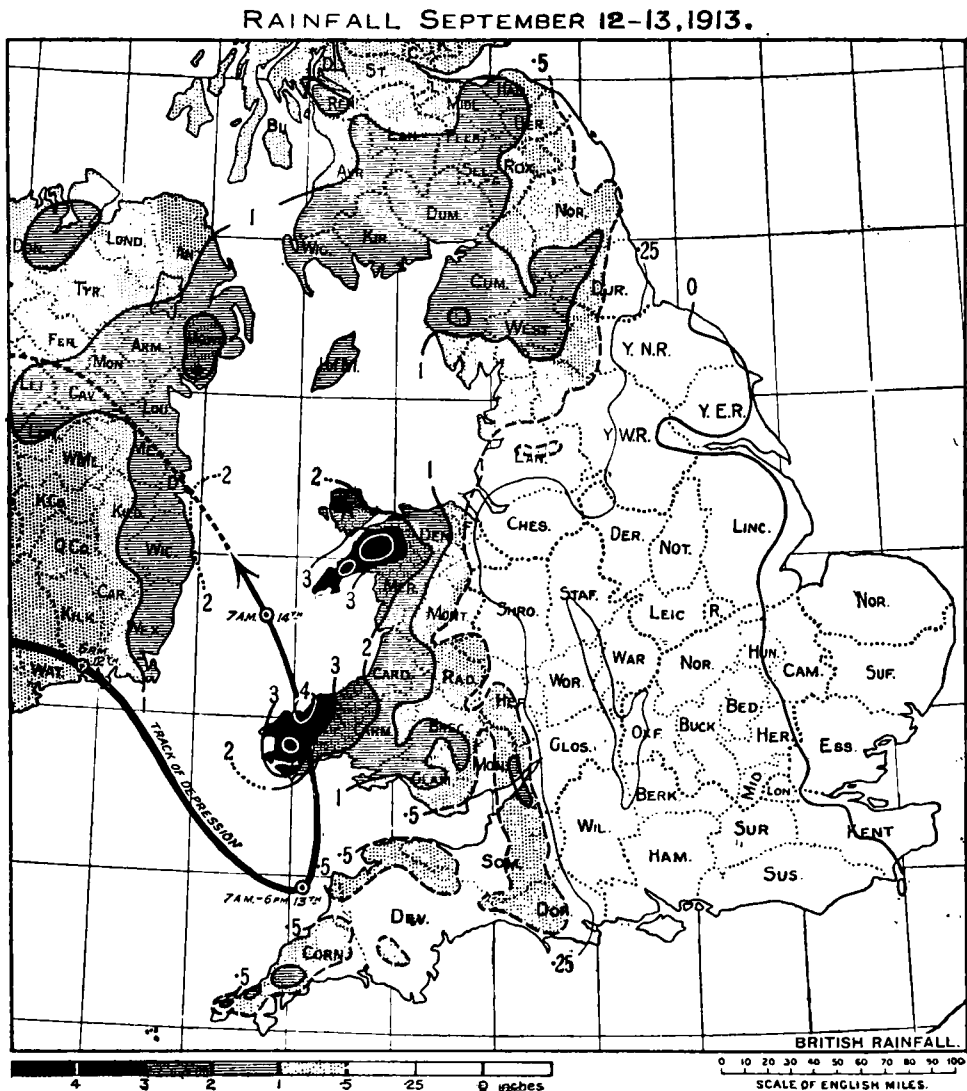
A series of shallow depressions passed eastward up the English Channel, and more than an inch of rain was recorded over a large part of the south and south-west of England and South Wales. The county of Monmouthshire generally had more than 2 inches.

VI.	Sedbury Park [Chepstow] .....	2·40 in.	or 7·6 per cent.
XI.	Llanbedr (Wernbystack) .....	2·50 „	5·7 „
„	Capel-y-ffin [Llanthony] .....	2·72 „	4·3 „

#### September 12th—13th.

A depression which developed as a secondary in the south of Ireland on the 12th increased in intensity during the following night, and moved south-eastwards to the coast of Cornwall. Here it appears to have remained stationary during the 13th, but later the centre moved abruptly to the north and subsequently followed a curved track across the centre of Ireland, eventually passing away southward into the Bay of Biscay. It is convenient to treat the rainfall of the two days together, and we give a map showing the distribution of the fall during the forty-eight hours. It will be observed that more than 1 inch was recorded in practically all parts of a very extensive area entirely surrounding the Irish Sea and St. George's Channel. Except for various small subsidiary one-inch splashes on the outskirts of the great main splash the rainfall diminished on all sides, less than ·50 in. falling in the west of Ireland, most of the north of Scotland, and of England south of the Pennines. On the east coast of England the two days were rainless. The most interesting feature of the map lies in the notable concentration of heavy rainfall on the coast of Wales, large areas both in Carnarvonshire and Pembroke having more than 3 inches, and considerable parts of both peninsulas having more than 4 inches. It is highly probable that more than 5 inches of rain fell on much of the district immediately surrounding Snowdon. The noticeable increase in the amount recorded as one approaches the sea in Dublin and Wicklow

suggests that the area with 2 inches of rain stretched across the Irish Sea practically to its western shores, and we have indicated its probable outline in a tentative manner by a broken line. It is possible similarly that the 3-inch area stretched unbroken from



Carnarvon to Pembroke, but of this there is no direct evidence. It is, at all events, clear that a very large proportion of this great rainfall must have fallen directly into the ocean.

As a matter of curiosity we have measured the volume of rain which fell in Wales on the two days, with the following results:—

<i>Wales.</i>	Area, sq. miles.	General Rainfall, inches.	Volume of Rain, sq. miles × inches
More than 4 inches .....	221	4·27	943
3—4 inches .....	792	3·44	2,722
2—3 „ .....	1,279	2·42	3,101
1—2 „ .....	2,368	1·33	3,157
·50—1 inch .....	2,147	·76	1,634
Less than ·50 in. ....	660	·37	246
Total .....	7,467		11,803

The general rainfall over the whole of Wales was 1·58 in., or 763 million tons of water.

#### September 12th.

XI.	Lake Cowlyd (Llethr Gwyn) ..	3·03 in. or 3·7 per cent.
„	„ „ (Gors-y-Llithrig) .....	3·17 „ 4·3 „
„	„ „ (Frith Fawr) .....	2·97 „ 3·7 „
„	„ „ ( „ Carreg Wen) .....	2·68 „ 3·2 „
„	Lake Eigiau (Dam Site) .....	2·50 „ 3·2 „
„	Llanberis (Brynrefail) .....	2·93 „ 4·9 „
„	„ „ (Llandinorwig School).....	2·80 „ 4·4 „
„	Bethesda (St. Ann's Vicarage) .....	2·72 „ 4·1 „
„	„ „ (Penrhyn Quarries) .....	2·62 „ 4·0 „

#### September 13th.

XI.	Newport (Llwyngwair) (Pembs.) .....	2·85 in. or 5·1 per cent.
XXIII.	Mourne Mountains (Fofanny Reservoir)	3·08 „ 3·7 „

#### September 14th.

Heavy rain in the west of Ireland undoubtedly associated with the passage southward of the above mentioned disturbance.

XXII.	Aasleagh House .....	3·41 in. or 4·0 per cent.
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#### September 16th.

Scattered localities in the east of England and Scotland experienced thunderstorms which produced no great quantity of rain except at isolated stations. The most noteworthy centre of activity was at Newcastle-on-Tyne, where at one spot 2·65 in. of rain fell in an hour and a half. Considerable flooding took place in the city.

VII.	Bardney Railway Station .....	1·76 in. or 9·1 per cent.
X.	Newcastle (Lit. and Phil. Soc.) .....	2·85 „ 10·8 „
„	„ „ (Northumberland Road) .....	2·00 „ 7·9 „
„	„ „ (Leazes Park).....	2·43 „ 10·4 „
„	„ „ (Town Moor) .....	2·65 „ 9·8 „
„	„ „ (Wellburn, Jesmond) .....	2·18 „ 9·1 „
„	Gosforth (Woodburn Road) .....	3·28 „ „
XVII.	Covesea Skerries .....	1·32 „ 8·0 „

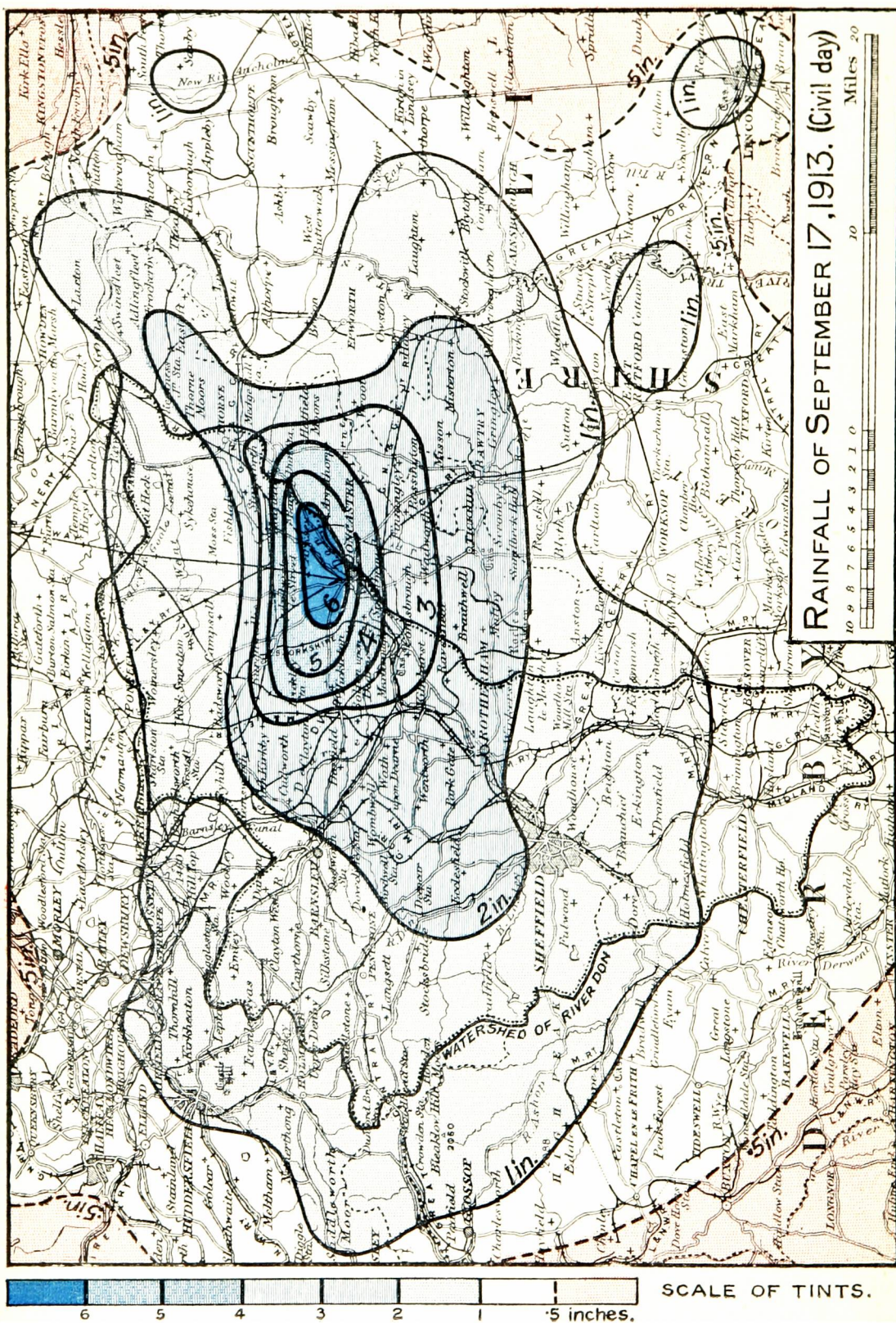
**September 17th.**

The *Daily Weather Report* of the Meteorological Office shows that at 7 a.m. on this day a large and shallow atmospheric depression lay across the Bay of Biscay, and the subsequent maps show that it was moving slowly eastwards during the day. The irregular shape of the isobars is suggestive of the existence of secondary depressions, but there is no apparent manifestation of special local disturbance in the neighbourhood of Doncaster, where a remarkable rain storm occurred. The fact that part of the rainfall of this storm, or series of storms, on September 17th fell before 9 a.m. caused a portion of the rain to be credited to the rainfall day of September 16th. It appears certain, however, that no rain fell in the Doncaster neighbourhood during the civil day of the 16th, and we are therefore able to plot the fall of the 16th and 17th together as a single rainfall incident, and to regard it as representing the fall of the civil day of September 17th. The only doubt occurs in the neighbourhood of Lincoln in the south-east corner of the map, where heavy rain fell on the 16th. We have endeavoured to eliminate this rain from the records used for the map.

Some rain fell during the day over a fairly well defined area, embracing the north Midlands of England and extending southward to Dorset and eastward to Norfolk, but the amount did not exceed the yield of a trifling shower except within a roughly circular area extending to 40 or 50 miles on each side of Doncaster, within which more than .25 in. fell. A much smaller inner area, roughly oval in shape, which stretched between Oldham on the west and Brigg on the east, and between York on the north and Mansfield on the south, embracing roughly 3,000 square miles, had a rainfall of more than .50 in. and may be regarded as defining the limits of the storm proper. The position and, so far as can be judged, the outline of the area affected seem to have been entirely independent of the contour of the land, the wet district lying indifferently across the summits of the Pennine Range and the low, flat plain to the east. Within it the amount of rainfall increased steadily to a single focus, the area enclosed by each isohyet being in every case similar in outline, *i.e.*, roughly oval. The increase in the total amount of fall was gradual on the outer edge, but was very rapid towards the core. The area with more than 1 inch stretched from Huddersfield to Gainsborough, with three small detached splashes in the east and south-east, and comprised 1,313 square miles. More than 2 inches







of rain fell over 398 square miles, stretching eastward from Barnsley and Sheffield to the borders of Lincolnshire. The 3-inch area was much smaller, extending over 130 square miles of which 64 square miles had more than 4 inches, 32 square miles probably more than 5 inches, and 9 square miles possibly more than 6 inches. This central area included part of the town of Doncaster, and seems to have extended about 3 miles north-east and north-west, and about 2 miles north. The line is drawn on the evidence of two observations, and although there is fairly good reason for believing that more than 6 inches of rain fell over a portion of the northern outskirts of Doncaster, we cannot speak with confidence as to the exact position of the line. The reading of 6·43 in. at Doncaster Pumping Station was unfortunately marred by a defect in the rain-gauge, which probably allowed a small amount of rain to enter the receiver of the gauge otherwise than by the legitimate entrance of the funnel. This gauge was, however, afterwards tested by a standard gauge placed alongside and no appreciable error was detected. It is unfortunate that no rainfall observation has been obtained immediately to the north of Doncaster, but readings of 6·00 in. at Wyndthorpe, 5·50 in. at Brodsworth, 2·40 in. at Kirk Bramwith, and 1·51 in. at Camps-mound, enable us to fix the positions of the isohyets in that part fairly satisfactorily; and we believe that there can be little doubt that they cannot have been misplaced by more than a mile at most. The accuracy of the measurements is largely attested by their mutual support, but opportunity was taken by Mr. Salter to visit Doncaster and inspect the majority of the gauges in the immediate vicinity. The rain-gauge at Avenue Road is of the "Howard" pattern, and when tested proved perfectly accurate. It is exposed in a somewhat sheltered spot, and placed at 4 feet above the ground, and it is therefore probable that the amount, 5·67 in. is, if anything, smaller than the actual fall. The gauges at Hexthorpe Hall and Carr House Hospital, giving respective totals of 4·46 in. and 4·49 in., are excellent gauges of the "Snowdon" type, well placed, and in the hands of competent Observers, so that their indications may be accepted with complete confidence. The fact that at least four other gauges in the town overflowed has deprived us of what would otherwise have been invaluable supplementary evidence, and we cannot refrain from repeating the warning so often uttered by Mr. Symons that there is no part of this country where at least 4 inches of rain is not liable to fall in a single day, with the addition that, from the experience of the recent

storms at Norwich and Doncaster, we should be inclined to raise the figure from 4 inches to 6 inches, and to recommend that no rain gauge should be purchased which will not contain at least that amount without overflowing.

The most remarkable of the records, all exceeding 4 inches during the storm, were as follows :—

*Rainfall on September 17th, 1913 (Civil Day).*

	Before 9 a.m.	After 9 a.m.	Total.
Doncaster (Pumping Station) .....	·37?	6·06?	6·43?
„ (Wyndthorpe) .....	·50	5·50	6·00
Brodsworth Gardens .....	...	5·50	...
Doncaster (Avenue Road).....	·41	5·26	5·67
„ (Carr House Hospital) .....	·22	4·27	4·49
„ (Hexthorpe Hall).....	·76	3·70	4·46

We have no very precise information as to the duration of the rain, since the only self-recording gauges known to be at work were at Huddersfield and Hodsock Priory, both on the outskirts of the area principally affected. At Huddersfield rain commenced at 10.15 a.m. and was over by 11 p.m.; at Hodsock it lasted with intervals from 8.20 a.m. to 7.20 p.m. The hour of commencement is given by most Observers in the central area as about 7 a.m.; it was later in the north-west, and almost certainly earlier in the extreme east. The hour of termination is still more difficult to fix, but it appears to have been generally about 9 p.m., only slight showers falling later in the evening and night. The rain was continuous for 14 hours in Doncaster, but in the surrounding districts brief pauses were observed. At Wadworth, four miles south of Doncaster, rain ceased for a time at 5 p.m., and at Redmires, five miles west of Sheffield, there was a break for an hour from 11.30 a.m. to 0.30 p.m., and another from 3 to 4 p.m. At Scrooby, near Bawtry, the rain is described as falling in four distinct showers from 8 to 9 a.m., from 10 to 11 a.m., from 3 to 3.30 p.m., and from 6 to 6.30 p.m., and the chart from the recording gauge at Hodsock Priory confirms this. The most prominent feature in all parts was the occurrence of violent bursts of heavy rainfall at intervals in the course of a generally very wet day, and the extreme irregularity with which these bursts took place in point of time in different localities. At Avenue Road the heaviest phase was between 2 and 4 p.m., during which time it was estimated that 2·50 in. or nearly half of the day's rain fell. This is



confirmed by an imperfect record taken by a neighbour. At Hexthorpe Hall, one mile south-west of Doncaster, the chief fall is stated to have been between 4 and 8 p.m., and at Wyndthorpe, about four miles north-east of Doncaster, the Observer notes that the bulk fell between 5 and 6 p.m. At Burton-on-Stather, near the mouth of the Trent, .89 in. fell in 70 minutes between 10 and 11.10 a.m., and only .06 in. fell during the remainder of the rainfall day; and at Mosborough 1.04 in., out of a total of 1.31 in., fell between 9.30 and 11.30 a.m. Thunder and lightning in the central area were almost continuous throughout the day, but there does not seem to have been much damage by lightning. The Observer at Sturton-le-Steeple, 18 miles south-east of Doncaster, reports thunder at 8 a.m. and hail at 9.30 a.m., and further notes that the upper air currents were from the E. and the lower from the N.W., the clouds moving slowly in both the lower and the upper atmosphere. One Observer, who happened to be passing through Doncaster by train whilst the storm was at its highest, describes the clouds as intensely black and blotting out the daylight as in an eclipse.

From the map it is possible to calculate the volume of water which fell during the storm, and for this purpose the areas between the isohyets have been measured. The area dwelt with is that over which the rain exceeded 1.00 in.

	Area, sq. miles.	General Rainfall, inches.	Volume of Rain, sq. miles × inches.
More than 6 inches.....	9.4	6.17	58
5—6 inches .....	22.6	5.49	124
4—5   ,,   .....	31.5	4.51	142
3—4   ,,   .....	66.2	3.50	232
2—3   ,,   .....	268.5	2.45	659
1—2   ,,   .....	915.2	1.46	1,334
Total more than 1 inch..	1313.4		2,549

The general rainfall over the 1,313 square miles with more than 1 inch was 1.94 in., and the volume of water which fell over that area during about 14 hours was 36,908 million gallons. Of this amount 4,691 million gallons were deposited over 63.5 square miles around the town of Doncaster, and 840 million gallons over the wettest area of 9.4 square miles, including the country a few miles to the north of the town.

The water-shed which separates the valley of the river Don from that of the Trent passes almost through the centre of greatest

rainfall, and, owing to this fortunate circumstance, the whole of the enormous precipitation, instead of finding its way into one drainage area, was divided between two. The river Don, however, lay entirely within the outer circumference of the storm area, the rainfall during the day within its drainage area varying from rather more than .50 in. at the source near Chesterfield to more than ten times that amount at Doncaster. The total volume of precipitation over the Don valley was as follows :—

	Area, sq. miles.	General Rainfall, inches.	Volume of Rain, sq. miles × inches.
More than 6 inches.....	9·4	6·17	58
5—6 inches .....	17·0	5·47	93
4—5    ,,   .....	18·4	4·51	83
3—4    ,,   .....	26·9	3·49	94
2—3    ,,   .....	154·4	2·42	373
1—2    ,,   .....	361·7	1·59	575
·50—1 inch .....	87·8	·85	75
Total .....	675·6		1,351

The general rainfall over the Don Valley was 2·00 in., and the total amount of water with which that river system had to deal was 19,559 million gallons.

It is somewhat remarkable, in view of the very large rainfall over the Don Valley, and more especially in view of its concentration over the town of Doncaster, that the amount of damage done by flooding was not far greater than was actually the case. This may, no doubt, be attributed largely to the comparative flatness of the country over which the most intense rainfall occurred, since in heavy floods more damage usually results from a torrential rush of water in its effort to find a lower level than from the accumulation of more or less stagnant floods in a level place. Reports refer chiefly to the flooding of basements and shops, and it is stated that practically every cellar in the town was inundated, in some cases to a depth of 2 or 3 feet, and that great damage was done to shopkeepers' stocks. The tram service in one part of the town was interrupted. Flooding also occurred in the Rother Valley, and at various other places in the neighbourhood.

The rain storm of September 17th, 1913, presents some points of similarity to the great East Anglian rainfall of August 25th—26th, 1912; but it is interesting to observe that the area over which more than 6 inches fell at Doncaster was only one half of that over which

more than 8 inches fell in the Norfolk storm, and that the area with more than 3 inches on August 25th—26th was about 25 times the area thus visited on September 17th. The duration of rain at Norwich on August 25th—26th was probably about 20 hours, that of the Doncaster storm about 14 hours. It is therefore evident that at the point where the greatest total rainfall was measured the mean intensity throughout the period of the rainstorm was very similar in the two cases, and that the point of difference lies in the greater duration of the East Anglian rainstorm and the larger area affected by it, rather than in the intensity of the rain whilst it lasted.

#### September 17th.

VII.	Wroot (South Level Pumping Station)...	1·53 in. or 8·7 per cent.	
„	Scrooby .....	1·68 „	7·6 „
„	Bawtry (Hesley Hall) .....	2·09 „	9·6 „
IX.	Tickhill (Sandbeck Park).....	1·90 „	8·0 „
„	Doncaster (Wadworth Hall) .....	2·83 „	11·1 „
„	„ (Carr House Hospital) .....	4·27 „	18·8 „
„	Rotherham (Thrybergh) .....	2·43 „	9·0 „
„	Chapeltown (Potter Hill).....	2·09 „	7·6 „
„	Doncaster (Firsby Reservoir) .....	2·14 „	8·7 „
„	Wentworth Woodhouse .....	2·65 „	9·0 „
„	Mexborough .....	2·70 „	11·8 „
„	Wath-upon-Deerne (Chapel Street) .....	2·37 „	9·6 „
„	Bolton-upon-Deerne .....	2·29 „	9·4 „
„	Doncaster (Hexthorpe Hall) .....	3·70 „	16·4 „
„	„ (Pumping Station).....	6·06½ „	26·0? „
„	„ (Avenue Road) .....	5·26 „	22·6 „
„	Brodsworth Gardens.....	5·50 „	...
„	Barnsley (Jordan Hill) .....	1·99 „	8·4 „
„	Burntwood Hall.....	3·17 „	12·3 „
„	Doncaster (Wyndthorpe) .....	5·50 „	22·7 „
„	Kirk Bramwith .....	2·02 „	11·0 „
„	Hemsworth Hall .....	1·71 „	7·8 „
„	„ Collieries .....	1·80 „	8·1 „
„	Ackworth (Hillthorpe) .....	1·80 „	8·7 „
„	Goole (Swinefleet) ..	1·78 „	8·1 „
„	Walton (Willington Lodge).....	1·76 „	8·3 „

#### September 18th.

IV.	Ditchingham .....	1·85 in. or 7·9 per cent.
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#### September 19th.

The east of Ireland was the district chiefly affected by rain accompanying the passage of a shallow depression, which moved slowly north-eastward from the neighbourhood of Wexford to a point between Anglesey and the Isle of Man. It is worthy of note

that on the morning of September 20th the track of this depression turned abruptly eastward, its movements being similar to those of the system which accompanied the notable rainstorms of August 24th—26th, 1905, and not unlike those associated with the great East Anglian storms of August 25th—26th, 1912. In the present instance, however, the change in the direction of movement occurred many miles out to sea, and if any very heavy fall of rain took place it probably spent its greatest energies over the Irish Sea. If this were the case the rain on the eastern side of Ireland may represent the western edge of the splash, and some weight is lent to the suggestion by the fact that the highest readings were found at the stations nearest the coast.

XXI.	Malahide (Seamount) .....	2·26 in.	or 7·7 per cent.
„	Skerries (Milverton Hall).....	2·50 „	8·5 „
„	Balbriggan (Ardgillan).....	2·77 „	8·9 „
„	Lambay Island .....	2·35 „	8·7 „
„	Drogheda (Mullacroghan) .....	2·51 „	9·0 „

#### September 22nd.

A wet day in the Mourne mountains.

XXIII.	Newcastle (Tullymore Park) .....	2·60 in.	or 3·9 per cent.
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#### October 1st.

A heavy local rainfall in Cornwall.

V.	Camelford (Stannon Clay Works).....	2·82 in.	or 5·0 per cent.
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#### October 2nd.

Thunderstorms, characterised in most places by exceedingly heavy rain for a comparatively short time, occurred in most parts of the upper Thames Valley and the lower Severn Valley. About 80 stations, all in England, had the heaviest rainfall of the year.

¶III.	Sarsden Gardens .....	2·08 in.	or 7·7 per cent.
„	Oxford (Banbury Road) .....	1·87 „	8·2 „
„	„ (Warneford Asylum) .....	1·81 „	8·2 „
„	„ (Headington Hill) .....	1·99 „	8·6 „
„	Litchborough Hall .....	2·09 „	7·6 „
VI.	Ledbury (Orchardleigh) .....	2·38 „	7·5 „
„	Snitterfield .....	2·60 „	8·7 „



**October 3rd and 4th.**

Thundery conditions continued and storms occurred in several places in East Anglia on the 3rd, those on the 4th being chiefly in the North Riding.

**October 3rd.**

IV. Worstead (Dilham) ..... 2·12 in. or 8·4 per cent.

**October 4th.**

IX. Driffield (York Road) ..... 1·63 in. or 7·7 per cent.  
 „ Bedale (Leeming Garth) ..... 1·96 „ 8·1 „  
 „ Whitby (Mulgrave Castle) ..... 2·37 „ 8·7 „

**October 5th.**

A chain of low-pressure systems whose movements cannot be traced with any certainty, but which were centred for the most part in the neighbourhood of the English Channel, was accompanied by extremely unsettled conditions in the Midlands, and a belt of heavy rainfall, sharply defined both on north and south and averaging about 70 miles in width, stretched from central Ireland to the coast of Norfolk. More than 1 inch of rain fell over a large part of this area, and the one-inch splash stretched unbroken from Norwich to Pwllheli, reappearing round Dublin. A detached one-inch area lay to the west of Sheffield, and a curious feature of the day's rainfall consisted in a number of small local showers which occurred on the south of the main rain area, being chiefly in various parts of Northamptonshire, Cambridgeshire and north-west Essex. More than 2 inches of rain was observed in numerous small areas arranged in a roughly straight line between the borders of North Wales on the west and mid-Norfolk on the east, the only large area being between Nottingham and Boston. In the immediate neighbourhood of Boston and of Newark there fell well over 3 inches of rain. It is interesting to note that during the history of *British Rainfall* no previously recorded daily rainfall in Nottinghamshire has reached 3 inches. In a considerable area stretching from Derbyshire into Lincolnshire this rain continued into the following day, and part of the Peak District had more than 1·00 in. again, whilst the fall in Nottinghamshire was not much less, the total at Newark-on-Trent for the two days being 4·31 in. The extremely local nature of the



VII.	Sleaford (Rauceby Hall) .....	2·57 in. or 11·0 per cent.
„	Claypole Rectory .....	2·78 „ 12·8 „
„	Fulbeck .....	2·21 „ 10·4 „
„	Welbourn .....	3·38 „ 15·2 „
„	Temple Bruer .....	2·92 „ 13·4 „
„	Navenby Rectory .....	3·50 „ 15·2 „
„	Carlton-le-Moorland .....	3·19 „ 14·8 „
„	Woodhall Spa (Galin House) .....	2·47 „ 12·0 „
„	Bucknall .....	2·18 „ 10·6 „
„	Horncastle .....	2·30 „ 10·6 „
„	Spilsby .....	2·18 „ 10·0 „
„	„ (Ashby Road) .....	2·37 „ 10·6 „
„	Hagworthingham .....	2·75 „ 11·3 „
„	Swinderby (Ling Moor) .....	2·22 „ 10·2 „
„	Cropwell Bishop (Cropwell Grove) .....	1·87 „ 8·6 „
„	Newark Castle Gardens .....	3·47 „ 15·6 „
„	North Collingham (Markham House) ...	3·23 „ 14·3 „
„	Burton Joyce Water Works .....	1·80 „ 7·6 „
„	Bulwell (Bestwood Water Works) .....	2·11 „ 8·2 „
„	Daybrook (Ramsdale Hill Reservoir) ..	2·12 „ 7·6 „
„	Bulwell Hall Park .....	2·12 „ 7·8 „
„	Southwell (Elmfield) .....	2·48 „ 10·6 „
„	„ (Halam House) .....	2·25 „ 9·3 „

**October 6th—8th.**

Conditions similar to those of October 5th continued during the succeeding days, and the main feature of the atmospheric circulation was a peculiarly persistent depression which travelled slowly across the south of England coming from the neighbourhood of Cape Finisterre and passing away in a north-eastward direction across Denmark. Heavy rain fell on the 6th in patches along the south coast, reaching 2 inches in parts of Dorset. On the 7th the fall was more general, and many stations in the north of Yorkshire received their heaviest rainfall of the year. The same district had considerable rain on the following day, but the fall of 2·15 in. at Waltham-on-the-Wolds, in Leicestershire, was more local, and was accompanied by lightning and hail.

**October 7th.**

X.	West Hartlepool Water Works.....	1·90 in. or 10·3 per cent.
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**October 8th.**

VII.	Waltham-on-the-Wolds .....	2·15 in. or 8·7 per cent.
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**October 13th.**

South-westerly conditions brought a wet day to the west Highlands.

XV.	Ballachulish (Glencoe Gardens) .....	3·45 in. or 3·3 per cent.
„	Glenleven (Blackwater Dam, S.) .....	2·71 „ 3·1 „
„	„ (Kinlochleven).....	2·73 „ 2·9 „
„	Dunoon (Reservoir) .....	2·50 „ 3·1 „
XVIII.	Glenleven (Kinlochmore).....	2·59 „ 2·6 „
XIX.	Cape Wrath.....	2·50 „ 4·7 „

**October 24th.**

Another day of south-west wind with considerable rainfall in the west of Scotland.

XVIII.	Loch Quoich (Kinlochquoich) .....	3·90 in. or 2·7 per cent.
„	Glencarron Lodge .....	2·69 „ 3·1 „

**October 26th.**

A day of widespread rainfall in the south of England. Nearly 200 stations, almost entirely in the home counties, recorded their maximum fall for the year, but none was large enough to quote.

**November 2nd.**

Chiefly in the west of Scotland.

XIII.	Meggat Water (Cramilt Lodge).....	2·53 in. or 5·0 per cent.
XVIII.	Loch Quoich (Glenquoich) .....	3·20 „ 2·7 „

**November 19th and 20th.**

The greater part of Wales, the Pennines and much of the west of Scotland were involved in a general rainfall of the type not infrequent in the autumn and winter months in these rainy districts.

**November 19th.**

XVIII.	Loch Arkaig (Achnacarry) .....	2·98 in. or 3·1 per cent.
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**November 20th.**

XI.	Ystalyfera (Wern School) .....	2·85 in. or 3·7 per cent.
„	Cwmaman Colliery .....	2·64 „ 3·3 „
„	Swansea W.W. (Nantyrwydd) .....	3·12 „ 3·6 „
„	Cardiff W.W. (Beacons Reservoir) .....	2·53 „ 3·1 „
„	Swansea W.W. (Bwlch) .....	4·24 „ 3·6 „
XVIII.	Skye (Scalpay Island) .....	2·50 „ 3·4 „

**November 28th.**

Another incident in the spell of inclement weather which characterized almost the whole month of November in the West Highlands, in striking contrast to the almost rainless conditions at the time enjoyed by the east of Scotland.

XVIII.	Ullapool (Drumruinie) .....	3·02 in.	...
XIX.	Loch Stack (Ardehullin) .....	3·32 „	or 4·7 per cent.

### December 3rd.

A moderate winter rainfall in the English Lake District. About 90 stations in the south of Scotland and a dozen in the north of Ireland also registered the maximum fall for the year on this day.

X.	Keswick (Derwent Island) .....	2·55 in.	or 4·2 per cent.
„	„ (Shu-le-crow) .....	2·51 „	4·2 „
„	Patterdale (Greenside Mine) .....	2·68 „	3·2 „

### Part II.—Abstract.

Throughout the history of *British Rainfall* no branch of the study of rainfall records has been treated in so consistently uniform a manner as that dealing with the maximum daily rainfall of each year, and even though since 1900 the purely statistical method of treatment has been supplemented by, and to some extent subordinated to, the cartographical method, we still continue to place upon record the maximum daily rainfalls exceeding certain limits in order to preserve the comparability of each successive year's records. If throughout the fifty years or so over which such statistics extend there had existed an unchanged number of uniformly distributed stations giving an equal representation to all parts of the British Isles, their results would in all probability have reflected the character of each year's heavy rainfalls in a strictly comparable manner, but the unequal distribution of stations, and the changes which time brings about in the relative representation of various parts of the country, render the statistical method of comparison in some respects untrustworthy. It is necessary to point out such a defect and we do so year by year in order to put the reader upon his guard against placing an undue weight on the tables in this section.

In Table I. are set out the 20 highest maximum daily rainfalls recorded during 1913. As is commonly the case this table consists of a certain number of examples of thunderstorm rains at comparatively dry stations, and some of the heaviest of the daily rains of the year in the normally wet regions, such as the west Highlands, the Lake District and the mountains of Wales. Of thunderstorm rains two only find a place, the great storm of September 17th, at Doncaster, being represented by six records, and the rainfall of October 5th by two records at Boston. Of the wet region rainfalls none is very

remarkable, the fall of 5·37 in. at Llyn Fawr Reservoir, near Treherbert, being the heaviest, and the Lake District being represented only by modest falls of 4·32 in. and 4·18 in. at the famous Borrowdale stations. At the head of the list are three noteworthy records of the Doncaster storm. The fall of 6·06 in. at the Doncaster Sewage Pumping Station represents only part of the 6·43 in. which fell in the 14 hours during which the storm lasted. As has been mentioned elsewhere the gauge with which this record was taken was unfortunately found, on inspection, to be slightly defective, and although subsequent testing with a certified standard gauge has shown no large error in its indications, it is necessary to print it with a query on that account. If correct, this record ranks extremely high in the history of thunderstorm rains in this country ; if incorrect its error is probably hardly sufficient to displace it. Turning to Table II. the highest maximum falls are arranged in the order of the proportion which they bear to the year's total fall at their respective stations. The 20 entries refer entirely to three days' rain storms, those of September 17th and October 5th, already referred to, and also those of June 17th, when isolated thunderplumps of great severity occurred in parts of the south-east of England. The Doncaster storm again heads the list and it is noteworthy for the remarkably high percentage values recorded, the neighbourhood being one of small annual rainfall.

In Table III. the largest individual day's rainfall during the year, and the largest individual percentage of the annual rainfall recorded in a single rain day, are compared with similar records for previous years back to 1865. As previously stated the fall of 6·06 in. at Doncaster exceeded any other recorded in 1913 as judged by both its absolute and relative magnitude. No fewer than 13 out of the 48 previous years compared have higher individual records to show, but it is instructive to note that 11 of these took place either at Seathwaite or Ben Nevis Observatory, and were rainfalls of an altogether different type to the Doncaster storm. The two other instances represent respectively the great local storm on September 7th, 1898, at Angerton, in Northumberland, and the remarkable rainfall which took place in East Anglia on August 26th, 1912, each of which was in its way a more extreme example of excessive rainfall. The Doncaster storm, however, surpasses all previous records viewed from the standpoint of the relation of the fall in a single day to the total rainfall of the year. If it can be fully

accepted, the largest fall registered represented 26·0 per cent. of the annual total, this being the only case on record in the British Isles

TABLE I.—*The Largest Maximum Falls in 1913.*

Date.	Div.	Station.	Depth.	Per Cent.	Total.
Sept. 17 ...	IX.	Doncaster, Pumping Statn.	6·06? in.	26·0?	23·32 in.
„ „ ...	„	„ Wyndthorpe ...	5·50 „	22·7	24·21 „
„ „ ...	„	Brodsworth Gardens .....	5·50 „	...	...
Apr. 26 ...	XI.	Rhondda W.W., Llyn Fawr Res.	5·37 „	5·2	102·53 „
Sept. 17 ...	IX.	Doncaster, Avenue Road...	5·26 „	22·6	23·29 „
Apr. 26 ...	XI.	Treherbert, Tyn-y-waun ...	4·45 „	4·5	98·97 „
June 9 ...	„	Snowdon, Pen-y-Gwryd ...	4·42 „	3·0	145·66 „
Apr. 26 ...	„	Rhondda, Pont Lluest Wen Res.	4·40 „	5·0	88·52 „
Aug. 21 ...	X.	Borrowdale, Seathwaite ...	4·32 „	3·5	124·07 „
Sept. 17 ...	IX.	Doncaster, Carr Ho. Hosp. ...	4·27 „	18·8	22·64 „
Nov. 20 ...	XI.	Swansea W.W., Bwlch ...	4·24 „	3·6	117·41 „
June 9 ...	X.	Borrowdale, The Moraine..	4·18 „	4·3	98·10 „
„ „ ...	XI.	Blaenau Festiniog, Oakley Quarries	4·13 „	4·4	93·97 „
„ „ ...	„	Penmachno, Gwnfa .....	4·00 „	...	...
Apr. 26 ...	„	Treherbert, Bute Colliery..	3·95 „	4·2	93·09 „
Oct. 24 ...	XVIII.	Loch Quoich, Kinlochquoich	3·90 „	2·7	142·44 „
„ 5 ...	VII.	Boston, Bargate End .....	3·82 „	17·0	22·49 „
Apr. 26 ...	XI.	Taff Fechan, Neuadd Res., No. 11	3·80 „	5·1	74·73 „
Oct. 5 ...	VII.	Boston, Grand Sluice .....	3·73 „	17·1	21·82 „
Sept. 17 ...	IX.	Doncaster, Hexthorpe Hall	3·70 „	16·4	22·61 „

TABLE II.—*The Largest Maximum Percentages in 1913.*

Date.	Div.	Station.	Per cent.	Depth.	Total.
Sept. 17 ...	IX.	Doncaster Pumping Station	26·0?	6·06 in.?	23·32 in.
„ „ ...	„	„ Wyndthorpe ...	22·7	5·50 „	24·21 „
„ „ ...	„	„ Avenue Road ...	22·6	5·26 „	23·29 „
„ „ ...	„	„ Carr Ho. Hos. ...	18·8	4·27 „	22·64 „
Oct. 5 ...	VII.	Boston, Grand Sluice .....	17·1	3·73 „	21·82 „
„ „ ...	„	„ Bargate End .....	17·0	3·82 „	22·49 „
Sept. 17 ...	IX.	Doncaster, Hexthorpe Hall	16·4	3·70 „	22·61 „
Oct. 5 ...	VII.	Newark Castle Gardens ...	15·6	3·47 „	22·18 „
„ „ ...	„	Navenby Rectory .....	15·2	3·50 „	22·95 „
„ „ ...	„	Welbourn .....	15·2	3·38 „	22·23 „
„ „ ...	„	Boston, Sleaford Road .....	15·0	3·54 „	23·57 „
„ „ ...	„	Carlton-le-Moorland .....	14·8	3·19 „	21·57 „
„ „ ...	„	North Collingham, Markham Ho..	14·3	3·23 „	22·57 „
June 17 ...	IV.	Elveden Hall .....	14·0	3·19 „	22·84 „
Oct. 5 ...	VII.	Boston, Black Sluice, (Skirbeck.	13·7	3·14 „	22·90 „
„ „ ...	„	Temple Bruer .....	13·4	2·92 „	21·81 „
„ „ ...	„	Claypole Rectory .....	12·8	2·78 „	21·76 „
„ „ ...	„	Sleaford, Kesteven County Asylum	12·6	2·65 „	21·00 „
June 17 ...	III.	St. Neots, Great Paxton ...	12·5	2·90 „	23·16 „
Sept. 17 ...	IX.	Burntwood Hall .....	12·3	3·17 „	25·72 „

of a day's rainfall exceeding one-quarter of the year's rain. Two other stations in the same storm recorded respectively 22·7 and

TABLE III.—*Comparison of Maximum Fall and Maximum Percentage with those in previous years.*

Year.	ABSOLUTE HIGHEST RAINFALL.				ABSOLUTE HIGHEST PERCENTAGE.			
	Depth	Per cent.	STATION.	Div.	Per cent.	Depth	STATION.	Div.
	in.					in.		
1865	6·41	5·5	Seathwaite .....	10	13·0	4·40	Fleckney .....	7
1866	6·38	3·6	„ .....	„	10·0	2·48	Burton .....	6
1867	4·78	17·7	Hartlip .....	2	17·7	4·78	Hartlip .....	2
1868	5·60	4·8	Camusinas.....	15	11·0	4·00	Tongue ...	19
1869	6·70	4·5	Seathwaite .....	10	10·0	3·40	Tillydesk .....	17
1870	6·00	17·1	Tongue .....	19	17·1	6·00	Tongue .....	19
1871	4·24	9·6	Melbury.....	5	11·5	3·62	Warter .....	9
1872	5·82	3·2	Seathwaite .....	10	10·0	3·70	Hillington Hall .....	4
1873	4·20	2·9	„ .....	„	11·8	2·77	Oscott .....	6
1874	5·32	4·4	Bryn Gwynant .....	11	11·9	2·50	Welwyn .....	3
1875	5·33	9·7	Newport W.W. ....	„	13·2	3·95	Letheringsett .....	4
1876	4·50	5·5	Foffany .....	23	8·5	3·70	Cragside .....	10
1877	4·98	5·3	Skye, Portree .....	18	9·3	3·09	Wellington .....	6
1878	4·24	8·6	Springfield .....	11	11·8	3·90	Haverstock Hill .....	1
1879	4·05	4·1	Little Langdale ...	10	12·3	3·80	Cambridge, Merton V. ...	3
1880	4·75	3·9	Seathwaite .....	„	11·7	3·34	Marmont Priory Lock ..	„
1881	5·42	4·7	Sligachan .....	18	10·6	3·20	Aboyne Castle .....	17
1882	4·51	3·0	Seathwaite .....	10	9·1	2·80	Bothalhaugh .....	10
1883	5·27	9·0	Glen-na-Smoel .....	21	12·3	4·31	Skegness .....	7
1884	6·78	5·0	Seathwaite .....	10	13·8	2·66	Diss, Thelveton .....	4
1885	4·62	3·2	„ .....	„	9·6	2·62	Beccles, Ellough .....	„
1886	4·20	9·9	Little Bredy .....	5	11·5	4·10	Leeds, Methley Park..	9
1887	4·93	13·0	Galway, Queen's Coll.	22	13·0	4·93	Galway, Queen's Coll.	22
1888	5·20	5·4	Wythburn Vicarage ...	10	11·8	3·24	Rothamstead.....	3
1889	4·45	16·5	North Ockendon .....	4	16·5	4·45	North Ockendon .....	4
1890	7·29	3·7	Ben Nevis Observatory	18	17·2	3·68	Slough, Langley .....	3
1891	6·14	4·2	Seathwaite .....	10	14·4	4·00	Montrose, Sunnyside..	16
1892	5·80	4·5	„ .....	„	15·0	4·27	Flax Bourton .....	5
1893	4·96	3·5	„ .....	„	16·2	4·48	Cranmer Hall .....	4
1894	7·74	5·1	Ben Nevis Observatory	18	11·1	3·56	Sidcup ..	2
1895	4·83	16·1	Mellington Hall .....	11	16·1	4·83	Mellington Hall .....	11
1896	4·59	3·7	Seathwaite .....	10	11·1	2·78	Barkby .....	7
1897	8·03	5·6	„ .....	„	14·1	2·40	Chatteris, Horseway L.	3
1898	6·70	18·1	Angerton Hall .....	„	18·1	6·70	Angerton Hall .....	10
1899	5·21	5·6	Borrowdale, Grange...	„	14·6	3·10	Wallingford .....	2
1900	5·40	11·9	Ilkley, Cherry Bank...	9	13·1	4·50	Gilstead Filters.....	9
1901	5·66	5·7	Dungeon Ghyll.....	10	17·9	4·24	Maidenhead, The Firs	2
1902	5·92	3·8	Ben Nevis Observatory	18	15·5	3·51	Esher Sewage Works..	„
1903	4·78	2·2	„ „ „ .....	„	12·8	4·41	Dartford, West Hill Ho.	„
1904	5·62	6·0	Skelwith Bridge .....	10	15·8	3·48	Leamington, Binswood Av.	6
1905	5·71	14·0	Glen-na-Smoel .....	21	14·9	3·98	Cofton Vicarage .....	5
1906	6·15	4·7	Seathwaite.....	10	11·9	2·50	Cambridge, Herschel Ho.	3
1907	4·86	9·4	Kingsbridge .....	5	12·5	3·40	Lincoln, St. Botolph's	7
1908	4·80	9·9	Treharris .....	11	16·0	3·45	Great Glemham .....	6
1909	6·46	5·7	Kinlochquoich .....	18	11·1	3·30	Tidworth Ho. [Ludgershall]	2
1910	4·51	3·4	Seathwaite .....	10	13·0	3·93	Wheatley, Waterstock	3
1911	7·00	4·7	„ .....	„	14·2	3·25	Haxby, Moorlands ...	9
1912	7·31	21·3	Brundall .....	4	22·2	6·67	Norwich, Carrow Ho.	4
1913	6·06?	26·0?	Doncaster Pump'g Stn	9	26·0?	6·06?	Doncaster Pump'g Stn	9

NOTE.—The maximum values in each column are printed in heavy type and the minimum in italic type.



TABLE IV.—*Comparison of the Mean of all the Maximum Falls of 1913 with similar data for previous years.*

Years.	Number of Returns.	Mean Percentage.	Mean Amount.	Mean Total Fall in year.	Ratio taking 33=100.	Total Fall being assumed =33in. Mean Max. =
			in.	in.		
1865.....	481	5·1	1·70	33	100	5·2 per cent
1866.....	590	3·7	1·48	40	121	4·5 „
1867.....	584	4·6	1·44	31	94	4·4 „
1868.....	676	4·3	1·43	33	100	4·3 „
1869.....	637	4·2	1·42	34	103	4·3 „
1870.....	687	4·9	1·30	27	82	3·9 „
1871.....	752	4·9	1·49	30	91	4·5 „
1872.....	743	m 3·4	1·59	M 47	M 142	4·8 „
1873.....	809	4·6	1·35	29	88	4·1 „
1874.....	1010	4·4	1·41	32	97	4·3 „
1875.....	1081	5·0	M 1·83	37	112	M 5·5 „
1876.....	1112	3·9	1·49	38	115	4·5 „
1877.....	1180	3·8	1·56	41	124	4·7 „
1878.....	1186	4·3	1·49	35	106	4·5 „
1879.....	978	4·2	1·52	36	109	4·6 „
1880.....	1117	4·8	1·72	36	109	5·2 „
1881.....	1194	4·1	1·45	35	106	4·4 „
1882.....	1463	3·6	1·42	39	118	4·3 „
1883.....	1505	4·0	1·41	35	106	4·3 „
1884.....	1691	4·8	1·32	28	85	4·0 „
1885.....	1801	4·5	1·41	31	94	4·3 „
1886.....	1718	4·6	1·64	35	106	5·0 „
1887.....	1921	4·5	m 1·14	m 25	m 76	m 3·5 „
1888.....	1974	4·4	1·41	32	97	4·3 „
1889.....	1812	4·8	1·41	29	88	4·3 „
1890.....	2081	5·0	1·46	29	88	4·4 „
1891.....	2218	4·1	1·47	35	106	4·5 „
1892.....	2231	5·4	1·62	30	91	4·9 „
1893.....	2267	4·8	1·30	27	82	3·9 „
1894.....	2321	4·2	1·46	35	106	4·4 „
1895.....	2423	4·5	1·37	30	91	4·2 „
1896.....	2465	4·4	1·33	30	91	4·0 „
1897.....	2598	4·1	1·36	33	100	4·1 „
1898.....	2691	5·0	1·42	28	85	4·3 „
1899.....	2791	4·7	1·42	30	91	4·3 „
1900.....	2702	4·6	1·61	35	106	4·9 „
1901.....	2747	M 5·7	1·58	28	85	4·8 „
1902.....	2832	4·4	1·20	27	82	3·6 „
1903.....	2936	4·0	1·67	41	124	5·1 „
1904.....	3093	4·6	1·31	29	88	4·0 „
1905.....	3250	4·8	1·31	27	82	4·0 „
1906.....	3365	4·5	1·40	31	94	4·2 „
1907.....	3465	4·1	1·32	32	97	4·0 „
1908.....	3596	4·4	1·31	30	91	4·0 „
1909.....	3666	4·4	1·51	34	103	4·6 „
1910.....	3894	3·8	1·34	35	106	4·1 „
1911.....	4130	4·2	1·38	33	100	4·2 „
1912.....	4315	3·8	1·57	41	124	4·8 „
Average.	2016	4·4	1·45	33	100	4·4 „
1913.....	4408	3·9	1·31	34	103	4·0 „
Difference	+2392	—0·5	—·14	+1	+3	—0·4 „

22·6 per cent. of the annual total, each of these exceeding by a small margin the record of 22·2 per cent. at Brundall on August 26th, 1912. With these exceptions the absolute maximum of 26·0 exceeds by nearly 8 per cent. any previous record for the British Isles.

Table IV., in which are compared the mean values of all the maximum fall data for each year, shows that the mean highest daily rainfall for 1913 was, in spite of the remarkable nature of one or two isolated falls, an unusually low one, being ·14 in. less than the average value for 48 years, and with four exceptions the lowest in the 49 years compared. The mean percentage was ·5 in defect, and has been lower in six years. Although, as has been pointed out, this method of comparison is not in every respect a sound one, the fact that a large part of the country was undoubtedly free from heavy daily rainfalls during 1913 is crystalized by it. Judged by the same standard, the year was on the whole one of slightly deficient rainfall, and the maximum daily falls expressed as a percentage of a normal year's rain fell 0·4 per cent. below the normal.

*Summary of Maximum Falls in 1913.*

	No. of Records.	Mean Amount.	Mean Percent- age of Annual Fall.	Falls of 2·00 in. or more.	Per Cent. of Total Number.	Falls of 3·00 in. or more.	Per Cent. of Total Number.
		in.		No.		No.	
England & Wales...	3663	1·30	4·1	316	8·6	51	1·4
Scotland .....	503	1·35	3·4	59	11·8	9	1·8
Ireland .....	242	1·45	3·6	31	12·8	2	0·8
British Isles...	4408	1·31	3·9	406	9·2	62	1·4

Comparing the data for the different countries it will be seen that England and Wales had, as is usually the case, a lower mean maximum fall than Scotland or Ireland, though it is noteworthy that the smallness of the figure in England, in contrast with that of most of the previous 8 years, was less marked than in the case of Scotland, where it fell ·25 in., or 16 per cent., below the average of that period. In Ireland the mean maximum fall varied little from previous years. The number of stations recording maximum falls exceeding 2·00 in. and 3·00 in. respectively was normal in England and Wales, but small in Scotland where the number of 2 inch falls recorded was 7·8 per cent. below, and the number of

3 inch falls 1·6 per cent. below, the average of the eight years. In Table V. the results for the whole British Isles are summarized and compared with the 30 previous years. It will be observed that, taking the country as a whole, there is no marked departure from average conditions, but that the year was one with a slightly smaller number of instances of heavy daily rainfalls relatively to the total number of records than is usually the case.

*Comparison of Maximum Falls.*

	No. of Records.	Mean Amount.	Mean Percent- age.	Falls of 2·00 in. or more.	Per Cent. of Total.	Falls of 3·00 in. or more.	Per Cent. of Total.
		in.		No.		No.	
<b>ENGLAND AND WALES—</b>							
1905.....	2719	1·28	4·9	176	6·5	12	0·4
1906.....	2846	1·31	4·6	310	10·9	24	0·8
1907.....	2915	1·30	4·2	95	3·3	16	0·6
1908.....	3002	1·26	4·5	178	5·9	25	0·8
1909.....	3069	1·47	4·4	427	13·9	37	1·2
1910.....	3254	1·34	3·8	232	7·1	30	0·9
1911.....	3430	1·34	4·3	278	8·1	58	1·7
1912.....	3643	1·56	3·9	546	15·0	105	2·9
1913.....	3663	1·30	4·1	316	8·6	51	1·4
<b>SCOTLAND—</b>							
1905.....	332	1·29	3·5	32	9·6	2	0·6
1906.....	325	1·68	3·9	78	24·0	6	1·8
1907.....	342	1·59	3·9	21	6·1	3	0·9
1908.....	386	1·54	4·2	68	17·6	9	2·3
1909.....	393	1·81	4·3	117	29·8	31	7·9
1910.....	405	1·51	3·6	63	15·6	2	0·5
1911.....	467	1·63	3·6	116	24·9	27	5·8
1912.....	435	1·75	3·5	110	25·3	25	5·8
1913.....	503	1·35	3·4	59	11·8	9	1·8
<b>IRELAND—</b>							
1905.....	199	1·88	5·9	72	36·2	31	15·6
1906.....	194	1·14	3·3	7	3·6	0	0·0
1907.....	208	1·21	3·1	2	1·0	2	1·0
1908.....	208	1·47	4·0	29	13·9	2	1·0
1909.....	204	1·46	4·0	14	6·9	1	0·5
1910.....	235	1·48	3·6	23	9·8	1	0·4
1911.....	233	1·41	3·7	22	9·4	2	0·9
1912.....	237	1·46	3·5	28	11·8	1	0·4
1913.....	242	1·45	3·6	31	12·8	2	0·8

TABLE V.—*Maximum Falls in each year exceeding 2·00 in.,  
and exceeding 3·00 in.*

Year.	Total number of records.		Falls of 2·00 in. or more.		Falls of 3·00 in. or more.	
			Number.	Per cent. of total No.	Number.	Per cent. of total No.
1882 .....	1463	.....	140	..... 9·6	..... 8	..... 0·6
3 .....	1505	.....	170	..... 11·3	..... 23	..... 1·5
4 .....	1691	.....	138	..... 8·2	..... 9	..... 0·5
5 .....	1801	.....	179	..... 10·0	..... 24	..... 1·3
6 .....	1718	.....	158	..... 9·2	..... 44	..... 2·6
7 .....	1921	.....	52	..... <i>m</i> 2·7	..... 4	..... <i>m</i> 0·2
8 .....	1974	.....	374	..... 18·9	..... 34	..... 1·7
9 .....	1812	.....	170	..... 9·4	..... 24	..... 1·3
1890 .....	2081	.....	345	..... 16·6	..... 54	..... 2·6
1 .....	2218	.....	270	..... 12·2	..... 39	..... 1·8
2 .....	2231	.....	470	..... 21·1	..... 81	..... <i>M</i> 3·6
3 .....	2267	.....	183	..... 8·1	..... 29	..... 1·3
4 .....	2321	.....	313	..... 13·5	..... 36	..... 1·6
5 .....	2423	.....	249	..... 10·3	..... 31	..... 1·3
6 .....	2465	.....	249	..... 10·1	..... 16	..... 0·6
7 .....	2598	.....	275	..... 10·6	..... 62	..... 2·4
8 .....	2691	.....	373	..... 13·9	..... 72	..... 2·7
9 .....	2791	.....	283	..... 10·0	..... 43	..... 1·5
1900 .....	2702	.....	641	..... <i>M</i> 23·7	..... 89	..... 3·3
1 .....	2747	.....	497	..... 18·1	..... 68	..... 2·5
2 .....	2832	.....	163	..... 5·8	..... 30	..... 1·1
3 .....	2936	.....	625	..... 21·3	..... 83	..... 2·8
4 .....	3093	.....	246	..... 8·0	..... 29	..... 0·9
5 .....	3250	.....	280	..... 8·6	..... 45	..... 1·4
6 .....	3365	.....	395	..... 11·7	..... 30	..... 0·9
7 .....	3465	.....	118	..... 3·4	..... 21	..... 0·6
8 .....	3596	.....	275	..... 7·7	..... 36	..... 1·0
9 .....	3666	.....	558	..... 15·2	..... 69	..... 1·9
1910 .....	3894	.....	318	..... 8·2	..... 33	..... 0·8
1 .....	4130	.....	416	..... 10·1	..... 87	..... 2·1
2 .....	4315	.....	684	..... 15·9	..... 131	..... 3·0
<hr/>						
Average ..	2644	.....	310	..... 11·7	..... 45	..... 1·7
1913 .....	4408	.....	406	..... 9·2	..... 62	..... 1·4
Difference	+1764	.....	+96	..... -2·5	..... +17	..... -0·3

## MONTHLY RAINFALL.

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THE method of handling the data utilized in the discussion of the monthly rainfall throughout the year, and of the cartographic treatment of the material upon which the running commentary is largely based, remains practically the same as in previous years. The results are graphically delineated, as formerly, in a double series of maps showing, in that on the left-hand page at each opening, the actual rainfall of the month, and in that on the right-hand page, the relation which it bore to the average, expressed as a percentage. In the preparation of the mean monthly values for each country given on pp. [186]–[194] the returns from 301 selected stations well distributed over the British Isles, have been utilized, but the maps of actual rainfall have been plotted from the records of more than 2,000 stations, thus enabling the lines of equal rainfall to be drawn with a high standard of accuracy. In some parts of the country data are still insufficient, but in all, great attention has been given to the probable trend of the lines, the factors affecting which, as influenced by distance from, and height above, sea, position with reference to rain-bearing and other winds, have been taken into full consideration. The maps on the right hand side of the page, showing the deviation from the average expressed as a percentage, although deduced from a relatively small number of points, have been prepared only after careful comparison with the maps of actual rainfall, by which means a considerable amount of additional precision has been introduced. The average used is that of the 35 years, 1875-1909, and although the number of homogenous records covering that long period is not very great we are able to select 103 so distributed over the country that a close approximation to an ideal representation has been obtained. In addition a certain number of supplementary percentage values have been used in the maps. The positions of the 103 representative stations are indicated by dots, whilst those of the supplementary stations are shown as hollow dots on the maps. In a few cases where the records did not extend over the whole period of 35 years, it has been necessary to bring them into accordance with this period

by applying corrections obtained from a comparison with neighbouring stations.

Table I., on pages [183]-[185], gives the names of the 103 representative stations, and in the succeeding columns the rainfall at each station has been expressed as a percentage of the average, the last column showing the relation of the total fall during the whole year at each station to the average annual total at that station. The mean values for the four main divisions of the British Isles are arrived at by taking the arithmetical mean of the actual rainfall totals at such of the 103 stations as lie in each respective country and expressing it as a percentage of the arithmetical mean of the averages for 35 years at the same stations. The mean value for the British Isles is calculated in the same way, using the whole 103 stations. The careful selection of the stations, so that they represent approximately equal areas, ensures that the general percentage values so calculated represent within a small margin of error the true relation of the general rainfall over the country to the general average for a long term of years.

Over the British Isles five months had a rainfall in excess of the average, these being January, March, April, May, and November, and it is worthy of note that except in January, when Scotland had 94 per cent. of the average, the various countries all had, in each of these months, more than the average rainfall. The five wet months all had a rainfall substantially above the average, March and April being the wettest with 164 and 165 per cent. followed by January with 143, April with 130, and November with 120 per cent.

Taking the country as a whole, the seven months comprising February, June to October inclusive, and December, were dry. In February, July, August, and December all the four countries shared in the deficiency, but in June, September, and October, Wales and Ireland were wet in each instance, and in June Scotland also had a rainfall above the average, the deficiency over the country as a whole being, in this month, entirely due to the unusual dryness in England. July and August were the driest months with 36 and 43 per cent. of the average. The widespread nature of the deficiency of rainfall in these two months was so remarkable that a special article in the early part of this volume is devoted to a critical comparison with similar dry summers in the history of British rainfall records. February and December were relatively

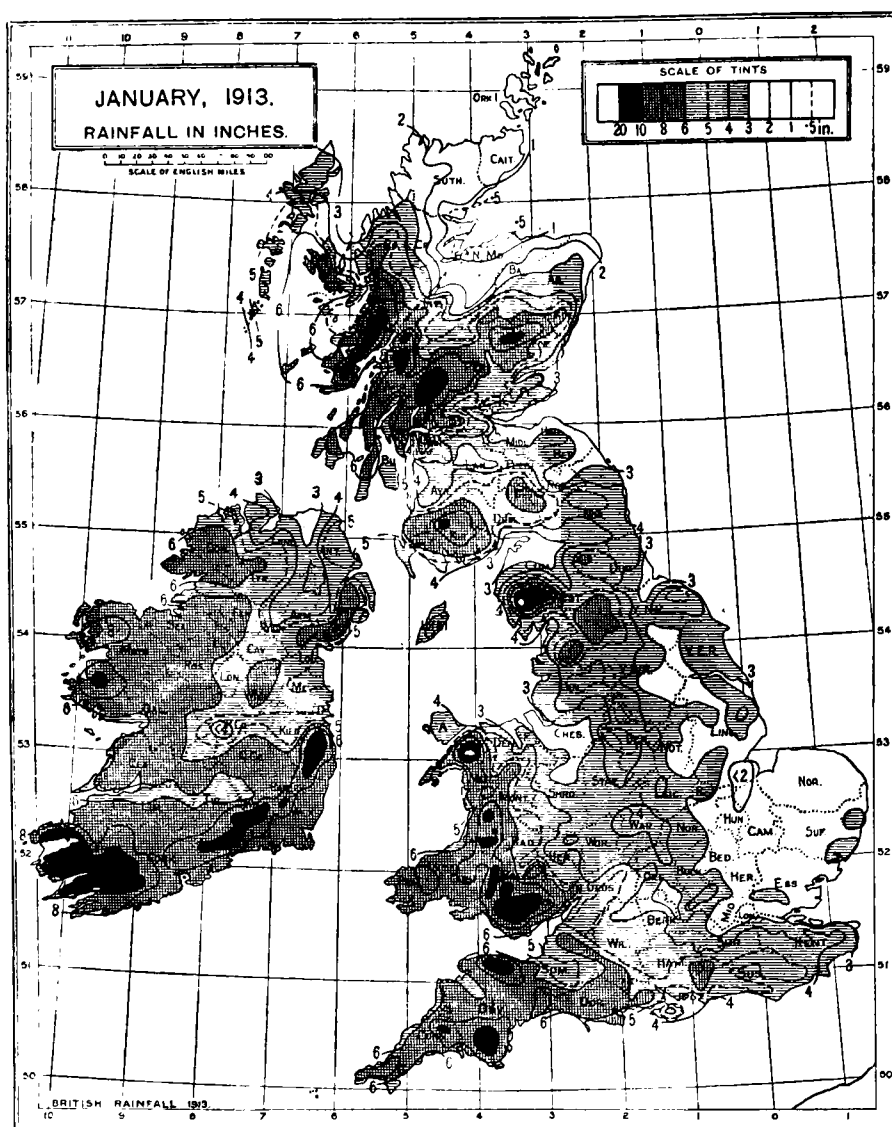
dry, the former having 70 per cent. of the average and the latter 78 per cent., but June, September, and October were only slightly drier than the normal.

In England the relation to the average was in each month of the same character as in the British Isles taken as a whole, that is to say, months which were wet over the whole country were also wet in England, and *vice versa*. For this reason it is not necessary here to enter at length into a synopsis of the monthly variations over England, since it would be merely a re-capitulation of what has been referred to above. April was the wettest month of the year in England with 175 per cent. of the average, closely followed by January with 170 per cent., and March with 168 per cent. The driest months were July with 43 per cent., and August with 49 per cent.; and February, June, and December were also markedly dry.

In Wales the months of extreme rainfall harmonized in general with England. April was the wettest month with 227 per cent., and March also, with more than double the average, was considerably wetter than January. As in England July and August were the driest months with 31 per cent. and 46 per cent. of the average. February and December were the only other two months in the year in which less than the average fell.

In Scotland the excesses were not so pronounced as in the other three great divisions. March with 162 per cent. was the wettest month, closely followed by April with 146 per cent., and May with 140 per cent. The wetness of May was almost entirely due to the remarkable series of rainstorms which affected central Scotland between the 6th and the 10th. July was exceptionally dry with 26 per cent. of the average, followed by August with 41 per cent. The deficiency of rain during the summer months was of a very exceptional nature in the west of Scotland, and was one of the most conspicuous features of a very dry summer throughout the British Isles.

In Ireland, January had the greatest rainfall with an excess of 67 per cent., followed by May, April and March with excesses of 56, 53, and 46 per cent. respectively. July and August, as in the other great divisions, were the driest months, the deficiency being 63 per cent. in each month. No other month was particularly dry. February, the next driest, having a deficiency of only 32 per cent.



**January.**—In this month atmospheric conditions over the Atlantic were in a very disturbed state, but no deep depression actually passed over the British Isles. Southerly gales were of frequent occurrence. Over the greater part of the country more than three inches of rain fell, the areas with most rain being located in the normally wet districts, where falls exceeding 10 inches were general. A small area in North Wales and also in the Lake District had more than 20 inches. In the north-east of Scotland and east of England less than three inches fell, the driest region being the north-east of Scotland, where on the shores of Moray Firth only half an inch was recorded. In Ireland only a small part of the north coast

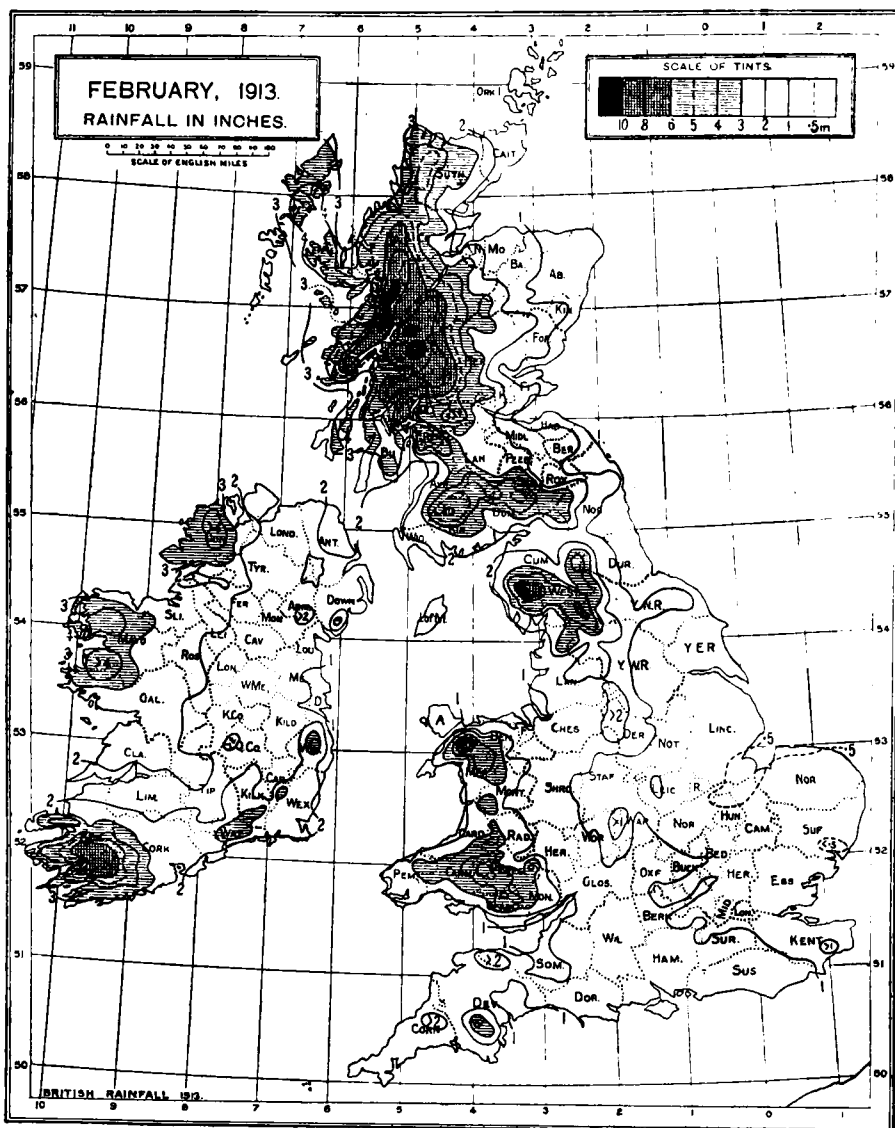




had less than three inches.

The rainfall was markedly below the average only in the extreme north and north-west of Scotland, where less than half the average fell. More than double the average fell in the vicinity of the Grampians, and in a series of patches stretching from the north-east of England to Devonshire. A large part of the south-east of Ireland also had more than twice the average rainfall.

The general rainfall was 70 per cent. in excess of the average in England, 68 per cent. in Wales, and 67 per cent. in Ireland. Scotland had a deficiency of 6 per cent., and the British Isles as a whole had an excess of 43 per cent.

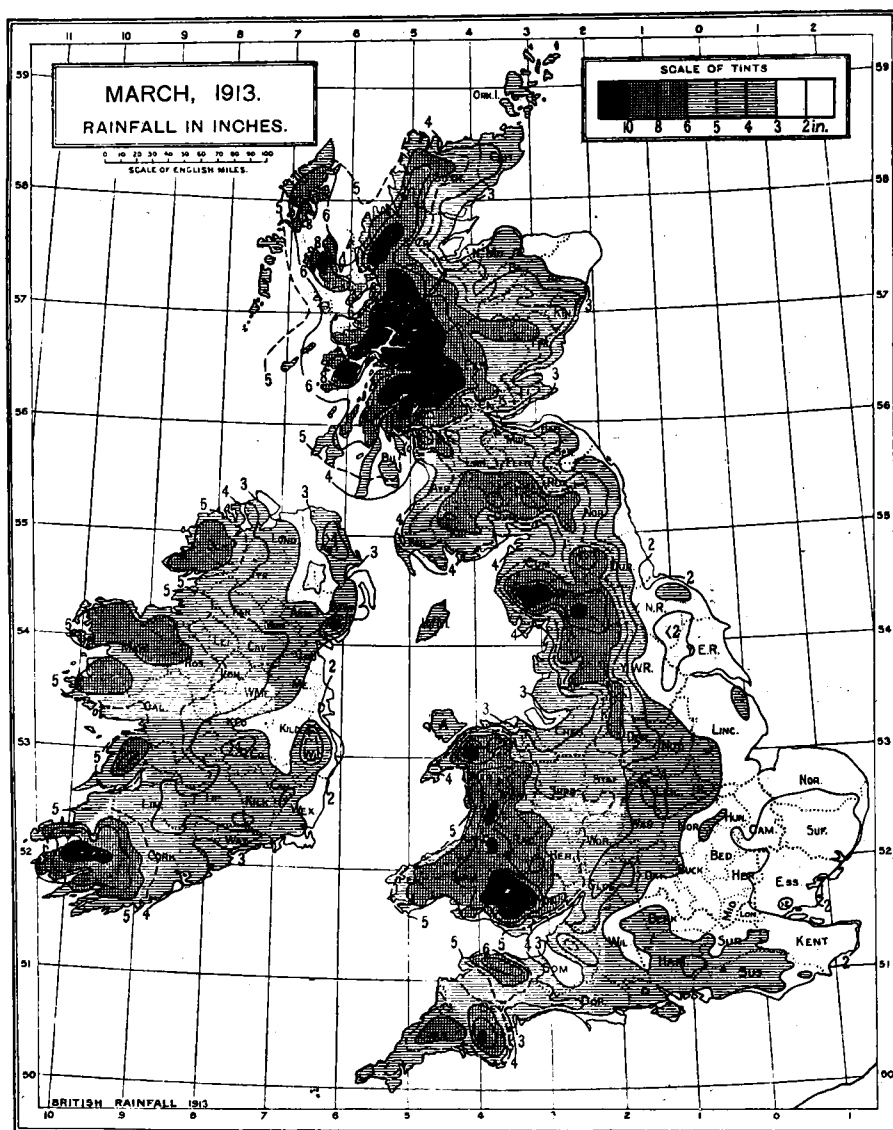


**February.**—In marked contrast to January the whole country, except the normally rainy districts, had less than three inches of rain. Throughout the east coasts of Great Britain and the east Midlands of England, the rainfall was under an inch, falling to less than half this amount round the Wash. Rainfalls exceeding 10 inches were restricted to small portions of west Inverness and Argyll, while more than five inches fell generally over the west of Scotland only, excepting patches in the very wet centres in North Wales, the Lake District, and the extreme south-west of Ireland. Almost the entire rainfall was registered during the first ten days.

Rainfall was below the average very generally, the only notable

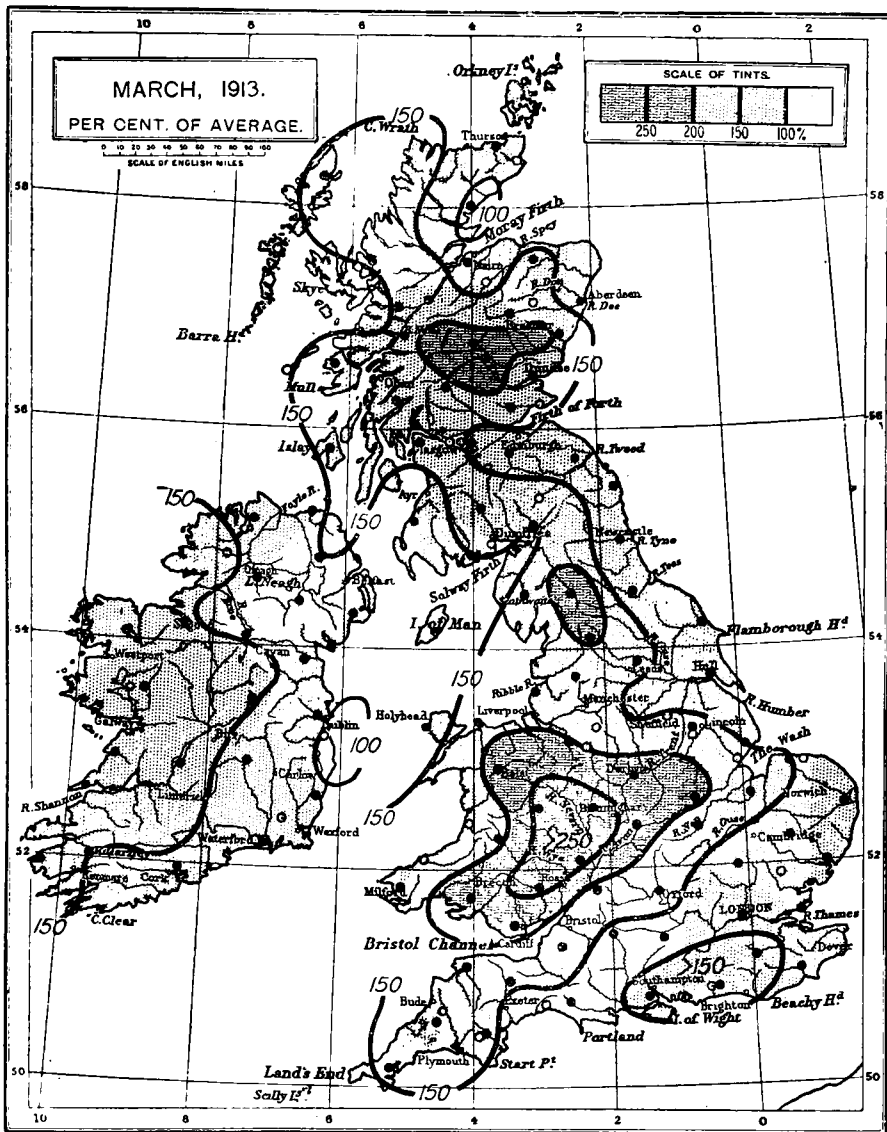


excess occurring in an elongated area embracing the central part of Scotland, including most of Inverness and portions of Perth, Argyll, and Lanark. Less than half the average fell over a narrow strip skirting the coast of the North Sea in Scotland, and extending into the Midland Counties of England. Small patches with a similar deficiency occurred in the east of Ireland and the west of England and Wales. The deficiency was thus greatest, 42 per cent., in England; ; in Wales it was 34 per cent., Ireland had a shortage of 32 per cent., while in Scotland the rainfall fell only 14 per cent. below the average. The country as a whole had a deficiency of 30 per cent.



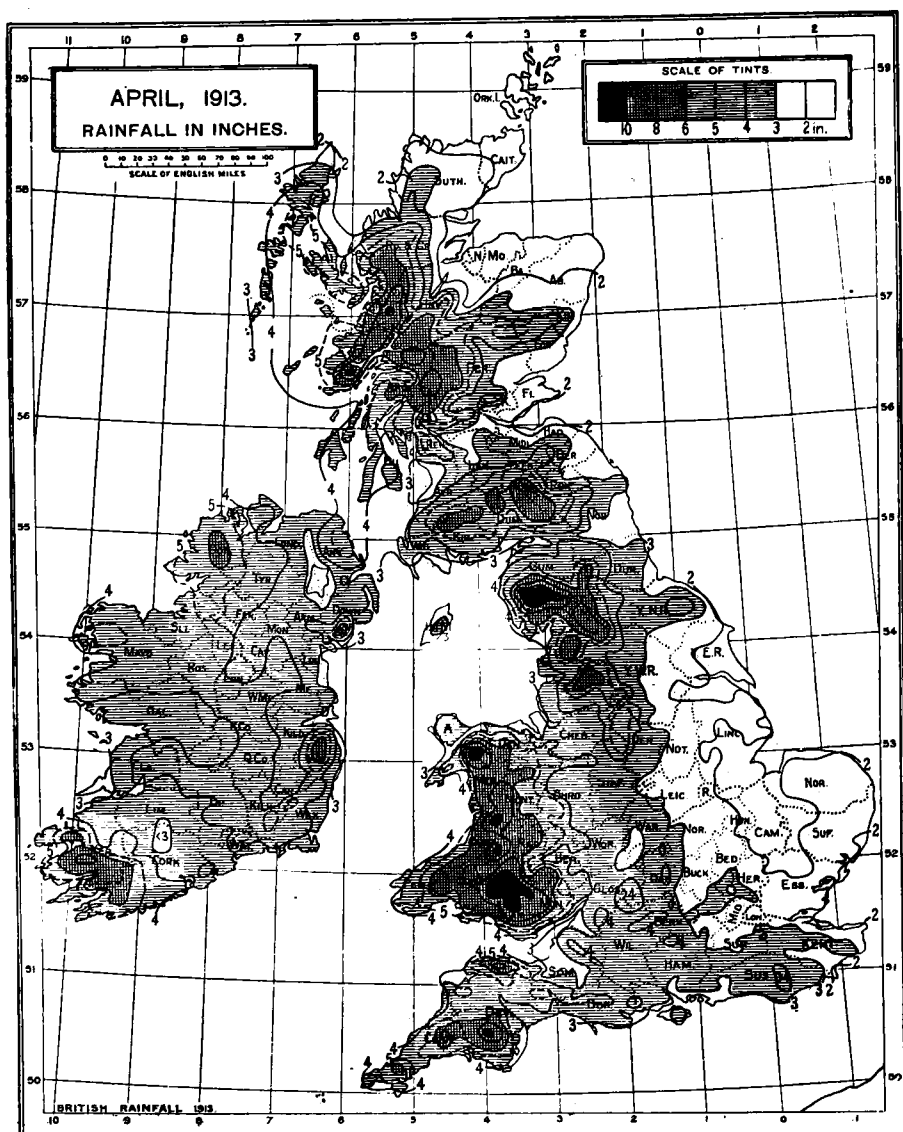
**March.**—A large number of depressions passed over the British Isles during this month, the general weather conditions being of an extremely unsettled type. The east coasts of England and Ireland had in general less than three inches of rain, the only extensive area with less than two inches being located in East Anglia. More than 10 inches fell over much of the west of Scotland, and in patches in Wales, in the Lake District, and the south-west of Ireland. Over the greater part of Ireland and the western half of England the rainfall varied between three and five inches.

Only in a small area on the north of the Moray Firth, and possibly also on the coast of Wicklow, was the rainfall below the average,



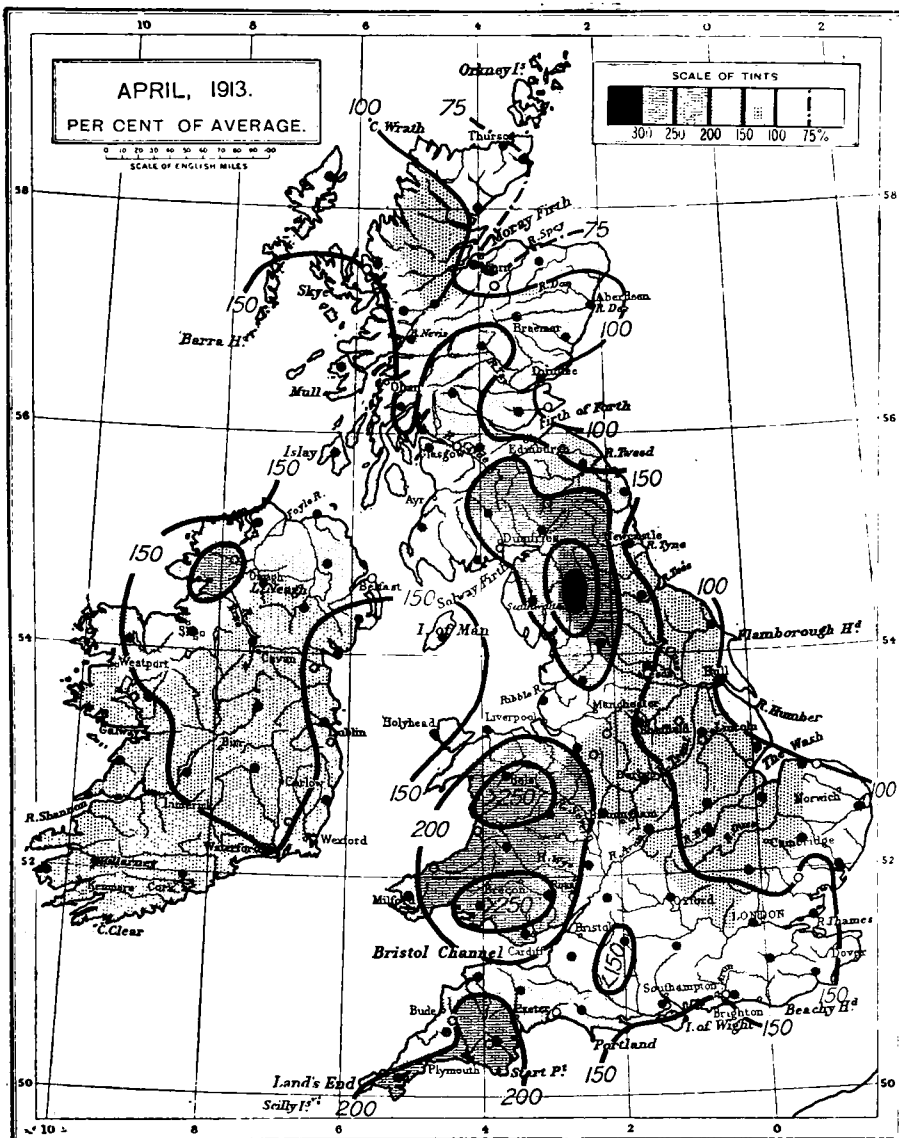
and except in the east of Great Britain and the eastern half of Ireland the fall was half as much again as the average. More than two and a half times the average fell over part of the west Midlands and Wales, this region being surrounded by a large area, stretching from Pembrokeshire to Lincolnshire, in which the rainfall exceeded double the average. More than double the average also fell in Perthshire and over part of the Pennine Chain.

Wales was the wettest of the large divisions with an excess of 106 per cent., England had an excess of 68 per cent., Scotland 62 per cent., while Ireland had 46 per cent. excess. The excess over the whole country averaged 64 per cent.



**April.**—Generally unsettled conditions continued to prevail throughout April, and rainfall was again heavy. In Ireland the fall was remarkably uniform, few stations having more than five, or less than three inches. Very local patches with ten inches or more appeared in Devon, Wales, Cumberland, and Inverness, and the larger part of Great Britain had more than three inches; less than this amount being recorded only in the east of the country. Falls of less than two inches were generally restricted to the shores of the Moray Firth, the Humber estuary and the Fen District.

The distribution relatively to the average was not unlike that in March. Only in the north-east of Scotland and a small



part of the east coast of Great Britain was less than the normal recorded, while over three times the average fell in a small area in Westmorland. More than twice the average fell over practically the whole of Wales, the Pennines, and the south of Devonshire. In Ireland double the average fell only in Co. Donegal, and in the south-west of Ireland the fall was not greatly in excess of the normal.

The general rainfall, taking the country as a whole, was 65 per cent. above the average, the excess varying from 127 per cent. in Wales to 46 per cent. in Scotland. England had an excess of 75 per cent. and Ireland of 53 per cent.



**May.**—The wetness which characterized March and April continued into May. Less than 2 inches of rain fell only in some eastern districts, and less than an inch round the Moray Firth and in Kent. Practically the whole of Ireland and Wales had a rainfall exceeding three inches, although only a small part of England recorded this quantity. The greatest variations occurred in Scotland, where more than 10 inches fell in two widely separated localities, the one in the east and the other in the west of the country. Over a large area stretching from west to east across the centre of Scotland the remarkable storms between May 6th and 10th raised the fall above 6 inches, with more than 8 inches over large areas.





The rainfall was above the average almost everywhere except in the north-east of Scotland and the east of England generally. In Scotland more than twice the average fell over the eastern Highlands, this excess being wholly due to the excessive rains from the 6th to the 10th. These rains fell with south-east winds and did not extend to the lee side of the Grampians, so that the driest and wettest parts of the British Isles were practically contiguous. Part of south and east Ireland also had more than double the average.

The general fall showed an excess of 56 per cent. in Ireland, 40 per cent. in Scotland, 25 per cent. in Wales, and 8 per cent. in England, and for the whole country an excess of 30 per cent.



**June.**—Almost the whole of England had a rainfall under an inch, and much of the south coast less than half an inch, though the thunderstorms of the 17th brought more rain in the Fens. Over a considerable part of the east and south coast of Ireland less than three inches fell, and more than four inches only in the west. In Scotland conditions were much more variable, the rainfall generally over the west exceeding five inches, and rising to more than 10 inches near Glenquoich. On the east coast from one to two inches fell very generally, but this relatively dry strip did not extend far inland.

Rainfall was in general below the average to the east of a line running from the Moray Firth to the Bristol Channel, the drynes



increasing towards the south-east. Over about two-thirds of England the rainfall was less than half the average, falling to a quarter of the average in the Thames Valley. Over Wales and much of Ireland the rainfall did not depart much from the average, but a small area in Co. Cavan had more than twice, and a small area in County Wicklow less than half the average. Scotland in general had a rainfall in excess of the average, especially in Ross and Cromarty.

The general rainfall exceeded the average, except in England, where there was a deficiency of 39 per cent. In Scotland there was an excess of 25 per cent., in Ireland of 9 per cent., and Wales 3 per cent. For the British Isles there was a deficiency of 6 per cent.



**July.**—Anti-cyclonic conditions prevailed almost without interruption, and the month was very dry, less than 3 inches of rain falling everywhere, except in small patches in Sutherland, Wales, the south coast of England, and East Anglia. In Sussex the thunderstorms of the 14th and 15th raised the rainfall at a few spots above 4 inches. Less than 1 inch fell over practically half the area of the British Isles, including extensive areas in each of the four countries. In a coastal strip in the south of Ireland, the Devon-Cornwall peninsula, and along the eastern coast of Great Britain from the Forth to the Wash only half an inch or less was recorded.

The districts over which more than half the average rain fell



were confined to an almost unbroken band passing from north-west to south-east, from Donegal to Dover. More than the average amount of rain fell only in the south-east of England. Less than a quarter of the average rain fell in central and southern Scotland, the north of England, the south of Ireland, and the south-west of England and Wales. The dryness culminated in the south-east of Ireland and in the west of Cornwall, where less than one-tenth of the normal rain fell.

The general fall was 74 per cent. below the average in Scotland. In Wales the deficit was 69 per cent., in Ireland 63 per cent., in England 57 per cent., and over the whole country 64 per cent.



**August.**—The quiet anti-cyclonic conditions of July continued. The month was remarkably dry, and everywhere less than 3 inches of rain fell, except in the normally wet localities, and in part of Sussex where heavy storms occurred on the last two days. Less than an inch of rain fell very generally on the eastern coasts of Great Britain and Ireland, and also over a large area in the south Midlands of England, culminating in a region with about half an inch in southern Northamptonshire. Patches with this small amount also occurred in a portion of the Thames estuary, and on the east coast of Ireland between Dublin and Dundalk. In Ireland the region with more than 2 inches was unusually restricted and little more than



1·50 in. fell in the normally wet areas in the south-west of Kerry.

Rainfall was below the average everywhere with the exception of a small area on the coast of Sussex. Owing to the infrequency of thunderstorms the rainfall relatively to the average was remarkably uniform, being, except in one or two districts, more than a quarter and less than half of the average. The driest area of the country generally was the north and east part of central Ireland.

The deficiency was greatest in Ireland, where it reached 63 per cent. In Scotland it was 59 per cent., Wales 54 per cent., and in England 51 per cent. For the British Isles as a whole the rainfall was 57 per cent. below the average.



**September.**—Owing to the occurrence of some very heavy local rainstorms in districts which are normally dry, the rainfall was very irregularly distributed over the United Kingdom. While the greater part of England and the east of Wales had less than 3 inches, wet areas are shown in the vicinity of Newcastle-on-Tyne, and of Doncaster, which experienced heavy storms on the 16th and 17th of the month respectively. In Ireland, on the other hand, there were few spots with less than 3 inches. Most of Scotland, north of the valley of the Forth and Clyde, had more than 3 inches, except over an irregularly shaped area covering the central Highlands, where the rainfall in general varied between 2 and 3 inches.





The rainfall was below the average generally to the north of a sinuous line extending from Malin Head to Alnwick. In England and Wales it rose to double the average in Pembroke, and to more than three times the average in the districts affected by the great storms at Newcastle and Doncaster, but it fell below half the average over most of the east coast from Hartlepool to the N. Foreland. In Ireland, except in the extreme north, it was above the average.

As compared with the normal there was an excess of 27 per cent. in Ireland and of 21 per cent. in Wales, while Scotland had a deficiency of 29 per cent. and England of 15 per cent., the general deficiency over the whole country being 8 per cent.



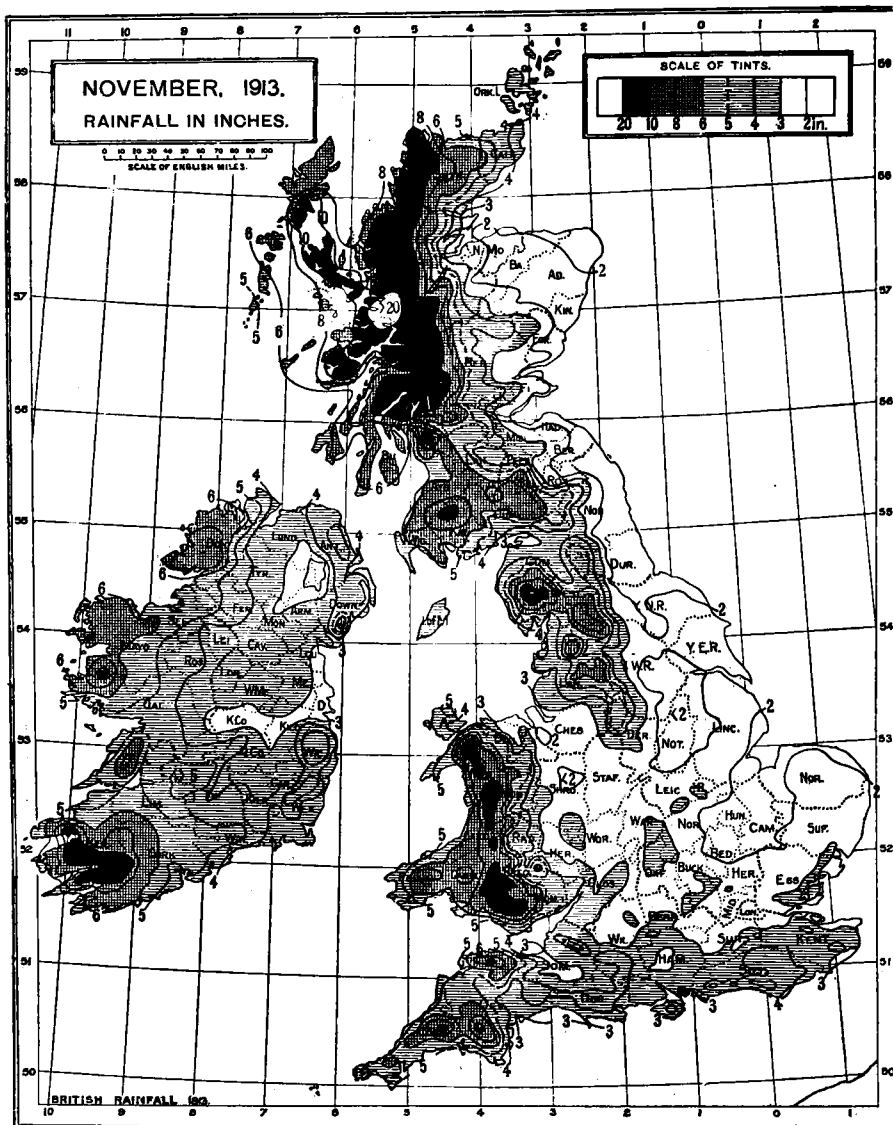
**October.**—The distribution of rainfall was extremely irregular and involved. More than 3 inches of rain fell over nearly the whole of England and Wales to the south of a line running from Holyhead to the Humber, but north of this the east coast generally had less than 2 inches. The normally wet regions in Ireland and Scotland were those having the greatest rainfall, but in Wales and especially Cumberland the normally rainy spots were far less wet than usual.

Speaking broadly the rainfall was above the average in the south-east of England, the south, east, and part of the west of Ireland and in the north-west of Scotland. The most conspicuous

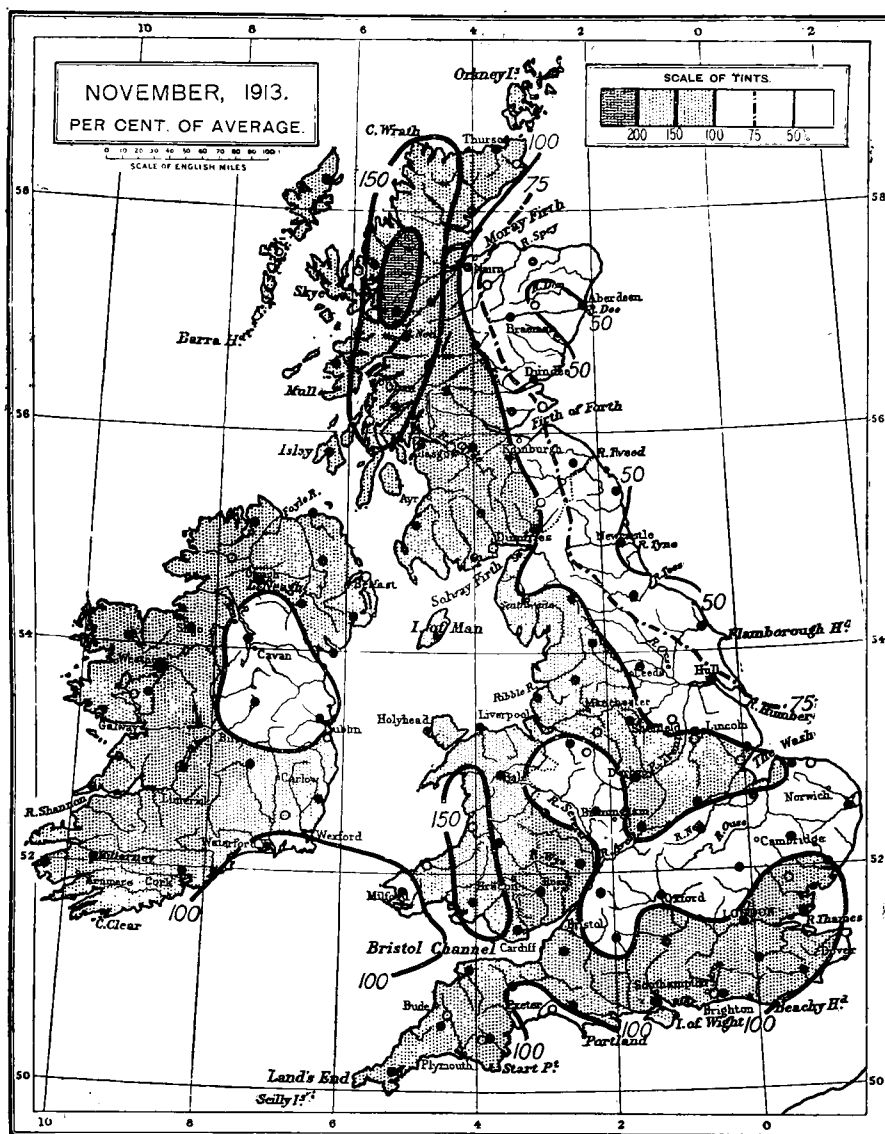


excess occurred in the south of Lincolnshire, where the great storms of the 5th and 6th raised the total over a small area to more than twice the average. Other comparatively wet areas were the south coast of Ireland and the Thames estuary. The deficiency was most marked in the east of Scotland and in north Lancashire, where less than half the average rain fell.

The relation of the rainfall of the four great divisions to the average was similar to that in September. In Ireland and Wales the excess was 13 per cent. and 2 per cent. respectively, while England had a deficiency of 3 per cent., and Scotland of 24 per cent. Over the whole country there was a deficiency of 6 per cent.



**November.**—The weather was wholly dominated by cyclonic systems and strong southerly to westerly winds prevailed throughout, bringing more than 10 inches of rainfall to a very extensive area in the west and north-west of Scotland. The eastern districts were, however, dry, and on a coastal strip extending from Peterhead to Scarborough less than 2 inches fell. The south of England, Wales, and the western half of Ireland were comparatively wet. Less than 2 inches fell in the Fen District and the lower Trent Valley, but almost the whole of the western districts had more than 5 inches, and large areas more than 10 inches. Practically the whole of Ireland had more than 4 inches, and the south-western wet



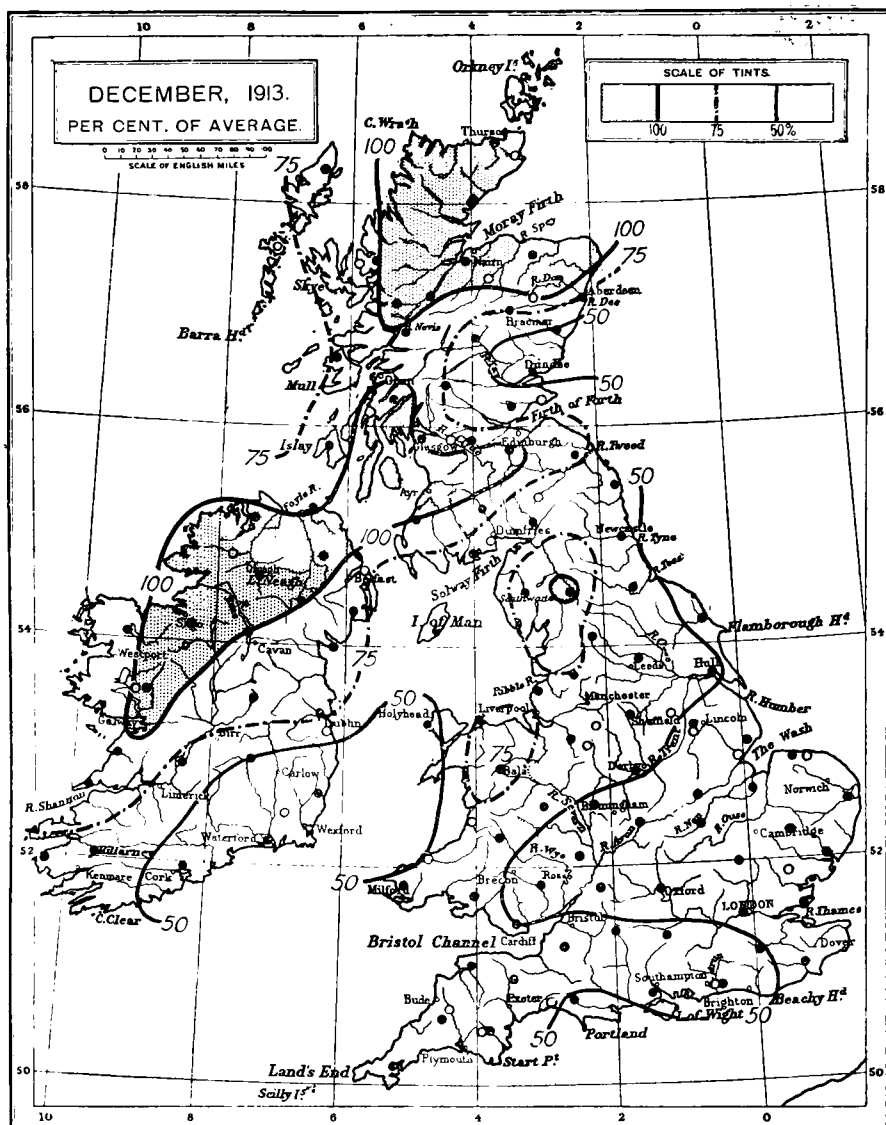
district embraced a large area with more than 10 inches.

The rainfall was below the average in the east of Great Britain, and in some places in Scotland and the north-east of England only half the average fell. Elsewhere, except in the north of Leinster, the fall was above the average, and markedly so in the north-west of Scotland, where it reached double the average, and over a considerable part of west Wales where it was 50 per cent. in excess.

The general rainfall exceeded the average by only 5 per cent. in England, by 19 per cent. in Ireland, by 31 per cent. in Scotland, and by 36 per cent. in Wales; the excess for the whole country being 20 per cent.



**December.**—Only in the west of Scotland, a small part of the Lake District, and a still smaller area in North Wales, did more than 10 inches of rain fall. Over about two-thirds of England the rainfall was less than two inches, diminishing to less than half an inch in the vicinity of the Wash. More than 3 inches fell only over the Devon-Cornwall peninsula and on the Pennines. In south Wales the wet area was conspicuously reduced and less than 2 inches fell on the coast of Pembrokeshire. The eastern half of Scotland had less than three inches, falling in Forfarshire to about one inch. A considerable portion of the east of Ireland had less than 2 inches, and less than 1 inch fell at Wexford.



A large area embracing the north of Ireland and part of Scotland had a rainfall slightly in excess of the average, and in the north-east of Scotland a considerable region had from a quarter to a half more than the average fall. In other parts of the country there was a deficiency which was most pronounced over the south-east of Ireland, Forfarshire, and a large portion of the south and east of England, where the rainfall was less than half the average.

The rainfall fell short of the average by only 7 per cent. in Scotland, while in Ireland the deficit was 16 per cent. In Wales and England the deficit was 38 per cent. and 39 per cent. respectively. Over the whole country 22 per cent. less than the average was recorded.

TABLE I.—*Monthly Rainfall in 1913: the Average, 1875–1909, being taken as 100.*

[ 182 ]

## BRITISH RAINFALL, 1913.

Div.	Station.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
I.	St. Pancras, Camden Square ..	140	48	135	156	98	25	90	60	88	114	100	37	89
II.	Tenterden, View Tower .....	214	49	136	162	51	26	74	60	67	131	106	44	94
"	Edenbridge, Falconhurst .....	181	50	167	175	79	19	121	69	83	139	121	54	106
"	Arundel, Patching .....	201	73	164	170	161	63	100	152	118	112	127	63	123
"	Fawley, Cadland .....	176	55	160	182	134	39	48	54	112	94	111	72	101
III.	Basingstoke, Sherborne St. John ..	160	61	148	177	114	36	88	51	106	137	103	58	102
"	Roydon, Therfield .....	162	49	132	142	102	40	96	47	109	126	86	49	92
"	Oxford, Magdalen College .....	147	43	155	180	122	20	33	31	73	155	102	37	89
"	Wellingborough, Croyland Abbey ..	166	43	182	133	83	31	51	72	70	134	82	40	89
IV.	March .....	144	37	174	119	103	42	33	45	61	125	76	25	78
"	Shoeburyness .....	156	48	139	175	102	10	147	20	49	198	127	47	102
"	Ipswich, Orwell Park .....	205	45	109	147	98	67	85	28	33	120	116	41	89
"	Bury St. Edmunds, Westley .....	132	47	112	144	112	60	43	68	115	119	92	42	90
"	Geldeston .....	172	48	117	121	84	46	129	46	123	118	79	43	94
"	Holkham Hall .....	165	31	171	118	72	80	35	64	81	114	104	35	86
V.	Bishops Cannings .....	178	57	131	143	129	29	79	81	122	73	78	69	95
"	Evershot, Melbury House .....	199	58	148	165	103	35	26	66	118	105	109	49	99
"	Ashburton, Druid House .....	208	68	177	225	149	38	15	43	137	98	117	55	111
"	Bampton, Huntsham Court .....	215	36	151	188	127	49	17	38	60	84	92	62	93
"	Barnstaple .....	197	44	182	190	139	114	27	33	75	74	141	86	104
"	Falmouth Observatory .....	173	52	157	205	179	58	11	36	74	110	121	98	106
"	Altarnon .....	152	51	171	165	127	94	13	29	70	105	148	80	101
"	Litton, Sherborne Reservoir .....	211	53	197	164	117	76	24	41	98	73	111	72	100
VI.	Stroud, Upfield .....	214	64	187	181	120	29	36	44	107	118	91	46	98
"	Church Stretton, Wolstaston ..	150	52	267	250	135	54	35	38	83	145	85	59	109
"	Wolverhampton, Wrottesley ..	171	42	268	184	102	56	62	62	57	96	93	47	97
"	Malvern, Church Street .....	193	52	274	193	127	32	37	74	154	147	122	40	116
"	Coventry, Kingswood .....	211	51	202	189	96	31	32	17	73	82	114	43	89
VII.	Market Overton .....	161	51	228	138	103	61	55	54	114	103	117	44	98
"	Revesby .....	139	41	141	138	95	44	33	29	65	129	97	26	79
"	Lincoln, Skellingthorpe Hall ..	170	50	175	138	86	30	19	50	91	108	110	46	85
"	Mickleover Manor .....	209	56	222	175	84	62	40	73	85	112	108	54	101
VIII.	Middlewich, Bostock Hall .....	124	63	220	199	99	80	44	39	48	76	87	61	87
"	Chatburn, Middlewood .....	124	58	170	205	126	101	38	42	51	48	105	75	89
"	Southport, Hesketh Park .....	149	56	162	166	105	93	46	40	74	62	121	60	88
IX.	Sheffield, Redmires Reservoir ..	161	52	150	135	96	52	42	49	105	124	111	68	95
"	Arncliffe Vicarage .....	136	84	202	208	77	74	19	37	45	34	143	68	92



TABLE I.—*Monthly Rainfall in 1913: the Average, 1875–1909, being taken as 100—(continued).*

Div.	Station.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
IX.	Wetherby, Ribston Hall .....	199	47	155	152	80	60	48	39	58	90	90	73	87
"	Hull, Pearson Park .....	222	38	131	100	116	40	18	24	51	90	93	67	78
"	Scarborough, Osgodby .....	196	34	111	115	108	49	30	33	36	90	62	42	73
X.	Darlington, Cleveland Parade ..	207	47	136	176	86	40	19	52	157	80	56	58	87
"	Newcastle, Town Moor .....	286	25	121	141	102	69	16	35	324	57	50	54	97
"	Howick Hall .....	190	42	135	196	157	86	18	35	101	48	68	61	86
"	Borrowdale, Seathwaite .....	117	96	153	204	96	171	20	63	40	59	99	93	96
"	Appleby, Castle Bank .....	117	104	221	312	63	79	33	35	90	56	112	101	101
XI.	Abergavenny, Larchfield .....	217	79	253	256	145	26	15	31	126	165	119	40	122
"	Ystalyfera, Wern School .....	184	69	242	297	139	117	24	57	87	96	190	60	121
"	Cardiff, Ely .....	213	47	204	221	123	84	16	36	107	108	146	50	108
"	Haverfordwest Castle .....	169	72	196	172	155	89	22	44	205	119	93	64	114
"	Birmingham W.W., Tyrmynydd ..	140	60	193	226	90	104	31	41	81	87	137	58	101
"	Bala .....	145	79	218	264	113	158	35	69	93	94	145	95	121
"	Llandudno .....	144	36	179	177	113	134	66	72	154	55	114	78	105
"	Holyhead .....	148	70	129	144	127	102	57	42	146	94	112	40	97
"	Douglas .....	129	56	145	123	117	118	42	20	83	74	134	72	90
XII.	Auchencairn, Torr House .....	150	87	150	164	143	95	28	50	99	58	123	67	96
"	Drumlanrig Castle .....	123	103	184	221	210	115	21	31	64	68	138	93	108
"	Canonbie, Byreburnfoot .....	101	86	136	226	100	96	18	58	52	104	123	58	91
XIII.	North Esk Reservoir .....	67	100	132	210	127	127	21	37	72	81	113	117	94
"	Marchmont House .....	130	53	126	112	98	118	24	44	68	55	61	87	77
XIV.	Airdrie, Hillend Reservoir .....	92	79	137	153	107	107	26	46	66	60	145	94	89
"	Girvan, Pimmore .....	128	57	132	160	133	96	20	42	73	59	147	104	94
"	Loch Thom .....	99	87	166	161	143	136	40	39	54	77	127	82	96
XV.	Inveraray, Newtown .....	75	100	182	131	179	152	32	56	53	82	165	106	106
"	Islay, Eallabus .....	128	73	157	178	147	104	39	49	57	77	108	92	96
"	Mull, Quinish .....	112	74	182	173	128	85	23	42	60	93	137	75	96
XVI.	Loch Leven Sluices .....	101	70	196	130	129	102	21	35	69	56	95	58	84
"	Balquhider, Stronvar .....	94	104	180	173	162	128	12	24	85	68	134	74	102
"	Blair Atholl .....	157	99	214	153	197	91	16	31	103	68	113	57	103
"	Dundee, Eastern Necropolis .....	171	35	174	102	173	62	21	41	94	54	68	48	81
XVII.	Fettercairn, The Burn .....	186	42	200	138	232	122	19	53	130	66	56	43	100
"	Braemar .....	160	60	183	150	176	74	10	28	81	60	59	71	89
"	Aberdeen, Cranford House .....	135	33	141	135	152	67	23	45	95	54	50	62	79
"	Keith Station .....	118	57	174	83	177	90	29	38	98	36	51	156	86
"	Cawdor .....	21	141	114	74	52	138	35	25	146	41	87	105	78

TABLE I—*Monthly Rainfall in 1913: the Average, 1875–1909, being taken as 100—(continued).*

Div.	Station.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
XVIII.	Fort Augustus, St. Benedict's ..	55	134	179	124	109	180	47	34	56	80	162	103	102
"	Glenquoich .....	66	118	147	138	121	183	28	48	46	95	205	125	109
"	Fort William, Atholl Bank .....	70	108	190	148	137	179	18	42	40	89	190	101	106
"	Loch Torridon, Bendauph .....	81	74	170	136	115	184	25	39	58	115	161	91	103
"	Stornoway .....	69	81	169	131	130	147	29	43	62	117	120	88	97
XIX.	Dunrobin Castle .....	17	59	89	99	95	152	45	44	115	33	123	138	83
"	Thurso, Holborn Head .....	45	53	111	64	106	114	43	37	99	52	103	150	82
XX.	Glanmire, Lota Lodge .....	163	62	131	197	179	77	9	65	177	159	111	34	105
"	Killarney, District Asylum .....	156	77	142	128	161	118	21	39	126	128	135	67	107
"	Valencia, Glanleam .....	163	74	172	135	250	112	29	30	129	145	149	65	118
"	Waterford, Brook Lodge .....	191	75	133	172	180	78	6	60	104	132	95	38	102
"	Nenagh, Castle Lough .....	154	70	188	167	157	124	26	40	107	98	122	74	107
"	Ennistymon House .....	150	75	184	133	141	114	39	52	132	131	126	99	112
"	Carrigaholt Castle .....	177	64	175	134	176	135	33	29	125	138	134	92	114
XXI.	Gorey, Newtown House .....	235	75	102	130	150	52	11	29	147	91	114	43	97
"	Abbeyleix, Blandsfort .....	223	64	127	178	171	125	31	25	127	163	112	48	113
"	Dublin, Fitz William Square .....	261	31	109	136	135	60	24	31	209	131	85	82	104
"	Mullingar, Belvedere .....	212	41	153	183	140	111	42	34	108	110	91	90	106
"	Greenore .....	171	59	129	128	141	91	66	19	152	130	108	79	103
XXII.	Tham, Gardenfield .....	151	88	183	157	154	112	34	24	130	105	133	109	112
"	Crossmolina, Enniscroe .....	152	91	169	154	167	112	46	31	121	102	138	91	114
"	Markree Observatory .....	178	70	152	170	152	103	49	37	83	73	131	119	107
XXIII.	Beltrubet, Cloverhill .....	177	58	146	169	161	202	40	19	154	83	95	101	112
"	Armagh Observatory .....	143	48	133	162	156	136	51	27	151	131	103	102	110
"	Seaforde .....	192	57	109	137	130	61	44	27	200	96	114	84	104
"	Bashmills, Dundarave .....	77	52	113	166	116	79	46	63	59	61	119	98	85
"	Ballymena, Harryville .....	142	75	159	189	161	123	46	30	103	125	109	116	111
"	Omagh, Edenfel .....	161	70	127	178	156	116	49	29	96	85	104	114	103
"	Buncrana, Rockfort .....	113	68	116	154	86	128	66	65	112	58	137	130	102
	England (Mean of 45 Stations)	170	58	168	175	108	61	43	49	85	97	105	63	96
	Wales ( " 8 )	168	66	206	227	125	103	31	46	121	102	136	62	112
	Scotland ( " 27 )	94	86	162	146	140	125	26	41	71	76	131	93	96
	Ireland ( " 22 )	167	68	146	153	156	109	37	37	127	113	119	84	107
	British Isles ( " 103 )	143	70	164	165	130	94	36	43	92	94	120	78	100

# MONTHLY RAINFALL. AT 301 STATIONS IN THE BRITISH ISLES DURING 1913.

## ENGLAND.

Div.	County.	Station.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
I.	London ..	St. Pancras (Camden Sq.)	2.57	.79	2.29	2.72	1.72	.58	2.31	1.43	1.75	3.11	2.35	.79	22.41
II.	Surrey ..	Worlingham (Redvers Rd.)	4.64	1.29	3.75	3.50	1.50	.40	1.93	1.96	1.40	4.26	3.29	1.46	29.38
"	"	Haslemere (Hazelhurst) ...	6.18	1.53	4.16	4.05	3.69	.79	2.81	1.48	4.09	5.26	3.77	1.96	39.87
"	"	Woking (The Grange).....	2.75	.92	2.90	2.46	1.81	.60	1.91	1.74	2.50	4.15	2.23	1.41	25.38
"	Kent ..	Tenterden (View Tower)...	4.58	.94	2.66	2.87	.84	.53	1.64	1.46	1.51	4.57	3.25	1.21	26.06
"	"	Hythe (Hillcrest Road) ...	3.58	.94	2.17	2.71	.73	.67	1.73	2.34	1.61	4.68	3.24	1.61	26.01
"	"	St. Peter's Court .....	2.72	.65	1.95	2.09	1.47	.59	1.56	.62	2.25	3.73	2.69	1.32	21.64
"	"	Ospringe (Lorenden) .....	3.99	.61	2.46	2.66	.87	1.13	2.08	1.29	1.65	3.82	4.09	.89	25.54
"	"	Tonbridge(The Manor Ho.)	4.29	.84	2.55	3.14	2.20	.53	2.20	1.36	1.68	4.93	3.28	1.11	28.11
"	Sussex ..	Arundel (Patching) .....	5.20	1.59	3.19	3.10	2.90	1.34	2.47	3.83	3.05	4.48	4.48	1.84	37.47
"	"	Balcombe (The Gables) ...	5.60	1.37	3.80	3.79	2.59	.69	3.20	2.01	2.89	5.15	4.38	1.80	37.27
"	"	Eastbourne (Glenthorne)...	4.75	1.29	2.75	3.63	1.11	.71	1.73	2.39	2.15	5.16	4.43	2.11	32.21
"	"	Totland Bay (Aston House)	4.65	1.35	2.91	2.68	2.81	.61	.72	1.74	3.81	4.63	3.64	1.75	31.30
"	Hampshire	West Dean .....	5.17	.97	2.51	2.92	2.59	.35	1.19	1.35	3.06	4.49	3.00	1.83	29.43
"	"	Bps. Waltham(Swanmore Ho.)	6.08	1.37	3.77	3.89	3.64	.50	2.31	2.31	3.12	4.33	4.64	2.55	38.51
"	"	Basingstoke(SherborneS.J.)	3.71	1.37	3.07	3.38	2.17	.83	2.13	1.29	2.37	4.76	3.08	1.62	29.78
"	Berkshire ..	Farnborough Rectory .....	5.22	1.68	4.77	5.28	3.69	.69	2.85	1.61	2.78	6.16	4.41	1.68	40.82
III.	Hertfordshire	St. Albans(County Museum)	3.11	.95	2.52	3.51	1.69	.61	1.64	1.04	1.25	3.58	3.15	.93	23.98
"	"	Royston (Therfield Rec.)...	2.68	.79	2.20	2.38	2.06	.96	2.65	1.29	2.15	3.43	2.02	.98	23.59
"	"	Slough (Upton).....	3.17	.80	2.21	2.41	1.77	.55	1.37	1.08	1.66	3.99	2.59	1.18	22.78
"	Buckinghamshire	Saunderton (Speen) .....	3.75	.59	2.58	3.16	1.74	.79	.86	.53	1.95	5.09	2.46	.88	24.88
"	"	Buckingham (Adstock Fields)	3.58	1.14	2.39	2.51	1.97	.89	1.27	.52	2.01	3.36	2.07	.94	22.65
"	Oxfordshire	Oxford (Magdalen College)	2.61	.80	2.25	3.00	2.21	.46	.80	.76	1.45	4.36	2.30	.76	21.76
"	"	Goring (Elmcroft) .....	2.80	1.07	2.07	3.09	2.22	.67	1.34	1.02	1.95	3.75	2.81	1.04	23.83
"	Northamptonshire..	Wellingboro (Croyland Abbey)	3.14	.72	3.08	2.37	1.66	.65	1.29	1.71	1.49	3.50	1.83	.85	22.29
"	Huntingdonshire ..	Huntingdon(Bosworth Ho.)	1.87	.69	2.35	1.93	2.07	.89	.74	.99	2.03	2.57	1.78	.61	18.52
"	Bedfordshire .....	Shillington .....	2.55	.80	2.39	2.75	1.65	.84	1.26	1.04	2.03	2.58	1.66	.79	20.24
"	Cambridgeshire ..	Ely (The Palace) .....	2.52	.73	2.01	1.70	1.97	1.36	.92	2.27	1.90	2.71	1.75	.77	20.61
"	"	Wisbech (Monica Road) ...	2.48	.46	2.32	1.69	2.61	1.03	1.14	1.19	2.27	3.40	1.49	.33	20.41
IV.	Essex .....	Grays Sewage Works .....	2.30	.64	2.09	2.00	1.16	.41	2.18	1.83	1.56	3.97	2.70	.85	21.69
"	"	Epping (The Hemnalls) ...	3.67	.76	2.05	3.21	2.12	.46	2.20	1.71	1.33	3.99	3.63	.75	25.88

# ENGLAND—(continued.)

Div.	County.	Station.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
IV.	Essex	Bradwell-on-Sea (Bradwell Hall)	2.33	.75	1.95	2.02	1.57	.23	1.77	.14	1.64	3.81	2.41	.67	19.29
	"	Shalford (Littles)	2.70	.66	1.69	1.76	2.10	1.77	1.79	.73	.95	3.36	2.83	.63	20.97
	"	Clare (Hawkedon Rectory)	2.73	.77	1.94	2.01	1.81	2.85	2.18	1.26	1.39	3.29	2.27	.76	23.26
	"	Ipswich (Woolverstone Pk.)	3.31	.56	1.65	2.51	1.77	1.89	2.08	.71	1.08	3.46	2.94	.92	22.88
	"	Aldborough (Aldringham Ho.)	3.30	.70	2.09	2.06	1.34	.77	2.16	1.63	2.28	4.09	2.68	.88	23.98
	"	Walsham-le-Willows	2.54	.75	1.72	2.19	2.14	1.16	1.74	2.09	1.60	3.42	2.24	.77	22.36
	"	Geldeston [Beccles]	2.63	.68	1.84	1.88	1.49	.81	3.05	1.03	2.63	3.36	1.96	.89	22.25
	"	Aylsham (Millgate)	2.79	.72	2.20	1.98	1.17	.68	2.23	1.11	1.88	3.58	2.09	.87	21.30
	"	Sandringham House	2.53	.69	2.45	2.31	1.65	1.67	.83	1.24	2.17	3.84	1.76	.54	21.68
	"	Watton	2.91	.81	2.16	2.43	1.98	.91	1.10	1.44	1.37	3.76	2.51	.62	22.00
V.	Wiltshire	Calne (High Street)	4.11	1.38	2.99	3.29	2.87	.69	.84	.66	3.13	2.46	2.47	1.92	26.81
	"	Mere (Charnage)	5.31	1.18	3.20	3.48	3.02	.79	.46	1.66	2.87	3.18	4.08	2.64	31.87
	"	Salisbury Plain (Shrewton)	4.82	1.40	2.80	2.91	2.49	.52	.99	1.25	3.27	3.32	3.07	1.97	28.81
	"	Marlborough (Mildenhall)	4.37	1.25	3.02	3.50	2.45	.30	2.14	.82	3.37	3.32	2.87	1.74	29.15
	"	Warminster (Warmwell Ho.)	6.34	1.96	3.16	3.19	2.34	.57	.79	1.34	3.22	4.34	4.52	2.38	34.15
	"	Beaminstor Vicarage	7.12	1.56	3.56	4.39	2.62	.59	.55	1.65	3.39	4.33	3.94	2.01	35.71
	"	Horton Vicarage	5.14	1.31	2.64	2.55	2.08	.47	1.07	2.35	4.14	4.35	3.38	1.97	31.45
	"	Kingsbridge (Collapit Creek)	7.42	1.04	3.90	3.23	2.36	.76	.89	1.02	2.44	2.64	3.75	2.72	32.17
	"	Princetown (H.M. Prison)	14.27	4.12	11.05	12.11	7.26	3.65	1.13	2.72	6.64	6.57	12.58	8.03	90.13
	"	Teignmouth (Den Gardens)	7.27	1.10	3.67	3.62	3.42	.36	.40	.65	1.65	4.88	3.23	2.11	32.36
	"	Cullompton	7.07	.94	4.16	4.19	3.65	.89	.68	1.95	1.94	5.62	3.92	2.33	37.34
	"	Chumleigh (Leigh House)	6.02	1.09	4.64	4.03	2.89	1.32	.50	2.30	1.64	3.52	4.37	4.11	36.73
	"	Barnstaple (N. Devon Athenæum)	6.33	1.23	4.48	4.17	3.00	2.52	.77	1.08	2.35	3.48	5.56	3.59	38.56
	"	Okehampton (Oaklands)...	7.93	1.79	6.77	5.73	2.43	2.22	.79	1.41	1.90	4.80	5.96	5.10	46.83
	"	Redruth (Trewirgie)	8.75	1.85	5.52	6.35	4.40	1.57	.38	1.37	4.29	5.07	6.28	4.23	50.06
	"	Bude (The School House).	4.96	.95	4.42	3.09	3.04	1.30	.37	1.18	2.36	2.71	4.08	3.25	31.71
	"	Penzance (Morrab Garden)	7.11	1.00	4.60	4.61	3.71	1.27	.38	1.80	2.79	2.39	4.77	5.30	39.73
	"	St. Austell (Trevana).....	7.93	1.47	4.57	5.26	4.10	1.71	.77	.60	3.56	5.09	5.98	4.37	45.41
	"	Altarnon Sanctuary	9.09	2.51	7.47	6.18	3.94	2.92	.53	1.40	3.12	7.37	9.05	5.90	59.49
	"	Street (Hind Hayes)	4.57	.67	2.98	2.66	2.73	1.02	.77	1.51	3.50	2.37	3.03	2.43	28.24
VI.	"	Burnham (Chalbury)	5.12	.67	2.81	2.42	1.85	1.19	.57	1.36	2.52	3.38	2.87	2.45	27.21
	"	Winsford School	10.14	2.31	9.17	6.28	4.12	2.28	1.29	1.74	2.78	4.58	7.03	5.40	57.12
	"	Stroud (Upfield)	4.98	1.15	3.75	3.78	2.51	.70	.98	1.29	2.56	3.80	2.52	1.25	29.27
	"	Mickleton (Bank House)...	3.79	.84	3.19	2.56	1.82	.58	1.82	.84	2.38	2.55	2.57	.92	23.86
	"	Clifton (Pembroke Road)...	5.95	1.14	4.33	3.10	2.70	1.07	.55	1.61	3.74	2.84	3.32	2.18	32.53
	"	Fairford (Hatherop Castle)	4.66	1.42	3.35	4.09	2.36	.76	2.11	1.07	3.14	3.67	2.70	1.35	30.68
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ENGLAND—(continued.)

Div.	County.	Station.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
VI.	Herefordshire	Ross (The Graig)	4.32	1.15	5.38	4.02	2.19	.77	.73	1.05	3.05	3.89	3.36	.88	30.79
	Shropshire	Ludlow (Ashford House)	3.95	2.08	5.99	4.91	2.14	.87	1.02	1.99	2.40	4.57	3.69	1.28	34.89
	"	Bishop's Castle Vicarage	4.61	1.64	5.64	4.92	4.12	1.46	.72	1.83	2.52	6.12	3.04	1.88	38.50
	"	Much Wenlock (Willey Pk.)	3.59	1.10	4.94	3.90	2.72	1.15	1.52	2.06	1.52	3.59	2.49	1.32	29.90
	"	Oswestry (The Mount Res.)	4.51	2.02	4.73	5.18	2.79	1.89	1.09	1.87	1.61	5.14	3.65	2.07	36.55
	Staffordshire	Market Drayton (old Springs)	3.41	1.11	4.77	3.67	2.07	.99	1.46	2.23	1.81	3.08	2.21	1.57	28.38
	"	Shugborough	4.47	.77	4.79	3.39	1.80	1.19	1.85	2.39	2.39	3.72	2.34	1.55	30.65
	"	Burton (Shobnall)	3.97	.85	3.73	3.13	1.94	1.14	.93	1.84	2.39	3.38	2.21	1.16	26.67
	"	Mayfield Ho. [Ashbourne]	4.50	1.06	4.54	3.99	2.59	1.73	.74	1.83	1.61	2.79	2.85	1.51	29.55
	Worcestershire	Worcester (Belmont Road)	3.71	1.02	4.07	3.21	2.53	.56	.81	1.33	2.08	3.58	2.45	.99	26.34
VII.	"	Dudley (Borough Cemetery)	3.49	.65	4.60	3.44	2.03	1.40	1.58	1.49	1.76	3.15	2.30	1.10	26.99
	Warwickshire	Wormleighton Hall	3.34	.87	3.12	3.50	1.99	.89	1.10	.44	2.10	3.84	3.04	1.25	25.48
	"	Bedworth Cemetery	4.12	.82	3.70	3.68	2.81	.93	.95	.67	1.88	2.96	2.76	.91	26.19
	"	Market Harborough (Rose Hill)	4.11	.92	3.94	2.82	1.72	.51	1.40	.77	1.74	3.48	2.93	.78	25.12
	"	Loughboro' (Nan Panton Res.)	4.03	1.04	4.19	2.60	2.15	1.01	1.06	1.61	2.03	3.44	2.45	.96	26.57
	"	Belvoir Castle	2.55	.76	3.69	2.25	1.72	1.52	.66	.79	2.39	4.21	2.17	.87	23.58
	Lincolnshire	Stamford (St. George's Sq.)	2.58	.84	2.62	1.71	2.41	1.58	.74	1.61	1.73	2.65	2.11	.83	21.44
	"	Boston (Black Sluice, Skirbeck)	2.79	.60	2.35	1.90	2.12	1.02	.79	.90	1.75	5.89	2.17	.62	22.90
	"	Sleaford (Rauceby Hall)	3.17	.67	3.28	2.17	1.79	.85	.81	.23	1.71	6.02	2.03	.59	23.32
	"	Willingham-by-Stow	3.20	.74	2.50	2.12	1.98	.73	.40	1.48	1.84	2.27	1.89	.90	20.05
VIII.	"	Skegness	2.70	.60	2.63	2.07	1.63	.92	.61	.65	1.86	3.05	1.55	.56	18.83
	"	Louth (Westgate)	4.20	.98	3.17	2.56	2.19	.63	.55	.98	1.48	2.91	2.29	.73	22.67
	"	Burton-upon-Stather Vic.	3.16	.50	2.01	2.30	2.72	1.01	.18	.82	2.71	1.79	1.97	1.20	20.37
	Nottinghamshire	Mansfield (West Bank)	3.84	.84	3.59	3.14	2.01	.38	.95	1.48	2.49	3.98	1.70	1.23	25.63
	Derbyshire	Buxton (Devonshire Hospital)	4.24	2.12	6.38	5.65	3.09	3.24	1.39	2.01	1.68	4.01	5.17	2.94	41.92
	Cheshire	Sandbach (Malkins Bank)	2.09	.92	3.68	2.42	1.96	1.72	.86	1.97	1.02	1.72	1.81	1.38	21.55
	"	Aldford	2.35	1.28	3.81	4.36	2.92	1.97	1.12	2.10	1.07	2.90	2.01	1.74	27.63
	South Lancashire	Liverpool (Huyton Vic.)	3.61	1.13	3.06	3.27	2.52	2.22	2.06	2.30	1.55	2.70	3.32	2.57	30.31
	"	Manchester (Whitworth Pk.)	2.94	1.25	3.31	3.98	2.61	1.85	1.28	2.06	1.55	1.60	3.16	2.52	28.11
	Central	Burnley (Swinden)	5.49	2.37	6.48	6.10	4.34	2.46	1.56	2.60	1.53	2.24	5.66	3.11	43.94
IX.	"	Stonyhurst College	4.81	1.88	6.09	4.97	4.05	2.47	1.48	2.29	1.95	2.08	5.67	4.21	41.95
	"	Horwich (Wallstiches)	2.98	2.20	3.28	6.16	3.52	2.30	1.65	2.87	2.13	2.00	3.88	1.92	34.89
	"	Southport (Hesketh Park)	3.80	1.15	3.42	3.06	2.24	2.10	1.33	1.49	2.29	2.32	3.83	1.86	28.89
	"	Greenodd (Summer Hill)	6.36	3.27	5.78	6.42	3.68	3.57	.95	2.84	2.70	4.27	6.50	4.18	50.52
	North	Morecambe	4.88	2.57	4.27	5.70	2.18	1.99	1.27	1.85	3.40	3.38	4.09	2.52	38.10
	"	Settle (Giggleswick School)	7.30	2.24	6.88	5.24	3.25	2.32	.85	1.63	2.17	1.88	5.33	3.14	42.23
	Yorkshire, W.R.														
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ENGLAND—continued.

Div.	County.	Station.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
IX.	Yorkshire, W.R. ...	Doncaster (Wadworth Hall)	3·40	·79	2·53	2·65	1·87	·88	1·00	1·38	4·30	3·08	2·23	1·30	25·41
"	"	Sheffield (Weston Park) ...	3·76	1·22	4·37	3·05	2·17	·82	1·57	1·23	3·00	4·17	3·23	1·95	30·54
"	"	Melham (Harewood Lodge)	4·85	1·79	7·99	5·09	3·04	2·53	1·32	1·41	2·14	3·28	4·97	4·47	42·88
"	"	Garforth (Manor Farm) ...	3·18	·74	2·47	2·76	1·68	·95	·75	·95	1·35	2·87	1·90	1·60	21·34
"	"	Ilkley (St. James' Road) ..	4·91	1·34	4·95	2·95	3·29	1·54	·67	·01	1·30	1·98	3·26	2·26	29·46
"	"	York (Mount Villas) .....	3·59	·62	2·40	2·87	1·71	1·48	·65	·91	1·53	2·82	2·42	1·64	22·64
"	E.R. ...	Birdsall Gardens .....	3·97	·91	2·28	2·77	2·62	1·51	·34	·86	1·30	3·73	2·65	1·75	24·69
"	"	Pattingham .....	3·32	·61	2·35	1·83	1·44	·58	·16	·80	1·66	2·25	2·06	·88	17·94
"	"	Market Weighton (Dalton Hall)	4·02	·92	3·11	2·47	2·31	1·07	·27	·87	1·07	2·45	2·28	1·69	22·53
"	"	Bridlington .....	3·31	·68	2·87	1·74	2·22	·90	·97	·99	·55	2·68	2·38	1·46	20·75
"	"	Leyburn (Bolton Hall) ...	5·05	1·61	6·96	4·10	2·50	1·19	1·18	1·18	1·66	2·66	2·75	1·98	32·82
"	N.R. ...	Thirsk (Mount St. John) ...	2·61	·90	2·09	3·03	1·61	1·94	·56	·93	1·29	2·20	1·95	1·86	20·97
"	"	Whitby (Mulgrave Castle)	4·09	·86	2·42	3·21	2·86	1·51	1·26	·97	1·60	5·17	2·00	1·43	27·38
"	"	Middlesbrough (Ormesby)	2·79	·75	1·59	2·31	2·12	1·66	1·10	1·36	1·64	3·65	1·34	1·82	22·13
"	"	Barnard Castle (County School)	3·91	1·21	4·95	3·26	2·84	1·64	1·25	·98	3·74	2·78	1·96	1·34	29·86
X.	Durham ...	Wearhead Station .....	5·25	4·21	9·92	5·95	2·63	2·43	1·44	2·52	3·72	3·64	5·36	4·79	51·86
"	"	Ushaw (St. Cuthbert's College)	4·59	·67	3·13	3·99	2·92	·67	1·00	1·94	3·42	3·10	1·25	1·00	27·68
"	"	Haltwhistle (Bellister Castle)	3·09	2·60	5·45	2·83	1·62	2·54	1·40	2·04	2·35	3·07	3·69	3·13	33·81
"	Northumberland ...	Corbridge (Howden Dene)	3·15	·81	3·78	2·70	2·00	1·44	1·80	1·86	4·00	3·57	1·76	1·84	28·71
"	"	Bellingham (High Green Manor)	3·56	1·75	4·39	2·88	2·79	1·72	·97	2·06	1·86	3·03	2·74	2·71	30·46
"	"	Morpeth (Bothalhaugh) ...	3·70	·51	2·43	2·75	2·38	1·63	·76	1·15	3·40	1·54	1·51	1·18	22·94
"	"	Howick Hall .....	3·57	·76	2·89	3·37	3·43	1·77	·47	1·02	2·30	1·61	1·94	1·74	24·87
"	"	Ilderton (Lilburn Cottage)	3·36	·94	3·86	2·95	3·18	1·62	1·08	1·97	2·04	1·79	1·76	1·16	25·71
"	Cumberland .....	Penrith (Fir Bank, Fell Lane)	4·52	2·38	5·24	4·43	1·44	1·88	·94	1·27	1·84	3·31	3·00	3·14	33·39
"	"	Wigton (Brookfield) .....	2·44	2·11	4·37	3·95	2·17	2·90	·93	2·54	2·30	3·14	3·24	3·13	33·92
"	"	Borrowdale (Seathwaite) ...	15·68	10·53	16·22	14·11	7·18	11·83	1·75	7·19	4·56	7·46	13·49	14·07	124·07
"	"	Whitehaven (Irish Street) ..	3·96	2·26	5·14	4·28	4·89	2·42	·66	2·71	3·10	4·79	4·14	3·27	41·62
"	"	Kirby Stephen (Redman Ho.)	4·79	3·01	6·83	6·37	1·34	2·79	1·29	1·42	3·69	2·24	4·73	3·70	42·20
"	Westmorland .....	Kendal (Crosthwaite Vic.)	5·03	3·20	6·12	6·54	3·00	4·24	1·05	2·31	3·40	4·36	7·24	4·08	50·57
"	"	Mean of 132 stations .....	4·37	1·30	3·82	3·54	2·47	1·37	1·24	1·52	2·31	3·63	3·31	1·99	30·87

MONMOUTH, WALES AND THE ISLANDS.

XI.	Monmouth .....	3	Abergavenny (The Chain).	7·02	2·39	7·25	6·71	3·88	·66	·55	3·57	6·58	4·77	1·64	46·26
"	"	4	Chepstow (Piercefield Pk.)	5·16	1·82	4·95	3·73	2·80	1·00	·46	4·42	2·97	4·78	1·34	34·78

**MONMOUTH, WALES AND THE ISLANDS—(continued.)**

Div.	County.	Station.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
XI.	Glamorgan	Swansea (The Knoll) .....	7·69	1·96	7·64	5·87	3·55	2·88	·90	1·66	3·22	4·68	8·91	3·29	52·25
"	"	Treherbert (Tyn-y-waun)...	15·34	4·76	15·00	15·27	5·56	5·16	·86	3·77	3·63	8·08	15·64	5·90	98·97
"	"	Cardiff (Penylan) .....	7·26	1·46	5·75	5·21	2·84	1·93	·60	·97	3·50	5·10	5·36	2·08	42·06
"	Cardarthen	Cardarthen (The Friary)..	6·41	2·79	6·60	6·03	3·88	2·57	·97	1·46	5·85	5·17	6·40	2·65	50·78
"	"	Llanwrda (Dolaucothy) ...	8·01	4·05	8·13	6·97	5·14	4·01	2·27	1·70	4·14	5·37	7·58	3·73	61·10
"	Pembroke	Castle Malgwyn [Llechryd]	7·27	2·49	5·75	5·87	3·94	2·14	·80	1·55	6·31	4·84	5·10	2·33	48·39
"	"	St. David's .....	7·12	2·23	4·30	3·61	3·30	2·44	·47	1·43	5·37	3·89	4·43	1·95	40·47
"	"	Tenly (Glendower) .....	6·65	2·16	6·02	5·46	4·09	2·12	·66	1·61	4·59	5·09	5·09	2·44	46·05
"	"	Aberystwyth(North Parade)	5·07	1·28	4·84	4·86	3·70	3·71	2·02	2·16	3·95	3·62	4·65	2·08	41·94
"	Cardigan	Birmingham W.W. (Claerddu)..	8·70	2·40	9·10	7·80	4·85	7·30	4·15	6·25	3·85	6·45	10·85	6·25	77·95
"	"	Brecon (New Inn) .....	11·89	5·10	12·57	8·89	3·77	2·87	·71	2·46	4·11	8·97	6·62	2·61	70·57
"	"	Ilay (Waunderwen).....	4·67	1·74	6·54	4·67	2·31	1·05	·49	1·42	2·47	5·98	3·31	1·48	36·13
"	Radnor	Llandrindod Wells (Kimberley)	5·10	2·12	6·09	5·29	3·37	2·27	·96	2·18	2·03	5·14	4·22	2·32	41·09
"	Montgomery	Llandinam (Plas Dinam)...	6·46	1·58	6·57	6·30	2·81	2·27	·52	1·83	2·45	5·76	4·32	2·16	43·03
"	Flint	Bodfari (Henblas) .....	2·02	·84	3·00	2·72	2·98	2·01	1·58	2·55	2·74	2·18	1·94	2·44	27·00
"	Merioneth	Bala (Eryl Aran) .....	7·59	3·42	9·14	7·68	3·36	4·66	1·25	3·43	3·42	5·63	7·84	5·68	63·10
"	"	Blaenau Ffestiog (Oakley Qrs.)	9·77	5·05	10·16	9·22	4·76	8·82	3·11	6·07	7·70	7·79	12·97	8·31	93·73
"	"	Dolgelly (Bryntirion) .....	6·89	2·42	6·69	6·87	3·81	5·41	2·34	3·64	4·91	5·43	7·88	4·47	60·76
"	"	Llandudno .....	3·62	·76	3·81	3·16	2·11	2·63	1·67	2·26	3·84	2·07	3·63	2·22	31·78
"	Carnarvon	Abersoch .....	5·12	1·93	3·78	3·64	2·94	3·03	1·79	1·80	6·33	5·47	5·38	2·32	43·53
"	"	Llanerchymedd Llwylarth Esgob..	4·57	1·41	3·50	3·27	3·01	2·95	1·31	1·57	4·14	4·14	4·68	2·14	36·69
<b>Wales. Mean of 23 stations</b>			<b>6·93</b>	<b>2·44</b>	<b>6·84</b>	<b>6·05</b>	<b>3·60</b>	<b>3·21</b>	<b>1·32</b>	<b>2·36</b>	<b>4·20</b>	<b>5·24</b>	<b>6·36</b>	<b>3·12</b>	<b>51·67</b>
XI.	Isle of Man	Douglas ..	4·64	1·71	4·12	3·00	2·89	2·95	1·35	·78	2·99	3·46	5·99	3·39	37·27

**SCOTLAND.**

XII.	Wigtown	Stoneykirk (Ardwell Ho.)	4·31	1·29	3·37	3·13	3·63	1·75	·59	1·59	3·21	3·06	5·40	3·89	35·22
"	"	Garliestown (Galloway House)	4·96	1·79	4·39	2·73	2·56	1·60	·89	1·37	3·07	2·84	4·60	3·03	33·83
"	Kirkcudbright	Dalry (Glendarroch) .....	8·15	4·65	5·94	5·10	5·29	3·52	·64	1·99	3·61	4·32	8·32	5·19	56·72
"	"	Dalbeattie (Little Kichorn)	6·16	2·40	5·04	4·37	4·14	3·08	·86	2·32	3·36	3·29	4·89	2·67	42·58
"	Dumfries	Moffat (Auchen Castle) ...	5·55	4·05	6·94	5·72	3·91	3·65	·80	2·02	2·67	4·61	6·31	4·19	50·92
"	"	Langholm (Ewes, Burnfoot)	5·35	3·80	6·31	5·94	3·68	3·23	1·20	1·71	2·05	5·07	6·81	3·70	48·35
"	Roxburgh	Hawick (Wolfelee) .....	3·19	2·19	5·12	4·26	3·05	1·97	1·47	1·85	2·62	4·25	2·89	2·86	35·72
XIII.	Selkirk	Selkirk (The Hangingshaw)	3·61	1·33	4·52	3·54	3·53	1·44	·81	1·04	2·31	3·19	2·59	2·13	30·04
"	Peebles	Stobo (Dawyck Gardens)...	4·08	2·26	5·39	4·88	2·92	2·49	1·73	1·81	2·34	2·91	3·14	3·28	37·23
"	Berwick	Marchmont House .....	3·11	1·13	3·34	2·55	2·48	2·80	·79	1·56	1·82	2·09	1·95	2·45	26·07

SCOTLAND—(continued.)

Div.	County.	Station.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
XIII.	Haddington	Dunbar (Broxmouth Park)	3.51	.56	2.31	1.75	2.50	1.09	.70	1.60	2.17	.99	1.26	1.83	20.27
"	Midlothian	West Calder (Addiewell)	2.05	2.18	5.81	2.89	1.91	2.61	1.37	.76	2.05	2.36	4.08	3.28	31.35
XIV.	"	Edinburgh (Blackford Hill)	2.28	1.26	3.21	1.79	1.18	1.49	.46	1.44	2.16	1.48	1.97	1.72	20.44
"	Lanark	Leadhills	7.49	4.32	7.94	8.07	6.26	4.16	.87	1.35	2.88	4.34	7.10	3.65	58.43
"	"	Strathaven (E. Overton Ho.)	2.37	2.75	3.62	2.28	2.07	3.16	.98	1.26	1.72	2.06	5.17	4.66	32.10
"	Ayr	Dalry (Blair)	5.00	4.33	4.63	3.43	3.92	2.84	1.78	1.94	2.69	2.31	7.43	6.29	46.59
"	"	Maybole (Culzean Gardens)	2.89	2.10	2.93	2.65	2.50	2.33	.60	1.07	2.42	2.15	5.19	4.08	30.91
"	"	Barrhill (Dochroyle)	7.60	2.10	3.45	3.00	2.95	2.80	.50	1.20	2.62	2.90	5.60	4.44	39.16
"	"	New Cumnock (Ayr Sanatorium)	6.33	4.10	7.06	4.34	6.45	3.47	.93	1.57	2.79	4.25	7.36	5.75	54.45
"	"	Glasgow (Queen's Park)	3.14	3.21	4.52	2.93	2.68	3.50	1.42	1.19	2.18	1.64	5.09	3.74	35.24
XV.	Renfrew	Cardross (Kilmaheew)	5.34	3.38	5.85	3.17	4.10	3.46	1.57	1.11	2.68	2.55	5.51	3.61	42.33
"	Dumbarton	Falkirk (Westbank)	3.98	2.60	4.10	2.73	2.15	2.28	1.23	1.03	2.64	1.97	5.24	3.34	33.29
"	Stirling	Buchlyvie (The Manse)	5.53	3.70	6.82	3.52	3.21	3.92	1.11	1.76	2.23	2.36	6.00	3.53	43.69
"	"	Rothesay (Crichton Road)	7.02	3.51	5.82	4.57	4.16	3.49	1.70	2.30	2.74	3.46	7.65	5.70	52.12
"	"	Glenleven (Kinlochleven)	9.67	8.45	12.42	7.74	7.33	8.45	1.33	2.61	4.57	8.61	14.27	9.92	95.37
"	"	Taynuilt (Barguilean)	8.19	6.85	12.46	6.08	5.57	6.31	.97	2.37	3.05	5.53	11.68	7.80	76.86
"	"	Loch Awe (Ford)	7.26	4.22	10.20	5.72	6.76	4.18	1.88	3.49	3.56	5.41	12.03	8.35	73.06
"	"	Muasdale (Killeen Manse)	7.52	2.63	4.90	3.81	4.49	2.83	1.13	2.14	2.68	4.31	5.41	3.81	45.66
"	"	Campbeltown (Witchburn)	5.48	2.26	4.38	4.76	4.08	2.77	1.38	1.55	2.80	4.36	6.79	3.77	44.38
"	"	Ardrishaig (Canal Office)	7.31	5.31	9.09	5.56	4.19	4.95	1.46	2.68	3.62	4.92	10.68	9.54	69.31
"	"	Lochgoilhead (Nuthill)	9.25	5.80	9.92	5.24	7.85	5.72	.83	2.24	3.65	4.86	11.95	9.25	76.56
"	"	Islay (Ardbeg)	4.78	2.82	5.40	3.79	3.42	2.49	1.26	.33	2.26	3.13	5.76	5.86	41.30
"	"	Jura (Ardfin)	6.72	4.75	6.45	5.47	3.20	3.89	1.59	1.82	2.85	4.95	7.56	6.41	55.66
"	"	Iona	5.35	3.78	6.58	4.28	3.71	2.34	1.82	2.10	2.79	3.70	7.87	4.39	48.71
"	"	Mull (Quinish)	6.21	3.28	7.80	5.16	3.83	2.80	.96	2.11	3.11	5.44	8.53	4.97	54.20
"	"	Tiree (Cornaigmore)	7.01	2.95	5.72	4.76	3.71	2.55	1.37	1.96	2.66	4.61	6.37	4.05	47.72
XVI.	Fife	Colinsburgh (Balcarras)	3.66	.76	4.15	2.03	2.36	1.65	.81	1.44	1.89	2.22	2.20	2.06	25.23
"	"	Cupar (Rankellour)	4.61	.92	3.49	1.86	2.72	1.97	.84	1.17	1.71	2.05	2.26	1.70	25.30
"	Perth	Balquhidder (Stronvar)	8.22	6.59	10.86	7.16	6.64	5.21	.50	1.48	4.91	6.33	10.56	6.52	74.98
"	"	Glendevon (Tormauk)	4.71	3.63	9.61	4.04	3.89	4.03	.83	1.47	3.04	4.42	6.67	4.64	50.98
"	"	Crieff (Strathearn Hydro.)	5.80	3.42	7.27	3.46	2.66	2.35	.44	.70	3.15	2.61	4.31	1.99	38.16
"	"	Aberfeldy (Dall Avon)	6.50	2.71	6.20	4.08	6.58	1.68	.36	1.08	2.02	2.27	3.42	2.48	39.38
"	"	Glenlyon (Meggernie Castle)	8.57	7.69	9.70	6.92	7.66	4.86	.70	1.32	3.98	6.14	9.70	6.18	73.42
"	"	Coupar Angus	6.62	1.13	5.26	2.22	5.20	2.24	.42	1.26	1.99	1.72	2.05	.91	31.02
"	Forfar	Arbroath (Muirheads Res.)	2.90	.65	3.46	2.98	2.92	1.96	.50	1.67	2.31	1.92	1.74	.88	23.89
"	"	Glen Prosen (Pearsie)	5.84	1.42	5.24	2.95	6.00	3.70	.40	1.51	3.58	2.45	2.91	1.81	37.81



SCOTLAND—(continued.)

Div.	County.	Station.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
XVII.	Kincardine	Pettercairn (The Burn) ...	4.98	1.07	5.37	3.37	5.36	2.74	.57	1.88	3.69	2.35	1.94	1.49	34.81
	"	Crathes (Pinewood).....	6.84	.88	4.46	2.81	6.03	1.46	1.83	1.38	3.81	1.24	.87	1.63	33.24
	Aberdeen	Braemar (Derry Lodge) ...	6.03	3.05	5.50	3.13	3.08	2.43	.56	.96	2.43	2.19	2.80	2.39	34.55
	"	Aberdeen (Cranford House)	3.19	.77	3.74	3.00	3.65	1.35	.69	1.38	2.55	1.75	1.65	2.11	25.83
	"	Strathdon Estate Office ...	4.06	.90	5.15	2.19	5.53	2.91	.78	1.64	2.71	1.34	1.17	3.31	31.69
	"	New Deer School House...	3.10	.82	2.93	1.78	3.70	1.93	.76	1.25	2.77	1.08	2.73	3.27	26.12
	"	Huntly (Cruchie) .....	2.43	.65	2.41	1.22	3.43	2.08	.60	.96	3.25	1.05	.92	3.18	23.18
	Moray	Gordon Castle .....	1.10	1.12	2.75	.87	2.71	2.37	.67	.89	3.46	.86	1.81	3.43	22.04
	"	Grantown-on-Spey .....	1.70	1.30	3.84	.75	1.84	2.17	1.80	1.39	2.30	.64	1.64	3.35	22.72
	Nairn	Nairn (Achareidh) .....	.61	1.93	2.38	1.06	.99	3.16	1.10	.97	2.99	1.19	2.13	2.79	21.30
XVIII.	Inverness	Kingussie .....	2.32	2.99	5.16	1.89	2.06	2.02	.84	1.16	1.83	1.50	3.41	3.90	29.08
	"	Fort Augustus(S.Benedict's)	3.05	5.61	6.77	2.76	2.57	3.72	1.39	1.21	1.98	3.31	7.32	5.81	45.50
	"	Loch Quoich (Glenquoich)	9.00	11.52	14.43	7.52	7.08	9.46	1.92	3.95	4.22	9.91	23.48	17.06	119.55
	"	Drumnadrochit .....	2.47	3.62	5.45	2.07	1.41	3.52	1.78	.99	2.20	2.23	4.56	4.41	34.71
	"	Loch Shiel (Glenfinnan) ...	11.43	8.97	14.33	7.91	7.89	10.47	1.51	4.32	4.91	9.21	20.64	12.61	114.20
	"	Arisaig House .....	4.82	4.86	6.68	4.12	4.63	4.94	1.64	2.59	3.41	5.57	10.65	7.63	61.54
	"	Skye (Kyleakin) .....	4.93	3.38	7.39	5.76	2.71	4.12	.80	1.51	2.24	4.87	9.04	5.12	52.07
	"	" (Dunvegan) .....	7.40	4.41	10.87	5.83	5.14	5.06	1.14	3.51	4.17	9.10	11.56	7.46	75.65
	"	Barra (Castle Bay) .....	5.00	2.10	3.61	3.26	3.25	2.59	1.55	1.94	1.95	5.49	4.50	2.93	38.17
	"	South Uist (Ushenish) .....	2.33	3.31	5.01	3.72	3.01	3.40	.87	2.26	2.17	5.96	7.43	4.44	43.91
XIX.	Ross and Cromarty	Alness (Ardross Castle) ...	1.16	2.71	3.31	2.11	2.02	3.09	.94	1.00	2.92	1.74	4.39	4.81	30.20
	"	Braemore House .....	3.50	4.75	9.03	4.07	5.03	4.75	2.75	1.71	3.45	6.32	11.25	8.20	64.81
	"	Loch Torridon (Bendamph)	7.65	5.54	12.39	6.40	5.22	7.47	1.36	2.60	4.19	9.60	14.37	9.31	86.10
	"	Poolwee (Inverewe Gdns.)	4.35	4.42	6.71	3.46	2.68	4.49	1.47	2.34	4.21	6.48	12.13	8.74	61.48
	"	Glencarron Lodge .....	4.47	7.09	6.58	5.54	5.37	8.68	1.85	3.29	3.35	10.07	18.40	12.51	87.20
	"	Stornoway .....	3.50	3.39	6.52	3.47	3.32	3.58	.86	1.66	2.46	6.32	6.66	5.25	46.99
	Sutherland	Invershin .....	.59	2.40	3.52	1.84	2.76	2.85	1.92	1.35	2.95	1.27	5.42	2.49	29.36
	"	Dunrobin Castle .....	.48	1.52	2.35	2.00	2.07	3.20	1.32	1.19	2.88	1.04	4.00	4.27	26.32
	"	Tongue Manse .....	1.68	2.37	3.16	1.88	2.37	2.81	.90	.86	2.99	3.01	5.26	5.46	32.75
	"	Loch Stack (Ardchullin)...	2.13	4.49	6.80	2.68	5.48	5.79	2.77	1.78	4.93	7.65	14.20	12.32	71.02
"	Caithness	Berriedale (Langwell) .....	.96	1.58	3.99	1.90	2.41	2.70	.65	1.02	2.82	2.26	4.63	5.46	30.38
	"	Thurso (Buckies) .....	1.78	1.84	3.92	1.64	2.18	1.99	1.30	1.89	2.62	2.05	4.62	5.62	31.45
	"														
Scotland. Mean of 78 stations .....			4.80	3.24	5.97	3.74	3.88	3.44	1.14	1.69	2.90	3.73	6.43	4.86	45.82

IRELAND.

Div.	County.	Station.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
XX.	Cork	Skibbereen Rectory.....	8.32	3.24	4.67	5.84	5.12	4.64	.36	1.11	6.54	7.19	5.66	2.26	54.95
"	"	Clonakilty (Shannon Vale Ho.)	6.31	2.66	4.93	4.20	4.28	3.46	.24	1.02	5.95	6.56	5.10	1.50	46.21
"	"	Dunmanway (The Rectory)	11.55	4.90	7.22	5.94	5.55	4.16	.31	1.37	6.97	7.90	7.67	3.09	66.63
"	"	Midleton (Ballynacurra) ...	6.66	2.03	4.07	3.73	4.24	2.18	.23	1.33	5.20	6.67	5.52	1.60	43.46
"	"	Mallow (Summer Hill) ..	7.87	2.60	4.55	2.91	3.94	2.53	.53	2.67	5.44	5.33	5.79	2.21	46.37
"	"	Mitchelstown Castle .....	7.89	2.10	4.03	3.61	4.24	2.83	.58	1.86	6.33	5.78	5.18	2.43	46.86
"	Kerry	Gap of Dunloe (Gearahameen)	17.00	7.50	13.30	9.00	8.50	5.70	1.00	1.80	7.90	11.00	12.40	8.50	103.60
"	"	Lough Caragh (Lickeen)...	14.80	6.94	10.88	7.07	7.31	4.99	.78	1.74	4.63	10.34	12.19	6.18	87.85
"	"	Darrynane Abbey.....	9.92	2.66	6.32	4.86	6.75	4.40	1.74	1.51	5.02	7.33	6.14	3.58	60.23
"	"	Kenmare (Dromore) .....	12.41	3.66	6.83	4.27	5.29	4.16	.85	1.53	5.27	8.73	8.38	4.30	65.68
"	Waterford	Lismore Castle.....	10.38	2.53	3.51	3.42	4.78	2.68	.29	1.64	4.58	5.43	5.71	1.71	46.66
"	"	Waterford (Brook Lodge)...	7.23	2.37	3.51	4.61	4.19	2.19	.18	2.24	3.32	5.30	3.62	1.66	40.42
"	Tipperary	Nenagh (Traverston) .....	7.85	2.49	6.49	4.56	4.54	4.61	.93	1.65	3.02	4.69	5.41	3.20	49.44
"	"	Clonmel (Bruce Villa).....	8.52	1.87	3.79	3.51	4.47	2.19	.42	.90	3.41	5.43	4.40	1.31	40.27
"	"	Cashel (Ballinamona) .....	6.55	1.96	3.61	4.09	4.22	2.89	.79	1.18	4.35	4.78	4.57	2.48	41.47
"	Limerick	Foynes (Mount Trenchard)	5.63	1.27	4.98	3.45	4.43	4.08	.90	2.17	2.68	5.16	5.53	3.97	44.25
"	Clare	Ennistymon House .....	6.44	2.57	5.96	3.73	3.81	3.61	1.38	2.60	5.56	5.77	5.80	4.97	52.20
"	"	Carrigaholt Castle .....	5.85	1.74	4.42	2.97	3.74	3.34	.91	1.15	4.19	4.86	4.93	3.65	41.75
"	"	Derravoher [Limerick] ...	5.37	1.21	3.67	3.27	3.36	3.17	.78	2.01	4.89	3.00	4.05	2.74	37.52
"	"	Newmarket-on-Fergus (Carrigoran)...	6.73	1.77	4.68	3.97	4.00	4.58	1.05	2.14	5.33	3.81	4.84	3.75	46.65
"	"	Scarriff (Woodpark).....	6.55	2.48	5.67	4.19	3.36	3.47	1.03	1.95	4.48	3.00	4.61	4.17	44.96
XXI.	Wexford	Wexford (Tate School) ...	6.80	2.92	3.41	4.03	3.70	1.85	.25	.90	3.82	4.11	3.74	.76	36.29
"	"	Enniscorthy (Ballyhyland)	9.02	2.74	3.69	4.54	5.68	1.86	.31	1.34	3.96	5.99	4.63	2.01	45.77
"	"	Gorey (Courtown House)...	7.50	2.05	2.32	3.09	3.35	1.34	.32	.97	4.09	3.43	3.88	1.46	33.80
"	Kilkenny	Kilkenny (Lavistown Ho.)	5.01	1.27	2.39	3.54	3.70	1.79	.41	.96	3.28	4.61	3.11	1.39	31.46
"	Wicklow	Rathdrum (Avondale) .....	7.90	2.16	3.07	3.91	4.99	1.82	.33	1.21	3.67	5.99	5.37	1.48	41.90
"	"	Bray (Fassaroe) .....	10.42	1.85	3.10	4.44	4.42	1.01	.73	.89	4.21	6.85	4.94	2.20	45.06
"	Queen's County	Abbey Leix (Blandsfort)...	7.03	1.64	3.28	4.52	4.16	3.22	.93	1.00	3.72	5.77	3.68	1.64	40.59
"	King's County	Birr Castle.....	4.77	1.26	3.94	3.91	3.46	3.28	1.02	1.30	3.20	3.63	3.08	2.53	35.38
"	"	Ballycumber (Moorock Lodge)	4.11	1.01	3.00	3.97	3.12	2.88	.81	1.04	2.96	2.48	2.58	2.99	30.95
"	"	Castledermot (Millbrook)...	6.18	1.23	2.87	3.48	4.19	1.71	.92	.99	2.66	4.79	3.07	1.64	33.73
"	Kildare	Monasterevan (Moore Abbey)	5.94	.83	2.94	4.13	3.74	1.88	.97	1.45	2.83	4.36	2.87	2.45	34.44
"	"	Balbriggan (Ardgillan) ...	5.08	.70	1.98	3.38	3.04	1.29	1.16	.41	5.54	4.03	2.69	1.95	31.20
"	Dublin	Dunboyne (Stirling Clonee)	5.21	1.18	2.69	3.11	3.12	1.50	.83	.86	4.09	4.35	2.66	2.30	31.90
"	Meath	Drogheda (Mullacrogan)...	4.02	.98	2.29	2.57	2.72	1.42	.87	.45	4.30	4.14	2.29	1.91	27.96
"	"	"	5.74	1.31	3.69	4.24	3.19	3.02	1.27	.93	3.74	3.44	3.57	3.01	37.15
"	"	Athboy (Frankville).....													

# IRELAND—(continued).

Div.	County.	Station.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
XXI.	Westmeath	Mullingar (Belvedere).....	6.58	1.09	4.05	4.33	3.52	3.02	1.33	1.36	3.27	3.50	3.07	3.06	38.18
"	"	Castlepollard (Pakenham Hall)	6.49	1.45	4.46	4.17	4.01	3.02	1.21	.85	3.52	3.63	3.14	3.74	39.69
"	Louth.....	Greenore .....	4.59	1.35	2.90	2.84	3.33	2.33	1.87	.65	4.10	3.73	3.38	2.41	23.43
"	Longford .....	Ballymahon (New Castle)	5.60	1.41	4.17	4.52	4.52	3.14	1.19	.98	3.40	3.07	2.94	3.74	38.68
XXII.	Galway ..	Knockboy House.....	5.78	1.93	4.09	2.79	4.64	3.55	1.76	1.29	3.35	5.06	4.45	3.56	42.25
"	"	Tuam (Gardenfield).....	6.00	2.78	5.89	4.06	4.33	3.24	1.08	1.06	4.61	4.14	5.69	5.11	47.99
"	"	Woodlawn.....	6.45	2.21	5.11	3.65	4.02	3.97	1.10	1.77	5.05	3.88	3.95	4.62	45.78
"	Mayo .....	Crossmolina (Enniscoe) ...	8.11	3.93	7.37	4.82	5.29	3.55	1.50	1.43	5.37	5.40	7.91	5.53	60.21
"	"	Westport (St. Helens).....	7.82	3.88	5.93	3.66	4.97	2.43	1.29	1.48	3.86	5.35	6.18	4.29	51.14
"	"	Cong (The Glebe) .....	7.99	3.88	6.59	3.99	4.64	4.04	.82	.92	3.76	4.08	5.69	5.24	51.64
"	"	Dugort (Slievemore Hotel)	7.99	4.54	7.40	5.33	5.34	4.52	2.69	2.25	4.72	6.89	7.11	6.52	65.30
"	Sligo .....	Collooney (Markree Obs.)	6.88	2.23	5.05	4.27	4.25	3.21	1.63	1.58	3.03	3.07	5.26	5.18	45.64
"	Leitrim .....	Mohill (Rectory) .....	6.23	1.86	4.28	4.60	4.90	3.25	1.69	1.18	4.44	4.05	3.50	4.26	44.24
XXIII.	Cavan.....	Killeshandra (DromMullac)	6.08	1.70	4.58	3.78	3.45	4.24	1.10	.98	4.61	2.51	3.54	3.65	40.22
"	Fermanagh .....	Enniskillen (Portora) .....	6.30	2.02	3.73	4.31	3.66	3.93	1.50	1.30	4.09	2.42	4.29	3.91	41.46
"	"	Belleek .....	5.34	1.94	4.48	5.36	3.93	3.49	1.79	2.03	3.30	2.64	5.56	3.93	43.79
"	Monaghan.....	Dartrey [Cootehill] .....	5.56	1.58	3.97	4.06	3.84	3.59	1.75	1.27	4.02	2.72	3.58	3.94	39.88
"	Armagh.....	Armagh Observatory .....	3.70	1.01	3.05	3.35	3.79	3.99	1.56	.95	4.14	3.72	2.93	2.88	35.07
"	Down.....	Seaforde .....	6.55	1.60	3.09	3.78	3.54	1.75	1.45	.99	6.51	3.49	4.41	3.15	40.31
"	"	Donaghadee .....	4.43	1.22	2.74	3.23	2.59	3.53	1.17	.68	2.92	2.49	3.65	2.26	30.91
"	Antrim .....	Belfast (Queen's University)	6.28	1.38	2.92	3.41	3.71	2.02	1.48	.88	4.15	3.84	4.10	3.51	37.68
"	"	Glenarm Castle.....	5.93	2.66	3.79	4.84	2.32	2.17	.80	1.64	3.60	4.87	4.83	5.23	42.68
"	"	Bushmills (Dundarave) ...	2.45	1.32	3.09	3.46	2.75	2.02	1.52	2.57	2.07	2.20	4.50	3.81	31.76
"	"	Ballymena (Harrville) ...	5.29	2.23	4.89	4.87	4.56	3.56	1.53	1.24	3.54	4.71	4.32	4.61	45.40
"	Londonderry.....	Limavady (Drenagh) .....	3.79	1.43	3.08	3.20	3.57	3.27	1.72	1.49	3.63	1.88	3.20	4.00	34.26
"	Tyrone .....	Cookstown (Lissan).....	4.79	1.75	3.39	3.49	3.69	2.55	1.44	1.03	2.90	2.95	2.69	2.88	33.55
"	"	Omagh (Edenfel) .....	5.57	1.89	3.77	4.44	4.15	3.27	1.64	1.21	3.24	3.19	3.82	4.47	40.64
"	Donegal.....	Buncrana (Rockfort) .....	4.00	1.87	3.63	3.78	2.23	3.55	2.25	2.68	3.92	2.48	5.64	5.48	41.53
"	"	Dunfanaghy (Horn Head)	5.10	3.38	4.41	5.95	3.20	3.16	1.92	1.75	4.34	2.68	6.51	5.42	47.82
"	"	Killybegs .....	6.89	3.24	6.14	5.41	4.50	4.21	2.41	2.85	4.07	3.55	8.65	7.46	59.38
"	"	Convoy .....	6.53	3.07	6.24	5.89	3.56	3.42	1.28	1.72	3.69	3.26	5.40	5.60	49.66
Ireland. Mean of 67 stations ..			6.80	2.26	4.48	4.17	4.14	3.09	1.10	1.41	4.21	4.59	4.83	3.47	44.55
BRITISH ISLES. Mean of 301 stations .....			5.22	2.11	4.75	3.92	3.30	2.43	1.19	1.60	3.03	3.99	4.70	3.16	39.40

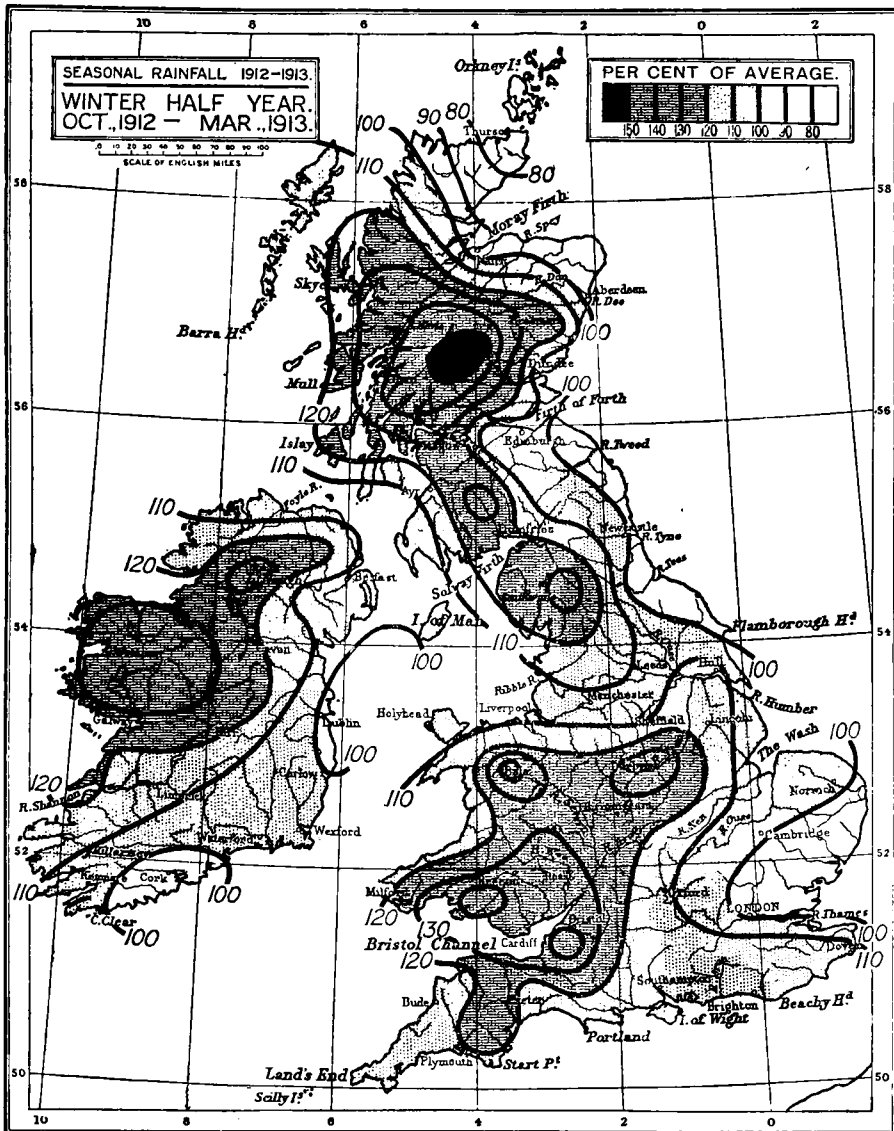
## SEASONAL RAINFALL, 1912-13.

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THE grouping of rainfall statistics in six-monthly periods, comprising the summer and winter half-years respectively, forms a convenient transition between the consideration of the fall during each individual month and that of the whole year. As we have constantly pointed out the year from January 1st to December 31st, unfortunately, embraces portions of two winters, and although it would be a matter of great difficulty to fix any date upon which the rainfall of one 12-monthly period would be naturally separated from that of another, it is obviously a disadvantage for the season, which in the British Isles is on the whole the rainiest, to be divided between two successive years. In addition to studying the rainfall of the summer and winter half years in relation to the average fall during each of those periods, we therefore include in this section a statement of the fall in the year ending on September 30th, which although probably not an ideal grouping, presents the advantage of dealing with the whole winter at once.

During the winter season 1912-13, the rainfall exceeded the average in all parts of the country, with the exception of narrow strips bordering the east coasts of both Great Britain and Ireland and a part of the south of Ireland. In these districts the deficiency reached 10 per cent. only in the north-east of Scotland, possibly reaching 20 per cent. in Caithness. In the centre and west of the three main land masses comprising the British Isles large areas had rainfall more than 20 per cent. in excess of the average. That in Ireland which extended from the mouth of the Shannon into the west of Co. Antrim included two districts, the smaller in Co. Tyrone, the larger embracing most of the province of Connaught, in which more than 30 per cent. excess was observed, but the east and south of Ireland had for the most part only little more than the normal fall, and the general excess in Ireland was smaller than that in the other countries, being only 15 per cent. All parts of Wales had a rainfall in excess of the average, and all except the north and west coasts an excess of more than 20 per cent. Two centres of relatively high fall, centred respectively in the north and the south, showed an excess reaching 40 per cent., and the whole of south-eastern

Wales had more than 30 per cent. above the average rainfall. The general fall for Wales was relatively larger than in any other part of the Kingdom, being 29 per cent, in excess. The Welsh wet area extended eastwards into England, and the Midlands and southern counties experienced a rainfall more than 10 per cent.



above the average. From south Devon, north-eastwards to the borders of Lincolnshire, and on the Welsh border northwards to Flint the excess was greater than 20 per cent. The main centre of high rainfall was in Somerset, corresponding closely with the

area over which the fall during the seasonal year 1911-12 was most excessive. A subsidiary wet centre occurred in the neighbourhood of Derby. The rainfall also exceeded 110 per cent. over the Pennines, reaching a maximum of about 130 per cent. in Westmorland. In the eastern and north-eastern counties generally the rainfall of the six months differed little from the average, falling slightly below it between London and Yarmouth, and also on the coast north of Flamborough Head. The general rainfall of England exceeded the average by 16 per cent. In Scotland an area of very pronounced excess lay in Perthshire where one station experienced more than 50 per cent. above the average fall. The district with an excess of more than 30 per cent. extended from Skye to Glasgow and eastward to western Aberdeenshire. More than 110 per cent. of the average fell over the whole of the west of Scotland, except in Sutherland and in Galloway, and this excess was observed in the centre of the country eastwards to the shores of the North Sea in the neighbourhood of Montrose. The wet region extended also southwards, joining the Pennine wet area in England. Slight deficiencies of rainfall were noted in Berwickshire and Haddingtonshire and north-east of a line drawn from Aberdeen to Cape Wrath, the deficiency being as mentioned above, more than 20 per cent. in Caithness. The general fall in Scotland was 24 per cent. above the average. The excesses in all four countries gave a general fall of 20 per cent. above the average for the British Isles as a whole.

In the summer six months, from April to September, 1913, the rainfall was, on the whole, deficient, but individual rains affecting small areas brought it into excess in widely scattered localities, rendering the map showing the relative distribution exceedingly complex. Speaking broadly, the pronounced winter dryness of the east coasts, both of Great Britain and of Ireland, in comparison with other parts of the country, was continued during the summer, and less than 80 per cent. fell generally from Dungeness to the Orkneys, whilst in Ireland less than 90 per cent. fell on the coast of Wicklow and Wexford. The most notable deficiencies in England occurred in an irregular band stretching from Cornwall to Yorkshire. Less than 80 per cent. of the average fell in central Devon, less than 70 per cent. in Oxfordshire, and less than 60 per cent. on the east coast of Lincolnshire and the East Riding. On the south-east of this strip a remarkable local excess occurred in Sussex,

where exceptional conditions existed almost throughout the summer, culminating in the great storms of July 14th and of August 30th-31st. At Arundel the excess was greater than 20 per cent. On the north-west less pronounced wet areas occurred in north and south Wales, where the rains of April had their greatest effect, and in south



Yorkshire a small isolated patch marks the position of the great Doncaster rain storm of September 17th. Further north a similar area picks out the locus of the Newcastle thunderstorm of the previous day. In general, however, England was dry, the fall for the whole country being 18 per cent. in defect. Wales, on the other hand,

owing to the more widespread nature of the heavy rains, had a general fall 1 per cent. in excess of the average. In Scotland the distribution of rainfall relatively to the average was simpler. In the north-east and south-east considerable areas had less than 80 per cent. of the average, and a part of the west coast also probably fell short to that extent. The greater part of the country, however, had rather more than 80 per cent., and a small patch in the south, and a narrow band stretching from Argyll to Kincardine, more than 90 per cent. The latter may be traced directly to the rains of May 6th-10th, and a small area in the east where the rainfall exceeded the average coincides closely with the district where these remarkable storms culminated. For Scotland as a whole the rainfall of the summer six months fell short of the average by 17 per cent. In Ireland generally rather more than 95 per cent. of the average fell, the deficiency being somewhat greater in the east and the fall exceeding the average over portions of the central and western counties. The general fall was 3 per cent. in defect. For the British Isles as a whole the comparative wetness of Wales and Ireland was more than counterbalanced by the dryness of the summer, especially of July and August, in England and Scotland, and the general fall was 13 per cent. in defect.

The map of the distribution of rainfall during the seasonal year exhibits the feature, characteristic of both summer and winter, of a deficiency on the east coasts and a relatively large fall on the west. In Ireland the distribution was comparatively simple, consisting of a single maximum with slightly more than 120 per cent. of the average in Co. Mayo and a fairly uniform diminution to a minimum of rather less than 100 per cent. on the east coast. The general fall in Ireland was 7 per cent. in excess. In Scotland the excessive rainfall of the winter of 1912-13 caused an excess in the rainfall of the year over the whole of the central area. More than 120 per cent. of the average was recorded over portions of the counties of Perth, Inverness and Argyll, and not much short of this proportion fell in the north of Forfarshire. The percentage fell off to less than 80 per cent. in Caithness, where both summer and winter were relatively dry, and to less than 90 per cent. round the lower estuary of the Forth, where the summer months were especially deficient in rainfall. The general fall for Scotland was 7 per cent. above the average. In England and Wales, broadly speaking, the eastern



half was dry, most of the east coast counties having less than 90 per cent. of the average, and the Yorkshire coast less than 80 per cent. The principal wet area embraced the whole of Wales, where two districts, in the north and south, had more than 120 per cent. and the general fall was 18 per cent. in excess. Smaller wet areas,



with excesses of 10 per cent. or more appeared in the English Lake District, on Dartmoor, and in Sussex, the two former being the result of heavy winter rains, and the last mentioned of local summer rains. For England the general fall was exactly the average, and for the British Isles as a whole there was an excess of 5 per cent.

Seasonal Rainfall, 1912-1913, in Relation to the Average, 1875-1909.

Div.	Stations.	Winter Six Months, October, 1912—March, 1913.				Summer Six Months, April — September, 1913.				12 Months, Oct., 1912—Sept., 1913.	Per cent. of Average.
		Rainfall. in.	Aver- age. in.	Difference from Average. in.	Per cent. of Aver.	Rainfall. in.	Aver- age. in.	Difference from Average. in.	Per cent. of Aver.		
I.	St. Pancras, Camden Square.....	12.07	12.38	— .31	97	10.51	12.73	— 2.22	83	90	
II.	Tenterden, View Tower .....	18.07	15.31	+ 2.76	118	8.85	12.33	— 3.48	72	97	
"	Edenbridge, Falconhurst .....	19.29	16.75	+ 2.54	115	12.07	13.51	— 1.44	89	104	
"	Arundel, Patching .....	19.77	17.17	+ 2.60	115	16.69	13.31	+ 3.38	125	120	
"	Fawley, Cadland .....	20.46	17.89	+ 2.57	114	12.69	13.98	— 1.29	91	104	
III.	Basingstoke, Sherborne St. John	18.21	15.86	+ 2.35	115	12.17	13.31	— 1.14	91	104	
"	Royston, Therfield .....	12.20	12.02	+ .18	101	11.49	13.54	— 2.05	85	93	
"	Oxford, Magdalen College.....	13.48	11.98	+ 1.50	113	8.68	12.60	— 3.92	69	90	
"	Wellingborough, Croyland Abbey	13.75	12.24	+ 1.51	112	9.17	12.93	— 3.76	71	91	
IV.	March .....	11.52	10.71	+ .81	108	7.67	12.32	— 4.65	62	83	
"	Shoeburyness .....	9.50	9.82	— .32	97	7.39	9.46	— 2.07	78	88	
"	Ipswich, Orwell Park .....	12.01	12.56	— .55	96	8.94	12.40	— 3.46	72	84	
"	Bury St. Edmunds, Westley.....	11.97	12.26	— .29	98	11.21	13.14	— 1.93	85	91	
"	Gedeston .....	11.62	11.91	— .29	98	10.89	11.82	— .93	92	95	
"	Holkham Hall .....	12.00	11.46	+ .54	105	8.58	12.10	— 3.52	71	87	
V.	Bishops Cannings.....	18.84	15.70	+ 3.14	120	14.31	15.17	— .86	94	107	
"	Evershot, Melbury House .....	26.64	22.27	+ 4.37	120	13.66	15.93	— 2.27	86	105	
"	Ashburton, Druid House .....	41.67	32.16	+ 9.51	130	19.70	19.45	+ .25	101	119	
"	Bampton, Huntsam Court .....	30.79	26.22	+ 4.57	117	13.81	18.54	— 4.73	74	100	
"	Barnstaple .....	25.39	21.30	+ 4.09	119	13.89	15.84	— 1.95	88	106	
"	Falmouth Observatory.....	30.29	26.14	+ 4.15	116	14.51	16.55	— 2.04	88	105	
"	Altarnon Sanctuary.....	40.91	35.83	+ 5.08	114	18.09	23.14	— 5.05	78	100	
"	Litton, Sherborne Reservoir ..	31.82	21.38	+ 10.44	149	15.05	18.25	— 3.20	82	118	
VI.	Stroud, Upfield .....	19.69	15.15	+ 4.54	130	11.82	14.66	— 2.84	81	106	
"	Church Stretton, Wolstaston ..	20.98	16.57	+ 4.41	127	14.68	15.84	— 1.16	93	110	
"	Wolverhampton, Wrottesley.....	15.88	12.64	+ 3.24	126	11.22	13.75	— 2.53	82	103	
"	Malvern, Church Street .....	18.12	14.14	+ 3.98	128	14.21	14.43	— .22	98	113	
"	Coventry, Kingswood .....	17.61	14.59	+ 3.02	121	9.56	14.39	— 4.83	66	94	
VII.	Market Overton .....	16.54	13.40	+ 3.14	123	11.59	13.70	— 2.11	85	104	

*Seasonal Rainfall, 1912-1913, in Relation to the Average, 1875-1909—(continued).*

Div.	Stations.	Winter Six Months, October, 1912—March, 1913.				Summer Six Months, April — September, 1913.				12 Months, Oct., 1912—Sept., 1913.
		Rainfall.	Aver- age.	Difference from Average.	Per cent. of Aver.	Rainfall.	Aver- age.	Difference from Average.	Per cent. of Aver.	
VII.	Revesby .....	in. 13.21	in. 12.59	in. + .62	105	in. 7.72	in. 12.56	in. — 4.84	62	83
"	Lincoln, Skellingthorpe Hall.....	13.30	11.34	+ 1.96	117	7.86	12.36	— 4.50	64	89
VIII.	Mickleover Manor .....	17.29	12.75	+ 4.54	136	11.31	13.90	— 2.59	81	107
"	Middlewich, Bostock Hall .....	16.33	14.63	+ 1.70	112	11.48	15.33	— 3.85	75	93
"	Chatburn, Middlewood .....	26.96	23.39	+ 3.57	115	16.63	20.28	— 3.65	82	100
"	Southport, Hesketh Park .....	17.80	16.73	+ 1.07	106	12.51	15.97	— 3.46	78	93
IX.	Sheffield W.W., Redmires Res...	23.22	22.20	+ 1.02	105	14.71	19.11	— 4.40	77	92
"	Arncliffe Vicarage .....	42.38	35.66	+ 6.72	119	18.20	25.83	— 7.63	70	99
"	Wetherby, Ribston Hall.....	14.41	13.31	+ 1.10	108	9.33	13.56	— 4.23	69	88
"	Hull, Pearson Park .....	14.84	13.17	+ 1.67	113	7.03	13.25	— 6.22	53	83
"	Scarborough, Osgodby.....	13.52	14.17	— .65	95	7.14	12.23	— 5.09	58	78
X.	Darlington, Cleveland Parade ...	12.19	12.59	— .40	97	10.62	13.18	— 2.56	81	89
"	Newcastle-on-Tyne, Town Moor.	14.74	13.92	+ .82	106	14.17	14.02	+ .15	101	103
"	Howick Hall .....	14.31	14.91	— .60	96	12.36	13.87	— 1.51	89	93
"	Borrowdale, Seathwaite .....	96.02	76.47	+ 19.55	126	46.62	53.01	— 6.39	88	110
"	Appleby, Castle Bank .....	24.36	18.62	+ 5.74	131	13.73	15.79	— 2.06	87	111
XI.	Abergavenny, Larchfield .....	28.09	20.77	+ 7.32	135	16.06	16.34	— .28	98	119
"	Ystalyfera, Wern School .....	54.05	36.79	+ 17.26	147	28.02	27.25	+ .77	104	128
"	Cardiff, Ely.....	31.72	23.26	+ 8.46	136	16.84	19.02	— 2.18	89	115
"	Haverfordwest Castle .....	35.11	27.12	+ 7.99	129	21.94	19.69	+ 2.25	111	122
"	Birmingham W.W., Tyrynynydd	44.18	37.20	+ 6.98	119	22.17	24.86	— 2.69	89	107
"	Bala, Eryl Aran ..	43.85	31.10	+ 12.75	141	23.80	21.08	+ 2.72	113	130
"	Llandudno .....	17.61	16.56	+ 1.05	106	15.67	13.80	+ 1.87	114	110
"	Holyhead .....	21.06	19.96	+ 1.10	106	14.76	15.06	— .30	98	102
"	Douglas .....	24.24	23.40	+ .84	104	13.96	18.15	— 4.19	77	92
XII.	Auchencairn, Torr House .....	31.40	25.53	+ 5.87	123	18.86	21.27	— 2.41	89	107
"	Drumlanrig Castle .....	33.62	25.17	+ 8.45	134	17.95	18.54	— .59	97	118
"	Canonbie, Byreburnfoot.....	26.38	23.47	+ 2.91	112	15.25	19.09	— 3.84	80	98

*Seasonal Rainfall, 1912-1913, in Relation to the Average, 1875-1909—(continued.)*

Div.	Stations.	Winter Six Months, October, 1912—March, 1913.				Summer Six Months, April—September, 1913.				12 Months, Oct., 1912—Sept., 1913.	Per cent. of Average.
		Rainfall.	Aver- age.	Difference from Average.	Per cent. of Aver.	Rainfall.	Aver- age.	Difference from Average.	Per cent. of Aver.		
XIII.	North Esk Reservoir .....	in. 23.25	in. 21.46	in. + 1.79	108	in. 15.65	in. 18.29	in. — 2.64	86	98	
"	Marchmont House .....	15.42	17.06	— 1.64	90	12.00	16.70	— 4.70	72	81	
XIV.	Airdrie, Hillend Reservoir.....	21.70	19.99	+ 1.71	109	13.36	17.73	— 4.37	75	93	
"	Girvan, Pinnmore .....	30.38	28.37	+ 2.01	107	17.18	21.40	— 4.22	80	96	
"	Loch Thom.....	48.74	36.37	+ 12.37	134	24.29	28.10	— 3.81	86	113	
XV.	Inveraray, Newtown .....	58.96	40.92	+ 18.04	144	24.78	27.75	— 2.97	89	122	
"	Islay, Eallabus .....	35.13	28.38	+ 6.75	124	17.48	20.41	— 2.93	86	108	
"	Mull, Quinish.....	39.47	32.98	+ 6.49	120	17.97	23.59	— 5.62	76	102	
XVI.	Loch Leven Sluices .....	24.66	19.86	+ 4.80	124	12.28	16.68	— 4.40	74	101	
"	Balquhitter, Stronvar.....	66.25	45.08	+ 21.17	147	25.90	28.69	— 2.79	90	125	
"	Blair Atholl .....	27.53	17.91	+ 9.62	154	12.91	14.44	— 1.53	89	125	
"	Dundee, Eastern Necropolis .....	14.98	14.08	+ .90	106	10.96	14.56	— 3.60	75	91	
XVII.	Fettercairn, The Burn.....	22.95	18.36	+ 4.59	125	17.61	16.39	+ 1.22	107	117	
"	Braemar.....	24.97	19.11	+ 5.86	130	12.69	15.82	— 3.13	80	108	
"	Aberdeen, Cranford House.....	16.73	17.32	— .59	97	12.62	15.41	— 2.79	82	90	
"	Keith Station .....	16.06	16.05	+ .01	100	13.80	17.35	— 3.55	80	89	
"	Cawdor .....	14.63	14.77	— .14	99	10.77	14.56	— 3.79	74	87	
XXVIII.	Fort Augustus, St. Benedict's .....	38.67	27.84	+ 10.83	139	13.63	16.69	— 3.06	82	118	
"	Loch Quoich, Glenquoich .....	94.60	68.75	+ 25.85	138	34.15	40.59	— 6.44	84	118	
"	Fort William, Atholl Bank .....	64.67	46.72	+ 17.95	138	23.71	29.08	— 5.37	82	117	
"	Loch Torridon, Bendamph .....	65.22	51.38	+ 13.84	127	27.24	32.55	— 5.31	84	110	
"	Stornoway .....	34.10	30.03	+ 4.07	114	15.35	18.37	— 3.02	84	102	
XIX.	Dunrobin Castle .....	14.90	17.46	— 2.56	85	12.66	14.44	— 1.78	88	86	
"	Thurso, Holburn Head.....	14.58	18.99	— 4.41	77	9.99	13.72	— 3.73	73	75	
XX.	Glanmire, Lota Lodge.....	23.33	25.64	— 2.31	91	18.63	18.44	+ .19	101	95	
"	Killarney, District Asylum .....	36.63	33.49	+ 3.14	109	20.11	21.32	— 1.21	94	104	
"	Valencia, Glanleam .....	36.54	32.08	+ 4.46	114	25.64	23.93	+ 1.71	107	111	
"	Waterford, Brook Lodge.....	22.56	21.72	+ .84	104	16.73	17.85	— 1.12	94	99	



## THE RELATION OF THE TOTAL FALL OF RAIN IN 1913 TO THE AVERAGE.

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THE average rainfall for all parts of the British Isles is not as yet fully established, since, in spite of half a century of organized effort, extensive tracts in Scotland and Ireland have remained without Observers, and we have no direct knowledge of the conditions in these places. We hope, and believe, that an increasing realization of the practical utility of a knowledge of the distribution of rainfall will, in time, lead to this defect being remedied, but in the meantime we endeavour to make the most of such information as exists, and to present as accurately as possible a picture of the rainfall of each year in relation to the average of a large period.

The average referred to in this section is that for the 35 years 1875-1909, and in the tables on pages [209]-[213] the average for the 10 years 1900-1909 is also included, in order that Observers whose records extend only over that time may have a means of applying the comparison to their own stations. In a certain number of cases where no complete average for the 35 years is available, the averages for somewhat shorter periods have been corrected by comparison with the longer records, and in these cases the fact is indicated by printing the computed average in italics. The table contains the data for 204 stations, selected in such a manner as to give as far as possible an equal representation to all parts of the British Isles. In most parts of the country many more long records are available, and in a large number of instances these records have been utilized in the construction of the map, although they have been omitted from the table in order that the mean values for the countries may be representative. The last column of the table gives the departure from the 35-year average observed during 1913 at each station, and this is expressed both in inches of rainfall and in the form of a percentage of the average at that station. These percentage values, when plotted upon a map, enabled lines to be drawn indicating each successive departure of 10 per cent. from the average. All parts of the country in which









the rainfall of the year exceeded the average, corresponding with the stations with a + sign in the last column of the table, are coloured blue ; those in which the rainfall was below the average are coloured red, and the colour in each case is deeper according as the departure from the average exceeds 10 or 20 per cent. Maps, constructed on the same principle, have appeared in each volume of *British Rainfall* since 1906.

In describing the map of the distribution of rainfall in 1912 in *British Rainfall*, 1912, page [194], we commented upon the similarity which it presented in many respects to that for the year 1910. It is worthy of note, although possibly a mere accident, that the map for 1913 has many points of similarity to that for 1911. In both years, speaking very generally, the western half of Great Britain and the south-west of Ireland were the regions of relatively highest rainfall, and there was a conspicuous falling off towards the east and north-east. A still more striking resemblance may be noted in the isolated wet district in the south-east of England, culminating in Sussex. In Scotland the dry and wet areas, although more extreme in 1911 than in 1913, were similarly placed, and there is a certain coincidence in the situation of a relatively wet patch in the north of England. The main point of difference lies in the position of the principal dry area in England, which in 1911 was confined to the Midland counties, whilst that of 1913 lay on the east coast between Whitby and Cromer. The extension of the dry area south-westward to the coast of Dorset, and the extension of the Welsh wet area across the Bristol Channel as far as Dartmoor were, however, features of both years, and along the south coast from the Scilly Islands to Dover the two maps were not far from being identical.

The map for 1913 presents, although not in so marked a degree as is sometimes the case, the familiar feature of alternating strips of relatively high and low rainfall, stretching from south-west to north-east. The most conspicuous of these strips may be observed in the succession of wet patches arranged in a more or less straight line between the coast of Kerry and the borders of Kincardineshire, where it gives way to the prevailing dryness of the east coast. A second wet band occupies most of the south coast of England, stretching from Lands End to the mouth of the Thames, and the suggestion of linear arrangement is strong in the interrupted tracts

of relatively high rainfall lying respectively between St. Ann's Head and Northumberland, and between North Devon and the Wash. A well-marked dry band stretches from Lyme Regis on the coast of Dorset to the north of Norfolk, and it appears probable that the relatively low fall in the south-east of Ireland may be associated with the similar conditions in Anglesey, the Isle of Man, Cumberland, and the Cheviots.

The greater part of Ireland experienced a rainfall above the normal, but this excess was apparently 20 per cent. only on the coast of Kerry, and was less than 10 per cent. over fully three quarters of the island. A narrow strip with rainfall slightly below the average occupied part of the east coast and re-appeared on the north coast, the district round Lough Foyle being relatively the driest. The general fall for Ireland was 2·83 in., or 7 per cent., above the average.

In Scotland the rainfall of the year fell slightly below the average over the western islands and on the west coast south of the mouth of the Clyde, but was in moderate excess over the western half of the country generally. This comparatively wet area extended eastward to Aberdeenshire over a tract which can be identified as that affected by the local rainstorms of May 6th-9th. In the district where these storms were most severe, namely the borders of Perthshire and Forfarshire, the rainfall of the year was more than 10 per cent. in excess. Apart from this wet strip the whole east of Scotland had a deficient fall during the year, the deficiency exceeding 20 per cent. on the coast almost everywhere from the Orkneys to Berwick-on-Tweed. For the whole country the general fall was 1·81 in., or 4 per cent., below the average.

With the exception of Flintshire and part of Anglesey the whole of Wales was wet, the rainfall being more than 10 per cent. in excess in the west, where the storms of April were chiefly felt, and in the south-east, and more than 20 per cent. in excess in a number of places in both these areas. The fall was most moderate in the north, and the estuary of the river Dee shared in the prevailing low rainfall of the north Midlands. For Wales as a whole the rainfall of the year was 4·25 in., or 9 per cent., in excess of the average, this being relatively the wettest part of the British Isles.

The distribution of relative rainfall in England was more complex. Devonshire and the south-west Midlands shared the comparative

wetness of Wales, and a tongue, corresponding closely with the track of the storms of October 5th stretched eastward to Boston, where the total was not far short of the average. A pronounced wet patch also lay on the south coast, and part of Sussex, where the thunderstorms of July 14th and August 30th-31st were most severe, had as much as 120 per cent. of the average fall. A small wet area was located in the northern Pennines, but with these exceptions the rainfall was below the average, and most conspicuously so on the east coast, where a large area, including the East Riding, north-east Lincolnshire, and a large part of Norfolk, had a deficiency of more than 20 per cent. The general rainfall in England was 1·46 in., or 4 per cent., below the average, and that of England and Wales taken together was ·57 in., or 2 per cent., below the average.

For the British Isles as a whole the extensive moderately wet areas in the west and the extremely dry east coast strip counter-balanced one another, and the general rainfall was almost exactly equal to the average, the result as calculated from the 204 records employed showing a deficiency of ·20 in., or 0·5 per cent.

## ABSTRACT.

COUNTRIES.	No. of Records utilized.	Average. 10 years 1900-09.	Average. 35 years 1875-1909.	1913.	Diff. from Average 1875-1909.	
					Amount.	Per cent.
		in.	in.	in.	in.	
England .....	86	31·61	32·54	31·08	1·46 —	4
Wales .....	16	46·52	47·22	51·47	4·25 +	9
England and Wales...	102	33·95	34·85	34·28	·57 —	2
Isle of Man .....	1	41·35	41·55	37·27	4·28 —	10
Scotland .....	57	45·58	44·48	42·67	1·81 —	4
Ireland .....	44	40·25	40·23	43·06	2·83 +	7
British Isles .....	204	38·59	38·73	38·53	·20 —	1

In the rough comparison with the general rainfall of the previous 32 years, which appears on page [208], the averages adopted for the different countries have been arrived at by cartographical methods, and refer to the 30 years 1870-1899. They therefore differ somewhat from those given in the abstract on this page. Judged by this standard the rainfall in England and Wales was 1 per cent., and for Ireland 2 per cent., above the average, that for Scotland 9 per cent. in defect, and that for the whole Kingdom 2 per cent. in defect. It is thus clear that, taken a whole, the year

1913 was one of average rainfall, any trifling difference being in the direction of deficit. In view of the great variations from excess to defect in different parts of the British Isles which occur every year it is difficult to know exactly what stress should

*Rough Comparison of the Rainfall for 33 Years ; based on assumed average values.*

	ENGLAND & WALES.			SCOTLAND.			IRELAND.			BRITISH ISLES.			Corrected Values.
	Fall.	Diff. from Average.		Fall.	Diff. from Average.		Fall.	Diff. from Average.		Fall.	Diff. from Average.		
		Amt.	p.c.		Amt.	p.c.		Amt.	p.c.		Amt.	p.c.	
Average	in. 33'92	in. ...	...	in. 46'85	in. ...	...	in. 42'28	in. ...	...	in. 39'25	in. ...	...	
Year.													
1881	35·81	1·89	+ 6	38·09	8·76	—19	36·11	6·17	—15	36·26	2·99	— 8	2
1882	41·91	7·99	+24	44·75	2·10	— 4	40·83	1·45	— 3	42·42	3·17	+ 8	18
1883	36·82	2·90	+ 8	39·81	7·04	—15	39·91	2·37	— 6	37·51	1·74	— 4	6
1884	29·24	4·68	—14	40·25	6·60	—14	35·50	6·78	—16	31·56	7·69	—20	—10
1885	33·25	·67	— 2	33·78	13·07	—28	35·52	6·76	—16	33·41	5·84	—15	— 5
1886	37·53	3·61	+11	37·31	9·54	—20	41·61	·67	— 2	37·59	1·66	— 4	+ 6
1887	23·60	10·32	—30	29·14	17·71	—38	24·72	17·56	—42	24·80	14·45	—37	—27
1888	31·66	2·26	— 7	37·10	9·75	—21	39·61	2·67	— 6	32·98	6·27	—16	— 6
1889	31·10	2·82	— 8	32·81	14·04	—30	33·49	8·79	—21	31·52	7·73	—20	—10
1890	30·07	3·85	—11	46·56	·29	— 1	38·54	3·74	— 9	36·20	3·05	— 8	— 3
1891	37·36	3·44	+10	43·59	3·26	— 7	39·35	2·93	— 7	39·41	·16	+ 0	+ 5
1892	30·35	3·57	—11	42·55	4·30	— 9	39·13	3·15	— 7	35·42	3·83	—10	— 5
1893	28·21	5·71	—17	41·67	5·18	—11	32·50	9·78	—23	32·63	6·62	—17	—12
1894	36·14	2·22	+ 6	44·20	2·65	— 6	40·82	1·46	— 3	39·18	·07	— 0	+ 5
1895	31·32	2·60	— 8	39·32	7·53	—16	37·63	4·65	—11	34·66	4·59	—12	— 7
1896	30·94	2·98	— 9	42·11	4·74	—10	37·35	4·93	—12	35·06	4·19	—11	— 6
1897	34·14	·22	+ 1	43·70	3·15	— 7	43·53	1·25	+ 3	38·38	·87	— 2	+ 3
1898	29·42	4·50	—13	49·82	2·97	— 6	38·40	3·88	— 9	36·46	2·79	— 7	— 2
1899	31·52	2·40	— 7	47·82	·97	— 2	40·04	2·24	— 5	37·28	1·97	— 5	— 5
1900	36·37	2·45	+ 7	53·38	6·53	—14	45·48	3·20	+ 8	42·34	3·09	+ 8	+ 8
1901	29·83	4·09	—12	41·04	5·81	—12	40·33	1·95	— 5	34·85	4·40	—11	—11
1902	28·01	5·91	—17	38·73	8·12	—17	37·56	4·72	—11	32·71	6·54	—17	—17
1903	43·81	9·89	+29	59·05	12·20	+26	51·11	8·83	+21	49·26	10·01	+26	+26
1904	30·25	3·67	—11	43·70	3·15	— 7	40·67	1·61	— 4	35·81	3·44	— 9	— 9
1905	28·80	5·12	—15	43·04	3·81	— 8	35·80	6·48	—15	33·92	5·33	—14	—14
1906	34·23	·31	+ 1	48·69	1·84	+ 4	37·85	4·43	—10	38·71	·54	— 1	— 1
1907	33·61	·31	— 1	47·33	·52	+ 1	41·55	·73	— 2	38·87	·38	— 1	— 1
1908	30·65	3·27	—10	45·09	1·76	— 4	40·63	1·65	— 4	36·44	2·81	— 7	— 7
1909	35·30	1·38	+ 4	45·59	1·26	— 3	38·13	4·15	—10	38·56	·69	— 2	— 2
1910	38·53	4·61	+14	46·47	·38	— 1	44·23	1·95	+ 5	41·77	2·52	+ 6	+ 6
1911	32·60	1·32	— 4	45·35	1·50	— 3	40·54	1·74	— 4	37·65	1·60	— 4	— 4
1912	41·85	7·93	+23	49·01	2·16	+ 5	44·06	1·78	+ 4	44·31	5·06	+13	+13
1913	34·28	·36	+ 1	42·67	4·18	— 9	43·06	·78	+ 2	38·53	·72	— 2	— 2

be laid on the summing up of the whole year's rainfall in a single percentage value, representing the relation of the general fall for the whole country to the average, but the regular recurrence of two relatively dry years following one relatively wet year which held true for the British Isles from 1889 till 1909 is peculiarly suggestive. We pointed out in *British Rainfall*, 1912, that after the temporary breakdown of this sequence in 1910, the wetness of 1912 brought that year into its place in the old order. With a slight deficiency in general rainfall the year 1913 again conforms with the rule, and although it would be premature to assert that the periodicity has been re-established, we place the fact upon record without further comment, and look forward with exceptional interest to the continuation of the series.

**COMPARISON OF THE RAINFALL OF THE YEAR 1913  
WITH THE AVERAGE OF THE PERIODS  
1900-09 & 1875-1909.**

**ENGLAND.**

DIV.	COUNTY and river-division.	STATION.	Average 1900-09.	Average 1875- 1909.	Depth in 1913.	Difference from Average 1875-1909. Per Amount. cent
			in.	in.	in.	in.
I.	London .....	2 St. Pancras (Camden Square)	24·57	25·11	22·41	2·70 — 11
II.	Surrey .....	6 Haslemere (Hazlehurst) .....	35·84	36·15	39·87	3·72 + 10
	„ Kent .....	1 Tenterden (View Tower).....	26·34	27·64	26·06	1·58 — 6
	„ „ .....	2 Margate (Cliftonville) .....	21·03	23·29	20·87	2·42 — 10
	„ „ .....	3 Selling (Harefield) .....	29·86	29·85	28·25	1·60 — 5
	„ „ .....	4 Edenbridge (Falconhurst) ...	31·06	30·26	32·02	1·76 + 6
	„ Sussex .....	2 Arundel (Patching) .....	29·61	30·48	37·47	6·99 + 23
	„ „ .....	5 Hailsham .....	30·02	30·48	36·88	6·40 + 21
	„ Hampshire .....	1 Ventnor (Flint Cottage) .....	27·95	28·97	29·14	·17 + 1
	„ „ .....	8 Basingstoke (Sherborne St. John)	29·27	29·17	29·78	·61 + 2
III.	Hertfordshire .....	1 Tring (Cowroast Lock) .....	28·73	28·89	25·52	3·37 — 12
	„ „ .....	3 Royston (Therfield Rectory)..	24·64	25·56	23·59	1·97 — 8
	„ Buckinghamshire ..	4 Slough (Langley) .....	23·52	24·18	21·00	3·18 — 13
	„ „ .....	5 Buckingham (Adstock Fields)	24·25	25·96	22·65	3·31 — 13
	„ Oxfordshire .....	3 Oxford (Magdalen College)...	23·31	24·58	21·76	2·82 — 11
	„ Northampton .....	4 Wellingborough (Croyland Abbey)	23·32	25·17	22·29	2·88 — 11
	„ Cambridgeshire ...	2 Cambridge (Quy Hall).....	22·00	23·11	20·31	2·80 — 12
	„ „ .....	March .....	22·37	23·03	18·06	4·97 — 22
IV.	Essex .....	3 Shoeburyness .....	18·69	19·28	19·73	·45 + 2
	„ „ .....	4 Chelmsford (High Street).....	22·66	23·02	21·88	1·14 — 5
	„ „ .....	5 Earls Colne (Chalkney Ho.)	22·83	23·43	20·90	2·53 — 11

## ENGLAND—(continued).

DIV.	COUNTY and river-division.	STATION.	Average 1900-09	Average 1875- 1909.	Depth in 1913.	Difference from Average 1875-1909. Per Amount. cent
			in.	in.	in.	in.
IV.	Suffolk .....	2 Ipswich (Orwell Park).....	24·10	24·96	22·28	2·68 — 11
"	" .....	5 Walsham-le-Willows .....	23·58	25·55	22·36	3·19 — 13
"	Norfolk .....	1 Geldeston [Beccles] .....	22·74	23·73	22·25	1·48 — 6
"	" .....	1 Cawston Rectory .....	25·29	26·91	20·96	5·95 — 22
"	" .....	3 Wells (Holkham Hall) .....	23·63	23·56	20·19	3·37 — 14
"	" .....	4 Swaffham .....	24·61	26·42	20·65	5·77 — 22
V.	Wiltshire .....	3 Warminster (Rye Hill) .....	35·21	36·75	33·72	3·03 — 8
"	" .....	4 Landford (Northlands) .....	30·04	30·11	29·88	·23 — 1
"	" .....	6 New Swindon .....	26·38	28·05	26·35	1·70 — 6
"	Dorset .....	1 Evershot (Melbury House) ...	37·70	38·20	37·78	·42 — 1
"	" .....	3 Wareham (South Street) . ...	32·10	31·39	34·41	3·02 + 10
"	South Devon ..	2 Devonport (Rowdens Res.)...	33·78	35·58	35·64	·06 + 0
"	" .....	4 Ashburton (Druid House) ...	48·68	51·61	57·22	5·61 + 11
"	" .....	6 Cullompton .....	33·22	35·18	37·34	2·16 + 6
"	North Devon ..	1 Lynton (Lee Abbey).....	37·90	37·92	45·88	7·96 + 21
"	" .....	3 Okehampton (Oaklands).....	43·95	46·25	46·83	·58 + 1
"	" .....	3 Northam Vicarage .....	34·13	35·55	36·20	·65 + 2
"	Cornwall .....	2 Falmouth (New Observatory)	41·95	42·69	45·28	2·59 + 6
"	" .....	2 St. Austell (Trevarna).....	43·85	46·21	45·41	·80 — 2
"	" .....	3 Altarnon Sanctuary .....	57·51	58·97	59·48	·51 + 1
"	" .....	4 Scilly (St. Mary's) .....	30·44	32·36	34·84	2·48 + 8
"	Somerset .....	2 Street .....	28·73	29·94	28·81	1·13 — 4
VI.	Gloucestershire ...	3 Stroud (Upfield) .....	29·03	29·81	29·27	·54 — 2
"	" .....	5 Clifton (Pembroke Road) ...	32·43	34·88	32·53	2·35 — 7
"	" .....	7 Great Barrington .....	28·59	29·83	29·88	·05 + 0
"	Herefordshire .....	1 Kington (Lynhales).....	31·55	33·28	34·34	1·06 + 3
"	Shropshire .....	3 Church Stretton (Wolstaston)	31·74	32·41	35·39	2·98 + 9
"	Staffordshire .....	2 Market Drayton (Old Springs)	29·47	29·41	28·38	1·03 — 4
"	" .....	3 Wolverhampton (Wrottesley)	24·65	26·39	25·62	·77 — 3
"	" .....	5 Cheadle (The Heath House)	32·10	32·65	30·84	1·81 — 6
"	Worcestershire .....	1 Malvern (Church Street)...	28·12	28·57	33·11	4·54 + 16
"	Warwickshire .....	1 Coventry (Kingswood) .....	27·50	28·98	25·82	3·16 — 11
VII.	Leicestershire ..	4 Thornton Reservoir.....	25·73	26·44	25·91	·53 — 2
"	Rutland.....	3 Market Overton .....	26·74	27·10	26·61	·49 — 2
"	Lincolnshire .....	3 Boston (Black Sluice, Skirbeck).	23·21	23·35	22·90	·45 — 2
"	" .....	3 Lincoln (Skellingthorpe Hall)	22·72	23·70	20·11	3·59 — 15
"	" .....	4 Louth (Westgate).....	27·30	28·74	22·67	6·07 — 21
"	Nottinghamshire ...	4 Eastwood Colliery .....	27·78	28·46	26·89	1·57 — 6
"	" .....	5 Worksop (Hodsock Priory)...	23·15	24·46	22·34	2·12 — 9
VIII.	Cheshire .....	1 Macclesfield (The Park) .....	33·58	34·73	30·99	3·74 — 11
"	" .....	1 Torrside Reservoir .....	42·95	44·46	38·09	6·37 — 14
"	South Lancashire...	3 Bolton (Smithills Hall) .....	46·80	46·29	42·27	4·02 — 9
"	Central ..	1 Stoneyhurst College.....	45·88	46·79	41·93	4·86 — 10
"	" ..	3 Southport (Hesketh Park) ...	31·13	32·70	28·89	3·81 — 12
"	North ..	1 Barrow-in-Furness ... ..	37·01	38·30	31·25	7·05 — 18
"	" ..	4 Wray Vicarage .....	43·74	44·34	43·95	·39 — 1
IX.	Yorks, West Riding	7 Sheffield W. W. (Redmires Res.)	40·25	41·31	39·38	1·93 — 5
"	" ..	11 Wetherby (Ribston Hall).....	28·10	26·87	23·49	3·38 — 13
"	" ..	11 Pateley Bridge (Castle Stead)	37·42	40·59	38·56	2·03 — 5

## ENGLAND—(continued).

DIV.	COUNTY and river-division.	STATION.	Average 1900-09.	Average 1875- 1909.	Depth in 1913.	Difference from Average 1875-1909.	
						Per Amount.	cent
IX.	Yorks, East Riding	2 Warter .....	in. 27·43	in. 29·75	in. 21·50	in. 8·25	— 28
	" " "	3 Patrington .....	22·40	24·05	17·94	6·11	— 25
	" " North "	1 Leyburn (Bolton Hall).....	31·72	32·79	32·82	·03	+ 0
	" " " "	2 Rounton Grange .....	25·56	25·82	24·64	1·18	— 5
	" " " "	4 Scarborough (Osgodby) .....	24·09	26·40	19·38	7·02	— 27
	" " " "	5 Guisborough (Lockwood Beck) .....	31·89	33·13	27·98	5·15	— 16
X.	" " " "	6 East Layton Hall.....	27·99	28·71	28·31	·40	— 1
	Durham.....	2 Weardale W.W. (Waskerley) .....	32·19	32·04	32·05	·01	+ 0
	" " .....	2 Sunderland (W. Hendon Ho.) .....	25·29	26·07	22·80	3·27	— 13
	Northumberland ...	4 Hallington (Fawcett) .....	28·11	28·95	25·98	2·97	— 10
	" " ...	5 Rothbury (Cragside) .....	33·66	34·24	30·43	3·81	— 11
	" " ...	5 Howick Hall .....	29·69	28·78	24·87	3·91	— 14
	Cumberland .....	1 Carlisle (Spital Cemetery) ...	33·21	32·17	28·23	3·94	— 12
	" " .....	2 Borrowdale (Seathwaite).....	126·16	129·48	124·07	5·41	— 4
	" " ...	3 Whitehaven (Irish Street) ...	43·57	41·70	41·62	·08	— 0
	Westmorland .....	1 Appleby (Castle Bank) .....	35·15	34·41	34·87	·46	+ 1

## WALES.

XI.	Monmouth ... ..	3 Abergavenny (Larchfield) ...	34·83	37·11	45·39	8·28	+ 22
	" Glamorgan .....	3 Ystalyfera (Wern School).....	63·91	64·04	77·73	13·69	+ 21
	" " .....	5 Cardiff (Ely Pumping Station) .....	41·02	42·28	45·48	3·20	+ 8
	" Carmarthen .....	2 Carmarthen (The Friary).....	47·85	48·80	50·78	1·98	+ 4
	" " .....	2 Llanwrda (Dolaucothy) ...	55·89	56·60	61·10	4·50	+ 8
	" Pembroke.....	1 Castle Malgwyn [Llechryd]..	43·54	43·70	48·39	4·69	+ 11
	" " .....	3 St. Davids.....	37·72	36·75	40·47	3·72	+ 10
	" " .....	4 Pembroke (Stackpole Court) .....	37·83	40·26	41·56	1·30	+ 3
	" Cardigan .....	2 Aberystwyth (Gogerddan) ...	45·81	45·46	56·63	11·17	+ 25
	" Brecon .....	4 Nanthir Reservoir [Aberdare] .....	57·23	59·39	68·31	8·92	+ 15
	" Radnor .....	1 Birmingham WW (Tyrrynydd) .....	59·27	62·06	62·77	·71	+ 1
	" Montgomery.....	5 Lake Vyrnwy (Bank Cynon Isaf) .....	54·83	58·33	59·22	3·89	+ 7
	" Flint .....	1 Northop (Soughton Hall) ...	32·29	32·55	29·68	2·87	— 9
	" Merioneth.....	3 Tan-y-bwlch (The Gardens)..	62·93	62·25	67·52	5·27	+ 8
	" Carnarvon .....	2 Llandudno.....	29·76	30·36	31·78	1·42	+ 5
	" Anglesey .....	Llanerchymedd (Llywdiarth Esgob) .....	39·66	38·57	36·69	1·88	— 5

## ISLE OF MAN.

XI.	Isle of Man .....	Douglas (Borough Cemetery)	41·35	41·55	37·27	4·28	— 10
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## SCOTLAND.

XII.	Wigtown .....	3 Stoneykirk (Ardwell House)..	38·52	36·40	35·22	1·18	— 3
	" Kirkcudbright .....	3 Dalry (Glendarroch) .....	55·17	52·60	56·72	4·12	+ 8
	" " .....	4 Auchencairn (Torr House) ...	48·94	46·80	44·99	1·81	— 4
	" Dumfries .....	3 Durrisddeer (Drumlanrig Gdns.) .....	46·22	43·71	47·04	3·33	+ 8
	" " .....	4 Moffat (Craigielands) .....	53·06	53·20	54·75	1·55	+ 3
	" Roxburgh ..	3 Hawick (Bransholme).....	32·27	33·80	31·74	2·06	— 6

## SCOTLAND—(continued.)

DIV.	COUNTY and river-division.	STATION.	Average 1900-09.	Average 1875- 1909.	Depth in 1913.	Difference from Average 1875-1909. Per Amount. cent
			in.	in.	in.	in.
XIII.	Selkirk .....	5 Galashiels (Stantling Craigs)	33·63	34·75	30·62	4·13 — 12
"	Peebles .....	3 N. Esk Reservoir [Penicuik]	39·94	39·75	37·50	2·25 — 6
"	Berwick .....	4 Marchmont House .....	32·52	33·76	26·07	7·69 — 23
"	Haddington .....	4 Prestonkirk (Smeaton) .....	26·00	25·47	18·60	6·87 — 27
XIV.	Lanark .....	1 Biggar (Cambus Wallace) ...	29·09	30·14	31·47	1·33 + 4
"	" .....	4 Airdrie (Hillend Reservoir)...	38·13	37·72	33·52	4·20 — 11
"	Ayr .....	3 Kilmarnock (North Craig Res.)	45·21	40·92	37·60	3·32 — 8
"	" .....	8 Girvan (Pinmore) .....	53·19	49·77	46·85	2·92 — 6
"	Renfrew .....	2 Glasgow (Queen's Park) .....	38·60	35·97	35·24	·73 — 2
XV.	Bute .....	1 Rothesay (Crichton Road) ...	54·65	52·10	52·12	·02 + 0
"	Argyll .....	2 Loch Sunart (Glenborrodale)	69·47	66·99	64·00	2·99 — 4
"	" .....	7 Kilmelfort (Arduaine) .....	59·13	57·60	58·27	·67 + 1
"	" .....	9 Mull of Kintyre .....	46·02	41·42	40·85	·57 — 1
"	" .....	11 Inveraray (Newtown) .....	71·25	68·67	72·50	3·83 + 6
"	" .....	14 Islay (Eallabus) .....	51·26	48·79	47·02	1·77 — 4
"	" .....	14 Mull (Quinish) .....	57·55	56·57	54·20	2·37 — 4
XVI.	Kinross .....	2 Loch Leven Sluice ..	36·70	36·54	30·78	5·76 — 16
"	Fife .....	2 Colinsburgh (Balcarres) .....	32·78	33·37	25·23	8·14 — 24
"	Perth .....	3 Balquhiddie (Stronvar) .....	74·43	73·77	74·98	1·21 + 2
"	" .....	14 Blair Atholl ...	33·36	32·35	33·36	1·01 + 3
"	" .....	15 Blairgowrie (Ballintuim Ho.)	38·58	37·68	42·19	4·51 + 12
"	Forfar .....	1 Kirriemuir (Lintrathen) .....	35·32	35·33	35·27	·06 — 0
"	" .....	2 Dundee (Eastern Necropolis)	27·72	28·64	23·24	5·40 — 19
XVII.	Kincardine .....	1 Fettercairn (The Burn) .....	35·13	34·75	34·81	·06 + 0
"	Aberdeen .....	1 Braemar (Bank) .....	34·11	34·93	30·92	4·01 — 11
"	" .....	1 Logie Coldstone (Loanhead).	32·72	30·67	30·97	·30 + 1
"	" .....	1 Aberdeen (Cranford House)..	32·70	32·73	25·83	6·90 — 21
"	" .....	4 New Deer Schoolhouse .....	32·89	34·74	26·12	8·62 — 25
"	Banff .....	2 Keith Station .....	35·28	33·40	28·64	4·76 — 14
"	Moray .....	3 Grantown-on-Spey .....	32·65	31·23	22·72	8·51 — 27
"	Nairn .....	2 Cawdor .....	29·38	29·33	22·95	6·38 — 22
XVIII.	Inverness .....	3 Kingussie .....	29·66	29·62	24·91	4·71 — 16
"	" .....	6 Fort Augustus (St. Benedict's)	45·19	44·53	45·50	·97 + 2
"	" .....	7 Glenquoich .....	115·15	109·34	119·55	10·21 + 9
"	" .....	9 Drumnadrochit .....	35·09	35·00	34·71	·29 — 1
"	" .....	13 Arisaig House .....	62·88	61·75	61·54	·21 — 0
"	" .....	17 Fort William .....	77·59	75·80	80·19	4·39 + 6
"	" .....	18 Skye (Scalpay Island) .....	77·22	74·40	74·41	·01 + 0
"	" .....	19 North Uist (Monach) .....	42·13	46·55	45·28	1·27 — 3
"	" .....	19 Harris (Island Glass) .....	46·26	42·44	42·99	·55 + 1
"	Ross & Cromarty	4 Strathpeffer .....	30·85	30·35	25·63	4·72 — 16
"	" .....	5 Fearn (Lower Pitkerrie) .....	23·49	23·19	18·54	4·65 — 20
"	" .....	7 Braemore House .....	61·89	60·02	64·81	4·79 + 8
"	" .....	8 Loch Torridon (Bendamph)..	90·40	83·93	86·10	2·17 + 3
"	" .....	9 Glencarron .....	87·59	86·50	87·20	·70 + 1
"	" .....	10 Stornoway .....	50·49	48·40	46·99	1·41 — 3
XIX.	Sutherland .....	1 Invershin .....	34·19	33·17	29·36	3·81 — 12
"	" .....	2 Dunrobin Castle .....	33·07	31·90	26·32	5·58 — 17
"	Caithness .....	2 Wick .....	31·35	29·88	24·50	5·38 — 18
"	" .....	3 Dunnet Head .....	29·16	29·89	24·42	5·47 — 18
"	Orkney .....	Shapinsay (Balfour Castle) ...	30·57	32·13	24·42	7·71 — 24



## IRELAND.

DIV.	COUNTY and river-division.	STATION.	Average 1900-09.	Average 1875- 1909.	Depth in 1913.	Difference from Average 1875-1909.	
						Per Amount.	cent
			in.	in.	in.	in.	
XX.	Cork .....	7 Glanmire (Lota Lodge) .....	41·90	44·08	46·42	2·34	+ 5
	" .....	9 Mallow (Summer Hill) .....	38·20	38·90	46·37	7·47	+ 19
	" Kerry .....	3 Killarney (District Asylum)..	50·48	54·81	58·86	4·05	+ 7
	" .....	4 Darrynane Abbey .....	47·76	49·95	60·23	10·28	+ 21
	" .....	6 Valencia (Glanleam) .....	56·10	56·01	65·92	9·91	+ 18
	" Waterford .....	3 Waterford (Brook Lodge) ...	40·12	39·57	40·42	·85	+ 2
	" Tipperary .....	1 Nenagh (Castle Lough) .....	38·55	39·43	42·26	2·83	+ 7
	" .....	3 Clonmel (Bruce Villa) .....	35·90	37·10	40·27	3·17	+ 9
	" .....	4 Roscrea (Timoney Park) .....	36·50	36·00	37·89	1·89	+ 5
	" Limerick .....	2 Foynes .....	39·23	39·60	44·25	4·65	+ 12
	" Clare .....	2 Ennistymon House .....	47·77	46·52	52·20	5·68	+ 12
	" .....	3 Carrigaholt Castle .....	36·97	36·60	41·75	5·15	+ 14
	" .....	3 Newmarket-on-Fergus(Carrigoran)	41·99	42·00	46·65	4·65	+ 11
XXI.	Wexford .....	3 Enniscorthy (Ballyhyland) ...	42·13	42·70	45·77	3·07	+ 7
	" .....	4 Gorey (Courtown House) ...	33·34	34·99	33·80	1·19	— 3
	" Kilkenny .....	2 Kilkenny (Lavistown House)	30·92	31·15	31·46	·31	+ 1
	" Wicklow .....	4 Bray (Fassaroe) .....	39·80	41·10	44·18	3·08	+ 7
	" Carlow .....	2 Carlow (Browne's Hill) ..	34·30	34·36	36·85	2·49	+ 7
	" King's County .....	1 Birr Castle .....	32·77	32·86	35·38	2·52	+ 8
	" Kildare .....	1 Monasterevan (Moore Abbey)	32·18	32·50	34·44	1·94	+ 6
	" .....	2 Straffan House .....	30·56	31·61	29·87	1·74	— 5
	" Dublin .....	3 Balbriggan (Ardgillan) .....	28·62	29·57	31·20	1·63	+ 6
	" Meath .....	4 Kells (Headfort) .....	34·25	37·25	36·58	·67	— 2
	" Westmeath .....	1 Athlone (Twyford) .....	34·99	37·35	43·33	5·98	+ 16
	" .....	1 Mullingar (Belvedere) .....	35·89	36·15	38·18	2·03	+ 6
	" Louth .....	3 Greenore .....	32·95	32·33	33·48	1·15	+ 3
XXII.	Galway .....	3 Tuam (Gardenfield) .....	44·06	42·69	47·99	5·30	+ 12
	" .....	4 Woodlawn .....	42·19	41·57	45·78	4·21	+ 10
	" Mayo .....	2 Crossmolina (Enniscoe) .....	54·37	52·87	60·21	7·34	+ 14
	" .....	4 Westport (St. Helen's) ...	47·10	46·20	51·14	4·94	+ 11
	" .....	6 Cong (The Glebe) .....	49·78	48·90	51·64	2·74	+ 6
	" Sligo .....	2 Collooney (Markree Obs.) ...	44·40	42·71	45·64	2·93	+ 7
XXIII.	Cavan .....	1 Belturbet (Cloverhill) .....	35·52	33·74	37·71	3·97	+ 12
	" Armagh .....	5 Armagh (Observatory) .....	32·09	31·88	35·07	3·19	+ 10
	" Down .....	2 Seaford .....	39·47	38·91	40·31	1·40	+ 4
	" .....	4 Donaghadee .....	31·71	31·70	30·91	·79	— 2
	" Antrim .....	1 Belfast (Queen's University)..	35·89	33·81	37·68	3·87	+ 11
	" .....	3 Bushmills (Dundarave) .....	37·91	37·56	31·76	5·80	— 15
	" .....	5 Ballymena (Harryville) .....	42·52	40·84	45·40	4·56	+ 11
	" Londonderry .....	5 Londonderry (Creggan Res.)	42·94	41·78	37·73	4·05	— 10
	" Tyrone ..	3 Omagh (Edenfel) .....	42·30	39·38	40·64	1·26	+ 3
	" Donegal .....	3 Dunfanaghy (Horn Head) ...	45·18	44·40	47·82	3·42	+ 8
	" .....	5 Killybegs .....	60·95	60·60	59·38	1·22	— 2
	" .....	8 Convoy .....	48·64	45·94	49·66	3·72	+ 8

## EXTREMES OF RAINFALL IN 1913.

Greatest Rainfall, at Loch Quoich (Loan) Inverness-shire ..... 183·25 in.

Least Rainfall, at Crowle (North Level Pumping Station) Lincolnshire 16·67 ,,

## ENGLAND.

GREATEST.		LEAST.	
Div.	in.	Div.	in.
X. The Sty, B. ....	165·44	VII. Crowle (N. Level Pumping Sta.)	16·67
„ Mickleden .....	141·47	III. Cambridge (Corporation Store Yd)	16·96
„ Sprinkling Tarn .....	129·32	VII. Bourne (Guthram) .....	17·07
„ Styehed Tarn .....	126·65	III. Fordham (Washington House)	17·35
„ Borrowdale (Seathwaite) .....	125·13	IX. Whitley Bdge. (Roall Pump. Sta.)	17·65
„ Hayes Water, No. 1 .....	116·10	III. Upwell (Marmont Priory Lock)	17·73

## MONMOUTHSHIRE AND WALES.

GREATEST.		LEAST.	
Div.	in.	Div.	in.
XI. Snowdon (Crib Goch) .....	167·00	XI. Dyserth Castle .....	23·34
„ Taff Fechan (Neuadd Res.) No. 6	108·21	„ Prestatyn (Edlestone House) ..	24·79
„ Swansea W. W. (Blaen Tawe)	105·49	„ Cilcain .....	24·97
„ Plynlimon .....	105·20	„ Rhyl (Sewage Works) .....	25·52
„ Rhondda WW (Llyn Fawr Res)	102·53	„ St. Asaph (St. Beuno's College)	26·54
„ Treherbert (Tyn-y-waun) ....	99·50	„ Llanefydd (Plas Uchaf Res.) ..	26·62

## SCOTLAND.

GREATEST.		LEAST.	
Div.	in.	Div.	in.
XVIII. Loch Quoich (Loan) .....	183·25	XIII. Aberlady Manse .....	17·78
„ „ „ (Kinlochquoich) ..	142·44	„ Edinburgh (City Observatory) ..	17·78
„ Achnashellach (Glenuaig) ....	124·60	„ Leith .....	17·89
XV. Mull (Glencannel) .....	120·13	„ North Berwick Reservoir .....	18·07
XVIII. Loch Quoich (Glenquoich) ....	119·55	XVIII. Fortrose .....	18·22
„ Loch Shiel (Glenfinnan) .....	114·20	„ Fearn (Lower Pitkerrie) .....	18·54

## IRELAND.

GREATEST.		LEAST.	
Div.	in.	Div.	in.
XX. Gap of Dunloe (Gearahameen)	103·60	XXI. Drogheda (Black Hall) .....	26·55
„ Lough Caragh (Lickeen) .....	87·85	„ Lambay Island .....	26·91
„ Kenmare (Derreen) .....	86·79	„ Howth Castle .....	27·05
XXII. Aasleagh House .....	86·05	XXIII. Ballymoney (Balnamore) .....	27·11
XXIII. Mourne Mountains (Fofanny Res.)	82·32	„ Clongowes Wood College .....	27·39
XX. Killarney (Muckross Abbey) ....	77·50	„ Dublin (Leeson Park) .....	27·54

## NOTE.

Second gauges and those at Lighthouses are excluded from the above, and also those to which a ? has been attached in the General Table. In selecting the minima, records are only used from gauges the receiving surface of which is known to be less than 3 feet above the ground. The highest only of the records from the Snowdon Power Company's gauges in Carnarvonshire has been quoted, and records from the Isles of Scilly and the Channel Islands have been excluded. Italics signify corrected values.

BRITISH RAINFALL, 1913.

PART III.

GENERAL TABLE

OF

TOTAL RAINFALL IN 1913,

AT

5370 STATIONS

IN

GREAT BRITAIN AND IRELAND,

WITH THE NAMES OF

THE OBSERVERS

OR OTHER AUTHORITIES FOR THE OBSERVATIONS.

---

COMPILED UNDER THE DIRECTION OF

HUGH ROBERT MILL,

*Director of the British Rainfall Organization,*

BY

CARLE SALTER,

*Assistant Director.*

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62, CAMDEN SQUARE, LONDON, N.W.



## EXPLANATORY NOTE.

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The counties are divided up into numbered areas, corresponding to the river-basins. A full description of these river-divisions for England and Wales was given in a special article in Part I. of *British Rainfall*, 1910, (pp. 37–66), and a similar article on the river-divisions of Scotland and Ireland appears in Part I. of *British Rainfall*, 1911, (pp. 49–72), with detailed maps showing all the river-divisions in each Division. These maps are now placed at the beginning of the Divisions to which they refer.

The Divisions in the General Table are shown on the map on p. [216]. They are the same as those adopted by the Registrars General of England and Scotland. The stations in each river-division are arranged nearly in the order of their latitude from South to North.

For convenience, the first name is that of a place which can be easily found on any large scale map; the second name is added to fix the site of observation more closely. In a very few instances, when in [ ] instead of ( ), it is that of the nearest town in an adjoining county; *e.g.*, “Haslemere (Courts Hill)” means Courts Hill, near Haslemere, both in one county; but “Geldeston [Beccles]” means Geldeston near Beccles, which is in another county.

In the column headed “diameter,” figures in old-style type indicate the length of the sides of rectangular mouthed gauges.

The letter D denotes that a copy of the daily record has been received, that it is complete for the year, and that the printed amount is the correct total of the daily entries. The letter M indicates that the gauge is read only on the first of each month. (R) denotes that the gauge used is a self-registering or a recording instrument, the correct reading of which depends upon the mechanism being in working order.

A few entries of total rain will be found in italics—indicating that the values have been corrected, *e.g.*, when snow has been lost, when the amount for a short period has been computed from other records, or when the gauge has been moved for a short distance during the year. The rule has been observed that a record is not printed if the gauge has been moved more than a mile, or if there is a greater difference than 50 feet of altitude between the two positions.

A dagger (†) denotes that the rain gauge has been visited and examined by the Editor or one of his assistants. A note of interrogation (?) implies doubt, not necessarily error; it is not intended to cast any suspicion on the accuracy of the Observer. The absence of information is indicated by ...

In the column of altitudes the sign  $\nabla$  means that a series of levels has been taken from the gauge to an Ordnance Survey bench mark; T, that the height has been ascertained approximately from the Ordnance Survey maps; and B, that the altitude has been taken by the barometer.

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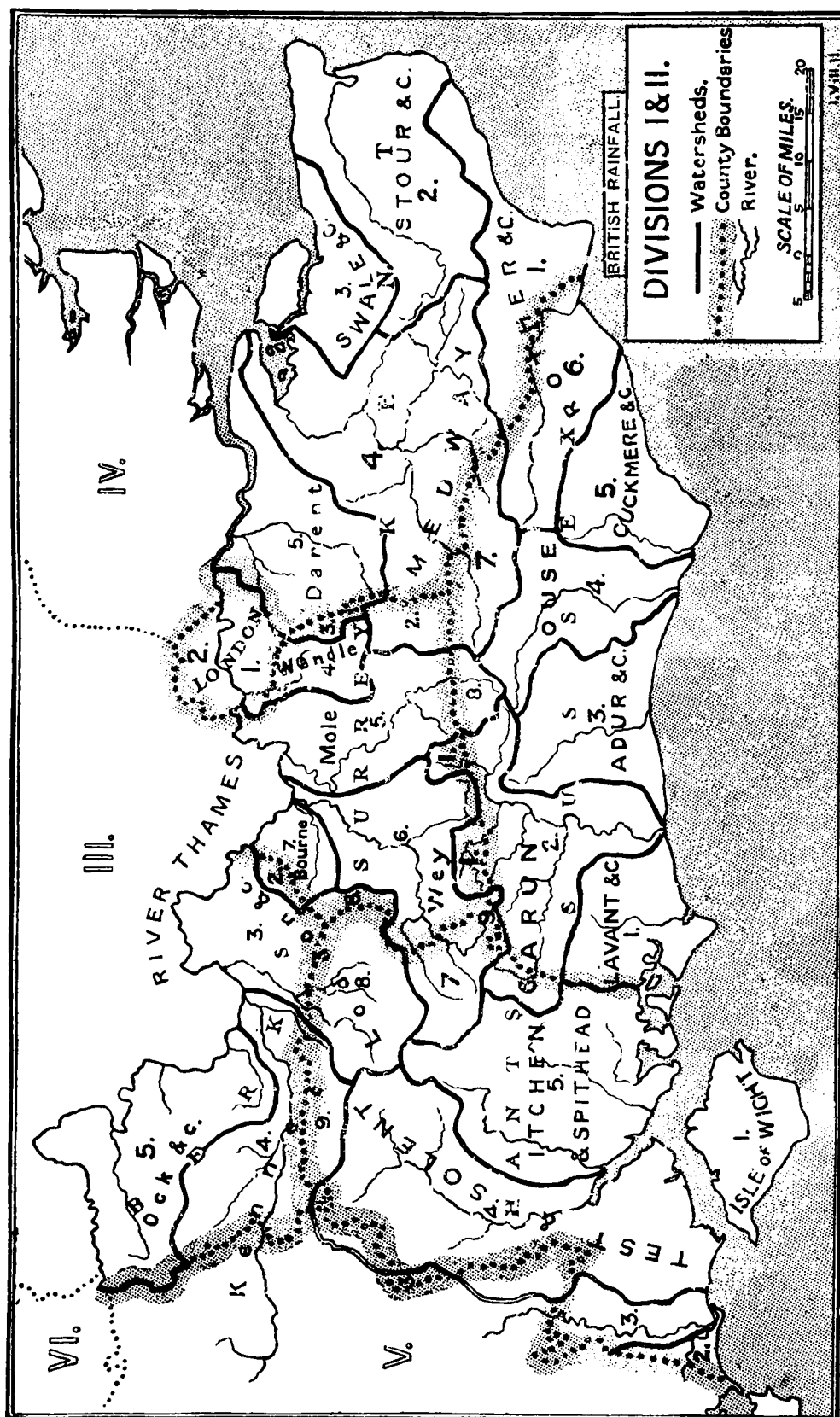
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Detailed Maps showing the river-division of each county into River Basins are given in the General Table.



ENGLAND AND WALES.

DIVISION I.—LONDON. (Area, 117 sq. mi.)

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
1.—THAMES—Right Bank Tributaries. 67 sq. mi.							
SOUTHWARK, D Walworth (Brettell Street)	Miss Moor .....	5	1	5	...	22·70	172
BERMONDSEY, D Shad Thames Pumping Station	London County Council	6	27	5	43 $\pi$	19·15	159
D LAMBETH (Brockwell Park).....	„ „ „ „	8	1	3	140 $\pi$	23·38	157
D „ (Brixton Hill Res.) ...	Met. Water Board.....	5	3	2	115 $\pi$	21·62	172
D BATTERSEA (Battersea Park) ...	London County Council	5	9	8	23	20·54	145
D† „ (Water Works) .....	Mr. F. J. Goldsworthy	5	3	6	26	19·17	148
D „ Nine Elms (Heathwall)	London County Council	8	39	4	54 $\pi$	18·67	161
WANDSWORTH, D† Streatham (Southwark W.W.)	Met. Water Board.....	5	4	1	120	20·95	155
D „ „ Hill Reservoir ...	„ „ „ „	5	3	1	197 $\pi$	22·18	172
D† „ (Putney Heath Reservoir) ...	„ „ „ „	5	1	0	180 $\pi$	22·89	169
D „ Wimbledon Pk. (Woodhouse)	Sir A. E. Bateman, KCMG	5	1	1	150	24·59	149
D† „ (Balham High Road)..... (R)	P. Dodd, Esq., C.E. ...	6	1	6	89 $\pi$	23·47	173
D „ „ Park Road) .....	F. C. Bayard, Esq. ...	5	1	0	80	22·56	159
D „ Wandsworth Com. (Patten Rd)	„ „ „ „	5	1	0	100	20·80	175
D† „ Southfields (Coronation Gdns.) (R)	P. Dodd, Esq., C.E. ...	6	1	6	37 $\pi$	24·20	164
D „ Clapham Com. (Macaulay Rd.)	Miss A. H. Boyson.....	5	1	0	75 $\pi$	21·06	...
D „ „ „ (The Chase) ...	H. N. Prentice, Esq. ...	5	1	5	70	19·99	144
D CAMBERWELL (Dulwich Wood Pk)	F. C. Bayard, Esq. ...	5	1	2	276	24·67	180
D „ Dulwich (Alley n Park).....	W. Marriott, Esq. ...	5	1	0	171	22·92	160
D† „ Nunhead (Southwark W.W.)	Met. Water Board.....	5	1	0	173	21·32	183
D† „ (The Green) .....	F. C. Bayard, Esq. ...	8	2	2	17	19·58	150
DEPTFORD (Telegraph Hill) .....	London County Council	5	9	6	135	17·76	...
D† „ (Kent Water Works)	Met. Water Board.....	5	1	0	20	21·09	145
GREENWICH D† (Deptford Pumping Station)	London County Council	10	4	0	18 $\pi$	24·57	146
D† „ (Royal Observatory) No. 8	F. W. Dyson, Esq. F.R.S.	8	1	0	150 $\pi$	22·30	164



## DIVISION I.—LONDON.—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>1.—THAMES—Right Bank Tributaries—(con.)</b>							
<b>GREENWICH</b>							
D† „ (Royal Observatory) No. 6	F. W. Dyson, Esq. F.R.S.	8	0	5	150 †	22·44	168
† „ „ „ No. 7	„ „ „	8	0	5	155 †	21·85	168
† „ „ „ No. 5	„ „ „	8	10	0	165 †	21·79	172
† „ „ „ No. 4	„ „ „	8	21	6	176 †	19·97	167
† „ „ „ No. 3	„ „ „	8	38	4	193 †	18·24	159
<b>LEWISHAM,</b>							
„ Sydenham (Lethen Grange)	G. F. Chambers, Esq...	5	1	5	220 †	25·77	184
D† „ Forest Hill (Barr Beacon)...	Met. Water Board.....	5	3	3	340 †	23·00	165
D† „ (Limes Grove) .....	G. E. Dacey, Esq. ....	5	1	0	36 †	23·57	176
D Woolwich, Eltham (High St.)	Met. Water Board.....	5	1	0	245	21·75	152
D „ Plumstead Com. (St. John's Rd.)	R. J. Allison, Esq.....	8	1	0	277	22·62	183
<b>2.—THAMES—Left Bank Tributaries. 50 sq. mi.</b>							
D PADDINGTON (Harrow Road) ...	C. W. Heinemann, Esq.	8	1	0	101 †	21·43	171
D† KENSINGTON (V. & A. Museum).	J. Storr, Esq. ....	8	0	6	27 †	19·88	165
† „ (Meteorological Office)	Meteorological Office ...	8	57	0	70	19·18	153
D „ (Holland House) ...	Mr. C. Dixon .....	5	4	0	68 †	20·24	160
D† „ (Campden Hill) ...	Met. Water Board.....	8	1	0	142 †	23·82	164
D HAMMERSMITH (The Creek).....	London County Council	8	20	0	35 †	20·07	157
D† FULHAM (Acfold Road).....	Miss Adrienne Carter...	5	1	0	13 †	20·74	160
D „ (Hammersmith Cemetery)	Mr. R. J. Brown .....	5	1	0	16 †	20·39	165
D† „ W. Kensington (Edith Rd.)	G. Searle, Esq.....	5	0	10	16 †	19·85	156
D CHELSEA (Lots Road Pump Stat.)	London County Council	8	33	6	54 †	19·02	143
D „ (Western „ „)	„ „ „	8	1	0	19 †	20·51	170
D „ (Physic Garden) .....	W. Hales, Esq. ....	5	1	0	20	22·06	165
D „ (St. Luke's Gardens) ..	T. W. E. Higgins Esq. CE	5	1	0	25 †	21·50	161
<b>WESTMINSTER</b>							
D „ (King's Scholars Pond)	London County Council	8	11	6	31 †	21·88	164
D† „ (Buckingham Palace)	Mr. W. Osborne.....	5	8	6	35	21·71	170
† „ (St. James's Park) ...	Meteorological Office ..	8	1	0	54	19·20	160
D „ (Hyde Park) .....	Royal Humane Society	8	1	3	...	18·05	155
D „ (Spring Gardens)...(1)	London County Council	8	66	4	95 †	20·13	163
D „ „ „ „ „(2)	„ „ „	12	65	11	95 †	19·96	163
D „ „ „ „ „(3)	„ „ „	8	6	0	35 †	20·40	163
D „ (Strand) .....	J. J. Steward, Esq. ...	5	40	0	80	20·68	152
<b>ST. MARYLEBONE,</b>							
D „ Regent's Pk (R Botanic Gdns)	J. B. Sowerby, Esq. ...	8	0	8	126 †	22·52	156
„ „ (Hamilton Terrace) .....	E. Heron Allen, Esq. ..	5	0	6	...	20·35	...
„ „ „ „ „	Miss Cobb .....	5	0	11	125	19·96	154
D† HAMPSTEAD (Barrow Hill Res.)..	Met. Water Board.....	5	3	4	197 †	20·39	162
„ „ (Aken-side Road) ...	E. L. Hawke, Esq. ...	5	1	0	285 †	23·91	179
„ „ (Arkwright Road)...	E. Farmiloe, Esq. ....	5	0	10	...	22·02	144
„ „ (Kemplay Road) ..	C. Clarke, Esq. ....	5	2	0	...	22·72	...
D† „ (Kidderpore Res.)...	Met. Water Board .....	5	1	0	322 †	20·97	158
D „ (New End Square)...	Mr. W. Pikesley .....	5	1	0	...	23·04	162
D† „ Observatory .....	E. L. Hawke, Esq. ...	8	1	0	451 †	23·29	169
† „ (Golders Hill) .....	London County Council	5	9	8	350 †	20·84	...
D† ST. PANCRAS (Camden Square) .....	Dr. H. R. Mill .....	8	0	9	111 †	22·41	163



## DIVISION II.—SOUTH EASTERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>SURREY. (Area, 725 sq. mi.)</b>						
<b>1.—ARUN. 45 sq. mi.</b>						
† Haslemere (Clammer Hill) .....	Col. Farquhar Glennie..	5	1 0	400	36·83	169
Chiddingfold (Rovehurst) .....	G. L. Halahan, Esq. ...	5	0 9	300	33·45	...
Dunsfold (Durfold) .....	Miss Billiter .....	5	1 0	225 †	33·15	...
„ Rectory .....	Rev. W. H. Winn .....	5	1 0	170 †	32·49	...
Godalming (Rockwoods, Brook)	<i>Surrey Advertiser</i> .....	...	...	450	34·43	...
Witley (Tigbourne Court) .....	„ .....	...	...	...	35·86	...
D Oakwood Vicarage .....	Rev. Canon J. Shearme	5	0 9	285 †	31·36	167
Abinger (Feldemore) .....	E. Waterhouse, Esq. ...	5	3 6	505 †	31·67	163
D „ (Joldwynds, Holmbury)	Mr. F. Cornish .....	5	1 0	550	32·98	175
<b>2.—MEDWAY. 50 sq. mi.</b>						
D Lyden Croft [Edenbridge] .....	Surg.-Gen. C. Planck ..	8	1 0	212 †	28·58	179
D Oxted (Stone Hall) .....	W. P. Metcalfe, Esq. ...	5	1 2	320 †	25·69	178
<b>3.—THAMES—Darent. 22 sq. mi.</b>						
Chelsham (Fairchildes) .....	A. S. Daniell, Esq. ...	8	1 0	600 †	30·58	...
„ „ „ .....	Mr. G. T. Mansfield ...	5	0 10	600 †	27·31	...
D Addington (Hares Bank Pump St.)	G. F. Carter, Esq., C.E.	5	1 0	331 †	25·24	167
D† „ Hills Reservoir .....	„ „ „ .....	8	0 9	473 †	25·47	181
D South Norwood (Woodside Vic.)	Rev. P. M. Bowman ...	5	1 0	...	23·56	148
D „ „ (Holmesdale Road)	E. A. Martin, Esq. ....	5	1 0	200	23·32	170
D „ „ (Apsley Road) ...	W. H. Cullis, Esq. ....	5	1 2	125	23·25	162
D Norwood (Auckland Road) .....	Miss J. Cooper .....	5	1 5	230 †	21·46	146
D Penge Recreation Ground .....	H. W. Longdin, Esq. C.E.	5	1 6	120 †	21·60	146
<b>4.—THAMES—Wandle. 71 sq. mi.</b>						
D Kingswood (Margery Hall Res.)	W. Vaux Graham Esq. CE	5	1 0	691 †	32·49	166
D Upper Gatton .....	F. Druce, Esq. ....	5	1 0	601	31·17	173
D Caterham Reservoir .....	A. E. Cornwall-Walker, Esq.	5	1 0	705 †	33·08	195
D Chaldon Rectory .....	F. C. Bayard, Esq. ...	5	1 0	542	29·62	148
D Chipstead (Eyhurst) .....	D. Morphew, Esq. ....	5	0 11	538	28·83	193
D „ (Dial Cottage) .....	F. C. Bayard, Esq. ...	5	1 0	550	29·84	186
D Caterham (Ashfield) .....	A. Malden, Esq. ....	5	1 6	610	27·74	177
D „ Asylum .....	Dr. P. E. Campbell ...	5	1 0	607 †	29·57	197
D „ Valley (Bradenhurst)	Henry Haes, Esq. ....	5	1 0	600 †	31·93	202
D Warlingham (The Larches) .....	Mrs. B. F. Harris .....	5	1 0	615 †	31·24	210
D „ (Redvers Road) ...	R. H. Curtis, Esq. ....	8	1 0	610 †	29·38	190
D Caterham Valley (Mount Vernon)	M. Ll. Evans, Esq. ...	5	0 10	500	30·55	169
D „ „ Depot .....	A. E. Cornwall-Walker, Esq.	5	1 6	431 †	30·27	196
D Banstead (Burgh Heath) .....	Capt. E. R. Taylor .....	5	1 0	571 †	31·34	186
D „ „ „ Reservoir	W. Vaux Graham Esq CE	5	1 0	570 †	33·99	150
D Chipstead (The Lodge) .....	F. E. Goad, Esq. ....	5	0 9	558 †	31·98	188
D „ (How Green Reservoir)	W. Vaux Graham Esq CE	5	1 0	528 †	31·16	169
D Kenley (Elmhurst) .....	Mrs. Jay Jones .....	5	0 8	430 †	29·35	187
D „ (Shord Hill) .....	A. Wildy, Esq. ....	5	0 10	450	28·03	180
D „ Pumping Station .....	A. E. Cornwall-Walker, Esq.	5	1 6	275 †	27·23	180
D Purley (Riddlesdown Road) No.1	J. Edmund Clark, Esq.	5	1 0	360 †	28·04	190
D „ „ „ No.2	„ „ „ .....	5	1 0	360 †	27·79	189
D „ (Pumping Station) .....	A. E. Cornwall-Walker, Esq.	5	1 0	215 †	27·65	180
D Sanderstead (Beechwood Road) ..	E. Alexander, Esq. ...	5	1 0	370	25·88	185

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
SURREY—(con.)							
4.—THAMES—Wandle—(con.)							
D South Croydon (Avondale Road)	Dr. G. J. Hinde, F.R.S.	5	1	0	225 T	26·99	189
D Wallington (Cotswold).....	F. C. Bayard, Esq. . .	5	4	1	144 T	27·23	197
D „ „ „.....	„ „ „ „ „.....	8	1	0	141 T	27·40	196
D Carshalton (Sewage Works).....	Baldwin Latham Esq CE	5	1	0	118 T	25·09	159
D Beddington (Sewage Farm).....	G. F. Carter, Esq., C.E.	5	1	0	129 T	22·44	164
D Croydon (Croham Manor Road)...	H. R. Wise, Esq. ....	5	1	0	340	27·07	181
D „ (Duppas Hill Lane) ...	F. C. Bayard, Esq. ...	5	1	0	168	22·58	160
D „ (Waddon New Road)...	G. Corden, Esq. ....	5	1	0	146	25·74	172
D „ (Park Hill Rise).....	late H. F. Parsons Esq. MD	5	1	3	240	23·39	161
D „ ( „ „ House).....	Baldwin Latham Esq CE	8	1	0	265 T	26·38	189
D Beddington Corner (Millgreen Rd)	F. C. Bayard, Esq. ...	5	4	0	77	24·48	150
D Wimbledon (Kingston Road) ..	H. A. Marshall, Esq....	5	1	0	54 T	24·84	179
D „ (Trinity Road) .....	A. Hampton Brown, Esq.	5	1	6	53	22·83	157
D „ (Sewage Works).....	C. H. Cooper, Esq., C.E.	5	1	0	55 T	21·53	154
5.—THAMES—Mole & c. 229 sq. mi.							
D Charlwood (Greenings).....	J. Innes, Esq. ....	5	1	0	300	31·03	176
D Outwood (The Orchards) .....	F. C. Bayard, Esq. ...	5	1	0	280	29·23	185
Dorking (Stone House, Rose Hill)	Lt.-Col. J. R. Greenhill	5	1	0	240 T	32·60	...
D „ (West Street) .....	Mrs. W. A. Marsh. ....	8	26	0	224 T	34·22	154
D† „ (Denbies).....	Mr. J. Ansell .....	5	0	9	610 T	33·55	178
D† „ (Pixham Firs).....	J. Croft Deverell, Esq..	8	0	6	150 ?	30·65	197
D† Brockham (North Lodge) .....	H. R. Kempe, Esq. ...	8	0	9	160 T	30·97	158
D Reigate (Hartswood).....	R. W. Clutton, Esq....	5	1	0	174	30·08	191
D South Nutfield (Hale Edge).....	F. C. Bayard, Esq. ...	5	1	0	270	28·35	170
D Earlswood (Sewage Farm) .....	F. T. Clayton, Esq., C.E.	5	1	6	196 T	27·91	153
D Redhill (Station Road).....	W. H. Fowler, Esq. ...	5	18	0	270 T	29·41	153
D „ (Wigmore) .....	W. A. Gunner, Esq. ...	5	1	0	250 B	30·76	177
D „ (Warwick Road).....	A. E. Cornewall-Walker, Esq.	5	1	6	284 T	31·18	187
D† Reigate (Holmfels) .....	T. Jackson, Esq. ....	5	1	2	260 T	28·15	173
D† „ (The Gas Works).....	F. C. Bayard, Esq. ...	10	1	0	275	30·82	174
D „ (The Knowle) .....	G. Weston, Esq. ....	5	1	0	390 T	29·60	180
D† „ (Wray Lodge) .....	A. Rosling, Esq. ....	5	1	0	316 T	31·13	176
D† „ ( „ „ Park Road) .....	Mr. F. W. Hedges.....	5	3	0	281 T	31·13	178
D† „ (Castle Grounds) .....	F. T. Clayton, Esq., C.E.	5	1	6	350 T	29·37	186
D „ (Northcote) .....	F. C. Pawle, Esq. ....	5	0	9	364	29·68	176
D „ (Laglands) .....	J. Welch, Esq. ....	5	1	2	375 T	32·14	172
D Redhill (Sid Court, Linkfield Lane)	Miss Janvrin .....	5	1	0	290	30·90	180
D Nutfield Priory .....	Mrs. Fielden .....	8	1	2	468 T	29·44	233
D „ „ „.....	Mr. J. Moffatt .....	8	1	2	331 T	30·64	215
D „ (Holmesdale) .....	C. Trentham Maw, Esq.	8	3	0	500 T	30·08	180
Betchingley (South Park Farm)	W. Lambert, Esq. ....	...	...	...	...	31·29	170
D Betchworth (Snower Hill) .....	T. Du Buisson, Esq. ...	8	0	9	250	30·62	183
D† „ (The Holmes) .....	F. R. Rushton, Esq. ...	5	0	8	322 T	30·87	189
D† Buckland (The White House)...	J. Herbert Scrutton, Esq	8	1	0	260	32·87	202
D Reigate (Hatherlow Observatory)	S. T. Klein, Esq.....	5	1	6	405	31·81	183
D Mickleham (Juniper Hall) .....	G. MacAndrew, Esq....	5	1	0	185 T	32·35	...
D† „ (Norbury Park) .....	Mr. G. Kent .....	9	1	0	500 ?	30·50	144

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
SURREY—(con.)							
5.—THAMES—Mole & c—(con.)							
D Headley (The Hurst) .....	Mrs. Lyall .....	5	1	3	450	32·64	153
D Walton-on-the-Hill (Hedgecroft) ..	G. R. Crompton, Esq. ..	5	1	0	570 T	30·77	186
D " " (Walton Manor) .....	Mr. J. Millichamp .....	5	1	0	600	30·29	167
D† Great Bookham (Sole Farm) ...	E. H. Sharp, Esq., K.C. ...	5	2	0	150 P	30·15	165
D† Leatherhead (Emlyn House) ...	A. T. Miller, Esq. ....	5	1	0	160	29·60	...
D Ashtead (D'Abernon Chase) .....	late Sir W. Vincent, Bt. ...	5	1	0	280 T	27·30	152
D† " (Barnet Wood Lane) ...	Rev. T. E. R. Phillips..	5	1	0	167 T	27·32	168
D† " (Oakfield Road) .....	H. F. Acocks, Esq. ...	5	0	9	189	27·01	152
D† " (The Hut) .....	F. C. Bayard, Esq. ....	5	0	5	200	28·08	152
D Cobham (Hatchford Park) .....	Sir H. B. Samuelson, Bart	8	1	0	170	22·66	153
D " Court .....	C. Talbot Agar, Esq. ....	5	0	7	68	21·99	147
D Oxshott (Oaklands) .....	J. J. Morrish, Esq. ...	...	0	6	246 T	25·87	145
D Banstead (The Hall) .....	F. C. Bayard, Esq. ...	8	1	0	480	28·54	161
D Epsom (The Durdans) .....	" " " " " " " " " " " "	8	0	11	217	27·60	162
D " (Water Works) .....	W. Vaux Graham Esq. CE	5	3	1	149 T	23·98	...
D Weybridge (Burcote) .....	Mrs. C. Sanger .....	5	0	9	117 T	22·08	169
D Sutton (Camborne Road) .....	F. E. Wright, Esq. ...	5	1	0	250 T	24·95	154
D Claygate (Hertslets) .....	N. C. Armitage, Esq. ...	5	1	0	106 T	25·19	191
D Esher (The Lammas) .....	Rev. Preb. D. Anderson	5	1	1	...	24·68	...
D " (Sewage Works) .....	F. C. Bayard, Esq. ...	5	1	0	42 T	21·77	155
D Sutton (High School, Cheam Rd.)	Miss E. Smith .....	5	1	0	197 T	21·91	...
D " (Water Works) .....	W. Vaux Graham Esq. CE	5	1	6	166 T	23·81	154
D " (Sewage Works) .....	W. H. Grieves, Esq., C.E.	8	1	0	100 T	27·93	167
D† Surbiton (Seething Wells) ...	Met. Water Board .....	5	0	10	34 T	23·96	173
D " (Vronvelin, Lovelace Rd.)	F. J. Barclay, Esq. ....	5	1	0	50	23·94	157
D " (Tandridge House) .....	Charles Price, Esq. ...	5	0	10	...	23·00	145
D East Molesey (Ember House) ...	Wilfrid Taylor, Esq. ....	5	1	0	30 T	23·98	162
D† West " (Walton Works) ...	Met. Water Board .....	5	0	6	35 T	21·80	148
D New Malden Sewage Works ...	F. C. Bayard, Esq. ...	5	1	0	45	22·08	...
D " " (Edenfield) .....	W. J. Carter, Esq. ....	5	1	0	40 T	23·82	149
D Kingston (County Hall) .....	E. Underwood, Esq. ...	5	0	9	31 T	24·99	151
D " Sewage Works .....	F. C. Bayard, Esq. ...	5	1	0	25	26·99	155
D " (Union Street) .....	Mr. T. Davis .....	8	3	0	26	24·63	162
D† Wimbledon (Raynes Park) .....	Messrs. J. Carter & Co.	8	1	0	75	22·92	174
D " " " " " " " " " " " "	C. H. Cooper, Esq., C.E.	5	1	0	50 T	22·15	150
D " (Worple Road) .....	N. Langsmith, Esq. ...	5	1	1	100 P	21·66	151
D " (Alyn Bank, The Downs)	F. C. Bayard, Esq. ...	5	1	1	162 T	23·75	165
D† Richmond (The Terrace) .....	" " " " " " " " " " " "	8	1	6	109	21·54	163
D " (The Old Palace) .....	Rev. A. Welsh Owen ...	8	0	9	...	21·64	163
D† " (Kew Observatory) (R)	Dr. C. Chree, F.R.S. ...	11	1	9	19 T	21·87	172
D Kew (Kew Gardens Road) .....	Dr. L. Burrell .....	5	1	2	23	23·14	169
6.—THAMES—Wey. 236 sq. mi.							
D Haslemere (Whitwell Hatch) ...	Marquis of Sligo .....	5	1	6	680 T	37·22	...
D† " (Courts Hill) .....	Mr. E. Biles .....	8	4	8	481 T	36·84	195



## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
SURREY—(con.)						
6.—THAMES—Wey—(con.)						
Merrow (Craigie) ..... <i>Paddock</i>	Miss Lomer .....	5	0	9	250 T	27·04 167
d Guildford (Burpham) .....	W. H. Burbidge, Esq..	5	0	8	...	28·04 168
High Clandon .....	F. B. Eastwood, Esq...	5	1	6	500 T	29·63 ..
d Horsley Towers .....	The Earl of Lovelace...	8	1	2	285 T	30·83 191
d „ (Woodcote Lodge) .....	Rt. Hon. Sir H. E. Roscoe	7	0	6	620	33·23 175
Worplesdon (Perry Hill Farm)..	Mr. G. H. Claydon.....	5	1	3	140 ?	25·76 ..
( „ „ School).	<i>Surrey Advertiser</i> .....	...	...	...	...	28·31 ..
Send (Sendholme) .....	...	...	...	...	...	26·49 ..
Ripley (Dunsborough House) ...	C. F. M. Cleverly, Esq.	5	1	6	70	23·44 ..
Woking (The Grange) .....	Rev. F. Wilson .....	5	0	8	78 T	25·38 178
„ (The Green) .....	Mrs. Howlett .....	5	0	9	120	23·11 ..
Pyrford (Pyrford Croft) .....	H. W. Page Phillips, Esq.	5	1	6	100 ?	23·14 ..
d „ (Southbourne) .....	C. Echlin Gerahty, Esq.	5	1	0	100 ?	22·39 166
Maybury (Grove Cottage) .....	F. C. Bayard, Esq. ...	5	1	0	115	23·89 ..
d Horsell (Lindisaye) .....	H. Horncastle, Esq. ...	5	4	2	120 T	21·94 149
„ ( „ „) ... <i>weekly g.</i>	„ „ „ „ „ „	5	0	9	120 T	22·03 ..
d „ (Kettlewell Hill) .....	Claude Marzetti, Esq...	5	0	9	115 T	23·61 177
d Wisley (R.H.S. Gardens) .....	S. T. Wright, Esq. ...	8	1	0	150	22·82 153
„ (West Hall Gardens).....	Mr. G. Carpenter .....	5	1	6	61 T	22·23 ..
d West Byfleet (Kilmeena) .....	F. Littleboy, Esq.....	5	1	0	100	22·25 173
d „ „ (Hollywood) .....	Allanson Bailey, Esq...	5	1	1	100 ?	22·00 165
d Byfleet .....	J. E. Dowell, Esq.....	5	1	1	59	21·42 165
d „ Rectory.....	Rev. G. E. Money .....	8	0	11	50	21·16 157
d Weybridge (Field Place) .....	Mrs. Yool .....	5	1	0	118 T	23·00 162
„ ( „ „)..... M	„ „ „ „ „ „	5	1	0	109 T	22·97 ..
d „ (Heath Field).....	Miss A. T. Gardiner ..	5	1	0	100 T	24·00 182
d „ (West Oaks) .....	A. Whittet, Esq. ....	5	1	0	36 T	21·77 167
d „ (Station Road) .....	H. K. G. Rogers, Esq..	5	1	1	85	23·48 184
„ (Lyneroft) .....	Maj.-Gen. J P Battersby	5	0	10	70	21·94 ..
7.—THAMES—Bourne. 55 sq. mi.						
d Brookwood (Knapp Hill) .....	Mr. G. C. H. Simmonds	5	1	0	181 T	24·24 163
„ ( „ „ „, Lynbrook)	C. Wigan, Esq. ....	5	1	8	200	23·74 164
d Chobham (Sandpit Hall) .....	K. A. H. Power, Esq...	5	1	0	100	23·95 182
d „ (Chobham House).....	Miss C. M. Perceval ...	5	3	0	80	26·22 163
d „ (The Manor House) ...	F. A. Walter, Esq. ...	5	1	0	150	23·84 161
Bagshot (Pennyhill Park) .....	<i>Surrey Advertiser</i> .....	...	...	...	...	24·91 200
d Chertsey (Ottershaw) .....	the late R. H. Otter, Esq.	5	1	0	200 T	22·83 182
„ (Long Cross) .....	F. A. Baker, Esq.....	5	3	0	205 T	20·79 ..
d „ (Botleys Park Gardens)	Mr. H. Whitmarsh ...	5	1	5	111 T	22·79 169
d† Sunningdale (The Camp) .....	Lady Hooker .....	5	2	0	252	24·00 156
d Virginia Water (St. Ann's Heath)	Rev. J. Peck .....	8	1	1	120	20·69 166
d Egham Park ...	J. R. FitzGerald, Esq.	5	0	11	150 ?	22·99 152
Englefield Green (Queenswood)..	W. G. Rigden, Esq. ...	8	3	0	200	26·30 188
d „ „ (Harvest Road)	H. Fermor, Esq.....	5	0	9	205	23·61 193

DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with 0i or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
SURREY—(con.)							
8.—THAMES—Loddon. 17 sq. mi.							
Frimsley Green Waterworks	F. J. Garland, Esq. ...	5	8	0	220	23·99	156
„ „ (Ridgemount)	C. C. Haviland, Esq....	5	0	9	350	26·21	196
„ „ (Tomlinscote)	Mr. T. Dawson ..	5	1	9	200	25·06	199
Camberley (Pembroke Lodge)	Lt.-Col. A. de B. V. Paget	5	1	0	300	24·50	165
„ „ (Waverley Court)	H. J. Hunt, Esq. ....	6	0	6	400	24·93	...
KENT. (Area, 1532 sq. mi.)							
1.—ROTHER & C. 217 sq. mi.							
Hawkhurst (Hensill)	F. Ross Thomson, Esq.	5	3	0	200	29·80	...
Tenterden (Summerhill)	Mrs. Wilkin	8	1	0	150	26·80	162
„ „ „	„ „ „	5	1	0	150	27·36	...
Benenden (Pullington)	Major H. Neve	5	1	0	330	28·63	166
Tenterden (View Tower)	J. Ellis Mace, Esq. ....	8	1	5	190	26·79	203
„ „ „ „ Snowdon	„ „ „ „	8	1	5	190	26·06	178
„ „ (West Cross)	J. Munn Mace, Esq. ...	5	1	0	170	26·10	146
Cranbrook (Hartley)	G. Pile, Esq. ....	5	1	3	405	29·38	173
Benenden (East End Sanatorium)	W. Scoresbrick, Esq....	5	1	0	280	26·57	...
Biddenden (Sandpit Wood)	J. Ellis Mace, Esq. ...	5	1	0	218	26·81	...
Dungeness	Meteorological Office ...	8	1	3	21	24·97	145
Hythe (Hillcrest Road)	J. B. Jordan, Esq. ....	5	1	0	190	26·01	186
„ „ (Sandling Park)	Rt. Hon. L. Hardy, M.P.	8	1	0	260	27·82	153
Sandgate	C. J. Conquest, Esq., C.E.	5	1	6	52	26·60	156
Folkestone (Borough Sanatorium)	M. Yunge Bateman, Esq.	5	1	0	102	26·58	173
„ „ (Cheriton Road)	J. Duncan Walker, Esq.	5	1	0	160	27·87	176
„ „ (Radnor Park)	A. E. Nichols, Esq., C.E.	8	0	11	102	28·43	179
„ „ „	Meteorological Office ...	8	1	0	121	31·32	170
„ „ (Cherry Gardens)	H. Turner, Esq. ....	5	1	6	230	28·69	178
„ „ (Lower Standen, Capel)	„ „ „	5	2	11	250	29·48	169
Dover	Meteorological Office ...	8	1	0	231	25·82	206
„ „ (Water Works)	W. C. Hawke, Esq., C.E.	5	1	6	200	25·98	162
Kearsney (Chilton Farm)	„ „ „	5	1	6	127	28·23	156
2.—STOUR & C. 386 sq. mi.							
Ashford (Oakwood)	H. F. Horsnaill, Esq... 5	1	4	170	27·17	168	
Dover (Martin Mill Pumping Stat.)	F. L. Ball, Esq..... 5	11	0	298	24·03	...	
Wye (S.E. Agricultural College)	H. C. Chapelow, Esq... 8	1	0	150	33·18	172	
„ „ (Bilting House)	Capt. W. W. Knight... 5	1	3	158	30·28	201	
Ashford (Eastwell Park Gdns.) (R)	Mr. J. G. Weston ..... 10	3	6	410	27·86	172	
Charing Pumping Station	F. L. Ball, Esq..... 5	1	0	593	22·52	...	
Deal and Walmer W. W.	A. Mantle, Esq. .... 12	1	0	110	26·05	...	
„ „ „	„ „ „	5	1	0	110	26·00	162
Hardres (Junipers)	G. Marshall, Esq. .... 8	1	9	327	26·15	165	
Eastry (Brewery)	T. N. Cheatle, Esq. ... 5	0	10	85	27·28	154	
Sandwich (Upton House, Word)	W. Elwin Napier, Esq. 5	1	0	32	27·36	167	
Chilham (Lower Ensden)	F. Ivo Neame, Esq. ... 5	3	0	305	26·70	195	



DIVISION II.—SOUTH EASTERN COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>KENT—(con.)</b>						
<b>2.—STOUR &amp; C—(con.)</b>						
Wingham (Margate W.W.) .....	Mr. W. R. Hosking ...	5	1	0	138 $\nabla$	27.47 162
$\nabla$ Sandwich (St. George's Golf Club)	W. Ryder Richardson Esq.	6	1	1	3	24.06 148
$\nabla$ Littlebourne House .....	T. M. Patterson, Esq. ...	5	2	4	37	22.81 176
$\nabla$ Canterbury (Oaten Hill House) ..	Rev. Canon H. M. Carr	5	1	3	50	25.60 169
„ (Irrigation Works) ..	C. Terry, Esq., C.E. ...	5	2	6	15 $\nabla$	25.26 173
$\nabla$ „ (St. Thomas' Hill) ..	J. Spillett, Esq. ....	5	0	6	230 $\nabla$	27.18 142
$\nabla$ Wickhambreux (The Willows) ..	A. Baird, Esq. ....	5	0	8	22 $\nabla$	24.14 176
Minster (Gas Works) .....	W. Thomson, Esq., C.E.	6	1	0	60 $\nabla$	22.16 ...
$\nabla$ Ramsgate (Southwood W.W.) ..	„ „ „	6	1	0	169 $\nabla$	22.44 144
$\nabla$ „ (Archer House) .....	Miss L. M. Wainwright	5	0	11	75 $\nabla$	22.32 137
$\nabla$ Broadstairs (Providence House) ..	Cecil Hamersley, Esq. ...	5	2	0	50 $\nabla$	23.38 161
$\nabla$ Reculver .....	Allington Collard, Esq.	5	5	2	27 $\nabla$	20.88 148
$\nabla$ St. Peter's .....	Rev. H. C. V. Snowden	5	0	9	140 $\nabla$	22.68 173
$\nabla$ „ „ Court .....	A. J. Richardson, Esq.	5	1	0	135 $\nabla$	21.64 157
Birchington (Hollydene) .....	W. Tomlin, Esq., Junr.	6	6	0	75 $\nabla$	19.41 ...
$\nabla$ „ (Rose Bank) .....	Mr. G. Hore .....	5	5	0	45 ?	20.94 146
† „ (Fernleigh) .....	R. Grant, Esq. ....	5	1	0	40	22.03 ...
$\nabla$ Westgate-on-Sea (Garlinge) ...	D. W. Horner, Esq. ...	5	1	5	75 $\nabla$	21.25 167
$\nabla$ Margate (Cliftonville) .....	J. Stokes, Esq. ....	5	1	0	77	20.87 143
† Kingsgate (White Ness) .....	Mr. T. Tullett .....	5	3	0	98	22.17 153
<b>3.—SWALE &amp; C. 167 sq. mi.</b>						
$\nabla$ Selling (Luton) .....	F. Ivo Neame, Esq. ...	5	4	9	263 $\nabla$	28.39 193
$\nabla$ „ (Harefield) .....	Sidney Neame, Esq. ...	5	4	6	219 $\nabla$	28.25 195
Sittingbourne (Sharsted Court) ..	H. Court, Esq. ....	5	1	6	287 $\nabla$	20.99 ...
$\nabla$ Bicknor Rectory..... <i>Snowdon g.</i>	Rev. W. T. Martin ...	5	0	9	540	30.99 179
$\nabla$ Boughton-under-Blean Vic. ...	Rev. W. H. Rammell..	5	2	4	116 $\nabla$	23.80 172
$\nabla$ Ospringe (Lorenden) .....	Walter C. Stunt, Esq..	5	1	6	180 $\nabla$	25.54 143
$\nabla$ Faversham (Westwood Court) ..	L. H. Finn, Esq. ....	...	...	...	30 ?	24.01 150
$\nabla$ Teynham (New Gardens) .....	Col. J. F. Honeyball ...	5	1	5	30 $\nabla$	23.17 158
$\nabla$ Faversham (Uplees Marshes) ...	W. J. Wright, Esq. ...	5	4	4	9 $\nabla$	18.99 193
$\nabla$ Whitstable (Western House) ...	J. W. Hayward, Esq..	5	0	10	17 $\nabla$	21.65 159
$\nabla$ „ (Tankerton) .....	F. Gaster, Esq. ....	8	0	11	73	18.47 150
Herne Bay (Water Works) .....	J. Roberts, Esq. ....	5	0	6	122 $\nabla$	23.29 ...
† Sheppey (Old Rides, Eastchurch)	H. C. Warren, Esq. ...	5	2	0	40 $\nabla$	20.99 ...
$\nabla$ Sheerness (Technical Institute) ..	A. H. Bell, Esq. ....	...	...	...	...	18.26 131
<b>4.—MEDWAY. 506 sq. mi.</b>						
$\nabla$ Woodchurch (Hengherst) .....	Capt. Somerset Webb...	5	1	0	160 ?	26.02 178
Goudhurst (Scotney Castle) .....	E. W. Hussey, Esq. ...	5	4	4	203 $\nabla$	29.19 ...
$\nabla$ „ (Maypole) .....	G. Parker Hinds, Esq..	8	1	8	412	29.03 152
$\nabla$ „ (Lidwells) .....	Rev. H. P. FitzGerald	5	1	0	260 $\nabla$	28.66 165
„ (Brandfold) .....	Dr. Douglas .....	5	2	0	238 $\nabla$	29.06 174
„ (Gore Court) .....	J. A. Druce, Esq. ....	5	1	0	196	28.01 165
$\nabla$ Horsmonden (Broad Ford House)	Mrs. L. E. Maude .....	5	1	0	96	31.58 202
$\nabla$ Tunbridge Wells (Hawkenbury)	D. W. Horner, Esq. ...	5	1	2	435 $\nabla$	32.97 198

DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with "0" or more recorded.	
		Diameter	Height Above Ground		Height Above SeaLevel		1913
		in.	ft.	in.	feet.	inches.	
KENT—(con.)							
4.—MEDWAY—(con.)							
n Tunbridge Wells (Courtlands) (R)	E. Weldon, Esq. ....	8	5	6	470 N	31·74	162
n† Speldhurst (Etherton Hill) .....	E. W. Winton, Esq....	5	1	5	282 N	31·56	177
n Tunbridge Wells (Pembury WW)	W.H.Maxwell, Esq.C.E.	8	1	8	196 N	28·92	155
n Paddock Wood (Matfield Grange)	J. A. Perkin, Esq.....	5	0	9	370	30·01	175
n "							

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
KENT—(con.)							
4.—MEDWAY—(con.)							
Halling Pumping Station.....	F. L. Ball, Esq.....	5	1	0	75 $\pi$	23.55	...
Rainham (Meresborough).....	S. Wakeley, Esq. ....	5	1	0	230	26.01	165
D „ (Mardale House) .....	F. W. H. Penfold, Esq. ....	5	1	2	85	25.91	196
D Chatham (Luton W.W.) .....	W. Coles Finch, Esq....	5	3	0	88 $\pi$	24.41	159
D Rochester (Knights Place) .....	F. H. Pye, Esq.....	5	3	0	320	25.00	191
Strood Water Works .....	W. Banks, Esq., C.E....	5	3	0	112 $\pi$	24.11	184
D Frindsbury (The Shrubbery) ...	Warwick Stunt, Esq. ..	5	1	6	150	23.22	153
D „ (Stonehouse) .....	E. W. Wood, Esq.....	5	5	0	20	22.08	151
D Hoo St. Mary (St. Mary's Hall)..	H. Pye, Esq. ....	5	5	6	146 $\uparrow$	22.07	163
5.—THAMES—Darent. 256 sq. mi.							
D Westerham (Quebec Square) ...	Met. Water Board.....	5	1	0	380	28.83	172
D „ Hill Estate .....	„ „ „ .....	5	1	0	539	26.05	190
†Sevenoaks (Tonbridge Rd. Res.)M	A. Grainger, Esq. ....	5	1	6	556	28.51	...
„ (Kippington Grange)..	Sir Douglas Fox.....	5	1	0	530 $\uparrow$	29.91	157
D† „ (The Old House) .....	W. Tattersall, Esq. ...	8	1	0	510 $\uparrow$	29.30	191
D „ (Speldhurst Close) ...	Rev. D. D. Mackinnon	5	1	0	470	28.09	188
D† „ (Wildernes Gardens)	Mr. J. Shelton .....	5	1	0	300 $\uparrow$	27.64	172
D†Brasted (Combe Bank) .....	Robert L. Mond, Esq..	8	0	10	323 $\pi$	28.06	187
D Tatsfield (Betsom Hill).....	Met. Water Board.....	5	0	7	820 $\pi$	31.58	179
†Seal (St. Lawrence Reservoir) ...	A. Grainger, Esq. ....	8	1	0	665 $\pi$	28.67	...
† „ (Oak Bank Reservoir) .....	„ „ „ .....	8	1	0	550 $\pi$	29.35	...
† „ (Kemsing Pumping Station)	„ „ „ .....	5	1	0	292 $\pi$	28.40	...
D Sevenoaks (Chevening Gardens)	Mr. C. Sutton.....	5	1	0	360	29.71	172
D†Knockholt (Kent Waterworks)..	Met. Water Board.....	5	1	0	785	27.08	162
D Otford (Beechy Lees) .....	Mr. R. Edwards.....	5	0	10	480 $\uparrow$	30.64	192
D†Halstead Rectory .....	Rev. F. H. Deane .....	5	1	0	530 $\uparrow$	28.51	185
Downe (Petleys) .....	Miss Murton .....	5	0	11	...	24.68	...
D „ (Council School) .....	A. J. Ridge, Esq. ....	5	0	8	500 $\uparrow$	27.35	178
D Keston (Forest Lodge) .....	F. C. Bayard, Esq. ...	5	1	0	300	27.25	148
D West Wickham (Wickham Court)	„ „ „ .....	5	1	2	300	26.49	151
Hayes (Hayes Place).....	„ „ „ .....	8	1	0	350	24.99	...
D†Orpington (Kent Waterworks)...	Met. Water Board.....	5	1	0	220	26.31	169
Meopham .....	Jesse Garratt, Esq. ...	5	1	1	290 $\pi$	20.99	141
„ Cobham (Sole Street).....	J. Scrutton, Esq. ....	5	1	8	311 $\uparrow$	25.90	...
D Bromley Common (Elmfield) ...	Rev. J. P. Faunthorpe..	5	0	9	240 $\pi$	21.15	174
D Bickley (Sunnydene) .....	Sir J. Wrench Towse...	5	1	0	270 $\uparrow$	22.98	172
D „ (Farrants) .....	L. E. Chalmers, Esq....	8	3	6	...	24.14	166
Bromley (Widmore Road) .....	D. G. Simpson, Esq....	8	0	6	260 $\uparrow$	21.70	186
D „ (The Palace) .....	F. C. Bayard, Esq. ...	5	1	0	187	22.70	144
D „ (Ravensfell) .....	H. L. Richardson, Esq.	5	1	0	200 $\pi$	22.35	164
D „ „ „ .....	„ „ „ .....	5	0	9	143 $\pi$	22.48	164
„ (Gilbert Road) .....	Edward Kinder, Esq... C. A. Case, Esq. ....	5	2	3	200	22.96	...
„ (Lansdown Road) .....	„ „ „ .....	5	1	0	220	22.89	164
Shortlands (The Gables) .....	A. March Tapp, Esq....	5	1	0	210	21.28	...
D Beckenham (Croydon Road).....	J. A. Angell, Esq.....	8	1	0	110 $\uparrow$	26.42	175

DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
KENT—(con.)						
5.—THAMES—Darent—(con.)						
D Chislehurst (Hawkwood) .....	F. C. Bayard, Esq.....	5	1	0	300	22·59 141
D Gravesend (Thong) .....	C. H. Scriven, Esq. ...	5	1	0	255 $\nabla$	24·95 195
D Southfleet (Kent Waterworks)..	Met. Water Board.....	5	1	0	82	22·24 160
D Wilmington( „ „ )..	„ „ „ „ „ .....	5	1	0	25	21·04 155
Dartford (West Hill House).....	F. C. Bayard, Esq. ...	5	1	3	100	23·25 ...
D Higham (White House, Telegraph Hill)	Mr. J. Filmer.....	5	1	0	250	23·59 170
D „ Waterworks .....	W. A. Walker, Esq....	8	1	0	142 $\nabla$	23·14 148
D „ (Oakleigh) .....	C. Lake, Esq.....	8	1	2	25	22·52 135
D Erith (Crossness) .....	London County Council	14	0	6	16 $\nabla$	19·84 146
SUSSEX. (Area, 1458 sq. mi.)						
1.—LAVANT & C. 175 sq. mi.						
D† Selsey (Large Acres) ... <i>Field g.</i>	E. Heron Allen, Esq... 5	1	0	25	31·65 174	
D† „ ( „ „ ) ... <i>Snowdon</i>	„ „ „ „ „ ... 5	1	0	25	32·37 174	
Sidlesham (Ivy Grange) .....	J. W. Moore, Esq. .... 5	1	1	10	33·62 ...	
D† Bognor .....	A. G. Thompson, Esq... 8	1	0	21 $\nabla$	31·15 171	
D† „ (Albert Road) .....	HLFGuermoprez, Esq. 8	1	0	20	31·96 172	
† Felpham (Outerwyke) .....	F. J. Neale, Esq. .... 8	1	0	8	29·66 162	
Bognor (Lidsey Lodge) .....	H. Neale, Esq. .... 8	1	2	25	35·30 163	
D West Thorney (The Manor House)	H. Padwick, Esq. .... 5	1	0	23 $\nabla$	33·22 178	
† Arundel (Bonhams, Yapton) ...	W. Harrison, Esq..... 5	1	0	24 $\nabla$	32·88 146	
† „ (Drove Farm, „ ) ...	„ „ „ „ „ .....	5	1	0	14 $\nabla$	31·76 146
D Chichester (Westgate) .....	G. A. Tyacke, Esq. ... 8	0	6	40 $\nabla$	34·15 176	
D „ (Oakwood House) ...	F. B. Du Pré, Esq. ... 5	6	0	130	37·41 191	
D West Bourne [Emsworth] .....	Rev. L. B. Birkett..... 5	1	0	50	37·71 193	
D Funtington.....	J. A. Greenwood, Esq. 5	1	0	95 $\nabla$	35·85 171	
West Stoke Rectory .....	Rev. Preb. W. F. Shaw 5	1	0	176 $\nabla$	37·83 165	
D Chichester (Goodwood Gardens).	Mr. F. Brock .....	5	1	3	133	38·83 176
D „ (Watergate House) ...	W. M. Christy, Esq.... 5	1	0	236 $\nabla$	38·37 197	
D „ (West Dean Park) ...	Mr. W. H. Smith .....	10	1	6	190 $\nabla$	39·28 153
D „ (Chilgrove) .....	J. W. Woods, Esq. ... 5	0	6	284 $\nabla$	35·53 ..	
D Compton House [Petersfield] ...	Rev. H. M. Langdale... 5	1	0	255 $\nabla$	39·20 210	
2.—ARUN. 285 sq. mi.						
D† Tortington House .....	Major J. A. Travers ... 5	1	0	25 $\nabla$	36·01 189	
D† Patching .....	J. Drewitt, Esq..... 5	1	0	130	37·47 170	
† „ House .....	Mrs. Joad .....	5	0	10	130 $\nabla$	37·96 171
Sutton (Coldharbour) .....	Mr. J. Campbell..... 5	2	0	140	37·18 158	
West Chilington (Gaywood) ...	E. Burney-Young, Esq. 5	0	8	134 $\nabla$	37·56 ...	
Cocking Rectory .....	Mrs. Randall .....	5	1	0	193 $\nabla$	37·88 173
D Elsted (Telegraph House).....	The Earl Russell .....	5	1	0	625 $\nabla$	36·71 164
Bepton (Linch Farm) .....	G. Eames, Esq. .... 5	0	8	276 $\nabla$	41·13 158	
D „ (Fairfield) .....	Major W. A. Chauncy.. 5	0	8	155 $\nabla$	36·44 157	
D Midhurst (Pendean) .....	Lt.-Col. P. C. Bulloch 5	1	0	206 $\nabla$	38·94 170	

DIVISION II.—SOUTH EASTERN COUNTIES—(*continued*).<sup>1</sup>

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level		
		in.	ft. in.	feet.	inches.	
<b>SUSSEX—(con.)</b>						
<b>2.—ARUN—(con.)</b>						
D West Harting [Petersfield] .....	Miss Monkhouse.....	5	0 6	...	36.42	148
D Stedham (Rotherhill).....	Dr. W. A. Wills .....	8	0 8	170 T	37.44	154
D Rogate (Durford Abbey Farm)...	J. Harmsworth, Esq....	5	3 0	156 T	35.09	180
D Easebourne (Hollist).....	Nigel V. Combe, Esq...	5	0 10	107 T	39.31	159
D Petworth Park .....	Mr. E. W. Pull.....	5	1 0	182 T	38.27	171
Tillington (River House) .....	The Hon. Lady Cunliffe	5	1 0	230	35.33	155
Midhurst (Lodsworth) .....	Lt.-Col. E.O. Hollist, RA	8	2 0	230	31.73	159
D „ (The Hills, Stedham)...	W. W. Smith, Esq. ...	5	1 6	...	32.91	148
„ (K. Edward VII. San.)	Meteorological Office ...	5	1 0	489	36.60	207
Wisborough Green (Lowfold) ...	B. de F. Osmaston, Esq.	5	1 6	120	30.67	143
D Linchmere (Borden Wood) .....	E. G. Lamb, Esq. ....	8	1 0	260 T	36.87	182
D Fernhurst (Blackdown House)...	Lady Philipson Stow...	5	1 10	500	35.31	164
D Lower Beeding (The Warren) ...	Leicester M. Reed, Esq.	5	0 10	430 T	32.47	168
Horsham (Christ's Hospital).....	S. H. Jennings, Esq....	5	1 0	161 T	33.25	167
† „ (Manor House) .....	H. Padwick, Esq. ....	8	0 10	140 T	34.16	162
D† „ (Richmond Road) .....	Miss L. E. Whitling ...	5	1 2	190	32.41	192
D† „ (Wimblehurst) .....	Miss E. M. Allcard ...	5	1 0	195 T	33.70	215
D Slinfold (Rapkyns) .....	W. Duncan Knight, Esq.	5	1 0	170	29.91	145
<b>3.—ADUR &amp; C. 237 sq. mi.</b>						
Rottingdean .....	G. Mason, Esq. ....	5	1 0	120 T	30.31	...
D† Worthing (Victoria Park) .....	Dr. R. H. Wilshaw ...	8	1 0	36 T	34.98	170
D† West Worthing (Hillmorton Lo.)	A. Morris Butler, Esq..	5	1 0	30 T	34.96	170
D† Brighton (Old Steyne) .....	D. Forbes, Esq., M.D..	5	1 0	32 T	32.05	168
D Hove (Town Hall) .....	Dr. A. Griffith .....	8	1 0	25	33.14	182
D Brighton W W (Goldstone Bottom)	J. Johnston, Esq., C.E.	8	0 7	140 T	32.91	166
D „ „ (Lewes Road).....	„ „ „	8	3 6	88 T	35.80	177
D „ „ (Shoreham) .....	„ „ „	8	1 9	12 T	34.43	174
D „ „ (Upper Portslade).	„ „ „	8	1 3	167 T	35.65	192
D „ „ (Race Hill Reservoir)	„ „ „	8	1 0	466 T	36.38	178
„ (White Hawk Kite Station)	S. H. R. Salmon, Esq.	5	1 0	380 T	33.69	...
D Preston (Ashford Road) .....	C. Biddlesden, Esq. ...	5	1 0	307 T	36.62	176
„ (The Knowle, Withdeane)	P. J. Trouncer, Esq. ...	8	1 3	100	35.89	...
D† „ (Ditchling Road).....	G. Berry Hamlin, Esq.	5	1 0	302 T	36.64	181
† Patcham (Upper Roedale).....	„ „ „	5	1 0	385 T	38.21	...
Preston (Hollingbury Camp) ...	„ „ „	5	1 0	575	39.24	...
D Falmer (Brighton W.W.).....	J. Johnston, Esq., C.E.	8	1 8	209 T	36.49	191
D Patcham ( „ „ ).....	„ „ „	5	1 6	207 T	37.73	195
D Bramber (Burletts) .....	Hatton G. Sugden, Esq.	5	5 6	75	38.96	203
Steyning (Crescent Road).....	Mr. H. J. Hide .....	5	1 0	80 T	41.07	171
D Hassocks (Pyecombe) .....	Mr. F. S. Mitchell.....	5	0 7	392	39.96	167
D Clayton Windmills .....	E. A. Martin, Esq.....	5	1 0	584 T	45.21	168
D Hurstpierpoint (Danny Park) ...	Mr. J. J. Bunney .....	8	1 3	180	44.37	145
D Ditchling .....	E. A. Martin, Esq.....	5	1 0	220 T	39.38	170
D Keymer (The Limes).....	Miss Berry .....	5	1 1	145 T	41.78	170
„ (Ockley Manor) .....	R. G. Davidson, Esq....	8	2 0	192 T	39.27	...
Burgess Hill (Silverdale Road)...	F. H. Phillips, Esq. ...	8	1 0	162 T	37.17	...

DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
SUSSEX—(con.)							
3.—ADUR & C—(con.)							
Burgess Hill (Ote Hall) .....	Mrs. Woods .....	5	1	6	...	39.50	...
Cowfold (Maple Bank) ...	Mrs. Ford .....	5	1	6	105 T	31.10	...
Cuckfield (Workhouse) .....	Mr. E. Gosden .....	8	1	0	389	31.30	158
d „ (Henmead Hall) .....	Mrs. Maxwell Campbell	5	3	5	365 T	33.58	193
Lower Beeding (Leonardslee) ...	Sir E. G. Loder, Bart...	8	1	0	250	32.40	...
4.—OUSE. 224 sq. mi.							
d Seaford College .....	Col. F. W. Savage.....	5	1	6	38 T	30.30	168
d Newhaven (Poverty Bottom) ...	J. T. Bickford, Esq. ...	8	1	1	51 T	31.10	160
d Lewes (Little Dene) .....	Miss B. Brand .....	8	0	11	93 T	37.79	189
d Falmer Court .....	Miss K. Moulden .....	5	3	0	312 T	36.82	172
d Lewes W. W. (Kingston Pump. Sta.)	A. Wells, Esq. ....	8	1	3	13 T	37.97	188
d „ (Bedford Lodge).....	Mrs. C. R. Kemp .....	5	1	0	85 T	28.65	186
East Hoathley (Old Whyly) ...	H. C. Harbord, Esq. ...	5	1	0	160	34.94	...
d Isfield Place .....	Major H. King .....	5	1	0	51	34.24	167
„ „ .....	„ „ .....	5	1	0	51	34.35	...
„ „ .....	„ „ .....	5	1	0	51	34.43	...
d Uckfield (Agricultural College)...	Prof. S. A. Woodhead..	8	1	0	166 T	32.43	180
Newick Rectory.....	Mrs. C. Powell .....	5	1	5	134 T	32.44	163
d Haywards Heath (Franklyn Road)	Mr. R. Inglis .....	5	1	0	260 T	36.55	169
d „ „ (S. Wilfrid's Par.)	Mr. J. E. Shirley .....	5	1	0	300 T	35.29	178
d Buxted Park .....	The Hon. H. B. Portman	8	1	0	94	37.59	188
„ „ (Strawberry Hall).....	C. Rintoul, Esq.....	5	1	0	180	35.44	180
d Mayfield (Five Ashes) .....	Miss Emily Aston .....	5	1	5	300	33.97	196
Nutley Vicarage .....	Rev. C. Neill .....	5	1	0	386 T	34.28	...
d „ (The Hall) .....	Miss Cook .....	5	0	10	417	35.77	179
d Haywards Heath (Brook House)	H. R. G. Clarke, Esq..	8	1	0	240	33.56	159
d Ardingly (Lywood House) .....	G. Forrester Scott, Esq.	5	0	9	240 T	34.69	193
d Balcombe (The Gables) .....	Mr. G. J. Warren .....	8	1	3	358 T	37.27	197
d „ (Stockcroft) .....	R. Newton, Esq. ....	5	1	1	341 T	36.89	185
d „ (Waterworks) .....	F. Martin, Esq., C.E...	8	1	0	471 T	38.47	156
„ (Highley Manor) .....	H. Faure Walker, Esq..	8	1	6	420	34.83	181
5.—CUCKMERE & C. 189 sq. mi.							
† Eastbourne (Wilmington Square)	Meteorological Office ...	5	1	0	39	31.86	176
d „ (Glenthorne) .....	Miss Woodd .....	8	1	6	86 T	32.21	187
„ (Arundel Road) .....	J. C. Wright, Esq.....	5	1	0	70	32.49	...
d „ (Ocklynge Cemetery)	C. Montague Wood, Esq..	5	3	6	171 T	30.72	162
d „ (Staveley Cross) ..	J. Weston, Esq.....	5	1	6	110 T	32.15	186
d West Dean .....	A. J. Howard, Esq. ...	8	1	0	112 T	30.32	186
d Jevington (Church Farm) .....	„ „ .....	8	0	9	274 T	35.72	222
d Litlington (Plough & Harrow Inn)	„ „ .....	8	1	0	19 T	33.89	159
Willington Sewage Farm .....	Eastbourne R.D.C.....	5	1	0	24	35.59	...
d Bexhill (Marina) .....	E. A. Elphick, Esq. ...	8	1	0	27 T	27.72	179
† St. Leonards (West Marina) ...	H. Colborne, Esq.....	8	1	0	24 T	28.31	186
† „ „ (Gensing Gardens).	„ „ .....	8	1	0	179 T	30.65	180
Hailsham .....	Rev. F. Clyde Harvey..	5	1	0	105	36.88	...
d „ (Magham Down) .....	W. E. Bear, Esq. ....	5	2	9	90 T	30.98	150
Hurstmonceux Place.....	H. A. James, Esq.....	5	1	8	83 T	28.78	...

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>SUSSEX—(con.)</b>						
<b>5.—CUCKMERE &amp; C—(con.)</b>						
D Hastings (Newgate)..... (R)	P. H. Palmer, Esq., CE	8	5	6	240	29·23 163
„ (Filsham Reservoir) ...	H. Colborne, Esq. ....	5	0	10	91	28·70 ...
„ (Halton Reservoir) .....	„ „ „ .....	5	0	10	301	28·39 ...
„ (Fairlight Reservoir) ...	„ „ „ .....	5	0	10	517	28·70 ...
D „ (Cemetery) .....	Walter Field, Esq. ...	5	0	8	478	29·78 188
D Battle (Crowhurst Park) ..	Mr. A. Munday .....	5	1	0	480	35·75 176
D Catsfield (Parkgate Gardens) ..	Mr. E. P. Edwards .....	5	1	0	300	32·72 181
D Horeham Road (Coxlow) .....	Miss P. C. Harrison ...	5	1	0	260 †	34·12 192
D „ Grange .....	W. F. Beauford, Esq..	5	1	2	260 †	34·95 182
D „ Road (Hollycroft Cottage)	J. Hamlin, Esq.....	5	1	0	300 †	35·58 192
D Heathfield (The White Cottage)	J. F. Leigh Clare, Esq.	5	1	3	500 †	33·79 174
<b>6.—ROTHER. 194 sq. mi.</b>						
D Hastings (Guestling Rectory) ...	late Rev. E. N. Bloomfield	5	1	5	125 †	29·05 162
D Winchelsea (Nesbit Cottage) ...	Miss G. Leigh.....	5	1	1	124 †	29·98 194
D „ (Mariteau House) ...	C. W. Campion, Esq. ...	5	1	0	120	30·16 169
D Battle (Whatlington) .	Miss H. Gripper.....	5	1	3	90 †	34·48 186
Udimore (The Hammonds) .....	J. G. Mair-Rumley, Esq.	8	1	0	144 †	27·06 162
D Beckley (Bixley Lodge) .....	B. E. de N. Ramus, Esq.	5	1	0	180	32·73 160
D Heathfield (Tottingworth Park).	Mr. J. Masson.....	5	1	0	500 †	34·57 167
D Northiam (Great Dixter) ....	Nathaniel Lloyd, Esq..	8	1	0	210 †	31·35 159
D Mayfield (Bishopstone).....	A. G. Robins, Esq. ...	5	1	0	430	36·27 172
D Wadhurst (The Olives).....	Miss Edith P. Luck ...	5	1	0	380 †	33·73 193
D Hurst Green (Boarzell).....	Sir F. Fison, Bart. ...	8	1	0	270 †	27·98 157
D Ticehurst (Myskyns).....	E. H. Cartwright, Esq.	5	1	0	340 †	33·75 183
D „ House .....	Mr. J. D. Jordan .....	5	4	9	423 †	30·04 153
<b>7.—MEDWAY. 117 sq. mi.</b>						
D Crowborough (Jarvis Brook).....	Crowborough Water Co.	5	1	0	325 †	36·57 184
D „ (Uckfield Lodge)...	J. J. S. Driberg, Esq. ...	8	1	0	796 †	39·93 231
D „ (Te Whare).....	Miss Hames .....	5	1	0	796 †	42·11 231
D Wadhurst (Lower Cousley Wood)	F. Wilkin, Esq.....	5	1	0	416 †	31·50 179
D Nutley (Pippingford Park) .....	Mr. G. Weston .....	5	1	0	600	36·62 193
D Forest Row (Wych Cross Place)..	D. W. Freshfield, Esq.	5	0	10	600 †	37·69 155
D „ „ (Hindleap Lodge)...	Mr. A. Adam .....	5	1	6	620	34·79 160
D „ „ (Charlwood Farm)...	A. Hoare, Esq. ....	5	1	0	250 †	35·60 ...
D Frant (Henley House) .....	E. Malden, Esq.....	5	1	6	440	34·32 190
D „ (Eridge Castle) .....	Mr. A. Wilson .....	5	1	0	400	36·67 163
D „ (Highfield) .....	C. M. R. Cleeve, Esq. ...	5	2	3	413 †	32·59 ...
D Crawley Down (The Grange).....	T. H. W. Buckley, Esq.	5	1	0	430 †	34·86 198
D East Grinstead (Brookhurst Obsy.)	F. J. Hanbury, Esq. ...	8	1	0	435 †	35·06 199
„ „ (Highfields) .....	G. Mason, Esq. ....	5	0	9	400	30·54 177
D „ „ (Cranston Road).	Mr. G. Mitchell .....	8	2	2	420 †	34·76 180
D „ „ (Shovelstrode) ...	Capt. Stanhope Bartley	5	2	6	320 †	31·08 142
D Glen Andred [Groombridge] ...	Mrs. Boardman .....	8	1	0	320	34·11 141
Cozleigh [ „ ] ...	J. Anderson, Esq.....	8	2	0	230	33·65 172

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with -01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>SUSSEX—(con.)</b>							
8.—THAMES—Mole. 27 sq. mi.							
D Worth (South Hill) .....	late T. E. Ravenshaw Esq	8	1	6	558 T	37·09	205
9.—THAMES—Wey. 10 sq. mi.							
<b>HAMPSHIRE. (Area, 1622 sq. mi.)</b>							
1.—ISLE OF WIGHT. 150 sq. mi.							
D† Ventnor (Flint Cottage) .....	J. S. Ineson, Esq. ....	5	1	0	99 T	29·14	176
D Shanklin .....	E. C. Cooper, Esq., C.E.	8	1	0	184 T	32·11	172
D Sandown (Free Library) .....	C. E. Gilchrist, Esq....	8	1	0	15	32·19	193
D Brighstone (Pitt Place).....	A. A. H. Wykeham, Esq.	8	1	3	180 T	27·40	149
D† Totland Bay (Aston House).....	J. Dover, Esq. ....	8	1	3	145 T	31·30	172
D† Newport (Grammar School) .....	C. D. Vibert, Esq. ....	5	1	0	65	32·90	184
Brading (Ryde W. W., Knighton)	J. T. Harvey, Esq., C.E.	8	2	0	53 T	37·91	150
† Ryde (New Lodge, St. John's Park)	Mrs. Dobie .....	5	1	1	147	32·79	186
„ (Perivale) .....	Major E. C. Murray ...	5	1	3	193 T	33·11	164
D† „ (Pier Street) .....	G. Nicholson, Esq. ....	12	9	7	15	32·11	146
D „ (Esplanade Gardens) .....	C. Mathew, Esq. ....	8	2	0	6 T	30·54	153
D† „ (Beldornie Tower) .....	P. Craven Hall, Esq....	5	1	0	30 T	28·40	181
D† Wootton (Fernhill) .....	C. G. Brodie, Esq. ....	8	0	6	118 T	36·49	179
D Binstead (Quarr Hill) .....	Dr J Winthrop Woodruff	5	0	10	100	30·50	161
D East Cowes (Spring Hill) .....	G. Shedden, Esq. ....	5	1	0	121 T	31·21	167
D Cowes W. W. (Broadfield).....	J. W. Webster, Esq., C.E.	5	0	10	161 T	31·33	163
„ (High Street) .....	Mr. H. S. Benzie .....	5	6	0	20	31·34	164
„ (R. Yacht Squad. Castle)	„ „ „ .....	8	4	0	0	27·12	158
2.—STOUR. 32 sq. mi.							
D† Bournemouth (Coastguard Stat.)	Messrs. Primavesi Bros.	5	1	0	100 T	30·32	199
† „ (Pleasure Gardens)	C. Dales, Esq. ....	5	1	0	41	33·78	172
D† „ (West Cliff) .....	Rev. G. A. Rideout ...	5	1	0	130	32·88	171
D „ (Rodney House)...	S. Hyla Greves, Esq....	5	1	6	145	32·13	176
† „ (Vale View) .....	C. Dales, Esq. ....	5	1	0	145	32·91	174
D† Christchurch (The White House)	A. H. Searle, Esq. ....	5	1	4	18 T	35·92	178
D† „ (Heron Court) .....	The Earl of Malmesbury	5	1	2	25 T	36·05	171
D† „ (Hurn Bridge House)	C. W. T. Drake, Esq...	8	1	0	30 T	36·05	191
3.—EAST AVON & C. 114 sq. mi.							
D† Christchurch (Winkton Lodge)..	Miss Lassell .....	5	1	0	34 T	31·56	190
D Hinton Admiral (East Close) ..	Col. A. M. Blake .....	5	1	0	185	33·49	159
D Ringwood (Moortown House) ...	Rev. A. D. Pennington	5	1	1	48 T	34·75	178
D „ (West Mount) .....	R. F. Williams, Esq....	5	1	0	100 T	34·95	197
„ Vicarage .....	Rev. W. D. Bodkin ...	5	2	0	70 T	31·42	...
„ (Ellingham Vicarage)	Rev. E. W. Poore .....	8	0	6	66 T	34·08	183
D Fordingbridge (Cuckoo Hill) ...	Heywood Sumner, Esq.	5	1	0	150	33·56	180
D „ (Oaklands) .....	S. B. Rake, Esq. ....	8	1	0	135 T	33·33	181
4.—TEST & SOLENT. 551 sq. mi.							
D Milford-on-Sea (Salt Grass) .....	A. C. G. Heygate, Esq.	5	1	0	6	32·38	151
„ „ „ (Milford House) ..	E. L. Agar, Esq. ....	5	0	8	40	31·83	178
Lymington (The Salterns) .....	P. A. Ouvry, Esq. ....	5	1	0	1	31·82	...



## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>HAMPSHIRE—(con.)</b>						
<b>4.—TEST &amp; SOLENT—(con.)</b>						
Milton (Wootton Hill) .....	Lt.-Col. R. Harman ...	5	1	0	188 T	33.22 173
Burley (Park View) .....	Rev. W. Esdaile .....	5	1	0	200 T	35.09 ...
„ (Manor House) .....	Col. F. Willan .....	5	3	6	210 T	28.75 ...
d Fawley (Cadland) .....	Mr. L. Smith .....	8	4	6	52 A	32.13 201
Hythe (The Garth, Dibden) .....	P. C. Crossley, Esq. ...	8	1	0	127 A	31.12 179
„ (Heathfield, „) .....	Mr. Jesse Reeves .....	5	1	3	127 T	34.38 189
„ (Heatherdown, Purlieu) ..	J. H. S. Gilman, Esq. ...	5	1	4	126 T	34.49 189
Lyndhurst (Cuffnells) .....	R. G. Hargreaves, Esq. ...	6	1	0	195	39.55 ...
Marchwood (Byams) .....	Maj. H. J. G. Lloyd .....	5	1	0	0	35.16 160
Southampton (East Park) .....	Col. C. F. Close, C.M.G. ...	8	1	0	65 A	31.97 182
„ Common Res. .... M	E. C. Rodda, Esq. ....	5	1	0	193 A	31.18 ...
d Ampfield Vicarage .....	Rev. Vere Awdry .....	5	3	0	233 T	30.54 171
d Romsey (Timsbury) .....	(R) W. Matthews, Esq., C.E. ...	8	1	8	96 A	29.43 162
d West Dean Rectory .....	Rev. E. Wells .....	5	1	0	149 B	29.43 174
† Horsebridge (Bossington House)	W. H. Deverell, Esq. ...	8	0	9	92 A	31.82 173
d† Stockbridge (Ashley) .....	Lekh S. Powell, Esq. ....	5	1	3	235 A	29.67 164
d† Broughton .....	W. Steele Tomkins, Esq. ...	5	1	3	125 T	33.09 175
d† Stockbridge (Houghton Lodge) ..	Mr. G. Morris .....	5	1	0	190 ?	32.38 151
d Barton Stacey (Moody's Down) ..	H. J. Gardiner, Esq. ....	5	1	3	230 T	30.24 163
d Micheldever (Northbrook House)	Miss E. M. Hare .....	5	0	11	325 T	31.66 185
d Sutton Scotney (The Nursery) ..	R. d'Eyncourt Day, Esq. ...	5	1	0	200	30.92 169
d Abbot's Ann Rectory .....	Rev. F. de Paravicini ..	5	0	10	200 ?	30.62 178
Longparish House .....	Mrs. Diggle .....	5	2	6	192	28.97 ...
d Andover (Fyfield Rectory) .....	Rev. E. K. R. Reynolds ..	5	1	5	260	29.45 177
d Oakley Rectory .....	Rev. F. G. Hume .....	5	1	6	400	31.84 200
„ (Malshanger) .....	G. Walter, Esq. ....	5	1	0	400	30.82 161
„ (Manydown Park) ... (R)	S. E. Bates, Esq. ....	...	1	8	415	27.63 ...
„ (Upper Wootton) .....	W. R. Thomson, Esq. ...	5	1	4	500	33.10 179
d Faccombe Manor .....	H. Gibson, Esq. ....	8	1	3	760 T	36.37 174
d Vernham Dean (Rowe House) ...	Adm. E. H. Gamble, C.B. ...	5	0	7	650 T	32.25 154
<b>5.—ITCHEN &amp; SPITHEAD. 422 sq. mi.</b>						
d Alverstoke (Monckton House) ...	J. Blake, Esq. ....	5	1	0	15	30.70 159
d† Portsmouth (Eastney) .....	A. W. Ward, Esq., C.E. ...	8	0	9	16 A	28.10 144
d† „ (Victoria Park) .....	Dr. A. Mearns Fraser ...	5	1	0	18 A	29.96 165
d Hayling Island (Richmond House)	E. S. McEuen, Esq. ...	5	1	2	16 A	30.19 155
d „ „ (Littlemead) .....	Douglas S. Bird, Esq. ...	5	1	2	5 A	29.28 167
d „ „ (Lama House) ...	J. Johnson, Esq. ....	5	1	2	14 A	29.66 148
d Emsworth (The Rectory) .....	Rev. H. G. Sprigg .....	5	0	10	20 ?	34.38 152
d Porchester (Noel Cottage) .....	Miss Montgomerie Frost ...	5	2	0	...	30.34 164
d Fareham (Burpham House) .....	W. S. Stevenson, Esq. MD ...	5	1	6	30	31.54 165
d „ (The Mount) .....	H. R. Pink, Esq. ....	5	1	6	250 A	31.30 158
d „ (Roche Court) .....	Mrs. H. F. Rawstorne ..	5	1	0	104 A	31.97 170
d Warsash (Hook Vicarage) .....	Rev. C. B. Lloyd .....	5	1	2	60 T	29.70 174
d† Havant (Farlington) .....	H. Ashley, Esq., C.E. ...	5	1	0	77 T	28.24 168
† „ ( „ ) .....	M „ „ „ „ „ „ „ „ „	5	1	0	77 T	28.72 ...

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>HAMPSHIRE—(con.)</b>							
<b>5.—ITCHEN &amp; SPITHEAD—(con.)</b>							
† Havant .....	H. Ashley, Esq., C.E....	5	1	0	25 T	33·37	186
† „ .....	„ „ „ „ .....	5	1	0	25 T	33·61	...
„ (Warblington Cottage)...	G. H. Evans, Esq.....	5	0	6	30 T	30·88	161
Cosham (Purbrook Grange) .....	Miss F. A. Deverell ...	8	0	9	100 P	33·90	165
D Netley (Lake House).....	Miss Pennington .....	8	1	0	54 T	33·96	202
D Wickham (The Croft) .....	Capt. W. Douglas Jones	5	1	8	84 T	30·47	178
„ (Park Place).....	Lt.-Col. H. R. Farquhar	5	1	0	150 T	32·07	175
Southampton (Thornhill Park)...	Mr. G. Busby.....	5	1	8	205 T	34·89	164
„ (Bitterne, Moorlands)	Courtenay F. Wilson Esq	5	1	0	200	31·77	161
D Botley (Hedge End) .....	Rev. T. H. Philpott .....	8	1	1	178 T	35·34	177
† „ (Brook House) .....	Beckett Powell, Esq....	5	3	2	45	33·53	..
† „ (Rectory) .....	Rev. G. E. C. Osborne..	5	1	0	50 P	33·70	...
D† „ (Botley Hill) .....	Lady Jenkyns .....	5	1	6	36 T	34·17	180
D† „ (Beechcroft, Curdridge)..	Miss L. M. S. Pasley...	5	1	0	96 T	32·55	197
D† Horndean (Blendworth Lodge)...	Mrs. Long .....	8	0	10	217	40·42	189
D Catherington (St. Catherines) ...	Capt. R. H. Archer, R.N.	5	1	3	370 T	35·48	190
Chalton (Woodcroft) .....	C. J. P. Cave, Esq. ...	5	1	0	230 T	37·25	...
D Bishops Waltham (The Palace Ho.)	A. F. Hardy, Esq.....	5	1	3	116 T	34·09	176
„ „ (Swanmore House)	W. H. Myers, Esq. ...	8	1	0	390 T	38·51	165
D „ „ (Hill Place) .....	late Maj. W. A. Daubeny	8	0	9	260 T	34·17	186
D Droxford (Uplands) .....	Miss Bridge .....	5	1	0	279 T	38·94	199
D „ (Fairfield House) .....	H. Hamilton Bridge, Esq	5	1	0	254	37·36	193
D „ (Fir Hill) .....	Capt. Mackenzie-Grieve	5	3	6	212 T	36·05	179
D† Eastleigh (Fair Oak Park) .....	G. H. Pember, Esq. ...	5	1	0	180	33·19	173
D Chandlers Ford (Fryern) .....	Miss Grace Stuart .....	5	1	2	150	31·86	166
D† Petersfield (Ditcham Park) .....	C. J. P. Cave, Esq. ...	8	1	0	555 T	38·72	184
† „ (Downley) .....	„ „ „ „ .....	5	1	2	374 T	38·86	...
D Otterbourne (Eldersfield) .....	G. Norworthy, Esq....	5	1	0	137 T	32·01	176
D „ (W. W., Shawford)..	E. C. Rodda, Esq.....	5	1	0	113 T	29·81	185
Winchester (Owslebury House)..	W. Welsh, Esq.....	5	1	0	365	31·32	171
D Twyford (Pumping Station)..(R)	W. Matthews, Esq. C. E.	8	1	9	139 T	32·46	176
D „ (Mallards Close).....	G. R. Marsh, Esq. ....	5	1	0	145 T	31·42	170
Kilmeston Manor .....	W. J. Heathcote, Esq..	5	4	6	323 T	33·33	...
Petersfield (Broadhanger).....	Mrs. R. M. Caulfeild...	5	1	0	730	36·07	...
Privett (Basing Park Gardens)..	Mr. T. S. H. Down ...	8	2	0	600	30·96	160
D Colmer Rectory .....	Rev. A. C. Hervey.....	5	1	1	560 T	34·66	150
D Ovington Rectory .....	Rev. H. F. La M. Stowell	5	1	0	221 T	34·00	175
„ (Barley Down) .....	J. Stevens, Esq.....	5	1	10	300	33·71	232
Itchen Stoke Rectory .....	Rev. V. E. Skrine .....	5	1	0	200 B	30·16	163
East Tisted (Rotherfield Park)...	Mr. W. H. Yates .....	5	1	0	550 T	39·44	202
D Newton Valence Vicarage.....	Rev. A. C. Maclachlan.	5	1	0	586	35·60	180
D Swarraton Rectory .....	Rev. W. L. W. Eyre....	5	1	0	310 T	32·26	196
D Medstead Manor .....	Capt. E. Jervoise, R.N.	8	1	10	705 T	35·42	205
D Ellisfield Manor.....	H. Hoare, Esq. ....	...	0	9	630	33·67	171
<b>6.—ARUN. 32 sq. mi.</b>							
† Petersfield (Sunwood) .....	C. J. P. Cave, Esq. ...	5	0	10	479 T	38·12	...

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>HAMPSHIRE—(con.)</b>						
<b>6.—ARUN—(con.)</b>						
Petersfield (The Miscombe) ... M	C. J. P. Cave, Esq. ...	5	1	1	250 B	38.77 ...
D „ (Buriton House) .....	L. Bonham Carter, Esq.	5	1	9	293	38.67 159
D† „ (Old Ditcham).....	C. J. P. Cave, Esq. ...	5	1	1	250 B	37.05 169
„ (Nursted) .....	M	5	1	0	270	36.17 ...
„ „ (House) .....	J. Rowe Bennion, Esq..	5	1	9	350	36.38 ...
„ (Weston) .....	Capt. P. W. Seward ...	5	1	0	330 T	39.28 174
D† „ (Fairley) .....	AW Leachman, Esq. MD	5	0	9	202 T	35.99 179
„ (The Mount, Ramshill)	F. G. Padwick, Esq....	8	1	0	250	37.47 177
D Liss (Overcombe) .....	Miss Jebb	5	1	0	500	34.31 194
D „ (Highfield) .....	J S Gamble Esq. CIE., FRs	5	0	9	325 T	35.59 192
„ (The Lodge) .....	Ernest Latter, Esq. ...	5	1	3	240 T	34.95 180
D „ (Kippences) .....	Rev. W. A. H. Thorold	5	0	9	250	34.99 153
D Greatham (King's Holt) .....	Mrs. Chase Parr.....	5	1	7	325 T	34.06 166
„ (Manor House).....	F. Coryton, Esq. ....	7	0	7	250	33.19 ...
<b>7.—THAMES—Wey. 92 sq. mi.</b>						
D Liphook (Fowley) .....	E. A. Lee, Esq. ....	5	0	10	296 T	35.89 206
D Selborne (The Wakes) .....	Col. A. Bibby .....	5	1	0	400 T	37.60 202
D† Grayshott .....	Mrs. Lyndon .....	5	1	0	661 T	37.16 209
D Headley (Eveley) .....	Mr. T. Carter.....	5	1	3	295 T	35.00 167
Liphook (Bordon Camp) .....	The Division Officer R.E.	8	1	0	268 T	31.83 ...
Headley Park .....	Mr. G. Glaysher.....	8	1	6	250 P	26.27 ...
Alton House .....	B. W. Bentinck, Esq....	6	1	3	300 T	30.73 ...
„ (Holybourne Lodge) ....	Capt. Francis D. Webb	5	1	0	365 T	32.05 ...
„ (Shalden Manor) .....	J. Gathorne Wood, Esq.	8	3	0	594 T	35.74 193
D Froyle (Park Edge) .....	R. B. Sedgwick, Esq....	5	1	0	350 T	29.34 190
Bentley (Marelands) .....	Mrs. Seawell .....	5	0	8	310	28.64 162
<b>8.—THAMES—Loddon. 164 sq. mi.</b>						
D Herriard Vicarage .....	Rev. E. L. Crawhall ...	5	1	0	557 T	31.09 191
D Warren Corner [Farnham] ....	F. Wilkin, Esq.....	5	1	0	560 T	26.59 179
D Upton Grey (Hoddington House)	Lord Basing .....	8	1	0	378 T	34.98 163
Mapledurwell .....	Miss Thorp .....	8	1	2	330	29.71 ...
D Aldershot (Sewage Works) .....	Mr. J. Edwards .....	5	1	0	231 T	28.44 198
D Basingstoke (Queen's School) ...	L. S. Theobald, Esq. ...	5	1	0	289	29.61 160
D „ (Pumping Station)..	F. R. Phipps, Esq., C.E.	5	0	6	320 T	28.57 159
D „ (Sherborne St. John)	Rev. D. W. Chute.....	5	1	2	267 T	29.78 189
D Winchfield (Elvetham Park) ...	Mr. G. B. Mitchison ...	8	1	0	217 T	26.05 184
Hartley Wintney .....	W. G. Machin, Esq. ...	5	1	2	222 T	25.65 157
D „ Grange .....	F. Walkinshaw, Esq....	8	1	0	221 T	25.90 173
D Blackwater (Hawley) .....	D. Morland, Esq. ....	5	1	0	210 T	24.91 154
D Strathfieldsaye Rectory .....	Rev. F. Page-Roberts..	5	1	0	164	26.88 200
D „ House Gardens...	Mr. A. G. Nichols .....	5	1	8	166	27.08 171
D Heckfield (Park Corner) .....	Miss Martineau .....	5	1	2	257	24.35 170
<b>9.—THAMES—Kennet. 65 sq. mi.</b>						
D Ewhurst Park Gardens.....	Mr. M. Dorsett .....	5	2	2	400 P	31.92 193
D Kingsclere (Tower Hill House)...	Dr. R. Maples.....	5	0	3	327 T	30.85 178

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

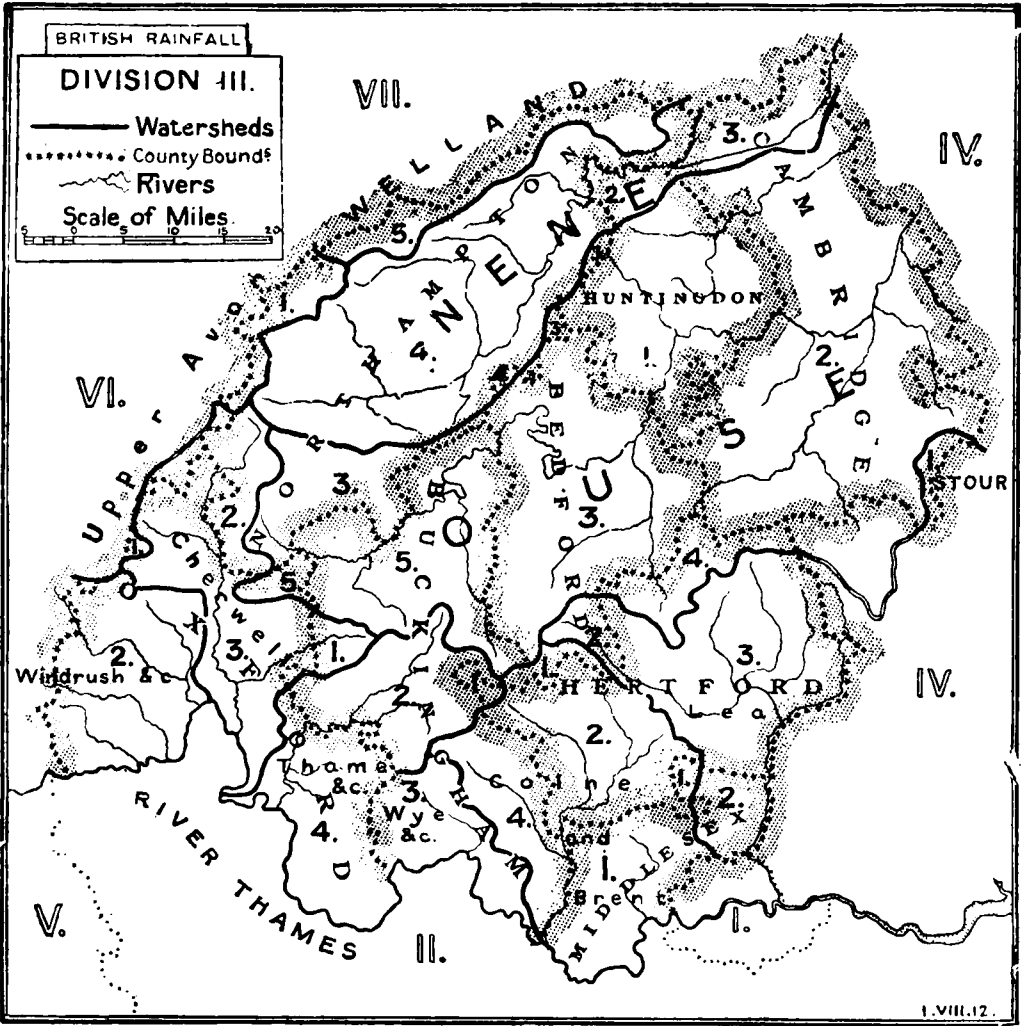
STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>BERKSHIRE.</b> (Area, 722 sq. mi.)							
1.—TEST. 2 sq. mi.							
2.—THAMES—Bourne. 15 sq. mi.							
D. Sunningdale (Lynwood) .....	G. Rodie Thompson, Esq.	5	1	0	266 $\nabla$	25.37	197
3.—THAMES—Loddon & c. 162 sq. mi.							
D. Wellington College .....	C. A. Stocken, Esq. ...	5	1	0	283 $\nabla$	25.50	180
D. " " (Woodside) ...	Mr. W. J. Townsend ...	8	2	9	240 ?	24.92	172
D. Finchampstead (West Court) ...	C. E. Harris-St. John, Esq.	5	1	0	180 $\nabla$	21.73	175
Swallowfield Park .....	Sir Charles Russell, Bart.	5	1	0	150 $\uparrow$	23.00	...
D. Ascot (Winkfield Manor) .....	C. A. Ferard, Esq. ....	5	1	0	240 $\nabla$	25.01	202
D. Wokingham (Staverton) .....	H. C. Mylne, Esq. ....	5	1	0	220 $\uparrow$	21.81	194
" (Pinewood) .....	Meteorological Office ...	8	1	0	219	21.99	150
D. Winkfield (Ryemead) .....	Mrs. Aubrey Elliott ...	5	0	10	220 $\uparrow$	24.74	200
D. Warfield (Hawthorndale) .....	G. H. Burges, Esq. ...	5	1	0	207	24.07	189
D. Windsor (Royal Gardens) .....	Mr. T. Edwards .....	5	1	0	88 $\uparrow$	23.68	201
D. " (Osborne Road) .....	Miss M. G. Cookson ...	8	1	0	88 $\uparrow$	24.88	221
" (Alma Road) .....	C. Sainty, Esq., C.E. ...	5	1	0	72	23.72	176
Maidenhead (Heywood Park) ...	Greville H. Palmer, Esq.	8	1	0	102	19.59	...
D. " (Belmont Road) ...	L. Lowman, Esq. ....	5	1	0	161 $\uparrow$	21.55	175
D. " (Hall Place) .....	Sir G. A. C. East, Bart.	8	1	2	275 $\nabla$	22.98	173
D. Bisham Vicarage .....	Rev. W. Farrer .....	5	1	0	100	23.25	177
D. Temple House [Marlow] .....	Mr. G. Groves .....	5	1	0	106	25.91	216
4.—THAMES—Kennet & c. 224 sq. mi.							
Mortimer (Wokefield Park) .....	A. Palmer, Esq. ....	5	4	0	180 $\nabla$	24.22	168
D. Brimpton (Stonehouse) .....	F. Hadden, Esq. ....	5	0	7	350	26.91	147
" (Littlepark) .....	Major W. Y. Langford	5	1	0	345 $\uparrow$	26.38	145
D. Newbury (Sandleford Priory) ...	Mr. R. H. Butcher ...	8	2	0	381 $\nabla$	34.43	173
D. " (Greenham Common) ..	H. L. Bowman, Esq. D. Sc	5	1	0	328 $\nabla$	30.78	170
D. Sulhampstead (Firlands) .....	late J. T. Strange, Esq.	5	1	0	300 $\uparrow$	28.77	202
D. Shinfield (University Coll. Farm)	Dr. H. N. Dickson .....	5	1	0	200 $\nabla$	23.32	163
D. Beenham House .....	Capt. W. Waring .....	8	2	2	320	26.35	153
Bucklebury Place .....	Meteorological Office ...	5	1	0	409	27.75	166
Reading (Leighton Park School)	" " .....	8	1	0	265	24.29	173
D. " (Northcourt Avenue) ...	R. Osmond, Esq. ....	5	...	...	225 $\nabla$	24.66	181
D. " W.W. (Bath Road) ...	L. C. Walker, Esq., C.E.	8	...	...	218	22.39	151
D. " (Fobney Pumping Stat.)	" " " " .....	5	1	3	132	20.37	147
D. " (Forbury Gardens) .....	J. Bowen, Esq., C.E. ...	5	1	5	145 $\nabla$	24.56	178
D. " (University College) ...	Dr. H. N. Dickson .....	5	1	0	152 $\nabla$	23.16	174
" (Victoria Square) .....	W. Haynes, Esq. ....	5	1	6	145 $\uparrow$	24.99	178
D. " (Caversham Lock) .....	R. A. Swarbrick, Esq. ...	5	3	5	124	22.09	164
D. Newbury (Welford Park) .....	Mr. C. Pope .....	5	1	0	341 $\uparrow$	31.78	162
D. Lambourn (East Garston) .....	J. H. Spackman, Esq. ...	5	2	6	395 $\uparrow$	28.46	182
" (Clarionville) .....	F. Gullett, Esq. ....	5	1	6	500	28.26	159
5.—THAMES—Ock & c. 319 sq. mi.							
D. Reading (Englefield) .....	J. H. Benyon, Esq. ...	5	1	1	175 ?	26.53	154
D. Frilsham House .....	Mr. W. E. Austen .....	5	1	0	370	26.17	160
D. Yattendon Court .....	Mr. F. Pitman .....	5	0	10	440 $\uparrow$	26.08	149
Hampstead Norris .....	John Brown, Esq. ....	5	1	0	300 ?	27.05	167
Farnborough Rectory .....	Rev. J. B. H. Whitehurst	5	1	3	713 $\uparrow$	40.82	194

## DIVISION II.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
BERKSHIRE—(con.)						
5.—THAMES—Ock & c—(con.)						
Wallingford (Aston Tirrold) ...	J. Harold Slade, Esq...	5	1	1	250	24·97 ...
D " ( " Upthorpe)...	L. G. Slade, Esq. ....	8	1	2	202	26·59 165
Didcot (Upton).....	No. 1 Miss Fry.....	5	2	3	240 †	26·33 176
D " ( " ).....	No. 2 " ".....	5	1	0	240 †	25·53 176
D Wantage (Ginge Manor) .....	Miss Elliot .....	3	3	0	332 †	29·45 195
" .....	W. Hanson, Esq., C.E.	5	1	0	304	27·06 ...
" (St. Katherine's School)	Sister Jean .....	5	1	0	300	24·46 ...
Steventon (Milton Hill) .....	R. H. Betteridge, Esq.	5	2	0	300	25·56 142
D Wallingford (Woodlea).....	G. F. Slade, Esq. ....	5	0	6	200 ?	24·37 174
" Castle .....	Miss Hedges .....	5	1	0	175 †	25·23 ...
D " (Shillingford Hill)..	Lt.-Col. G. Hart Dyke	5	1	4	218 †	23·38 166
D Little Wittenham .....	J. Latham, Esq.....	5	2	0	189	20·83 151
D Long Wittenham (Manor Ho.)...	Adm. W. R. Clutterbuck	12	1	0	170 †	25·11 147
D " " (Willington)...	H. J. Hewett, Esq.....	5	1	0	167 †	25·32 177
Faringdon .....	Mr. C. Luker .....	5	1	0	333 †	25·87 146
D " (Bleak House) .....	Miss Turner .....	5	1	0	367 †	25·97 170
D Abingdon (The Square House)...	E. Estridge, Esq. ....	5	1	9	180 †	23·33 167
" (Twickenham House).	Mr. A. Fawdry .....	5	10	0	220	22·36 141
" (Caldecott House) ...	Maj.-Gen. T. M. Bailie	5	0	7	177 †	20·75 ...
" (Sewage Works) .....	G. Winship, Esq., C.E.	5	0	6	169	20·54 ...
D " Union .....	Mr. J. Fray .....	5	1	0	196	24·93 172
" (Donnington) .....	R. W. Langford, Esq..	5	1	6	196	23·93 164
" (Northcourt House)...	M. T. Tatham, Esq. ...	5	0	7	190 †	21·61 ...
Hinton Waldrist .....	Capt. F. C. Loder Symonds	5	3	6	331	22·54 148

MAP OF DIVISION III.

SOUTH MIDLAND COUNTIES,  
Showing the River-Divisions.



The River Thames is a county boundary throughout.

## DIVISION III.—SOUTH MIDLAND COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
MIDDLESEX. (Area, 232 sq. mi.)	232 sq. mi.						
1.—THAMES—Colne & Brent. 185 sq. mi.							
Shepperton Lock [Weybridge]...	R. A. Swarbrick, Esq...	5	1	0	41 $\nabla$	21.55	...
d† Hampton .....	Met. Water Board.....	8	1	0	42 $\nabla$	21.99	157
d „ Wick (Park House) ...	A. Shorter, Esq.....	5	1	0	28 $\nabla$	25.35	158
Teddington (Clarence Road) ..	T. Gale, Esq. ....	5	1	3	32 $\nabla$	22.96	144
d Staines (Belle Vue) .....	J. Gundry, Esq. ....	5	1	0	51 $\nabla$	23.59	162
„ (Cambria House) .....	the late C. Ashby, Esq.	5	0	10	50 ?	23.51	142
d „ Reservoir .....	Met. Water Board.....	5	1	0	50 ?	22.48	175
d Twickenham (Sewage Works)...	F.W. Pearce, Esq., C.E.	5	1	7	37 $\nabla$	21.56	152
d Isleworth (Mandeville House)...	A. Worsley, Esq. ....	12	1	0	24	26.92	162
Sipson (Hollycroft) .....	Mr. W. J. Mitchell ..	5	1	0	95 ?	19.72	...
d† Kew Bridge (M.W.B. Works)...	Met. Water Board.....	8	1	0	37 $\nabla$	24.25	165
d Chiswick (Grove Park) .....	A. E. Brounger, Esq....	5	1	1	18 $\nabla$	21.40	165
d „ (Sewage Works) ... (R)	J. H. Abbott, Esq....	8	3	0	24 $\nabla$	22.14	163
Hayes (Council Offices) .....	Douglas C. Fidler, Esq.	8	4	0	135 $\nabla$	22.15	...
d Ealing .....	H. M. Baker, Esq.....	5	1	6	97 $\nabla$	21.41	182
† „ (Longfield Avenue) .....	W. R. Hicks, Esq., C.E.	5	9	0	114	20.87	164
d† „ (St. Stephen's Road) ...	Mr. C. Edwards .....	5	0	10	156 $\nabla$	21.47	172
† Perivale (Northern Sewage Farm)	W. R. Hicks, Esq., C.E.	5	12	0	56	21.00	188
d† Willesden Reservoir .....	Met. Water Board.....	5	2	6	199 $\nabla$	20.75	140
d† „ Green (Strode Road)...	Miss Lamport.....	5	1	0	150	22.63	176
d „ (Stonebridge Farm) (R)	O. C. Robson, Esq., C.E.	10	5	9	100 $\nabla$	19.96	162
d Highgate (North Hill) .....	L. J. Tatham, Esq. ..	5	1	0	400	23.09	171
d „ ( „ „ Depôt) ...	E. J. Lovegrove, Esq., CE	5	5	4	309	23.00	167
d Harrow (Bessborough Road Depôt)	J. P. Bennetts, Esq., C.E.	5	1	0	215 $\nabla$	22.41	187
Golders Green (Garden Suburb) ..	Meteorological Office ...	8	1	0	279	22.34	166
d† „ „ (Highfield Avenue)	A. E. Payne, Esq. ....	5	1	0	175	21.71	175
† Hendon Sewage Works .....	S. S. Grimley, Esq., C.E.	6	1	8	150	16.96?	...
d† „ (Central School) .....	J. W. Butler, Esq. ....	5	1	4	220	22.16	182
Wealdstone House .....	K. R. Cobb, Esq. ....	5	0	11	236 $\nabla$	19.56	...
d Pinner (Hatch End) .....	W. M. Cann, Esq.....	5	0	11	260	22.66	194
d† Northwood (Haslemere) .....	Miss McBean .....	5	1	0	240	23.07	173
d „ (Murray Road) .....	Mrs. Tilley .....	5	1	0	240	21.77	181
d Harrow Weald (Hill House) ...	A. Crossman, Esq.....	5	3	6	284	21.36	198
d North Finchley .....	Miss M. Shoults.....	5	0	8	295 $\nabla$	22.56	180
d† Mill Hill (Flower Lane) .....	Mrs. Edwards.....	5	1	0	250	21.31	150
d† „ „ (The Hollies) .....	Mrs. H. R. Mill.....	5	1	0	380	20.66	178
† „ „ ( „ „ ) .....	„ „ „ „ .....	5	1	0	350	20.29	...
Dyrham Park [Barnet] .....	Mr. H. Juniper .....	5	1	0	310	21.55	...
d† Potters Bar (Little Heath) ...	Henry Ellis, Esq. ....	5	3	4	375	21.82	176
d† „ „ ( „ „ „ ) Snowdon	„ „ „ „ .....	5	1	0	375	22.39	177
d „ „ (Mount Grace) .....	J. Forbes, Esq. ....	5	1	0	380	21.78	176
2.—THAMES—Lea. 47 sq. mi.							
d Crouch End (Barrington Road) ..	E. J. Lovegrove, Esq., CE	8	3	10	122	23.77	175
d Harringay (Wightman Rd. Depôt)	„ „ „ „ .....	8	23	3	113	20.30	156
d Highgate (Avenue Road) .....	C. S. Nicholson, Esq... 5	1	0	212 $\nabla$	23.74	169	
Tottenham (Drayton Road) .....	Meteorological Office ...	5	1	3	53 $\nabla$	22.21	...
d† Hornsey (High Street) .....	Met. Water Board.....	5	4	0	109	24.84	163

DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with +01 or more recorded.
		Diameter	Height Above Ground	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
MIDDLESEX—(con.)						
2.—THAMES—Lea—(con.)						
†Muswell Hill (Grand Avenue)...	G Michael Williams, Esq	5	1 0	317	24.12	...
D† „ „ (Tollington School)	W. Campbell Brown, Esq	5	1 11	380 †	24.70	175
D „ „ (Grove Avenue) ...	Ernest A. Lee, Esq. ...	5	1 0	235 B	24.10	185
D „ „ (Colney Hatch Lane)	Miss Abethell.....	5	0 10	310 †	25.77	192
D „ „ (Sewage Farm) ...	E. J. Lovegrove, Esq., CE	8	4 5	214 †	24.43	192
D Wood Green (Maryland Road)...	Mr. F. C. Hornsey.....	8	9 4	118 †	23.13	160
D „ „ (Town Hall) ... (R)	C. H. Croxford, Esq....	8	5 6	126 †	19.90	161
D Finchley (Victoria Park).....	C. J. Jenkin, Esq., C.E.	5	1 0	272 †	23.61	184
D „ (Etchingham Park) ...	Mrs. J. W. Scott .....	5	1 2	295 †	24.14	202
D Southgate (Reservoir Road).....	W. B. Butler, Esq.....	5	1 0	255 †	23.25	175
D Ponders End (Bylock Hall) .....	H. E. Freir, Esq. ....	5	1 0	50	22.11	177
Hadley Wood (Camlot).....	Miss Paget .....	5	1 1	350	21.77	...
D† Enfield (Southbury Road) .....	Met. Water Board.....	5	1 0	109 †	21.80	156
D „ (Public Offices).....	Dr. W. P. Warren.....	8	43 0	141	21.30	180
D† „ (Carisbrooke Culloden Rd.)	J. McEwan, Esq. ....	5	1 0	204 †	22.76	173
D „ (Clay Hill).....	G. H. C. Lea, Esq.....	5	1 0	200 †	22.09	188
D „ (Roselands, Turkey Street)	E. S. Rashleigh, Esq...	5	0 7	80	20.88	164
D Potter's Bar (North Lodge) .....	W. Gundry, Esq. ....	6	1 0	332	21.99	147
D† Rammey Marsh [Waltham Abbey]	Met. Water Board.....	8	1 0	60 †	23.50	149
HERTFORDSHIRE. (Area, 635 sq. mi.)						
1.—THAMES—Thame. 10 sq. mi.						
D Tring (Grove Lodge).....	Miss Boyson .....	8	1 0	450	25.17	187
„ (Pendley Manor) .....	Mrs. Williams .....	5	2 0	420	26.26	200
D „ (Cowroast Lock) .....	Gordon C. Thomas, Esq.	5	3 8	394 †	25.52	161
2.—THAMES—Colne. 199 sq. mi.						
D Easby [Northwood].....	Mrs. Sandford Fawcett	8	0 10	400 †	26.14	156
D Gate House [ „ ].....	O. S. Holt, Esq.....	8	4 6	448	22.20	174
D Rickmansworth (Moor Park)...	Lord Ebury.....	5	2 0	340	20.29	172
D „ (Sandy Lo. Golf Club)	J. F. Markes, Esq.....	...	...	...	22.86	175
„ (Croxley Green) ..	S. Ingleby Oddie, Esq..	5	0 7	250 †	21.37	...
D† Totteridge (West Lodge) .....	W. H. Newman, Esq...	5	1 0	390 †	22.66	171
D† „ (Dollis Brae) .....	C. Stewart King, Esq..	5	1 0	350 †	23.54	162
Elstree (Bays Hill) .....	H. S. Winter, Esq. ...	5	1 0	430 †	21.74	...
† „ (Aldenham House) ... (R)	Mr. E. Beckett .....	10	4 9	305	20.72	...
D Watford (Oxhey Grange) .....	J. Doyle Penrose, Esq.	5	1 0	300	21.84	149
D „ (Bushey Hall Road) ...	J. Durst, Esq. ....	5	1 2	230	22.75	171
D „ (Colne Valley W.W.) ...	C. P. Sinclair, Esq. ...	5	1 0	200 †	22.92	183
D† „ (London Orphan Asylum)	Rev. Dr. O. C. Cockrem	5	1 0	230 †	21.99	184
„ (Park Road) .....	E. J. Slinn, Esq. ....	5	1 6	263 †	21.10	180
D „ (Weetwood).....	J. Hopkinson, Esq. ...	5	1 0	269 †	22.51	199
„ ( „ )..... M	„ „ „ „ „ „ „ „	5	1 0	269 †	22.14	...
Radlett (Sewage Disposal Works)	E. H. L. Lailey, Esq...	5	0 10	347 †	20.74	...
D† Shenley (Kitwells).....	T. H. Riches, Esq. ...	5	1 0	420	23.14	168
„ ( „ )..... M	„ „ „ „ „ „ „ „	5	1 0	420	21.69	...
Sarratt (Goldingtons) .....	P. Clutterbuck, Esq....	8	3 0	400	21.38	...



### DIVISION III.—SOUTH MIDLAND COUNTIES—(continued.)

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with -01 or more recorded.
		Diameter	Height Above Ground	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>HERTFORDSHIRE—(con.)</b>						
<b>2.—THAMES—Colne—(con.)</b>						
+ Chipperfield (Little Callipers) ...	A. W. Rivington, Esq.	5	1 0	407 T	20·50	...
d London Colney (Bowmans) .....	C. Barwell Field, Esq...	5	1 0	235 T	22·62	157
d Hemel Hempstead (Apsley Mills)	Messrs.J.Dickinson&Co.	24	1 4	260	21·78	184
d „ „ (Manor Estate)	C. A. Bracey, Esq. ...	5	1 0	...	24·27	162
d „ „ (Church Croft)	Rev. Canon F.H. Fisher	5	3 0	300	24·24	172
d St. Albans (Hill End Asylum)...	G. Goodchild, Esq. ...	5	1 0	295 T	22·68	158
d „ (County Museum) ...	J. Hopkinson, Esq. ...	5	1 0	389 T	23·98	190
d „ (Gorhambury).....	Mr. W. Newberry .....	5	1 0	423 T	21·77	155
d+Berkhamsted (Anglefield).....	E. T. Browne, Esq. ...	5	1 0	450 T	25·12	179
d+ „ (Rosebank) .....	E. Mawley, Esq. ....	8	1 0	401 T	24·05	182
† „ „ „ „ „M	„ „ „ „ „	8	1 0	401 T	23·69	...
d Gt.Gaddesdon(GoldenParsonage)	Elliott Kitchener, Esq.	8	1 0	536 T	25·76	209
Harpenden (Rothamsted) .....	Lawes Agricultural Trust	5	0 9	420 T	23·48	...
d „ { „ } .....	„ „ „	8	0 9	420 T	21·96	169
d „ { „ } .....	„ „ „	72X87	0 9	420 T	24·72	211
d „ (Beesthorpe) .....	G. Paget, Esq. ....	5	0 6	420	22·98	176
<b>3.—THAMES—Lea. 340 sq. mi.</b>						
d New Barnet (Gas Works).....	F.J.Bancroft,Esq.,C.E.	8	0 9	212	22·21	181
d Barnet (Summerhill).....	F. A. Milne, Esq. ....	5	0 10	400 T	19·73	169
d „ (Bedford Avenue) .....	Miss Haines .....	5	1 3	350	23·75	198
d Hadley (Hadley Bourne) .....	Mrs. Weber .....	5	1 0	430	23·80	195
d Cheshunt (Goff's Oak House) ...	W. M. Cuninghame, Esq.	5	1 0	310 T	21·51	176
d Northaw (St. Just).....	Miss Poland .....	5	1 0	400	23·24	208
d+Broxbourne (Stafford House) ...	A. F. Newbery, Esq. ...	5	1 0	118 T	24·07	178
d+Hoddesden (Feilde's Weir) .....	Met. Water Board.....	8	3 8	95 T	22·26	169
d Haileybury College .....	P. H. Latham, Esq. ...	8	1 0	270 T	21·10	169
d Gilston Park .....	Mr. E. Leach .....	8	1 0	175 T	23·56	152
d Hatfield (Holwell House).....	Wilfrid E. Laurie, Esq.	5	1 6	240 T	21·56	156
d „ (Surveyor's Office).....	U. A. Smith, Esq., C.E.	5	1 0	270 T	20·27	173
d Hertford (Bayfordbury) .....	H.W.ClintonBaker,Esq	8	1 2	250	21·98	183
d Stanstead Abbots .....	E. H. Barlow, Esq. ...	5	1 2	115 T	21·88	160
d+Hertford (Sewage Works) .....	Met. Water Board.....	8	1 0	121 T	18·84	157
d+Ware (Red House).....	„ „ „	5	1 0	115 T	21·30	183
d Welwyn (Bridge House) .....	Dr. B. W. Thomas ...	5	2 3	216	26·02	160
d Much Hadham .....	T. W. Mott, Esq. ....	5	1 0	212	21·53	182
d Bishops Stortford (Barrell's Down Rd.)	H. Sheppard, Esq.....	5	1 2	300	22·23	149
d Bennington House.....	Miss E. A. Parker.....	5	1 0	406 T	21·79	168
d+ „ Lordship .....	A. F. Bott, Esq. ....	5	0 10	365 T	23·17	177
d Little Hadham (Hadham Hall)..	W. Minet, Esq. ....	5	0 10	338 T	21·99	155
d Standon (Libury Hall).....	S. Knothe, Esq. ....	5	1 3	380	22·30	194
d Buntingford (Hamels Park) .....	H. Shepherd Cross, Esq.	5	1 3	390 T	23·16	182
d „ (Westmill,ColesPk.)	T. Greg, Esq.....	5	1 0	379 T	23·22	158
d Hitchin (Preston) .....	R. de V. Pryor, Esq. ..	8	2 5	480 T	22·55	184
d Weston Park .....	M. R. Pryor, Esq.....	5	0 8	470 T	24·35	189
d Buntingford (Throcking Rectory)	Rev. B. W. Harvey ..	5	1 0	487 T	23·95	204
d Royston (Therfield Rectory). ....	Mr. J. Cracknell .....	5	1 0	513 T	23·59	172

## DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with 0.1 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>HERTFORDSHIRE—(con.)</b>						
4.—OUSE. 86 sq. mi.						
D Offley (School House) .....	C. W. Mears, Esq. ....	5	1	0	526	21.37 191
D „ Vicarage .....	Rev. E. P. Gatty .....	5	1	6	525	21.89 170
D Graveley Rectory .....	Rev. R. E. C. Walker...	5	0	10	325 T	24.06 140
D† Hitchin (The Chilterns) .....	F. Ransom, Esq. ....	5	0	9	300 T	22.80 175
D† „ (The Maples) .....	W. Hill, Esq. ....	8	1	1	220 T	21.95 168
D „ (Chiltern Road) .....	A. Latchmore, Esq. ...	5	1	0	297 T	21.31 169
D† „ (High Down) .....	Miss E. Pollard .....	5	1	1	422 T	21.40 148
D „ (Roxley House, Willian)	Mrs. H. Bendixson.....	5	1	6	370	22.27 151
D Letchworth (Garden City) .....	A. W. E. Bullmore, Esq.	5	1	0	218 T	20.21 157
D „ .....	A. W. Brunt, Esq. ....	5	1	0	290 T	21.93 181
D Baldock (High Street) .....	Dr. F. W. Langston Day	5	1	0	214 T	21.31 158
D Royston (Barley) .....	W. W. Cook, Esq. ....	5	1	0	300	22.39 175
D „ (Earlshill House).....	J. Phillips, Esq. ....	8	1	6	225 T	21.98 186
<b>BUCKINGHAMSHIRE. (Area, 743 sq. mi.)</b>						
1.—THAMES—Cherwell. 30 sq. mi.						
2.—THAMES—Thame. 158 sq. mi.						
Butlers Cross .....	Meteorological Office ...	5	1	0	399	24.42 ...
D Wendover (Lanscombe) .....	C. H. Broodbank, Esq..	5	1	3	540	25.03 164
D „ (Halton Gardens).....	Mr. R. C. Sanders.....	5	1	10	400	26.38 187
D Weston Turville (Yaxley Lodge)	Miss Morris.....	5	1	1	335	22.58 153
Bulbourne [Tring] .....	Gordon C. Thomas, Esq.	5	2	3	401 T	24.76 ...
Thame (Cheersley Hill).....	Mrs. Bernard .....	...	0	6	345	19.76? ...
Mentmore Gardens .....	Mr. J. MacGregor .....	5	1	2	400 ?	23.20 ...
3.—THAMES—Wye & c. 129 sq. mi.						
Eton (Tangier Islands) .....	C. Sainty, Esq. ....	5	1	0	67 T	22.39 156
† Slough (Upton) .....	R. Bentley, Esq. ....	8	2	0	80 T	21.26 ...
D† „ ( „ ) .....	„ „ „ .....	5	2	0	78 T	22.78 197
Taplow Court .....	Lord Desborough, KCVO	8	1	0	217 T	21.35 ...
Burnham (Burnham Cottage) ...	G. J. Williams, Esq....	5	3	0	182 T	26.72 ...
Farnham Royal (The Chase).....	F. C. Carr-Gomm, Esq.	5	3	0	169 T	23.49 177
Stoke Poges (Stoke Court) ..	H. Allhusen, Esq. ....	...	...	...	200 ?	22.27 ...
D Greenlands [Henley-on-Thames]	Lord Hambleden .....	8	1	3	116	22.95 161
D Hedsor .....	Lord Boston .....	8	1	0	170 T	26.82 151
D Bourne End (The Bourne) .....	A. Morse, Esq. ....	5	1	0	240 T	22.40 148
D Marlow (Thames Bank) .....	S. H. Wright, Esq. ...	8	2	0	105	25.66 204
D High Wycombe .....	H. S. Wheeler, Esq....	5	0	11	253 T	25.22 183
Penn (Rayners) .....	Sir P. F. Rose, Bart....	5	1	3	547 T	27.72 181
D Bradenham House .....	J. H. Tempest, Esq. ...	8	0	6	420 T	25.21 157
Saunderton (Speen) .....	H. R. McCarthy, Esq....	5	1	0	650	24.38 ...
D Hampden House.....	The Earl of Buckinghamshire	5	1	0	690 T	24.84 182
4.—THAMES—Colne. 133 sq. mi.						
Wraysbury (Elmslea) .....	Comm. P. C. Pearson, R.N.	5	1	0	80	24.15 160
D Slough (Langley) .....	R. H. Major, Esq. ....	8	0	10	85 T	21.00 162

DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>BUCKINGHAMSHIRE—(con.)</b>							
<b>4.—THAMES—Colne—(con.)</b>							
d Chalfont St. Peter (Chalfont Park)	Mr. G. Barrell .....	5	1	0	201 T	24·06	156
d " " (" Cottage)	Miss Hibbert .....	5	1	1	265 P	22·03	148
d Chalfont St. Giles (The Stone) ... M	Col. R. W. Phipps.....	5	1	0	270 T	24·26	188
" " (" "	A. D. Gordon, Esq. ....	5	1	0	270 T	24·28	...
d " " (Woodlands) ... M	Dr. A. Morley Davies..	5	0	11	400 T	24·23	179
" " (" "	W. Garton, Esq. ....	5	0	11	400 T	24·22	...
Amersham (Winchmore Hill)	G. Weller, Esq.....	5	1	0	494 N	25·75	...
d† " (St. Mary's Sch.) No.1	Mr. W. Stephens .....	5	1	0	340	24·23	165
d " (" ") No.2	Rev. T. H. Fitzpatrick.	5	1	0	340	24·25	163
d† " (The Plantation)	H. Yates Thompson, Esq.	8	1	0	464 N	24·69	181
d " (Latimer Ho. Gardens)	Rev. J. H. Harvey ...	8	1	7	400	24·27	178
Chesham (Chesham Bois Rectory)		5	0	11	530 T	24·32	...
<b>5.—OUSE. 293 sq. mi.</b>							
d Oving House .....	H. Yates Thompson, Esq.	5	1	0	515 T	24·21	186
" " .....	Dr. T. F. Vaisey.....	5	1	6	515 T	23·83	...
Winslow (Norden House).....	Mr. J. Clues .....	5	0	9	...	23·19	...
Stockgrove Pk. [Leighton Buzzard]	W. Weston, Esq. ....	5	1	2	500	24·39	...
d Buckingham (Adstock Fields)...	Mrs. Hawkins .....	5	0	9	352 T	22·65	161
d Stony Stratford (Calverton Limes)	Rev. W. L. Harnett ...	5	1	3	230	22·00	154
d Wolverton (St. George's Vic.)...	H. J. Hippsley, Esq....	5	1	0	270 T	22·47	172
d " (The School House)...	F. Littleboy, Esq.....	5	1	0	264 T	21·58	168
" (Council School) .....	F. J. Taylor, Esq.....	5	5	0	263 T	21·10	...
d Newport Pagnell (The Croft) ...	Rev. J. H. Harvey ...	5	2	0	191 T	22·50	172
d " (Lovat Bank)...		5	2	0	190	21·33	161
d North Crawley Rectory.....		5	1	0	300 T	19·45	174
<b>OXFORDSHIRE. (Area, 756 sq. mi.)</b>							
<b>1.—SEVERN—Upper Avon. 10 sq. mi.</b>							
d Sibford Ferris.....	Joshua Lamb, Esq. ...	5	1	0	590 N	27·05	151
<b>2.—THAMES—Windrush &amp; c. 261 sq. mi.</b>							
Witney (Ringwood Farm) .....	J. W. Abraham, Esq...	5	5	0	400	23·39	142
" (Hailey School) .....	S. Heaton, Esq. ....	5	2	6	360 T	33·77?	...
Woodstock (Freeland House) ...	W. J. Short, Esq. ....	8	0	9	345	24·74	162
d Wootton Rectory .....	Rev. F. R. Marriott ...	5	0	10	370 T	27·31	157
d Charlbury (Wychwood House)...	J. H. Glen, Esq. ....	5	0	8	450	25·33	204
Fifield (Fifield House) .....	E. W. Bishop, Esq. ...	...	...	...	480	23·68	...
d Lyneham.....	R. de M. Pratt, Esq....	5	1	7	351 T	29·84	172
d Chadlington (Langston House)...	Major F. W. Schofield..	5	0	11	420	27·29	154
d Sarsden (Estate Office).....(R)	J. M. Blair, Esq. ....	8	3	0	492 N	26·19	166
d " Gardens .....	Mr. J. E. Vine .....	5	0	10	538 N	27·06	159
Steeple Barton School .....	S. Heaton, Esq. ....	6	1	0	358 T	29·16	...
Chipping Norton (Heythrop) ...	Albert Brassey, Esq....	10	4	0	700	22·34?	166
" (" School)	S. Heaton, Esq. ....	6	2	0	658 T	24·50	...
<b>3.—THAMES—Cherwell. 250 sq. mi.</b>							
Nuneham Park Gardens .....	Mr. C. E. Munday.....	8	3	0	280 T	21·34	...
d† Oxford (Hincksey Pumping Sta.)	W. H. White, Esq., C.E.	8	1	0	187 N	22·47	173

## DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>OXFORDSHIRE—(con.)</b>						
<b>3.—THAMES—Cherwell—(con.)</b>						
D Oxford (Magdalen College) .....	J. J. Manley, Esq. ...	5	1 0	186 $\nabla$	21.76	168
D† " (Radcliffe Observatory) ..	Dr. A. A. Rambaut, FRS	5	33 11	223 $\nabla$	19.79	...
D† " (Banbury Road) .....	" " " " (R)	8	1 8	210 $\nabla$	25.11	183
D " (Warneford Asylum) ...	Miss E. M. Tawney ...	11	2 4	210 $\nabla$	25.41	182
D " (Headington Hill) .....	Dr. J. Neil .....	5	1 1	211 $\nabla$	22.77	153
D " (Elsfield Manor House) ..	Dr. J. Neil .....	5	1 0	300 $\nabla$	22.15	152
D Islip .....	Miss Davenport .....	5	0 10	354	23.16	172
Hampton Poyle Rectory .....	Miss M. J. Parsons ...	5	1 0	355 $\nabla$	23.91	175
Charlton-on-Otmoor School .....	Col. G. E. Eliot .....	5	3 0	200 $\nabla$	22.66	140
D Bicester (Bank) .....	Rev. S. T. Gwilliam ...	5	1 0	201 $\nabla$	24.00	163
" (Launton School) .....	E. Cartwright, Esq. ...	6	1 3	197 $\nabla$	27.71	...
D " (Middleton Park) .....	H. A. Fane, Esq. ....	5	0 10	231 $\nabla$	23.70	152
Upper Heyford School .....	S. Heaton, Esq. ....	6	1 0	212 $\nabla$	27.45	192
D Steeple Aston (Hill House) ..	The Earl of Jersey .....	5	2 6	326 $\nabla$	26.03	159
D " (The Grange) .....	S. Heaton, Esq. ....	5	1 0	350 $\nabla$	28.25	...
D Swerford .....	B. S. Ogle, Esq. ....	5	0 4	400 $\nabla$	29.81	181
West Adderbury (St. Amand's) ..	Miss Bradshaw .....	8	1 0	400 $\nabla$	29.65	184
D Adderbury (Cross Hill) .....	W. Hall, Esq. ....	5	1 0	500 $\nabla$	29.25	181
D Bloxham Grove .....	Miss M. M. Bradford ...	8	1 0	320	26.56	...
D Bodicote House .....	G. H. Norris, Esq. ....	5	1 1	338 $\nabla$	24.40	164
" (Draycott House) .....	W. H. Warriner, Esq. ...	8	3 10	387 $\nabla$	29.81	159
D " Vicarage .....	J. F. Starkey, Esq. ....	8	1 3	388 $\nabla$	26.42	163
Broughton Rectory .....	F. B. Judge Baldwin, Esq.	5	1 8	391 $\nabla$	26.29	160
Wroxton .....	Rev. H. N. Fowler ...	5	1 0	390 $\nabla$	25.98	173
D Shenington School Gardens .....	Rev. B. W. Bradford ...	5	0 6	370 ?	27.58	179
	Hon. Mrs. FitzGerald ...	8	1 3	600 ?	26.75	172
	Rev. A. Blythman .....	5	1 3	540	29.60	175
<b>4.—THAMES—Thame &amp; c. 210 sq. mi.</b>						
D Caversham (Rectory Road) .....	W. Simpson, Esq. ....	5	1 0	129 $\nabla$	24.23	187
" (Eastfield) .....	C. M. Powell, Esq. ....	5	1 0	180 $\nabla$	23.60	173
D " (St. Benet's Home) .....	Mr. H. Hall .....	5	1 3	300	25.07	177
D " (Kidmore End School) .....	T. F. Higgins, Esq. ...	5	0 11	330 $\nabla$	27.11	167
D Harpsden (Cray) .....	B. E. D. Kilburn, Esq. ...	5	4 6	230 $\nabla$	22.61	148
D Goring (Elmercroft) .....	Major E. Gambier Parry	5	0 10	160	23.83	185
Henley-on-Thames (Peppard) ...	Rev. Hubert Shears ...	5	1 0	336	23.83	...
D " " " (Greys Green) .....	Miss Mary Davis .....	5	2 0	350 $\nabla$	25.60	195
D " " " ( " " Lane) .....	G. Potter, Esq. ....	5	0 9	123	23.48	148
D Nettlebed (Joyce Grove) Gauge A	Mr. A. Johnstone .....	5	1 0	590 $\nabla$	28.72	167
D " " " ( " " ) Gauge B	" " " " .....	5	1 0	590 $\nabla$	28.67	179
" (School Gardens) .....	S. Heaton, Esq. ....	5	1 0	607 $\nabla$	28.93	160
D Dorchester (Bishops Court) .....	T. Latham, Esq. ....	5	2 0	169	20.76	182
D Abingdon (Culham School House)	F. Mitchell, Esq. ....	5	0 10	180	23.43	164
D " ( " College) .....	R. L. Treble, Esq. ....	8	0 11	213 $\nabla$	23.10	160
D Clifton Hampden (Manor House)	Lord Aldenham .....	5	1 0	190 $\nabla$	22.05	160
D† Watlington (Pyrton Hill) .....	W. H. Dines, Esq. F.R.S.	5	1 0	520 $\nabla$	24.43	164
D " ( " Manor) .....	Mrs. E. Hamersley ...	5	1 6	321 $\nabla$	23.74	171

## DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter.	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
OXFORDSHIRE.—(con.)							
4.—THAMES—Thame & c—(con.)							
Lewknor (Manor House) .....	Miss Spencer .....	5	1	3	360	24·82	208
Chinnor Hill .....	Capt. E. G. Mansel ...	7	1	5	800	23·86	...
Toot Baldon (Potlands).....	D. Clinkard, Esq. ....	5	1	0	288 $\pi$	22·10	152
Great Haseley School.....	S. Heaton, Esq. ....	5	1	0	319 $\pi$	21·53	...
„ „ (Manor House) .....	F. Gelderd-Somervell, Esq....	5	1	0	280 $\pi$	21·20	...
† Waterstock.....	W. H. Ashhurst, Esq....	8	3	2	200 ?	22·93	184
Thame (Tythrop House) .....	A. W. Smith, Esq.....	...	...	...	230 ?	21·29	142
Stanton St. John (Woodperry)...	J. Thomson, Esq. ....	6	1	0	399 $\pi$	24·72	157
5.—OUSE. 25 sq. mi.							
NORTHAMPTONSHIRE. (Area, 1003 sq. mi.)							
1.—SEVERN—Upper Avon. 60 sq. mi.							
Winwick Warren .....	Col. R. H. Ainsworth...	8	1	5	648 $\pi$	25·58	178
Welford (Salford House) .....	J. Gee, Esq. ....	5	1	3	566	24·15	180
2.—THAMES—Cherwell. 77 sq. mi.							
King's Sutton (Astrop).....	E. Browne, Esq. ....	5	1	0	338 $\pi$	24·34	169
Grimsbury (Banbury W.W.) ...	W. E. Wood, Esq. ....	5	1	3	320 $\pi$	23·08	167
3.—OUSE. 148 sq. mi.							
Brackley House .....	J. Allen, Esq.....	5	1	0	425 $\pi$	28·66	183
Hargrave House.....	C. K. Murchison, Esq..	5	1	0	273	19·24?	...
4.—NENE. 622 sq. mi.							
Courteenhall Grange.....	Capt. G. M. Archdale...	...	...	...	280	22·69	149
Blisworth (Crieff House) .....	A. Westley, Esq. ....	5	5	0	330	23·84	159
„ .....	T. W. Millner, Esq. ...	5	1	6	300 $\pi$	23·25	183
Litchborough Hall .....	C. A. Markham, Esq... 5	1	10	500	27·54	156	
Castle Ashby ...	R. G. Scriven, Esq. ...	5	1	0	263 $\pi$	25·51	193
Little Houghton House.....	Christopher Smyth, Esq. 5	2	2	271 $\pi$	24·04	171	
Northampton (Dallington Av.)...	C. A. Markham, Esq... 5	1	0	265 $\pi$	22·07	168	
„ „ (Berry Wood).....	„ „ „ „ .....	8	1	4	399 $\pi$	23·37	165
„ „ „ „ „ .....	„ „ „ „ .....	...	...	...	399	23·22	...
„ „ „ „ „ .....	„ „ „ „ .....	...	...	...	...	20·90	160
Great Billing Rectory .....	Rev. G. H. Mullins ...	8	1	6	275 $\pi$	21·99	188
Daventry (Sheaf Street) .....	C. A. Markham, Esq... 5	1	0	486	23·93	158	
„ „ (Tunnel End) .....	T. W. Millner, Esq. ...	5	1	6	394	26·03	201
Great Brington .....	C. A. Markham, Esq... 5	2	9	448	22·54	156	
Althorp House .....	„ „ „ „ .....	8	3	10	310 $\pi$	23·64	...
Sywell Hall .....	T. A. Dickson, Esq. ...	5	1	0	371 $\pi$	24·19	174
Pitsford (Sedgebrook) .....	C. A. Markham, Esq... 5	1	0	311 $\pi$	22·10	178	
„ „ „ „ „ .....	„ „ „ „ .....	5	1	0	311 $\pi$	22·32	...
Rushden (Alfred Street School)..	S. Saddler, Esq.....	5	1	3	200 ?	21·13	158
Wellingborough (Swanspool) ...	N. P. Sharman, Esq. ...	5	0	2	155	21·98	167
„ „ „ „ „ .....	E. Sharman, Esq. ....	5	1	0	174 $\pi$	22·29	165
Watford Court .....	C. A. Markham, Esq... 9	1	2	380	24·39	...	
Ravensthorpe (Coton Mill) .....	G. S. Eunson, Esq. ...	5	1	0	355	24·29	164
Brixworth Hall .....	Mr. J. Sutherland .....	8	0	8	400 $\pi$	23·45	168
Scaldwell.....	Capt. R. Soames.....	5	1	0	404 $\pi$	22·67	...

## DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with -01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
NORTHAMPTONSHIRE—(con.)							
4.—NENE—(con.)							
D Raunds (Day School) .....	Léon G. H. Lee, Esq...	8	1	0	205 $\pi$	19·52	152
D Cranford (Woodford House).....	E. N. Plevins, Esq. ...	8	1	0	252 $\pi$	19·08	150
D Kettering W.W. (Cransley) .....	T. R. Smith, Esq., C.E.	8	0	6	275 $\pi$	22·02	153
D „ (Sewage Works) .....	„ „ „	8	1	0	199 $\pi$	22·40	171
D „ (George Street).....	C. W. Lane, Esq. ....	5	1	0	288 $\pi$	20·98	165
D „ W.W. (ThorpeMalsor) .....	T. R. Smith, Esq., C.E.	5	0	11	352 $\pi$	23·09	168
D „ „ (Clover Hill)...	„ „ „	5	0	7	344 $\pi$	21·51	157
„ (Warkton).....	Mr. R. H. Brett.....	5	1	3	275 $\pi$	20·73	142
Rothwell (Loddington) .....	Mr. J. Oliff.....	5	1	0	400	23·58	...
Thrapston (Islip) .....	J. Edmonds, Esq. ....	5	1	6	145 $\pi$	19·25	...
„ (Drayton House).....	„ „ „	5	1	6	220 $\pi$	21·24	148
D Clopton Manor .....	Mrs. Buckley .....	6	0	11	245 $\pi$	21·41	179
D Aldwinkle St. Peter Rectory ...	C. A. Markham, Esq... 5	0	11	175	20·94	143	
D Rushton Manor .....	R. A. Willows, Esq. ...	5	1	0	400 $\pi$	21·44	147
Rothwell (Shotwell Mill) .....	A. Harris, Esq. ....	5	1	6	320 $\pi$	23·62	144
D Desborough.....	C. A. Markham, Esq... 5	3	0	457 $\pi$	25·51	145	
Barnwell (Lilford Hall) .....	Mr. E. Wilson .....	5	1	0	...	21·19	...
Oundle (Milton Road) .....	J. M. Siddons, Esq. ...	5	3	4	131 $\pi$	19·33	...
„ Waterworks .....	N. E. Dixon, Esq., C.E.	5	1	0	147 $\pi$	22·88	141
D Corby (Weldon Grange) .....	John Rooke, Esq. ....	8	1	0	342 $\pi$	21·23	196
D Peterborough (Westbourne Ho.)	E. H. Colman, Esq. ...	8	1	0	30 $\pi$	18·66	154
D „ (Ashfield) .....	J. A. Percival, Esq. ...	5	0	7	30	18·19	157
D „ (Abbeyfields) .....	J. Shipley Ellis, Esq... 5	0	6	49 $\pi$	19·51	152	
„ (Milton House) ...	C. A. Markham, Esq... ..	...	...	...	20·47	...	
D Wittering Rectory.....	Rev. S. B. Warde .....	5	1	0	180	20·84	165
D Eye (Northolm) .....	S. W. Egar, Esq. ....	5	1	0	17 $\pi$	19·48	186
D „ (Newborough) .....	R. Williams, Esq.....	5	1	0	8 $\pi$	20·20	169
5.—WELLAND. 96 sq. mi.							
D Marston Trussell Rectory ... (R)	Rev. J. Knight Law... 10	2	6	314 $\pi$	25·37	154	
D Dingley Hall [Market Harboro']	Lord Downe .....	5	1	6	400 $\pi$	24·17	146
D Carlton Park Gardens .....	Mr. R. W. Thatcher ...	5	1	1	400 $\pi$	23·02	145
Rockingham Castle Gardens.....	Mr. G. M. Biggs .....	5	4	4	300 $\pi$	24·08	...
D Gretton (Gretton House) .....	Mr. J. Rogers.....	9	1	0	354 $\pi$	22·90	159
D „ School .....	W. Leeson, Esq. ....	5	0	6	363	23·08	177
Kings Cliffe (Fineshade Abbey)...	C. A. Markham, Esq... 5	0	9	200	20·35	...	
Etton [Market Deeping] .....	J. C. Gill, Esq., C.E... 8	1	0	25 $\pi$	20·20	...	
HUNTINGDONSHIRE. (Area, 366 sq. mi.)							
1.—OUSE. 327 sq. mi.							
D St. Neots (Waresley Park) .....	Col. Duncombe .....	5	0	11	190	20·86	171
D „ (Great Paxton) .....	Rev. A. G. Cane.....	5	1	0	100 $\pi$	23·16	144
D Fenstanton .....	Rev. N. Royds .....	5	0	8	50	19·29	154
D Huntingdon (Brampton Grange)	Rev. A. T. Thompson... 5	1	6	47 $\pi$	21·69	140	
D „ (Bosworth House)...	H. Lucas, Esq. ....	5	1	6	35 $\pi$	18·52	175
D „ (Hinchingsbrooke)(R)	Earl of Sandwich .....	10	6	0	74 $\pi$	19·22	144
D St. Ives (Slepe House) .....	Dr. W. R. Grove .....	5	1	0	25	20·70	170

## DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
HUNTINGDONSHIRE—(con.)							
1.—OUSE—(con.)							
D Houghton Grange .....	C. H. Coote, Esq. ....	5	1	0	114	21.10	189
D Catworth.....	Miss E. M. Conway ...	5	0	9	210 $\pi$	20.67	165
D Great Gidding Rectory .....	E. N. Plevins, Esq. ...	5	1	0	169 $\pi$	18.23	137
Whittlesea Mere .....	A. Lunn, Esq., C.E. ...	8	1	6	10 ?	18.91	...
2.—NENE. 39 sq. mi.							
BEDFORDSHIRE. (Area, 467 sq. mi.)							
1.—THAMES—Colne. 20 sq. mi.							
D Dunstable (Kensworth Vicarage)	Mrs. Litle .....	5	1	3	585	23.85	148
Luton (Stockwood) .....	late F. Crawley, Esq...	5	3	0	539 $\pi$	22.46	170
2.—THAMES—Lea. 32 sq. mi.							
D Luton (Pumping Station).....	J. W. Tomlinson, Esq. CE	5	1	0	343 $\pi$	20.79	179
D „ (Tennyson Road) .....	Harold F. Smith, Esq.	5	1	1	530 $\pi$	22.75	177
D „ (The Downs) .....	G. W. Pryer, Esq.....	5	1	0	479	24.17	169
D Dunstable (The Grammar School)	W. D. Coales, Esq. ...	5	0	8	480	24.52	186
3.—OUSE. 408 sq. mi.							
Woburn (Milton Bryant).....	Mr. C. J. Kilby .....	5	1	0	510	22.71	...
D Shillington .....	Kilham Roberts, Esq...	5	1	0	182 $\pi$	20.24	148
D Ampthill (Higham Bury).....	E. J. Jekyll, Esq. ....	5	1	0	310 $\pi$	21.97	159
Shefford (Upper Stondon).....	R. Long, Esq. ....	5	1	0	241 $\pi$	18.58	...
Apsley Guise (Oaklands) .....	Mrs. Dymond.....	5	1	0	410	20.76	159
D† Woburn (Crawley Mill Farm)...	H. M. Freear, Esq. ...	8	1	0	292 $\pi$	21.33	175
D† „ (Fruit Farm, Ridgmont)	W. H. Neild, Esq.....	5	1	0	270 $\pi$	21.81	184
D Stotfold (Three Counties Asylum)	Dr. L. O. Fuller.....	5	1	0	220 $\pi$	18.51	173
Shefford (Clifton Bury) .....	A. Inskip, Esq. ....	5	2	1	150	19.31	...
D „ Council School .....	G. F. Alldritt, Esq. ...	5	1	0	134 $\pi$	20.72	167
„ Hardwicke .....	H. Inskip, Esq. ....	5	1	0	60	18.86	...
D Cranfield School.....	Alfred Death, Esq. ...	5	1	6	365	20.43	157
D Biggleswade (Waterworks) .....	H. Carne, Esq., C.E....	5	1	6	170 $\pi$	16.37?	171
Sandy (The Lodge) .....	R. Ll. Farley, Esq. ...	5	1	0	200 ?	18.30	...
D „ (Beeston Grange) .....	Col. Maunsell Bowers..	5	1	0	85 ?	19.06	184
D Bedford (The Park) .....	(R) N. Greenshields, Esq...	8	5	8	123 $\pi$	18.08	152
„ (Castle Road) .....	Miss M. E. Newbery...	5	7	0	108 $\pi$	19.99	162
D Great Barford House.....	J. Arnold Whitchurch Esq	5	1	0	120 $\pi$	19.43	144
Sharnbrook (Castle Close) .....	L. Stileman-Gibbard Esq	5	0	4	210	21.96	147
„ (Colworth Gardens)	Mr. J. Hoad .....	5	2	0	250	20.54	...
4.—NENE. 7 sq. mi.							
CAMBRIDGESHIRE. (Area, 859 sq. mi.)							
1.—STOUR. 17 sq. mi.							
Brinkley Hall.....	R. W. King, Esq.....	5	1	0	380	20.11	...

DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with 01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
CAMBRIDGESHIRE—(con.)						
2.—OUSE. 740 sq. mi.						
D Odsey [Ashwell] .....	Sir H. G. Fordham ...	5	1	0	256 A	21·82 171
Abington Pigotts .....	Mr. J. N. Woodham ...	5	0	8	130	20·53 ...
D Melbourn Vicarage .....	Mrs. de Courey-Ireland	5	1	2	78	19·91 137
D Meldreth (Chiswick Farm) .....	A. Howard, Esq. ....	5	1	1	70 T	20·87 154
D „ (Belmington Close) ...	G. Warren Bindloss, Esq.	5	1	0	65 T	19·04 155
D Foxton (The Bury) .....	J. Gifford, Esq. ....	5	1	0	60 T	19·23 178
D Great Abington (Abington Hall)	Mr. F. Ripley .....	3	0	7	90 ?	17·73 159
D Whittlesford (Sawston Hall) ...	D. L. Huddleston, Esq.	5	1	1	86 T	18·72 151
D Harston Vicarage .....	Mrs. C. M. Baldwin ...	5	0	8	47 T	19·64 138
D Wimpole Hall .....	Mr. W. J. Snell .....	5	1	0	141	22·34 175
D Little Shelford Manor House ...	Miss M. C. Walton ...	5	1	0	52	21·62 154
D Stapleford House .....	J. H. H. Linton, Esq..	5	2	3	64	20·07 145
D Balsham Rectory .....	Rev. H. J. E. Burrell..	5	1	6	399 T	18·53 137
D West Wrattling Park .....	R. W. Ross, Esq. ....	5	1	0	385 T	18·54 159
Weston Colville .....	Gerald H. Long, Esq...	5	1	0	327 A	18·40 ...
D Trumpington .....	C. Parsons, Esq. ....	5	1	0	60 T	21·16 147
D Grantchester Mill .....	J. Nutter, Esq. ....	5	5	0	31 A	19·35 143
D Cambridge W.W. (Fleam Dyke)	W. W. Gray, Esq., C.E.	5	1	5	99 A	18·43 162
D „ „ (Fulbourne) ...	„ „ „	5	1	0	37 A	19·57 170
D „ „ (Cherryhinton) ...	„ „ „	5	1	0	35 A	18·65 156
D „ „ (Hills Road, South)...	Smith Nutter, Esq. ...	8	0	10	40 ?	21·00 165
† „ „ (Herschel House) ...	C. N. H. Lock, Esq. ...	5	1	0	36 T	17·79 ...
D† „ „ (Sidney Street) .....	Percy Pain, Esq. ....	8	53	0	83 A	17·31 155
D „ „ (Corporation Store Yd.)	Julian Julian, Esq., C.E.	5	1	0	52 T	16·96 148
D† „ „ (Tenison Avenue) ...	W. B. Parsons, Esq. ...	8	1	2	40 ?	18·73 160
D† „ „ (Pinehurst) .....	C. F. Foster, Esq. ....	5	0	10	36	19·74 167
D† „ „ (Botanic Gardens) ...	R. Irwin Lynch, Esq...	8	1	1	43	18·67 158
D „ „ (Corporation Pumping Sta.)	Julian Julian, Esq., C.E.	5	1	0	28 T	19·29 200
D „ „ (Quy Hall) .....	T. Musgrave Francis Esq.	5	0	5	24 A	20·31 166
D Croxton Park .....	G. D. Newton, Esq. ...	5	2	6	200 ?	23·54 143
D Boxworth [St. Ives] ..	E. H. Thornhill, Esq...	5	1	0	76 T	20·61 193
D Burwell .....	R. Stephenson, Esq....	5	2	0	58	18·19 155
D Conington Hall [St. Ives] .....	Philip T. Gardner, Esq.	8	0	5	50 T	22·76 189
D Cottenham (Bernard House) .....	A. Bull, Esq. ....	5	3	6	30 T	20·82 137
D Fordham (Washington House)...	W. V. Bloom, Esq. ...	5	1	0	30	17·35 148
Soham .....	T. Everett, Esq. ....	5	2	0	25 T	18·51 ...
Stretham (Dimocks Cote) .....	H. Nightingale, Esq... 5	13	7	...	...	21·68 ...
„ „ Engine .....	Mr. J. Housley .....	9	4	9	13 A	19·07 ...
D „ „ (Orchard House) .....	C. Wright, Esq. ....	8	5	0	42	19·40 147
D Wilburton Manor .....	Albert J. Pell, Esq. ...	5	1	5	50 T	19·70 141
D Ely (The Palace) .....	Mr. A. Sewell .....	5	1	0	64 T	20·61 175
Chatteris (Holwood Farm) .....	Mr. G. Argent .....	5	0	10	12	20·60 ...
Mepal Engine .....	Mr. J. Goodman .....	5	20	6	25	14·65 ...
D Littleport (Highfield House) ...	H. G. Martin, Esq. ...	8	2	7	67 T	18·17 148
D Chatteris (Aylesby House) .....	A. H. Ruston, Esq. ...	8	0	6	31	20·21 144
D „ „ (The Priory) .....	H. F. Fryer, Esq. ....	5	0	7	31	19·43 141



## DIVISION III.—SOUTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
CAMBRIDGESHIRE—(con.)							
2.—OUSE—(con.)							
D March .....	A. Lunn, Esq., C.E. ...	9	2	0	10 ?	18·06	138
D Upwell (Marmont Priory Lock) ..	„ „ „ „ ...	8	1	1	...	17·73	184
D „ (Euximoor House) .....	H. West, Esq., jun. ...	5	0	8	15	18·01	157
3.—NENE. 102 sq. mi.							
D Stanground Sluice .....	A. Lunn, Esq., C.E. ...	8	1	6	15 ?	18·24	132
D Thorney (Bedford Office) .....	Hugh R. Brodie, Esq. ...	8	3	6	9 7/8	18·55	143
D Parson Drove (Clows Cross) .....	F. Ashworth, Esq. ....	8	3	0	13	19·10	146
Wisbech (Bank House) .....	Lord Peckover of Wisbech	8	0	8	6	19·76	...
D „ (Monica Road) .....	F. W. Climensson, Esq.	8	1	2	6	20·41	142



## DIVISION IV.—EASTERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with -01 or more recorded.
		Diameter	Height Above Ground	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>ESSEX. (Area, 1532 sq. mi.)</b>						
<b>1.—THAMES—Lea. 132 sq. mi.</b>						
d West Ham (Abbey Mills).....	London County Council	8	1 0	11 $\pi$	21-23	160
d Leyton (Town Hall) .....	E. H. Essex, Esq. ....	5	1 0	22 $\pi$	20-27	140
Leytonstone .....	Miss G. Lister .....	5	1 6	100 $\tau$	21-95	...
d† Lea Bridge .....	Met. Water Board.....	8	0 6	23 $\pi$	21-88	143
† Walthamstow (Ferry Lane).....	" " "	8	0 10	30 $\pi$	20-88	...
d† Woodford (Haggar Lane) .....	" " "	8	0 8	176 $\pi$	21-12	150
d† Buckhurst Hill Reservoir.....	" " "	8	1 7	275 $\pi$	21-69	164
" " (Ardmore) .....	Mrs. Eliot Howard ...	8	1 0	270	20-72	...
d† Chingford Mill .....	Met. Water Board.....	8	0 6	40 $\pi$	21-52	146
" (Sewardstone Lodge)..	W. P. Robertson, Esq.	8	0 10	200 ?	21-53	...
d† Loughton (High Beech Reservoir)	Met. Water Board.....	8	1 0	376 $\pi$	22-95	163
d† Waltham Abbey Pumping Station	" " "	8	5 0	66 $\pi$	22-46	157
" " (Gunpr. Factory)	The Superintendent ...	5	2 0	64 $\pi$	20-55	...
d Hatfield Broad Oak (Barrington Hall)	A. H. Gosling, Esq. ...	5	0 10	300 $\tau$	18-99	172
d Hassobury [Bishop Stortford] ...	L. D. Gosling, Esq. ...	5	0 10	290 ?	21-06	196
d Elsenham (Gaunts End) .....	Sir Walter Gilbey, Bart.	5	1 0	363 $\tau$	22-98	165
<b>2.—THAMES—Roding &amp; c. 316 sq. mi.</b>						
d Grays (Stanley Road) .....	A. C. James, Esq., C.E.	5	3 3	21 $\pi$	22-33	163
d " Sewage Works .....	" " "	8	2 3	9 $\pi$	21-69	156
Stifford (Coppid Hall) .....	Miss Scott .....	5	2 0	75	20-81	...
East Ham (Central Park).....	Medical Officer of Health	5	1 0	13 $\pi$	21-35	150
d† " " Well .....	Met. Water Board.....	8	0 11	17 $\pi$	20-77	149
d Barking Cemetery .....	H. Hargreaves, Esq....	5	1 0	18	20-33	141
d Ilford Sewage Works .....	H. Shaw, Esq. ....	5	1 1	31 $\tau$	20-56	164
d Bulvan (Pear Tree Corner) .....	Mrs. Read-Andrews ...	5	1 0	12	21-28	158
d Vange Pumping Station .....	Southend Water Wks Co	5	1 0	43 $\pi$	21-33	140
d Pitsea " " .....	" " "	5	1 0	29 $\pi$	20-71	135
d Hornchurch .....	W. J. Grant, Esq.....	8	1 9	46 $\pi$	20-44	165
d† Wanstead (Red Bridge) .....	Met. Water Board.....	8	8 0	33 $\pi$	20-45	144
d Manor Park (Albany Road).....	A. J. Wilmsburst, Esq.	5	3 0	40	20-89	166
d Romford (Harold Wood) .....	J. G. Broodbank, Esq..	5	4 0	120	21-44	172
d " (Herongate House) ...	H. A. F. Chambers, Esq.	5	1 9	240	23-32	195
d Havering Grange .....	G. P. Hope, Esq. ....	5	1 0	255 $\pi$	23-32	200
d " -atte-Bower (Fernside)	Benjamin Smith, Esq..	5	1 0	341 $\tau$	24-52	206
d Chigwell (Grange Court) .....	Hon. Cecil Baring .....	5	1 0	190 ?	21-62	160
d Theydon Bois (Thriffs Hall) ...	H. B. Debenham, Esq..	5	0 9	200	22-37	195
Epping (The Hemnalls) .....	A. Nicholl, Esq.....	8	0 8	345	25-88	...
d North Weald (Canes) .....	H. W. Hart, Esq. ....	5	1 11	250 ?	21-01	147
<b>3.—CROUCH. 186 sq. mi.</b>						
d Shoeburyness .....	Superintendt. of Expts.	8	1 0	13 $\pi$	19-73	157
" " M	" " "	5	1 0	13 $\pi$	19-12	...
d Southend (Corporation Obsy.) ...	E. J. Elford, Esq., C.E.	8	1 0	90	19-00	150
d " (Broadway) .....	H. J. G. Ralph, Esq..	5	1 0	85 $\beta$	18-49	161
d " (Water Works) .....	Southend Water Wks Co	8	1 0	112 $\pi$	20-53	172
d Leigh Reservoir .....	" " "	5	1 0	117 $\pi$	20-04	152
d Eastwood Pumping Station .....	" " "	8	1 0	50 $\pi$	20-99	173
Thundersley Reservoir .....	" " "	5	1 0	277 $\pi$	20-93	...

## DIVISION IV.—EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with 0.1 or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
ESSEX—(con.)							
3.—CROUCH—(con.)							
D Rayleigh.....	A. H. Goodall, Esq. ...	5	1	0	275 B	21.35	168
Nevedon Pumping Station .....	Southend Water Wks Co	5	1	0	43 A	20.82	...
D Billericay (Service Tank) .....	" " " "	5	1	0	310 A	23.37	162
D " (Ramsden Hall) .....	T. W. Bacon, Esq. ....	5	0	9	260 A	23.41	168
D Wickford (Runwell Hall).....	Lt.-Col. H. Kemble ...	5	1	0	75 T	26.19	158
Rettendon Rectory .....	Rev. G. Evans-Gwynne	5	0	5	120	20.80	...
Southminster (The New Moor)...	E.J. Attenborough, Esq.	...	...	...	...	20.35	...
Bradwell-on-Sea (Bradwell Hall)	J.C. Chillingworth, Esq.	5	1	1	27	19.29	...
4.—BLACKWATER. 425 sq. mi.							
D Brentwood (Shenfield, The Lodge)	H. P. Landon, Esq. ...	5	0	7	303 A	21.94	152
South Hanningfield .....	Meteorological Office ...	...	...	...	134	22.59	...
D Cold Norton (Latchingdon Rec.)	Mrs. Pope .....	5	1	0	175 P	19.56	132
D Ingatestone (Fryerning) .....	A. E. Christy, Esq. ...	5	1	0	291 A	20.68	188
D Maldon (Hazeleigh Rectory) ...	Rev. G. H. Raynor ...	7	1	1	161 A	20.81	156
D Danbury Rectory .....	Rev. J. Bridges Plumptre	5	1	0	365 T	23.17	157
Maldon .....	R. H. Eve, Esq. ....	5	0	8	...	21.54	...
" (Heybridge) .....	E. E. Bentall, Esq. ....	5	0	9	16	22.68	...
D Writtle (Melbourne).....	E. Rosling, Esq. ....	5	0	9	140 T	21.35	176
" .....	R. Woodhouse, Esq. ...	8	2	0	100 P	21.28	...
" (The House).....	Miss Osborne .....	5	4	0	110	23.68	...
Chelmsford (High Street).....	F. Chancellor, Esq. ...	8	1	0	92 A	21.88	178
D " (Spergula) .....	J.C. Thresh, Esq., M.D.	5	1	0	136 T	21.28	155
D " (Springfield Place)...	Miss Jackson .....	5	0	11	143 A	22.85	203
Roxwell .....	R. W. Christy, Esq. ...	5	1	0	180 T	17.66?	...
D Witham (Terling Vicarage).....	H. C. Boutflower, Esq.	5	1	0	115 T	20.46	149
Great Leighs (Lyons Hall) .....	J. H. Tritton, Esq. ...	5	3	0	130 A	20.35	...
Witham (Faulkbourne Hall) ...	Miss C. L. Parker .....	5	0	8	100 P	20.77	194
D Hartford End (Leez Priory).....	ME Hughes-Hughes Esq	...	...	...	190 P	21.08	173
D Kelvedon (Lawn House) .....	F. Randolph-Symmons, Esq.	5	1	0	96	23.38	155
D " (White Barn) .....	W. & H. J. Sheldrake, Esqs.	5	1	5	135 T	21.05	157
D " (Feering Vicarage)...	Rev. A. F. Curtis .....	5	1	0	100 T	24.92	166
Little Dunmow Council School...	Miss M. G. Archer ...	5	1	0	258 T	20.81	...
D Great " .....	Mssrs. Hasler & Clapham	5	0	6	250	19.55	157
Little " (Throws) .....	Miss Webb .....	5	1	4	283 T	20.12	...
Pattiswick Hall.....	H. S. Tabor, Esq. ....	...	...	...	220 P	18.20	...
D Braintree (Bocking, Fennes).....	" " " "	5	1	0	240 T	18.61	141
Great Saling (Saling Grove).....	late Capt. J.N. Harrison	8	1	0	290 T	18.46	...
D Shalford (Littles) .....	W. F. Hart, Esq. ....	5	1	8	260	20.97	181
5.—COLNE & C. 283 sq. mi.							
Mersey Island (Waldegraves) ...	<i>E. Anglian Daily Times</i>	...	...	...	55 P	17.78	...
D Clacton-on-Sea .....	Mr. A. W. Shadick ...	8	1	2	55 A	18.79	145
Great Clacton (Clay Hall) .....	Philip Smith, Esq. ....	5	2	0	45	18.50	145
Fingringhoe (Ballast Quay Farm)	T. B. Grubb, Esq. ....	5	2	0	47	19.66	149
D Walton-on-the-Naze.....	A. G. Bloomfield, Esq.	8	1	0	70 A	19.87	160
Colchester (Berechurch) .....	R. P. Blyth, Esq. ....	5	1	3	120 P	21.14	151
" (King's Ford) .....	Hon. Lady Digby .....	5	1	0	103 T	20.66	194
D " (Borough Surveyor's Office)	H. Goodyear, Esq. ....	8	17	0	82 A	19.71	150

## DIVISION IV.—EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
ESSEX—(con.)							
5.—COLNE & C—(con.)							
d Colchester (Hill House, Lexden)	S. F. Hurnard, Esq. ...	5	1	0	90 T	19.45	153
„ ( „ „ „ ) M	„ „ „ „ „ „	5	1	0	90 T	19.19	...
„ (Home Farm, „ „)	Mr. W. Bird .....	5	1	0	125 T	19.49	...
Great Bromley (Broughton).....	W. Arnold Roberts, Esq. ....	5	1	3	115 T	21.26	...
Earls Colne (Chalkney House)...	H. F. Hills, Esq. ....	5	1	3	188 T	20.90	138
d Manningtree (Bradfield Lodge)...	G. Hempson, Esq. ....	5	1	0	113 T	19.79	139
d Halstead (The Brewery) .....	E. T. Adams, Esq. ....	5	1	0	140 T	21.06	157
d „ (Grammar School).....	Miss Coles .....	7	1	0	220 T	19.74	158
Great Maplestead (Monk's Lodge)	T. F. Miller, Esq. ....	5	0	9	245 T	20.08	...
d Great Yeldham (The Oak House)	G. A. Goodchild, Esq. ..	5	1	6	150	18.57	145
Ridgewell (Ridgewell Hill) .....	Miss E. E. W. Gurney	5	1	0	269 T	19.08	164
6.—STOUR. 110 sq. mi.							
Harwich (Coastguard Station)...	Mr. W. Bevan .....	5	1	0	40	18.34	...
Manningtree (High Street) .....	<i>E. Anglian Daily Times</i> ...	...	...	...	...	22.50	...
d Lawford (Dale Hall).....	W. H. Richardson, Esq. ....	5	1	0	110 T	21.87	154
d Dedham (Dalethorpe) .....	J. D. Tremlett, Esq. ....	5	1	1	54	21.40	171
Langham Rectory .....	Rev. T. S. Raffles .....	5	0	11	134	19.82?	186
d Bulmer Lodge [Sudbury].....	Miss Burke.....	5	1	3	200 T	22.72	175
Walter Belchamp (Eyston Hall)	Capt. J. A. Daniell ...	5	2	0	187 T	19.10	...
7.—OUSE. 80 sq. mi.							
Arkesden (Wood Hall) .....	Charles Beadle, Esq. ....	5	1	0	380	22.99	138
d Great Chesterford Mills .....	Ernest H. King, Esq. ....	5	1	0	130	18.33	174
„ „ (Boro' Farm)...	„ „ „ „ „ „	5	1	0	125	16.23?	..
SUFFOLK. (Area, 1489 sq. mi.)							
1.—STOUR. 271 sq. mi.							
d East Bergholt (Ackworth House)	A. Harwood, Esq. ....	8	1	6	145	19.65	175
Capel St. Mary School .....	B. B. Taylor, Esq. ....	5	1	0	135 ?	22.84	181
d Sudbury (Great Cornard).....	A. B. Legard, Esq. ....	5	1	0	100 ?	20.81	161
d „ (Cornard Road) .....	W. I. Tait, Esq., C.E. ....	5	1	3	90 T	19.29	165
d „ (Lunt Fall Reservoir)...	„ „ „ „ „ „	5	1	3	194 T	19.20?	180
d „ (Friars Street) .....	E. Ransom, Esq. ....	5	1	7	93 T	20.51	197
d Haverhill Vicarage .....	late Rev. H. C. Newbery	5	...	...	...	20.66	164
Hitcham Rectory .....	Rev. R. R. Cobbold ...	5	1	5	255 T	21.64	180
Stansfield (Cordell Hall) .....	J. Slater, Esq. ....	5	1	0	300 T	21.78	...
Hartest (Hop Hall) .....	Sheriff A. Long, Esq. ....	5	1	6	300	21.51	180
d Hawkedon Rectory .....	Rev. B. P. Oakes .....	5	3	4	305 T	23.26	247
d Wickhambrook Schools.....	W. Brown, Esq. ....	5	1	3	390	20.23	166
d Cockfield Rectory .....	Rev. Edwin Hill .....	5	1	0	305 T	20.85	159
2.—ORWELL. 166 sq. mi.							
d Trimley (The Avenue) .....	G. Binyon, Esq. ....	8	1	0	80 T	23.41	170
d Ipswich (Woolverstone Park) ...	C. H. Berners, Esq. ...	8	1	0	100 T	22.88	185
d „ (Orwell Park) .....	E. G. Pretymann, Esq. MP	8	1	0	60 T	22.28	188
„ (Belstead Hall) .....	R. Wilson, Esq. ....	5	1	0	100	23.93	175

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## DIVISION IV.—EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>SUFFOLK—(con.)</b>						
<b>4.—YARE &amp; C—(con.)</b>						
D St. Olave's Priory (Paddock) ...	Surg.-Gen. W. A. S. Wynne	8	1	2	10 $\nabla$	22.33 172
D " " " (Boat House)	" " " "	5	1	0	9 $\nabla$	22.86 177
D Burgh Hall [Yarmouth] .....	H. P. Frederick, Esq...	8	0	6	45 $\nabla$	21.82 168
<b>5.—OUSE. 378 sq. mi.</b>						
Bradfield St. George .....	R. W. Thompson, Esq.	5	0	10	300	19.09 149
Drinkstone .....	J. E. Townsend, Esq...	5	3	0	220 ?	19.35 ...
D Little Saxham Rectory .....	Rev. H. I. Kilner .....	8	0	10	220	22.39 175
D Bury St. Edmunds .....	J. R. Burdon, Esq.....	5	1	0	185	20.33 157
D " " " (Westley) ...	R. Burrell, Esq.....	5	1	0	226 $\nabla$	22.81 156
D† Walsham-le-Willows .....	Mr. J. Pamment .....	5	1	0	140	22.36 180
Herringswell Rectory .....	Rev. E. H. Wright ...	5	0	6	...	18.72 ...
†Barningham (The Beeches) ... M	Miss A. K. Lingwood ..	8	0	9	136	18.24 ...
D Elveden Hall .....	Viscount Iveagh, K.P..	5	1	0	130 $\nabla$	22.84 196
Brandon (North Court Lodge) ...	Mr. T. Caiger.....	5	2	0	50	16.93? 154
<b>NORFOLK. (Area, 2044 sq. mi.)</b>						
<b>1.—YARE. 658 sq. mi.</b>						
Diss (The Cedars) .....	Dr. H. M. Speirs .....	5	0	9	108 $\nabla$	19.46 146
D Pulham St. Mary .....	W. G. Rutter, Esq. ...	5	1	2	...	23.96 180
" " " School .....	W. H. Pumfrey, Esq...	5	1	0	131 $\nabla$	23.31 155
D Geldeston [Beccles] .....	E. T. Dowson, Esq. ...	5	1	0	38 $\nabla$	22.25 189
" " " [ " ] .....	" " " " " .....	8	1	0	38 $\nabla$	21.39 ...
Long Stratton (Gt. Moulton Rec.)	Rev. T. D. Chute .....	5	1	3	150	23.11 ...
D " " (Fritton Rectory)..	Mrs. Howes .....	5	1	0	120 $\nabla$	21.37 173
D Ditchingham .....	W. G. Rutter, Esq. ...	5	1	0	...	23.35 154
D Hedenham Rectory ...	Ven. Dr. T. H. Bindley	5	1	0	104 $\nabla$	23.32 180
D Toft Monks School.....	W. B. Alexander, Esq.	5	1	0	60 $\nabla$	22.70 188
Spooner Row (Wattlefield Hall)	E. F. Routh Clarke, Esq.	5	1	5	165 ?	21.63 168
D Raveningham Hall [Beccles] ..	N. H. Bacon, Esq. ...	8	1	3	75 ?	22.29 143
D Saxlingham Nethergate .....	Mrs. Pitt .....	5	1	5	...	22.17 158
D Thurlton School... ..	H. W. Robinson, Esq..	5	1	0	20	22.01 160
Loddon (Langley Park) .....	Mr. A. Bentley ..	5	2	2	80	20.32 ...
D Wymondham .....	J. B. Pomeroy, Esq. ...	8	1	3	118 $\nabla$	23.78 170
D Hingham Hall .....	E. Noel, Esq.....	5	1	1	190 $\nabla$	21.11 172
D Dunston Hall... ..	A. W. Preston, Esq.	5	4	0	100 ?	23.11 152
D† Keswick Old Hall .....	E. Knight, Esq.....	5	1	0	90 ?	23.90 180
D Hethersett (Cedar Grange) .....	F. A. Bainbridge, Esq.	5	0	9	150 $\nabla$	24.14 178
Yarmouth (Sailors' Home) .....	Meteorological Office...	8	4	0	27	22.57 160
D " (Northgate St.) <i>Snowdon g.</i>	G. W. Hughes, Esq....	5	1	0	7 $\nabla$	21.83 166
D " { " " } <i>Glaisher g.</i>	" " " " .....	8	0	11	7 $\nabla$	22.33 166
D " { " " } <i>Howard g.</i>	" " " " .....	5	1	0	7 $\nabla$	21.09 166
D† Norwich (Christ Church Rd. Eaton)	A. W. Preston, Esq....	5	1	0	98 $\nabla$	24.42 184
" (Carrow House) .....	Miss Colman .....	5	1	3	35 $\nabla$	22.96 ...
D Brundall (Blofeld Road) .....	A. W. Preston, Esq....	5	1	0	55	20.86 140

DIVISION IV.—EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground.			
		in.	ft.	in.	feet.	inches.
NORFOLK—(con.)						
1.—YARE—(con.)						
D Norwich (Ipswich Road) .....	J. H. Willis, Esq.....	5	1	0	110 T	24·37 163
D „ (Heigham Cemetery)...	A. W. Preston, Esq....	5	3	2	37 T	22·94 182
D Honingham Hall .....	Rt. Hon. Sir A. E. Fellowes	10	4	10	100 ?	19·40 182
D Drayton .....	A. W. Preston, Esq....	...	...	...	...	22·49 201
D Bylaugh Park Gardens .....	Mr. G. Beeton .....	5	1	0	130 T	22·67 160
D Swanington Rectory .....	Rev. G. B. Atkinson...	5	2	7	90 T	20·28 179
D Great Massingham .....	W. S. Freuer, Esq. ...	5	3	2	245 T	22·40 152
D Reepham (Old Brewery House)..	S. Bircham, Esq. ....	...	...	...	150	22·07 162
D Cawston Rectory .....	A. W. Preston, Esq. ...	5	1	0	120	20·96 159
D East Rudham.....	Miss F. E. Mays .....	5	2	0	140	20·57 182
2.—YARE—Bure & c. 368 sq. mi.						
Moulton .....	A. W. Preston, Esq....	4	...	...	...	20·30 ...
D Acle.....	„ „ „ .....	5	0	6	51	22·74 180
D Sprowston Hall .....	Sir Eustace Gurney ...	5	1	0	90 T	23·10 176
D Yarmouth (Ormesby St. Michael)	Gt. Yarmouth W. W. Co.	8	1	0	21 T	24·56 227
D Coltishall.....	A. W. Preston, Esq....	...	...	...	...	22·39 169
Aylsham (Rippon Hall) .....	Major H. S. Marsham..	5	0	6	90 ?	22·55 ...
D „ (Millgate) .....	A. W. Preston, Esq....	5	1	0	40	21·30 163
D „ (Burgh Road) .....	J. H. Gillett, Esq.....	5	1	0	86 T	20·92 191
D Worstead (Dilham) .....	A. W. Preston, Esq. ...	5	0	8	...	25·16 205
D „ (The Rookery, Dilham)	H. Morse Taylor, Esq... 5	28	0	53 T	22·88 149	
D „ (Lyngate Cottage) ...	R. J. Cross, Esq. ....	8	1	0	55 T	23·31 156
D „ (The Grange) .....	Rev. F. W. Walter ...	5	3	0	40 T	22·55 160
North Walsham (Beech Grove)...	Sydney Hare, Esq.....	5	1	0	140	23·16 169
D „ „ (Empson House)	W. S. Horn, Esq. ....	5	1	0	102 T	22·01 167
„ „ (Gunton Park)...	A. W. Preston, Esq....	...	...	...	...	20·67 ...
Wickmere .....	J. Blott, Esq.....	5	6	3	150	18·20 185
Mundesley-on-Sea .....	R. W. Cross, Esq.....	8	1	2	65	19·18 ...
D Baconsthorpe Rectory .....	Rev. H. Milnes Walker	5	1	3	280 T	18·19 156
D Cromer (Northrepps Hall) .....	Mrs. R. Gurney.....	5	1	4	200	21·63 188
3.—STIFFKEYS & C. 288 sq. mi.						
Little Massingham.....	Meteorological Office...	...	...	...	280	22·39 183
D Sandringham House Gardens ...	Mr. T. H. Cook .....	5	1	1	121 T	21·68 183
Cromer .....	W. H. Archer, Esq. ...	8	1	0	197 T	16·20? 203
D „ (The Warren) .....	F. H. Barclay, Esq. ...	8	1	8	...	19·55 164
D Sheringham Hall .....	Miss E. Upcher .....	...	...	...	...	20·64 151
D Blakeney .....	Mr. R. Lee .....	5	1	3	29	17·17? ...
D „ .....	A. W. Preston, Esq. ...	...	...	...	...	20·11 215
Wells (Holkham Hall) .....	Earl of Leicester, G.C.V.O.	12	4	6	43	20·19 ...
4.—OUSE & C. 683 sq. mi.						
Riddlesworth Hall Gardens .....	Mr. H. Simpson .....	5	1	0	80 ?	19·57 ...
D† Thetford (Waterworks) .....	Mr. E. S. Greenwood...	8	1	0	170 T	20·18 173
D „ (Ford Street Gardens)...	Mr. A. Pipe.....	5	1	0	44	19·47 144
Kenninghall .....	A. B. Smith, Esq. ....	5	0	6	100 ?	18·92 ...
Quidenham Hall.....	Mr. H. Courtney .....	5	1	0	100 T	20·14 144







## DIVISION V.—SOUTH WESTERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>WILTSHIRE. (Area, 1375 sq. mi.)</b>						
<b>1.—LOWER AVON. 386 sq. mi.</b>						
D Corsley (Sturford Mead) .....	H. Theodore Cookson Esq.	5	0	9	460 $\nabla$	33·79 204
D Edington Vicarage .....	Rev. E. C. Alexander..	5	0	8	334	29·54 167
D Erlestoke Vicarage .....	Rev. H. S. Travers ...	5	0	6	320 $\nabla$	29·94 164
Market Lavington .....	Miss A. P. Bouverie ...	5	0	10	290 $\nabla$	28·19 183
D " " (Littleton Panell)	W. A. Wilson, Esq. ...	5	1	0	296 $\nabla$	28·84 172
D Trowbridge W.W. (Biss Bottom)	W.W. Gray, Esq., C.E.	5	1	0	311	31·80 190
D " (Rood Ashton) .....	Mr. W. Strugnell .....	8	1	6	250	33·70 217
D " (Wingfield) .....	T. H. Clark, Esq. ....	5	1	0	190	27·54 168
" .....	<i>Wiltshire Times</i> .....	5	...	...	160	30·47 ...
D Bradford (Winsley Manor) .....	E. W. Knatchbull, Esq.	5	0	6	400	28·66 188
" (Bearfield House) .....	G. A. R. FitzGerald, Esq.	5	1	10	290 $\nabla$	29·11 176
D " (Woolley Grange) .....	P. K. Stothert, Esq., C.E.	5	0	8	216 $\nabla$	30·23 230
D " (Manvers House) .....	Dr. C. E. S. Flemming	5	0	9	130	30·33 187
Seend (Cleeve House) .....	(R) W. Heward Bell, Esq..	...	1	0	160 $\nabla$	26·36 173
D Holt (The Retreat) .....	A. V. H. Beaven, Esq.	5	2	6	145 $\nabla$	26·89 190
Devizes (Wilts Co. Asylum) ...	Dr. J. Ireland Bowes...	8	2	3	385 $\nabla$	27·28 ...
D " (Southbroom House) ...	Mr. W. Pike .....	5	1	0	434 $\nabla$	29·83 202
D Calne (High Street) .....	E. W. Brown, Esq. ....	4	1	0	242	26·81 183
" (Compton Bassett Gardens)	Lt-Col A. W. H. H. Drake	6	1	0	500 $\nabla$	29·32 191
D Chippenham (Kington Langley).	Charles Garnett, Esq. ...	5	1	0	270	28·55 164
D Wroughton (Basset Down House)	Mrs. Story Maskelyne..	5	1	0	500 $\nabla$	26·82 161
D Wootton Bassett (The Lime Kiln)	the late H. Bevir, Esq.	5	1	6	422 $\nabla$	27·15 175
Malmesbury (Cowbridge House).	Meteorological Office ...	5	1	0	236	29·71 174
D " (Charlton Cottage).	Countess of Suffolk ...	6	0	9	400	29·89 183
<b>2.—STOUR. 33 sq. mi.</b>						
D Mere (Charnage) .....	A. R. White, Esq. ....	5	1	0	426 $\nabla$	31·87 207
D Stourhead .....	Sir H. Hoare, Bart. ...	5	1	0	583 $\nabla$	34·90 168
D Kilminster Rectory .....	Rev. H. A. Boys .....	5	1	6	710 $\nabla$	38·78 248
<b>3.—EAST AVON. 554 sq. mi.</b>						
D Donhead St. Mary (Charlton Ho.)	Dowager Lady Wynford	5	0	7	515	38·22 175
D Longford Castle .....	The Earl of Radnor ...	5	1	0	141 $\nabla$	32·85 182
D Tisbury (The Academy) .....	J. Bristol, Esq. ....	5	0	9	380 $\nabla$	33·44 182
D East Knoyle (Slades) .....	E. H. Miles, Esq. ....	5	2	0	590 $\nabla$	33·51 194
D Fonthill House Gardens .....	Hugh Morrison, Esq. ...	5	0	10	400	35·11 201
D Salisbury .....	W. J. Goodwin, Esq., C.E.	5	2	2	153 $\nabla$	29·70 172
D " (Fowlers Hill) .....	Mrs. T. Awdry .....	5	1	0	225 $\nabla$	29·32 165
D† " (Brown Street) .....	late T. H. Baker, Esq.	5	1	0	155 $\nabla$	32·35 248
" (Castle Street) .....	C. H. De Mello, Esq. ...	5	3	6	150	28·69 ...
D " (Atherton House) .....	Wilfred Fletcher, Esq.	5	0	11	250	31·41 204
" (Wilton House) .....	Mr. T. Challis .....	8	1	0	180 $\nabla$	38·83 228
D Stratford-sub-Castle (The Manor Ho.)	J. Carpenter, Esq. ....	5	0	9	165 $\nabla$	28·84 174
Woodford (Court House) .....	Mrs. E. G. Chetwynd Stapylton	5	0	10	200	31·22 170
D Codford St. Mary (Stockton Ho.)	G. Knowles, Esq. ....	5	1	0	260	33·83 213
D Maiden Bradley .....	The Duke of Somerset..	5	2	0	626 $\nabla$	35·12 200
Sutton Veney (Greenhill) .....	R. W. Pretor-Pinney, Esq.	5	1	0	390	32·68 ...
D Warminster (Rye Hill) .....	Stiles E. Jefferys, Esq..	8	2	0	466 $\nabla$	33·72 220

DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
WILTSHIRE—(con.)						
3.—EAST AVON—(con.)						
† Warminster (Bishopstrow) .....	P. Benton, Esq. ....	5	1	10	380 T	31.42 190
D Cholderton Rectory .....	Rev. A. E. Brisco Owen	8	1	0	320 A	31.20 200
Salisbury Plain (Chitterne House)	Miss S. Prangle .....	11	4	0	319 T	27.10 ...
D † Salisbury Plain (Shrewton) .....	F. J. Wardale, Esq. ...	5	0	9	322	28.81 192
Collingbourne Kingston .....	Baldwin Latham Esq. CE	5	1	0	470 A	33.79 ...
D Chirton Old Manor House .....	Mr. T. Selfe .....	5	3	0	374	28.01 180
D Pewsey (Wilcot) .....	W. R. Wilbraham, Esq.	5	0	6	415 A	28.76 197
„ (Stowell Park) .....	J. H. Smith-Barry, Esq.	5	1	0	470	29.28 ...
D Bishops Cannings .....	Mrs. H. H. Mogg .....	5	1	0	446 A	29.16 191
4.—TEST. 77 sq. mi.						
Landford (Northlands) .....	Mrs. Wigram .....	5	1	10	167 A	29.88 201
D Ludgershall (Conholt Park) .....	E. A. Wigan, Esq. ...	5	1	3	800 T	34.67 171
5.—THAMES—Kennet. 169 sq. mi.						
D Grafton (Wexcombe) .....	K. A. MacAndrew, Esq.	5	1	0	570 T	35.81 184
Shalbourne (The Manor) .....	Mr. J. H. Brown .....	5	1	0	580 ?	31.06 ...
Marlborough (College) .....	Meddows Taylor, Esq. ..	5	1	0	425	30.73 166
D „ (Mildenhall) .....	Rev. Gordon Soames ...	5	1	0	456	29.15 152
D Ramsbury (Eastridge) .....	Mr. A. Stainford .....	6	0	6	600	29.74 188
D Aldbourne (The Warren) .....	Henry Brown, Esq. ...	5	1	0	550 T	29.52 184
D „ (Upham House) .....	Miss Hanbury .....	5	1	6	875	28.66 182
6.—THAMES—Cole & c. 156 sq. mi.						
D Wroughton (Water Works) .....	H. J. Hamp, Esq. ....	8	1	3	450	26.47 173
„ (Burderop Park) ...	A. Ashford, Esq. ....	5	0	9	570	26.39 ...
D New Swindon .....	H. J. Southwell, Esq. ...	8	0	11	378	26.35 193
D South Marston Vicarage .....	Rev. A. Macdonald ...	5	1	0	310 ?	23.77 161
D Highworth (Hannington Hall) ...	Mrs. Hussey-Freke ...	5	1	0	375	26.64 176
DORSETSHIRE. (Area, 988 sq. mi.)						
1.—PARRETT. 61 sq. mi.						
D Evershot (Melbury House) .....	Mr. R. Rintoul .....	5	1	6	500	37.78 166
D Chedington Court .....	Sir Henry Peto, Bart. ...	5	1	0	605	37.64 181
D Leigh Vicarage .....	Dorset Field Club .....	...	1	0	250 ?	37.56 168
D Sherborne Castle .....	Mr. T. Turton .....	5	1	0	195 T	33.45 202
2.—AXE. 25 sq. mi.						
Broadwindsor Vicarage .....	Mrs. Brown .....	5	0	7	535 T	41.87 198
D „ (Blackdown House) .....	C. E. M. Pinney, Esq. ..	5	0	9	515	40.81 214
3.—FROME & C. 502 sq. mi.						
Portland Bill (New Lighthouse).	Meteorological Office ...	8	1	0	37	24.21 158
D „ (Easton) .....	R. S. Henshaw, Esq. C.E.	5	1	6	265 A	27.88 175
D „ (H.M. Naval Depôt) ..	H. A. Brain, Esq., C.E.	8	1	5	23 A	29.97 170
D Weymouth (Westham) .....	J. H. Bolam, Esq. ....	5	1	0	25	26.06 161
D „ (Massandra) .....	H. W. Green, Esq. ...	5	1	6	40 B	28.48 173
D Chickerell (Montevideo) .....	Mrs. N. M. Richardson	5	1	0	100	28.37 188
East Fleet (Fleet House) .....	Dorset Field Club .....	5	1	2	40	27.62 ...
D † West Lulworth Vicarage .....	Rev. W. Percy Schuster	5	1	0	128 A	27.88 159

## DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height above Ground.	Height above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>DORSETSHIRE—(con.)</b>						
<b>3.—FROME &amp; C.—(con.)</b>						
D East Lulworth Vicarage .....	Dorset Field Club .....	5	0 9	173	32·51	156
Creech Grange .....	J. W. G. Bond, Esq....	5	1 2	240 T	34·92	...
D Abbotsbury (New Barn) .....	J. C. P. White, Esq....	5	1 6	111 T	28·38	192
D Upwey (Portland W. W.) .....	R. S. Henshaw, Esq. C.E.	8	1 0	290 T	31·05	190
D Warmwell (Warmwell House)...	Lord Wynford .....	5	0 10	155 T	34·15	178
D Wareham (East Holme) .....	Dorset Field Club .....	5	1 0	24 T	33·91	162
Stoborough (King Barrow) .....	L. G. Pike, Esq.....	5	0 9	14	32·65	...
D Wareham (Worgate Hill) .....	Mr. W. Sargent .....	5	1 1	108 T	32·36	204
D „ (South Street) .....	S. W. Bennett, Esq. ...	5	2 6	18	34·41	179
D „ (Binnegar Hall) .....	Lt.-Col. P. Farrer .....	5	1 0	65	34·21	179
D „ (Trigon) .....	Mrs. L. Sturdy .....	8	1 4	60 T	31·22	166
D Herringston House .....	Dorset Field Club .....	5	...	...	35·68	153
D Abbotsbury (Littlebredy) .....	Rev. A. C. Moule .....	5	0 9	355	35·11	155
D Dorchester Water Works .....	H. D. Strange, Esq. ...	8	1 0	315 T	35·78	178
D „ (Wollaston House) ...	Capt. J. E. Acland .....	5	1 0	200 T	36·00	179
D Poole (Parkstone) .....	W. H. Symes, Esq. ...	5	1 3	160 T	33·08	172
D† Branksome (Bourne Valley) .....	H. W. Woodall, Esq....	8	1 3	84 T	33·06	162
„ (Alderney Reservoir) .....	„ „ „ „ „ „ „ „ „ „	8	1 3	213 T	27·43?	...
D Broadstone (Lypiatt Cottage) ...	F. W. Beckford, Esq....	5	1 0	220 B	37·61	247
D Lyme Regis (Post Office) ....	J. G. Pulsford, Esq. ...	5	1 0	55	30·92	157
D „ „ (Holme Cleve) .....	Mrs. Cave .....	5	1 0	230 T	29·62	157
D „ „ (Highcliff) .....	Miss G. Lister .....	5	1 3	330 T	32·27	154
D Charmouth (Leslie Cottage) .....	M. E. Mills, Esq. ....	8	1 3	120 T	30·82	185
„ ( „ „ ) weekly .....	„ „ „ „ „ „ „ „ „ „	5	1 0	120 T	30·47	...
D Bridport (Coneygar) .....	H. Gordon, Esq., C.E..	5	1 0	110 T	32·46	172
D Bradford Peverell House .....	Mrs. Middleton .....	6	1 1	381	38·01	179
D Charminster (Brooklands) .....	Dorset Field Club .....	8	1 3	...	34·17	161
D Puddletown Vicarage .....	Rev. A. Helps .....	5	2 8	195	36·31	175
Wynford House Gardens .....	Mr. F. Hansford .....	5	0 6	410	42·94	156
D „ Eagle .....	F. M. Walter, Esq. ...	5	0 11	...	36·87	187
D Bere Regis (Barrow Hill) .....	Mr. A. C. Lucas .....	5	1 0	120	35·56	161
„ „ (Bloxworth Rectory) .....	Rev O. P. Cambridge FRS	5	1 6	205 T	34·75	...
D „ „ ( „ „ House) .....	F. G. A. Lane, Esq. ...	5	1 6	118	37·50	176
Netherbury .....	B. J. T. Stott, Esq.....	5	1 0	143 T	36·56	186
D Maiden Newton (Cattistock Lodge)	Major H. H. F. Fagan	5	1 0	361 T	42·06	195
D Beaminster Vicarage .....	Miss D. Hutchings .....	5	1 0	216 T	35·71	193
D „ (Hamilton Lodge) ...	Fiennes Trotman, Esq.	5	1 0	210 T	35·38	196
D Milton Abbas (Milton Abbey) ...	Mr. C. H. Perkins .....	5	0 10	333 T	41·16	190
<b>4.—STOUR. 388 sq. mi.</b>						
Kinson (Eglington) .....	W. C. Keevil, Esq. ...	5	0 6	44 T	35·25	199
Wimborne (Corfe Mullen) .....	G. V. Sparrow, Esq., C.E.	5	1 6	82	34·27	...
„ ( „ „ Forest Hill) .....	E. Philip Belben, Esq.	8	2 0	300	34·72	169
D Winterbourne Whitchurch Vic..	Rev. H. H. T. Bassett.	8	0 6	241	37·64	160
D Sturminster Marshall (Bailie Ho.)	Rev. J. Cross .....	5	0 6	85	34·26	171
„ „ „ „ „ „ „ „ „ „	„ „ „ „ „ „ „ „ „ „	...	...	85	34·06	...
Wimborne (Westfield) .....	Countess of Moray .....	5	...	...	34·87	...
D „ (St. John's Hill) .....	E. H. Widnell, Esq....	5	1 0	146 B	35·63	188

DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level		
		in.	ft.	in.	feet.	inches.	
DORSETSHIRE—(con.)							
4.—STOUR—(con.)							
D Wimborne (Codford House).....	GHBatterbury, Esq. MD	5	0	9	69 T	34.74	207
D „ (Stoneham) .....	H. J. Tuck, Esq. ....	5	1	0	200 T	33.06	158
Witchampton ..	Miss A. L. Homer .....	5	1	0	130 T	35.58	...
Blandford (Bryanstone Gardens)	Mr. J. Jaques .....	5	1	0	155	41.60	...
D Horton Vicarage .....	Rev. G. Wellington ...	5	1	0	133 T	31.45	188
D Holwell (Westrow House) .....	W. Warry, Esq. ....	5	1	0	252	36.69	152
D Wimborne St. Giles (St. Giles Ho.)	Earl of Shaftesbury ...	5	1	0	165 T	36.02	173
D Gussage St. Michael Manor .....	Miss Ellen Good .....	5	1	3	200	36.91	156
Iwerne Courtney (Ranston) .....	Sir R. L. Baker, Bart. MP	5	1	7	180 ?	32.71	...
D Sturminster Newton (Riverside).	A. R. Hallett, Esq. ...	5	5	0	205	31.75	156
D „ „ Vicarage..	Dorset Field Club .....	5	2	7	180 T	32.13	166
D Iwerne Minster House Gardens..	J. H. Ismay, Esq. ....	5	1	0	244 T	35.05	180
D „ „ „ „ (R) „ „ „ „	„ „ „ „	8	1	1	244 T	35.01	172
D Fontmell Magna .....	Dr. T. Appleyard .....	8	1	8	260 T	30.80	172
Ashmore Rectory .....	Rev. A. J. Reed .....	8	1	3	700	38.25	178
D Shaftesbury .....	Rev. F. Ehlers .....	5	1	2	722	28.36	179
D Buckhorn Weston Rectory .....	Rev. W. Hughes D'Aeth	5	1	0	285	29.57	183
D Gillingham .....	S. H. Stephens, Esq....	5	1	2	244 T	31.78	184
5.—EAST AVON. 12 sq. mi.							
SOUTH DEVON. (Area, 1707 sq. mi.)							
1.—PARRETT. 7 sq. mi.							
2.—TAMAR & C. 395 sq. mi.							
D† Plymouth (The Hoe).....	H. Victor Prigg, Esq. CE	8	1	0	116 T	36.47	199
D „ (Drake's Reservoir)...	F. Howarth, Esq., C.E.	5	1	0	149 T	37.79	181
D „ (Hartley Reservoir)...	„ „ „ „	5	1	0	321 T	41.17	196
D „ (Freedom Fields).....	H. Victor Prigg, Esq. CE	8	1	0	208 T	38.84	190
D Devonport (Rowdens Res.) .....	F. W. Lillierap, Esq., CE	5	1	0	201 T	35.64	203
D Plympton (Leigham).....	Vere Cholmondeley, Esq	5	1	0	50	42.15	207
D Bickley (Roborough Reservoir)..	F. Howarth, Esq., C.E.	5	1	0	548 T	47.39	230
D Bere Alston (Mount Tamar).....	T. Ching, Esq. ....	5	2	0	350	43.07	215
D „ „ (Rumleigh) .....	Sir A. W. Croft, K.C.I.E.	5	1	6	125 T	43.57	198
Sheepstor Vicarage .....	Rev. H. H. Breton .....	8	1	0	710 T	66.31	239
„ „ „ „ M	F. Howarth, Esq., C.E.	5	1	0	1024 T	49.30	...
D „ (Red Stone) .....	„ „ „ „	5	1	0	763 T	67.93	240
D „ (Burrator) .....	„ „ „ „	5	1	0	755	65.80	240
D „ (Head Weir).....	„ „ „ „	5	1	0	720	56.95	240
D Dousland Reservoir .....	F. W. Lillierap, Esq. C.E.	5	1	0	721	56.92	224
D Dartmoor (Deancombe Farm) ...	F. Howarth, Esq., C.E.	5	1	0	830 T	63.56	182
D „ (Leather Tor Farm)...	„ „ „ „	5	1	0	910 T	69.47	217
„ (Siwards Cross)..... M	„ „ „ „	5	1	0	1200 T	69.09	...
„ (Cramber Tor) .....	„ „ „ „	5	1	0	1435 T	58.74	...
D Tavistock (Statsford, Ashbrook)..	Rev. H. B. Grylls .....	5	1	0	400	51.76	234
D „ (Langstone, Moortown)	Col. H. F. Coleridge ...	5	1	0	700	57.57	227
D „ (Public Library) .....	John Quick .....	8	20	0	283 T	44.28	209
D „ .....	W. J. Monk, Esq. ....	5	1	0	375 T	49.24	220

## DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>SOUTH DEVON—(con.)</b>						
<b>2.—TAMAR &amp; C—(con.)</b>						
Dartmoor (Leeden Tor).....	M F. Howarth, Esq., C.E.	5	1 0	1270 $\pi$	52·80	...
„ (N. Hessary Tor) No. 1	„ „ „	5	1 0	1625 $\pi$	60·46	...
„ ( „ „ ) No. 2	„ „ „	5	1 0	1502 $\pi$	62·66	...
Marytavy Rectory.....	Rev. Irvine K. Anderson	8	1 0	560 $\pi$	50·32	...
Milton Abbot (Endsleigh).....	Mr. F. Yole	5	1 0	180 $\uparrow$	49·86	...
d Lifton (Kelly House).....	Rev. Maitland Kelly...	8	2 6	462 $\uparrow$	50·65	209
Coryton Manor .....	R. L. Newman, Esq....	5	1 2	...	49·29	215
d Lydford (Long Ridge) .....	H. Pollock, Esq. ....	4	0 6	800	55·58	172
d Polapit Tamar [Launceston] ...	R. C. Coode, Esq. ....	5	1 0	315 $\pi$	42·57	217
<b>3.—ERM &amp; C. 217 sq. mi.</b>						
d†Salcombe (Sandhills).....	W. H. Pike, Esq. ....	5	1 0	118 $\pi$	32·53	182
d† „ (The Park) .....	Capt. J. Partridge .....	5	1 0	40	35·43	183
d† „ (Springfield) .....	Dr. A. Pearce .....	5	1 0	100	35·93	182
†South Huish .....	W. Balkwill, Esq.....	5	5 6	68 $\uparrow$	39·15	...
d†Kingsbridge (Collapit Creek) ...	A.A.Froude, Esq. C.M.G.	5	0 9	50 $\pi$	32·17	200
d†Slapton (Higher Start House) ...	Horace G. Morgan, Esq.	5	1 0	130 $\uparrow$	40·16	216
d Revelstoke (Membland) .....	Mr. G. Baker.....	5	1 0	180 $\uparrow$	39·80	164
d†East Allington (Fallapit Gardens)	W. H. Tucker, Esq. ...	5	1 0	305	47·01	192
d†Dartmouth (Stoke Fleming).....	C. F. Selby, Esq. ....	5	0 9	356 $\pi$	37·24	212
Ermington (Strode) .....	H. Gore Hawker, Esq.	5	1 0	100 $\pi$	41·63	207
d Ivybridge (Woodhay).....	H. Alger, Esq. ....	5	1 0	300	50·69	213
d Ugborough (Venn) .....	Capt. Hon. U. Colborne	5	0 8	500 $\uparrow$	52·50	196
d South Brent (Blackadon Asylum)	H. Victor Prigg, Esq. CE	5	1 0	607 $\pi$	55·31	255
d „ „ (Great Aish).....	Miss Kingwell .....	5	1 0	500 $\uparrow$	60·74	221
<b>4.—DART. 197 sq. mi.</b>						
d Brixham (Lindthorpe) .....	Miss E. M. Lakeman...	5	7 0	120 $\uparrow$	39·58	183
d Paignton (Queen's Park) .....	A. J. Holman, Esq.....	8	1 0	11 $\pi$	35·72	185
d Totnes (Berry Pomeroy) .....	C. Barran, Esq. ....	5	1 0	185 $\pi$	41·61	187
d „ ( „ „ Vicarage)	Rev. H. Cooper .....	5	2 1	130 $\uparrow$	43·49	185
d „ (Staverton).....	J. A. Devenish, Esq. ...	5	0 11	50	42·20	182
d „ (Broadhempston) .....	Charles Mole, Esq.....	5	1 0	135 $\uparrow$	43·18	212
d Buckfastleigh (Harewood) .....	J. S. Trelawny, Esq....	5	1 0	230 $\uparrow$	58·80	188
Ashburton (Landscope).....	A. F. Parbury, Esq. ...	5	1 0	350	51·71	...
d Holne Vicarage .....	Rev. J. Gill.....	5	1 6	650 $\pi$	66·13	211
d Ashburton (Druid House).....	J. S. Amery, Esq. ....	5	1 0	584 $\uparrow$	57·22	208
d „ (Leusdon Vicarage)...	Rev. A. Woolcombe...	5	1 0	900 $\pi$	64·04	207
d Princetown (Huccaby House) ...	Capt. H. H. Joll, R.A.	5	0 11	900 $\uparrow$	62·29	198
d „ (H.M. Prison).....	George Perry, Esq. ...	5	1 0	1359	90·13	244
d „ (Two Bridges) .....	T. C. Bridges, Esq. ...	5	0 9	1170 $\uparrow$	83·55	232
†Dartmoor (Cowsie Valley).....	F. W. Lillierap, Esq., CE	8	1 6	1352 $\pi$	74·15	...
† „ (Black Dunghill) No.5	„ „ „	8	1 0	1590 $\uparrow$	55·50	...
† „ (Beardown Tor) No.3	„ „ „	8	1 0	1550 $\uparrow$	51·40	...
† „ (White Tor) ..... No.1	„ „ „	8	1 0	1640 $\uparrow$	59·00	...
† „ (Devil's Tor)..... No.2	„ „ „	8	1 0	1785 $\uparrow$	52·25	...
† „ (Cowsie Head) ... No.4	„ „ „	8	1 0	1580 $\uparrow$	75·70	...

DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
SOUTH DEVON—(con.)							
5.—TEIGN. 209 sq. mi.							
D Torquay (Cockington Court) ...	Roger C. Mallock, Esq.	5	1	0	180	41.65	169
† „ (Princess Gardens) .....	F. March, Esq. ....	5	1	0	12	32.25	176
D† „ (Cary Green) .....	„ „ „ .....	5	1	0	12	33.17	176
D „ (Roby Hall) .....	Sir J. Edwards-Moss, Bt.	5	1	0	500 T	37.16	203
D Kingskerswell (South Hill) .....	E. A. Foster, Esq. ...	5	1	0	270 T	35.73	189
Abbotskerswell (Court Grange)..	Mrs. Marcus Hare .....	5	1	1	150 B	41.73	178
D Stoke-in-Teignhead Rectory ...	Rev. K. A. Lake .....	5	1	0	100	35.41	179
D Newton Abbot (The Chestnuts)..	E. D. Wylie, Esq. ....	5	0	6	100 T	35.09	193
Teignmouth (Woodlands) .....	<i>Western Daily Mercury</i>	8	1	2	98 T	31.62	162
D „ (Den Gardens) .....	G. Rossiter, Esq. ....	5	1	0	20 T	32.36	158
D „ (Landscore Res.) ...	„ „ „ .....	8	1	0	136	33.94	162
D „ (Hazledown Res.)...	„ „ „ .....	8	2	0	425	31.26	156
D „ (Shaldon) .....	„ „ „ .....	5	1	0	213	36.03	152
D „ (Bonnicliff) .....	Miss M. Horner .....	5	1	0	260 T	35.26	182
D „ (The Shrubbery) ...	E. A. Norton, Esq. ...	8	1	0	275 T	33.86	178
„ (Benton) .....	W. C. Lake, Esq., M.D.	5	1	0	320	30.21	174
„ (Holcombe) .....	<i>Western Daily Mercury</i>	...	...	...	...	32.71	...
Dawlish (The Lawn) .....	S. F. C. Churchward, Esq	5	1	0	18 T	33.69	...
„ (Thorns Reservoir) .....	„ „ „ .....	5	1	0	550 A	37.29	...
„ (Burrows Reservoir) ...	„ „ „ .....	5	1	0	420 A	34.13	...
D Chudleigh (Ideford Rectory) ...	Rev. G. J. Ford .....	5	1	0	300 A	34.02	180
D Ilsington .....	W. J. J. H. Burnett, Esq.	5	1	0	650	49.88	204
D Bovey Tracey (Blenheim House)	Mr. E. E. Underdown..	5	1	0	300	43.34	180
D Hennock Vicarage .....	Rev. A. H. Skipper ...	5	1	0	600	56.98	168
Chudleigh (Trusham) .....	Rev. Offley H. Cary ...	5	0	6	322 T	35.82	176
D Moretonhampstead (Bullaton) ...	S. C. Chapman, Esq., C.E.	8	1	0	928 A	48.12	208
D „ (Mardon) ...	„ „ „ .....	8	1	0	835	44.49	206
North Bovey (Manor House) ...	Mr. G. Laurence .....	5	1	0	700	54.52	203
D Christow (Kennick) .....	S. C. Chapman, Esq., C.E.	8	1	0	836 A	42.52	208
D „ (Smithacott) .....	„ „ „ .....	5	1	6	861 A	45.23	203
D Moretonhampstead (Blackingstone)	„ „ „ .....	8	1	0	1158 A	47.50	204
D Christow (Laployd) .....	„ „ „ .....	5	1	6	1041 A	48.66	202
D Moretonhampstead Rectory .....	Rev. S. D. Dewey .....	5	1	0	600 B	45.46	213
6.—EXE. 445 sq. mi.							
D Mamhead .....	A. F. Parbury, Esq. ...	5	1	0	200	39.39	168
D Starcross (Cofton Vicarage) .....	Rev. C. F. Benthall ...	5	1	9	60	33.20	159
Exmouth (Douglas Avenue) .....	Rev. S. G. Gillum .....	5	0	10	80 B	29.86	165
D „ (Nidderdale) .....	Mrs. Herbert Stewart...	5	1	0	51	29.78	164
„ (Manor Grounds) .....	S. Hutton, Esq., C.E..	5	1	0	13 A	29.39	169
D „ (Filters, Salterton Rd.)	„ „ „ .....	8	8	6	195	33.50	178
„ ( „ Capel Lane)...	„ „ „ .....	5	8	0	240	31.78	177
„ (Marpool Hall) .....	Mrs. Chichester .....	5	1	0	87 T	27.26	...
D Alphington .....	Capt C W M Plenderleath	5	1	0	32 T	33.62	179
D Aylesbeare (Rosamondford) .....	A. T. Loram, Esq. ....	5	0	10	220 T	32.84	163
Exeter (Ide) .....	<i>Devon Gazette</i> .....	8	1	0	130	37.70	...
† „ (Franklyn, St. Thomas)	E. N. Snow, Esq. ....	5	0	8	65	35.42	156
D† „ (Devon & Exeter Inst.)...	J. E. Coombes, Esq. ...	5	13	7	155 A	29.39	174



DIVISION V.—SOUTH WESTERN COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded
		Diameter	Height Above Ground		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>SOUTH DEVON—(<i>con.</i>)</b>						
<b>6.—EXE—(<i>con.</i>)</b>						
D† Exeter (Elmfield House) .....	W. B. Heberden, Esq. CB	5	1	0	100 T	29·60 158
D Rockbeare (The Grange) .....	Col. J. W. Stirling ...	5	1	5	150	32·75 185
† Broad Clyst (Brockhill) .....	W. T. Bayne, Esq. LL.D.	5	1	0	80	31·66 205
Newton St. Cyres (Sherwood) ...	Capt. A. L. Cave .....	5	1	0	400	33·39 178
D Upton Pyne (The Parsonage) ...	Rev. A. Hillyard .....	5	1	0	213 T	32·97 179
D† Brampford Speke Station .....	Mr. A. Tucker .....	5	1	0	79 T	30·00 169
D Crediton (Trobridge House) .....	R. Stanley Clarke, Esq.	8	1	2	250 T	32·41 218
· Silverton (Killerton) .....	Meteorological Office ...	5	1	0	161	31·23 161
D Crediton (Okefield) .....	Seymour F. Pope, Esq.	5	1	0	325 T	35·31 200
D Coplestone (Coplestone House) ..	Miss Pope .....	5	0	11	315 T	35·72 208
D Cullompton .....	M. T. Foster, Esq. ...	5	1	0	202 T	37·34 231
D Tiverton (Southwood) .....	P. T. Miers, Esq. ....	...	...	...	550 ?	36·56 213
D† „ (Broomhill) .....	Rev. J. Dickinson ...	5	1	0	380	35·17 198
D „ (St. Peter Street) .....	Miss Gill .....	5	6	0	245	35·44 208
„ (Hartnolls) .....	Maj.-Gen. F. A. Bowles	5	1	6	226 T	36·90 ...
D Halberton .....	Capt. G. Izat, R.N. ...	5	0	6	240 T	35·02 172
D Uffculme (Bullmoor) .....	Miss M. E. Gowring ...	5	1	0	280	37·78 219
· Tiverton (Lythecourt) .....	A. L. Sadler, Esq. ....	5	0	8	230	41·30 187
D Bampton (Huntsham Court) ..	H. Acland Troyte, Esq..	8	1	0	640 T	41·53 181
„ (Wonham) .....	Mrs. J. R. Holland ...	5	1	0	530	39·46 191
<b>7.—AXE &amp; C. 237 sq. mi.</b>						
D Budleigh Salterton (West Hill Lo.)	E. C. Thurgood, Esq. ...	5	3	6	120	29·72 153
„ „ (Squabmoor) ...	S. Hutton, Esq., C.E. ...	5	1	0	267	34·09 196
D† East Budleigh (Otterton Vic.) ...	Rev. R. Seymour .....	5	0	7	80	31·05 178
D† „ „ (Bicton Gardens) .....	Mr. E. H. High .....	5	1	0	90	31·09 168
„ „ ( „ Common) .....	S. Hutton, Esq., C.E. ...	5	1	0	300	34·38 ...
D† Sidmouth (Sidmount) .....	Miss C. M. Radford ...	5	1	0	149 T	35·86 186
„ (Winslade Cottage) ...	Miss G. Collins .....	5	1	0	150 T	35·28 191
D† „ (Salcombe Regis) .....	J. W. B. Unwin, Esq..	5	0	7	340	30·44 158
D† Seaton .....	Mrs. Pattinson .....	5	0	10	25	29·57 180
D Axmouth (Millmead) .....	E. H. Waters, Esq. ...	5	4	9	20 T	30·63 182
D Rousdon [Lyme Regis] .....	Mr. C. Grover .....	5	1	0	516 T	31·40 183
D Pinhay [ „ „ ] .....	Mr. J. F. Stobo .....	5	1	11	465 T	32·99 188
D† Ottery St. Mary (West Hill) ...	B. Stansbury, Esq. ....	5	1	6	340 T	35·39 189
† „ „ „ (Broad Street) ..	<i>Devon Gazette</i> .....	5	4	0	170 B	36·75 177
D† „ „ „ (Manor House) ..	W. A. Willock, Esq. ...	5	1	2	200	36·45 183
D Northleigh Rectory .....	Mrs. W. Champernowne	5	0	6	335 T	40·54 229
D Kilmington (Haddon Corner) ...	A. Hitchcock, Esq. ....	5	1	0	400 T	37·73 194
D Honiton (Combe Raleigh) .....	Lt.-Col. M. James .....	5	2	4	500 T	36·54 201
D Chardstock Vicarage .....	Rev. A. Lewis .....	5	0	8	317 T	37·23 199
<b>NORTH DEVON. (Area, 898 sq. mi.)</b>						
<b>1.—NORTH COAST STREAMS. 77 sq. mi.</b>						
† Braunton (Sands Hotel, Saunton)	T. Wainwright, Esq. ...	5	0	8	75	31·95 153

DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.  1913	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
NORTH DEVON—(con.)						
1.—NORTH COAST STREAMS—(con.)						
Woolacombe .....	Miss Chichester .....	5	1	0	60 $\nabla$	32.99 ...
D Morthoe (Twitchen House) .....	Dr. G. B. Longstaff ...	8	1	0	430 $\uparrow$	39.75 216
Parracombe .....	Rev. J. F. Chanter ...	5	1	0	795 $\uparrow$	52.16 206
D Ilfracombe (Reservoir) .....	O. M. Prowse, Esq., C.E.	5	1	0	395	47.38 219
D „ (Bickleighscombe) ...	Mrs. Slade King .....	5	1	0	300	45.36 222
D† „ (Meteorological Station)	O. M. Prowse, Esq., C.E.	5	1	0	25	40.47 218
D Martinhoe Rectory .....	Rev. R. W. Oldham ...	5	2	3	808	47.40 200
Lynton (Lee Abbey) .....	C. F. Bailey, Esq. ....	5	0	6	320 $\uparrow$	45.88 ...
D Lynmouth (Gwynallt) .....	A. L. Ford, Esq. ....	8	0	8	284 $\uparrow$	48.57 212
D „ (Rock House) .....	T. H. Mead-Briggs, Esq.	5	0	11	22 $\nabla$	45.22 222
2.—TAW. 442 sq. mi.						
D Spreyton (Lynderies) .....	Capt. C. W. R. Hooper, R.N.	5	1	0	...	40.55 217
Morchard Bishop (Hartnolls) ...	Mrs. Owen Wynne ...	5	1	0	420 $\uparrow$	34.42 ...
D Chumleigh (Leigh House) .....	Mr. W. Gillies .....	5	1	0	350	36.73 217
D Witheridge .....	H. J. Mansfield, Esq. ...	5	1	2	600	39.70 171
D Warkleigh Rectory .....	Rev. J. H. Thompson ...	5	1	0	439 $\nabla$	39.21 225
D South Molton .....	F. Day, Esq. ....	5	1	0	450 $\uparrow$	49.58 197
D Filleigh (Castle Hill Gardens)...	The Countess Fortescue	12	3	6	317	45.00 225
D Molland .....	S. J. Case, Esq. ....	5	1	9	674 $\uparrow$	50.57 227
D East Anstey (Rhyll Manor) .....	Mrs. Hancock .....	5	1	0	850	51.07 201
West Buckland (County School)	T. Wainwright, Esq. ....	...	...	...	680	46.21 201
D† Barnstaple (N. Devon Athenæum)	„ .....	8	1	0	25 $\nabla$	38.56 220
D „ (Pilton) .....	Capt. G. F. Hibbert ...	5	1	0	87 $\nabla$	38.70 235
Stoke Rivers (Higher Davies) ...	Mrs. Chamings .....	5	1	0	700	49.94 222
Braunton (Tyspane) .....	A. M. Norton, Esq. ...	5	...	...	95	38.06 200
D Arlington Court .....	No. 1 Miss Chichester .....	5	1	0	613 $\nabla$	52.39 195
„ „ .....	No. 2 T. Wainwright, Esq. ....	5	1	0	613 $\nabla$	50.66 195
D Challacombe .....	O. M. Prowse, Esq., C.E.	5	1	2	815 $\nabla$	69.33 220
3.—TORRIDGE. 342 sq. mi.						
D Okehampton (Oaklands) .....	Maj.-Gen. E. H. Holley	5	1	0	500 $\uparrow$	46.83 193
D Petrockstow (Heanton Satchville)	Mr. A. Eames .....	5	1	0	332 $\nabla$	38.49 205
Dolton (Hilliers) .....	A. Smythies, Esq. ....	5	1	3	380 $\nabla$	35.60 162
D Beaford (Abbots Hill) .....	J. Stuckey, Esq. ....	5	1	3	380 $\uparrow$	34.53 185
D Roborough (Ebberly) .....	J. S. C. Davis, Esq. ....	5	1	0	506 $\uparrow$	34.08 208
Torrington (Enfield) .....	T. Wainwright, Esq. ...	5	1	0	336 $\nabla$	39.54 221
D „ (Little Silver) .....	L. L. Lloyd, Esq. ....	5	1	0	395 $\uparrow$	42.55 212
D Parkham (Melbury Moor) .....	Baldwin Latham Esq CE	5	1	0	623 $\nabla$	50.39 241
D „ ( „ Reservoir) ...	„ .....	5	1	0	516 $\nabla$	55.12 241
D Abbotsham (High Park) .....	G. Sheldon, Esq. ....	5	0	11	300 $\uparrow$	42.03 230
D „ (Riccard's Down) ...	Mrs. Hibbert .....	5	1	0	87 $\nabla$	38.82 221
D Bideford (Gammaton W. W.) ...	Baldwin Latham Esq CE	5	1	0	335 $\nabla$	40.98 232
D „ (Webbery) .....	Mrs. C. E. Boyd .....	5	1	10	355 $\nabla$	40.65 203
D „ Rectory .....	Rev. T. Newton Leeke.	5	1	2	150 $\uparrow$	41.68 211
„ (Northam Road) .....	Mr. W. Littlejohns ...	5	0	6	20	37.53 173
Bideford (Horwood House) .....	Rev. J. Dene .....	5	1	0	288 $\uparrow$	34.80 224
Northam (St. Helens) .....	Miss Bowles .....	5	1	0	67 $\uparrow$	39.63 194

## DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with -01 or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
NORTH DEVON—(con.)							
3.—TORRIDGE—(con.)							
D Northam Vicarage .....	Rev. Preb. Dimond—Churchward	5	1	3	173 N	36·20	224
D „ „ (Fairlea) .....	Col. F. W. Bennet.....	5	2	6	200 ?	35·41	209
D Westward Ho! (Bellevue) .....	A. H. Boyd, Esq. ....	8	1	0	200 N	33·96	220
D Instow .....	Miss Lock .....	5	1	0	100 B	34·18	193
4.—WEST COAST STREAMS. 32 sq. mi.							
D Hartland Abbey .....	Mr. G. Sleep .....	5	1	6	222 T	37·77	199
D Clovelly Court .....	Mr. H. Tuke .....	5	0	11	350 ?	53·44	219
5.—EXE. 5 sq. mi.							
CORNWALL. (Area, 1357 sq. mi.)							
1.—CAMEL & N.W. COAST STREAMS. AMS. 458 sq. mi.							
Phillack Rectory .....	Rev. A. P. Hockin.....	5	1	0	70 N	36·07	178
D St. Ives (Lower Bussow Reservoir)	S. Palmer, Esq. ....	5	0	8	393 N	54·15	233
D „ „ (Penwyn) .....	Dr. J. M. Nicholls.....	5	6	6	60 N	33·66	200
Camborne .....	Cornwall County Council	...	...	...	...	44·65	223
† Redruth (Tolvean) .....	A. Lanyon, Esq. ....	5	0	9	365	47·33	214
D † „ „ (Trewirgie) .....	A. P. Jenkin, Esq.....	5	1	0	399 N	50·06	228
D „ „ (Tehidy Park) .....	Mr. F. J. Clark .....	5	1	5	187 T	44·01	187
† St. Agnes .....	W. Whitworth, Esq....	5	3	8	318 N	36·96	234
D † Newquay (Tresillian House) ...	Lt.-Col. E. Gully-Bennet	5	2	0	290	44·23	200
† „ „ (Reservoir) .....	Dr. C. C. Vigurs .....	5	1	0	210	38·40	...
D † „ „ (Mount Wise) ... No. 1	„ „ „ .....	5	1	0	190	38·45	221
† „ „ („ „ „ ) ... No. 2	„ „ „ .....	5	1	0	190	38·14	...
D St. Wenn Vicarage .....	Rev. J. G. Addenbrooke	8	1	3	431 T	47·18	221
D Withiel Rectory .....	Rev. W. S. Cruddas ...	5	0	11	360 T	50·71	243
Bodmin (Polgwin) .....	H. D. Foster, Esq.....	5	1	0	280	51·35	...
D Helland (Tredethy) .....	Mrs. Hext .....	5	1	6	279	46·11	216
D Wadebridge (St. Kew) .....	Major W. C. Braddon..	5	1	0	100	41·94	213
Camelford (Stannon Clay Works)	Capt. R. M. Richards...	8	1	0	800 T	56·43	209
Tintagel (K. Arthur's Castle Hotel)	Cornwall County Council	5	1	0	245	30·76	202
D Poundstock (Widemouth Bay)...	Mr. J. W. Burrow .....	8	1	0	28	25·73	185
D Bude (The School House) .....	Karl Durston, Esq. ...	5	1	0	51 T	31·71	203
D Morwenstow Vicarage .....	Rev. H. Lynne Jones...	5	0	10	331 N	37·96	237
2.—FOWEY & S.E. COAST STREAMS. AMS. 620 sq. mi.							
Lizard .....	A. P. Jenkin, Esq.....	5	1	0	244 N	35·39	...
Mullion (Polarrian Hotel) .....	Mr. R. Thomas .....	5	1	0	230	31·73	163
St. Keverne (Lanarth) .....	P. D. Williams, Esq..	5	0	10	290 T	45·22	224
D „ „ (Rosuick Cottage)...	G. W. Jevons, Esq. ...	5	1	0	250 T	46·48	236
Bosahan .....	Cornwall County Council	...	...	...	240	33·95	177
Helston (Tenderah) .....	J. Walker Tyacke, Esq.	5	1	0	220 T	43·20	213
D † Penzance (Morrab Garden) .....	C. H. Benn, Esq. ....	5	1	0	55	39·73	230
„ „ (Rosehill) .....	(R) David Howell, Esq. ...	10	3	0	212 T	36·20	201
† „ „ (Trengwainton House)	T. Robins Bolitho, Esq.	10	1	0	400 T	48·86	204
D „ „ („ „ „ Gardens)	„ „ „ „ .....	10	0	10	400 T	50·40	222
D „ „ (County School) .....	Lance Webb, Esq.....	8	0	6	55	39·75	237

## DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with 0.1 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
CORNWALL—(con.)							
2.—FOWEY & S.E. COAST STREAMS—(con.)							
Marazion.....	T. Field Michell, Esq. ...	5	2	0	30	42.34	185
D Falmouth (New Observatory) (R) ..	E. Kitto, Esq. ....	11	2	0	169 T	45.28	207
„ (St. Mawes, Place) ...	J. S. Spry, Esq. ....	5	1	0	12	36.08	186
D Penryn (Ashfield) .....	J. G. Stephens, Esq. ...	5	1	1	100	43.16	193
D „ (Carclew) .....	Mr. J. Simmons.....	5	0	9	180 ?	46.49	186
D Redruth (Pencoys Vicarage) ..	Rev. L. C. Carpenter...	5	1	0	700	52.83	243
D† „ (Trevince) .....	E. B. Beauchamp, Esq. ...	8	1	0	240 T	51.08	220
Tregoney (Veryan) .....	Dr. Martin Clover .....	5	1	3	154	38.69	220
D Truro (Killiow) .....	J. C. Daubuz, Esq. ....	5	1	0	230 T	40.73	196
D† „ (Bosvigo) .....	Miss C. L. Rashleigh...	5	1	0	100 T	44.37	227
† „ (Pencalenick) .....	H. H. Williams, Esq. ...	5	0	7	100 ?	41.48	174
D† „ W.W. (Lower Tregurrow) ...	W. J. Lean, Esq. ....	5	9	0	71 T	44.56	207
Grampound Road (Creed Rectory) ...	Western Morning News	5	1	0	15	41.30	239
D Probus (Lamellyn).....	H. Tresawna, Esq. ....	5	0	6	230	37.34	169
D Talland (Polperro).....	H. E. Butler, Esq. ....	5	1	0	120	39.96	229
Fowey (St. Willow) .....	Cornwall County Council	...	...	...	51	35.28	194
D† „ (Torfrey).....	W. G. Mills, Esq. ....	5	0	6	300	45.64	162
D† St. Austell (Trevarna) .....	W. M. Coode, Esq. ...	5	1	0	300 T	45.41	218
D Looe (Morval).....	A. H. Tremayne, Esq. ...	5	1	0	150 T	45.68	184
„ (Bray) .....	Mrs. G. Sneyd .....	5	1	0	530 T	45.41	227
D† Lostwithiel (Lanwithan) .....	Miss Foster.....	5	1	0	80	46.27	206
D Roche (Glencoe).....	Miss Browne .....	5	0	9	602 T	44.24	240
D† Liskeard (Trevillis) .....	L. C. Foster, Esq. ....	5	1	0	320 T	43.50	218
„ (Dean Terrace) .....	W. A. Jenkin, Esq. ...	5	1	1	400 T	41.70	212
„ (St. Cleer Down) .....	„ „ „ „ „	5	1	1	620 T	44.74	...
„ ( „ Tregarrie) ...	Lt.-Col. J. D. A. Roberts	5	1	6	800	51.31	...
3.—TAMAR & C. 279 sq. mi.							
D Empacombe [Devonport] .....	J. Sandercock, Esq. ...	5	1	0	20 T	37.85	228
D Cremyll [Devonport].....	S. B. Wilcox, Esq. ...	5	10	0	25	38.07	246
D St. Germans (Trethill) .....	Lt.-Col. J. D. A. Roberts	5	2	0	200 B	34.44	186
„ „ (Fairfield).....	Dr. J. Wallis Gill .....	5	1	6	170	41.87	...
D Antony Vicarage .....	Rev. Alan Clover .....	5	1	0	195 T	38.49	190
D Torpoint (Merifield Vicarage) ...	Rev. Leonard A. Williams	5	0	8	160 T	39.88	212
Saltash (Pentillie Castle) .....	Cornwall County Council	5	2	4	150 B	54.02?	198
St. Mellion Rectory .....	Rev. F. T. Wintle .....	5	1	0	400	45.59	217
D Callington (Pencrebar).....	Miss Horndon .....	5	1	9	450 T	47.14	210
„ (County School) .....	H. P. Giles, Esq. ....	5	1	0	550	50.62	...
D „ (Mount Lodge) .....	G. Brown, Esq. ....	8	6	0	400	50.32	207
D Albaston .....	N. R. Rosekilly, Esq. ...	5	4	0	600	43.75	195
D Linkinhorne (Phoenix Mines) ...	Phoenix Mines, Ltd. ...	5	1	0	870 T	68.69	214
D Launceston (Landue) .....	Miss S. E. Tregoning...	5	0	11	225 T	46.64	218
D „ (Hexworthy) <i>Snowdon</i> ...	R. B. Rogers, Esq. ...	5	1	0	270 T	45.94	213
D Altarnon Sanctuary .....	Rev. A. H. Malan.....	5	1	0	620 T	59.48	241
D Launceston (Old Tree House) ...	Mrs. Saunders .....	8	1	6	600	40.86	214
D „ (Tamar Terrace) ...	Captain L. Ching, R.N.	5	0	10	446	44.93	219
Egloskerry (Tregeare) .....	E. G. B. Lethbridge, Esq.	5	1	0	575 T	47.40	...

## DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
CORNWALL—(con.)							
4.—INSULAR—Isles of Scilly.							
St. Mary's .....	Meteorological Office...	8	1	6	152	34·84	216
Tresco Abbey.....	T.A.DorrienSmith, Esq.	11	3	0	40	37·13	215
SOMERSETSHIRE. (Area, 1630 sq. mi.)							
1.—LOWER AVON. 300 sq. mi.							
Wanstrow (The Manor Cottage)	P.E.B.Warburton, Esq.	5	1	0	465	32·37	178
d Cranmore Hall .....	Rev. H. A. Boys.....	8	1	9	600 †	40·02	205
Shepton Mallet (Pondsmead, Oakhill)	Mr. J. Fletcher .....	8	1	0	710	40·25	196
d „ „ (Hillylands, „)	Mr. E. Stock .....	5	0	10	659 †	40·50	207
d† Frome W.W. (Egford) .....	F. W. Jones, Esq., C.E.	8	2	0	270 †	30·98	209
† „ (Selwood School) .....	Miss A. K. Coombs ...	5	1	6	310 †	30·09?	...
d Mells (Wadbury House) .....	Mrs. Sykes .....	5	1	0	394 †	33·43	192
d „ (Selwood).....	Miss E. G. Horner.....	5	1	0	344 †	33·53	221
d Binegar (Gurneyslade) .....	VeryRevGA Kindersley	5	1	0	588 †	38·88	186
d Stratton-on-the-Fosse (Downside Abbey	„ „ „	8	1	0	600 †	35·97	196
d Frome (Orchardleigh) .....	Rev. Canon Duckworth	8	0	10	303 †	28·47	198
d „ (Beckington) .....	E. M. Nelson, Esq. ...	8	1	3	270 †	29·03	192
d Chewton Mendip (The Priory)...	The Earl Waldegrave..	5	1	0	550 †	40·20	210
Ston Easton .....	H. E. Hippisley, Esq. .	5	3	0	480 †	36·93	203
d Midsomer Norton (Island House)	Dr. G. S. Pollard .....	5	1	6	300	33·75	172
d „ „ (North Road)..	Rex W. Bird, Esq. ...	5	1	0	330 †	33·98	190
d „ „ (Dymboro) ...	A. Bulleid, Esq.....	5	1	0	357 †	33·72	185
d Radstock .....	G. H. Gibson, Esq.....	8	8	0	330 †	39·43	155
d E. Harptree (Sherborne Res., Litton)	J.A.McPherson, Esq CE	5	1	0	338 †	39·67	197
d „ „ (Harptree Court) ...	W. W. Kettlewell, Esq.	5	1	0	346 †	39·19	203
„ „ „ (Hill) ...	J.A.McPherson, Esq. CE	8	1	0	784	37·35	...
d Temple Cloud.....	Dr. Theodore Martin...	5	1	0	340 †	33·86	204
d Clutton (Council School) .....	J. Pullen, Esq. ....	5	1	6	420 †	32·44	207
d Pensford (Sutton Court) .....	Rt. Hon. Lord Strachie	8	1	0	280	33·72	204
d Dunkerton Rectory .....	Rev. F. C. Newbery ...	5	1	0	300	30·61	179
d Bath (Crossways, Monkton Combe)	M. J. Lipscomb, Esq....	5	1	0	180	32·46	181
d „ (Combe Down) .....	Miss Scriven .....	5	5	0	500	33·78	207
Chew Magna .....	J.A.McPherson, Esq CE	5	1	4	180 †	32·96	177
d Pensford (Publow School House)	A. Hayes, Esq. ....	5	1	0	230 †	29·53	180
d „ (Norton Court) .....	H. H. Palairret, Esq. ...	5	1	0	300	33·67	220
d Bath (Claverton Manor) .....	E. A. Whittuck, Esq....	5	1	0	238 †	30·91	190
† „ (Royal Institution) .....	Dr. W. H. Symons ...	6	8	0	74	29·78	159
d† „ (Henrietta Park) .....	„ „ „	5	1	0	67 †	28·98	166
d „ (Statutory Hospital).....	„ „ „	5	1	0	520	31·33	165
d† „ (Kingswood School) .....	„ „ „	5	1	0	620 †	29·05	170
d „ (Somerset Place) .....	R. Lewis Lloyd, Esq....	5	0	10	350	30·90	205
d „ (Charlcombe).....	J. Dent Young, Esq. C.E.	8	2	0	325 †	31·97	191
d Saltford House ...	Col. W. V. Rolleston...	8	0	8	100	27·46	192
d Batheaston .....	Col. Linley Blathwayt.	5	1	0	166 †	27·76	180
„ „ „ M	„ „ „	5	1	0	166 †	27·73	...
d „ Reservoir .....	J. Dent Young Esq., C.E.	6	2	0	248 †	30·83	216

## DIVISION V.—SOUTH WESTERN COUNTIES—(continued)

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\frac{1}{10}$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>SOMERSETSHIRE—(con.)</b>							
<b>1.—LOWER AVON—(con.)</b>							
Barrow Gurney Reservoir.....	J.A.McPherson, Esq. CE	5	1	6	300 $\nabla$	33.36	212
Keynsham (West View Road)...	S. B. Froude, Esq.....	5	1	0	102 $\nabla$	28.22	...
d Long Ashton (Estate Office).....	H. B. Napier, Esq. ...	8	1	0	134 $\nabla$	33.60	213
Bristol (Coronation Road) .....	H. C. Martin, Esq. ...	5	0	10	50	32.92	...
d† Failand House .....	Miss Agnes Fry .....	5	1	0	385	32.93	215
Abbots Leigh (Leigh Court).....	Sir Henry Miles, Bart.	5	1	0	170 $\nabla$	31.86	187
<b>2.—YEO, AXE &amp; BRUE. 405 sq. mi.</b>							
d Castle Cary (Alford House) .....	Admiral P. F. Tillard...	5	1	0	98 $\nabla$	29.08	193
d Somerton (Butleigh Court) .....	R. Neville Grenville Esq.	8	1	2	95	29.65	168
Bruton (Sexey's School) .....	S. W. Brown, Esq. ...	5	1	0	280 $\nabla$	30.41	174
d „ (King's School) .....	D. E. Norton, Esq.....	5	1	2	200	34.58	215
d Ditchat .....	Rev. H. A. Boys.....	...	...	...	200	29.08	166
d Street (Overleigh House).....	J. B. Clark, Esq. ....	5	0	8	100	28.40	173
d „ (Hind Hayes).....	Joseph Clark, Esq.....	5	1	5	78 $\nabla$	28.24	167
d „ .....	W. S. Clark, Esq. ....	8	1	0	100	28.81	186
d Evercreach Vicarage.....	Rev. H. A. Boys .....	5	1	0	284 $\nabla$	30.11	196
Edington.....	A. C. F. Luttrell, Esq..	5	2	6	90 $\nabla$	33.51	180
d Shepton Mallet (Pilton) .....	J. Dredge Allen, Esq..	5	1	3	354	31.93	194
d† „ „ (Charlton) .....	C. E. Burnell, Esq.. ...	5	1	0	481 $\nabla$	34.44	209
d† „ „ (Field House) ...	F. H. Berryman, Esq..	5	1	0	500 $\nabla$	34.60	200
d† „ „ (Grammar School)	William Aldridge, Esq.	5	1	0	475 $\nabla$	34.20	200
d „ „ (The Cloisters)...	Frank Dell, Esq. ....	5	1	0	...	33.04	214
d „ „ (Sewage Farm)...	W. Reader, Esq. ....	5	0	8	310 $\nabla$	33.72	195
d Wells (Somerset & Bath Asylum)	J. E. P. Shera, Esq., M.D.	5	1	0	300	25.61	193
† „ (Wookey Hole Paper Mills)	W. S. Hodgkinson & Co.	5	1	4	180	31.24	...
† Priddy Vicarage .....	Rev. W. H. Creaton ...	5	1	0	800 ?	36.17	...
d Burnham (Dunstan Ho., Chalbury)	H. A. Smith Spark, Esq.	5	1	0	20 $\nabla$	27.21	178
„ .....	W. H. Chowins, Esq. C.E.	8	0	9	24 $\nabla$	26.58	166
d „ (Brent Knoll).....	Miss FitzGerald.....	5	2	0	26 $\nabla$	29.48	204
Compton Martin.....	J.A.McPherson, Esq. CE	8	1	0	276	38.32	...
Ubley (Rookery Farm).....	„ „ „	8	1	0	525	44.75	...
Blagdon (Nordrach-on-Mendip)...	R. Thurnam, Esq., M.D.	5	0	4	862 $\nabla$	44.00	180
d Winscombe (The Down) .....	J. Grubb, Esq. ....	5	1	0	295 $\nabla$	32.24	204
d Banwell (Eversley) .....	Kenneth Anderson, Esq.	5	1	6	50 $\nabla$	31.88	190
Blagdon Hill .....	J.A.McPherson, Esq. CE	8	1	0	550	36.19	...
„ (Pumping Station).....	„ „ „	8	0	8	112 $\nabla$	35.98	188
„ (Coombe Lodge).....	„ „ „	8	1	0	388 $\nabla$	37.63	...
Ubley (Pixey Hole) .....	„ „ „	8	1	0	300	32.27	...
Nempnett (West Town) .....	„ „ „	8	1	0	263	34.30	...
Burrington (Burrington Link)...	„ „ „	8	1	0	335	35.12	...
d „ (Langford) .....	Miss M. B. Smith .....	5	1	8	40	32.14	192
„ „ (Hylsbroke) .....	P. T. Marshall, Esq. ...	5	0	5	75 $\nabla$	33.12	208
d Weston-spr.-Mare (Leycroft Ho.)	C. Brown, Esq. ....	8	1	0	15	28.12	166
d „ „ „ (Town Hall)...	W. H. Allen, Esq.....	5	1	0	21	28.05	162
d „ „ „ (Worle) .....	Dr. St. John Kemm ...	5	1	0	...	29.57	184
„ „ „ (Kewstoke) ...	H. Ruddle, Esq.....	5	1	0	40	30.82	...
Butcombe (Cholwell).....	J.A.McPherson, Esq., CE	8	1	0	370	37.80	...

## DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>SOMERSETSHIRE—(con.)</b>						
<b>2.—YEO, AXE &amp; BRUE—(con.)</b>						
D Wrington (The Cottage) .....	H.C.Bristowe, Esq. M.D.	5	1	0	100	30·17 187
D „ (The Rectory) .....	Rev. G. M. Ashdown..	5	5	0	68	32·29 186
Yatton (Chelvey) .....	J.A.McPherson, Esq. CE	8	0	8	60	29·07 163
D Flax Bourton (Backwell Hill Ho.)	W. Garnett, Esq. ....	8	1	10	490 T	31·74 173
D „ „ (The Grange) .....	C. Onslow Master, Esq. ....	5	1	0	180 P	32·84 175
D† Clevedon W.W. (Old Street) ...	J. Harger Pye, Esq. ....	5	1	10	28 T	28·18 182
D† „ „ (Tickenham Rd.) .....	„ „ „ „ „ „	5	1	6	70 P	27·59 203
D† „ „ (Bowling Green) .....	Maj. A. B. Trestrail ...	5	0	11	126 T	29·85 178
Wraxall (Boys' School) .....	Ebenezer Brown, Esq..	5	1	2	...	31·37 187
<b>3.—PARRETT. 568 sq. mi.</b>						
D Crewkerne (The Reservoir) .....	E. H. Munford, Esq....	8	1	0	426	34·82 187
D „ (Bincombe House) ...	Miss Sparks .....	5	1	2	294 T	33·71 200
D „ (Merefield House) ...	J. Tompsett, Esq. ....	8	1	1	231 T	38·33 187
Coker Court Gardens .....	Mr. T. H. Gilham .....	8	1	0	250 P	34·48 156
D West Coker .....	G. F. Deedes, Esq....	5	1	6	265	29·87 170
„ „ „ .....	Arthur Scratton, Esq..	5	1	6	230 P	34·81 ...
D Ilminster (Laurel Bank) .....	W. Beckwith, Esq. ....	5	1	0	180 T	31·99 180
D „ (Whitelackington Ho.)	S. Creed, Esq. ....	5	3	0	200 T	34·01 179
D „ (Dillington Park)...(R)	Mr. W. Goldthorpe ...	8	2	0	161 T	35·90 179
D Montacute (Odcombe Rectory) ..	Rev. H. Cornish .....	5	1	0	379 T	34·21 175
D Yeovil (Gas Works) .....	E. Howell, Esq. ....	5	22	0	122 T	27·98 175
D „ (Pen Mill Sew. Works)...	Dr. A. E. Remmett Weaver	5	1	0	102 T	29·96 209
D Wellington (Old Way House) ...	T. Fox, Esq. ....	5	1	1	300	34·51 235
D Stoke-under-Ham ...	Miss Gillett .....	8	1	0	80 P	30·01 170
D Tintinhull (Manor House).....	Rev. Dr. S. J. M. Price	5	0	10	145	31·14 160
D Angersleigh (Blagdon Reservoir)	H. T. Coles, Esq. ....	8	1	6	590 T	36·93 166
D „ (Leigh Hill Reservoir)	„ „ „ „ „ „	8	1	6	525 T	35·81 166
D „ „ „ Court) .....	A. Eastwood, Esq....	8	1	0	360 T	35·95 207
D Wellington (Walton) .....	F. J. Burnett, Esq. ....	5	1	0	280 P	33·00 190
D Rimpton .....	Rev. H. A. Boys .....	8	3	0	100	28·07 179
D Langford Budville (Ritherdens)	Miss Rodd .....	5	0	10	380 T	34·48 205
D „ „ (Bindon) ...	Major T. G. C. Reynolds	5	6	0	406	33·17 191
D Milverton (Spring Grove).....	C. Roberts Gawen, Esq.	5	0	8	500 T	38·06 222
D „ (Old Halls) .....	Charles Bere, Esq. ....	5	1	0	250	37·57 209
Taunton (Linden Grove) .....	H. Le B. Gunner, Esq.	5	1	0	70 B	28·81 ...
D „ „ „ .....	Dr. H. J. Alford.....	5	1	0	64	33·73 179
D Wiveliscombe (Culverhead) .....	T. R. Marsh, Esq....	5	1	0	450 T	39·88 185
D Langport (The Grange).....	Dr. H. Markant Page..	5	1	0	50 T	30·59 215
„ (Huish Episcopi) .....	Miss A. M. Kelway ...	8	1	1	30 P	26·22 ...
D Milverton (The Mount, Halse)...	Miss S. C. Smith .....	5	1	2	254 B	33·87 209
D Wincanton (Maperton Ho. Gdns.)	Mr. L. G. Read .....	5	1	3	...	35·50 237
D North Cadbury Rectory .....	Rev. H. A. Boys .....	8	1	3	256 T	30·49 205
D Somerton (Kingweston) .....	Rev. G. de Y. Aldridge	5	2	6	200 T	32·36 217
Cothelstone House .....	C. E. J. Esdaile, Esq...	5	1	0	430	35·56 186
D North Petherton (Shovell) .....	A. M. Wilson, Esq. ....	8	1	0	206 T	30·20 190
D „ „ (The Old Rectory)	E. Constable Curtis, Esq.	8	0	6	136 T	32·99 176
D Bridgwater (Fore Street) .....	J. T. Rainforth, Esq....	5	1	3	41	30·55 168

## DIVISION V.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level		
		in.	ft.	in.	feet.	inches.	
<b>SOMERSETSHIRE—(con.)</b>							
<b>3.—PARRETT—(con.)</b>							
D Bridgwater (Blake Gardens) ...	F. Parr, Esq., C.E. ...	5	3	1	27 $\nabla$	29·91	162
D „ (Ashford) .....	„ „ „ „ .....	5	1	5	102 $\nabla$	34·74	185
D „ (Northfield) .....	H. C. Salmon, Esq. ...	5	4	10	50 $\nabla$	31·80	175
Fiddington (Keenthorne) .....	T. W. Cuffe, Esq. ....	5	1	0	220 $\nabla$	33·67	161
D Cannington (Brymore) .....	H. H. P. Bouverie, Esq.	5	1	6	65 $\nabla$	30·90	175
<b>4.—NORTH COAST STREAMS. 158 sq. mi.</b>							
Williton (Aller Farm) .....	T. Hosegood, Esq. ....	5	3	6	175	35·83	161
D Holford (Dytche School) .....	J. E. Overend, Esq. ...	5	1	0	260 $\nabla$	38·36	181
D Quantockshead (St. Audries) ...	Mr. F. S. Hayne .....	8	1	0	260 $\nabla$	35·45	160
Stockland Bristol (Manor House)	H. T. Daniel, Esq. ....	5	1	0	65	37·27	...
D Minehead (Mariansleigh) .....	T. F. Twist, Esq. ....	5	1	0	45 $\nabla$	35·23	191
D „ (Clanville) .....	R. Shafto Adair, Esq. ...	5	1	0	105	34·85	171
Porlock (Lynch Mead, Allerford)	J. Dyke Acland, Esq. ...	5	1	3	100 $\nabla$	36·57	213
<b>5.—EXE. 122 sq. mi.</b>							
D Dulverton (Exebridge Fishery) ..	T. F. Tracy, Esq. ....	5	1	0	410	45·49	201
D Brushford Rectory .....	Rev. B. J. du Boe .....	5	1	0	450 $\nabla$	43·63	210
D „ Nurseries .....	Mr. G. Ruff .....	5	1	2	400	45·32	229
D Hawkrigde (Liscombe) .....	Mr. E. W. Darby .....	5	3	6	980	58·26	251
D Winsford School .....	W. Dicker, Esq. ....	5	1	2	685 $\nabla$	57·12	209
D Simonsbath .....	Rev. H. F. Ramsay ...	5	1	3	1080 $\nabla$	65·90	233
<b>6.—AXE. 42 sq. mi.</b>							
Chard (Tatworth Vicarage) .....	Rev. H. Stuart King ...	5	1	4	347 $\nabla$	39·02	177
D „ Vicarage .....	Rev. Preb. Walter Farrer	5	1	0	380 $\nabla$	40·08	204
D Cricket St. Thomas (Cricket Ho.)	Mr. H. M. Harvey .....	5	1	0	444	38·89	163
<b>7.—STOUR. 35 sq. mi.</b>							
D Henstridge (Inwood Ho. Gardens)	Mr. W. Hester .....	5	1	0	350	33·32	168
D Temple Combe Rectory .....	Rev. J. C. Fox .....	5	0	6	215	34·99	199
D „ „ (Cheriton House) .....	Rev. H. A. Boys .....	...	...	...	...	33·08	179
Wincanton (Holbrook House) ...	Mrs. Angerstein .....	5	2	4	450 $\nabla$	33·50	168
D „ „ (Roundhill Grange) ..	General C. H. P. Ducat	5	1	9	380	32·01	204
D Pen Selwood Rectory .....	Rev. Newton Parsons ..	5	0	10	680 $\nabla$	34·08	178





## DIVISION VI.—WEST MIDLAND COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
GLOUCESTERSHIRE. (Area, 1243 sq. mi.)							
1.—WYE. 50 sq. mi.							
D Castleford [Chepstow] .....	Mrs. W. R. Lysaght ...	5	0	8	146 T	33·09	189
Pen Moel [ „ ] .....	W. R. Price, Esq. ....	5	1	0	240 T	35·17	189
D Forest of Dean(RuardeanHillLo.)	C. O. Hanson, Esq. ...	8	1	0	932 T	40·94	176
2.—SEVERN—Right Bank Tributaries. 176 sq. mi.							
D Sedbury Park [Chepstow] .....	Col. P. S. Marling, vc., CB	8	1	0	175 T	31·73	166
D Lydney (Clanna) .....	Captain W. B. Marling	5	1	0	260 T	35·19	179
D Forest of Dean(Whitemead Park)	C. O. Hanson, Esq. ...	8	1	0	200 T	36·19	165
D „ „ „ (BlakeneyHill Lo.)	„ „ „ ..	8	1	0	500 T	32·20	163
„ „ „ (Worcester Lodge)	„ „ „ ..	8	0	11	712 T	36·62	...
D „ „ „ (Edgehills Lodge).	„ „ „ ..	8	1	0	914 T	36·13	153
D Westbury-on-Severn (Chaxhill).	Mrs. Grant .....	5	3	0	122 T	30·73	192
Mitcheldean (Blaisdon)...	Colin MacIver, Esq. ...	5	1	0	117 T	33·24	...
Tibberton Court.....	W. R. Price, Esq. ....	5	1	0	109 T	25·06	172
Tewkesbury (ForthamptonCourt)	Mr. H. French .....	5	1	0	48 T	24·76	...
D „ „ (Upper Lode) .....	E. D. Marten, Esq., C.E.	5	1	0	41 T	27·21	158
D Bromsberrow Pumping Station...	W. OsborneThorp Esq. CE	5	1	0	181 T	29·27	162
3.—SEVERN—Left Bank Tributaries. 372 sq. mi.							
Wickwar.....	F. G. Ansell, Esq. ....	5	1	0	260 B	27·34	...
D Thornbury (Thornbury House)...	Rev. H. H. Gillett.....	5	2	1	125	39·31	172
Tortworth Court .....	The Earl of Ducie .....	8	1	0	264 T	30·77	190
„ „ School .....	E. A. Smith, Esq. ....	5	2	0	264	30·68	190
Dursley (Woodmancote) .....	E. Fryar Smith, Esq....	5	1	0	257	30·20	...
D Avening House .....	Maj. Hon. L. Byng ...	8	1	3	350 P	32·57	160
Berkeley Castle Gardens .....	Mr. S. Wathen .....	5	1	6	62 T	28·49	...
D „ „ (Sharpness Docks).....	F. A. Jones, Esq., C.E.	5	3	6	50	27·61	173
D Nailsworth (Dunkirk Manor) ...	Miss M. C. Meade-King	5	1	3	400 B	35·15	195
Chalford (Hyde Grange) .....	C. J. Bowstead, Esq. ...	5	2	6	527 T	32·70	...
D Stroud (Stanley Park) ...	Sir W. H. Marling, Bart.	8	1	0	365 T	32·15	184
D „ „ (Upfield).....	Miss E. R. Stanton ...	5	1	0	226 T	29·27	186
D Stonehouse (Wycliffe College)...	W. A. Sibly, Esq. ....	5	1	0	130 T	27·32	181
„ „ (Parklands) No. 1 (R)	W. Grey Robinson, Esq.	8	2	6	103 T	27·74	184
„ „ „ „ „ No. 2	„ „ „ „ „	5	2	6	103 T	26·95	188
Stroud (Park Farm, Lypiatt) ...	E. Armitage, Esq. ...	5	0	11	720 T	32·86	...
D Whitminster .....	F. A. Jones, Esq., C.E.	5	1	0	32 T	29·66	185
Haresfield Court .....	R. I. Tidswell, Esq. ...	5	1	0	100	30·56	205
D Harescombe Grange .....	Stamford Hutton, Esq.	5	1	0	545 T	28·95	187
D Brookthorpe (Chambers Farm)...	Mr. H. C. Prinsep.....	8	1	0	157 T	26·21	188
Quedgeley House .....	Col. Curtis Hayward...	5	1	0	65 T	27·70	160
D Witcombe Reservoir .....	R. Read, Esq., C.E. ...	8	3	0	297 T	28·69	161
D Gloucester (Park Road).....	G. Embrey, Esq. ....	8	1	3	56 T	26·49	179
D „ „ (Belgrave Road) .....	W. Piffe Brown, Esq....	5	1	0	52 T	25·83	173
„ „ (Denmark Road).....	Harley Butt, Esq. ....	5	1	5	79 T	25·48	...
„ „ (Clovelly).....	Albert J. Stephens, Esq.	5	1	0	80 T	25·10	...
D „ „ (Barnwood Vicarage).	Rev. F. H. Fowler.....	5	1	0	80 T	28·55	180
D „ „ (Llanthony Lock) ...	E. J. Bradley, Esq. ...	5	1	2	39 T	26·09	176
„ „ (Wotton Asylum).....	Dr. E. F. Kough .....	8	0	9	93 T	23·32	...

## DIVISION VI.—WEST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
GLOUCESTERSHIRE—(con.)							
3.—SEVERN—Left Bank Tributaries—(con.)							
D Gloucester (Maisemore Lock) ...	E. J. Bradley, Esq. ...	5	1	1	39	25.94	178
Churchdown (Barrow Hill) .....	Mrs. J. H. Jones .....	5	1	0	225	27.66	178
D Dowdeswell Reservoir .....	J. S. Pickering, Esq., C.E. ...	5	1	3	357	31.50	157
Leckhampton (Thirlestaine Hall) (R)	J. Player, Esq. ....	8	2	6	240	27.37	164
D Charlton Kings (The Grange) ...	Miss E. M. Heberden ...	5	0	9	300	29.63	176
D Cheltenham (Hewletts Reservoir)	J. S. Pickering, Esq. C.E. ...	8	1	6	419	28.28	175
D " (Sandford Mead) ...	" " "	5	2	6	210	26.71	153
" (Kemerton Lodge) ...	Rev. Percy Burd .....	5	1	0	211	26.28	178
" (Elmfield) .....	Major F. Fawkes .....	5	1	2	220	26.50	153
" (High Street) .....	Meteorological Office ...	5	1	0	214	26.71	158
D " (Prestbury) .....	J. W. Guy, Esq. ....	5	0	10	...	28.45	189
D " (Brookville, Swindon)	J. C. M. Stanton, Esq. ...	8	1	2	137	26.56	179
D Tewkesbury Pumping Station ...	J. S. Pickering, Esq. ...	5	0	9	47	25.00	178
4.—SEVERN—Upper Avon. 99 sq. mi.							
D Winchcombe .....	Dr. J. Halliwell .....	5	1	2	295	28.96	182
Wormington Grange .....	(R) R. E. S. Thomas, Esq. ...	8	2	0	200	29.67	...
Chipping Campden .....	W. Godson, Esq. ....	5	0	4	446	26.15	...
D† " (Hidcote) ...	Major W. Wright .....	5	1	0	525	24.04	154
D† Mickleton (Bank House) .....	M. J. Salter, Esq. ....	5	1	0	233	23.86	165
5.—LOWER AVON & C. 198 sq. mi.							
D Monkswood Reservoir [Bath] ...	J. Dent Young Esq., C.E. ...	5	2	0	365	29.04	208
D Bristol Docks (Underfall Yard) .	Engineer, Bristol Docks ...	8	19	6	45	26.52	191
" (Telephone Avenue) .....	J. A. McPherson, Esq. C.E.	5	50	0	80	29.57	188
Clifton (Oakfield Road) .....	" " "	5	1	0	200	29.28	179
D " (Harley Place) .....	Miss Hooper .....	5	1	5	260	30.74	213
D " (Pembroke Road) .....	R. F. Sturge, Esq. ...	8	0	10	215	32.53	211
D " College .....	D. Rintoul, Esq. ....	8	1	2	230	30.95	189
D " (Stoke Bishop) .....	H. L. P. Lowe, Esq. ...	8	1	3	230	32.10	218
D Stapleton (Milton Cottage) .....	R. C. Sikes, Esq., C.E. ...	5	1	0	114	28.75	207
Bristol (Horfield) .....	<i>Bristol Times &amp; Mirror</i> ...	...	...	...	...	31.49	...
Westbury-on-Trym (Cote House)	Mrs. H. St. V. Ames ...	8	1	3	243	30.38	193
D Filton .....	F. W. Gayner, Esq. ...	5	2	0	202	26.60	172
D Winterbourne (Kendleshire) ...	J. Marsh, Esq. ....	5	1	0	170	26.17	178
D " Down (Elm Croft)	Hugh T. Coles, Esq. ...	5	1	0	250	27.99	202
D Frampton Cotterell (Park House)	H. H. Harding, Esq. ...	5	1	0	158	25.61	181
Chipping Sodbury (Stanshawes Ct)	Mrs. Hooper .....	5	1	3	280	26.79	...
D " (The Ridge) ...	Lt.-Col. P. Burges .....	5	1	4	375	28.50	239
Almondsbury (Over Court, Field)	R. C. C. Lippincott, Esq. ...	5	1	0	260	24.97?	...
D " ( " " Park)	" " "	5	1	0	147	28.40	199
D " ( " " " )	" " "	5	1	0	240	29.92	199
D " ( " " Garden)	" " "	8	1	0	137	28.23	199
Badminton Gardens .....	Mr. J. Pearce .....	5	1	0	407	35.43	190
6.—THAMES—Right Bank Tributaries. 15 sq. mi.							
7.—THAMES—Windrush & c. 333 sq. mi.							
D Fairford (Dunfield, Kempsford) ..	A. T. Iles, Esq. ....	5	0	8	260	26.77	199
D " (The Close) .....	W. Cobbett Arkell, Esq. ...	5	1	9	...	27.81	151

DIVISION VI.—WEST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
GLOUCESTERSHIRE—(con.)						
7.—THAMES—Windrush & c—(con.)						
D Fairford (Draycott) .....	C. W. Edmonds, Esq. ...	5	2	0	200	29·31 168
D Lechlade (St. John's Lock) .....	R. A. Swarbrick, Esq. ...	5	3	2	239 $\nabla$	22·81 156
D „ (Claydon House) .....	T. T. S. Metcalfe, Esq. ...	5	1	0	250 $\nabla$	24·89 177
D „ (Southrop) .....	Thomas Arkell, Esq. ...	...	1	0	...	24·72 ...
† Cirencester (Roy. Agricultl. Coll.)	Meteorological Office ...	5	0	10	443	30·53 184
† „ (Waterloo) .....	W. Griffith, Esq. ....	5	0	6	350 $\uparrow$	29·80 ...
D† „ (Cripps Mead) .....	Mrs. Wilfred Cripps ...	5	0	8	366 $\nabla$	30·55 191
D† „ (Dollarward House) ..	C. P. Hooker, Esq. ...	5	1	6	366	31·01 187
D† „ ( „ „ „ ) ..	„ „ „ „ „ „ „ „	8	1	6	366	30·58 187
D Fairford (Hatherop Castle) .....	Mrs. Bazley .....	5	1	0	410 $\uparrow$	30·68 174
„ Colesborne .....	H. S. Elwes, Esq. ....	5	0	9	500	35·14 178
D Little Barrington (Barrington Grove)	C. J. B. Hurst, Esq., C.B.	5	1	0	395 $\nabla$	30·28 148
„ Great Barrington .....	H. J. Barrett, Esq. ...	5	1	6	430 $\uparrow$	29·88 ...
D Northleach (Sherborne House) ..	Mr. A. Mitchell .....	5	1	0	420	31·59 161
D „ (The Vicarage) .....	Rev. R. C. S. Jones ...	5	0	9	545 $\uparrow$	29·73 180
D „ (Leygore Manor) .....	Arthur E. Moss, Esq. ...	5	1	0	650 $\uparrow$	29·85 197
D Bourton-on-the-Water .....	E. W. Kendall, Esq. ...	5	1	6	434 $\uparrow$	32·82 155
D „ „ „ (Chardwar) ..	G. F. Moore, Esq. ....	5	2	6	430	33·19 187
D „ „ „ „ Rectory ...	Rev. W. E. White ...	5	0	10	433 $\uparrow$	33·22 159
D Wyck Rissington Rectory .....	Rev. P. H. Kempthorne	5	1	0	500 $\uparrow$	31·19 168
„ Stow-on-the-Wold (Icomb Place) ..	G. H. Simpson Hayward, Esq.	8	1	3	500 $\uparrow$	28·66 215
D „ „ „ (Quar Wood) ..	Mrs. Bryant .....	5	1	0	690	30·26 165
D „ „ „ (Maugersbury) ..	D. W. Horner, Esq. ...	5	1	0	590 $\uparrow$	27·88 164
D „ „ „ (Duncomb House) ..	R. I. Arkell, Esq. ....	5	0	9	700	30·16 ...
„ Temple Guiting .....	Major G. T. Noel .....	5	1	2	665 $\uparrow$	30·90 ...
HEREFORDSHIRE. (Area, 840 sq. mi.)						
1.—WYE. 685 sq. mi.						
D† Walford-on-Wye Vicarage .....	Rev. Kentish Bache ...	5	3	0	112 $\uparrow$	32·40 194
D Weston-under-Penyard .....	Dr. G. W. Prevost .....	5	0	6	290 $\uparrow$	30·56 155
D† Ross (The Graig) .....	H. Southall, Esq. ....	5	1	0	213 $\nabla$	30·79 185
D „ (Broad Street) .....	A. Neame, Esq. ....	5	1	3	123 $\nabla$	30·01 178
D Kentchurch Rectory .....	Rev. R. P. Dansey .....	5	1	0	215 $\uparrow$	38·40 208
† Ross (Perrystone Court) .....	General Clive .....	5	1	3	450	26·82 172
† Much Dewchurch (Bryngwyn) ..	Sir J. Rankin, Bart., M.P.	5	0	9	421 $\nabla$	35·31 162
„ Brockhampton Court .....	Hereford Times .....	...	...	...	...	31·35 ...
D Fownhope (Lower House) .....	Miss F. Cresswell .....	5	1	5	200 $\uparrow$	31·33 184
D Woolhope (The Hyde) .....	J. A. Thompson, Esq. ...	5	1	0	440 $\nabla$	31·38 177
„ Vowchurch (Whitehouse) .....	Arthur S. Wood, Esq. ...	5	5	0	450 $\uparrow$	40·27 196
„ Tyberton Court .....	C. B. Lee Warner, Esq. ...	5	0	10	276 $\uparrow$	32·72 190
D† Hereford (St. Michael's Priory) ..	Rev. Gregory Swann, OSB	8	1	0	291 $\nabla$	29·85 178
D „ (Breinton Court) .....	H. A. Wadworth, Esq. ...	5	3	0	238 $\uparrow$	27·82 178
D† „ (Richmond Place) .....	W. Cooke, Esq. ....	8	0	8	184 $\nabla$	29·10 181
„ „ (White Horse Street) ..	Hereford Journal .....	5	1	0	210	29·75 177
D „ „ (Quarry House) .....	Rev. Preb. W. Selwyn ..	5	1	0	180 $\uparrow$	30·87 177

## DIVISION VI.—WEST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea level	1913	
		in.	ft.	in.	feet.	inches	
HEREFORDSHIRE—(con.)							
1.—WYE—(con.)							
D† Hereford (Broadlands) .....	Miss Ida M. Lea.....	5	1	0	280 T	28·51	169
† „ (Hinton Court) .....	A. Battiscombe, Esq....	5	1	0	185 T	30·32	172
D† „ (Holmer Hall) .....	Rev. Preb. M. Hopton..	8	1	3	241 T	27·01	191
D Credenhill (Stretton Sugwas) ...	S. H. Armitage, Esq...	5	1	0	226 T	29·65	168
D† „ .....	F. E. Whiting, Esq. ...	5	1	5	275 T	30·02	198
† Yarkhill Vicarage.....	Rev. A. G. Jones .....	8	1	0	200 T	30·28	176
D† Burghill Court .....	Miss E. D. Woodhouse	5	1	2	293 T	27·12	182
D† Ocle Pychard (Ocle Court) ..	G. Cresswell, Esq. ....	8	1	2	298 T	30·78	190
D Marden (Fruit Farm) .....	M. Piper, Esq. ....	8	0	9	270 ?	28·72	149
D Whitney-on-Wye .....	Mr. W. Burgess.....	8	1	0	428 B	36·00	195
D Brilley Vicarage .....	Rev. W. Head .....	5	1	0	590 T	35·37	213
† Sarnesfield Rectory .....	Rev. W. Marshall .....	5	0	11	400 T	27·98	171
D Almeley .....	B. G. Ronalds, Esq. ...	5	1	0	396 T	30·37	199
D† Bodenham (Pigeon House) .....	R. C. Bailey, Esq. ....	5	1	0	215	28·46	183
† Pencombe Rectory.....	Rev. J. Seymour St. John	5	1	0	520 T	31·61	183
D Huntington Court... ..	E. Radclyffe Crump, Esq.	5	1	1	833 T	39·87	229
D† Pembridge (Dilwyn).....	Dr. T. Lambert Hall...	5	0	8	290 T	28·44	191
† „ (Burton Court) .....	Col. P. L. Clowes .....	5	1	0	400	31·75	201
D Bromyard (Dumbleton Cottage)..	T. V. Philpott, Esq. ...	5	1	0	393 T	32·02	174
D „ (The Royal Oak, Norton)	C. Day, Esq. ....	5	1	0	630 T	32·37	156
D† „ (Rowden Abbey).....	H. J. Bailey, Esq. ....	5	1	0	450 T	33·61	188
D† „ (Buckenhill).....	Mrs. Phipps .....	8	1	6	410	32·19	156
D† Kington (Lynhales) .	S. Robinson, Esq. ....	5	1	0	566	34·34	191
D† „ (Gravel Hill) .....	Col. G. F. Pearson.....	5	0	8	535 T	36·31	235
D† Pembridge (Marston) .....	H. Langston, Esq.....	5	1	5	347 T	30·39	198
D „ (Byletts) .....	Gen. Sir E. Wood, K.C.B.	5	1	5	350 T	29·90	181
D Kimbolton (Grantsfield) .....	Mrs. Hutchinson .....	5	1	0	424 T	30·72	194
2.—SEVERN—Right Bank Tributaries. 155 sq. mi.							
D Much Marcle (The Mount) .....	Miss A. M. Charles ...	5	0	8	240 T	29·39	162
D† Ledbury (Orchardleigh) .....	M. A. Wood, Esq.....	5	3	6	180	31·91	155
D† „ (Underdown) .....	S. H. Bickham, Esq....	5	1	0	307 T	32·14	174
† „ ( „ ) .....	M „ „ „ .....	5	1	0	306 T	31·13	...
„ (Putley Court) .....	J. Riley, Esq....	5	1	0	290	35·80	170
D „ (Wellington Heath) ...	Rev. F. S. Stooke-Vaughan	5	1	2	505 T	35·54	188
† Whitbourne Court .....	Dow. Lady Harington..	5	1	0	130	32·79	...
D Leintwardine .....	E. Charnock, Esq. ....	5	1	6	430 T	37·15	208
SHROPSHIRE. (Area, 1343 sq. mi.)							
1.—MERSEY—Weaver. 27 sq. mi.							
2.—DEE. 30 sq. mi.							
D Whitchurch (Fenns Bank) .....	M. W. Sowden, Esq., C.E.	8	1	0	271 T	29·42	175
Sodylt Hall.....	W. H. Horsfall, Esq...	5	1	0	267 T	33·05	...
3.—SEVERN—Right Bank Tributaries. 722 sq. mi.							
D Ludlow (Ashford House) .....	W. Downes Hall, Esq.	5	0	5	315 T	34·89	200
D Bromfield (Oakly Park) .....	Mr. J. R. Francis .....	5	1	0	300	30·92	201

DIVISION VI.—WEST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height above Ground.		Height above Sea Level		
		in.	ft.	in.	feet.	inches.	
SHROPSHIRE—(con.)							
3.—SEVERN—Right Bank Tributaries—(con.)							
D Bromfield (Warwick House) ...	F. Brayshaw, Esq. ....	5	1	0	320 T	33·09	203
D Bitterley (Clee Hill Quarry) ...	Rev. Preb. J. R. Burton ...	...	...	...	1510	33·77	210
D " Rectory .....	Mr. " " "	5	1	3	509	31·60	222
D Craven Arms (Stokesay Court)...	Mr. F. J. Powell .....	5	0	9	432 A	33·99	166
D Clun (Trinity Hospital) .....	Rev. H. J. Scott .....	5	1	0	680	40·31	202
D Wistanstow Rectory ...	Rev. W. M. D. La Touche	5	1	0	480	34·00	175
Lydbury North .....	Richard Parry, Esq. ...	5	1	0	662 A	35·54	177
Bishops Castle (Totterton) .....	W. H. B. Whitaker, Esq.	5	1	0	700	34·83	209
D " " (Castle Street) ...	E. Griffiths, Esq. ....	5	2	0	720 B	35·47	184
D " " Vicarage .....	Rev. C. E. Warner ...	5	1	6	596 T	38·50	225
D " " (More Rectory) ...	Rev. Ridley Relton ...	6	0	11	600 T	36·92	...
D Church Stretton (Sewage Works)	E. J. Marsh, Esq. ....	5	1	0	582 A	36·93	215
D Bridgnorth (Cantreyn) .....	W. Bayliss, Esq. ....	5	3	0	290	30·49	177
D " " " .....	" " " .....	5	0	3	287	31·81	177
D " " (Aldenham Park) ...	Mr. T. Canning .....	5	3	9	430 T	29·10	153
D Church Preen (Preen Manor) ...	Mr. J. Hopkins .....	5	1	0	700 T	32·85	188
D Church Stretton (Wolstaston) ...	Mrs. E. D. Carr .....	5	1	5	800 A	35·39	205
D Much Wenlock (Willey Park)...	Lord Forester .....	5	3	0	492 A	29·90	188
Dorrington (Netley Hall) ..	Miss Hope-Edwards ...	5	1	7	351 T	33·19	206
Pontesbury (Somerville) .....	Miss H. M. Croft .....	5	1	6	355 T	29·46	...
D Minsterley (Wallop) .....	Mrs. Severne .....	8	1	8	700 T	42·48	203
† Shrewsbury (Ordnance Surv. Off.)	Meteorological Office ...	8	1	0	212 A	25·94	163
D† " (The Abbey House)	Miss F. Rouse Boughton	8	1	3	171 T	28·96	182
D " (Highfield) .....	T. M. Howells, Esq. ...	5	4	6	250 A	27·15	185
4.—SEVERN—Left Bank Tributaries. 564 sq. mi.							
Bridgnorth (Coton Hall) .....	Lt.-Col. E. M. Wakeman	5	1	6	460 T	31·80	180
D Worfield (School House) .....	Frank Turner, Esq. ...	5	1	0	200	28·55	189
D Shifnal (Hatton Grange) .....	Mr. G. Risebrow .....	5	4	4	262	28·01	196
D " (Neachley) .....	Col. Hon. F. Bridgeman	5	3	0	280 T	31·62	213
D " (National Schools) .....	F. W. Haswell, Esq. ...	5	1	1	279 A	28·95	189
D " (Haughton Hall) .....	W. J. Brooke, Esq. ....	5	3	0	355 A	29·29	179
Wellington .....	G. Riley, Esq., C.E. ...	6	1	6	300 A	27·01	...
D Shrewsbury (Roden) .....	J. W. Nowell, Esq. ...	8	1	3	208	24·42	161
D " (Fitz Rectory) .....	Rev. W. Brewster ...	5	1	2	238 A	29·54	198
D " " ( " Manor) .....	Major J. F. Ll. Horner	5	1	4	253 A	29·36	200
Maesbrook (Pentreheylin) .....	G. B. Maclean, Esq. ...	5	1	7	203 T	28·20	...
D Newport (Aston Hall) .....	Col. R. Leeke .....	5	1	4	280 A	27·13	190
D " (Agricultural College) ..	P. Hedworth Foulkes Esq	5	1	0	220 T	25·00	172
D " (Edgmond) .....	J. Bodenham, Esq. ...	8	1	0	261 T	26·70	214
D " " " .....	" " " .....	5	1	0	261 T	26·67	...
D " (Chetwynd Park) .....	Mrs. Burton Borough ...	5	1	0	240 T	28·24	204
D " " ( " Gardens) ...	Mr. N. Sherwood .....	5	1	0	250 T	27·93	210
D Baschurch (The Mount) .....	L. W. Sharpe, Esq. ...	5	1	0	300	28·84	223
D Cheswardine (Knighton Res.) ...	G. R. Jebb, Esq., C.E.	5	1	0	351 A	29·48	168
D Oswestry (The Mount Reservoir)	G. W. Lacey, Esq., C.E.	5	1	0	698 A	36·55	228
D Ellesmere (The Grange) .....	Mrs. Ashton .....	5	0	10	340	30·97	183

## DIVISION VI.—WEST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>STAFFORDSHIRE. (Area, 1165 sq. mi.)</b>						
<b>1.—MERSEY—Weaver. 50 sq. mi.</b>						
D Betley Hall.....	Col. J. A. Macdonald...	5	0 8	270	27·97	195
<b>2.—SEVERN—Left Bank Tributaries. 160 sq. mi.</b>						
D Dudley (Shavers End) .....	H. A. Hill, Esq., C.E..	5	1 0	744 T	28·73	174
D Wombourne (The Bratch) .....	Baldwin Latham Esq CE	5	0 9	271 T	29·24	175
† Wolverhampton (Town Hall) ...	G. Green, Esq., C.E....	5	15 6	481 T	27·80	178
† " (West Park) ...	" " " "	5	1 4	432 T	27·56	183
Patshull Park.....	The Earl of Dartmouth	8	1 3	273	28·55	...
D Weston Park [Shifnal].....	The Earl of Bradford...	5	1 6	400 T	30·35	186
D Norbury Junction .....	G. R. Jebb, Esq., C.E.	8	1 0	332 T	29·32	179
D Market Drayton (Old Springs)...	F. E. Harding, Esq. ...	5	1 0	423 T	28·38	197
Maer Hall Gardens .....	F. J. Harrison, Esq. ...	8	1 6	390 T	30·93	166
<b>3.—TRENT—Right Bank Tributaries. 512 sq. mi.</b>						
D West Bromwich .....	(R) A.D. Greatorex, Esq., CE	8	1 7	546 T	28·08	177
D Wednesbury (Ocker Hill).....	A. W. Willet, Esq., C.E.	5	0 8	474 T	27·60	173
D Walsall (Brockhurst Sew. Farm)	J. Taylor, Esq. ....	8	0 11	376 T	26·62	177
D " (Wednesbury Sewage Wks.)	T. Wicks, Esq. ....	5	2 8	381 T	26·75	175
D Bilston (The Lunt Outfall) .....	Vincent Turner, Esq. CE	5	1 0	422 T	29·74	171
D Wolverhampton (Cotton House)...	H. Rudge, Esq. ....	6	0 4	...	33·85	168
† " (Graiseley) ...	K. C. Berrington, Esq..	6	0 9	506 T	28·82	177
D " (Wrottesley) ...	Mr. E. Simpson .....	8	1 0	500	25·62	171
D Bloxwich (Sneyd Reservoir).....	A. W. Willet, Esq., C.E.	5	1 0	507 T	27·01	182
D Hammerwich (Cannock Chase Res)	" " " "	5	1 0	475 T	28·16	196
D Brewood (Belvide Reservoir) ...	G. R. Jebb, Esq., C.E..	5	1 0	367 T	28·50	173
D Lichfield (St. John Street) .....	Dr. F. M. Rowland ...	5	0 10	269 T	27·70	187
" (Maple Hayes) .....	A. O. Worthington, Esq.	5	0 11	380 T	25·06	...
D Penkridge (Rodbaston).....	Mrs. J. Ward.....	5	0 9	324 T	29·96	184
D Hednesford (Scout House) .....	H. A. Hill, Esq., C.E..	5	1 0	750 T	24·88	156
Shugborough ...	The Earl of Lichfield...	5	1 0	260	30·65	219
D Stafford (Tipping Street) .....	W. Fred. Wright, Esq.	5	2 6	258 T	27·29	176
" (West Bank, Doxey) M	Leslie Wilson, Esq. ...	5	0 6	250 T	27·72	...
Ingestre Park.....	H. H. Goddard, Esq....	5	1 8	320 T	24·58	...
D Eccleshall (Walton Hall) .....	Sir H. A. Wiggin, Bart.	5	1 0	344 T	29·26	189
" ( " " ) Weekly g.	" " " "	5	1 3	350 T	28·60	...
Stone (Meece House).....	E. J. W. Wood, Esq...	5	1 6	331 T	29·01	177
<b>4.—TRENT—Left Bank Tributaries. 193 sq. mi.</b>						
D Burton (Hoar Cross) .....	F. W. Lycett, Esq. ....	8	1 0	400 T	27·89	163
" (Rangemore) .....	Mr. H. Barson .....	5	5 6	424 T	25·49	...
D " (Shobnall) .....	Messrs. Bass & Co. ...	5	5 6	156 T	26·67	157
D Longton (The Meir) .....	R. C. Frain, Esq., C.E.	5	1 0	618 T	28·83	180
D " High School .....	H. O. Smith, Esq. ....	5	0 8	500	29·97	176
<b>5.—TRENT—Dove. 250 sq. mi.</b>						
D Uttoxeter (Greenfields).....	W. E. Smith, Esq.....	5	1 0	387	29·86	183
Cheadle (The Heath House).....	Mr. Rufus Horne .....	5	0 6	647 T	30·84	...
D Oakamoor (Woodbank) .....	(R) M. A. Bolton, Esq.....	8	4 10	500	30·14	201
D Mayfield House [Ashbourne] ...	Graham C. Lawson, Esq.	8	1 0	374 T	29·55	191
D " (Doveside) .....	Mr. T. Bridge.....	8	1 0	421 T	28·11	186

## DIVISION VI.—WEST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
STAFFORDSHIRE—(con.)							
5.—TRENT—Dove—(con.)							
Ipstones (Sharpcliffe Hall) .....	A. S. Boucher, Esq. ...	5	0	4	925 $\frac{1}{2}$	33·39	...
D Leek (Wall Grange) .....	R. C. Frain, Esq., C.E.	5	1	0	458 $\frac{1}{2}$	32·06	205
D „ (Hillesdon) .....	J. Wilson, Esq. ....	5	1	0	750 ?	34·15	224
D „ (Haregate) .....	Mr. G. Sweetmore .....	5	0	9	680	33·16	213
WORCESTERSHIRE. (Area, 717 sq. mi.)							
1.—SEVERN—Right Bank Tributaries. 231 sq. mi.							
D Redmarley (Haselden) .....	Miss F. L. Newbury ...	5	0	5	280	30·54	170
Upton-on-Severn (Willow Bank)	J. Selwyn Cowley, Esq.	5	1	3	42	28·50	166
D „ „ „ (The Eades)...	Major E. W. Tennant..	5	0	9	100 $\frac{1}{2}$	29·28	192
D Malvern (British Camp Res.) ...	W. Osborne Thorp Esq. & Co.	5	0	11	677 $\frac{1}{2}$	33·87	176
D† „ (Church Street) .....	„ „ „ „	5	1	0	350 $\frac{1}{2}$	33·11	169
D† „ (Belle Vue House) .....	A. Mander, Esq. ....	5	4	0	520	34·23	181
D „ (Davenham Gardens) ...	Mr. C. A. Bayford ...	5	2	0	300	30·87	176
D† „ (Hornycroft Road) .....	Rev. T. Wolseley Lewis	5	1	0	492 $\frac{1}{2}$	32·53	186
D „ (Madresfield Court) ...	Mr. W. Crump .....	8	2	6	125 $\frac{1}{2}$	30·56	176
D Knightwick Sanatorium .....	H. Gordon Smith, Esq.	5	1	0	300 $\frac{1}{2}$	30·84	172
D† Worcester (Diglis Lock) .....	E. J. Bradley, Esq. ...	5	1	0	49 $\frac{1}{2}$	25·84	183
D „ (Bromwich House) ...	Rev. Manley Power ...	5	1	3	200 $\frac{1}{2}$	27·51	186
D Martley Rectory .....	Rev. J. F. Hastings ...	5	1	0	220 $\frac{1}{2}$	31·48	174
Ombersley (Holt Lock) .....	E. J. Bradley, Esq. ...	5	1	1	55 $\frac{1}{2}$	27·57	...
Clifton-on-Teme .....	Mrs. H. Tayleur .....	5	0	10	640 $\frac{1}{2}$	30·13	149
D Tenbury (St. Michael's) .....	Mrs. & Miss Hewitt ...	5	0	8	343 $\frac{1}{2}$	33·42	180
D „ ( „ Roseland Cott.)	Frederick Lowe, Esq. ...	5	1	0	313 $\frac{1}{2}$	32·57	177
D „ (Rochford Rectory) ...	Rev. J. Tomson .....	5	1	0	317 $\frac{1}{2}$	32·23	163
D Stockton-on-Teme (Eardiston)...	Miss M. Wallace .....	5	0	8	200 $\frac{1}{2}$	30·34	163
D† Bewdley (Winterdyne) .....	Miss K. M. Sturt .....	5	1	0	100 ?	27·58	170
„ ( „ ) .....	„ „ „ „	...	...	...	100 ?	30·83	...
2.—SEVERN—Left Bank Tributaries. 194 sq. mi.							
D Kempsey (Draycott House) .....	Col. C. E. Southouse Scott	5	1	0	55 $\frac{1}{2}$	27·43	179
D† Worcester (Belmont Road) .....	G. B. Wetherall, Esq. ..	5	1	1	180 $\frac{1}{2}$	26·34	178
D† „ (Water Works) .....	T. Caink, Esq., C.E. ...	5	0	9	56 $\frac{1}{2}$	26·06	171
D „ (Barbourne) .....	B. Brotherton, Esq. ...	5	2	6	92 $\frac{1}{2}$	26·58	165
D „ (Bevere Lock) .....	E. J. Bradley, Esq. ...	5	1	1	52 $\frac{1}{2}$	27·80	159
„ (Hawford Lodge) .....	F. Ames, Esq. ....	5	1	1	70	30·81	...
D Droitwich (Friar Street Dépôt)...	H. Hulse, Esq., C.E. ...	12	2	9	98 $\frac{1}{2}$	27·86	180
D Bromsgrove (Tardebigge Res.) ...	F. A. Jones, Esq. C.E.	5	4	6	455 $\frac{1}{2}$	29·87	170
D Barnt Green (Upwood) .....	Miss M. Gibbins .....	5	0	9	650 $\frac{1}{2}$	26·44	174
D Stourport (Lincombe Lock) .....	E. J. Bradley, Esq. ...	5	1	0	62 $\frac{1}{2}$	28·90	155
D† Kidderminster (Brinton Park)...	Mr. J. T. Cowderoy ...	5	1	0	160 $\frac{1}{2}$	26·97	168
„ (Honeybrook Ho.)	Col. R. Talbot Watson..	5	0	9	75	29·35	...
D Netherton (Lodge Farm Res.) ...	A. W. Willet, Esq., C.E.	5	1	0	445 $\frac{1}{2}$	26·71	181
Dudley (Borough Cemetery) ...	J. Gammage, Esq., C.E.	5	1	3	591 $\frac{1}{2}$	26·99	175
3.—SEVERN—Upper Avon. 260 sq. mi.							
D Blockley (Upton Wold) .....	E. W. Arkell, Esq. ...	5	1	0	800 ?	31·59	175
Shipston (Tidmington House) ...	Miss Staunton .....	5	1	1	230	23·31	...



## DIVISION VI.—WEST MIDLAND COUNTIES—(continued).

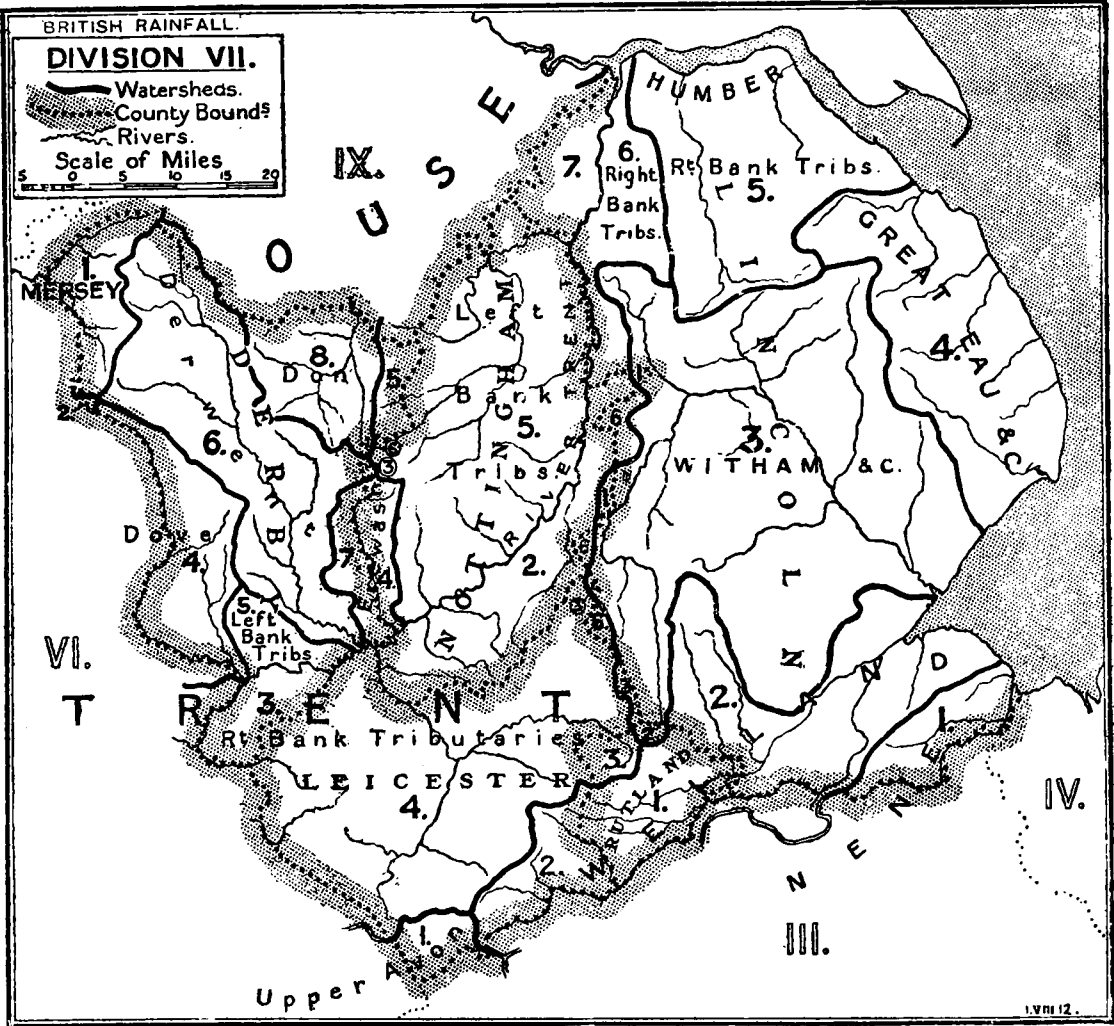
STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>WORCESTERSHIRE—(con.)</b>						
3.—SEVERN—Upper Avon—(con.)						
D Evesham (Bengeworth).....	Messrs. Ross Bros., Ltd.	5	1	0	128 T	24·92 175
† „ (Lansdowne) .....	Miss Burlingham .....	5	5	0	108 T	23·95 ...
„ .....	H. S. Harvey, Esq. ...	8	3	0	86 T	22·87 154
D „ (Great Hampton) .....	H. C. Boutflower .....	5	1	0	150 T	22·89 165
D „ (Port Street) .....	A. Fowler, Esq. ....	5	1	6	80 T	23·62 173
Pershore (The Poplars).....	Col. J. F. Miller .....	5	1	6	104 T	23·41 ...
D Shipston (Armscote) .....	W. L. Stanton, Esq. ...	5	1	1	241 T	25·58 179
D „ (Talton) .....	Capt. G. Lainson Field	8	1	0	160 T	22·62 149
„ (Cookhill School) .....	T. Barber, Esq. ....	5	1	0	400 P	25·42 ...
D Redditch (Holmwood Gardens)...	Mr. J. G. Blakey .....	5	0	10	480 T	29·64 159
D „ (Hewell Gardens) .....	Mr. A. A. Pettigrew ...	5	1	0	469 T	29·83 188
Alvechurch (Bordesley Hall) ...	A. H. Wiggan, Esq. ....	...	4	0	490	30·43 169
D „ (High Croft) .....	D. B. Grubb, Esq. ....	5	1	0	580	30·85 180
D „ (Fairfield) .....	D. McMichael, Esq. ....	8	0	8	400 T	29·42 154
D Bromsgrove (Lower Bittal Res.)	F. A. Jones, Esq., C.E.	5	3	0	457 T	29·60 177
4.—THAMES—Windrush & c. 10 sq. mi.						
5.—TRENT—Right Bank Tributaries. 22 sq. mi.						
D Halesowen (Frankley) .....	E. Antony Lees, Esq. ...	5	0	10	570 T	32·42 170
<b>WARWICKSHIRE. (Area, 942 sq. mi.)</b>						
1.—SEVERN—Upper Avon. 603 sq. mi.						
Long Compton (Weston Park)...	H. A. Warriner, Esq. ...	8	3	0	510 T	26·43 154
Shipston (Honington Vicarage)...	Rev. E. H. Boddington	5	0	10	215 T	24·26 153
D Bidford (Moor Hall) .....	E. H. Cubberley, Esq. ...	5	1	0	125	24·79 165
D Wormleighton Hall .....	F. W. Burnett, Esq. ....	5	4	9	515 T	25·48 161
Stratford-on-Avon (Avonfield) ..	G. W. Everard, Esq. ....	5	0	10	120 T	24·25 153
D „ „ „ (King Ed. Gram. Sch.)	R. T. Hiron, Esq. ....	5	1	0	108	23·26 166
„ „ „ (High Street) ...	F. D. Spencer, Esq. ....	8	1	2	134	23·59 ...
D „ „ „ (Shottery Hall) ..	R. C. Carter, Esq. ....	5	0	8	140 T	24·92 160
Alcester (Ragley Hall) .....	Mr. C. Harding .....	5	1	0	270 T	25·75 ...
Ashorne .....	Mr. G. T. Osborn .....	5	1	0	160 P	24·23 169
Snitterfield .....	Roden Dixon, Esq. ....	8	1	6	274 T	29·74 ...
Warwick (Norton Curlieu) .....	Hon. A. E. Parker .....	5	0	7	380	22·53 ...
D Radford Semele (Radford House)	C. E. G. Hatherell, Esq.	5	1	2	240 T	28·51 184
Warwick (Castle Gardens) ...	Mr. H. F. Smale .....	8	1	2	197 T	24·77 ...
D Leamington (Pump Room Gardens)	Health Department ...	8	1	0	166	25·05 163
D „ (Binswood Avenue) ..	Rev. A. Corbet .....	5	0	9	...	26·76 163
D „ (West Hill, Cubbington)	Mrs. Robins .....	5	1	0	282 T	26·29 159
D Hatton .....	J. P. Arkwright, Esq. ...	...	5	0	400	25·73 179
Lapworth (Ardenhill) .....	A. R. Walker, Esq. ...	8	4	8	420 T	24·99 146
„ Croft .....	T. Birkett Barker, Esq.	5	2	0	410 T	28·25 161
D Rugby (Bilton Grange).....	W. H. G. Southcomb, Esq.	5	1	0	400	21·21 154
D „ (Temple Observatory) ...	Rev. Denys E. Shorto...	5	1	1	383 T	23·84 164
Ryton-on-Dunsmore (Ryton Ho.)	Charles Browett, Esq. ...	5	1	2	260 T	28·49 ...
D Coventry (City Hospital) .....	E. H. Snell, Esq., M.D.	8	1	0	269 T	26·35 185

DIVISION VI.—WEST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
WARWICKSHIRE—(con.)						
1.—SEVERN—Upper Avon—(con.)						
D Coventry (St. Paul's Road) .....	J. B. Morris, Esq. ....	5	1	0	341 T	25·89 177
„ (Kingswood) .....	R. B. Caldicott, Esq....	8	1	0	340 T	25·82 ...
D Foleshill (Foxford School) .....	A. F. Smith, Esq. ....	5	10	9	311 T	26·05 155
D Coventry (Keresley Grange) .. ...	Miss H. Rotherham ...	5	0	10	413 T	26·74 218
D Bedworth Cemetery .....	Mr. G. O. Bosworth ..	5	1	0	385 T	26·19 150
2.—THAMES—Windrush & c. 2 sq. mi.						
3.—THAMES—Cherwell. 15 sq. mi.						
D Farnborough .....	Miss Prater .....	5	1	0	515 T	28·76? 173
4.—TRENT—Right Bank Tributaries. 322 sq. mi.						
Hockley Heath (Packwood) .....	E. S. Fry, Esq. ....	5	1	2	400	28·37 ...
D Solihull (Marsh Cottage) .....	E. P. Currall, Esq., C.E.	5	1	0	420 T	25·36 166
D Northfield (West Heath House)	Prof. A.J.Brown, F.R.S.	5	1	0	590	28·94 195
D Hampton-in-Arden(Hampton Manor)	Mr. W. R. Cooper .....	8	0	7	345 T	30·80 177
Meriden .....	Coventry Herald .....	...	...	...	...	26·55 ...
D Selly Oak (Bournville) .....	Messrs Cadbury Bros.Ld	5	1	0	434 T	30·51 181
„ „ (Lodge Hill Cemetery)	Mr. W. Garden .....	5	1	4	540 T	30·48 153
Moseley (Prospect Road) .....	Rev. F. Oscar Lane ...	5	1	0	550 T	28·15 ...
„ „ (Highfield Road).....	J. Newland Brown, Esq.	8	1	9	550 P	29·29 180
D „ „ (Chantry Road) .....	G. F. Lyndon, Esq.....	5	1	0	472 B	29·60 182
D Birmingham (Sparkhill) .....	D. H. Owen, Esq. ....	5	1	0	426 T	29·26 188
D „ „ (Edgbaston) .....	A. Cresswell, Esq.....	8	1	0	515 T	27·04 182
D „ „ (Hagley Road).....	H. E. Stilgoe, Esq., C.E.	5	0	9	612 T	30·86 185
„ „ (The Crescent)... M	J. J. Gilbert, Esq.....	5	7	0	480 T	30·36 .
D „ „ (Sewage Works, Saltley)	J. D. Watson, Esq., C.E.	5	1	5	293 T	23·13 170
„ „ (Gravelly Hill).....	W. Ll. Mold, Esq.....	5	3	0	470	28·34 ...
D „ „ (Erdington) .....	E. Antony Lees, Esq...	5	1	3	472	24·85 174
D Castle Bromwich Hall .....	Viscount Newport .....	5	0	10	364 T	30·51 177
Minworth .....	J. D. Watson, Esq., C.E.	8	0	6	286 T	24·80 170
Nuneaton (Chilvers Coton Vic.)..	Rev. R. Chadwick .....	5	0	10	283 T	23·51 157
D Whitacre(Birmingham W.W.)...	E. Antony Lees, Esq...	5	1	5	269 T	25·70 176
D Sutton Coldfield (The Park).....	Mr. H. Harlond.....	5	1	0	371 T	26·29 156
„ Atherstone (Mancetter Manor)..	Hon. George Peel .....	5	1	0	250	28·71 ...

MAP OF DIVISION VII.

NORTH MIDLAND COUNTIES,  
Showing the River-Divisions.



## DIVISION VII.—NORTH MIDLAND COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet	inches.	
<b>LEICESTERSHIRE.</b> (Area, 824 sq. mi.)							
1.— <b>SEVERN</b> —Upper Avon. 41 sq. mi.							
Lutterworth (Walcote).....	Major Corbet Smith ...	5	0	6	290 T	24.41	...
D Bitteswell School Gardens .....	M. Smith, Esq. ....	5	0	9	401 T	25.30	181
2.— <b>WELLAND.</b> 96 sq. mi.							
D Market Harborough (Rose Hill).	G. O. Nicholson, Esq....	5	1	0	350 T	25.12	170
East Langton Grange .....	J. W. Logan, Esq., M.P.	5	1	0	300 ?	23.63	...
D Kibworth Beauchamp .....	E. V. Phillips, Esq. ...	5	2	6	390 T	24.53	159
Hallaton Hall.....	S. N. Bankart, Esq. ...	8	1	3	366	20.26	...
Horninghold House <i>Snowdon g.</i> M	Mr. B. Inchley .....	5	1	6	380	21.37	...
" " <i>Flout g.</i> M	" " " " .....	6	2	0	380	19.80	...
D Loddington (The Cottage) .....	Major N. H. Matthews	5	1	0	452 T	26.86	198
Withcote Hall Gardens.....	Mr. W. Rouse .....	5	0	9	500	22.99	...
3.— <b>WITHAM.</b> 7 sq. mi.							
4.— <b>TRENT</b> —Right Bank Tributaries. 680 sq. mi.							
Wistow Hall Gardens .....	Hon. T. F. Fremantle..	5	1	0	307 T	22.78	...
D Countesthorpe (Wigston Sew. Fm.)	W. G. J. Clark, Esq., C.E.	8	0	9	257 T	21.50	169
D Blaby (Whetstone Road) ... <i>No. 1</i>	G. F. Shoults, Esq. ...	5	0	6	239 T	24.44	177
D " " " " " <i>No. 2</i>	" " " " " .....	5	0	6	239 T	23.42	175
D Leicester (Stoneygate Road) ...	T. Spencer Smithson Esq	5	0	6	258 T	22.93	160
D " " " " " .....	Bernard Stracey, Esq....	5	1	0	190 T	23.33	158
D " (Town Hall Square) ...	E. G. Mawbey, Esq., C.E.	5	0	6	211 T	22.99	167
D† " " " " " (R)	" " " " " .....	7	2	0	213 T	22.80	165
D Market Bosworth (Osbaston Hall)	Thomas Cope, Esq.....	8	1	0	393 T	26.03	208
D Desford (Industrial School) .....	C. Oxley, Esq. ....	5	1	0	370 T	28.73	154
Scraptoft (Nether Hall) .....	W. R. Kendall, Esq....	5	2	0	350	20.96	...
Humberstone Asylum .....	S. C. Leak, Esq.....	8	1	0	266 T	24.06	170
D Leicester (Gilroes Cemetery) ...	E. G. Mawbey, Esq., C.E.	5	1	0	285 T	23.35	173
" (Anstey Pastures).....	W. P. Viccars, Esq. ...	5	1	1	280 T	22.75	...
D Thornton Reservoir .....	G. T. Edwards, Esq., C.E.	8	1	2	371 T	25.91	161
D Cropstone (Bradgate Reservoir)..	" " " " " .....	8	1	0	246 T	25.94	172
Hungerton (Baggrave Hall).....	A. E. Burnaby, Esq....	5	1	3	380 T	23.41	...
D Barkby Hall .....	Victor R. Pochin, Esq..	5	0	6	217 T	23.83	153
Syston .....	S. K. Daniels, Esq. ...	5	1	6	180 T	23.46	...
D Coalville W.W. (Bardon Hill) ...	L. L. Baldwin, Esq., C.E.	8	1	0	520 T	27.57	176
D Swithland (The Brand) .....	G. T. Edwards, Esq., C.E.	8	1	0	172 T	24.63	154
D Ratcliffe-on-Wreake College ...	Rev. J. Cremonini .....	5	1	0	288 T	20.80	156
D Ashby-de-la-Zouch (Coleorton Hall)	Mr. H. T. Wilson.....	5	2	0	540 T	28.48	155
Barrow-upon-Soar (The Mount).	Mrs. C. Stuart Thomson	5	1	6	...	23.48	...
D Melton Mowbray .....	Gerald Walsh, Esq. ...	...	...	...	...	22.09	166
D Charnwood Forest (Blackbrook Res.)	A. H. Walker, Esq., C.E.	8	1	0	367	26.57	186
D Loughborough (Nan Pantan Res.)	" " " " " .....	8	1	0	269 T	26.57	169
Loughborough (The Widenings)	Adrian Young, Esq. ...	5	0	7	197 T	24.60	158
" (Sewage Farm) .....	A. H. Walker, Esq., C.E.	8	1	0	134 T	22.33	...
D Burton-on-the-Wolds (Burton Hall)	Lord Ernest St. Maur...	5	1	0	270 T	23.97	165
D Prestwold Hall .....	E. H. Packe, Esq. ....	8	1	0	209 T	24.05	184
D Waltham-on-the-Wolds .....	G. Higgins, Esq. ....	5	1	0	568	24.62	161
D Croxton Kerrial Vicarage .....	Rev. W. E. P. Malden	5	1	0	480 T	23.97	177
D Belvoir Castle Gardens .....	W. H. Divers, Esq. ...	8	1	0	260 T	23.58	181

## DIVISION VII.—NORTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level.	1913	
		in.	ft. in.	feet.	inches.	
<b>RUTLAND. (Area, 152 sq. mi.)</b>						
1.—WELLAND. 125 sq. mi.						
Liddington (Uppingham W.W.)	Messrs G. & F. W. Hodson	5	1 0	152 $\pi$	20.71	...
d Uppingham (Ridlington) .....	N. W. Wortley, Esq....	5	4 7	527 $\uparrow$	24.24	169
Wing (The Cottage) ... ..	J. P. W. Lightfoot, Esq.	5	1 1	370 $\uparrow$	24.50	151
Oakham (Fritham House).....	Mrs. Chapman .....	5	1 0	300	26.81	...
d Whitwell Rectory .....	Rev. T. E. Woodhouse.	5	0 11	320	24.57	185
Great Casterton Rectory .....	E. N. Plevins, Esq. ...	8	1 0	126 $\pi$	23.18	...
„ „ (Walk Farm) ... „ „ „	„ „ „ „	5	1 8	330 $\uparrow$	23.70	...
2.—WITHAM. 5 sq. mi.						
3.—TRENT—Right Bank Tributaries. 22 sq. mi.						
d Market Overton .....	Miss Grace Wingfield...	8	0 11	475 $\uparrow$	26.61	187
<b>LINCOLNSHIRE. (Area, 2646 sq. mi.)</b>						
1.—NENE. 100 sq. mi.						
Tydd (North Level Sluice) .....	Mr. S. Fovargne.....	5	3 6	10 $\uparrow$	22.51	...
2.—WELLAND. 341 sq. mi.						
Stamford (St. George's Square)..	T. Booth, Esq. ....	5	4 0	88 $\pi$	21.45	...
d Market Deeping (Wilsthorpe) ...	J. C. Gill, Esq., C.E....	8	3 10	55 $\pi$	19.74	145
Holywell Hall ... ..	Col. Birch Reynardson	5	0 6	190 $\uparrow$	23.87	152
Bourne (Council School) .....	J. Langsford, Esq. ...	5	1 0	23	18.80	...
d „ (Guthram) .....	F. S. Robins, Esq., C.E.	5	1 6	19	17.07	140
d Spalding (Pode Hole) .....	H. Bain, Esq.....	8	1 3	13	21.11	169
3.—WITHAM & C. 1085 sq. mi.						
Stainby Rectory .....	Rev. W. L. de B. Thorold	4	0 9	490 $\uparrow$	22.75	...
Stroxton Rectory .....	Rev. S. C. Wood .....	5	0 10	350 $\uparrow$	23.26	...
d Little Ponton Rectory .....	Rev. P. R. Worsley ...	5	1 0	250 $\uparrow$	24.49	201
d Denton Manor ... ..	Sir C. G. E. Welby, Bt. CB	5	3 0	310	24.12	197
d Grantham (Saltersford).....	H. Preston, Esq. ....	5	0 6	188 $\pi$	22.43	149
d „ (Guildhall) .....	W. Wright, Esq., C.E.	5	13 6	202 $\pi$	19.51	147
„ (High Street) .....	Messrs. R. & W. Bird..	5	1 0	202	22.12	...
d Boston (Black Sluice, Skirbeck).	F. S. Robins, Esq., C.E.	5	1 3	11	22.90	192
d „ (Sleaford Road) .....	J. Shaw, Esq. ....	5	1 2	9	23.57	155
d „ .....	G. E. Clarke, Esq., C.E.	8	1 0	13 $\pi$	22.26	155
d „ (Grand Sluice) .....	J. H. Johnson, Esq., C.E.	8	8 0	18 $\uparrow$	21.82	150
„ (Bargate End) .....	A. O. Scrivener, Esq...	8	1 0	9	22.49	162
d Sleaford (Kesteven County Asylum.)	Dr. J. A. Ewan .....	...	0 9	100	21.00	153
d „ (Rauceby Hall) .....	Rev. V. F. Willson ...	5	1 0	125 $\uparrow$	23.32	159
d Claypole Rectory .....	Rev. F. R. A. Hamilton	8	2 0	70	21.76	147
Fulbeck .....	Meteorological Office ...	5	0 8	180 $\pi$	21.24	172
d Welbourn .....	Miss M. Burt .....	5	3 6	120 $\uparrow$	22.23	145
Temple Bruer.....	Miss A. S. Morley .....	5	1 0	300 $\uparrow$	21.81	...
New Leake (Lade Bank Engines)	J. H. Johnson, Esq., C.E.	8	1 0	10 $\pi$	18.52	...
d Carrington Grange .....	Mr. T. J. Ward .....	5	6 0	15 $\pi$	21.85	156
Navenby Rectory .....	Mr. J. Thompson .....	5	1 0	218 $\uparrow$	22.95	147

DIVISION VII.—NORTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level		
		in.	ft. in.	feet.	inches.	
LINCOLNSHIRE—(con.)						
3.—WITHAM & C—(con.)						
Carlton-le-Moorland .....	J. Broocklebank, Esq....	5	1 2	49	21.57	...
Mareham-le-Fen .....	Meteorological Office...	5	3 0	11	20.62	...
Revesby .....	J. Shaw, Esq.....	5	2 0	135 $\nabla$	19.82	...
D Woodhall Spa (Galm House) ...	J. Collins, Esq. ....	5	1 0	72	20.57	164
D Spilsby (Hagnaby Priory) .....	Miss Poeklington .....	8	1 8	47 $\nabla$	22.47	175
Lincoln (Branston Hall) .....	A.S.Leslie Melville, Esq.	5	1 0	122 $\nabla$	18.18	...
D Bardney Railway Station .....	C. A. Kirby, Esq. ....	8	7 6	25 $\nabla$	19.28	164
D Bucknall.....	Mr. Joshua Bint .....	5	1 0	33 $\nabla$	20.59	167
D Horncastle.....(R)	H. R. Maynard, Esq....	5	1 6	110	21.77	161
Lincoln (Boultham Pumping Sta.)	Neil McK. Barron Esq. CE	5	1 0	19 $\nabla$	19.77	...
„ (Skellingthorpe Hall) ...	A. H. B. Coupland, Esq.	5	1 0	40	20.11	...
„ (Station) .....	Great Central Rly. Co.*	9	3 6	26	20.03	142
D „ (Sessions House) .....	H. Hoe, Esq. ....	5	1 0	59 $\nabla$	19.80	147
D „ (D'Isney Place) .....	A. H. Leslie Melville Esq	4	1 0	215 $\nabla$	20.84	181
D „ (Cottesford Place) .....	F. A. Peacock, Esq. ..	5	0 9	220	20.95	162
D „ (Monks Tower) .....	H. C. H. Allanby, Esq.	5	1 6	100	20.33	141
Scampton House .....	Mrs. G. E. Sandars ...	5	1 11	80	18.15	...
D Hackthorn Hall.....	E. W. Cracroft, Esq....	5	4 6	105	18.43	157
D Willingham-by-Stow .....	R. C. Bacon, Esq. ....	8	2 0	70 $\nabla$	20.05	170
Springthorpe Rectory .....	Rev. B. Davies .....	5	1 0	75 $\nabla$	19.16	...
4.—GREAT EAU & C. 443 sq. mi.						
D Wainfleet (Bridge House)....	G. Booth Walker, Esq.	5	1 0	17 $\nabla$	20.52	188
D Skegness (Estate Offices) .....	S. Coetmore Jones, Esq.	8	1 0	13 $\nabla$	18.83	178
D East Keal Rectory .....	Rev. R. H. Simpson ..	5	0 7	180 $\nabla$	19.62	180
D Halton Holgate .....	G. Rattenbury, Esq....	5	1 0	89 $\nabla$	22.55	169
D Spilsby .....	L. T. Dean, Esq. ....	5	2 0	150 $\nabla$	21.90	140
D „ (Ashby Road) .....	J. J. Rainey .....	5	1 0	160 $\nabla$	22.03	154
Hagworthingham .....	Mr. R. Wright .....	5	1 1	252 $\nabla$	24.25	...
Harrington Hall .....	Mr. E. Burgess .....	5	0 4	163 $\nabla$	22.56	...
Alford Cemetery .....	Mr. E. Hodgson.....	5	1 0	29 $\nabla$	18.04	149
D Mablethorpe (Trusthorpe Hall)..	I. N. Woodiwiss, Esq...	8	1 3	10 $\nabla$	18.59	149
D Louth (Westgate) .....	Dr. F. Fawcett .....	5	0 9	120 $\nabla$	22.67	156
D Kirmond .....	C. Fieldsend, Esq.....	5	1 2	309 $\nabla$	20.63	186
5.—HUMBER—Right Bank Tributaries. 428 sq. mi.						
Market Rasen.....	F. C. Burrell, Esq. ....	5	0 8	84	19.14	...
„ „ .....	Great Central Rly. Co..	9	3 6	100	17.87	157
D Waltham Hall Gardens .....	Mr. C. Frankish.....	5	1 1	80	22.51	171
Brigg Station .....	Great Central Rly. Co..	..	...	16	16.49?	161
D „ .....	A. Atkinson, Esq., C.E.	8	1 2	11 $\nabla$	17.97	166
D Grimsby (Abbey Road).....	W. J. Wood, Esq., C.E.	5	3 0	23	22.10	143
„ .....	Great Central Rly. Co..	9	15 0	42	17.78	...
Barnetby.....	„ „ „ „	9	3 6	51	18.56	...
D Brocklesby Park .....	Mr. F. C. Stainsby.....	5	2 0	108 $\nabla$	21.50	170
D Burnham Beeches .....	R. S. Fieldsend, Esq....	5	1 0	160	19.90	183
D Burton-upon-Stather(Normanby)	A. G. Wilkes, Esq.....	5	0 10	185 $\nabla$	20.94	163

\* Kept for the Canal Department of the Great Central Railway Company. Returns supplied by T. Chappell, Esq.

## DIVISION VII.—NORTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with 0.1 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
LINCOLNSHIRE—(con.)						
5.—HUMBER—Right Bank Tributaries—(con.)						
D Thornton Curtis Vicarage .....	Rev. C. B. Goodacre ...	8	1 4	66	20.61	168
„ „ School .....	W. Dove, Esq. ....	...	...	70 ?	19.32	...
D Horkstow .....	E. J. Turton, Esq. ....	5	0 10	75 ½	23.66	165
Ferriby Sluice .....	A. Atkinson, Esq., C.E.	5	1 0	18 ½	18.96	171
New Holland .....	Great Central Rly. Co..	9	3 6	18	17.90	143
6.—TRENT—Right Bank Tributaries. 172 sq. mi.						
Woolsthorpe .....	A. Brown, Esq., C.E....	...	1 3	182	21.41	...
Swinderby (Ling Moor) .....	Cecil H. Wray, Esq....	5	0 9	50 ?	21.80	...
D Lincoln (Doddington Hall) .....	G. E. Jarvis, Esq. ....	8	1 2	92 ½	18.38?	146
Gainsborough .....	Great Central Rly. Co..	...	...	76	16.79?	148
„ (N. Sandsfield) .....	Mr. J. Creed .....	5	1 5	23 ½	20.11	...
Burton-upon-Stather Vicarage...	Rev. Canon F. A. Jarvis	5	1 6	212 ½	20.37	...
7.—TRENT—Left Bank Tributaries. 77 sq. mi.						
Wroot (S. Level Pumping Station)	Mr. F. S. Trafford .....	10	5 0	13 ½	17.57	...
Crowle (N. „ „ „)	Mr. H. G. Trafford .....	5	2 6	10 ?	16.67	...
„ (Keadby) .....	Great Central Rly. Co.	9	3 6	17	15.68?	...
NOTTINGHAMSHIRE. (Area, 843 sq. mi.)						
1.—WITHAM. 10 sq. mi.						
2.—TRENT—Right Bank Tributaries. 218 sq. mi.						
Kingston (Midland Agric. Inst.)..	Meteorological Office ...	5	1 0	126 ½	22.03	152
D „ Hall .....	Lord Belper .....	5	0 9	130	24.39	171
D Plumtree (Normanton-on-Wolds)	T. A. Hill Esq. ....	8	1 0	170 ½	22.58	173
D Nottingham (Wilford Hill Res.)	F. W. Davies, Esq. ...	8	0 11	296 ½	21.12	173
Cropwell Bishop (Cropwell Grove)	H. Smith, Esq., jun....	5	1 1	160 ½	21.68	...
Bingham (Whatton Manor) .....	Capt. M. H. Hall .....	5	3 0	104 ½	21.16	150
D Newark Castle Gardens .....	Mr. W. Yorke .....	5	0 8	63 ½	22.18	153
North Collingham (Markham Ho.)	Miss Turton .....	5	1 0	28 ½	22.57	172
3.—TRENT—Derwent. 2 sq. mi.						
4.—TRENT—Erewash. 42 sq. mi.						
D Beeston (West End) .....	Dr. F. Rothera .....	5	1 0	104 ½	24.27	174
D Nottingham (Strelley) .....	T. L. K. Edge, Esq. ...	8	1 0	396 ½	23.60	164
D „ ( „ Hall) .....	„ „ „ „ .....	5	1 0	378 ½	24.29	181
D „ ( „ „ „) .....	„ „ „ „ .....	5	1 0	379 ½	24.39	...
D Bulwell (Watnall Reservoir) ...	F. W. Davies, Esq. ....	8	0 11	472 ½	28.31	204
D Eastwood Colliery .....	J. W. Fryar, Esq. ....	5	1 0	245 ½	26.89	181
„ (Moorgreen Reservoir)...	A. Brown, Esq., C.E....	...	6 0	301	25.69	195
Annesley (Selston W.W.) .....	S. Maylan, Esq. ....	5	1 0	475 ½	23.98	...
5.—TRENT—Left Bank Tributaries. 569 sq. mi.						
Nottingham (Lenton Hall) .....	C. A. Hingston, Esq....	5	0 7	188 ½	21.36	...
„ (Trent Lane) ... (R)	A. Brown, Esq., C.E....	8	0 10	85 ½	22.31	154
D „ (The Castle) .....	„ „ „ „ .....	8	1 2	192 ½	22.46	181
„ ( „ „ „) .....	„ „ „ „ .....	8	76 0	268 ½	21.17	...
D „ (Carisbrook Ho., The Park)	W. Bradshaw, Esq. ...	5	2 0	247 ½	23.35	178

## DIVISION VII.—NORTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
NOTTINGHAMSHIRE—(con.)							
5.—TRENT—Left Bank Tributaries—(con.)							
Nottingham (Stoke Bardolph) ...	A. Brown, Esq., C.E....	8	1	0	66 $\pi$	21.92	...
„ (Mapperley Hall Drive) ...	„ „ „ „ ...	...	1	0	245	25.13	...
D „ ( „ Hill) .....	E. Powell, Esq. ....	8	1	0	400 $\pi$	23.54	154
Bagthorpe (Isolation Hospital)...	P. Boobbyer, Esq., M.D.	8	2	0	189 $\pi$	22.84	174
D Nottingham (Basford W.W.) ...	F. W. Davies, Esq. ...	8	1	0	169 $\pi$	22.31	154
D Burton Joyce Water Works.....	„ „ „ „ „ „ .....	8	0	9	64 $\pi$	23.72	160
Bulcote (Corporation Farm).....	A. Brown, Esq., C.E....	10	1	3	65 $\pi$	21.99	...
Lowdham (Chilwell Nurseries)...	Mr. J. D. Pearson .....	5	1	7	90	21.75	...
D Bulwell (Bestwood W.W.) .....	F. W. Davies, Esq. ...	8	1	2	317 $\pi$	25.76	164
D Daybrook (Ramsdale Hill Res.).	„ „ „ „ „ „ .....	8	0	10	495 $\pi$	27.78	199
Bulwell Hall Park .....	A. Brown, Esq., C.E....	8	1	0	252	27.17	183
Hucknall Torkard (Forge Mills)	J. D. Walker, Esq. ....	5	4	3	200 ?	24.19	...
D Papplewick (Water Works) .....	F. W. Davies, Esq. ...	8	0	10	317 $\pi$	26.71	171
D Southwell (Elmfield) .....	Dr. H. Handford .....	5	1	0	132 $\pi$	23.36	161
„ ( „ ) .....	M „ „ „ „ „ .....	5	1	0	132 $\pi$	22.91	...
D „ (Halam House) .....	Rev. Canon Singleton..	5	1	0	170 $\pi$	24.05	149
D† Farnsfield .....	Dr. C. Wills .....	5	1	0	210 $\pi$	23.73	165
† Sutton-in-Ashfield W.W. ....	Messrs G. & F. W. Hodson	5	1	1	462 $\pi$	25.95	...
† Mansfield (W.W. Rainworth) ...	„ „ „ „ „ „ .....	5	1	0	360 $\pi$	26.77	...
D „ (Berry Hill) .....	W. Hollins, Esq. ....	5	1	0	528 $\pi$	30.42	197
„ (High Oakham) .....	P. J. Shacklock, Esq. ...	5	1	0	425 $\pi$	27.83	186
D† „ (West Bank) .....	W. Pickard, Esq. ....	8	1	0	405 $\pi$	25.63	175
Clipstone Water Works .....	Messrs G. & F. W. Hodson	5	1	0	236 $\pi$	23.67	...
D Ollerton (Boughton W.W.) .....	F. W. Davies, Esq. ...	8	0	7	141 $\pi$	22.43	155
„ (Thoresby Gardens) .....	Mr. A. Simmons .....	8	0	9	125 $\pi$	26.21	...
Clumber Gardens .....	A. P. Elliott, Esq. ....	5	4	0	164 $\pi$	21.39	...
D Elkesley Pumping Station .....	N. McK. Barron, Esq. CE	5	1	0	118 $\pi$	23.36	171
Rampton Manor .....	C. E. Ellis, Esq. ....	6	1	0	50	20.30	156
D Workshop (Carlton Road) .....	J. Edeson, Esq. ....	5	1	1	154	22.06	153
„ .....	Great Central Rly. Co..	9	3	6	127	21.08	173
D „ (Osberton Gardens) ...	Mr. J. B. Allan .....	5	3	6	70	22.57	166
Retford .....	Great Central Rly. Co..	9	3	6	52	18.07	151
D „ (Grammar School) .....	G. R. Davies, Esq. ....	8	0	11	53 $\pi$	20.55	180
D „ (Morton Hall) .....	W. H. Mason, Esq. ...	5	1	0	140 $\pi$	21.30	146
„ (Babworth Hall) .....	Col. H. Denison .....	5	1	0	92 $\pi$	19.47	...
D Sturton-le-Steeple .....	S. Ingham, Esq. ....	5	4	6	50	19.05	149
Workshop (Wigthorpe Hill) .....	R. C. Ramsden, Esq. ....	5	1	0	100	22.18	154
D† „ (Hodsock Priory) .....	Lt.-Col. H. Mellish ...	8	1	0	56 $\pi$	22.34	164
† „ ( „ „ ) ... M	„ „ „ „ „ „ .....	5	1	0	56 $\pi$	22.12	...
† „ ( „ „ ) ... (R)	„ „ „ „ „ „ .....	11	1	6	56 $\pi$	22.17	158
D Scrooby .....	Mr. J. Mallender .....	5	1	0	44	22.19	171
The Gardens [Bawtry Hall] .....	Mr. F. E. Hogbin .....	5	1	3	31 $\pi$	22.79	160
Stockwith .....	Great Central Rly. Co.	9	3	6	21	19.53	171
D Bawtry (Hesley Hall) .....	B. I. Whitaker, Esq. ....	8	0	11	61 $\pi$	21.81	163

6.—OUSE—Don. 2 sq. mi.



## DIVISION VII.—NORTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
DERBYSHIRE. (Area, 1029 sq. mi.)							
1.—MERSEY, UPPER. 93 sq. mi.							
Comb's Reservoir .....	Great Central Rly. Co..	9	3	6	710 T	32.50	243
Chapel-en-le-Frith .....	" " "	9	3	6	965 T	32.98	213
D Whaley Bridge (Mosley Hall)...	S. Arrowsmith, Esq. ...	9	1	2	760 B	35.43	222
Mellor (Manor House) .....	W. Jowett, Esq.....	5	1	0	544 T	31.18	...
D Glossop W.W. (Swineshaw) .....	Mr. J. Garner .....	12	3	0	733 T	34.45	221
Woodhead Station.....	Great Central Rly. Co..	9	3	6	878 T	41.87	210
2.—MERSEY—Weaver. 2 sq. mi.							
3.—TRENT. Right Bank Tributaries. 68 sq. mi.							
Netherseale Old Hall.....	W.W. Worthington Esq. ...	...	...	...	260	31.95	...
D Repton (The Croft) .....	H. C. Hayward, Esq. ...	5	1	4	170	26.44	186
Stanton-by-Bridge .....	F. Worrall, Esq., C.E..	8	1	2	144 T	24.74	...
4.—TRENT—Dove. 156 sq. mi.							
Snelston Rectory .....	Rev. A. Evans .....	8	1	6	450 T	29.11	150
Osmaston (Yeldersley Hall) .....	H.F. Wright, Esq., M.P.	5	1	0	635	27.84	184
D Ashbourne Water Works.....	Mr. J. W. Twigg .....	5	1	0	582 T	30.63	182
5.—TRENT—Left Bank Tributaries. 84 sq. mi.							
Willington W.W. (Milton) .....	Messrs G. & F. W. Hodson	5	1	0	134 T	23.78	...
D Chellaston .....	H. Chambers, Esq.....	5	1	0	170 T	25.36	191
Findern (The Longlands).....	Mrs. B. W. Spilsbury..	5	0	9	186 T	24.51	166
Etwall (Blakeley Lodge) .....	Mr. R. Giles .....	5	1	0	190 T	26.27	...
" (Sewage Farm) .....	Mr. B. Hydes .....	5	13	0	201 T	24.85	...
Mickleover (County Asylum) ...	R. Legge, Esq., M.D. ...	5	3	0	300 T	24.57	154
D " Manor.....	Mr. J. Campbell .....	5	2	0	280	26.93	184
Littleover (The Knoll) .....	W. B. Robotham, Esq..	5	2	6	315	26.15	172
" Old Hall .....	E. McInnes, Esq. ....	5	2	6	346 T	27.93	183
6.—TRENT—Derwent. 428 sq. mi.							
D Spondon (Derby Sewage Works)	J. Ward, Esq., C.E. ...	5	1	3	135 T	25.45	188
D " (The Homestead) .....	H. Fowler, Esq.....	5	1	6	255 T	24.63	169
D Derby (Wild Street).....	Messrs. J. Davis & Son	5	1	0	174	26.71	182
D† " (Midland Railway).....	J. Sayers, Esq. ....	5	1	5	156 T	25.19	174
D " (Royal Infirmary) .....	E. Forster, Esq.....	5	1	0	195 T	24.63	196
D " (The Arboretum) .....	J. Ward, Esq., C.E. ...	8	1	0	196 T	26.46	173
" (Duffield Road) .....	Dr. W. G. Copestake...	5	1	2	190 T	25.63	...
Kirk Langley (Langley Hall) ...	G. W. Peach, Esq. ...	5	1	10	396 T	28.34	194
D Breadsall Lodge.....	Col. W. B. Woodforde.	5	1	3	280 T	24.72	158
D " Priory .....	Miss H. A. Haslam ...	5	1	6	380 T	26.17	171
D Duffield (Castle Hill House).....	Messrs. J. Davis & Son	...	...	...	...	26.91	194
D " (Kirkstyles).....	W.B. Worthington Esq. CE	5	1	0	235 T	25.44	173
D Belper (Herbert Strutt School)...	W.W. Tunnicliffe, Esq.	8	1	0	223 T	27.77	174
D " (Quarry Bank) .....	J. Hunter, Esq., C.E. ...	5	0	8	281 T	28.55	175
D " (Highfield) .....	Lt.-Col. M. Hunter ...	8	0	8	310 T	28.79	171
D Wirksworth (Greengates).....	Thomas Gibbs, Esq. ...	5	1	0	495 T	31.48	170
D " (Manor House).....	T. Atkinson, Esq. ....	5	1	0	498 T	31.76	186
Alderwasley .....	Rev. C. E. B. Deacon...	5	0	8	550 B	32.10	185
D Whatstandwell (Meerbrook Sough)	Messrs G. & F. W. Hodson	5	1	0	246	31.38	186
D Brackenfield (Lindway Reservoir)	R. F. Ward, Esq. ....	5	1	0	595 T	29.38	160

## DIVISION VII.—NORTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
DERBYSHIRE—(con.)							
6.—TRENT—Derwent—(con.)							
Matlock Bath .....	Miss E. Chadwick .....	5	1	1	500	32·14	...
D „ (The Gables) .....	Mrs. R. Wildgoose.....	5	1	0	450	34·52	200
D „ (Rockside) .....	J. D. Evans, Esq. ....	5	1	0	637	31·49	191
Darley Dale (Whitworth Inst.)..	J. H. Dawson, Esq. ...	5	2	0	361	30·68	...
D „ Hall.....	A. Clay, Esq. ....	5	1	0	400	32·33	205
D Clay Cross (Press Reservoir).....	G. Frith, Esq., C.E. ...	8	1	0	810	30·43	178
D Bakewell (Catcliff).....	Dr. T. Fentem .....	12	3	1	411	33·34	171
D†Chatsworth Gardens .....	Mr. F. Jennings.....	5	1	0	436	35·84	209
D Buxton (Portobello Bar) .....	F. Langley, Esq., C.E.	8	1	0	1600	48·57	251
D „ (Stanley Moor) .....	„ „ „	8	1	0	1340	45·03	252
D „ (Burbage Edge) .....	„ „ „	8	1	0	1400	45·33	251
D „ (Devonshire Hospital)...	W. Pilkington, Esq. ...	5	1	0	988	41·92	232
D†Holmesfield (Barbrook Reservoir)	Gilbert Frith, Esq., C.E.	8	1	0	1080	33·81	277
D†Eyam (The Rectory) .....	Rev. F. L. Shaw .....	5	1	0	856	33·98	210
D „ (The School) .....	R. Owen, Esq. ....	8	1	6	856	38·36	218
D „ (Eyam View) .....	Mr. P. Thorpe.....	5	1	0	945	36·00	222
„ (Bretton).....	Rev. F. L. Shaw .....	5	1	0	1250	52·96?	...
†Grindleford (Grouse Inn) No. 58	S. B. Winser, Esq., C.E.	5	1	0	990	32·77	170
Hathersage .....	No. 57 „ „ „	5	1	0	525	33·53	167
Bamford .....	No. 60 „ „ „	8	2	0	680	32·72	198
D „ (Engineer's Office) No. 36	„ „ „	8	2	1	509	35·98	251
Castleton .....	No. 55 „ „ „	5	1	0	625	39·90	189
Hope School.....	No. 56 „ „ „	5	1	0	545	37·47	207
Edale (Dale Head) .....	No. 54 „ „ „	5	1	0	1015	44·77	215
„ (Upper Booth) ...	No. 53 „ „ „	5	1	0	910	41·60	216
Bamford (Yorkshire Br. Weir) 59	„ „ „	5	1	0	540	35·28	204
Ashopton (Win Hill) .....	No. 34 „ „ „	5	1	0	1240	34·79	...
„ (Cockbridge Farm) No. 33	„ „ „	5	1	0	620	38·91	204
„ (Wooler Knoll) No. 52	„ „ „	5	1	0	1080	36·71	...
„ Inn.....	No. 32 „ „ „	8	1	0	610	38·98	208
„ (Grimbo Carr) ...	No. 51 „ „ „	5	1	0	1100	32·16	...
„ (Cutthroat Brdg.) No. 31	„ „ „	8	1	0	994	38·01	...
„ (Moscar Flat) ...	No. 30 „ „ „	8	1	0	1154	39·07	...
Derwent Bridge End .....	No. 28 „ „ „	5	1	0	624	38·75	201
„ Dam.....	No. 26 „ „ „	5	1	0	790	35·83	217
Ashopton (Haglee) .....	No. 50 „ „ „	8	1	0	783	35·86	226
Blackdean Moor (Crookstone) 49	„ „ „	5	1	0	1460	43·00	...
Derwent (Lockerbrook Fm.) No. 27a	„ „ „	5	1	0	1174	40·16	215
Woodland Dale (Woodlands, S.) 48	„ „ „	8	1	0	1044	39·50	204
„ „ „ ( „ „ „ N.) 47	„ „ „	8	1	0	1063	39·16	204
The Peak (Fairbrook).....	No. 46 „ „ „	5	1	0	1009	50·92	213
„ (Nungrain).....	No. 45 „ „ „	5	1	0	1320	49·38	...
Hayfield (Ashop Head) ...	No. 43 „ „ „	5	1	0	1650	39·80	...
Woodland Dale (Rowlee) No. 24	„ „ „	5	1	0	1540	37·49	...
Derwent Dale (Walker Ho.) No. 22	„ „ „	5	1	0	758	38·28	213
Alport Dale (Alport Castles) No. 42	„ „ „	5	1	0	955	47·26	183
Featherbed Moss (Redgate Clough) 44	„ „ „	5	1	0	1730	44·20	...

## DIVISION VII.—NORTH MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft	in.	feet.	inches.	
DERBYSHIRE—(con.)							
6.—TRENT—Derwent—(con.)							
Derwent Dale (Birchinlee) No. 23	S. B. Winsor, Esq., C.E.	5	1	0	870	45·02	237
Birchinlee Moor (Cote Ridge) No. 18	„ „ „	5	1	0	1440	44·12	...
Lady Clough Moor ..... No. 41	„ „ „	5	1	0	1720	40·70	...
Coldharbour Moor (Summit) No. 39	„ „ „	8	1	0	1670	44·43	...
Derwent Dale (Howden Dam) 17	„ „ „	8	1	0	829	42·48	225
„ „ (Banktop Hey) 16	„ „ „	8	1	0	1340	50·06	...
„ „ (Ridge Farm) ... 13	„ „ „	5	1	0	1175	34·10	...
Alport Moor (Glethering Clough) ... 40	„ „ „	5	1	0	1640	39·10	...
Westend Moor (Blacklow Cote) 15	„ „ „	5	1	0	970	46·05	...
„ „ ..... No. 10	„ „ „	5	1	0	1560	43·71	...
Alport Moor ..... No. 38	„ „ „	5	1	0	1790	40·60	...
Derwent Dale (Back Dyke) No. 12	„ „ „	5	1	0	1546	44·13	...
„ „ (Mosley Bank) No. 5	„ „ „	5	1	0	1350	47·40	...
Ridgewalk Moor ..... No. 9	„ „ „	5	1	0	1650	41·98	...
Bleaklow Stones ..... No. 8	„ „ „	5	1	0	2060	52·86	...
Derwent Dale (Roundhill) No. 4	„ „ „	5	1	0	1675	45·20	...
7.—TRENT—Erewash. 50 sq. mi.							
d Codnor (Cross Hill) .....	A. F. Pine, Esq. ....	5	1	0	372 T	27·12	167
d „ „ Park .....	Midland Railway Co. ...	5	1	0	243 T	28·52	175
8.—OUSE—Don. 148 sq. mi.							
Hardwick Hall .....	Mr. E. Wilson .....	8	2	6	594 T	31·32	168
d Grassmoor Colliery .....	Mr. J. Norman .....	5	19	10	370 T	20·90	143
† Chesterfield (Gas Works) .....	Chesterfield Corporation	5	1	0	279	26·07	...
„ „ .....	Great Central Rly. Co..	9	3	6	250	27·06	157
d „ „ (Sewage Works) ...	Mr. W. Tomlinson .....	5	2	0	222	26·42	151
d† „ „ (Linacre Reservoir)	Chesterfield Corporation	8	1	0	460	31·14	179
d† „ „ ( „ „ „ )	„ „ „ „ „	5	1	0	490	26·82	178
„ „ (Tapton Grove) .....	Mr. W. R. Bloxham ...	5	4	3	400	25·75	...
d Totley Hall .....	W. A. Milner, Esq. ...	5	1	0	700	33·13	173
d Eckington (Mosbrough C.E. Sch.)	W. H. Holmes, Esq. ...	5	1	0	330 T	28·47	...
Killamarsh (Norwood) ...	Great Central Rly. Co..	9	3	6	226 T	26·75	201
d† Norton .....	Col. Sir N. Creswick, KCB	5	0	8	700 T	30·59	175

MAP OF DIVISION VIII.

NORTH WESTERN COUNTIES.

Showing the River-Divisions.



## DIVISION VIII.—NORTH WESTERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>CESHIRE. (Area, 1027 sq. mi.)</b>						
<b>1.—MERSEY, UPPER. 269 sq. mi.</b>						
D† Macclesfield (The Park) .....	Mr. S. H. Moss .....	5	1	0	501 $\pi$	30.99
	Great Central Rly. Co..	9	3	6	539	23.21?
D† " (Swanscoe Park) ..	T. C. Horsfall, Esq. ...	5	1	0	676 $\pi$	31.48
Bollington (Sponds Hill) .....	Great Central Rly. Co..	9	3	6	1279 $\pi$	25.94?
" Cross (Turner Heath) ..	J. A. Wanklyn, Esq. ...	5	0	11	500	30.22
D Wilmslow (Parkside) .....	Miss H. M. Pearson ...	8	1	0	255	26.75
Whaley Bridge .....	Great Central Rly. Co..	9	3	6	602 $\pi$	35.17
D Poynton (Waterloo) .....	C. F. Butterworth, Esq. ...	5	1	0	397 $\pi$	27.76
D Handforth .....	Dr. A. J. P. Nowell ...	5	1	8	256 $\pi$	29.80
D Rostherne Vicarage .....	Rev. C. H. Coneybeare	5	1	0	163 $\pi$	28.60
D Disley (Lyme Park) .....	T. Molyneux, Esq. ....	5	1	0	674 $\pi$	28.42
D " ( " " ) .....	" " " " " " " " " "	5	1	0	720 $\pi$	27.60
D Runcorn (Weston Point) .....	J. A. Saner, Esq., C.E.	8	1	4	17 $\pi$	27.02
D Thelwall (The Clough) .....	E. W. Reynolds, Esq. ...	5	1	0	95	27.95
Altrincham (Norman's Place)....	Miss G. A. Griffiths ...	5	8	0	150 $\pi$	32.38
" (Barrington House)....	C. E. Newton, Esq., C.E.	8	2	6	103 $\pi$	28.91
Cheadle (Adswold) .....	R. W. Wright, Esq. ....	5	0	6	186 $\pi$	28.05
D Northenden (Wythenshawe Hall)	T. E. Tatton, Esq. ...	5	1	0	114 $\pi$	29.10
" ( " " ) " " " " " " " " " "	" " " " " " " " " "	8	1	0	114 $\pi$	27.97
Marple Top Lock .....	Great Central Rly. Co..	9	3	6	523 $\pi$	29.01
D Stockport .....	Dr. H. E. Corbin .....	5	1	0	186 $\pi$	29.62
Godley Reservoir .....	G. H. Hill, Esq., C.E..	12	2	0	500	26.90
Newton .....	Great Central Rly. Co..	9	3	6	396 $\pi$	28.56
Mottram Station .....	" " " " " " " " " "	9	3	6	452 $\pi$	26.58
D Broadbottom (Harewood Lodge).	Col. Sidebottom .....	5	1	0	440	29.05
D Dukinfield (Higher Reservoir)...	F. J. Dixon, Esq., C.E.	8	1	6	495 $\pi$	28.04
D " (Lower " " ) .....	" " " " " " " " " "	5	1	0	435 $\pi$	27.36
D Hadfield (Millbrook House) .....	Mr. R. Daniels .....	8	3	10	442 $\pi$	32.99
D " ( " " ) " " " " " " " " " "	" " " " " " " " " "	12	4	0	442 $\pi$	33.02
Arnfield Reservoir .....	G. H. Hill, Esq., C.E..	12	2	6	550	33.04
Rhodes Wood Reservoir .....	" " " " " " " " " "	12	1	0	520	37.10
Torrside Reservoir .....	" " " " " " " " " "	12	1	6	680	38.09
D Stalybridge (Market Ground Yard)	F. J. Dixon, Esq., C.E.	5	1	0	373 $\pi$	33.12
D " (Brushes Filter Ho.) ..	" " " " " " " " " "	8	1	0	615 $\pi$	34.87
Swineshaw Moor (Lees Hill) .....	" " " " " " " " " "	8	1	0	1168 $\pi$	31.95
Woodhead Reservoir .....	G. H. Hill, Esq., C.E..	12	0	10	660	40.26
<b>2.—MERSEY—Weaver. 489 sq. mi.</b>						
D Audlem Vicarage .....	H. W. S. Cotton, Esq..	5	1	6	226 $\pi$	28.66
D Baddiley (Nantwich W. W.) ...	Baldwin Latham Esq CE	5	1	0	231 $\pi$	27.78
D Nantwich (Dorfold Hall) .....	J. A. Saner, Esq., C.E.	8	1	0	190 $\pi$	26.86
D " (Reaseheath Hall) ...	" " " " " " " " " "	8	1	0	130 $\pi$	27.86
D Sandbach (Malkins Bank) .....	Mssrs Brunner Mond & Co	5	3	8	244 $\pi$	21.55
† Congleton (Sewerage Works) ...	J. H. Walters, Esq., C.E.	5	1	0	248 $\pi$	27.12
D† " (Buglawton Vicarage) ..	J. A. Saner, Esq., C.E.	8	5	0	347	28.91
Bosley Reservoir .....	Great Central Rly. Co..	9	3	6	590 $\pi$	25.62
" Minns .....	" " " " " " " " " "	9	3	6	1210 $\pi$	28.69
D Middlewich .....	Mssrs Brunner Mond & Co	5	3	10	138 $\pi$	23.30

DIVISION VIII.—NORTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with $\geq 0.1$ or more recorded.	
		Diameter	Height Above Ground.	Height Above Sea Level			
		in.	ft.	in.	feet.	feet.	
CHESHIRE—(con.)							
2.—MERSEY—Weaver—(con.)							
Middlewich (Bostock Hall) .....	late Col France Hayhurst	5	2	6	157 $\nabla$	26.03	...
D Chelford (Astle Hall) .....	G. Dixon, Esq. ....	5	1	0	250 $\nabla$	25.43	164
" " " } .....	" " " .....	5	1	0	250 $\nabla$	24.91	...
Northwich .....	Great Central Rly. Co.	9	3	6	76 $\nabla$	22.92	165
D " (Winnington) .....	Mssrs Brunner Mond & Co	5	1	0	64 $\nabla$	26.74	191
D " (Lostock Gralam) ...	" " "	5	3	6	75 $\nabla$	24.91	186
3.—MERSEY, LOWER & C. 142 sq. mi.							
D Frodsham (Simonsdelf) .....	E. H. Lewis .....	5	1	0	420 $\nabla$	28.09	204
D Ince Hall .....	Mrs. Park-Yates .....	5	0	7	80	29.19	205
D Hooton Water Works .....	P. H. Bettle, Esq. ....	5	1	0	97	28.76	172
D Eastham (Mill Hey) .....	Roger P. Sing, Esq. ...	5	1	7	125 $\nabla$	31.70	200
" House .....	J. H. Vernon, Esq. ...	5	1	0	100 $\nabla$	30.03	199
D Wirral W.W. (Prenton) .....	P. H. Bettle, Esq. ....	5	1	0	91 $\nabla$	26.01	211
D Rock Ferry (Elmhurst) .....	Miss Shepherd .....	8	6	0	110	30.72	188
Birkenhead (Bidston Observatory)	W. E. Plummer, Esq. ...	8	1	0	189 $\nabla$	25.78	204
D Hoylake (District Council Office)	R. W. Fraser, Esq. ...	5	1	0	33 $\nabla$	26.89	183
D Wallasey (Marine Park) .....	Dr. T. W. N. Barlow ...	5	1	0	35 $\nabla$	28.51	187
4.—DEE. 127 sq. mi.							
D Aldford .....	Miss M. Meredith .....	5	1	1	46 $\nabla$	27.63	218
D Eaton Hall Gardens .....	Mr. N. F. Barnes .....	5	3	0	72 $\nabla$	23.68	159
Eccleston .....	E. Wells, Esq. ....	5	1	1	94 $\nabla$	25.75	156
Rowton (Holly Bank) .....	R. J. Salmon, Esq. ....	5	1	5	123	26.21	162
D Chester (Sewage Works) .....	W. D. Scouller, Esq. ...	5	1	0	34 $\nabla$	23.92	165
" (Curzon House) .....	J. H. Howell, Esq. ....	5	1	1	78	25.61	179
D " (Christleton Hall) .....	Mr. J. Weaver .....	5	1	2	142 $\nabla$	27.81	204
D " (Water Works) .....	C. Wilfrid Bennett, Esq.	5	0	10	85 $\nabla$	22.90	184
" (Northgate Station) .....	Great Central Rly. Co.	9	3	6	84 $\nabla$	25.55	152
D Neston (Vine House) .....	H. F. Russell, Esq. ...	5	1	0	111 $\nabla$	26.41	187
West Kirby (Hilbre House) .....	Egerton Macdonald, Esq.	5	0	9	25 $\nabla$	23.74	...
D " " (Greenfield) .....	H. Bell, Esq. ....	5	1	0	75 $\nabla$	26.22	176
" " (The Abbey Manor)	Cedric R. Boulton, Esq.	5	0	10	200	25.57	166
SOUTH LANCASHIRE. (Area, 687 sq. mi.)							
1.—ALT & C. 103 sq. mi.							
D Liverpool (Huyton Vicarage) ...	Mrs. E. M. Sanderson ..	5	0	11	116 $\nabla$	30.31	210
D " (Knotty Ash) .....	W. M. Reade, Esq. ...	5	1	0	100	29.91	218
D West Derby (Basil Grange) .....	Mr. G. Harris .....	8	1	3	100 ?	31.50	198
D " " (Croxteth Hall) ...	Mr. J. Gibbins .....	5	1	0	79 $\nabla$	30.41	187
D Great Crosby (Alexandra Park) ..	S. Wilson, Esq. ....	5	1	0	34 $\nabla$	28.59	195
D Blundellsands (Myra) .....	H. Montgomery, Esq. ...	5	1	0	35	28.99	209
D Ormskirk (Bickerstaffe Pump Sta.)	G. H. Abbott, Esq. ...	5	1	2	128 $\nabla$	30.13	209
D " (Springfield Pumping Sta.)	" " " .....	5	0	11	70 $\nabla$	30.06	199
D† Downholland (Barton Moss) .....	J. Baxendell, Esq. ....	5	0	9	14 $\nabla$	27.64	199
2.—MERSEY, LOWER. 240 sq. mi.							
Garston .....	J. A. Brodie, Esq., C.E.	10	1	10	84 $\nabla$	33.41	191
D " (Grassendale Park) .....	Miss E. C. Abraham ...	5	1	0	35 $\nabla$	28.85	192

## DIVISION VIII.—NORTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\cdot 01$ or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>SOUTH LANCASHIRE—(con.)</b>							
<b>2.—MERSEY, LOWER—(con.)</b>							
D Aigburth (Holmfield) .....	Miss Maxwell .....	5	1	0	100 T	29·96	211
D Woolton (Roseleigh Gardens) ...	Mr. J. Stoney .....	8	1	0	180 T	33·01	200
D Warrington (Howley Yard) .....	A. M. Ker, Esq. ....	10	0	10	19 T	26·99	184
„ (Central Station) ...	Great Central Rly. Co..	9	3	6	59 T	27·12	167
† Liverpool (Monument Place) ...	J. A. Brodie, Esq., C.E.	5	1	3	126 T	27·11	194
D† „ „ „ (R) „ „ „	„ „ „	10	4	6	129 T	26·50	194
„ „ „ (Smithdown Road) ...	„ „ „	10	0	9	135 T	30·30	209
„ „ „ (Rathbone Road) .....	„ „ „	10	1	0	199 T	32·80	204
„ „ „ (Lank Lane) .....	„ „ „	10	10	8	101 T	30·63	206
„ „ „ (Newsham Park) .....	„ „ „	10	1	0	140 T	32·69	208
„ „ „ (Breeze Lane) .....	„ „ „	5	0	9	135 T	32·69	207
„ „ „ (Huskisson Station) ...	Great Central Rly. Co.	9	3	6	40 T	28·46	203
St. Helen's (Eccleston Hill) .....	J. J. Lackland, Esq., C.E.	12	2	9	268 T	28·63	180
Earlestown (Newton Cemetery) ..	Newton-in-Makerfield U.D.C.	5	1	0	75 T	35·21	...
D Leigh (Leesrigg) .....	Major T. Hunter, C.E.	5	1	0	71 T	27·48	209
D Tyldesley Gas Works .....	H. Hoy, Esq. ....	5	1	0	150	31·39	176
<b>3.—MERSEY—Irwell. 299 sq. mi.</b>							
Urmston (Sew. Wks., Davyhulme)	Mr. A. B. Ogden .....	8	2	3	72 T	25·96	173
D Manchester (Whalley Range) ...	J. H. Cooke, Esq. ....	5	1	0	100 T	27·53	187
D „ „ (Godlee Observatory) ...	W. C. Jenkins, Esq. ...	8	1	3	140	28·59	201
D „ „ „ „ „ (R) „ „ „	„ „ „	11	1	6	140	28·38	199
„ „ „ (Piccadilly) .....	Great Central Rly. Co..	9	40	0	194 T	27·75	205
„ „ „ (Fairfield) .....	„ „ „	9	6	0	312 T	30·37	209
D† „ „ „ (Oldham Road) .....	Dr. J. Niven .....	5	1	0	191 T	29·82	199
† „ „ „ (Whitworth Park) ...	Meteorological Office ...	8	1	5	126	28·11	197
Eccles (Worsley New Hall) .....	Mr. W. B. Upjohn ...	8	10	0	80 T	28·77	180
„ „ „ (Old Hall) .....	„ „ „	6	1	6	150	32·05	171
D Ashton-under-Lyne (Knott Hill Res.)	F. J. Dixon, Esq., C.E.	8	1	3	605 T	32·88	198
D Swinton (Endsley) .....	G. A. T. Jesson, Esq. ...	5	0	8	220 T	31·20	207
Prestwich Reservoir .....	G. H. Hill, Esq., C.E. ...	12	2	0	356 T	30·51	...
D „ „ „ (Heaton Park) .....	T. DeC. Meade, Esq., C.E.	8	1	0	312 T	30·03	194
Oldham (Gas Works) .....	G. H. Hill, Esq., C.E.	5	4	0	600 T	35·92	...
D† „ „ „ (Alexandra Park) .....	Dr. J. B. Wilkinson ...	5	1	0	600	36·91	224
„ „ „ (Honeywell Lane) .....	Great Central Rly. Co..	8	3	6	553	33·50	221
„ „ „ (Brushes Clough) <i>old g.</i>	C. J. Batley, Esq., C.E.	5	4	0	930 T	40·46	224
„ „ „ „ „ <i>new g.</i> „ „ „	„ „ „	5	5	0	955 T	41·65	224
D† Bolton (Queen's Park) .....	T. Midgley, Esq. ....	5	1	0	342 T	39·46	224
D† „ „ „ (Heaton Reservoir) .....	Lewis Mitchell, Esq. C.E.	5	1	0	500	39·08	232
D „ „ „ (Bloomfield, Heaton) ...	Mrs. F. Taylor .....	5	1	0	530 T	38·50	224
D „ „ „ (Smithills) .....	R. E. Proffitt, Esq. ...	5	6	0	492 T	39·93	218
D† „ „ „ „ „ (Hall) .....	Col. R. H. Ainsworth ...	8	1	2	510 T	42·27	181
„ „ „ „ „ (Moor) .....	„ „ „	8	1	2	1375 T	42·36	...
D Bury (Parsons Lane) .....	R. B. Rigby, Esq. ....	8	9	8	316 T	38·85	209
D „ „ „ (Bridge Hall) .....	Miss C. Marshall .....	5	0	6	...	37·12	205
† Milnrow (Piethorne, Kiteliffe) ...	C. J. Batley, Esq., C.E.	5	4	6	769 T	39·56	226
D† „ „ „ „ „ (Coldgreave) „ „ „	„ „ „	5	4	6	894 T	38·13	216
† „ „ „ „ „ (Norman Hill) „ „ „	„ „ „	5	4	6	1076 T	35·32	220

DIVISION VIII.—NORTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
SOUTH LANCASHIRE—(con.)							
3.—MERSEY—Irwell—(con.)							
† Milnrow (Piethorne, Rooden Res.)	C. J. Batley, Esq., C.E.	5	4	6	1131 $\nabla$	35.53	218
† Rochdale (Broadfield Park Obsy.)	Dr. A. G. Anderson ...	8	0	6	472	39.42	227
„ (Fieldhead Yard) .....	S. S. Platt, Esq., C.E..	8	12	0	484 $\nabla$	35.57	196
„ ( „ „ „ ) ... (R)	„ „ „ „ „	8	12	0	484 $\nabla$	35.59	196
† „ (Ashworth Moor Res.)	J. S. Diggle, Esq., C.E.	5	1	2	957 $\nabla$	36.59	201
„ Bury (Gin Hall) .....	No. 1 J. Woodhead Smith, Esq., C.E.	8	1	0	475	38.51	203
„ ( „ „ „ ) .....	No. 2 „ „ „ „ „	8	1	0	475	39.82	203
† Bolton (Belmont Reservoir) .....	Lewis Mitchell, Esq., CE	5	1	0	800	48.49	237
„ Rochdale (Hamer Pasture Res.) ..	F. H. Brunt, Esq. ....	8	1	0	760	46.49	232
„ (Naden Filters) .....	J. S. Diggle, Esq., C.E.	5	1	8	761	38.81	191
„ Norden (Higher Red Lumb) ... M	„ „ „ „ „	5	1	6	1125 ?	39.29	...
„ (Far Knowl) .....	„ „ „ „ „	5	1	2	...	42.50	...
„ Rochdale (Naden Dean) ... old g.	„ „ „ „ „	5	1	7	948 $\nabla$	32.01	...
„ ( „ „ „ ) ... new g.	„ „ „ „ „	5	1	4	948 $\nabla$	35.96	...
† Ramsbottom (Killgate Brook) M	„ „ „ „ „	5	1	0	978 $\nabla$	44.93	...
† „ (Cheesden Barn) M	„ „ „ „ „	5	1	0	997 $\nabla$	39.84	...
† „ (Shuttleworth Moss) M	„ „ „ „ „	5	0	11	1076 $\nabla$	40.34	...
„ (Gt. Lodge, Higher Hill) M	„ „ „ „ „	5	1	0	1495	40.43	...
„ Edenfield (Scout Moor Res.) No. 2	J. Woodhead Smith, Esq., C.E.	8	1	0	1275	43.94	223
„ Rochdale (Spring Mill Whitworth)	F. H. Brunt, Esq. ....	5	1	7	720	48.40	218
„ (Cowm, „ „ „ )	„ „ „ „ „	8	1	7	760	42.26	200
† Entwistle .....	Lewis Mitchell, Esq., CE	5	1	0	700	47.76	222
„ Littleborough (Hollingworth Lake)	Rochdale Canal Co.*	8	1	5	600	34.25	...
„ (Windy Bank) ...	„ „ „ „ „	8	2	0	605 $\nabla$	33.83	...
„ (Canal Summit) ...	„ „ „ „ „	8	2	0	700	31.86	...
„ (Chelburn) .....	„ „ „ „ „	8	2	0	800	35.04	...
„ (Byron Edge Drain) .....	„ „ „ „ „	8	1	5	1250 $\nabla$	35.93	...
„ (Lenches) .....	„ „ „ „ „	8	2	0	806	36.31	...
„ Walsden (Calf Lee) .....	„ „ „ „ „	10	1	6	960	36.94	...
„ (Warland Drain) .....	„ „ „ „ „	8	1	5	1250 $\nabla$	33.15	...
„ (Whiteholme Drain) ...	„ „ „ „ „	8	1	5	1250 $\nabla$	35.21	...
„ (Rishworth Drain) .....	„ „ „ „ „	8	1	5	1200 $\nabla$	33.06	...
„ Bacup (Beech House) .....	A. E. Sutcliffe, Esq. ....	5	1	0	940	46.86	177
† Haslingden (Holden Wood) No. 1	J. Woodhead Smith, Esq., C.E.	8	1	0	670 $\nabla$	53.40	214
„ ( „ „ „ „ ) No. 2	„ „ „ „ „	8	1	0	670 $\nabla$	50.12	214
† „ (Calf Hey) .....	No. 1 „ „ „ „ „	8	1	0	800 $\nabla$	51.26	214
„ ( „ „ „ „ ) .....	No. 2 „ „ „ „ „	8	1	0	800 $\nabla$	43.13	214
„ Rawtenstall Cemetery .....	J. Johnson, Esq., C.E..	8	1	0	572	45.00	165
† „ (Cloughbottom Res.) No. 1	J. Woodhead Smith, Esq., C.E.	8	1	0	1025	42.83	199
„ ( „ „ „ „ ) No. 2	„ „ „ „ „	8	1	0	1025	37.26	199
† „ (Hapton Reservoir) No. 1	„ „ „ „ „	8	1	0	930 $\nabla$	49.54	247
„ ( „ „ „ „ ) No. 2	„ „ „ „ „	8	1	0	930 $\nabla$	49.58	247
4.—MERSEY, UPPER. 45 sq. mi.							
„ Didsbury (Linden Road) .....	L. G. King, Esq. ....	8	1	6	110	29.02	208
„ Heaton Mersey [Stockport] .....	W. B. Leigh, Esq. ....	5	3	11	218 $\nabla$	25.80	191
„ Chorlton-cum-Hardy Sew. Works	G. F. Walter, Esq. ....	8	1	10	76 $\nabla$	27.84	197

\* Returns supplied by W. A. M'Grath, Esq.



## DIVISION VIII.—NORTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with 01 or more recorded.
		Diameter	Height Above Ground.		Height Above SeaLevel	1913	
		in.	ft.	in.	feet.	inches.	
SOUTH LANCASHIRE—(con.)							
4.—MERSEY, UPPER—(con.)							
D Chorlton-cum-Hardy .....	J. H. Casartelli, Esq....	5	2	0	75	26·99	186
Withington (Lady Barn Ho.Sch.)	R. H. Rees, Esq.....	5	0	6	122	27·93	190
Denton Reservoir .....	G. H. Hill, Esq., C.E..	12	2	0	324 T	26·28	...
Gorton „ .....	„ „ „ „	12	2	0	263 T	27·66	...
D Ashton-under-Lyne (Henrietta St. Yard)	F. J. Dixon, Esq., C.E.	7	1	0	394 T	32·78	215
„ „ „ (Waterhouses)...	Great Central Rly. Co..	9	3	6	345 T	28·94	216
D Lower Swineshaw Reservoir.....	F. J. Dixon, Esq., C.E.	8	3	0	886 T	34·26	201
D Mossley (Manor House Yard) ...	„ „ „	5	1	0	636 T	34·45	198
CENTRAL LANCASHIRE.		(Area, 536 sq. mi.)					
1.—RIBBLE & C. 326 sq. mi.							
†Rivington (Higher Hill) .....	J. Parry, Esq., C.E. ...	8	1	4	733 T	36·25	...
D Haslingden (Mitchells House Res.)	C. Harrison, Esq. ....	5	1	6	990	45·87	177
D Darwen (Sunnyhurst Hey Res.)..	R. W. S. Saville, Esq..	8	1	8	915 T	48·34	221
D „ (Earnsdale Reservoir)...	„ „ „	8	1	8	705 T	47·32	221
D „ (Sewage Works) .. .....	„ „ „	5	1	6	460 T	44·01	186
D „ (Bold Venture Park) ...	Dr. F. G. Haworth ...	8	2	4	722	51·55	238
„ (Hoddlesden) ..... No.1	W. Stubbs, Esq., C.E..	8	4	0	680	48·00	222
„ „ „ „ „ No.2	„ „ „	8	1	0	675	47·58	222
† „ (Daisy Green) ..... No.1	„ „ „	8	1	0	969	45·73	224
„ „ „ „ „ No.2	„ „ „	8	1	0	969	45·23	224
„ (Pickup Bank) ..... No.1	„ „ „	8	1	0	720	47·04	224
„ „ „ „ „ No.2	„ „ „	8	1	0	720	45·76	224
D Brindle (Whiteholme) .....	Victor H. Gatty, Esq..	5	1	8	315 T	33·61	189
†Blackburn (Guide Reservoir) ...	W. Stubbs, Esq., C.E..	8	1	0	650	41·36	211
„ (Witton) .....	„ „ „	8	2	6	315 T	47·92	191
„ (Store Yard) .....	„ „ „	8	30	0	373 T	32·42	159
„ (Water Works Office)	„ „ „	8	60	0	436 T	28·50	181
† „ (Corporation Park)...	„ „ „	8	0	6	584 T	39·69	219
† „ (Pumping Station) ...	„ „ „	8	6	0	600 T	40·49	189
D Accrington (St. James's Vicarage)	Rev. A. Spencer.....	8	1	6	475 T	43·82	212
D „ (Victoria Hospital) ...	Mr. L. T. Whipp .....	5	1	2	540 T	44·79	205
Hutton .....	Meteorological Office ...	...	...	...	82	34·13	201
D Penwortham Hall .....	Rev. T. R. Finch .....	5	0	9	100	35·73	192
Higher Walton (Bannister Hall)	A. A. Gatty, Esq. ....	5	0	7	75	32·31	...
D Preston (Corporation Offices) ...	J. H. Smethurst, Esq..	8	18	7	148 T	34·63	194
Blackburn (Samlesbury Sew Wks)	W. Stubbs, Esq., C.E.	8	...	...	240	34·04	197
†Causeway Side (Burnley W.W.)	W. Williamson, Esq....	8	2	0	1116 T	39·24	...
†Sheddin „ „ „	„ „ „	8	2	0	960 T	39·58	...
†Cant Clough, S. Side( „ „ „	„ „ „	8	2	0	900 T	41·10	232
† „ „ „ N. Side( „ „ „	„ „ „	8	2	0	900 T	39·69	232
Rams Clough Head( „ „ „	„ „ „	8	2	0	1260 T	42·45	...
D Huncoat (Burnley Road Res.)...	C. Harrison, Esq. ....	9	1	6	620 T	49·61	198
D Great Harwood (Dean Clough)...	„ „ „	12	1	6	540	44·18	213
Salesbury School .....	T. Counsell, Esq. ....	5	1	0	447 T	32·38	...
D Burnley (Queen's Park) .....	Dr. Thomas Holt .....	8	1	0	459 T	39·45	194
„ (Yorkshire Street) .....	W. Williamson, Esq....	8	30	0	420 T	35·34	205

DIVISION VIII.—NORTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain 1913	Days with 10 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level		
		in.	ft. in.	feet.	inches.	
<b>CENTRAL LANCASHIRE—(con.)</b>						
<b>1.—RIBBLE &amp; C—(con.)</b>						
† Burnley (Swinden).....	Upper g. W. Williamson, Esq...	8	12 0	820	44·02	233
† " ( " ).....	Lower g. " " " ...	8	2 0	745	43·94	232
† " (Extwistle Moor Top)...	" " " ...	8	2 0	1310	44·89	...
D " (Gawthorpe Hall) .....	Lord Shuttleworth.....	8	0 9	316	41·58	203
D " (Huntroyde).....	N. G. Howsin, Esq. ...	5	1 0	423	39·65	205
D Fulwood (Haighton).....	A. E. Coupe, Esq., C.E.	5	1 2	255	33·68	185
Alston Reservoir .....	J. H. Smethurst, Esq...	8	1 2	320	41·38	...
† Stonyhurst College .....	Rev. W. Sidgreaves, S.J.	8	1 10	377	41·93	205
D† " " (R) .....	" " " "	11	1 10	377	41·95	204
† " " (R) .....	" " " "	11	1 0	376	41·28	...
Knowle Green (Preston W.W.) M.	J. H. Smethurst, Esq.	8	1 2	400	40·45	...
Loud Scales ( " " ) M.	" " " "	8	1 2	400	39·72	...
Spade Mill ( " " ) M.	" " " "	8	1 2	400	37·88	...
Jeffrey Hill ( " " ) M.	" " " "	8	1 2	900	47·59	...
D Beacon Fell (Barnsfold Reservoir)	A. E. Coupe, Esq., C.E.	5	1 6	506	36·77	202
" " ( " " ) M.	" " " "	5	1 6	506	36·98	...
D† Colne (Cemetery Grounds) ... (R)	T. H. Hartley, Esq. ...	8	2 11	619	37·05	204
Barrowford Reservoir .....	Leeds & L'pool Canal Co.	8	1 0	473	38·57	...
Foulridge (Upper Reservoir) ...	" " " "	8	1 0	582	37·53	...
† Clitheroe (Downham Hall) .....	R. C. Assheton, Esq. ...	10	1 6	464	39·71	...
" ( " " ) check g.	Ralph Assheton, Esq. ...	5	0 9	470	41·26	...
D† Chatburn (Middlewood) .....	W. K. Wilkinson, Esq.	5	1 3	363	38·71	181
<b>2.—RIBBLE—Douglas. 156 sq. mi.</b>						
D Upholland Grammar School .....	C. H. Cox, Esq. ....	5	1 0	310	30·39	204
D Wigan W.W. (Worthington) ...	T. L. Hughes, Esq. ...	8	1 6	225	33·77	206
Horwich (Wallsuches) .....	C. E. Barr, Esq. ....	5	1 0	655	34·89	...
D† " (Lower Rivington) ...	J. Parry, Esq., C.E. ....	8	1 0	440	36·68	200
† " (Lower Knoll) .....	" " " "	8	1 4	742	37·91	...
† Rivington (Brown Hill) .....	" " " "	8	1 4	843	38·06	...
D† " (Stoneshouse) ... No. 1	" " " "	8	1 4	623	38·62	221
† " ( " ) ... No. 2	" " " "	8	1 4	623	38·32	...
† " (Hurst Hill).....	" " " "	8	1 10	1029	39·08	...
† " (Coppice Stile).....	" " " "	8	1 8	879	37·43	...
† " (Gamekeeper's) .....	" " " "	8	0 8	850	44·27	...
Rufford .....	J. G. Heggie, Esq. ....	5	1 0	41	31·96	...
Leyland (Worden Hall) .....	H. Nowell Harrington Esq	5	1 0	125	35·36	203
" ( " " ) .....	" " " "	5	1 0	125	35·07	...
Wheelton .....	Herbert Chadwick, Esq.	5	1 3	425	38·19	...
D Bamber Bridge (Cuerden Hall)..	R. A. Tatton, Esq. ....	5	1 0	230	36·45	201
<b>3.—COAST STREAMS. 52 sq. mi.</b>						
Southport (Birkdale).....	M. J. Baxendell, Esq. ....	5	1 0	27	29·09	...
D† " (Hesketh Park) .....	" " " "	5	1 0	38	28·59	194
D† " ( " " ) M.O.g.	" " " "	8	1 0	38	28·89	206
D† " ( " " ) (R) .....	" " " "	11	1 5	39	28·79	205
† " (Lord Street Station).	Great Central Rly. Co. ...	9	3 6	21	26·57	187
<b>4.—OUSE—Aire. 2 sq. mi.</b>						
Worthdale (Watersheddles Res.)	W. Fowlds, Esq., C.E.	5	1 0	1115	44·95	...

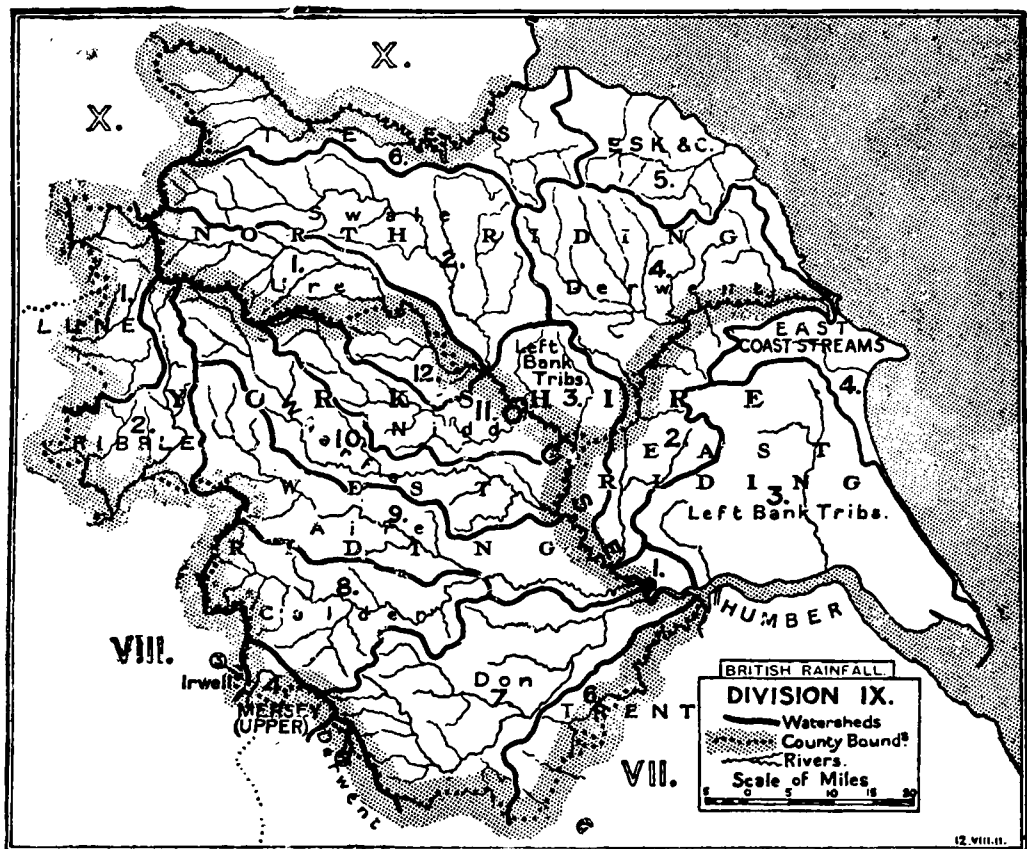
## DIVISION VIII.—NORTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with -01 or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
CENTRAL LANCASHIRE—(con.)							
4.—OUSE—Aire—(con.)							
Foulridge (Canal Office) .....	Leeds & L'pool Canal Co.	8	1	0	497	42·54	...
„ (Cragg Nook Hill) ...	„ „ „	8	1	0	690	37·97	...
NORTH LANCASHIRE. (Area, 609 sq. mi.)							
1.—DUDDON & C. 77 sq. mi.							
b Barrow-in-Furness .....	W. Fergusson, Esq. ...	11	1	6	36 A	31·25	187
b Ulverston (Urswick School Ho.)..	J. Dobson, Esq. ....	5	1	3	140 T	40·77	209
Lindal (Moor Mines).....	Messrs. Harrison, Ainslie & Co.	5	7	0	400 ?	41·19	170
b Duddon Valley (Seathwaite Vic.)	Rev. J. B. Ditchfield...	5	1	0	330 T	73·43	218
2.—LEVEN & C. 135 sq. mi.							
b† Cartmel (Flookburgh Lodge) ..	Mrs. Myres .....	5	1	0	75 T	40·14	200
b† „ (Carke).....	W. R. Nash, Esq. ....	5	1	0	76 A	38·09	198
b „ (Holker Hall) .....	Lord Richard Cavendish	5	0	9	85 A	39·55	213
b Ulverston (Poaka Beck) . ....	W. Fergusson, Esq. ...	11	1	6	512 A	42·06	204
b† Cartmel (Aynsome) .....	J. Stewart Remington Esq.	8	2	0	140 T	42·66	231
b „ W. W. (Newton Res.) (R)	T. Huddleston, Esq. C.E.	10	1	0	586	44·30	232
Ulverston (Graythwaite) .....	Meteorological Office...	8	1	0	185	50·99	...
b Greenodd (Pennybridge School)..	W. White, Esq. ....	5	1	0	118	50·15	211
b „ (Summerhill).....	J. L. Altham, Esq. ....	5	4	6	241 T	50·52	192
b Coniston (Water Park).....	A. P. Brydson, Esq. ...	6	1	0	165	55·40	205
b† „ (Holywath).....	Miss C. Marshall .....	8	0	8	170	84·77	219
b† Hawkshead (Tower Bank, Sawrey)	Miss Alcock-Beck .....	5	2	0	342 T	61·66	221
† Coniston .....	Miss C. Marshall .....	5	1	2	305 T	77·69	195
† Hawkshead (Esthwaite Mount)..	C. E. S. Headlam, Esq.	5	1	0	216 T	63·84	...
„ (Black Fell) .....	M Miss C. Marshall .....	5	1	6	1055	65·03	...
b† Skelwith Fold [Ambleside] .....	„ „ „ .....	5	1	0	333	77·90	216
† „ „ [ „ „ ] .....	M „ „ „ .....	5	1	0	333	77·27	...
3.—KENT & C. 45 sq. mi.							
b Heysham Harbour.....	Midland Railway Co....	5	1	6	28 A	33·16	189
b „ House.....	Miss Tomlinson .....	5	1	6	80	39·78	226
b Morecambe .....	Mr. T. B. Lamb .....	8	1	0	24 A	38·10	191
b Bolton-le-Sands Vicarage.....	Rev. A. R. Tomlinson.	5	1	2	70 T	36·07	204
b Carnforth (Over Kellet) .....	W. Farrer, Esq. ....	8	1	0	192	36·27	198
b Yealand Conyers (Beechfield) ...	W. E. Roper, Esq. ....	5	1	0	250	38·57	219
b „ „ .....	J. Rawlinson Ford, Esq.	5	1	0	278 T	40·82	209
b† Grange-over-Sands (Nutwood)	Miss S. M. Arkwright .	5	1	0	...	36·90	194
† „ „ „ (Merlewood)..	E. C. Miller, Esq. ....	5	0	9	280 B	40·79	184
b† Cartmel Fell (The Schoolhouse)..	R. J. Cragghill, Esq. ...	5	5	0	220 T	50·19	220
4.—LUNE. 135 sq. mi.							
b† Hampson-in-Ellel .....	W. G. Welch, Esq. ...	5	1	6	145 T	36·62	204
b† Lancaster (Bailrigg) .....	H. L. Storey, Esq. ....	5	1	3	200	37·05	208
† Quernmore (Brow Top).....	A. G. Bradshaw, Esq. ...	8	1	0	552 T	44·59	195
Bowland Forest (High Salter) ...	J. T. Sanderson, Esq. ...	5	1	0	1014 T	41·56	...
„ „ (Whiteray).....	„ „ „ .....	5	1	0	1139 T	57·36	...
b† Lancaster (Strathspey) .....	A. B. S. Welch, Esq. ...	5	1	0	87 A	34·92	2 3

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>NORTH LANCASHIRE—(con.)</b>						
<b>4.—LUNE—(con.)</b>						
Lancaster (Blea Tarn Reservoir)	A. G. Bradshaw, Esq...	8	1 0	330	34·06	204
D „ (Greg Observatory) ...	Neville Holden, Esq....	8	1 0	312	39·11	210
„ (Robert Street).....	A. G. Bradshaw, Esq...	8	1 0	62 T	38·58	213
D „ (Halton Park) .....	Mr. Mark Best .....	...	...	...	39·11	171
D Caton (Caton Green) .....	W. F. Mason, Esq. ....	...	...	...	44·69	191
D† Wray Vicarage .....	Rev. C. L. Reynolds...	5	1 0	165 T	43·95	218
D Leck Vicarage .....	Rev. J. Turner .....	5	1 1	400	36·67	213
<b>5.—WYRE &amp; C. 213 sq. mi.</b>						
D St. Anne's-on-the-Sea(Whitehall)	M. B. Copland, Esq. ....	8	1 8	20	33·27	207
D „ „ „ .....	Mr. W. E. Procter .....	5	1 0	25 T	29·55	203
D† Weeton Reservoir .....No. 1	J. Cook, Esq., C.E. ....	5	1 0	133 T	32·78	176
D† „ „ „ .....No. 3	„ „ „ .....	5	1 0	108 T	32·79	178
D Barton (Anderton Fold) .....	W. H. Mason, Esq. ....	5	0 6	90 T	33·79	178
D† Blackpool (Met. Observatory) ...	E. W. Rees Jones, Esq. MD	5	1 0	67 T	32·69	199
D Kirkham (Elswick Lodge) .....	L. G. King, Esq. ....	5	1 4	52	34·50	202
Poulton-le-Fylde (Singleton Pk.)	T. H. Miller, Esq. ....	8	0 11	50 P	35·95	181
D St. Michael's-on-Wyre(Rose Cot.)	J. Moss, Esq. ....	5	1 0	27 T	32·72	198
D† „ „ „ „ Vicarage	Ven Archdeacon Hornby	5	1 0	26 T	33·51	201
D† Fleetwood .....	(R) E. Frobisher, Esq. ....	8	1 8	29 T	29·76	199
D† Garstang (Bruna Hill) .....	A. Wilson, Esq. ....	5	1 0	90 T	37·22	212
† „ (Holme Ho., Bleasdale)	„ „ „ .....	5	1 0	650 T	50·68	...
„ (Fairsnape Fell) .....	„ „ „ .....	5	1 0	1630 T	68·50	...
„ (Calder Intake).....	J. Cook, Esq., C.E. ....	5	1 0	632 T	41·09	...
D† „ (Barnacre Reservoir)...	„ „ „ .....	5	1 0	616 T	41·42	207
D† „ (Grizedale Reservoir)...	„ „ „ .....	5	1 0	517 T	40·76	207
Pilling (Smallwood Hey) .....	M. Mr. E. Curwen .....	5	0 9	12 T	32·31?	...
† Wyresdale (Abbeystead Res.) ..	A. G. Bradshaw, Esq...	8	1 0	366 T	46·09	176
D† „ ( „ Gardens)	Mr. T. Wyton .....	8	1 0	420 T	47·60	198
Quernmore (Old Gauge Basin) M	A. G. Bradshaw, Esq...	8	1 0	963 T	44·04	...
Wyresdale (Wardstone) .....	„ „ „ .....	8	1 0	1440 T	63·54	...
<b>6.—INSULAR. 4 sq. mi.</b>						

## MAP OF DIVISION IX.

YORKSHIRE,  
Showing the River-Divisions.



## DIVISION IX.—YORKSHIRE.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with +0.1 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>WEST RIDING. (Area, 2791 sq. mi.)</b>						
<b>1.—LUNE. 178 sq. mi.</b>						
D High Bentham .....	Mr. Bryan Holmes .....	5	1	0	412 T	37.49 202
Ingletton (Kingsdale Head) .....	Mr. L. Pye .....	5	0	10	994 T	62.55 ...
D Hawes Junction .....	Mr. W. H. Bunce .....	5	1	0	1130 T	63.63 219
Sedbergh (Dent Post Office) .....	Mr. J. Mason .....	5	1	0	484 T	66.32 212
D „ (Akay) .....	C. E. Taylor, Esq. ....	5	1	0	400 T	55.20 199
D „ (Cemetery) .....	Mr. J. Anderson .....	5	1	0	374 T	54.73 214
D „ (Bynac) .....	Mrs. B. Wilson .....	5	1	0	480 T	50.89 193
D „ (Howgill School) .....	W. Woodhead, Esq. ...	5	1	0	550 T	46.65 198
<b>2.—RIBBLE. 225 sq. mi.</b>						
D Laneshaw Reservoir [Colne] .....	J. F. Bedford, Esq. ...	5	1	0	842	32.94 193
D Barnoldswick (Rainhall Road) .....	Asa Burniston, Esq. ...	5	0	10	549 T	36.72 195
† Bolton-by-Bowland (Bolton Hall) .....	Mr. G. Wrightson .....	8	0	6	300 T	42.65 ...
† Slaidburn (Knowlmer Manor) .....	W. Peel, Esq. ....	5	1	0	417 T	56.12 ...
„ (Thorneyholme) .....	R. A. Tatton, Esq. ....	5	1	6	380	56.64 ...
„ (Hareden Brook) ... M	J. H. Smethurst, Esq. ..	8	1	2	540	61.50 ...
+ „ (Langden Brook) ... M	„ „ „ „ „ „	8	1	2	556	61.75 ...
† „ (Whiteholme) .....	W. K. Wilkinson, Esq. ..	5	1	3	475 T	49.51 ...
„ (Dunsop Houses) .....	W. Stubbs, Esq., C.E. ..	8	1	0	450 T	60.62 196
„ (Middle Knoll) .....	„ „ „ „ „ „	8	2	6	1298 T	52.70 ...
„ (Brennand) .....	„ „ „ „ „ „	8	1	0	820 T	63.54 199
„ (Whitendale) .....	„ „ „ „ „ „	8	1	0	830 T	61.41 197
„ (Cabin Hill) .....	„ „ „ „ „ „	8	3	1	1559 T	62.40 ...
„ (Baxton Fell) .....	„ „ „ „ „ „	8	2	6	1540 T	56.30 ...
D† Settle (The Terrace) .....	J. W. Shepherd, Esq. ..	8	1	2	531 T	41.96 211
D† „ (Giggleswick School) .....	P. Haswell, Esq. ....	8	1	0	500 T	42.23 198
<b>3.—MERSEY—Irwell. 2 sq. mi.</b>						
<b>4.—MERSEY, UPPER. 35 sq. mi.</b>						
Greenfield (Upperwood Moor) ...	F. J. Dixon, Esq., C.E. ..	5	1	0	1518 T	40.51 ...
„ (Chew Mount) .....	„ „ „ „ „ „	5	1	0	1600 T	43.69 ...
D „ (Yeoman Hey) .....	„ „ „ „ „ „	5	1	0	784 T	44.33 205
„ (Ashway Moss) .....	„ „ „ „ „ „	5	1	0	1581 T	36.68 ...
„ (Birchen Clough) .....	„ „ „ „ „ „	5	1	0	1017 T	47.01 ...
Saddleworth Station .....	M E. Prebble, Esq., C.E. ..	5	4	2	630 T	28.33 ...
Strinesdale [Oldham] .....	C. J. Batley, Esq., C.E. ..	5	4	0	815 T	32.46 222
D Standedge (Castleshaw, Broadhead) .....	„ „ „ „ „ „	8	4	6	876 T	36.69 227
† „ „ (Cudworth) .....	„ „ „ „ „ „	5	4	6	1410 T	27.08 227
„ „ (Redbrook Reservoir) .....	E. Prebble, Esq., C.E. ...	8	1	6	1150	42.85 ...
† Denshaw (Ox Hey) .....	C. J. Batley, Esq., C.E. ..	8	4	6	1030 T	37.74 225
D† „ (New Year's Bridge) .....	„ „ „ „ „ „	8	4	0	1012 T	40.29 225
† „ (Ready Con Dean) .....	„ „ „ „ „ „	8	4	0	1414 T	38.72 225
<b>5.—TRENT—Derwent. 7 sq. mi.</b>						
Derwent Dale (Low Seat) No. 21	S. B. Winsor, Esq., C.E. ..	5	1	0	1565	38.24 ...
„ „ (Howden Ho.) 19	„ „ „ „ „ „	8	1	0	775 T	35.76 ...
„ „ (Row Top) No. 20	„ „ „ „ „ „	5	1	0	1260	44.78 ...
„ „ (Sandy Lee) No. 7	„ „ „ „ „ „	5	1	0	1340	40.75 ...
„ „ (Cranberry Clough) 6	„ „ „ „ „ „	8	1	0	960	47.43 ...



## DIVISION IX.—YORKSHIRE—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
WEST RIDING—(con.)							
7.—OUSE—Don—(con.)							
† Little Don Valley (Bridge Lane)	L.S.M. Marsh, Esq., C.E.	8	4	9	761	39·03	215
† Langsett Moor (Flouch Road) ...	" " "	8	4	3	960	40·34	218
" " (Fiddlers Green) M	" " "	8	1	6	1493	43·30	...
" " (Border Hill) ... M	" " "	5	1	6	1148	43·80	...
" " (Swinden Lodge) ..	" " "	8	1	6	1037	42·23	211
Wath-upon-Deerne (Chapel St.)	Dr. F. J. Burman	8	2	2	188	24·76	164
Bolton-upon-Deerne	T. Washington, Esq.	5	1	0	130	24·27	146
Worsborough	Great Central Rly. Co.	9	3	6	225	26·88	160
Stainborough (Wentworth Castle)	W. J. Fisher, Esq.	8	2	6	520	27·90	153
† Doncaster (Hexthorpe Hall) ...	H. Morris, Esq.	5	1	0	25	22·61	...
" " " " " " " " " " " "	Great Central Rly. Co.	9	3	6	32	21·71	142
" " (Pumping Station) ...	F. Oscar Kirby, Esq., C.E.	8	1	2	30	23·32	145
† " (Avenue Road) .....	M. H. Stiles, Esq.	5	4	0	60	23·29	158
† " " " " " " " " " " " "	E. Farr, Esq.	5	1	6	60	22·93	...
Dunford Bridge (Windleden) ...	H. Dearden, Esq., C.E.	12	2	2	1100	45·57	...
" " (Dearden Res.) ..	" " "	12	1	6	1244	45·06	...
" " Station	Great Central Rly. Co.	9	3	6	954	40·88	211
" " Reservoir	H. Dearden, Esq., C.E.	12	2	0	1111	47·56	234
Penistone	Great Central Rly. Co.	9	3	6	717	33·79	205
" (Hazlehead) .....	" " "	9	3	9	868	43·29	230
" (Ingbirchworth Res.)	J. H. Taylor, Esq., C.E.	8	1	3	853	35·99	193
Silkstone (Champany Hill Res.)	" " "	5	1	0	...	23·77	160
Barnsley (Jordan Hill) .....	" " "	8	1	0	460	23·75	...
" " " " " " " " " " " "	Great Central Rly. Co.	9	3	6	317	22·66	148
" (Burton Grange Sew. Wks.)	J. H. Taylor, Esq., C.E.	5	1	0	131	27·52	182
Cawthorne	Rev. C. T. Pratt	5	1	6	340	28·13	186
Burntwood Hall	J. Dymond, Esq.	5	1	0	378	25·72	...
Doncaster (Wyndthorpe) .....	Viscountess Chetwynd	5	0	11	13	24·21	...
† Kirk Bramwith	H. A. Brundell, Esq., C.E.	5	1	0	17	18·35	143
Hemsworth Hall	Mr. E. T. Bendall	5	1	0	250	21·79	146
" Collieries	C. P. Finn, Esq.	5	1	3	246	22·26	153
Campsall (Camps Mount)	G. B. C. Yarborough, Esq.	5	1	0	100	23·02	...
† Ackworth School	E. Priestman, Esq.	8	1	0	125	21·42	170
" (Hillthorpe) .....	Mrs. F. Hatchard	5	1	5	175	20·58	151
" (Nostell Priory) .....	Mr. T. L. Allison	5	4	0	200	21·17	149
† Goole (Swinefleet) .....	Mr. G. Harrison	5	5	6	10	22·10	...
† " " " " " " " " " " " "	W. E. Grayburn, Esq.	5	2	0	18	18·29	...
8.—OUSE—Aire—Calder. 361 sq. mi.							
Holmbridge (Yateholme Farm) ...	J. C. Barrowclough, Esq., C.E.	7	1	0	861	51·90	...
" (Holme Stykes Res.) ...	Mr. B. T. Woodcock	7	2	0	830	36·10	...
" (Boshaw Whams Res.)	" " "	7	2	0	930	48·00	...
" (Bilberry Reservoir) ..	" " "	7	2	0	820	48·90	...
Meltham (Harden Moss) .....	J. W. Armitage, Esq., C.E.	8	1	2	1212	43·57	...
" ( " " ) new g.	" " "	8	1	0	1212	45·07	...
Wessenden Head	" " "	8	1	0	1270	43·77	...
" (Hollin Bank Moss) ...	" " "	8	1	0	1360	68·36	...
" (Great Butterley) .....	" " "	8	1	0	1110	44·54	...



## DIVISION IX.—YORKSHIRE—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height above Ground.		1913	
		in.	ft	in.	feet.	inches.
WEST RIDING—(con.)						
8. -OUSE- Aire-Calder—(con.)						
Wassenden (Bobus) .....	J.W.Armitage, Esq. C.E.	8	1	0	1200 T	37·47 ...
Meltham (Brow Grains) .....	" " " " "	8	1	0	900 T	41·47 ...
" (Royd Edge) <i>Glaisher g.</i> .....	C. L. Brook, Esq. ....	8	1	0	585 T	48·37 ...
" " " " <i>M.O.g.</i> .....	" " " " "	8	1	0	585 T	47·64 ...
" (Harewood Lodge) .....	" " " " "	8	1	0	514 L	42·88 220
" Grange .....	J.W.Armitage, Esq. C.E.	8	1	2	850 T	38·63 ...
Marsden (Deer Hill) <i>old g.</i> .....	" " " " "	8	1	0	1149 T	41·28 ...
" " " <i>new g.</i> .....	" " " " "	8	1	0	1149 T	44·49 ...
Wakefield (Woolley Park Gardns.) .....	Mr. T. Wells .....	5	1	0	400	23·64 ...
" Slaithwaite (Blackmoorfoot) .....	J.W.Armitage, Esq. C.E.	8	1	0	800 T	41·69 248
" (Inglewood) .....	J. Woodhead, Esq. ....	5	1	0	546 T	41·47 224
" Huddersfield (Carr End, Dalton) .....	J. W. Robson, Esq. ....	8	1	0	350 T	28·12 192
" (Bank Field, Golcar) .....	J. R. Sykes, Esq. ....	5	1	0	400 T	35·68 181
" (Cemetery) .....	Mr. J. Firth .....	8	1	0	410 T	32·80 207
" Walton (Willington Lodge) .....	E. Simpson, Esq. ....	5	1	0	200 T	21·32 147
" Rishworth Moor (Gt. Walden Edge) .....	C. Clemesha Smith Esq. C.E.	5	0	10	1135 T	44·97 221
" (Stott Hall) .....	" " " "	5	1	0	935 T	40·82 226
" (Ringstone Res.) .....	" " " "	5	1	0	990 T	38·93 211
" Moor (Greystones) .....	" " " "	5	1	0	1175 T	45·95 ...
Soyland Moor (Summit) .....	" " " "	5	1	0	1290 T	43·21 ...
" (Baitings Gate) .....	" " " "	5	1	0	935 T	44·17 241
" (Manshead) .....	" " " "	5	1	0	1240	44·08 ...
Horbury (Highfields) .....	J. H. Green, Esq. ....	5	1	0	226 T	22·79 ...
" (Town Hall) .....	J. H. Horsfall, Esq. ....	8	2	0	200	21·58 169
" Mirfield (Cote Wall) .....	J. Watson-Kaye, Esq. ..	8	1	2	200	32·28 194
" Wakefield .....	Dr. H. Maclean Wilson	8	1	0	174 T	21·05 179
" (Public Park) .....	C. Clemesha Smith Esq. C.E.	5	1	0	124	22·63 177
" (Field Head Reservoir) .....	" " " "	5	1	0	250 T	20·85 155
Elland .....	P. H. Whitwam, Esq. ..	8	1	0	307 T	33·39 ...
Mytholmroyd (Cragg Hall) .....	W. A. Simpson-Hinchliffe, Esq.	5	1	0	615 T	42·70 ...
Sowerby Bridge (Brockwell, Triangle) .....	Mrs MacDougall Rawson	8	1	0	500 T	41·97 ...
" (Haugh End) No. 4 .....	J. Selwyn Rawson, Esq. ..	5	0	8	450 T	37·22 225
" Todmorden W.W. (Ramsden Res.) .....	F. H. Brunt, Esq., C.E.	8	1	0	993 T	46·42 187
" " ( " Hill) .....	" " " "	5	1	0	1326	44·92 ...
" (Walsden) .....	E. W. Cockcroft, Esq. ..	5	1	0	550 T	45·85 192
" (Fielden Hospital) .....	Mr. F. Rogers .....	5	1	0	650 T	38·59 202
" (Sourhall Hospital) .....	" " " "	5	1	0	1020 T	49·07 196
Halifax (Dean Clough Mills) .....	C. W. Crossley, Esq. ....	...	...	...	426	34·90 ...
" (Hall Ings, S. Owham) .....	Rev. G. E. Aspinall ...	5	0	7	750 T	23·55 201
" Sowerby Bridge (Thorpe) No. 1 M .....	J. Selwyn Rawson, Esq. ..	8	0	8	345 T	39·96 ...
" " " " No. 2 .....	" " " "	5	0	8	345 T	40·65 207
" Halifax (Public Library) .....	E. Green, Esq. ....	8	1	0	625 T	30·17 189
Batley (Staincliffe Reservoir) .....	J. C. Barrowclough Esq. C.E.	7	1	0	492 T	18·38 187
" (Woodwell Dépôt) .....	O. J. Kirby, Esq., C.E.	8	1	0	301 T	23·98 166
" Ardsley Reservoir No. 1 .....	C. Clemesha Smith Esq. C.E.	5	1	2	395 T	22·68 179
" " " " No. 2 .....	" " " "	5	1	2	326	22·92 179
" (Jaw Hill Filters) .....	" " " "	5	1	0	315 T	20·71 152

## DIVISION IX.—YORKSHIRE—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level		1913	
		in.	ft.	in.	feet.	inches.	
<b>WEST RIDING—(con.)</b>							
<b>8.—OUSE—Aire—Calder—(con.)</b>							
Halifax W.W. (Albert) .....	R.J. Hartley, Esq., C.E.	5	1	0	795 T	31.16	...
„ „ (Gibbet) .....	„ „ „	5	3	9	568 T	33.26	...
„ „ (Ramsden Wood) .....	„ „ „	8	1	2	816 T	32.31	...
Gomersall (Castle House).....	A. J. Pyrah, Esq. ....	5	1	0	480	23.78	165
Hebden Bridge (Falling Royd)...	A. R. Crossley, Esq....	4	1	0	479 T	43.28	201
<sup>D</sup> „ „ (Summerfield)...	J. Hoyle, Esq. ....	5	1	0	800 T	38.81	217
Halifax W.W. (Castle Carr Lodge)	R.J. Hartley, Esq., C.E.	5	0	6	1060 T	39.49	...
„ „ (Midgley Moor) M	„ „ „	8	0	9	1350 T	41.12	...
„ „ (Warley Moor) M	„ „ „	8	1	2	1325 T	39.23	...
„ „ (Ogden) ..... M	„ „ „	5	0	10	990 T	38.09	...
„ „ (Ovenden Moor)...	„ „ „	8	0	9	1375	38.63	...
„ „ (Widdop) .....	„ „ „	5	1	3	1050	40.13	...
„ „ (Walshaw Dean Lodge)	„ „ „	5	1	0	1040	45.55	...
„ „ ( „ „ ) ... M	„ „ „	8	1	0	1380 T	41.12	...
<b>9.—OUSE—Aire. 504 sq. mi.</b>							
Pontefract (Tanshelf Drive).....	T. K. Heseltine, Esq....	5	1	0	180	20.72	160
Whitley Bridge (Roall Pump Stat.)	J.E. Pickard, Esq., C.E.	8	0	10	44 T	17.65	...
Castleford Secondary School ...	W. A. D. Lawson, Esq.	5	1	3	100 P	21.27	166
<sup>D</sup> Morley (The Secondary School)...	W. E. Burgess, Esq....	5	1	0	535 T	22.96	156
Pudsey (Tong Hall) .....	J. H. Tempest, Esq. ....	...	...	...	525	28.91	161
„ (Fulneck) .....	Miss E. C. Lawford ...	5	1	0	490 T	26.05	...
<sup>D</sup> Garforth (Manor Farm) .....	Prof. R. S. Seton .....	8	1	2	194 T	21.34	206
Bradford (Grange Road, Horton)	Mr. A. E. Chilton .....	5	3	0	450 T	30.41	214
„ (Queensbury).....	R. J. Foster, Esq.....	8	2	2	1050	32.87	216
„ (Brayshaw Reservoir)...	J. Watson, Esq., C.E..	5	1	0	982 T	32.28	200
<sup>D</sup> „ (Lister Park).....	Mr. H. Lander .....	8	1	0	440 T	30.28	183
„ (Thornton Moor Filters)	J. Watson, Esq., C.E..	5	1	0	1218 T	40.44	263
„ (Stubden Res.) ..... A	„ „ „	8	1	0	1075 T	44.21	231
„ ( „ „ ) ..... B	„ „ „	8	1	0	1075 T	44.03	231
„ ( „ „ ) .....	„ „ „	5	1	0	1071 T	41.48	231
„ (Nan Scar, Oxenhope) M	„ „ „	5	1	0	1101 T	44.18	...
„ (Leeming Reservoir) M	„ „ „	5	1	0	850 T	37.14	242
„ (Doe Park Reservoir)...	„ „ „	8	1	0	810 T	38.63	213
„ ( „ „ „ ) .....	„ „ „	5	1	0	811	35.56	213
„ (Leeshaw Res.) ..... M	„ „ „	5	1	0	875 T	45.11	...
„ (Chellow Dean Res.) ...	„ „ „	5	1	0	645 T	32.87	210
„ ( „ Heights Res.)	„ „ „	5	1	0	848	32.83	207
„ (Hewenden Res.) . old g.	„ „ „	5	1	0	700 T	32.78	195
„ ( „ „ ) new g.	„ „ „	5	1	0	701 T	34.23	195
„ (Heaton Reservoir) ...	„ „ „	8	1	0	530 T	28.85	175
„ ( „ „ „ ) ...	„ „ „	5	1	0	531 T	28.09	175
Leeds (Wortley Reservoir) .....	C.G. Henzell, Esq., C.E.	8	0	9	307 T	23.67	190
„ (Knostrop) .....	„ „ „	8	0	9	72 T	19.77	149
<sup>D</sup> „ (Holbeck W.W. Depot)...	„ „ „	8	0	9	93 T	23.63	144
<sup>D</sup> „ (Museum).....	H. Crowther, Esq.....	10	46	0	177 T	21.80	167
„ (Woodhouse Moor) .....	C.G. Henzell, Esq., C.E.	8	0	9	307 T	23.78	174

## DIVISION IX.—YORKSHIRE—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level		
		in.	ft. in.	feet.	inches.	
<b>WEST RIDING—(con.)</b>						
<b>9.—OUSE—Aire—(con.)</b>						
Leeds (Weetwood Reservoir) No.1	C.G. Henzell, Esq., C.E.	8	0 9	328 $\pi$	22.22	185
" { " " ) No.2	" " "	8	0 9	328 $\pi$	22.90	185
" { " " Garth) .....	Frank Gott, Esq. ....	5	0 10	300	24.49	...
" (Allerton Hill) .....	T. Harding Churton, Esq.	5	0 7	418 $\pi$	21.82	...
Shipley (Cragg End) .....	Leeds & L'pool Canal Co.	8	1 0	304	27.21	...
D Oakworth (Oldfield Filters) .....	W. Fowlds, Esq., C.E.	5	1 0	1008 $\pi$	37.93	207
Bingley (Gilstead Filters) .....	J. Watson, Esq., C.E.	5	1 0	572 $\pi$	24.73	184
Rawdon (Barningham) .....	H. Killick, Esq. ....	5	0 9	525	26.81	...
D Adel (Lawns Wood Cemetery) ...	Mr. S. R. Dyson .....	5	1 0	475 $\uparrow$	26.73	183
" Bingley (Oakwood) .....	T. Garnett, Esq. ....	5	1 0	525 $\uparrow$	29.30	...
D Keighley (The Knowle) .....	P. Clough, Esq. ....	5	1 0	385 $\uparrow$	32.01	187
D " (Long Lee) .....	C. Croft, Esq. ....	8	1 0	725 $\uparrow$	30.56	207
D " (Victoria Park) .....	Mr. R. Butterfield .....	5	1 0	305 $\pi$	30.05	190
Bingley (Sunnydale) .....	J. Watson, Esq., C.E.	5	1 0	825	29.68	208
" (East Morton) .....	Keighley News .....	...	...	...	30.05	...
D Earby (Sewage Works) .....	J. E. Aldersley, Esq. ....	8	1 0	425 $\pi$	35.89	195
D Silsden (Bolton Road) .....	Mr. A. Elder .....	5	1 0	432 $\pi$	27.55	162
" (Gill Grange) .....	M J. Watson, Esq., C.E.	5	1 0	883	26.29	...
" Reservoir .....	" " " " ..	5	1 0	560 $\pi$	26.85	180
" (Cringles Reservoir Site) ..	" " " " ..	5	1 0	760 $\uparrow$	27.05	180
Carleton (Beech Hill) .....	W. Cyril Empson, Esq.	8	5 3	425	36.13	...
D Skipton (Sewage Works) .....	A. E. W. Aldridge, Esq.	8	0 9	315 $\uparrow$	30.35	151
D† " (Town Hall) .....	(R) " " " " ..	6	1 6	367 $\uparrow$	29.97	185
D " ( " ) .....	" " " " ..	...	...	367 $\uparrow$	30.17	186
" (Hawthorne Cottage) ...	Leeds & L'pool Canal Co.	8	1 0	380	27.35	...
Gargrave (Banks Hill Bank Newton)	" " " " ..	8	1 0	545	34.09	...
" (Ray Bridge Hill) .....	" " " " ..	8	0 10	459	31.22	...
D Skipton (Embsay) .....	J. A. Edmondson, Esq.	5	6 0	560 $\uparrow$	36.15	205
D " ( " Moor Reservoir) .....	A. E. W. Aldridge, Esq.	8	1 3	670	31.66	199
Gargrave (Great Scarnber Hill) ...	Leeds & L'pool Canal Co.	8	0 9	676	31.90	...
Winterburn (Long Hill) .....	" " " " ..	8	0 9	705	33.14	...
" (Brown Hill) .....	" " " " ..	8	1 0	961	37.95	...
D† Malham Tarn .....	Mr. John Winskill " ...	8	1 0	1296 $\pi$	49.86	209
D† " " " " .....	" " " " ..	5	1 0	1296 $\pi$	50.75	209
<b>10.—OUSE—Wharfe. 408 sq. mi.</b>						
Aberford (Lotherton Hall) ... (R)	Mrs. Trench Gascoigne	8	1 0	200	20.29	...
D Saxton Vicarage .....	Rev. C. D. Ash .....	5	2 6	95	20.95	178
Adel (Eccup, South) .....	C.G. Henzell, Esq., C.E.	8	0 9	390 $\uparrow$	26.29	196
" ( " East) .....	" " " " ..	8	0 9	375 $\pi$	27.89	195
Harewood (Arthington) .....	" " " " ..	8	0 9	139 $\pi$	31.14	169
" House .....	Countess of Harewood.	5	0 10	300	24.38	...
Wetherby (Park Hill) .....	W. B. Bridgeman-Simpson Esq.	5	1 4	170	21.64	...
D† Ilkley (Silverwell Cottage) .....	Mr. T. C. Gill .....	5	1 0	904 $\pi$	33.24	196
D† " (Glen Rosa) .....	F. A. Aykroyd, Esq. ....	8	1 1	450	31.00	180
D† " (St. James' Road) .....	Miss Brown .....	5	1 0	325 $\uparrow$	29.46	181

## DIVISION IX.—YORKSHIRE—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>WEST RIDING—(con.)</b>							
<b>10.—OUSE—Wharfe—(con.)</b>							
Leathley (Lindley Wood, S.) ...	C.G. Henzell, Esq., C.E.	8	0	9	312 T	29.07	212
„ ( „ „ N.) ...	„ „ „ „	8	0	9	320 T	28.95	212
Ilkley (March Gill Reservoir) ...	C. F. Hodgson, Esq. ...	5	0	9	665 T	29.11	...
† York (Mount Villas) ...	Mrs. Rowntree ...	5	1	0	70	22.64	219
† „ (Cherry Hill) ...	Mssrs H Richardson & Co	5	1	6	50	20.59	155
† „ (Museum Gardens) ...	Meteorological Office ...	9	1	0	57	20.52	185
D „ (The Retreat) ...	Dr. H. J. Mackenzie ...	5	1	0	74 T	20.47	180
„ (Acomb Landing) ...	W. H. Humphreys, Esq.	5	1	0	40 T	19.26	158
Skipton (Counter Hill) ... M	J. Watson, Esq., C.E. ...	5	1	0	951 T	26.59	...
„ (Chelker Reservoir) ... M	„ „ „ „	5	1	0	730	28.50	...
Fewston (Broad Dubb) ... M	A. S. West, Esq., C.E.	5	1	0	725	28.64	...
„ (John o' Gaunts) ... M	„ „ „ „	5	1	0	600	27.84	...
„ (Timble Ings) ...	C.G. Henzell, Esq., C.E.	8	0	9	912 T	31.20	203
„ ( „ ) ...	„ „ „ „	8	0	9	720 T	29.86	218
„ (Swinsty, E.) ...	„ „ „ „	8	0	9	460 T	29.99	216
„ ( „ W.) ...	„ „ „ „	8	0	9	425 T	30.36	216
„ South ...	„ „ „ „	8	0	9	525 T	28.84	199
„ North ...	„ „ „ „	8	0	9	525 T	27.41	200
„ (Blubberhouses) ...	„ „ „ „	8	0	9	575 T	32.37	215
Bolton Abbey Estate Office ...	A. Downs, Esq. ...	5	1	2	368 T	30.54	193
Barden Reservoir ...	J. Watson, Esq., C.E. ...	8	1	0	746 T	37.27	239
„ „ „ „	„ „ „ „	5	1	0	746 T	36.81	239
„ „ „ „ Upper ..	„ „ „ „	5	1	0	1250 T	32.82	210
Burnsall (Thorpe Fell) ... M	„ „ „ „	5	1	0	1661 T	35.65	...
„ (Sandbed Beck) ... M	Rev. W. J. Stavert ...	5	1	0	676 T	36.96	...
D „ Rectory ...	J. Watson, Esq., C.E. ...	8	4	7	503 T	37.26	217
Grimwith Reservoir ...	„ „ „ „	8	1	0	890 T	39.72	206
„ „ „ „	„ „ „ „	5	1	0	893 T	38.73	206
Hawkswick ... M	Harold Wager Esq. F.R.S.	5	1	6	650 P	51.02	...
† Arncliffe Vicarage ...	Rev Canon W A Shuffrey	5	1	0	732 T	56.79	198
D Wharfedale (Oughtershaw) ...	Miss Woodd ...	5	1	6	1175	59.09?	175
<b>11.—OUSE—Nidd. 254 sq. mi.</b>							
Spofforth (Sewage Works) ...	C. E. Rivers, Esq., C.E.	5	1	0	184 T	23.38	198
D Wetherby (Ribston Hall) ...	Mr. W. Simpson ...	5	1	2	130 T	23.49	168
Harrogate (Ling Cottage) ...	A. S. West, Esq., C.E.	5	1	0	750	25.45	...
„ (Cobblers Cottage) M	„ „ „ „	5	1	0	730	27.17	...
„ (Ten Acres Reservoir) ...	„ „ „ „	8	1	6	620 T	25.11	178
D „ (Scargill Reservoir) ...	„ „ „ „	8	1	0	646 T	28.41	186
„ (Beaver Dyke Res.) ...	„ „ „ „	8	0	11	575 T	27.91	188
„ (Long Stoop) ... M	„ „ „ „	5	1	0	700	26.95	...
„ (Knab's Moor) ... M	„ „ „ „	5	1	0	700	25.63	...
D „ (Harlow Moor Obsy.) ...	C. E. Rivers, Esq., C.E.	5	1	0	480 T	26.63	193
„ ( „ Hill Res.) ...	A. S. West, Esq., C.E.	8	1	0	589 T	24.18	180
„ (Irongate Bridge Res.) ...	„ „ „ „	8	1	6	455 T	26.21	185
D „ (The Stray) ...	Mr. G. W. Gledhill ...	5	1	0	380	25.97	184
D „ (Park Parade) ...	„ „ „ „	5	1	0	400	26.68	184

## DIVISION IX.—YORKSHIRE—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>WEST RIDING—(con.)</b>							
<b>11.—OUSE—Nidd—(con.)</b>							
D Goldsborough Hall.....	Mr. R. Goodall .....	5	1	0	118 $\pi$	22.96	173
Knaresborough (Water Tower)...	A. S. West, Esq., C.E.	8	1	0	240 $\pi$	23.63	190
D " (Grammar School).....	J. H. Hislop, Esq. ....	5	1	0	230 $\pi$	18.98?	168
Harrogate (Bilton Sewage Works)	C. E. Rivers, Esq., C.E.	5	1	0	208 $\pi$	24.72	185
D Birstwith (Swardcliffe) .....	Capt. C. S. Greenwood.	5	1	0	510 $\uparrow$	31.00	171
D Ouseburn (Thorpe Underwood Hall)	F. W. Slingsby, Esq....	5	1	1	60 $\uparrow$	21.87	177
D Pateley Bridge (Castle Stead) ...	Mr. C. May.....	5	1	0	410	38.56	187
Ramsgill (Raygill House) .....	J. Watson, Esq., C.E..	5	1	0	925 $\uparrow$	50.03	166
" .....	" " "	5	1	0	450 $\uparrow$	32.31?	155
Nidderdale (High Riggs) .....	" " "	5	1	0	1010 $\uparrow$	41.12	164
" (East Gill Head) ... M	" " "	5	1	0	1710 $\uparrow$	63.11	...
" (Rain Stang) .....	" " "	5	1	0	1470 $\uparrow$	52.46	...
" (New Houses) .....	" " "	5	1	0	755 $\uparrow$	42.06	162
" (Lodge).....	" " "	5	1	0	1150 $\uparrow$	48.25	207
<b>12.—OUSE—Ure. 110 sq. mi.</b>							
† Dallow Moor (Harper Hill) .....	C.G. Henzell, Esq., C.E.	8	0	9	858 $\pi$	32.75	203
D Ripon (Studley Royal Gardens).	O. H. Wade, Esq. ....	5	1	6	250	28.97	192
D " (The Red House) .....	F. D. Wise, Esq. ....	5	1	0	120	27.39	158
† Kirkby Malzeard (Drovers' Inn) ..	C.G. Henzell, Esq., C.E.	5	0	9	576 $\pi$	38.33	210
" " ( " " " ) ..	" " "	8	0	9	576 $\pi$	35.56	209
† " " (Hawset) .....	" " "	8	0	9	820 $\pi$	37.36	200
" " (Hambleton Hill) ..	" " "	8	0	9	1106 $\pi$	38.91	...
† " " (Bagwith Brae) ..	" " "	5	0	9	703 $\pi$	30.61	206
" " ( " " " ) ..	" " "	8	0	9	703 $\pi$	31.01	212
" " (Stone & Ears Wham) ..	" " "	8	0	9	1118 $\pi$	39.96	...
D Ripon (High Bank, Mickley) ...	Miss Harrison .....	5	1	6	225 $\uparrow$	29.84	172
<b>EAST RIDING. (Area, 1176 sq. mi.)</b>							
<b>1.—OUSE—Left Bank Tributaries. 82 sq. mi.</b>							
Deighton Grove [York] .....	Miss M. L. Whitehead.	5	2	0	47 $\uparrow$	21.07	199
D Heslington [ " ] .....	Hon. L. de Yarburgh-Bateson	8	0	7	35	21.65	174
D Dunnington Hall [ " ] .....	Miss Hildyard .....	8	1	2	110	19.75	194
<b>2.—OUSE—Derwent. 248 sq. mi.</b>							
D Warter .....	Mrs. J. Coxon .....	5	1	10	230 $\uparrow$	21.50	165
D Birdsall Gardens .....	Mr. J. Anderson.....	5	1	3	303 $\pi$	24.69	181
D Malton (The Leat House).....	W.R. Innes Hopkins Esq.	5	0	10	60 $\uparrow$	22.13	185
D Rillington (Scampston Hall) ...	Mr. F. C. Puddle .....	5	1	6	102 $\pi$	23.54	183
Hunmanby (Holly Bank) .....	the late Miss Suter ...	5	1	2	...	23.02	...
<b>3.—HUMBER—Left Bank Tributaries. 675 sq. mi.</b>							
Patrington (Spurn Head) .....	Meteorological Office ...	8	1	0	27	18.00	163
" .....	Miss H. Kirman.....	5	2	6	46 $\pi$	17.94	...
D Hull (Pearson Park) ...	H. B. Witty, Esq. ....	5	0	10	12	20.49	17
D " (Springhead) .....	C. B. Newton, Esq., C.E.	5	1	0	16 $\pi$	21.19	21
D Cottingham (Water Works).....	" " "	5	1	1	26 $\uparrow$	19.99	15
North Cave (The Croft) .....	W. H. Carver, Esq. ...	8	1	6	35	20.72	...

DIVISION IX.—YORKSHIRE—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	.	inches.	
EAST RIDING—(con.)						
3.—HUMBER—Left Bank Tributaries—(con.)						
D Holme upon Spalding Moor .....	C. J. Pybus, Esq. ....	8	4 0	35 ↑	19·72	183
Beverley (East Riding Asylum).	Dr. M. A. Archdale ...	5	1 0	175 ↑	22·00	191
„ (New Walk) .....	W. Evans, Esq., C.E...	5	3 0	38 ↗	22·89	211
„ (Hull Bridge).....	„ „ „ „ ..	5	2 6	11 ↗	20·14	179
D Market Weighton (Dalton Hall)	Mr. W. Jackson.....	5	1 6	150 ↑	22·53	179
D „ „ ( „ „ Holme)	Mr. J. P. Jobling .....	8	6 0	150	21·40	174
D „ „ (Cleaving Grange)	George Cobb, Esq. ....	4	1 6	150	18·32	165
Brandesburton (Hempholm Lock)	W. Evans, Esq., C.E...	5	2 6	11 ↗	18·68	175
Driffield (York Road) .....	W. E. Lovel, Esq. ...	5	1 0	76 ↑	21·11	...
„ (Highfield) .....	Mr. R. Marson .....	5	1 0	80	22·81	...
D Lowthorpe (The Elms) .....	F. K. Hawes, Esq.....	5	1 0	63 ↗	20·50	186
4.—EAST COAST STREAMS. 171 sq. mi.						
D Hornsea .....	F. Lord, Esq.....	8	1 0	40 ↗	20·86	197
D Bridlington.....	S. R. Crofts, Esq. ....	5	1 0	59 ↑	20·75	160
D Helperthorpe (West Farm) .....	H. D. Birdsall, Esq. ...	5	1 0	250	23·21	178
D Filey (Deepdene) .....	A. V. Machin, Esq. ...	5	0 8	44 ↗	20·18	174
NORTH RIDING. (Area, 2155 sq. mi.)						
1.—OUSE—Ure. 273 sq. mi.						
Masham Moor (Benjy Guide)....	C. G. Henzell, Esq., C.E.	5	0 9	1411 ↗	38·40	...
† „ „ (Somerside) .....	„ „ „ „ ..	5	0 9	928 ↗	35·94	162
„ „ (Autherlands) ...	„ „ „ „ ..	5	0 9	1237 ↗	38·85	...
† „ „ (High Sour Mire)	„ „ „ „ ..	5	0 9	884 ↗	33·16	...
„ „ (Spruce Gill).....	„ „ „ „ ..	5	0 9	1187 ↗	41·65	...
D „ „ (Leighton Res.)...	„ „ „ „ ..	5	0 9	634 ↗	36·27	213
„ „ (Thorney Grane)..	„ „ „ „ ..	5	0 9	1175 ↗	44·35	...
„ „ (Bracken Hill) ...	„ „ „ „ ..	5	0 9	1450 ↗	40·01	...
„ „ (Towler Hill)....	„ „ „ „ ..	8	0 9	820 ↗	37·52	204
„ „ (Spruce Gill, East)	„ „ „ „ ..	5	0 9	915 ↗	36·83	...
„ „ ( „ „ „ North)	„ „ „ „ ..	5	0 9	883 ↗	34·36	...
D† „ „ (Breary Bank) ...	„ „ „ „ ..	5	0 9	600 ↗	36·90	202
„ „ (Healey).....	„ „ „ „ ..	5	0 9	542 ↗	31·19	192
† „ „ (Low Houses).....	„ „ „ „ ..	5	0 9	693 ↗	36·51	220
„ „ (Black Brunt) ...	„ „ „ „ ..	5	0 9	1160 ↗	43·01	...
„ „ (Brown Beck) ...	„ „ „ „ ..	5	0 9	1150 ↗	39·37	...
D „ „ (Roundhill Res.)...	A. S. West, Esq., C.E..	8	1 0	743 ↗	35·16	194
D Middleham (The Deanery) .....	Rev. H. G. Topham ...	5	1 0	430	32·61	156
D West Witton (Ivy House) .....	J. B. Espiner, Esq. ...	5	1 0	606 ↗	35·39	199
D Leyburn (Bolton Hall) .....	Mr. F. Scrivener .....	8	1 0	420 ↑	32·82	201
Hawes (The Stone House).....	H. Arden Crallan, Esq.	5	1 6	845	51·11	191
2.—OUSE—Swale. 569 sq. mi.						
D Dalton Parsonage .....	Rev. G. H. Chilman ...	5	1 0	87 ↑	19·20	172
D Thirsk (Baldersby Park) .....	Mr. J. E. Hathaway ...	10	2 0	100	20·04	170
D „ „ (Spital Hill) .....	C. H. Gill, Esq. ....	5	1 0	117 ↗	21·93	176
„ „ (Sowerby) ...	William Brown, Esq....	5	1 0	110	22·26	...
D „ „ (Brynkellhow) .....	A. B. Hall, Esq.....	8	1 0	115 ↗	22·47	172

## DIVISION IX.—YORKSHIRE—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in	feet.	inches.	
NORTH RIDING—(con.)						
2.—OUSE—Swale—(con.)						
D Thirsk (The Hall) .....	Reginald Bell, Esq. ...	5	1 10	121 $\pi$	21.47	166
D „ (Brook House, Sutton)...	F. R. Hansell, Esq. ...	5	1 0	246 $\pi$	21.47	156
„ (Thirlby) .....	A. J. Walker, Esq. ...	5	1 0	339 $\pi$	22.82	...
„ (Mount St. John) <i>Snow g.</i>	„ „ „ .....	5	1 7	535 $\pi$	21.73	...
D „ „ „ „ } „ „ „ .....	„ „ „ .....	5	1 0	523 $\pi$	20.97	169
„ „ „ „ „ } <i>Cary g.</i> .....	„ „ „ .....	5	1 0	523 $\pi$	20.64	...
D „ „ „ „ „ } .....	„ „ „ .....	5	1 10	542 $\pi$	22.79	173
„ „ „ „ „ } <i>M</i> .....	„ „ „ .....	5	1 10	542 $\pi$	21.77	...
„ (Bolthby, West) .....	„ „ „ .....	5	1 0	484 $\pi$	23.38	...
„ „ „ „ „ } .....	„ „ „ .....	5	1 0	480 $\pi$	23.43	...
„ „ „ „ „ } <i>Cliff Head No. 2M</i> .....	„ „ „ .....	5	1 4	772 $\pi$	20.26	...
„ (Newbuilding) .....	G. S. Thompson, Esq. ..	8	1 3	580	25.06	152
„ (Knayton Hall) .....	Gilbert E. Talbot, Esq. ..	5	1 0	267 $\pi$	21.42	...
D Bedale (Burneston) .....	Rev. Canon J. T. Hartley ..	5	1 0	110 $\uparrow$	24.35	163
„ (Thorpe Perrow) .....	Mr. W. Pattison .....	5	1 0	140	26.06	203
„ (Park House) .....	Miss M. Greenwood ...	5	1 1	180	25.38	199
„ (Leeming Garth) .....	Capt. D. A. G. Lascelles ..	5	2 0	...	24.21	...
Newby Wiske .....	H. Rutson, Esq. ....	5	0 10	105 $\uparrow$	22.98	...
D Thornton-le-Moor .....	Col. R. W. Peckitt ...	5	1 0	136 $\uparrow$	22.62	161
D „ „ „ „ (Pasture Ho.) ..	Col. B. A. Satterthwaite ..	5	1 0	225 $\uparrow$	20.73	177
Scruton Hall .....	Rev. A. T. Coore .....	5	1 6	110	24.44	182
Muker (Gunnerside Lodge) ...	W. M. Christy, Esq. ....	5	1 0	900 $\uparrow$	49.32	...
Northallerton (Osmotherley)....	T. Yeoman, Esq. ....	8	0 8	660	25.71	...
Scorton Grammar School .....	W. G. Shannon, Esq. ....	5	1 3	230	18.91	...
D Rounton Grange .....	Mr. J. Hanagan .....	8	1 0	249	24.64	197
D Richmond (Sedbury Park) .....	G. Gilpin Brown, Esq. ..	5	1 0	450	27.03	189
„ (Gilling West) .....	G. Roper, Esq. ....	5	1 3	303 $\uparrow$	27.56	...
Middleton Tyas .....	J. F. B. Baker, Esq. ...	5	0 10	380 $\uparrow$	24.67	...
3.—OUSE—Left Bank Tributaries. 153 sq. mi.						
Haxby (Moorlands) .....	E. G. Tew, Esq. ....	8	0 8	58 $\pi$	21.01	...
Alne .....	E. N. Weighell, Esq. ....	5	0 10	80	18.00	...
Sutton-on-the-Forest (Sutton Hall)	Mrs. Grey .....	5	1 0	125	19.58	...
4.—OUSE—Derwent. 509 sq. mi.						
Terrington Hall .....	Mr. T. Suffield .....	5	1 5	300 $\uparrow$	21.44	222
D Malton (Broughton Rise) .....	C. C. Laverack, Esq. ....	5	1 0	164	22.24	166
Hovingham Hall .....	Sir W. H. A. Worsley, Bt. ..	5	0 6	120 $\uparrow$	22.90	159
D Ampleforth Abbey .....	Rev. H. de Normanville, O.S.B.	8	1 0	351	20.99	170
Helmsley (Duncombe Park Gdns.)	Mr. D. Williams .....	5	3 0	176 $\uparrow$	26.53	...
D Ebberston Vicarage .....	Rev. J. S. Salman .....	5	...	212	22.60	149
D Thornton-le-Dale (Beckside) ...	Miss E. M. Priestman ..	5	0 8	125	21.70	186
D Pickering (Hungate Hall) .....	Dr. J. L. Kirk .....	5	1 0	90	22.09	190
D Seamer (Irtou Pumping Station)	W. Millhouse, Esq. C.E. ..	8	1 0	94 $\pi$	20.85	175
Scarborough (Osgodby) .....	„ „ „ .....	8	1 0	166 $\pi$	19.38	...
5.—ESK & C. 278 sq. mi.						
D Scarborough .....	W. W. Larkin, Esq. ....	5	1 0	101 $\pi$	19.39	187
„ (Manor Road) .....	H. W. Smith, Esq., C.E. ..	5	1 0	170 $\pi$	22.10	205

DIVISION IX.—YORKSHIRE—(continued).

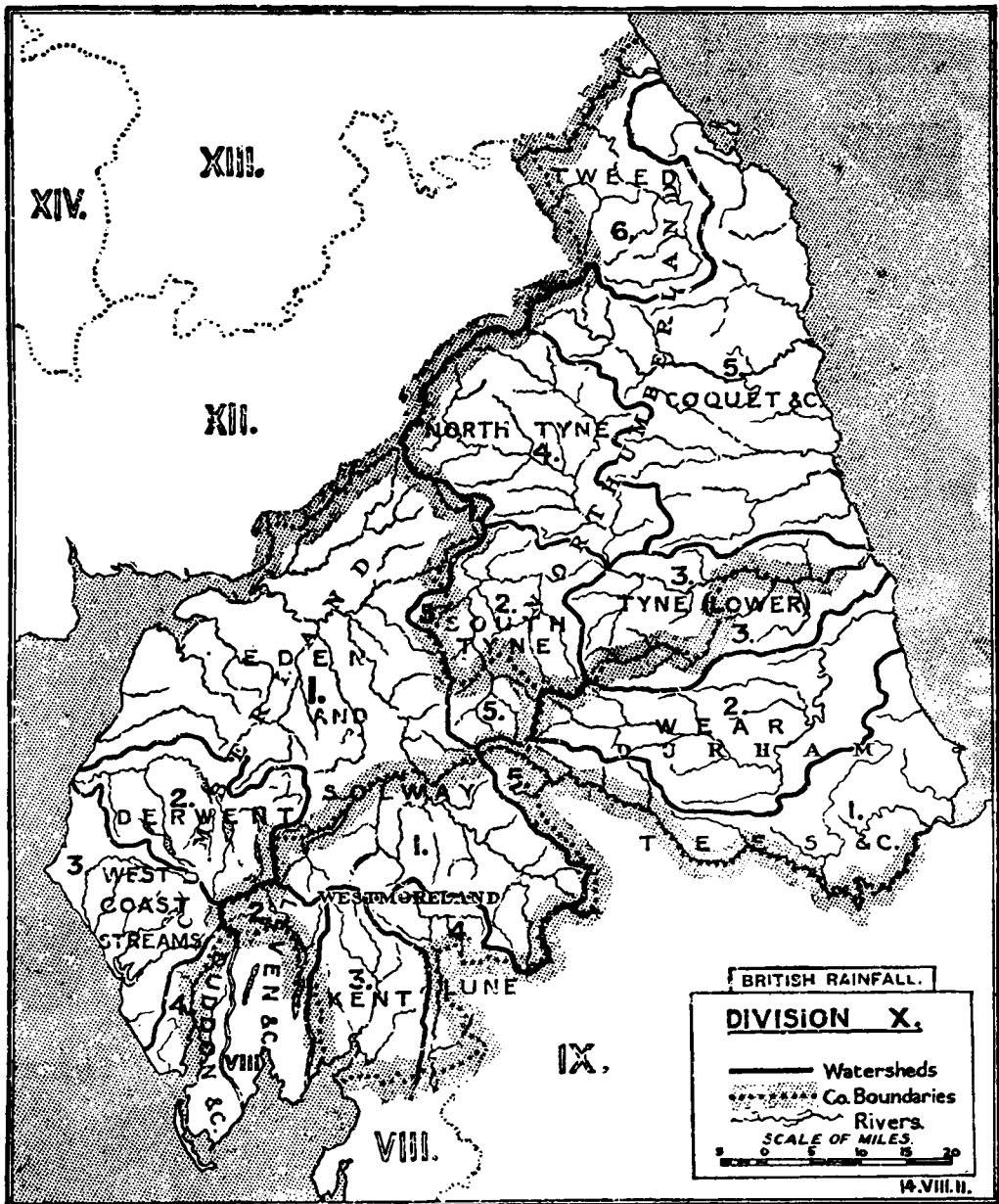
STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
NORTH RIDING—(con.)						
5.—ESK & C—(con.)						
Scarborough (Scalby) .....	Mrs. J. W. Rowntree...	5	0	11	300 B	23.98 ...
<sup>D</sup> „ (St. Philips, Scalby) .....	Rev. W. E. Stewart ...	5	1	0	130 A	21.02 174
<sup>D</sup> Glaisdale (The Gables Gardens)..	Mr. H. Hope ..	5	0	9	400	28.78 181
Fylingdales Vicarage .....	Rev. R. Jermyn Cooper	6	0	10	125	20.29 ...
<sup>D</sup> Sleights (Brook Park) .....	E. Isle Hubbard, Esq..	5	1	0	80 T	25.97 175
<sup>D</sup> Whitby (Park Hall, Aislaby) ...	Rev. J. H. Richardson..	5	1	0	500	27.90 186
<sup>D</sup> „ (Ocean Road) .....	T. W. Parkinson, Esq.	8	1	0	125	22.00 162
<sup>D</sup> „ (Mulgrave Castle) .....	Mr. J. Corbett .....	5	1	0	410 T	27.38 197
<sup>D</sup> Guisborough (Lockwood Beck Res)	W. I'Anson, Esq., C.E.	8	1	0	632 A	27.98 170
„ „ „ „ M	„ „ „ „	8	1	0	632 A	27.87 ...
<sup>D</sup> Skelton-in-Cleveland Rectory ...	Rev. H. Mackworth Drake	5	1	0	300 T	21.30 142
<sup>D</sup> Saltburn-by-the-Sea (Skelton Castle)	W. H. A. Wharton, Esq.	5	0	9	272 A	23.34 146
<sup>D</sup> „ „ „ .....	J. H. Stanton, Esq. ...	8	4	6	200	20.38 173
6.—TEES. 373 sq. mi.						
<sup>D</sup> Ingleby Manor .....	Lord De L'Isle .....	5	0	11	460 T	26.90 179
„ Greenhow Vicarage .....	Rev. M. A. Horsfall ...	5	0	10	400	26.82 173
<sup>D</sup> „ „ (The School House) .....	P. Huntington, Esq....	5	1	0	430 T	27.53 198
<sup>D</sup> Croft (Dalton-on-Tees) .....	Mr. W. Wrather .....	8	2	0	170 P	23.06 165
East Layton Hall .....	Mrs. Proud .....	11	1	0	575 T	28.31 ...
<sup>D</sup> Forcett Park .....	Capt. P. M. French ...	11	1	0	351 T	29.07 185
Hutton Magna Vicarage .....	Rev. A. W. M. Close...	5	0	4	450	31.11 ...
<sup>D</sup> Great Ayton (Easby Hall) .....	J. J. Emerson Esq., LL.D.	5	1	0	355	24.48 170
<sup>D</sup> Kildale Hall .....	R. B. Turton, Esq. ...	5	1	2	600 T	29.53 203
Stokesley (Seamer) .....	J. Pounder, Esq. ....	5	1	4	315	21.87 153
<sup>D</sup> Middlesbrough (Ormesby) .....	W. Stewart Tailyour Esq	5	1	0	100 T	22.13 170
<sup>D</sup> „ (Linthorpe) .....	Mrs. C. L. Bell .....	8	1	0	48 T	22.48 186
<sup>D</sup> „ (Albert Park) ...	J. M. Parnaby, Esq. ...	8	1	0	30	26.87 169
Baldersdale (Blackton Reservoir)	Hugh Wilson, Esq. ...	5	1	0	935 T	42.60 ...
„ (Balderhead) .....	M „ „ „	5	1	0	1360	41.30 ...
<sup>D</sup> „ (Hury Reservoir) ...	„ „ „	5	1	0	866 T	36.55 183
Lunedale (Lunehead) .....	M „ „ „	5	1	0	1450	50.00 ...
„ (Selset) .....	M „ „ „	5	1	0	924 T	40.90 ...
<sup>D</sup> „ (Grassholme Reservoir)	„ „ „	5	1	0	936 A	40.18 180
<sup>†</sup> Mickleton (Lime Kiln Pasture) M	Mr. J. Harvey .....	8	1	0	1175 T	36.46 ...



## MAP OF DIVISION X.

## NORTHERN COUNTIES,

Showing the River-Divisions.



DIVISION X.—NORTHERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet	inches.
DURHAM. (Area, 1011 sq. mi.)						
1.—TEES & C. 396 sq. mi.						
D Darlington (Hurworth Grange) ..	A. C. Backhouse, Esq. ...	5	1	0	161 $\nabla$	22.50 178
D " (Cleveland Parade) ..	W. W. Willmott, Esq. ...	5	1	3	160 $\nabla$	22.35 168
D " (Hummersknott) ...	Mr. J. Short .....	5	1	0	200	22.50 ...
Piercebridge (Carlbury Hall) ...	J. H. Pease, Esq. ....	5	1	0	230 ?	25.14 ...
D† Barnard Castle (County School) ..	R. C. Hitchcock, Esq. ...	5	1	6	540 $\nabla$	29.86 176
D Stockton (Ropner Park) .....	M. H. Sykes, Esq. ....	5	1	9	61 $\nabla$	20.63 146
D Staindrop (Raby Gardens) .....	Lord Barnard .....	5	1	6	460	33.41 215
D Hurworth Burn (Crookfoot Res.)	T. Bower, Esq., C.E. ...	10	1	6	293 $\nabla$	21.10 203
D West Hartlepool (Lynn Street) ..	Mr. H. Lamb .....	5	65	0	84	13.32 152
" " (Water Works)	T. Bower, Esq., C.E. ...	10	1	0	35 $\nabla$	18.44 ...
D Hurworth Burn Reservoir .....	" " " " ..	10	1	0	357 $\nabla$	19.99 154
D Hartlepool (Hart Reservoir) .....	" " " " ..	10	1	0	172 $\nabla$	20.34 170
Seaham (Dalton Pumping Sta.) ..	A. B. E. Blackburn, Esq. ...	8	1	0	345 $\nabla$	24.24 200
2.—WEAR. 464 sq. mi.						
Wolsingham (Dryderdale) ...	Mr. G. Cranston .....	5	1	0	580 ?	33.69 ...
D Willington Rectory .....	Rev. T. Urmson .....	5	1	0	285 $\nabla$	24.94 156
D Wolsingham (Martagon House) ..	Miss F. E. Stobbs .....	5	1	0	464	34.18 160
Stanhope (Parson Byer's Quarry) ..	Messrs. Bell, Bros., Ltd. ...	5	6	8	846 $\nabla$	36.22 ...
D Wearhead Station .....	Mr. R. Rust .....	5	0	6	1104	51.86 170
Durham Observatory .....	Meteorological Office ...	12	4	0	352	23.39 174
Ushaw (St. Cuthbert's College) ..	Rev. Dr. C. Gelderd ...	5	0	9	600 $\nabla$	27.68 178
Pittington (Elemore Hall) .....	Miss Baker Baker .....	8	0	6	323 $\nabla$	24.83 ...
D Weardale W.W. (Tunstall Res.)	R. Askwith, Esq., C.E. ...	8	1	2	724 $\nabla$	32.10 168
" " (Waskerley 6)	" " " " ..	8	4	2	1229 $\nabla$	27.89 ...
" " ( " 3)	" " " " ..	8	4	6	1433 $\nabla$	32.97 ...
" " ( " 4)	" " " " ..	8	4	7	1321 $\nabla$	28.36 ...
" " ( " 5)	" " " " ..	8	4	2	1244 $\nabla$	29.74 ...
D " " ( " )	" " " " ..	8	0	11	1179 $\nabla$	32.05 199
" " ( " 2)	" " " " ..	8	4	5	1367 $\nabla$	29.39 ...
" " ( " 1)	" " " " ..	8	4	4	1317 $\nabla$	29.42 ...
Fence Houses (Chilton Moor) ..	V. W. Corbett, Esq. ...	5	1	4	186 $\nabla$	22.58 ...
Chester-le-Street (Biddick Hall)	Mr. A. Bentley .....	5	1	0	150 $\nabla$	26.39 179
Ryhope Pumping Station .....	A. B. E. Blackburn, Esq. ...	8	1	1	228 $\nabla$	22.76 181
D† Sunderland (W. Hendon Ho.) No. 5	T. W. Backhouse, Esq. ...	5	1	0	130 $\nabla$	22.80 188
† " ( " " " ) No. 6	" " " " ..	5	1	0	130 $\nabla$	22.94 189
" (Mowbray Park) .....	H. Renney, Esq., M.D. ...	5	1	0	105	21.37 ...
" (Claxheugh Grove) .....	J. P. Cornett, Esq. ....	5	2	6	90	22.90 ...
D " (The Cedars) .....	W. F. Vint, Esq. ....	5	1	0	115 $\nabla$	21.51 152
" (Southwick Cemetery)	Mr. J. R. Hodgson .....	8	1	0	171 $\nabla$	22.62 151
3.—TYNE, LOWER. 151 sq. mi.						
D Weardale W.W. (Smiddy Shaw)	R. Askwith, Esq., C.E. ...	8	1	3	1128 $\nabla$	33.39 204
Consett Park Farm .....	J. D. Brown, Esq. ....	5	4	3	641 $\nabla$	27.03 159
Burnopfield (Priestfield) .....	H. F. Bulman, Esq. ...	5	1	0	532 $\nabla$	23.97 ...
D Rowlands Gill (Armstrong College)	J. F. Annand, Esq. ...	12	1	0	446	26.68 191
D† Washington (Usworth School) ...	H. W. Walbank, Esq. ...	8	1	0	284 $\nabla$	21.54 180
Gateshead (Low Fell) .....	Newcastle Chronicle ...	...	...	...	...	26.92 ...

## DIVISION X.—NORTHERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>DURHAM—(con.)</b>						
<b>3.—TYNE, LOWER—(con.)</b>						
Sunderland (Cleadon Pumpg. Sta.)	A. B. E. Blackburn, Esq.	8	1	0	216 $\pi$	22.06
Ryton-on-Tyne (Balgonie House)	J. W. Smith, Esq., M.D.	5	1	6	258	24.86
D South Shields (North Marine Park)	Dr. D. M. Mathieson...	5	7	6	30 $\pi$	23.15
<b>NORTHUMBERLAND. (Area, 2015 sq. mi.)</b>						
<b>1.—EDEN. 20 sq. mi.</b>						
<b>2.—SOUTH TYNE. 232 sq. mi.</b>						
Allenheads .....	J. W. Metcalfe, Esq. ....	8	1	0	1353 $\pi$	44.55
D Bardon Mill (Allans Green) .....	J. B. Lowes, Esq. ....	5	0	6	1000	32.06
D Haltwhistle (Bellister Castle) ...	J. M. Clark, Esq. ....	5	1	0	380	33.81
D „ (Plenmellor Collieries)	Mr. J. Sisk .....	...	...	...	...	31.05
<b>3.—TYNE, LOWER. 227 sq. mi.</b>						
D Corbridge (Howden Dene) .....	J. H. Straker, Esq. ...	5	0	9	200 $\uparrow$	28.71
D „ (Monksholme) .....	H. Palmer, Esq. ....	5	1	0	127 $\uparrow$	27.75
Hexham (St. Eilan's) .....	Hexham Courant .....	...	...	...	...	27.91
D „ (Beaufront Castle) .....	Capt. J. H. Cuthbert D.S.O.	8	1	0	400	27.16
Newcastle (Lit. and Phil. Soc.)..	H. Richardson, Esq. ..	8	55	0	160	26.32
„ (Chronicle Office) ...	Newcastle Chronicle ...	8	30	0	148	25.15
„ (Northumberland Rd.)	A. M. Sole, Esq. ....	8	45	0	200	25.42
„ (Leazes Park) .....	R. Moffat, Esq. ....	5	1	0	255 $\pi$	23.91
D „ (Town Moor) .....	D. C. Baldie, Esq. ....	5	2	0	201 $\pi$	27.01
„ (Wellburn, Jesmond).	J. H. Holmes, Esq. ...	5	1	6	163 $\uparrow$	24.05
D Heddon-on-the-Wall Vicarage...	Rev. W. G. Pringle ...	5	1	0	420 $\uparrow$	26.50
North Shields (Dockwray Square)	Meteorological Office ...	8	1	4	117	24.56
D Tynemouth (Tyne Pier Works)..	N. G. Gedy, Esq., C.E.	5	1	8	65 $\pi$	25.00
D „ (Percy Park) .....	J. E. Burnett, Esq. ...	8	1	0	91 $\pi$	24.24
D „ ( „ „ ) .....	(R) „ „ „ „ .....	6	1	6	91 $\pi$	24.01
D „ ( „ „ ) .....	(R) „ „ „ „ .....	8	6	0	96 $\pi$	23.62
Whittle Dean (Newcastle W.W.)	A. L. Forster, Esq., C.E.	5	0	6	380	25.21
„ „ Filters ( „ „ )	„ „ „ „ .....	5	1	1	353	26.34
<b>4.—NORTH TYNE. 433 sq. mi.</b>						
N. Tyne (Green Crag) (Newcastle W.W.)	A. L. Forster, Esq., C.E.	5	1	6	896 $\pi$	25.49
Hallington Village ( „ „ )	„ „ „ „ .....	5	1	0	467 $\pi$	26.96
„ Reservoirs ( „ „ )	„ „ „ „ .....	5	1	0	470	26.62
„ (Fawcett) ( „ „ )	„ „ „ „ .....	5	1	2	537 $\pi$	25.98
„ (Cheviot) ( „ „ )	„ „ „ „ .....	5	1	2	576	24.77
Gunnerton Burn (Campbell) ( „ „ )	„ „ „ „ .....	5	1	1	650 $\pi$	27.19
Colt Crag ( „ „ )	„ „ „ „ .....	5	1	0	654	26.03
D Bellingham (High Green Manor)	Capt. C. Morrison-Bell	5	1	0	849 $\pi$	30.46
Otterburn Tower .....	Miss Audrey Pease .....	5	0	11	550	27.91
D „ (Horsley Vicarage) ...	Miss Stephens .....	5	1	2	700	27.18
Redewater (Catcleugh) .....	A. L. Forster, Esq., C.E.	5	1	0	819	42.69
<b>5.—COQUET &amp; C. 840 sq. mi.</b>						
Whittington (Newcastle W.W.)	A. L. Forster, Esq., C.E.	8	0	9	528	26.71
Burnside ( „ „ )	„ „ „ „ .....	5	0	9	419	25.54
Ryal Cottage ( „ „ )	„ „ „ „ .....	10	0	9	463	26.83

DIVISION X.—NORTHERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
NORTHUMBERLAND—(con.)						
5.—COQUET & C—(con.)						
D Scots Gap (Wallington Gardens)	Mr. E. Keith .....	8	2	9	446 T	34.55 162
†Morpeth .....	T. Matheson, Esq. ....	8	1	6	100	24.34 ...
	<i>Fruitgrower &amp; Florist</i> ...					21.86 ...
D† " (Bothalhaugh Garden) ..	Hon. & Rev. W. C. Ellis	5	1	10	35	24.66 204
† " ( " " " ) M	" " " " "	5	1	10	35	23.57 ...
D† " ( " " " ) M	" " " " "	5	1	10	137	22.94 205
† " ( " " " ) M	" " " " "	5	1	10	137	23.40 ...
D " (Longwitton Hall) .....	C. H. S. Perceval, Esq.	5	0	6	570 T	31.97 193
" (Ashington) .....	W. Wilson, Esq. ....	5	1	0	110	21.05 168
D " (Cockle Park) .....	R. Thornton, Esq. ....	8	1	0	325 A	26.01 210
D Font Res. (Tynemouth W. W.) ..	J. W. McKerrow, Esq.	10	1	0	614 A	28.35 216
D† Acklington (Broomhill Colliery)	Broomhill Collieries Ltd.	5	7	0	92 A	21.96 152
Rothbury (Brinkburn Priory) ...	Mrs. Hugh Fenwick ...	8	1	2	257 T	29.20 ...
D " (Cragside) .....	Mr. W. Bertram .....	8	1	0	405 A	30.43 181
D Flotterton .....	G. H. Phillips, Esq. ...	8			541	27.14 154
D Felton (Newton-on-the-Moor) ...	J. A. Charlton, Esq. ...	5	1	6	500 A	28.13 159
Alnwick Castle .....	Meteorological Office ...	5	0	4	210	26.73 183
D Howick Hall .....	Earl Grey, G. C. M. G. ...	8	0	10	121 A	24.87 164
Bamburgh .....	T. W. Little, Esq. ....	5	1	0	75 L	19.46 ...
Belford (Middleton Hall) ... (R)	Major G. F. T. Leather				240 P	18.27? ...
6.—TWEED. 262 sq. mi.						
D Glanton (Glanton Pyke Gardens)	Mr. J. Henderson .....	8	4	2	521 A	26.52 189
D Ilderton (Lilburn Tower) .....	A. B. Collingwood, Esq.	10	6	0	300 T	23.30 177
D " ( " Cottage) .....	N. D. Cowans, Esq. ...	5	1	0	340 T	25.71 193
D Wooler (St. Ninians) .....	Dr. R. Walker .....	8	0	10	176 T	27.97 ...
" (Victoria House) .....	Miss Dodds .....	5	1	0	176 T	19.65 ...
" (The Thirlings) ....	Col. J. M. W. Anderson	5	1	6	200 P	22.92 ...
D " (Doddington Vicarage) ..	Rev. J. G. Shotton .....	8	1	0	140 T	24.03 170
D Pawston [Coldstream] .....	B. P. Selby, Esq. ....	5	1	0	327 T	22.85 171
D Berwick-on-Tweed (Church St.)	Lt.-Col. A. W. Pennyman	5	2	0	95	21.12 165
7.—INSULAR. 1 sq. mi.						
CUMBERLAND. (Area, 1516 sq. mi.)						
1.—EDEN & SOLWAY. 887 sq. mi.						
Ullswater (Hallsteads) .....	Miss C. Marshall' .....	5	2	0	497 T	58.87 190
D Watermillock (Mell Fell House)	Gerald Spring-Rice, Esq.	5	1	0	980	45.69 184
Penrith (Lowther Street) .....	H. Lester, Esq. ....	5	1	0	575 T	33.61 193
" (Fir Bank, Fell Lane) ..	the late T. Lester, Esq.	5	1	0	575 T	33.39 185
" (Nandana) .....	G. Varty Smith, Esq. ...	5	1	0	650	29.92 287
" (Sandath House) .....	" " " " "	5	1	0	575	32.39 204
D " (Benson House) .....	A. B. Sinclair, Esq. ...	5	0	8	450	35.90 196
" (Newton Rigg) .....	W. T. Lawrence, Esq. ...	8	1	0	559	34.43 210
" (Greystoke Castle) .....	H. Walker, Esq. ....	5	1	3	650 T	45.51 ...
D " ( " Belle Vue) ..	Miss E. A. Rowe .....	5	4	0	680 T	33.93 180
" (Ennim) .....	Mrs. Hamlet Riley ...	8	0	6	660	38.33 180
Uldale (Chapel House Reservoir)	J. Smith Hill, Esq. ...	8	1	0	600 T	43.28 189

## DIVISION X.—NORTHERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>CUMBERLAND—(con.)</b>						
<b>1.—EDEN &amp; SOLWAY—(con.)</b>						
D Penrith (Nunwick Hall) .....	Mrs Heywood Thompson	5	1	0	298 T	30.36 192
Aspatria (Agricultural College)..	J. Smith Hill, Esq. ...	8	1	0	251 T	36.48 193
„ (Brayton Hall) .....	Sir Wilfrid Lawson Bart.	8	0	8	200	32.07 ...
D Renwick (Ravenwood) .....	W. Salkeld, Esq. ....	5	2	0	680	33.98 170
D Wigton (Brookfield) .....	J. Ransom Marsh, Esq.	5	1	6	124 T	33.22 189
D Wreay Vicarage.....	Rev. Canon A. R. Hall	5	2	0	310 T	28.57 198
D Geltsdale.....	H. C. Marks, Esq., C.E.	5	1	2	778 T	36.40 235
D Carlisle (Spital Cemetery) .....	J. T. Charlton, Esq. ...	8	1	6	115	28.23 190
„ (Denton Holme) .....	W. Eggleston, Esq. ...	5	2	0	57	28.28 ...
„ (Rickerby) .....	Mr. T. Stoddart .....	8	1	2	52 T	27.94 ...
„ (Stanwix).....	Sir Benjamin Scott .....	8	1	6	100 T	27.89 159
D „ (Newby Grange) .....	T. H. Hodgson, Esq....	5	0	8	64 T	27.13 199
D „ (Brunstock) .....	M. T. Scott, Esq. ....	5	1	6	86 T	27.64 181
„ (Scaleby Hall) .....	Meteorological Office ...	5	1	0	112	30.65 222
D Penton (Warwickland School)..	W. Roden, Esq.....	5	1	0	250 B	35.16 196
<b>2.—DERWENT. 257 sq. mi.</b>						
Sprinkling Tarn .....	Dr. H. R. Mill .....	5	1	6	1985	129.32 ...
Styehead Tarn .....	„ „ „ .....	4	0	6	1472 T	126.65 ...
† The Stye B .....	„ „ „ .....	4	1	0	1077 T	161.95 ...
„ B ... <i>Seathwaite g.</i> .....	„ „ „ .....	5	1	6	1070 T	165.44 ...
† „ C .....	„ „ „ .....	4	1	0	1077 T	156.53 ...
† „ D .....	„ „ „ .....	4	1	0	1077 T	131.35 ...
† Borrowdale (Seathwaite) .....	„ „ „ .....	4	0	6	422 T	125.13 ...
† „ ( „ ) <i>weekly</i> .....	„ „ „ .....	5	1	0	422 T	124.54 ...
D† „ ( „ ) .....	„ „ „ .....	5	1	0	423 T	124.07 224
Ullscarf .....	G. H. Hill, Esq., C.E..	7	1	8	2100 T	112.70 ...
Helvellyn (Birkside) .....	„ „ „ .....	7	1	3	1900 T	88.70 ...
Wythburn .....	„ „ „ .....	7	1	4	580 T	86.60 ...
D† Borrowdale (Rosthwaite) .....	J. Reay, Esq. ....	5	0	9	...	98.10 201
Buttermere (Hassness) .....	Miss C. Marshall .....	5	1	0	355	105.61 212
D† Borrowdale (Grange) .....	Mr. J. Threlkeld .....	5	0	9	271 T	85.94 167
Armboth Fells (The Pewitts).....	G. H. Hill, Esq., C.E..	7	1	6	1650 T	67.20 ...
Helvellyn (Whiteside) .....	„ „ „ .....	7	1	6	2100 T	80.30 ...
Thirlmere (Dale Head Hall) ...	„ „ „ .....	7	1	5	620 T	81.60 ...
D† Keswick (Deer Close) .....	Miss C. Marshall .....	7	1	9	300 T	60.54 211
D „ (Derwent Island) <i>old g.</i> .....	„ „ „ .....	5	0	7	280	59.78 211
D „ ( „ ) <i>new g.</i> .....	„ „ „ .....	5	0	6	290	57.28 210
† „ (The Bank) .....	Mr. G. C. Furlong.....	5	1	6	265 T	51.11 205
D† „ (Shu-le-crow) .....	A. Mitchell Dawson, Esq.	5	0	7	296 T	58.97 220
D† „ (Crosthwaite School)...	H. Swinburn, Esq.....	5	1	0	254 T	53.11 209
D „ (Mirehouse) .....	Miss Spedding .....	5	1	1	300	48.63 211
D Cockermouth (Whinfell Hall)...	Mrs. Peile .....	5	0	1	255 T	54.10 203
D „ (Lorton Hall) .....	Sir J. T. Hutchinson ...	5	1	0	270	51.89 196
„ (Brandlingill).....	Mrs. Sewell.....	5	1	0	320	58.58 175
„ (Shatton Hall).....	Miss Irwin .....	5	4	5	300 T	40.32 ...

**DIVISION X.—NORTHERN COUNTIES—(continued).**

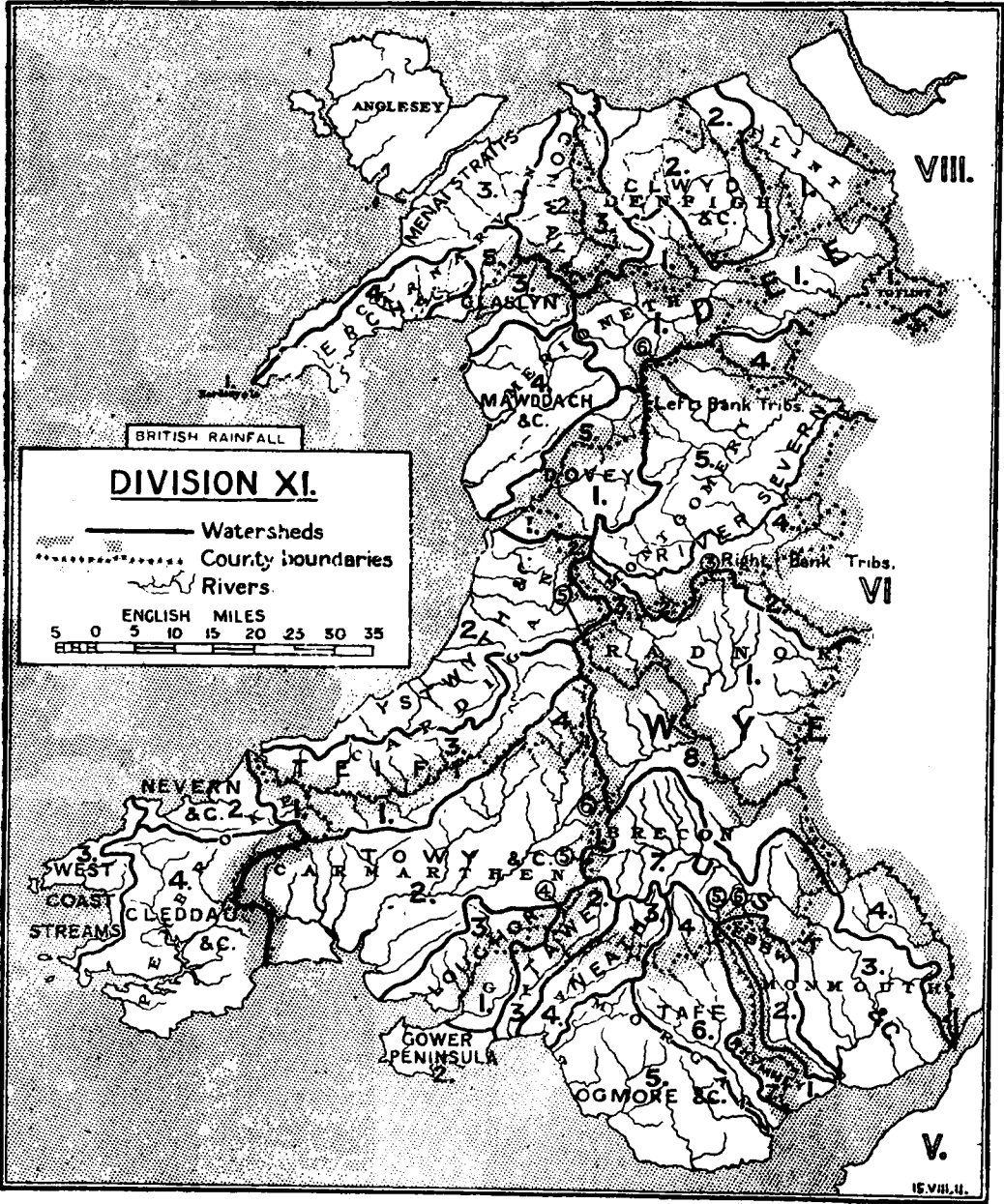
STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>CUMBERLAND—(con.)</b>							
<b>2.—DERWENT—(con.)</b>							
D Threlkeld (Blencathra Sanatorm.)	Dr. W. Goodchild .....	5	1	0	885 $\nabla$	56.72	216
Camerton Vicarage .....	Rev. E. C. Bennett ...	5	1	0	200 $\nabla$	31.01	...
Bassenthwaite (Higham) .....	Joseph Fisher, Esq. ....	5	0	9	500	42.51	158
D „ (Bassenfell) .....	Mrs. S. G. Rathbone ...	8	1	0	384	39.88	198
D Cockermouth (Broughton Grange)	G. S. Wilson, Esq. ...	5	1	3	209 $\nabla$	38.75	200
D „ (Dovenby Hall) (R)	H. B. Dykes, Esq. ....	4	4	0	255 $\uparrow$	33.92	177
<b>3.—WEST COAST STREAMS. 235 sq. mi.</b>							
Ravenglass (The Grove) .....	A. Watt, Esq. ....	5	2	8	77 $\nabla$	38.15	176
Eskdale Green (Gatehouse) .....	Miss C. Marshall .....	5	0	10	150	50.03	212
Beckfoot .....	„ „ „ .....	5	1	0	180 $\uparrow$	55.78	176
D Seascale (Whinthwaite) .....	Dr. R. Hellon .....	5	1	0	52 $\nabla$	35.47	199
Netherwasdale Vicarage .....	Rev. J. Hodgson .....	5	1	0	182 $\nabla$	49.40	153
Braystones .....	H. H. Watson, Esq. ...	10	3	6	36 $\uparrow$	34.14	...
D Egremont (The Grange) .....	J. Sherwen, Esq. ....	8	1	0	351 $\nabla$	47.80	211
„ (Ringingstone) .....	Harold Adair, Esq. ...	5	1	0	260 $\nabla$	40.21	174
Cleator Moor W.W. (Dent Res.)	R. Robertson, Esq., C.E.	5	1	0	395 $\nabla$	47.03	185
Frizington (Parkside Mines) ...	H. Norman Morris, Esq.	8	1	0	345	38.61	...
D Whitehaven (Scragill Reservoir)	E. E. Stiven, Esq., C.E.	8	1	0	188 $\nabla$	37.66	205
D „ (Irish Street) .....	Dr. Eldon Pratt .....	5	1	1	21 $\nabla$	41.62	198
Distington (Gilgarran) .....	Mr. A. Kydd .....	5	4	9	470 $\uparrow$	39.52	179
D Workington (Winscales House) ..	J. A. Trench, Esq. ....	5	1	6	440 $\uparrow$	33.80	175
<b>4.—DUDDON &amp; C. 50 sq. mi.</b>							
<b>5.—SOUTH TYNE. 87 sq. mi.</b>							
D Alston (Nenthead) .....	Caldwell Harpur, Esq.	8	1	6	1463	60.78	185
<b>WESTMORLAND. (Area, 783 sq. mi.)</b>							
<b>1.—EDEN. 373 sq. mi.</b>							
Ravenstonedale (The Chantry) ...	J. R. Highmoor, Esq. ...	5	1	11	900	52.32	216
D Kirkby Stephen (Redman House)	Mrs. T. Mason .....	5	1	0	574 $\uparrow$	42.20	189
Hayes Water (High Street) No. 3	Baldwin Latham Esq., CE	5	1	0	2600 $\nabla$	108.50	...
„ „ „ „ „ No. 2	„ „ „ „ „	5	1	0	2000 $\nabla$	109.40	...
„ „ „ „ „ No. 1	„ „ „ „ „	5	1	0	1750 $\nabla$	116.10	...
Patterdale Hall .....	Miss C. Marshall .....	5	1	3	490 $\uparrow$	93.98	226
„ (Greenside Mine) .....	W. H. Borlase, Esq. ...	7	1	6	1000 $\uparrow$	82.81	...
D Appleby (Castle Bank) .....	C. R. Rivington, Esq. ...	5	1	2	440 $\uparrow$	34.87	206
Ullswater (Sharrow Bay) .....	Mr. G. Robinson .....	5	0	7	600	46.05	...
D Great Strickland (Greencroft) ...	Mrs. Whiteside .....	5	2	0	648 $\nabla$	38.47	177
D Morland [Penrith] .....	Miss M. F. Markham ...	5	1	0	456 $\uparrow$	36.94	214
Lowther Castle [Penrith] .....	Mr. F. Clarke .....	8	4	0	760 $\uparrow$	36.65	184
Temple Sowerby .....	Mrs. Burton .....	5	2	0	349 $\uparrow$	25.51	...
<b>2.—LEVEN. 60 sq. mi.</b>							
D† Bowness (Lindeth Howe) .....	F. G. Senior, Esq. ....	5	1	0	250 $\uparrow$	58.63	210
D „ (Dawstone) .....	A. M. Sing, Esq. ....	5	1	2	550	58.32	205
D† „ (Fallbarrow) .....	Miss E. F. Rawson ...	8	1	0	155 $\uparrow$	58.05	191
† Windermere (Hammer Bank) ...	Miss C. Marshall .....	5	1	0	290 $\nabla$	58.05	226

## DIVISION X.—NORTHERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\cdot 01$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>WESTMORLAND—(con.)</b>							
<b>2.—LEVEN—(con.)</b>							
D† Bowness (Fellside) .....	T. D. Lingard, Esq. ...	5	0	6	310 $\nabla$	60·10	205
D† Windermere (Holehird) .....	W. G. Groves, Esq. ...	5	1	0	483 $\nabla$	67·02	229
D† „ (Brockhole) .....	W. Gaddum, Esq. ....	5	1	6	145	66·17	222
D† Ambleside (Wansfell) .....	Miss C. Marshall .....	5	1	0	150 $\nabla$	70·65	217
D† „ (Skelwith Bridge) ...	A. J. Adams, Esq. ....	5	1	9	190 $\nabla$	82·83	215
Little Langdale (Fell Foot) ...	Miss C. Marshall .....	5	2	2	380	101·15	...
D† Ambleside (White Craggs) .....	C. H. Hough, Esq. ....	5	2	4	252	69·98	225
D „ (Gale House) .....	G. A. Johnston, Esq. M.D.	5	1	0	180 $\nabla$	72·90	221
„ (Lesketh How) .....	Mrs. Benson .....	5	2	6	175 $\nabla$	78·57	238
Elterwater Hall .....	Miss C. Marshall .....	5	1	1	200	86·52	...
D† Rydal (The Stepping Stones) ...	Gordon Wordsworth Esq.	5	1	0	190	81·08	238
† „ ( „ „ „ ) M	„ „ „ „	5	1	3	190	79·25	...
† Loughrigg Fell .....	Gauge A „ „ „	5	1	3	690	69·17	...
† „ „ „ „ „ Gauge B	„ „ „ „	8	1	3	690	74·34	...
Rydal .....	Miss M. Yates .....	5	0	7	390 $\nabla$	79·80	221
D „ (High Close) .....	F. E. T. Jones Balme, Esq.	8	0	9	553 $\nabla$	85·31	207
D „ (Silverthwaite) .....	No. 1 Miss A. Sharp .....	5	1	0	292 $\nabla$	75·43	219
Ambleside (Rydal Farm) .....	Ralph Fletcher, Esq. ...	5	1	4	160	75·09	226
D† Dungeon Ghyll .....	Miss C. Marshall .....	5	1	0	310	106·71	235
† „ „ „ „ „ M	„ „ „ „	5	1	0	311	108·83	...
† Mickleden .....	M „ „ „	5	1	6	490	141·47	...
D Grasmere (The Wray) .....	Miss G. M. Simpson ...	5	1	0	221 $\nabla$	91·68	229
„ (Michael's Fold) .....	Miss E. F. Paley .....	5	1	0	300	86·71	218
<b>3.—KENT. 188 sq. mi.</b>							
D Milnthorpe (St. Anthony's) .....	G. E. Clayton, Esq. ...	5	3	0	...	41·25	189
D Heversham (Plumtree Hall) .....	T. Carrick Watson, Esq.	5	0	8	115 $\nabla$	42·59	206
D „ (Leasgill) .....	T. A. Argles, Esq. ....	5	0	8	130	39·61	219
D Kendal (Crosthwaite Vicarage) ...	Rev. T. Heelis .....	5	1	0	200	50·57	218
D „ (Vicarage Terrace) .....	Mrs. Braithwaite .....	8	0	6	160 $\nabla$	45·68	202
D† „ (Holmcroft) .....	R. Rhodes, Esq. ....	5	1	3	170 $\nabla$	46·23	225
† „ (Birchfield) .....	H. W. Baron, Esq. ....	5	1	6	175 $\nabla$	47·73	205
D† „ (Low Slack) .....	A. W. Wilson, Esq. ...	5	1	0	350 $\nabla$	48·33	199
„ (Brantfield) .....	Mrs. W. H. Somervell..	5	1	6	290 $\nabla$	51·18	200
† „ (Ellergreen) .....	C. J. Cropper, Esq. ...	5	1	6	270 $\nabla$	54·96	250
D „ (Potter Fell) .....	Messrs. J. Cropper & Co.	...	0	4	800	70·40	171
Long Sleddale (Low House) .....	R. Martindale, Esq. ...	5	1	0	550	68·46	...
<b>4.—LUNE. 122 sq. mi.</b>							
Kirkby Lonsdale .....	J. R. Picard, Esq. ....	7	0	8	215 $\nabla$	44·00	...
D „ „ (Casterton) .....	R. A. Clarke, Esq. ....	8	1	0	305	44·35	224
D „ „ „ „ „	Miss Williams .....	8	1	0	320 $\nabla$	44·94	193
Barbon (Underfell) .....	Miss C. E. Wilson .....	5	1	5	405 $\nabla$	42·19	181
D „ Manor .....	F. Crossley, Esq. ....	6	1	3	650 $\nabla$	42·07	155
D „ „ „ „ „	Miss Wilkinson .....	5	1	0	310 $\nabla$	43·50	175
<b>5.—TEES. 40 sq. mi.</b>							

MAP OF DIVISION XI.

MONMOUTH, WALES, AND THE ISLANDS,  
Showing the River-Divisions.





## DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>MONMOUTH. (Area, 534 sq. mi.)</b>						
<b>1.—RHYMNEY. 39 sq. mi.</b>						
D Coedkernew (Cefnlllogell) .....	T. Hillier, Esq. ....	5	3	6	200	39.91
D Rumney (Witla Court) .....	Mr. J. F. Matthyssens..	5	1	3	168 $\pi$	40.06
<b>2.—EBBW. 88 sq. mi.</b>						
D Newport (Tredegar Park) .....	Mr. J. Bone .....	5	0	10	0	41.23
Bassaleg (Bryn Hedydd) .....	Blethyn T. Rees, Esq., CE	5	8	0	333 $\pi$	48.22
D Rogerstone (Rhiwderin) .....	L. Forestier-Walker Esq	5	1	3	259 $\uparrow$	43.99
Blackwood .....	H. Caldwell, Esq., C.E.	8	1	6	620	44.89
D Abertillery (The Park) .....	Dr. T. B. Smith .....	5	1	0	700 $\uparrow$	67.81
D „ (Cwmtillery) .....	W. Y. Hobkirk, Esq...	5	1	0	970 $\uparrow$	73.50
D Tredegar (Llyswe dog) .....	Mrs. L. Whitehead ...	5	1	3	1050 $\uparrow$	60.19
D „ (Redesdale) .....	D. W. Davies, Esq. ...	5	1	6	963	61.09
D Ebbw Vale (Iron Works) .....	J. H. Gogerty, Esq. ...	8	1	0	902 $\pi$	63.02
D Nant-y-bwch (Shon Sheffrey's Well)	D. W. Davies, Esq. ...	5	1	5	1204	64.72
<b>3.—USK &amp; C. 290 sq. mi.</b>						
D Portske wett (Sudbrook) .....	W. K. Laurence, Esq. CE	8	0	10	22 $\pi$	29.36
D Caerleon (Llanwern House) .....	D. A. Thomas, Esq., M. P.	8	1	0	190 $\uparrow$	36.77
D Newport (Friar Street Yard) ...	Newport Corporation...	5	1	0	32	42.84
„ (Ynis-y-fro Reservoir)..	„ „ ..	5	1	0	130 $\uparrow$	46.82
D „ (Pant-y-reos Res.) .....	„ „ ..	5	1	0	435 $\uparrow$	60.05
„ W. W. (Llanvaches) ...	„ „ ..	5	0	10	456 $\pi$	39.17
„ (Nantypridd, Wentwood)	„ „ ..	5	1	0	500 $\pi$	42.76
D Chepstow (Itton Court) .....	E. Curre, Esq. ....	5	1	0	390	35.74
D Llanfrehffa Grange .....	Col. W. F. Cleeve .....	5	4	0	326 $\pi$	49.01
Tredunnoch Rectory .....	Rev. C. T. Salusbury ...	5	2	3	170 $\pi$	35.58
D Newport W. W. (Newchurch) ...	Newport Corporation...	5	1	0	525 $\pi$	45.43
D Devauden (Tredean) .....	W. W. Hood, Esq., C.E.	5	3	6	700	36.46
D Griffithstown .....	T. P. Holmes Watkins Esq	5	1	0	473 $\pi$	61.27
Abersychan (The Hawthorns) ...	J. W. Mulligan, Esq. MD	5	1	0	755 $\uparrow$	61.64
„ (Glansychan) .....	Meteorological Office...	3	2	0	698	63.72
„ (Brynderwen) .....	E. H. M. Luckock, Esq.	5	1	0	136 $\pi$	43.04
Blaenavon .....	E. J. John, Esq. ....	8	1	6	1150 $\uparrow$	68.65
D Raglan (Llanarth Court) .....	E. B. Herbert, Esq.....	5	1	2	125	38.70
D Abergavenny (Larchfield) .....	Dr. N. R. Phillips .....	5	1	0	240 $\uparrow$	45.39
D† „ (The Chain) .....	W. Baker Gabb, Esq...	5	1	3	300 $\uparrow$	46.26
D „ (Linda Vista) .....	A. V. Whitehead, Esq.	5	1	6	180	46.29
D† Grwyne Fawr (Coed Dias) .....	W. Baker Gabb, Esq...	5	1	0	900 $\uparrow$	50.36
D† „ „ (Ffwydd Fwthog)	Baldwin Latham, Esq CE	5	0	8	1380 $\pi$	54.57
<b>4.—WYE. 117 sq. mi.</b>						
D Chepstow (Piercefield Park) .....	H. Clay, Esq.....	5	1	6	310	34.78
Monmouth (The Elms) .....	Mrs. Hall .....	5	1	1	91	30.80
D „ (The Hendre) .....	Mr. T. Coomber .....	8	1	0	176 $\uparrow$	29.78
D „ (Pentwyn) .....	Rev. Canon J. Harding	5	1	0	191 $\pi$	33.34
Llantilio Court .....	Sir H. Mather-Jackson Bt	5	0	11	231	37.48
D „ Crosseny (Brynderi) ...	Miss Jackson .....	5	1	5	570	38.02
D† Llanthony Abbey .....	Baldwin Latham, Esq CE	5	1	0	792 $\pi$	52.74

DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>GLAMORGAN.</b> (Area, 808 sq. mi.)						
1.—LOUGHOR. 55 sq. mi.						
D Gorseinon (Penllergaer).....	Sir J.T.D.Llewelyn,Bt.	5	3	0	240 T	55.15 234
D Felindre (Lower Lliw Reservoir)	R. H.Wyrrill, Esq., C.E.	8	1	3	426 T	57.03 217
D „ (Upper „ „)	„ „ „	8	1	0	610	67.36 238
2.—GOWER PENINSULA. 62 sq. mi.						
D Penmaen (Cefn Mor).....	R. A. Bostock, Esq. ...	5	1	5	300	50.44 204
Mumbles (Bristol Ch. Yacht Club)	E. N. Henham, Esq....	5	1	0	20	57.72 191
Swansea (Killay House) .....	late M.B.Williams, Esq.	5	0	6	265 T	51.24 211
3.—TAFE. 47 sq. mi.						
D Swansea (Victoria Park) .....	Mr. D. Bliss .....	8	1	0	26 T	50.78 208
D „ (The Knoll) .....	E. H. Perkins, Esq. ...	5	1	0	150 T	52.25 221
Morriston (The Vicarage).....	Rev. D. Williams .....	5	1	0	236	54.15 211
D Pontardawe (Plas Cilybebyll) ...	the late H. Lloyd, Esq.	5	3	0	510	68.23 205
D Ystalyfera (Wern School) .....	J. Williams, Esq. ....	5	1	3	240 T	77.73 211
4.—NEATH. 82 sq. mi.						
D Briton Ferry (Brynsiriol).....	H. A. Clarke, Esq. C.E.	5	1	0	33 T	49.39 188
D „ „ (Cefn Court) .....	„ „ „	5	1	0	503 T	52.71 202
D Neath .....	D.M.Jenkins, Esq., C.E.	5	1	0	204 T	63.99 205
D „ (Glynfeln) .....	T. Gibbins, Esq.....	5	1	4	180 B	55.87 174
D „ (Longford Court).....	J. G. Moore-Gwyn, Esq.	5	2	6	250	56.02 191
D Glyn Neath (Aberpergwm) .....	F. Stoten, Esq. ....	5	1	6	...	63.81 193
5.—OGMORE & C. 350 sq. mi.						
Cowbridge (Fonmon Castle).. ...	O. H. Jones, Esq. ....	8	1	2	130	31.81 177
D Barry W. W. (Biglis) .....	T.E. Franklin, Esq. C.E.	5	1	0	20 T	32.13 182
„ „ (Merthyr Dyfan Res.)	„ „ „	5	1	0	300 T	38.23 ...
„ „ (Pencoedtre Res.)...	„ „ „	5	1	0	200 T	30.67 ...
„ „ (Dinas Powis Res.)...	„ „ „	5	1	0	165 T	32.52 ...
D Lower Penarth .....	E. I. Evans, Esq., C.E.	5	1	0	67 T	33.15 209
D Penarth .....	„ „ „	5	5	0	160 T	35.97 210
Cardiff (Cogan Pill, Llandough).	C.H. Priestley, Esq., CE	5	1	0	121 T	38.72 194
D „ (Ely Pumping Station)...	„ „ „	5	1	0	53 T	45.48 227
Cowbridge (Ash Hall) .....	E. Tudor Owen, Esq... ..	8	3	0	315 T	50.27 190
Merthyr Mawr .....	Meteorological Office ...	...	...	...	74	41.95 ...
Bridgend.....	Dr. A. D. Low .....	5	1	0	116 T	44.89 208
D Llantrisant (Talygarn)...	G. L. Clark, Esq. ....	5	4	3	250	64.33 213
D „ (S. Rhondda Colliery)	W. W. Hood, Esq., C.E.	5	15	0	480	72.58 158
„ (Llanilid Reservoir)	T. Saunders, Esq. ....	8	1	3	582 T	70.86 172
D Port Talbot (Twyn-yr-hydd, Margam)	G. Lipscomb, Esq.....	5	1	0	180 T	44.22 210
Glyncorrwg Colliery .....	Mr. C. Stephens .....	5	4	6	725 T	92.28 199
6.—TAFF. 157 sq. mi.						
Cardiff (Trade Street Depot) ...	C.H. Priestley, Esq. C.E.	5	1	0	45	40.88 197
D „ (Park Place) .....	Dr. C. T. Vachell .....	5	1	0	42 T	40.21 228
D Llandaff (Howell's School) .....	Miss A. G. Winny .....	5	1	4	86 T	40.22 195
„ (West Hill) .....	J. E. Gladstone, Esq... ..	5	1	0	110 T	45.38 ...
Pontypridd (Maesderwen, Graig)	T. Bowen, Esq. ....	5	10	0	425 T	60.71 193
D „ (Lan Wood Reservoir)	E. W. Terrey, Esq., C.E.	5	1	0	300	60.75 207
D Porth (Cemetery Road).....	D. Hawkins, Esq. ....	5	1	0	500 T	74.82 166



## DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>PEMBROKE. (Area, 617 sq. mi.)</b>						
1.—TEIFI. 37 sq. mi.						
d Castle Malgwyn [Llechryd] ...	E. Gower, Esq. ....	5	1	0	30 ?	48.39 206
2.—NEVERN & C. 91 sq. mi.						
d Fishguard (Goodwick Station)...	G. Lambert Gibson, Esq.	5	7	4	57 $\pi$	44.36 217
d Newport (Llwyngwair).....	G. B. Bowen, Esq. ....	8	1	1	40 $\uparrow$	55.48 204
3.—WEST COAST STREAMS. 82 sq. mi.						
d St. Brides .....	Lord Kensington, D.S.O.	5	0	11	100 $\pi$	46.29 167
d St. Davids .....	D. P. Williams, Esq. ....	5	1	0	216	40.47 188
4.—CLEDDAU & C. 407 sq. mi.						
Pembroke (Stackpole Court).....	Mr. W. B. Fisher ...	6	1	6	60 $\pi$	41.56 208
Tenby (Glendower) .....	J. T. C. Burgess, Esq..	5	1	6	20	46.05 199
St. Ann's Head .....	Meteorological Office ...	8	0	8	150	41.45 204
d Pembroke Dock (Admiralty Res.)	D. J. Morgan, Esq. ...	8	1	0	90	42.10 191
d " " (County School)	G. H. West, Esq. ....	5	1	0	85 $\uparrow$	47.35 204
d Saundersfoot (Hean Castle) .....	Hon. Herbert C. Lewis	5	1	11	206 $\pi$	36.55 197
Haverfordwest (Picton Castle)...	Sir C. E. G. Philipps, Bt.	5	0	10	138	53.07 233
d " " (Poyston) .....	Dr. Henry Owen	...	...	...	..	48.75 161
d " " (Portfield) .....	J. W. Phillips, Esq. ...	5	1	0	220 $\uparrow$	49.77 224
d " " .....	" " "	5	1	0	95 $\text{B}$	53.16 202
d Whitland (Trewern) .....	G. Protheroe-Beynon Esq.	5	3	0	30	57.44 219
Penfford Council School .....	Thomas H. Davies, Esq.	5	1	0	310	51.95 ...
Treffgarne Hall .....	Col. R. O. Lloyd, R.E.	5	1	1	286 $\pi$	48.94 ...
Mynachlogddu School .....	J. Edwal Williams, Esq.	5	1	3	620	66.76 ...
d Fishguard (Langton, Dwrbach)...	J. C. Yorke, Esq. ....	5	1	0	320	49.07 233
<b>CARDIGAN. (Area, 688 sq. mi.)</b>						
1.—DOVEY. 20 sq. mi.						
2.—YSTWYTH & C. 347 sq. mi.						
d Lampeter (Llanlear) .....	Miss Lewes .....	5	1	1	226	47.97 219
d Strata Florida (Hafod) .....	T. J. Waddingham, Esq.	5	1	0	580 $\uparrow$	61.82 244
Aberystwyth (N. Parade).....	Dr. A. Thomas .....	8	2	6	15	41.94 210
d " " (Gogerddan) .....	Mr. W. Penwill .....	5	1	1	83 $\text{B}$	56.63 226
Ynys-lâs (Sandling) .....	Wyndham Deedes, Esq.	5	1	6	20 $\uparrow$	36.90 186
3.—TEIFI. 260 sq. mi.						
d Lampeter (Falcondale) .....	Mr. W. Taylor .....	5	1	10	498	54.42 226
4.—TOWY. 46 sq. mi.						
d Nantneuadd [Abergwesyn] .....	Mr. W. Roberts .....	5	1	0	1290	70.75 204
Tregaron (Maes-y-bettws) ...	Dr. H. R. Mill .....	5	1	0	910	72.50 ...
Strata Florida (Towy-fechan) M	" " " .....	5	1	0	1330	73.70 ...
5.—WYE. 15 sq. mi.						
Birmingham W.W. (Llyn Gynon) M	E. Antony Lees, Esq. ...	...	...	...	1500	72.50 ...
† " " (Bwlchyrhendre) M	" " " .....	5	1	0	1585	67.70 ...
" " (Claerddu) ... M	" " " .....	5	1	0	1500	77.95 ...
" " (Gwngu)..... M	" " " .....	5	1	0	1650	72.05 ...
d " " (Abergwngu)...	" " " .....	5	1	0	1200	62.95 201
Plynlimon .....	M Dr. H. R. Mill .....	5	1	0	1740	105.20 ...

## DIVISION XI.—MONMOUTH, WALES AND THE ISLANDS—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	1913 inches.
<b>BRECON. (Area, 733 sq. mi.)</b>						
1.—TOWY. 17 sq. mi.						
2.—TAWE. 41 sq. mi.						
b Swansea W.W. (Nantyrwydd)...	R. H. Wyrill, Esq., C.E.	5	1	0	920	87·72 207
„ „ (Blaen Tawe) M „ „ „	„ „ „	5	1	0	1375	105·49 ...
3.—NEATH. 48 sq. mi.						
† Pont Neath Vaughan [Glyn Neath]	W. N. Hogben, Esq. ...	5	1	5	297	69·01 203
4.—TAFF. 48 sq. mi.						
b Nanthir Reservoir [Aberdare] ..	O. Williams, Esq., C.E.	5	1	0	860	68·31 224
„ „ [ „ „ ] M „ „ „	„ „ „	5	1	0	860	68·54 ...
Penderyn .....	J. R. Fox, Esq., C.E. ...	5	1	0	1003	56·45 ...
Taff Fechan (Pontsticill) .. No. 12	T. F. Harvey, Esq., C.E.	5	1	0	1031	59·00 ...
„ „ { „ West) .. 14	„ „ „	5	1	0	1254	66·26 ...
„ „ { „ East) .. 13	„ „ „	5	1	0	1763	61·27 ...
b† Cardiff W.W. (Llwynon Res.) ...	C. H. Priestley, Esq. C.E.	5	1	0	860	65·05 232
„ „ (Pont-ar-daf) ...	„ „ „	5	1	0	850	74·85 232
„ „ (Garw-nant) .....	„ „ „	5	1	0	1100	75·82 ...
„ „ (Nant Gwineu) ...	„ „ „	5	1	0	1275	58·92 ...
„ „ (Nant-y-gou-garn) „ „ „	„ „ „	5	1	0	...	84·28 ...
b† Taff Fechan (Pentwyn Res.) ...	T. F. Harvey, Esq., C.E.	5	1	0	1120	73·84 241
† „ „ ( „ „ ) .. M	„ „ „	5	1	0	1120	73·45 ...
Cardiff W.W. (Nant Goch) .....	C. H. Priestley, Esq. C.E.	5	1	0	...	58·34 ...
„ „ (Nant Ddu) .....	„ „ „	5	1	0	1560	75·75 ...
† „ „ (Pentwyn Uchaf, No 5) „ „ „	„ „ „	5	1	0	1143	71·17 ...
† „ „ (Storey Arms, No. 4) „ „ „	„ „ „	5	1	0	1430	78·35 ...
„ „ (Tyle Brith, No. 1) ...	„ „ „	5	1	0	2350	88·96 ...
b† „ „ (Cantref Res., No. 2) „ „ „	„ „ „	5	1	0	1120	79·38 224
b† „ „ (Beacons Res., No. 6) „ „ „	„ „ „	5	1	0	1340	82·93 226
„ „ (Nant Penig, No. 3) ..	„ „ „	5	1	0	2000	91·86 ...
b† Taff Fechan (Neuadd Res.) No. 1	T. F. Harvey, Esq., C.E.	5	1	0	1462	80·35 242
† „ „ ( „ „ ) No. 1 M	„ „ „	5	1	0	1462	75·20 ...
b† „ „ ( „ „ ) No. 4	„ „ „	5	1	0	1487	89·53 242
b† „ „ ( „ „ ) No. 4A	„ „ „	5	1	0	1487	89·86 242
† „ „ ( „ „ ) No. 2 M	„ „ „	5	1	0	1993	81·67 ...
† „ „ ( „ „ ) No. 5 M	„ „ „	5	1	0	1515	90·89 ...
† „ „ ( „ „ ) No. 10 M	„ „ „	5	1	0	1700	75·71 ...
b† „ „ ( „ „ ) No. 11	„ „ „	5	1	0	1524	74·73 242
† „ „ ( „ „ ) No. 7 M	„ „ „	5	1	0	2017	90·89 ...
† „ „ ( „ „ ) No. 8 M	„ „ „	5	1	0	1723	97·66 ...
† „ „ ( „ „ ) No. 3 M	„ „ „	5	1	0	1843	64·72 ...
„ „ ( „ „ ) No. 3A M	„ „ „	5	1	0	1843	65·88 ...
† „ „ ( „ „ ) No. 9 M	„ „ „	5	1	0	1997	58·12 ...
† „ „ ( „ „ ) No. 6 M	„ „ „	5	1	0	2099	108·21 ...
5.—RHYMNEY. 2 sq. mi.						
6.—EBBW. 7 sq. mi.						
b† Ebbw Vale W.W. (Filters) No. 1	T. J. Thomas, Esq., C.E.	5	1	0	1413	66·74 212
† „ „ „ „ West g. No. 3	„ „ „	5	1	0	1468	75·35 213
† „ „ „ „ N. W. g. No. 2	„ „ „	5	1	0	1471	70·91 214

## DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level		
		in.	ft. in.	feet.	inches.	
<b>BRECON—(con.)</b>						
<b>6.—EBBW—(con.)</b>						
Ebbw Vale W.W. (Carno, S.)...	T.J. Thomas, Esq., C.E.	5	1 0	1236 $\nabla$	69.89	223
† " " " ( " E.)...	" " "	5	1 0	1391 $\nabla$	69.29	225
† " " " ( " W.)...	" " "	5	1 0	1412 $\nabla$	72.93	225
† " " " ( " N.)...	" " "	5	1 0	1533 $\nabla$	69.21	223
<b>7.—USK. 299 sq. mi.</b>						
Crickhowell (Glanusk Park).....	Lord Glanusk.....	5	1 0	290	52.86	179
D† " (Gwernvale) .....	E. Pirie Gordon, Esq...	5	1 0	393 $\nabla$	46.72	201
" (Penmyarth) .....	J. H. Furnedged, Esq...	5	1 0	330	46.25	184
Llanbedr (Wernbystack) .....	Dr. H. R. Mill .....	5	1 0	...	44.11	...
D Swansea W.W. (Bwlch) .....	R. H. Wyrill, Esq., C.E.	8	1 0	1246	117.14?	223
D " " (Cray Res.) No.1 .....	" " "	5	1 0	1032	83.20	236
" " " ( " " ) No.2 .....	" " "	5	1 0	1015	97.52	...
D Bwlch (Buckland Gardens) .....	Mr. E. Beckett .....	8	0 9	486	56.13	192
Talybont (Cui) .....	Lt.-Col. H. Jones Williams	5	1 0	490 $\nabla$	60.10	...
D† Brecon (New Inn) .....	Mr. W. Williams .....	5	1 0	810	70.57	159
† Cray Station .....	M Mr. J. Jones .....	5	1 0	930	78.30	...
† Crickhowell (Cwmdu) .....	M Mr. J. P. Edwards.....	5	1 0	430	51.20	...
D " (Ffordlas Farm) ...	Dr. H. R. Mill .....	5	1 0	1170	53.13	177
† Llanfrynach (Tymawr).....	Miss D. de Winton ...	5	1 0	450 $\nabla$	50.66	195
† Crickhowell (Tal-y-maes).....	M Dr. H. R. Mill .....	5	1 0	1250	61.60	...
D Treacastle (Blaenau-hydfder) .....	" " " " .....	5	1 0	1070	90.40	207
Brecon (Ffrwdgrech) .....	J. D. D. Evans, Esq....	8	1 0	570	59.47	208
D " (The Laurels) .....	C. J. E. Large, Esq. ...	5	1 0	492 $\nabla$	51.50	229
" " " " .....	" " " " .....	8	1 0	492	50.45	...
† Black Mountains (Waun Fach)..	{ The Referees, Aber- }	5	1 0	2650 $\nabla$	61.23	...
D† " " (Cwm Grigus Uchaf) ..	{ tillery Water Bd. Act }	5	1 0	1980 $\nabla$	64.42	222
D† " " (Dam Site, Grwyne Fawr) ..	" " "	5	1 0	1620 $\nabla$	64.61	223
D† " " (Aber Clyd) .....	" " "	5	1 0	1880 $\nabla$	58.59	222
† " " (Pen-y-Manllwyn) .....	" " "	5	1 0	2512 $\nabla$	56.57	...
D† " " (Taren-yr-Esgob)..	" " "	5	1 0	2039 $\nabla$	55.24	219
D " " ( " " " " , Top) ..	J. R. Gethin Jones, Esq.	5	1 0	2100 $\nabla$	60.29	219
D† " " (Twyn Tal-y-Cefn) ..	{ The Referees, Aber- }	5	1 0	2130 $\nabla$	55.65	216
D† " " (Blaen Grwyne Fawr) ..	{ tillery Water Bd. Act }	5	1 0	2150 $\nabla$	53.98	215
D† Llanfihangel Nant-Bran (Cwm cynog)	Dr. H. R. Mill .....	5	1 0	790	50.93	176
† Upper Chapel (Tymawr) .....	Mrs. Probert .....	5	1 0	945	54.20	...
<b>8.—WYE. 271 sq. mi.</b>						
D† Cathedine Rectory .....	Rev. D. H. Picton.....	5	1 0	660	43.67	179
D† Capel-y-ffin [Llanthony] .....	J. R. Gethin Jones, Esq.	5	1 0	1047 $\nabla$	64.28	215
D Talgarth (Dan-y-garth) .....	F. Morgan, Esq.....	5	4 0	404 $\nabla$	37.24	181
Gwernyfed Park [Glasbury] ...	late Capt. A. Glen Kidston	5	1 0	375 $\nabla$	32.73	215
D Hay (Waunderwen) .....	Col. R. D. Garnons-Williams	5	1 4	400	36.13	198
Llanwrttyd Wells (Brynderw) ...	Mrs. W. T. Rees .....	5	1 0	800	64.53	243
D† Llangammarch Wells .....	Dr. W. Black Jones ...	8	1 0	551 $\nabla$	56.03	226
D Builth Wells (Tyn-y-berllan) ...	Dr. W. W. Baldock Fry	5	1 0	430 $\nabla$	46.66	198
† Abergwesyn (Trallwn) .....	M Dr. H. R. Mill .....	5	1 0	1000 ?	84.05	...
† Pen-graig [Newbridge].....	M " " " " .....	5	1 0	960	60.80	...
D† Llys dinam [ " ].....	C Venables Llewelyn Esq	5	1 3	646 $\nabla$	47.29	227

## DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>BRECON—(con.)</b>						
<b>8.—WYE—(con.)</b>						
Llysdinam [Newbridge] .....	C Venables Llewelyn Esq	5	1 0	646 T	48.67	227
( Birmingham W. W. (Cors-yr-hwch) M	E. Antony Lees, Esq...	5	1 0	1775	94.60	...
„ „ (Esgair Ceiliog) M	„ „ „ „	5	1 0	1525	70.25	...
„ „ (Llyn-Carw) M	„ „ „ „	5	1 0	1775	90.10	...
† „ „ (Nant-y-car) ... M	„ „ „ „	5	1 0	1545	81.60	...
† „ „ (Esgair Garthen) M	„ „ „ „	5	1 0	1600	70.30	...
D† „ „ (Elan Village) ...	„ „ „ „	5	1 0	...	60.79	228
<b>RADNOR. (Area, 474 sq. mi.)</b>						
<b>1.—WYE. 424 sq. mi.</b>						
Boughrood Castle .....	(R) Hon. F. J. Morgan.....	8	1 0	400 ?	41.51	203
Welfield [Builth] .....	E. A. Thomas, Esq. ...	5	1 10	740	49.77	146
Builth Road (St. John's Vicarage)	Rev. J. L. Bryans .....	5	0 11	550 T	43.74	223
D Llandrindod Wells (Kimberley) ..	W. B. de Winton Esq. CIE	5	1 0	699 T	41.09	214
New Radnor (Ednol).....	M Mr. F. Dorrell .....	5	1 0	951 T	40.28	...
Radnor Forest (Great Rhos) ... M	H. Langston, Esq.....	5	1 6	2150 T	54.83	...
D Presteign (St. Davids) .....	Dr. N. Y. Lower .....	5	1 0	500	38.40	200
„ (Norton Manor Gdns.)	Mr. Wilson Palliser ...	...	1 6	650	41.87	...
D† Birmingham W. W. (Tyrmynydd)	E. Antony Lees, Esq...	5	1 0	832 T	62.77	235
D† „ „ (Nantgwillt) .	„ „ „ „	5	1 0	845	67.99	233
† „ „ (Dwfnant) ...	„ „ „ „	5	1 0	...	70.75	...
† „ „ (Esgair Gader) No 1 M	„ „ „ „	5	1 0	1500	66.85	...
„ „ ( „ „ ) No 2 M	„ „ „ „	5	1 0	1500	70.40	...
D† „ „ (Claerwen) ...	„ „ „ „	5	1 0	1250	69.65	223
D† „ „ (Tynant) ...	„ „ „ „	5	1 0	1250	68.92	234
Rhayader .....	„ „ „ „	5	1 0	...	50.45	...
† Birmingham W W (Cerrigllwydion) M	„ „ „ „	5	1 0	1700	75.50	...
† „ „ (Pen-y-gareg) M	„ „ „ „	5	1 0	1500	58.55	...
† „ „ (Calettwr) ... M	„ „ „ „	5	1 0	1500	72.15	...
„ „ (Figin) No. 1 M	„ „ „ „	5	1 0	1700	81.50	...
„ „ ( „ ) No. 2 M	„ „ „ „	5	1 0	1700	87.10	...
„ „ (Aberhenllan) M	„ „ „ „	5	1 0	1250	59.48	...
Abbey Cwmhir .....	Rev. W. F. B. Ward ...	5	1 0	912	44.05	...
Llanbister (Llananno) .....	Dr. H. R. Mill .....	5	1 0	900	50.50	...
<b>2.—SEVERN—Right Bank Tributaries. 50 sq. mi.</b>						
<b>MONTGOMERY. (Area, 797 sq. mi.)</b>						
<b>1.—DOVEY. 120 sq. mi.</b>						
D Machynlleth (The Plas).....	W. H. Brooks, Esq. ...	5	1 0	41 T	57.25	220
<b>2.—YSTWITH. 7 sq. mi.</b>						
<b>3.—WYE. 37 sq. mi.</b>						
D Llangurig (Dernol) .....	Dr. H. R. Mill .....	5	1 0	870	60.29	201
<b>4.—SEVERN—Right Bank Tributaries. 154 sq. mi.</b>						
D Llandinam (Plas Dinam) .....	Mr. D. Bowen .....	5	3 0	504 T	43.03	189

DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued.)

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
MONTGOMERY—(con.)							
4.—SEVERN—Right Bank Tributaries—(con.)							
D Newtown (Penarth Weir) .....	G. R. Jebb, Esq., C.E..	8	1	0	321 $\nabla$	38·07	229
5.—SEVERN—Left Bank Tributaries. 479 sq. mi.							
D Berriew (Rhiewport Gardens) ...	Mr. E. Jones .....	5	1	0	370 $\nabla$	38·47	181
D CastleCaerinion(SylfaenGardens)	Mr. J. Edwards .....	5	1	3	605 $\nabla$	41·01	232
D Welshpool (Llwynderw) .. . . .	W. H. Brooks, Esq. ...	8	1	0	243 $\nabla$	34·45	206
D " (County School) .....	" " " .....	5	1	0	263 $\nabla$	34·02	215
Garthbibio (Bwlch Tomlyd) ... M	Dr. H. R. Mill .....	5	1	0	1370 $\nabla$	69·60	...
D Meifod (Coed-y-Maen) .....	Mr. W. H. Corbett ...	5	1	3	280 $\nabla$	39·44	228
D Lake Vyrnwy .....	E. J. Bradley, Esq. ...	5	0	7	770 $\nabla$	48·61	199
" " (Bryn Gwyn) .....	J. Parry, Esq., C.E. ...	8	1	0	1311 $\nabla$	60·55	...
D " " (Bank Cynon Isaf) .....	" " " .....	8	1	0	750 $\nabla$	59·22	197
" " (Ty Uchaf) .....	" " " .....	8	1	0	860 $\nabla$	58·69	...
" " (Heol-y-ffridd) No.1 .....	" " " .....	8	1	0	912 $\nabla$	79·70	...
" " ( " " " ) No.2 .....	" " " .....	8	1	0	912 $\nabla$	76·37	...
" " (Tyn-y-ffridd) ...	" " " .....	8	1	0	1010 $\nabla$	60·41	...
" " (Lluestwen).....	" " " .....	8	1	0	1667 $\nabla$	69·49	...
" " (Llwynrhiw) .....	" " " .....	8	1	0	1428 $\nabla$	85·26	...
" " (Craig-y-Gribbin)..	" " " .....	8	1	0	1100 $\nabla$	65·02	...
" " (Eunant Bridge)...	" " " .....	8	1	0	830 $\nabla$	78·70	...
" " (Carreg Goch).....	" " " .....	8	1	0	1750 $\nabla$	79·45	...
" " (Fawnog).....	" " " .....	8	1	0	1315 $\nabla$	62·14	...
FLINT. (Area, 256 sq. mi.)							
1.—DEE. 198 sq. mi.							
D Hanmer (Gredington) .....	Lord Kenyon, K.C.V.O.	5	0	10	300	31·89	202
D Overton (Fairleigh) .....	B. J. E. Wright, Esq...	5	1	8	220 $\nabla$	27·45	175
D The Elms [Gresford].....	P. L. Rooper, Esq.....	8	1	0	200	28·49	207
Cilcain .....	W. Simmons, Esq.....	5	1	0	790 $\nabla$	24·97	199
Hawarden .....	Great Central Rly. Co..	9	3	6	35	27·58	188
Northop (Soughton Hall) .....	Sir John E. Bankes ...	5	1	0	418 $\nabla$	29·68	155
D " (Highfield) .....	Rev. Canon A. Atkinson	5	1	0	400	27·08	173
D Hawarden Bridge .....	J. E. Griffiths, Esq. ...	9	1	0	15	27·19	188
D Mostyn Vicarage .....	Rev. W. Vaughan-Jones	5	1	0	100	32·69	227
2.—CLWYD. 51 sq. mi.							
D† Bodfari (Henblas) .....	Mrs. Scott Bankes .....	5	1	0	283 $\nabla$	27·00	203
D " (Cae Gwyn) .....	Mrs. Morgan .....	5	0	5	542 $\nabla$	27·26	205
St. Asaph (St. Beuno's College).	St. Beuno's College ...	8	1	0	480 $\nabla$	26·54	...
Dyserth Castle .....	J. B. Price, Esq. ....	5	0	6	350	23·34	...
Rhyl (Sewage Works) .....	Dr. A. Eyton Lloyd ...	8	1	0	31 $\nabla$	25·52	195
D Prestatyn (Edlestone House) ...	T. J. Scott, Esq. ....	5	1	0	30	24·79	155
3.—SEVERN—Left Bank Tributaries. 7 sq. mi.							



## DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
<b>DENBIGH. (Area, 668 sq. mi.)</b>							
1.—DEE 270 sq. mi.							
	Chirk (Penisar'glyn Lodge) .....	Prof. Fraser Story .....	...	...	500	38·34	156
D	Cerrig-y-Druidion (Garthmeilio) .....	Col. S. Parr Lynes .....	5	1 0	925 T	45·29	181
D†	„ „ „ (Bwlch-y-beudy) No.2 .....	Col. C. S. Mainwaring..	5	1 0	1050 T	50·94	215
D†	„ „ „ „ „ „ „ No.3 .....	„ „ „ „ „ „ „	8	1 0	1050	48·27	215
	Wrexham (Ty Mawr Reservoir) .....	F. Storr, Esq., C.E. ...	5	0 9	805	37·40	179
	„ (Pack Saddle Res.) ...	„ „ „ „ „ „ „	5	0 9	370 T	31·77	184
	„ (Cae Llwyd Res.) ...	„ „ „ „ „ „ „	8	0 9	918 T	38·43	179
	„ „ „ „ „ „ „	„ „ „ „ „ „ „	5	0 9	918 T	37·98	179
	„ (Esclusham Vicarage) .....	Rev. J. E. Tompson ...	5	1 5	327	31·03	217
D	„ (Broughton) .....	J. Hall, Esq. ....	5	1 0	500 T	32·86	202
	„ (Gwersyllt) .....	S. H. V. Simmons, Esq. ...	5	1 0	283 T	29·58	...
	Gresford (Horsley Hall) .....	Mr. Henry Young .....	5	1 0	135	27·97	180
D†	Cerrig-y-Druidion (Hafod-llan-isaf) .....	J. H. Parkin, Esq. ....	5	1 2	1200	43·14	190
D†	Pentre Voelas (Nant Heilyn) ...	„ „ „ „ „ „ „	5	1 0	1225	49·72	220
D†	Cerrig-y-Druidion (Hafod-yr-Onen) .....	„ „ „ „ „ „ „	5	1 0	1175	39·66	214
	†Nantglyn (Pant-y-maen) ..... M	„ „ „ „ „ „ „	8	1 0	1320 T	43·54?	...
	†Llyn Bran ..... M	„ „ „ „ „ „ „	8	1 0	1428 T	57·12	...
<b>2.—CLWYD &amp; C. 267 sq. mi.</b>							
D	Gyffylliog (Fachlwyd Hall) .....	Elliott S. Currey, Esq. ...	5	1 0	640 T	42·48	232
D	Ruthin (Tymawr) .....	Maj.-Gen. C. L. Cary ...	5	1 0	400	31·04	197
D	„ (Llanbedr Hall) .....	Dr. G. A. Crace-Calvert ..	5	1 0	451 T	29·89	190
D	Llangerniew (Hafodunos) ... (R)	Col. T. Gee .....	8	3 0	512	43·49	177
	Llanefydd (Rhyl W.W., S.) ... M	L. G. Hall, Esq., C.E. ...	5	1 0	600	33·48	...
	„ „ „ „ „ „ „ W.) ... M	„ „ „ „ „ „ „	5	1 0	580	28·52	...
D	„ (Plas Uchaf Res.) ...	„ „ „ „ „ „ „	5	1 0	485	26·62	178
D	„ (Glascoed Reservoir) ..	„ „ „ „ „ „ „	5	1 0	360	28·73	189
D	Llangynhafal (Plâs Drâw) .....	Col. C. J. Bromhead, C.B. ...	5	1 0	419 T	31·84	231
D†	Denbigh (Asylum) .....	W. Barker, Esq. ....	5	0 10	316 T	30·82	203
D	„ (Garn) .....	W. D. W. Griffith, Esq. ...	5	1 0	447 T	32·00	208
	„ (Gallt-faenan) .....	Mr. J. B. Pritchard ...	5	0 5	400	31·61	...
	Trefnant (Maes Elwy) .....	Major R. F. Birch .....	5	1 3	150 T	28·33	164
	Wygfair [St. Asaph] .....	Col. H. R. L. Howard, C.B. ...	8	2 6	250	27·39	...
D	Colwyn Bay (Four Crosses) .....	W. Jones, Esq., C.E. ...	5	1 0	400 T	31·18	180
D	„ „ „ (Council Offices) ...	„ „ „ „ „ „ „	8	1 0	82 T	30·09	162
<b>3.—CONWAY. 84 sq. mi.</b>							
D	Pentre Foelas (Voelas Hall) .....	Mr. T. Dickie .....	5	1 3	640 T	58·11	213
D†	Llanrwst (County School) .....	Rev. J. I. Farr .....	5	1 4	55 T	48·78	202
D	„ (Poplar Grove) .....	J. O. Gethin Jones, Esq. ...	5	0 8	35	50·58	206
D	Tal-y-cafn (Bodnant Hall) .....	Mr. George Gurney ...	8	1 6	120	35·42	209
<b>4.—SEVERN—Left Bank Tributaries. 47 sq. mi.</b>							
D	Llangadwaladr (Penygwely Res.) .....	G. W. Lacey, Esq., C.E. ...	5	1 0	1094 T	44·85	209
<b>MERIONETH. (Area, 661 sq. mi.)</b>							
1.—DEE. 218 sq. mi.							
D†	Bala (Eryl Aran) .....	Mrs. Burton .....	8	1 0	600 T	63·10	208
D	„ (Henblas) .....	W. Gordon Price, Esq. ...	5	1 0	540	50·06	220

DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued).

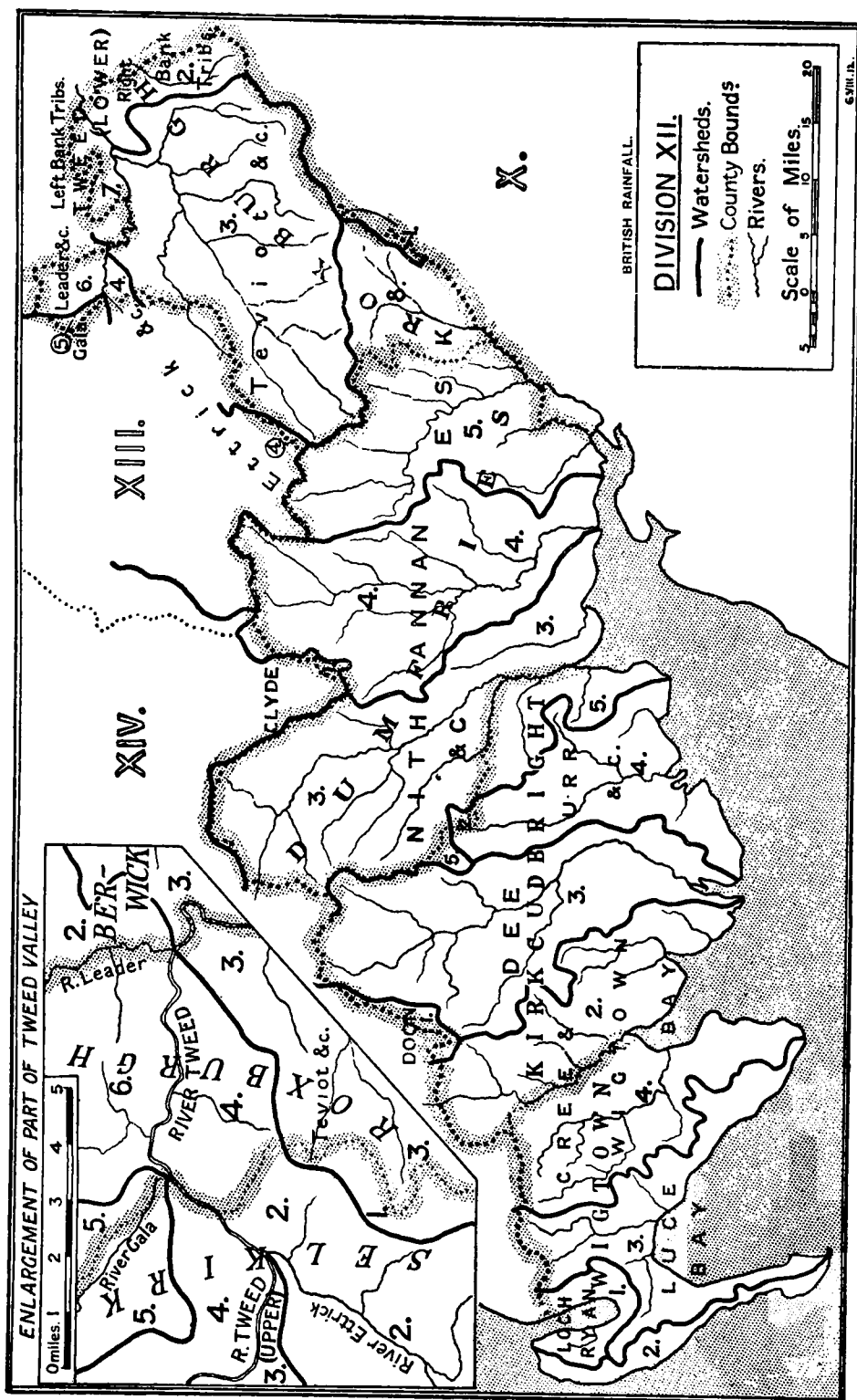
STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>MERIONETH—(con.)</b>							
1.—DEE—(con.)							
† Llanderfel (Palé Gardens) .....	Mr. E. J. Edwards ...	8	1	0	606 A	56·37	220
D Llandrillo (Tyddysillan) .....	Hon. R. Henley Eden...	8	1	6	515	46·58	200
Corwen (Rûg Gardens).....	Mr. W. B. Burchill ...	8	1	2	500	37·67	...
2.—CLWYD. 7 sq. mi.							
3.—GLASLYN. 92 sq. mi.							
D Tan-y-bwlch (The Gardens) ...	Mr. J. Roberts .....	5	1	0	50 P	67·52	223
D Festiniog (Morwynion Lake)..(R)	E. Lewis Evans, Esq....	4	10	0	1320 T	65·47	227
† Blaenau Festiniog (Oakley Quarries)	R. H. Jones, Esq. ....	5	10	0	1100	93·73	224
4.—MAWDDACH & C. 262 sq. mi.							
D Towyn (Peniarth) .....	Mrs. Wynne .....	8	1	0	25	55·12	210
D Dolgelly (Bryntirion) .....	E. P. Beale, Esq. ....	5	0	10	50	60·76	209
5.—DOVEY. 82 sq. mi.							
D Aberdovey .....	W. J. Eves, Esq. ....	5	1	0	15	43·02	220
6.—SEVERN—Left Bank Tributaries.							
<b>CARNARVON. (Area, 572 sq. mi.)</b>							
1.—[BARDSEY ISLAND.]							
[Bardsey Island] .....	Hon. F. G. Wynn .....	5	1	0	30	34·41	...
2.—CONWAY & C. 146 sq. mi.							
D Snowdon (Pen-y-Gwryd)..No. 13	A. Lockwood, Esq.....	5	1	0	916 T	145·66	230
D† Bettws-y-Coed (Tyn-y-bryn) ...	Dr. Hugh W. Fox.....	8	2	6	153 A	50·73	186
D† Lake Cowlyd (Llethyr Gwyn) C	T. B. Farrington Esq. CE	5	1	0	1700	80·95	217
D† „ „ (Gors-y-Llithrig) D	„ „ „	5	1	0	1900	73·83	217
D† „ „ (Ffrith Fawr) ... B	„ „ „	5	1	0	1700	80·92	217
D† „ „ ( „, Carreg Wen) A	„ „ „	5	1	0	1168	84·65	217
D Lake Eigiau (Dam Site) .....	H. J. Jack, Esq. ....	5	1	0	1245 T	77·30	204
Llanbedr-y-Cennin (Plasdulyn).	W. T. Ward, Esq. ...	8	1	0	509 A	58·45	...
„ „ „ (Llyndulyn)	„ „ „	8	1	6	1632 T	77·26	...
Conway (Bodlondeb) .....	A. Wood, Esq. ....	5	0	10	90 P	32·26	...
Deganwy (Y Berlfa).....(R)	Willoughby Gardner Esq	8	1	0	30 A	28·70	...
D† Llandudno .....	W. Little, Esq. ....	5	1	0	72 T	31·78	198
3.—MENAI STRAITS. 221 sq. mi.							
Nantlle (Dorothea Quarries)... M	W. J. Griffith, Esq. ...	8	2	0	450	64·53	...
† Llandwrog (Glynllivon Park) ...	Hon. F. G. Wynn.....	5	1	0	100 T	45·78	...
† „ „ ( „ Nursery)	„ „ „	5	1	0	180 T	48·98	212
† „ „ ( „ Garden).	„ „ „	5	1	0	100 T	45·27	220
† „ „ ( „ Fort) ...	„ „ „	5	1	0	180 T	48·78	204
Carnarvon (Belan Fort).....	„ „ „	5	1	0	26 T	35·60	...
D Llanberis (Mount Pleasant).....	Mr. H. J. Jones .....	5	2	0	369 T	71·48	227
D Carnarvon (Glangwna) .....	J. E. Greaves, Esq. ...	8	1	2	202 T	43·66	214
D Llanberis (Brynrefail School) ...	J. Rees Foster, Esq. ...	5	1	0	356 T	59·23	218
D „ „ (Llandinorwig School)	John Roberts, Esq.....	5	1	0	850	63·26	227
D Llanrug (Llys Eiddon) .....	J. Rees Foster, Esq. ...	5	1	0	400 T	43·39	207

## DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
CARNARVON—(con.)							
3.—MENAI STRAITS—(con.)							
B Bethesda (St. Ann's Vicarage) ..	Rev. W. Morgan .....	5	1	6	500	66.18	217
B „ (Penrhyn Quarries) ...	W. D. Hobson, Esq. ...	8	1	0	528 $\nabla$	65.59	219
B Bangor (Penrhyn Castle Gdns.)..	Mr. W. Speed .....	5	1	0	150 $\nabla$	38.20	210
B Llanfairfechan .....	Mr. W. Timmins .....	5	1	0	144	36.75	192
Penmaenmawr (Mountain Res.)..	R. J. Hughes, Esq. ...	5	1	6	1200 $\nabla$	49.79	...
B „ (Council Offices). „ „ „ ...	„ „						

DIVISION XI.—MONMOUTH, WALES, AND THE ISLANDS—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.  1913	Days with 101 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
ISLE OF MAN—(con.)						
† Douglas (Borough Cemetery) ...	F. Cottle, Esq. ....	8	1	0	284	37·27
† „ (Clypse Res., Onchan) ..	Mr. W. Crebbin.....	8	1	0	420	39·58
„ (Baldwin) .....	F. Cottle, Esq. ....	8	1	0	720	50·70
† Ramsey (Town Hall).....	G. W. Kewin, Esq. ...	8	15	0	18	49·20
Point of Ayre.....	Bd. of Northern Lights	3	4	6	116	23·38?
CHANNEL ISLANDS.						
JERSEY. (45 sq. mi.)						
† St. Helier W.W. (Millbrook Valley)	A. J. Jenkins, Esq., C.E.	5	0	11	52	28·75
† „ „ (St. Louis Obsy.)... (R)	Rev. M. Dechevrens, S.J.	8	5	0	180	26·15
† St. Aubins (Railway Station) ...	Meteorological Office ...	8	1	9	36	26·47
† „ (Belle Vue) .....	Miss M. M. Sumner ...	5	1	0	220	27·15
St. Ouen's Manor .....	R. Malet de Carteret Esq	5	2	0	270	27·02
GUERNSEY. (25 sq. mi.)						
† St. Peter-in-the-Wood (Les Hêches)	A. Collenette, Esq. ...	5	3	0	350	31·62
† St. Martins (Les Blanchés) .....	B. T. Rowswell, Esq....	5	1	0	310	35·09
† „ (Hautnez) .....	A. H. P. Davey, Esq. C.E.	5	0	8	343	34·16
† Villiaze .....	„	5	0	6	337	30·64
† St. Saviours (Le Mont Saint) ...	S. Carey Curtis, Esq...	5	1	0	105	32·02
† St. Peter Port (St. Martin's Rd.)	A. Collenette, Esq.....	5	1	0	295	36·14
† „ „ (Market Street)...	B. T. Rowswell, Esq....	5	52	8	100	35·55
† „ „ (Villa Carey).....	Dr. F. E. Carey ...	8	1	6	180	34·74
† „ „ (Rohais).....	A. Collenette, Esq.....	5	1	0	145	35·15
† Castel (St. George) .....	Rev. H. G. de C. S. Guille	5	0	10	120	33·12
SARK. (2 sq. mi.)						
† Vallée du Creux .....	B. T. Rowswell, Esq....	5	1	0	320	27·09
HERM. (1 sq. mi.)						
ALDERNEY. (3 sq. mi.)						
† Le Huret .....	B. T. Rowswell, Esq....	5	1	0	245	31·66



SCOTLAND.

DIVISION XII.—SOUTHERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
WIGTOWN. (Area, 488 sq. mi.)						
1.—LOCH RYAN. 46 sq. mi.						
Loch Ryan Lighthouse .....	Bd. of Northern Lights	...	...		46	37·23
2.—WESTERN GALLOWAY. 44 sq. mi.						
Mull of Galloway .....	Bd. of Northern Lights	...	...		327	23·27
d Logan House .....	K. McDouall, Esq.....	7	0	8	80 ?	36·19
Lochnaw Castle ..	Scot.Meteorological Soc.	5	0	8	230 ?	39·32
Corsewall .....	Bd. of Northern Lights	...	3	4	112	38·14
3.—LUCE BAY. 186 sq. mi.						
d Stoneykirk (Ardwell House).....	Sir M. McT.Stewart,Bt.	8	3	9	107 T	35·22
d Glenluce (Crews) .....	Peter Taylor, Esq.....	5	1	9	218 T	35·78
4.—CREE & WIGTOWN BAY. 212 sq. mi.						
d Whithorn (Cutroach) .....	J. G. Martin, Esq.....	5	0	6	120 T	36·28
d " .....	Dr. J. F. Smith .....	5	0	8	207 T	40·09
Garliestown (Galloway House)...	Mr. J. R. Crosbie .....	5	3	9	20 ?	33·83
KIRKCUDBRIGHT. (Area, 902 sq. mi.)						
1.—DOON. 16 sq. mi.						
2.—CREE & WIGTOWN BAY. 222 sq. mi.						
Gatehouse (Cally) .....	Meteorological Office ...	5	1	0	120	45·54
Creetown (Cassencary) .....	J.A.Henryson-Caird, Esq	5	0	8	50	39·38
d Palnure (Bargaly) .....	Scot.Meteorological Soc.	...	...		...	47·22
Glenhead of Trool.....	J. McMillan, Esq. ....	5	0	11	320	68·05
3.—DEE. 377 sq. mi.						
Kirkcudbright (Balmae) .....	The Countess of Selkirk	5	0	8	150 T	34·40
d " (St. Mary's Isle) .....	Mr. J. Jeffrey .....	5	1	0	20	40·57
Twynholm (Barwhinnoek) .....	R. W. Laidlay, Esq....	8	1	0	300 T	45·34
d Dalry (Glendarroch) .....	Miss M. Barbour .....	5	0	11	192 T	56·72
d " (Clenerie) .....	Mr. J. Kirk .....	8	0	10	850	71·67
d " (The Old Garroch) .....	Miss Bruce .....	8	0	9	448 T	65·43

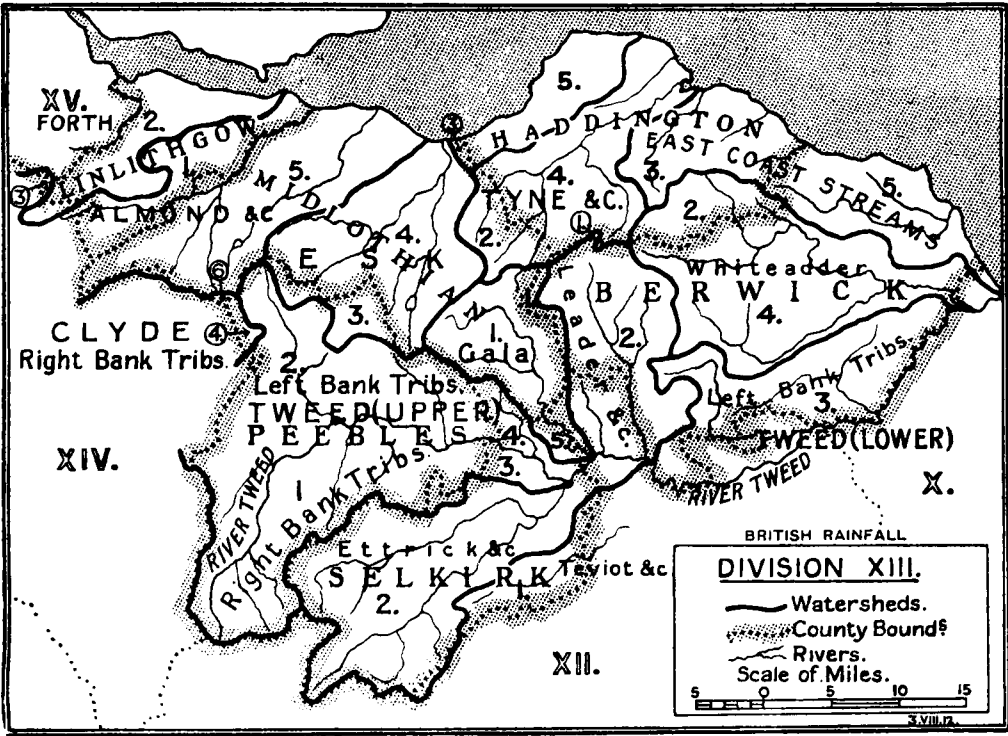
## DIVISION XII.—SOUTHERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
KIRKCUDBRIGHT—(con.)							
3.—DEE—(con.)							
D Carsphairn (Shiel) .....	Mr. S. Wilson .....	5	1	0	850 T	76·05	229
D „ (Knockgray) .....	Miss Clark Kennedy ...	8	0	11	641 T	59·33	226
4.—URR & C. 196 sq. mi.							
Auchencairn (Torr House) .....	W. Ovens, Esq. ....	5	0	8	50	44·99	...
D Dalbeattie (Kirkennan).....	Wellwood Maxwell, Esq.	5	0	9	30 T	46·05	227
„ (Little Richorn) .....	Mr. W. Kerr .....	5	0	9	54 T	42·58	177
D Kirkpatrick Durham (Glenlair)..	Major W. Maxwell ...	5	0	6	250 T	53·20	194
D Corsock (Monybuie) .....	Miss Dickson .....	5	0	9	580	49·26	216
5.—NITH & C. 91 sq. mi.							
Kirkbean (Arbigland) .....	Scot. Meteorological Soc. ....	...	...	...	50 ?	35·29	...
D Cargen [Dumfries] .....	R. F. Dudgeon, Esq. ....	5	0	10	80 T	47·38	208
D Lochrutton (Dumfries W.W.) ..	J. Smellie, Esq. ....	5	1	0	273 T	43·13	233
D Lincluden House [Dumfries] ...	Miss Young .....	5	1	0	60 T	40·28	194
D Jardington [Dumfries].....	J. Rutherford, Esq. ...	5	1	0	70 ?	38·34	203
DUMFRIES. (Area, 1074 sq. mi.)							
1.—CLYDE—Right Bank Tributaries. 5 sq. mi.							
2.—URR. 6 sq. mi.							
3.—NITH & C. 421 sq. mi.							
D Ruthwell (Comlongan Castle) ...	Mr. W. Brown .....	5	1	0	68 T	34·67	167
D Dumfries (Crichton Roy. Inst.)..	Mr. E. Joss .....	6	5	0	155	33·12	199
Moniaive (Glencrosh) .....	Miss Macmillan .....	5	1	2	350	50·93	233
D „ (Maxwelton House) ...	Rev. Sir E. Laurie, Bt. ....	5	1	6	400 T	48·87	231
„ (Jarbruck).....	Cecil E. Laurie, Esq. ....	8	1	2	350 T	55·26	231
D Durrisdeer (Drumlanrig Gardens)	Mr. D. Inglis .....	5	0	9	191 T	47·04	165
4.—ANNAN. 367 sq. mi.							
D Dalton (Whitecroft) .....	W. Maitland-Heriot Esq	8	1	8	240 T	29·84	204
D Hoddon Castle .....	Scot. Meteorological Soc.	5	1	4	150	35·60	195
Ecclefechan (Knockhill) .....	A. Johnson-Fergusson, Esq.	5	0	9	170 T	33·66	...
„ (Burnfoot) .....	Major H. C. Irving ...	...	...	...	160 ?	36·29	222
Dalton (School House) .....	P. C. Copland, Esq. ...	5	1	0	175	37·37	...
D „ (Kirkwood) .....	Arthur J. Steel, Esq. ....	5	0	8	245 T	41·09	202
D Lockerbie (Castle Milk) .....	Mr. J. T. Jeffrey .....	5	1	6	199 T	39·14	194
D Lochmaben (Esthwaite) .....	W. J. Halliday, Esq. ....	5	1	0	166 T	36·92	193
Beattock (Kinnelhead) .....	J. Bartholomew, Esq. ...	5	1	0	820 T	58·79	...
Moffat (Craigielands).....	Mr. L. Fraser .....	5	1	0	331	54·75	...
D „ (Auchen Castle).....	Mr. J. Macgregor .....	5	0	6	500 T	50·92	224
D „ (Hope Lodge).....	Mrs Anstruther-Ritchie	5	1	0	450	46·82	208
5.—ESK. 275 sq. mi.							
D Rigg .....	Mr. W. Brown .....	5	1	0	65 T	31·91	162
D Canonbie (Watch Hill House) ...	Col. H. J. Johnston ...	5	0	9	230 T	38·19	169
„ (Byreburnfoot) .....	Mr. David Crabbe .....	3	0	9	160	38·75	...
D „ (Irvine House) .....	J. H. Milne Home, Esq.	5	0	6	200	45·40	208
Langholm (Drove Road) .....	Mrs. Jackson .....	5	0	9	270	48·75	...
„ (Ewes, Burnfoot) ...	Miss H. C. Little .....	5	0	6	541 T	48·35	...

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>DUMFRIES—(con.)</b>							
5.— <b>ESK—(con.)</b>							
Langholm (Ewes School) .....	Mr. J. C. Lyall .....	5	1	0	445 T	48·67	...
Eskdale Muir Observatory .....	Meteorological Office ...	8	0	8	778	53·05	211
<b>ROXBURGH. (Area, 666 sq. mi.)</b>							
1.— <b>NORTH TYNE. 6 sq. mi.</b>							
2.— <b>TWEED, LOWER—Right Bank Tributaries. 57 sq. mi.</b>							
Kelso (Springwood Nurseries) ...	Messrs. Laing & Mather	5	1	0	200	23·69	181
3.— <b>TWEED—Teviot &amp; c. 431 sq. mi.</b>							
Teviothead (Skelfhill) .....	Miss Grieve .....	3	1	2	950 T	50·70	...
Hawick (Wolfelee) .....	Scot. Meteorological Soc.	5	0	10	587	35·72	...
" (Bransholme) .....	J. G. Winning, Esq.....	5	0	6	457 T	31·74	203
Jedburgh (Ploughlands) .....	J. Scott, Esq.....	5	1	0	301 T	22·82	190
St. Boswells (Monksford) .....	A. Mitchell, Esq. ....	5	0	11	320	23·62	...
" " (The Fens) .....	J. J. Fairbairn, Esq....	5	1	6	260	24·80	175
Kelso (Springwood Park) .....	Mr. W. Chaplin.....	5	1	3	130 L	22·99	173
4.— <b>TWEED—Ettrick &amp; c. 10 sq. mi.</b>							
Melrose (Asylum) .....	Mr. A. C. Pattman ...	5	0	6	480 T	30·06?	222
" ( " ) .....	B " " "	5	1	0	480 T	28·35	222
5.— <b>TWEED—Gala. 6 sq. mi.</b>							
6.— <b>TWEED—Leader &amp; c. 25 sq. mi.</b>							
Melrose (Drygrange).....	J. T. S. Roberts, Esq...	5	1	0	360	24·18	...
7.— <b>TWEED, LOWER—Left Bank Tributaries. 25 sq. mi.</b>							
Kelso (Broomlands) .....	Mr. W. Muir .....	8	1	3	205	20·51	...
Smailholm (Sandyknowe).....	Mr. J. E. Templeton ...	5	1	2	500	21·36	...
8.— <b>ESK. 106 sq. mi.</b>							



MAP OF DIVISION XIII.—SOUTH EASTERN COUNTIES,  
Showing the River-Divisions.



DIVISION XIII.—SOUTH EASTERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground	Height Above Sea Level		
		in.	ft. in.	feet.	inches.	
SELKIRK. (Area, 268 sq. mi.)						
1.—TWEED—Teviot & c. 34 sq. mi.						
d Selkirk (Whitmuir Hall) .....	C. W. Dunlop, Esq. ...	5	1 0	800	27·83	181
2.—TWEED—Ettrick & c. 192 sq. mi.						
Meggat Head (Edinburgh W. W.) No. 1	Messrs. Leslie & Reid, C.E.	5	1 3	1496 T	51·60	...
d „ Water (Cramilt Lodge) ...	Mr. A. Sim .....	5	0 4	1005 T	50·30	217
d Selkirk (The Hangingshaw) .....	Miss Johnstone of Alva	6	0 6	670 T	30·04	172
3.—TWEED, UPPER—Right Bank Tributaries. 17 sq. mi.						
4.—TWEED, UPPER—Left Bank Tributaries. 19 sq. mi.						
d Caddonfoot (Fairnilee) .....	Mr. T. Brown .....	5	1 0	450 T	29·76	164
Galashiels (The Peel, Clovenfords)	W. R. Ovens, Esq. ....	6	1 6	500	31·58	...
5.—TWEED—Gala. 6 sq. mi.						
d Galashiels (Abbotsford Rd.) .....	Dr. J. W. Somerville ...	5	0 8	416 T	27·59	198
„ (Stantling Craigs) ...	Mr. J. Murray .....	12	1 3	800	30·62	...

## DIVISION XIII.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground	Height Above Sea Level		
		in.	ft. in.	feet.	inches.	
<b>PEEBLES.</b> (Area, 348 sq. mi.)						
1.— <b>TWEED, UPPER—Right Bank</b>	<b>Tributaries. 127 sq. mi.</b>					
Ravenscraig (Edinburgh W.W.) No. 3	Messrs. Leslie & Reid, C.E.	5	1 3	2258 $\pi$	70.22	...
Gameshope Loch ( „ „ ) No. 4	„ „ „	5	1 3	1860 $\pi$	77.81	...
„ Farm ( „ „ ) No. 5a	„ „ „	5	1 3	1538 $\pi$	69.90	...
Talla „ Linns „ ( „ „ ) No. 5	„ „ „	8	1 3	1538 $\pi$	67.81	...
„ „ „ ( „ „ ) No. 6a	„ „ „	5	1 3	966 $\pi$	64.25	...
„ „ „ ( „ „ ) No. 6	„ „ „	8	1 3	966 $\pi$	62.82	...
Quarter Hill „ ( „ „ ) No. 7a	„ „ „	5	1 3	1196 $\pi$	48.47	...
„ „ „ ( „ „ ) No. 7	„ „ „	8	1 3	1196 $\pi$	48.34	...
Victoria Lodge ( „ „ ) No. 8	„ „ „	5	1 3	904 $\pi$	47.78	...
„ „ „ ( „ „ ) No. 8a M	„ „ „	8	1 3	904 $\pi$	45.52	...
D Stobo (Dawyck Gardens) .....	Mr. J. Simpson .....	5	1 1	600 $\pi$	37.23	203
2.— <b>TWEED, UPPER—Left Bank</b>	<b>Tributaries. 192 sq. mi.</b>					
Stobo Castle .....	Scot. Meteorological Soc.	3	1 0	600	38.00	...
Innerleithen (The Glen) .....	„ „ „	...	...	750	37.39	...
Peebles (Swinton Bank) .....	late C. A. Ainslie, Esq.	5	0 5	600 B	31.93	...
D „ „ „ „ ( „ „ „ ) „ (R)	„ „ „ „	8	4 6	600 B	31.99	203
D Castlecraig [Dolphinton] .....	Scot. Meteorological Soc.	...	...	820	28.56	197
West Linton (Broomlee Cottage)	Messrs. Leslie & Reid, C.E.	...	1 0	801	25.60	197
D „ „ Rectory .....	Rev. J. S. Begg .....	5	1 0	780 $\pi$	30.45	220
3.— <b>ESK. 23 sq. mi.</b>						
Eddlestone (Portmore Reservoir)	Messrs. Leslie & Reid, C.E.	11	1 0	1000	28.00	191
„ „ „ „ „ ( „ „ „ ) M	„ „ „ „	11	1 0	1007	27.66	...
D West Linton (Rutherford House)	the late Miss „ Cameron..	5	3 9	970 $\pi$	33.24	206
N. Esk Reservoir [Penicuik] ...	Mr. W. Tod .....	11	0 6	1150 $\pi$	37.50	...
4.— <b>CLYDE—Right Bank Tributaries.</b>	<b>6 sq. mi.</b>					
<b>BERWICK.</b> (Area, 457 sq. mi.)						
1.— <b>TWEED—Gala. 6 sq. mi.</b>						
2.— <b>TWEED—Leader. 92 sq. mi.</b>						
D Earlstoun (Cowdenknowes) .....	Mr. J. Robertson .....	5	0 10	360 $\pi$	27.49	176
3.— <b>TWEED, LOWER—Left Bank</b>	<b>Tributaries. 115 sq. mi.</b>					
Coldstream (Lochton) .....	J. Aitchison, Esq. ....	5	1 0	151 B	20.39	...
„ (Birgham) .....	Scot. Meteorological Soc.	5	1 10	...	19.73	...
D „ (The Hirsell) .....	Mr. P. MacAndrew ...	5	1 0	94 $\pi$	19.94	160
D Swinton House .....	A. E. Swinton, Esq. ....	5	1 0	200	19.90	176
4.— <b>TWEED—Whiteadder. 164 sq. mi.</b>						
D Marchmont House .....	Mr. J. A. Wood .....	5	1 0	498 $\pi$	26.07	179
Duns Castle .....	Mr. P. Smith .....	5	1 0	500	24.11	...
„ (Manderston) .....	Mr. F. J. Marshall .....	5	1 6	356 $\pi$	23.39	...
West Foulden .....	J. Hewat Craw, Esq. ....	5	1 0	250 $\pi$	20.77	...
5.— <b>EAST COAST STREAMS. 80 sq. mi.</b>						
St. Abb's (Northfield) .....	J. A. Morrison, Esq. ....	5	0 8	130 $\pi$	19.40	...
„ „ Head .....	Bd. of Northern Lights	8	4 3	224	19.27	...
<b>HADDINGTON.</b> (Area, 267 sq. mi.)						
1.— <b>TWEED—Leader. 1 sq. mi.</b>						
2.— <b>TWEED—Whiteadder. 35 sq. mi.</b>						

## DIVISION XIII.—SOUTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>HADDINGTON—(con.)</b>						
<b>3.—EAST COAST STREAMS. 69 sq. mi.</b>						
Garvald (Donolly Reservoir) ...	A.G. Merriles, Esq., C.E.	5	1	6	600 $\overline{\pi}$	29.53 ...
„ (Thorster Reservoir).....	„ „ „	5	1	6	700	20.49 ...
Prestonkirk (Beil) .....	Scot. Meteorological Soc.	5	1	6	180	17.49? ...
Dunbar (Broxmouth Park) .....	„ „ „	5	1	6	50 ?	20.27 ...
<b>4.—TYNE &amp; C. 114 sq. mi.</b>						
Prestonkirk (Smeaton) .....	Scot. Meteorological Soc.	7	7	10	100	18.60 ...
<b>5.—FIRTH OF FORTH. 48 sq. mi.</b>						
Drummore [Musselburgh] .....	Scot. Meteorological Soc.	5	1	0	75 $\overline{\pi}$	19.09 ...
Gosford House Gardens.....	Mr. W. Galloway .....	5	1	0	24	19.61 ...
Aberlady Manse.....	Rev. J. Hart .....	5	0	11	15	17.78 ...
d Gullane (The Warren) .....	H. E. Meek, Esq. ....	8	1	0	115	19.05 194
North Berwick Reservoir ... ..	A.G. Merriles, Esq., C.E.	5	1	6	150 $\overline{\pi}$	18.07 ...
<b>6.—INSULAR.</b>						
<b>MIDLOTHIAN. (Area, 369 sq. mi.)</b>						
<b>1.—TWEED—Gala. 68 sq. mi.</b>						
<b>2.—TYNE. 28 sq. mi.</b>						
<b>3.—FIRTH OF FORTH. 3 sq. mi.</b>						
d Musselburgh (Levenhall) .....	Miss C. Husband .....	5	1	0	15 $\overline{\pi}$	18.89 178
<b>4.—ESK. 129 sq. mi.</b>						
Moorfoot Hills (Bowbate)..... M	Messrs. Leslie & Reid, C.E.	11	0	6	1260	42.99 ...
„ „ (Gladhouse Res.).....	„ „ „	5	0	8	915	31.08 228
„ „ ( „ „ ) M	„ „ „	8	1	0	915	29.93 ...
„ „ (Rosebery) .....	„ „ „	5	0	9	750	29.45 215
„ „ ( „ „ ) ... M	„ „ „	11	0	9	750	27.20 ...
„ „ (Edgelaw) .....	„ „ „	5	0	10	654	29.80 215
„ „ ( „ „ )..... M	„ „ „	11	0	10	654	27.70 ...
Penicuik (Brunstane Cottage)...	„ „ „	5	1	0	800 ?	29.14 201
„ „ .....	Scot. Meteorological Soc.	...	...	...	604	27.16 ...
Pentland Hills (Harehill) .....	Messrs. Leslie & Reid, C.E.	11	1	7	1297	33.16 ...
„ „ (Martyrs Cross)...	„ „ „	5	1	0	750	29.14 215
„ „ (Loganlea) .....	„ „ „	5	1	0	811 $\overline{\pi}$	29.44 187
„ „ ( „ „ )..... M	„ „ „	8	1	4	813 $\overline{\pi}$	27.90 ...
„ „ (Glencorse Filters).....	„ „ „	5	1	0	639	30.16 205
„ „ ( „ „ „ ) M	„ „ „	11	1	0	639	30.70 ...
„ „ (Glen Cottage) ...	„ „ „	5	1	2	739	30.42 208
„ „ ( „ „ „ ) M	„ „ „	8	1	2	738	29.60 ...
d Loanhead (Elmswood) .....	H. B. Dunlop, Esq. ....	5	1	0	520 $\overline{\pi}$	23.11 156
Pentland Hills (Swanston) .....	Messrs. Leslie & Reid, C.E.	5	0	6	550 ?	25.46 181
„ „ ( „ „ ) ... M	„ „ „	11	0	6	550 ?	25.98 ...
„ „ ( „ „ ) ... M	„ „ „	4	0	6	550 ?	25.06 ...
„ „ (Fairmilehead)...	„ „ „	5	1	0	590	26.70 160
Dalkeith Gardens .....	Mr. J. Whytock.....	5	1	0	144	20.06 ...
Liberton (Alnwick Hill) .....	Messrs. Leslie & Reid, C.E.	5	1	0	407	22.54 172
„ „ ( „ „ „ )..... M	„ „ „	8	1	0	407	22.55 ...
<b>5.—ALMOND &amp; C. 140 sq. mi.</b>						
Pentland Hills (Crosswood) .....	Messrs. Leslie & Reid, C.E.	5	1	0	950	32.61 194
„ „ ( „ „ „ )... M	„ „ „	8	1	0	950	32.10 ...

**DIVISION XIII.—SOUTH EASTERN COUNTIES—(continued).**

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet	inches.	
MIDLOTHIAN—(con.)							
5.—ALMOND & C—(con.)							
Pentland Hills (Harperrig) .....	Messrs.Leslie & Reid,CE	5	1	0	900	35·63	235
"    "    {    "    "    }... M	"    "    "    "    "    "	8	1	0	900	34·73	...
"    "    (Morton) ..	"    "    "    "    "    "	5	1	0	749	31·09	223
West Calder (Addiewell) .....	John Fyfe, Esq.....	5	0	6	600	31·35	...
D Balerno (Cockburn Hill) .....	R. Cross, Esq.....	5	1	0	767 T	31·50	170
Pentland Hills (Harlaw Res.) ...	Messrs.Leslie & Reid,CE	5	1	0	800	26·94	213
"    "    {    "    "    } M	"    "    "    "    "    "	11	0	9	800	27·53	...
"    "    (Bonally Res.)*..	"    "    "    "    "    "	11	0	6	1112	30·65	...
"    "    (Clubbiedean Res.)	"    "    "    "    "    "	4	0	6	773	22·59	...
"    "    {    "    "    "    } M	"    "    "    "    "    "	11	0	9	773	23·52	...
"    "    (Firhill Tank) ...	"    "    "    "    "    "	5	0	6	412	22·79	180
D† Edinburgh (R. Obs., Blackford Hill)	T. Heath, Esq. ....	8	1	0	442 A	20·44	164
"    (Napier Road) .....	Scot.Meteorological Soc.	...	...	...	...	20·40	...
D†    "    (Univ. Engin. Lab.).	Prof. T. Hudson Beare.	5	1	0	227 A	20·84	165
†    "    {    "    "    "    "    } M	"    "    "    "    "    "	5	1	0	227 A	20·39	...
D    "    (City Observatory)...	W. Peck, Esq. ....	8	1	0	349	17·78	156
†    "    (Charlotte Square)...	Scot.Meteorological Soc.	11	1	6	190 T	18·85	...
†    "    {    "    "    "    "    } ...	"    "    "    "    "    "	12	63	0	300	13·62	...
Leith .....	Meteorological Office...	8	1	8	37	17·89	156
"    (Navigation School).....	Scot.Meteorological Soc.	5	0	5	76	20·85	...
D Davidson's Mains (Broomfield)...	Mr. C. Comfort .....	5	0	10	42 L	19·21	154
6.—CLYDE—Right Bank Tributaries. 1 sq. mi.							
LINLITHGOW. (Area, 120 sq. mi.)							
1.—ALMOND & C. 60 sq. mi.							
Uphall (near Bangour) No. 7 M	Messrs.Leslie & Reid,CE	8	1	4	790 A	27·63	...
"    {    "    "    "    } No. 8 M	"    "    "    "    "    "	8	1	5	577 A	27·97	...
"    {    "    "    "    } No. 6 M	"    "    "    "    "    "	8	1	4	680 A	27·07	...
"    {    "    "    "    } No. 3 M	"    "    "    "    "    "	8	1	2	711 A	26·75	...
D    "    (Bangour) .....	Dr. J. Keay .....	5	1	0	586 T	21·97	178
"    .....	John Fyfe, Esq.....	5	0	10	380	28·18	...
D Dalmeny House .....	Mr. D. T. Johnston ...	4	0	8	55	20·70	162
2.—FORTH—Right Bank Tributaries. 59 sq. mi.							
D Bathgate (Boghead House) .....	Mr. A. Ferguson .....	5	2	0	500	33·91	161
D    "    (Filters) .....	No. 1 A. L. Reid, Esq. ....	5	0	9	640 T	28·36	183
"    (Petershill Res.) No. 2	"    "    "    "    "    "	5	0	9	710 T	27·27	...
"    (Ballincrieff Res.) No. 3	"    "    "    "    "    "	5	0	9	730 T	25·48	...
Torphichen (Lochcote) .....	John Louden, Esq. ...	6	0	4	550 T	30·17	...
D Linlithgow (Grange) .....	H. M. Cadell, Esq. ...	5	0	6	430 A	25·87	170
"    (Preston House)....	Mr. C. Blair .....	5	0	8	380	28·90	...
D    "    Academy .....	J. Beveridge, Esq.....	5	1	0	170 T	32·22	204
"    "    .....M	"    "    "    "    "    "	5	1	0	170 T	32·78	...
Queensferry (Hopetoun) .....	John Fyfe, Esq.....	8	7	10	304 A	19·82	...
Bo'ness (Neidpath Cottage) .....	Mr. J. Grant .....	5	3	0	200 T	23·86	...
3.—CLYDE—Right Bank Tributaries. 1 sq. mi.							

\* Formerly called Harbour Hill.



#### DIVISION XIV.—SOUTH WESTERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with 0.1 or more recorded.
		Diameter	Height Above Ground			
		in.	ft.	in.	feet.	inches.
LANARK. (Area, 881 sq. mi.)						
1.—TWEED, UPPER—Left Bank Tributaries. 20 sq. mi.						
D Biggar .....	J. Eunson, Esq. ....	8	1	0	691 T	30.16 211
D „ (Cambus Wallace) .....	T. W. M. Watson, Esq. ....	6	0	6	748 T	31.47 162
2.—ALMOND. 14 sq. mi.						
3.—FORTH—Right Bank Tributaries. 9 sq. mi.						
Airdrie (Forrestburn Reservoir) .....	J. Frew, Esq. ....	8	0	6	720	33.10 ...
4.—CLYDE—Right Bank Tributaries. 378 sq. mi.						
Coulter Reservoir .....	No. 2 W. Ross, Esq., C.E. ...	11	1	0	...	50.38 ...
„ .....	No. 1 J. Chisholm, Esq., C.E. ...	11	1	0	...	47.94 ...
Lamington (Cowgill Reservoir) .....	Scot. Meteorological Soc. ....	5	1	0	970 T	43.99 ...
D „ Gardens .....	Miss Dunlop .....	5	1	4	800	38.20 196
Biggar (Shieldhill) .....	„ .....	5	1	2	850 T	27.61 ...
D „ „ .....	„ .....	5	on roof	„	850 T	24.54 204
Lanark (Rhyber Lodge) .....	R. Swann, Esq. ....	6	3	0	650	26.40 ...
D Cleghorn Gardens .....	Mrs. Elliott Lockhart ...	5	0	6	720 T	30.03 171
Carluke (Coldstream Reservoir) ..	W. Ross, Esq., C.E. ...	11	1	0	800 ?	32.70 ...
D „ (Mauldslie Castle) .....	Mr. D. Bryson .....	5	1	0	140	30.64 195
D Motherwell (Dalzell Gardens) ...	Mr. W. Mackie .....	6	5	6	170	30.14 200
D Bothwell .....	Dr. J. T. Wilson .....	5	0	9	150 T	32.55 171
Glasgow (Belvedere Hospital) ...	Scot. Meteorological Soc. ....	5	1	1	60 T	32.53 ...
„ (Tollcross Park) .....	J. Whitton, Esq. ....	5	0	6	85	37.24 ...
„ Green .....	„ „ „ .....	5	0	6	35	33.32 ...
„ (George Square) .....	„ „ „ .....	8	6	0	40	32.78 ...
„ (Alexandra Park) .....	„ „ „ .....	5	0	6	141	35.20 ...
D „ Observatory .....	(R) Prof. L. Becker .....	11	2	0	182	34.54 205
† „ (Botanic Gardens) .....	J. Whitton, Esq. ....	5	0	6	110	30.50 ...
„ (Kelvingrove Park) ...	„ „ „ .....	5	0	6	48	35.03 ...
„ (Ruchill Park) .....	„ „ „ .....	5	0	6	220	33.91 ...
„ (Springburn Park) .....	„ „ „ .....	5	0	6	361	37.26 ...
D† Airdrie (Airdrie Street) .....	J. Chisholm, Esq., C.E. ....	5	1	0	402 T	33.47 197
D „ (Hillend Reservoir) .....	Mr. W. A. Ritchie .....	5	3	6	620 T	33.52 182
† Roughrigg Res. [Slamannan] ...	J. Chisholm, Esq., C.E. ....	5	1	0	661 T	33.90 ...
D Gartcosh (Gartloch Hospital) ...	Mr. James McEwen ...	5	1	1	291 T	36.59 221
5.—CLYDE—Left Bank Tributaries. 448 sq. mi.						
† Leadhills .....	Scot. Meteorological Soc. ....	5	1	1	1300	58.43 ...
† Strathaven (Glengavel Reservoir) ..	J. McMillan, Esq., C.E. ....	5	1	0	880 T	41.60 ...
† „ (Dungavel) .....	Scot. Meteorological Soc. ....	5	1	0	800 T	43.43 ...
† „ (Kype Reservoir) ...	W. H. Purdie, Esq. ....	11	3	0	941	39.90 165
„ (Dunside Reservoir) ..	J. McMillan, Esq., C.E. ....	5	...	...	1010 T	42.53 ...
D „ (East Overton House) ..	H. Lee Dykes, Esq. ....	5	5	6	700 T	32.10 187
„ (Glassford Filters) ...	J. McMillan, Esq., C.E. ....	5	...	...	750 T	39.16 ...
Hamilton W.W. (Townhill) .....	W. H. Purdie, Esq. ....	7	1	0	436 T	34.95 ...
D „ (Laighstone Hall) .....	Rev. T. M. B. Paterson ..	5	1	9	260 T	33.82 190
„ Palace .....	Scot. Meteorological Soc. ....	...	...	...	140	32.51 ...
D Busby (Thornton Hall) .....	A. Henderson Bishop Esq ...	5	1	0	441 T	38.97 199
D Carmunnock (Carnbooth) .....	R. Robertson, Esq., C.E. ....	5	1	0	365 T	38.51 215
Cambuslang (Greenlees Filters) ..	J. McMillan, Esq., C.E. ....	8	...	...	322	30.65 ...

## DIVISION XIV.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>LANARK—(con.)</b>						
5.—CLYDE—Left Bank Tributaries —(con.)						
Glasgow (Bellahouston Park) ...	J. Whitton, Esq. ....	5	0	6	160	32.46 ...
6.—IRVINE. 2 sq. mi.						
7.—AYR. 1 sq. mi.						
8.—NITH. 2 sq. mi.						
9.—ANNAN. 7 sq. mi.						
<b>AYR. (Area, 1135 sq. mi.)</b>						
1.—CLYDE—Left Bank Tributaries s. 20 sq. mi.						
1) Glengarnock (Chemical Works) ..	G. Harrower, Esq. ....	8	1	6	100 ?	50.83 165
2.—FIRTH OF CLYDE. 60 sq. mi.						
Saltcoats .....	Scot. Meteorological Soc. ...					35.32 ...
Shaws Water Works (Kelly Dam)	D. Macalister, Esq., C.E.	6	1	0	640	53.20 ...
„ „ (Knockencorsan)	„ „ „	6	1	0	1040	54.60 ...
3.—IRVINE & C. 283 sq. mi.						
1) Kilmarnock (Agricultural College)	Prof. R. A. Berry ....	8	1	2	80	33.57 207
„ (North Craig Res.) ..	R. Blackwood, Esq. ...	12	1	0	319 $\pi$	37.60 ...
1) Kilwinning (Eglinton Castle) ..	Mr. W. Priest .....	5	1	0	50 ?	40.39 186
1) Stevenston (Greenhead Filters) ..	Gilbert Christie, Esq., C.E.	5	1	0	186 $\pi$	37.46 200
1) Dalry (Blair Gardens) .....	Mr. W. Mair .....	5	1	3	155 $\uparrow$	46.59 198
1) „ (Munnoch Reservoir) .....	Gilbert Christie, Esq., C.E.	5	1	0	325 $\pi$	45.42 197
1) „ (Caaf Reservoir) .....	„ „ „	5	1	3	515 $\pi$	47.69 194
1) „ W.W. (Filters) .....	Mr. W. Wightman „	5	1	0	320 $\pi$	45.32 213
„ „ (Thirdpart) ... M	„ „ „	5	1	0	560 $\pi$	50.18 ...
„ „ (Camphill Reservoir) .....	James Lee, Esq., C.E. ...	12	1	6	611	61.39 ...
1) Beith (Filter Station) .....	W. C. Dale, Esq. ....	5	6	0	384 $\pi$	43.26 199
4.—AYR. 222 sq. mi.						
Ayr (Glendrishaig) .....	P. Murdoch, Esq. ....	10	3	0	42	31.23 177
1) „ Cemetery .....	J. Young, Esq., C.E. ...	5	1	0	50	30.33 165
1) Mauchline (Catrine) .....	Messrs. J. Finlay & Co.	6	1	0	301 $\uparrow$	27.42? 174
5.—DOON. 119 sq. mi.						
Loch Finlas .....	J. Young, Esq., C.E. ...	5	1	0	849 $\pi$	60.03 ...
Maybole (Knockdon Farm) .....	Mr. W. Muir .....	5	1	6	352	33.29 ...
Ayr (Doonside) .....	Scot. Meteorological Soc.	5	1	0	90	35.88 ...
1) „ „ (Doonholm) .....	J. Kennedy, Esq. ....	5	1	0	90	37.69 194
6.—CULZEAN BAY & C. 32 sq. mi.						
Turnberry (Lighthouse) .....	Bd. of Northern Lights ...					29.41 ...
„ (Hotel) .....	Mr. J. Richards .....	5	1	0	97 $\pi$	25.45 173
1) Maybole (Culzean Gardens) .....	Mr. R. G. Hepburn ...	8	2	8	200	30.91 165
7.—GIRVAN. 105 sq. mi.						
Girvan (Glendoune Gardens) ...	Mr. J. Simons .....	5	1	0	100 $\uparrow$	40.79 177
1) „ „ (Sunnyside, Golf Course)	D. Macdonald, Esq. ...	5	1	0	27	36.11 202
Loch Bradan .....	Messrs J. & H. V. Eaglesham, C.E.	11	1	0	991 $\pi$	52.45 ...
8.—STINCHAR & C. 155 sq. mi.						
Barrhill (Dochroyle) .....	Mr. J. Scott .....	6	1	0	548 $\pi$	39.16 ...

DIVISION XIV.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
AYR—(con.)							
8.—STINCHAR & C—(con.)							
Colmonell (Knockdolian) .....	Meteorological Office ...	5	1	0	150	43.36	208
d Girvan (Pinmore) ..	Miss Hamilton .....	5	0	5	207 1	46.85	229
Barr Manse .....	Rev. G. Dods.....	5	1	0	330	50.65	189
9.—LOCH RYAN. 12 sq. mi.							
10.—LUCE BAY. 15 sq. mi.							
Ballantrae (Lagafater Lodge) ...	C. R. Boulton, Esq. ....	5	0	11	792 1	63.33	204
11.—CREE. 40 sq. mi.							
12.—DEE. 9 sq. mi.							
13.—NITH. 62 sq. mi.							
New Cumnock (Ayr Sanatorium)	Dr. E. E. Prest .....	5	1	0	850	54.45	189
14.—INSULAR. 1 sq. mi.							
RENFREW. (Area, 241 sq. mi.)							
1.—CLYDE—Right Bank Tributaries. 3 sq. mi.							
2.—CLYDE—Left Bank Tributaries. 194 sq. mi.							
Lochwinnoch (Garthland).....	H. Macdowall, Esq. ...	5	0	11	150	57.63	...
Gorbals Dist. W.W. (Ryat Lynn)	J.R.Sutherland, Esq. CE	8	0	5	310	46.80	...
„ „ „ (Waulk Glen)	„ „ „	12	0	5	280	45.40	...
„ „ „ (Middleton)	„ „ „	12	0	5	550	49.20	...
„ „ „ (Nether Cairn)	„ „ „	12	0	5	700	52.15	...
Paisley W.W. (Stanely) .....	James Lee, Esq., C.E..	12	1	0	190	41.35	...
„ „ (Back Thornleymuir)	„ „ „	12	1	0	646	51.73	...
„ „ (Muirhead).....	„ „ „	12	1	0	482 1	54.32	...
„ „ (Springside) .....	„ „ „	12	1	0	532 1	59.63	...
d Pollokshaws (Pollok House).....	Sir J. Stirling-Maxwell, Bt...	5	1	0	50	33.58	200
d Glasgow (Queen's Park) .....	J. Whitton, Esq. ....	8	0	9	144 1	35.24	206
„ (Maxwell Park) .....	„ „ „	5	0	6	69	37.21	...
d Kilbarchan (Glentyan)..... (R)	R. H. Hunter, Esq. ...	8	3	9	285	52.89	218
d† Paisley (The Coats Observatory)	J. Woodrow, Esq. ....	8	1	8	107	43.95	220
Kilmalcolm Water Works.....	D. S. Carson, Esq.....	5	1	0	500 ?	74.92	...
Shaws W.W. (Duchall Moor) ...	D. Macalister, Esq., C.E.	6	1	0	1150	66.40	...
„ „ (Creuch Hill) .....	„ „ „	6	1	0	1350	54.50	...
„ „ (Green Water) ...	„ „ „	6	1	0	788 1	62.90	...
Kilmalcolm (St. Oswald's) ... (R)	D. S. Carson, Esq. ....	5	1	0	350	60.91	...
Shaws W.W. (Gryfe Reservoir)..	D. Macalister, Esq., C.E.	6	1	0	640 1	57.97	220
„ „ (Mansfield) .....	„ „ „	5	1	0	573 1	59.98	222
„ „ (Darndaff Moor)....	„ „ „	6	1	0	850	60.90	...
Bishopton (Ingliston) .....	D. Cross, Esq.....	5	1	0	195	44.70	...
3.—FIRTH OF CLYDE. 34 sq. mi.							
Shaws W.W. (Largs Road) .....	D. Macalister, Esq. C.E.	5	1	0	910	47.06	...



### DIVISION XIV.—SOUTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
RENFREW—(con.)						
3.—FIRTH OF CLYDE—(con.)						
Dougliehill Filters (Pt. Glasgow W.W.)	James Murray, Esq. ...	8	1	6	540 T	57·44 ...
Parkhill (,, ,, )	8	1	6	275 T	47·69 ...	
Shaws W.W. (Compensation Res.)	D. Macalister, Esq., C.E.	5	1	0	600	60·91 240
,, ,, (Loch Thom) .....	,, ,, ,, ...	5	1	0	643 T	62·21 241
,, ,, (Shielhill) .....	,, ,, ,, ...	6	1	0	962 T	62·10 ...
,, ,, (Spango Burn) ...	,, ,, ,, ...	6	0	9	757 T	61·50 ...
,, ,, (Hole Glen) .....	,, ,, ,, ...	5	1	0	603	57·67 248
,, ,, (New Yetts Dam)..	,, ,, ,, ...	5	1	0	800	61·81 251
D Port Glasgow (Broadfield) .....	J. P. Harrington, Esq.	8	1	0	250	58·64 225
D ,, ,, (Elmworth) .....	A. F. Gray, Esq. ....	5	1	3	107	59·83 210
D Greenock (Prospect Hill) .....	D. Macalister, Esq., C.E.	5	1	0	233	61·13 218
Langbank (East Bank Gardens).	A. Cross, Esq. ....	5	2	6	150	46·66 ...



## DIVISION XV.—WEST MIDLAND COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913
		in.	ft.	in.	feet.	inches.
<b>DUMBARTON. (Area, 270 sq. mi.)</b>						
1.—FORTH—Right Bank Tributaries. 10 sq. mi.						
2.—FIRTH OF CLYDE & COWAL. 52 sq. mi.						
D Cardross (Kilmahew).....	Claud A. Allan, Esq....	5	1	0	130 T	42·33 211
D Helensburgh (Fernigair) .....	J.N. Stirling, Esq., C.E.	8	1	0	22	50·69 216
D " (Valve House).....	" " "	8	1	0	293	53·79 230
D Roseneath (Achnashie) .....	R. S. Campbell, Esq....	6	1	0	25	56·35 204
Garelochhead (Aikenshaw) .....	Mr. W. S. Turnbull ...	6	1	0	32	62·30 ...
3.—CLYDE—Leven. 149 sq. mi.						
D Dumbarton (Leven Shipyard) ...	Messrs W. Denny & Bros.	5	1	0	9 T	43·98 190
Kilpatrick Hills (Burncrooks Res.) No.1	T. L. Rae, Esq., C.E....	5	1	0	835 T	39·90 ...
" " ( " " ) No.2	" " " " " "	5	1	0	959 T	55·60 ...
" " ( " " ) No.3	" " " " " "	5	1	0	920 T	50·16 ...
" " ( " " ) No.4	" " " " " "	5	1	0	1080 T	46·47 ...
" " ( " " ) No.5	" " " " " "	5	1	0	897 T	38·07 ...
" " ( " " ) No.6	" " " " " "	5	1	0	905 T	46·92 ...
D Renton (Carman Filters) .....	Mr. Chas. Brown .....	8	4	0	292	46·73 219
D Alexandria (The Rectory) .....	Rev. J. Eldon Ellison...	5	1	0	58 T	45·70 214
D Glen Finlas Reservoir .....	Mr. D. Murray .....	12	2	6	820	72·83 211
4.—CLYDE—Right Bank Tributaries. 59 sq. mi.						
D Drumchapel (Wasdale).....	F. C. Thomson, Esq. ...	5	1	0	68 T	31·46 211
D Duntocher (Cochno Filters) .....	T. L. Rae, Esq., C.E....	5	1	0	400 T	42·75 201
Milngavie (Dougalston) .....	R. M. Ker, Esq.....	5	1	4	150	39·30 218
Kilpatrick Hills (Greenside Res.)	T. L. Rae, Esq., C.E....	5	1	0	876 T	46·80 ...
" " (Loch Cochno)...	" " " " " "	5	1	0	909 T	46·85 ...
" " (Jaw Reservoir) .....	" " " " " "	5	1	0	912 T	49·64 ...
<b>STIRLING. (Area, 463 sq. mi.)</b>						
1.—FORTH—Right Bank Tributaries. 263 sq. mi.						
Muiravonside Ho. [Linlithgow].	Mr. C. Leeder.....	5	4	8	175	30·44 ...
D Polmont (Vellore).....(R)	W. Brown, Esq.....	8	4	6	320 T	26·89 209
D Falkirk (Inglewood, Laurieston)	W. Ballantine, Esq. ...	5	1	3	133 T	33·47 166
D " (Westbank) .....	A. Nimmo, Esq.....	5	0	9	75 T	33·29 178
D " (Burgh Buildings) .....	David Ronald, Esq., C.E.	5	1	0	107 T	34·35 162
D " (Burnfield) .....	" " " " " "	5	1	0	50	35·64 177
" (Ardenlea) .....	J. Aitken, Esq., F.R.S.	5	1	0	105 T	34·24 192
" (Kerse)..... No. 1	C. Brown, Esq. ....	8	1	0	18 T	30·30 ...
Little Denny Reservoir .....	C. Massie, Esq. ....	8	1	0	326	39·86 ...
" " Filters .....	" " " " " "	8	1	0	268 T	42·89 ...
Kilsyth (Faughlin Res.) .....	" " " " " "	8	1	0	707 T	57·13 ...
Earlsburn Reservoir .....	" " " " " "	8	1	0	1202 T	59·84 ...
D Stirling (Touch Reservoir) No. 1	A. H. Goudie, Esq. ...	8	1	6	707	53·60 228
D " " " " " " No. 2	" " " " " "	8	2	0	765	54·30 228
" (Polmaise Castle).....	C. Stirling, Esq.....	6	1	3	220	43·47 166
" (Victoria Place) .....	R. Kidston, Esq., F.R.S.	5	2	10	100	39·44 ...
D† Buchlyvie (The Manse).....	Rev. J. A. Macdonald..	5	1	3	118 T	43·69 224

DIVISION XV.—WEST MIDLAND COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with -01 or more recorded.
		Diameter	Height above Ground.		Height above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
STIRLING—(con.)							
1.—FORTH—Right Bank Tributaries—(con.)							
Gargunnoch House .....	Mr. D. McNeill .....	5	1	6	85 T	38·48	...
D Kippen (Arngomery) .....	Mr. P. McCowan .....	5	4	2	150	46·79	151
Ben Lomond .....	J.R.Sutherland, Esq.CE	8	0	6	1800	82·14	...
2.—FORTH—Teith. 5 sq. mi.							
3.—FORTH—Left Bank Tributaries. 15 sq. mi.							
† Bridge of Allan (The Lea) .....	Laurence Pullar, Esq...	5	1	0	80	36·08	210
4.—CLYDE—Leven. 128 sq. mi.							
D Strathblane (The Manse) .....	Rev. W. B. Moyes.....	5	0	6	235 T	51·51	206
Kilpatrick Hills (Burncrooks Res.) No. 7	T. L. Rae, Esq., C.E...	5	1	0	955 T	48·99	...
D Killearn (Achnagowan) .....	Miss Guthrie-Smith ...	5	0	10	332 T	57·78	209
Loch Arklet (Corriehichon) .....	J.R.Sutherland, Esq.CE	8	0	6	870	86·10	...
„ „ (Corriearklet) .....	„ „ „	8	0	6	950	85·80	...
5.—CLYDE—Right Bank Tributaries. 52 sq. mi.							
D Torrance (Glenorchard) .....	Miss Bartholomew .....	5	1	6	200	36·43	193
Strathblane (Mugdock Reservoir)	J.R.Sutherland, Esq.CE	8	0	6	320	45·80	...
„ (Craigend Castle) ...	Mr. A. Davidson .....	5	0	9	665	38·58	...
„ (Craigbarnet) .....	Com. Miller Stirling, R.N.	5	0	6	300 T	48·80	...
D Kilsyth .....	J. I. Little, Esq. ....	5	11	0	200	44·02	202
„ (Corrie Reservoir) .....	„ „ „	...	...	...	...	51·20	...
BUTE. (Area, 218 sq. mi.)							
1.—ISLE OF BUTE. 50 sq. mi.							
D Rothesay (Crichton Road) .....	H. Lauder, Esq., jun...	5	4	0	97	52·12	235
D „ (Glenburn Hydro.) ...	Mr. D. Penney .....	5	1	0	86	49·42	233
Port Bannatyne (Ettrickdale) ...	Lt.-Col. M.R. Gray Buchanan	5	1	0	190 B	48·06	230
2.—CUMBRAES. 4 sq. mi.							
D Great Cumbrae (Millport) .....	R. Elmhirst, Esq. ....	5	1	0	15 T	38·33	223
3.—ARRAN. 164 sq. mi.							
Pladda .....	Bd. of Northern Lights	...	...	...	130	39·33	171
Holy Island (Pillar Rock) .....	„ „ „	3	0	3	46	40·36	176
ARGYLL. (Area, 3181 sq. mi.)							
1.—TAY—Tummel. 36 sq. mi.							
2.—SOUND OF ARISAIG, SOUND OF MULL & C. 317 sq. mi.							
Morvern (Ardtornish) .....	Scot. Meteorological Soc.	5	1	0	48 T	75·48	...
D „ (Drimnin) .....	Mrs. Gordon .....	5	1	0	225	66·77	229
D Loch Sunart (Glenborrodale) ...	C. D. Rudd, Esq. ....	5	0	2	60 L	64·00	233
Ardnamurchan .....	Bd. of Northern Lights	8	4	3	180	42·94	180
3.—LOCH LINNHE—Right Bank Tributaries. 139 sq. mi.							
D Morvern (Kingairloch) .....	G. Herbert Strutt, Esq.	5	1	0	40 ?	98·51	207
Ardgour House .....	Capt. A. J. N. Maclean	5	0	10	60 T	98·70	251
4.—LOCH LINNHE—Left Bank Tributaries. 165 sq. mi.							
D Duror (The Rectory) .....	Rev. E. J. Benwell ...	5	1	0	120	78·18	218

DIVISION XV.—WEST MIDLAND COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
ARGYLL—(con.)							
4.—LOCH LINNHE—Left Bank Tributaries—(con.)							
D Ballachulish House .....	F.C. Beresford Drummond Esq.	5	1	0	56 $\pi$	84.37	232
D „ (Glencoe Gardens) ...	J. D. Sutherland, Esq.	8	1	0	20	103.93	218
Glenleven (Blackwater Ho.) No. 4	British Aluminium Co.	8	1	0	1069	78.80	...
D „ ( „ Dam, S.) 2	„ „ „	8	1	0	1072	87.70	235
„ (Invercann).....No. 6	„ „ „	8	1	0	1070	90.85	...
„ (Kinlochleven)..No. 1	„ „ „	8	1	0	140	95.37	225
Loch Eil (Corran) .....	Bd. of Northern Lights	3	1	6	38	82.63	220
5.—LOCH ETIVE. 197 sq. mi.							
D Taynuilt (Barguilean) .....	Scot. Meteorological Soc.	...	...	...	230	76.86	191
D Connel Ferry (Ach-na-cloich) ...	„ „ „	...	...	...	...	62.26	217
D Glen Etive .....	„ „ „	...	...	...	50	106.45	198
6.—LOCH ETIVE—Loch Awe. 319 sq. mi.							
D Loch Awe (Ford) .....	J. Boyd, Esq.	8	1	0	260	73.06	239
D „ „ (Cruachan) .....	„ „ „	8	1	0	208 $\pi$	85.27	232
Dalmally (Manse of Glenorchy)...	Rev. Farquhar MacRae	6	1	7	150	68.44	214
7.—FIRTH OF LORNE. 112 sq. mi.							
D Kilmelfort (Arduaine) .....	J. A. Campbell, Esq....	5	0	10	23 $\pi$	58.27	218
D† Oban .....	Dr. E. Bailly .....	8	1	0	17 $\pi$	51.84	226
8.—SOUND OF JURA. 163 sq. mi.							
D Lochgilphead (Poltalloch).....	Mr. D. S. Melville.....	5	1	2	135	58.49	230
D Ardfern (Innisaeg).....	Mr. James Strang .....	5	3	7	100 ?	46.56	214
9.—KINTYRE, WEST. 146 sq. mi.							
Mull of Kintyre .....	Bd. of Northern Lights	...	...	...	279 ?	40.85	186
D Muasdale (Killeen Manse) .....	Rev. D. J. Macdonald..	5	1	0	30 $\pi$	45.66	218
Largie Castle .....	J.R.M. Macdonald, Esq.	5	1	0	160 $\pi$	49.02	226
D Carse .....	J. Birkmyre, Esq., jun.	6	1	6	20 $\pi$	40.49	243
10.—KINTYRE, EAST. 177 sq. mi.							
D† Campbeltown (South Park) .....	J. A. Gardiner, Esq. ...	8	0	10	20 $\pi$	46.82	224
D† „ (Witchburn) .....	Mr. John Giffen .....	5	1	6	75	44.38	230
„ (Devaar) .....	Bd. of Northern Lights	...	3	4	120 ?	46.07	199
D Skipness Castle ...	R. F. Graham, Esq. ...	5	1	6	14 $\pi$	45.73	220
11.—LOCH FYNE. 264 sq. mi.							
Kilbride (Craig Cottage) .....	Philip Barne, Esq.....	5	1	0	9	43.65	211
Otter Ferry (Ballimore) .....	Mr. W. MacKenzie ...	5	0	6	70 $\pi$	53.10?	...
D Ardrishaig (Canal Office) .....	L. J. Groves, Esq., C.E.	5	1	0	48 $\pi$	69.31	224
D Loch Fyne (Furnace).....	Mr. W. Nicol .....	5	3	0	15 $\pi$	66.83	223
D „ „ ( „ Brenchoillie) .....	A. E. Lowis, Esq. ....	5	1	0	240 ?	80.99	172
D† Inveraray (Newtown) .....	Mrs. Little .....	5	1	0	17	72.50	239
D† „ Castle Gardens .....	A. E. Lowis, Esq. ....	5	1	0	40	80.93	232

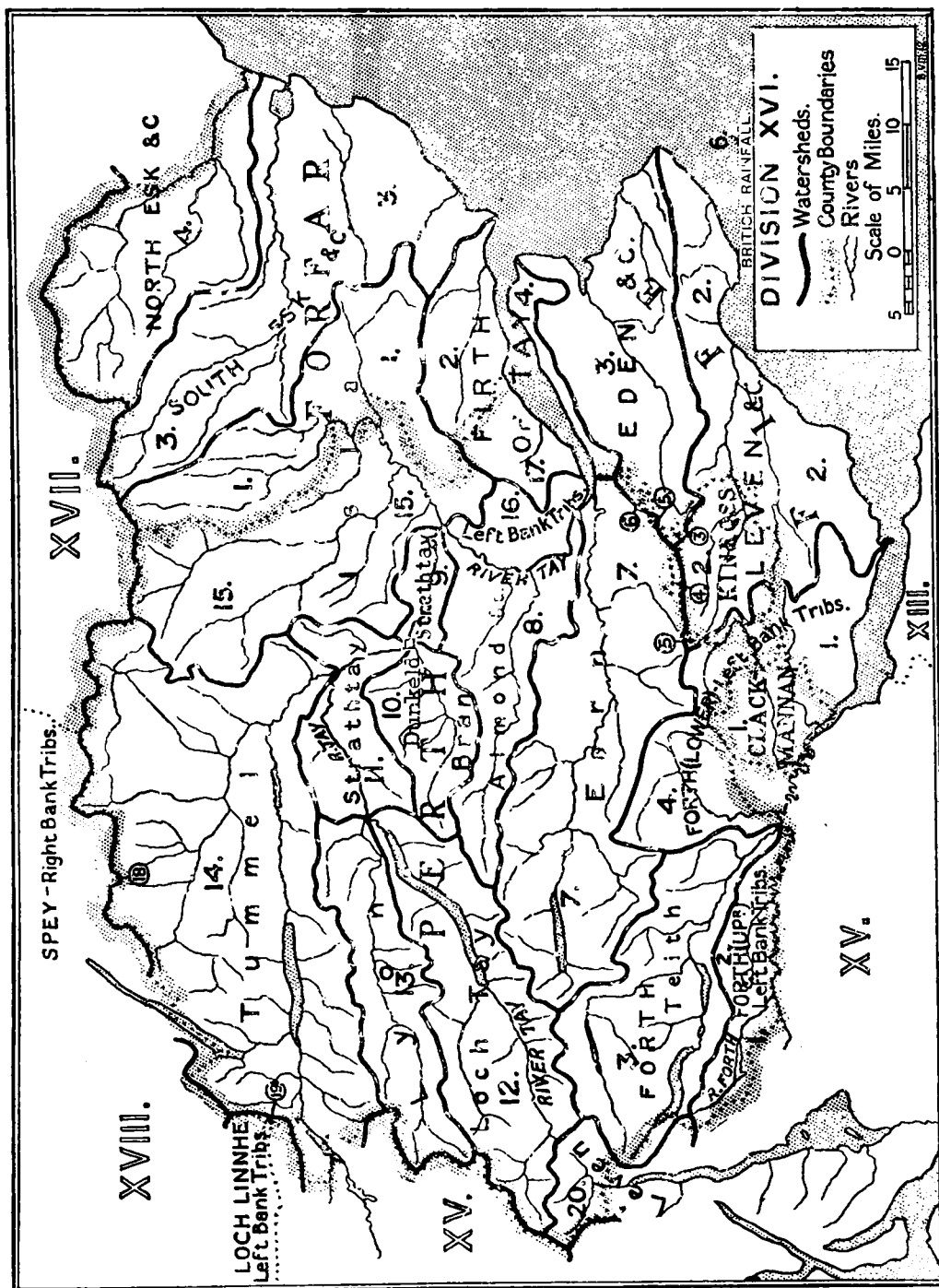
DIVISION XV.—WEST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with -01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
ARGYLL—(con.)							
11.—LOCH FYNE—(con.)							
D Ardkinglas .....	Sir Andrew Noble, Bt..	8	1	6	37 $\pi$	83·84	232
D†Glen Aray (Ladyfield) .....	A. E. Lowis, Esq. ....	5	1	0	400 ?	93·00	191
12.—FIRTH OF CLYDE & COWAL. 242 sq. mi.							
Innellan .....	Scot. Meteorological Soc.	...	...	...	15	49·58	...
D Tighnabruaich (Wellpark) ...	R. Paton, Esq. ....	12	5	0	50 B	49·30	179
D Dunoon (Castle Gardens) .....	W. Rodger, Esq., C.E.	12	3	6	56 $\pi$	76·35	211
D „ (Reservoir) .....	„ „ „	12	3	6	245 $\pi$	80·35	220
D „ (Redhurst) .....	Dr. J. Banks .....	5	1	6	60	75·22	221
D Holy Loch (Ardnadam) .....	Rev. J. Cairns Mitchell	5	1	0	66 B	81·03	228
D Loch Eck (Benmore).....	Mr. R. Greenlaw .....	5	1	3	40	91·65	201
D†Lochgoilhead (Nuthill) .....	G. Murray Knox, Esq..	5	1	0	15	76·56	221
13.—CLYDE—Leven. 4 sq. mi.							
14.—INSULAR. 900 sq. mi.							
D Islay (Ardbeg) .....	C. E. Hay, Esq.....	5	7	0	46 $\pi$	41·30	208
„ (Rhinns) .....	Bd. of Northern Lights	7	3	6	150	33·64?	192
„ (Lochindaule).....	„ „ „	3	0	6	52	44·91	...
„ (McArthur's Head) .....	„ „ „	3	0	4	128	64·06	...
D „ (Eallabus).....	J. Forbes, Esq. ....	5	1	0	68 $\tau$	47·02	239
„ (Rhuvaal) .....	Bd. of Northern Lights	3	1	3	147	41·41	197
D Jura (Ardfin).....	Colin Campbell, Esq....	5	1	0	160	55·66	230
„ (Fladda) .....	Bd. of Northern Lights	3	1	0	42	54·00	182
Lismore (Mousedale).....	„ „ „	7	3	10	105	45·92	202
D Eriska (Ledaig) .....	Scot. Meteorological Soc.	5	1	6	30	58·64	222
D†Mull (Iona Manse) .....	Rev. A. Macmillan.....	5	1	2	45	48·71	223
D† „ (Bunessan) .....	Duncan Cameron, Esq.	5	1	4	50 B	47·43	240
„ (Lochbuie Castle) .....	Mr. E. Lovesey .....	8	1	4	10	85·84	237
D „ (Ulva) .....	F. W. Clark, Esq.....	5	1	0	30 $\pi$	63·94	237
D† „ (Knock).....	Duncan Cameron, Esq.	5	1	4	50	87·45	219
D „ (Glencannel) .....	„ „ „	5	1	3	140	120·13	226
D† „ (Gruline) .....	J. W. Melles, Esq. ...	8	1	0	101	84·41	261
D „ (Quinish) .....	J. N. Forsyth, Esq. ...	5	1	3	35 B	54·20	228
„ Sound of .....	Bd. of Northern Lights	3	1	4	55	63·21	...
D†Tiree (Cornaigmore) .....	J. Ross, Esq. ....	5	1	0	25 $\tau$	47·72	260
Sanda .....	Bd. of Northern Lights	...	...	...	165	28·44	196

## MAP OF DIVISION XVI.

EAST MIDLAND COUNTIES,

Showing the River-Divisions.



## DIVISION XVI.—EAST MIDLAND COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level.		
		in.	ft.	in.	feet.	inches.	
<b>CLACKMANNAN.</b> (Area, 55 sq. mi.)							
1.—FORTH, LOWER—Left Bank Tributaries. 55 sq. mi.							
D Alloa House Gardens .....	Earl of Mar & Kellie, K.T.	5	2	6	40	32.35	189
„ (Mar Street) .....	A. Mitchell, Esq. ....	5	0	6	70	27.83	...
„ W.W. (Gartmorn Res.) ...	Andrew Mackie, Esq. CE	11	1	0	172	28.19	...
D Dollar (Wellhall, Dollarbeg) ..	James Bleloch, Esq. ...	5	0	9	265	34.18	196
D „ Academy .....	Mr. T. Aitken .....	9	1	0	178	36.41	165
<b>KINROSS.</b> (Area, 87 sq. mi.)							
1.—FORTH, LOWER—Left Bank Tributaries. 15 sq. mi.							
Blairingone Manse [Dollar] .....	Rev. J. F. Cameron ...	5	1	6	300	34.08	190
2.—LEVEN & C. 67 sq. mi.							
Blairadam Wood [Kelty] .....	D. Mackenzie, Esq., C.E.	8	0	5	761	35.81	156
D Loch Leven Sluice .....	Mr. W. Hay .....	8	0	9	360	30.78	166
3.—EDEN. 2 sq. mi.							
4.—TAY—Earn. 3 sq. mi.							
<b>FIFE.</b> (Area, 505 sq. mi.)							
1.—FORTH, LOWER—Left Bank Tributaries. 66 sq. mi.							
D Rosyth (H.M. Dockyard) .....	T. B. Hunter, Esq. ....	8	1	0	53	19.24	177
D Dunfermline (Broomhall Gardens)	Mr. J. Mitchell .....	5	1	0	15	23.44	150
D „ (Keavil) .....	J. J. Dalgleish, Esq. ...	5	2	0	150	21.91	170
D „ (Victoria Place) ...	J. Blyth, Esq. ....	5	1	2	365	28.39	190
D Culross (Westgrange) .....	J. J. Dalgleish, Esq. ...	5	2	0	116	27.98	185
Carnock (Luscar House) ... No. 1	A. Mitchell, Esq. ....	5	0	10	430	28.18	...
„ „ „ „ „ No. 2	„ „ „ „ „	5	0	10	430	28.17	...
„ (Craigluscar) .....	W. R. Maxwell, Esq. ...	12	0	4	280	31.45	...
2.—LEVEN & C. 208 sq. mi.							
D Dunfermline (Fordell House) ...	Earl of Buckinghamshire	5	1	0	250	24.31	147
D Cowdenbeath (Northbank) .....	J. S. Rae, Esq. ....	5	1	0	473	32.01	224
D Cleish Hills (Deanhead) .....	„ „ „ „ „	5	1	0	725	27.22	161
„ „ (Rescobie Reservoir) .....	„ „ „ „ „	5	1	0	660	31.21	...
„ „ (Loch Glow Res.) ...	D. Mackenzie, Esq., C.E.	8	0	7	897	37.30	156
Leslie (Lothrie Reservoir) .....	Scot. Meteorological Soc.	5	0	5	702	30.47	..
D Elie House (The Gardens) .....	Mr. A. A. Law .....	5	0	10	55	21.93	161
D „ (The Castle) .....	Miss E. E. Scott Moncrieff	5	0	9	...	20.20	162
Largo (Carlton) .....	Mr. E. Tate .....	5	2	6	150	25.88	188
D Colinsburgh Manse .....	Rev. Robert Dick .....	5	2	0	130	23.50	163
D „ (Balcarres) .....	Mr. J. M. Paul .....	5	1	0	300	25.23	176
„ „ (Lathallan) .....	Scot. Meteorological Soc.	...	...	...	55	23.64	...
D Carnbee (Ovenstone W.W.) .....	A. P. Watson, Esq. ...	5	1	0	168	21.25	145
3.—EDEN & C. 205 sq. mi.							
Cupar (Clatto Reservoir) .....	Scot. Meteorological Soc.	...	...	...	500	25.02	...
„ (Rankeillour) .....	„ „ „ „ „	...	...	...	240	24.76	...
D „ „ „ „ „	Capt. J. Kerr .....	5	1	0	240	25.30	162
D „ (Fife & Kinross Asylum) ..	Mr. J. Ness .....	5	1	0	210	25.62	176



## DIVISION XVI.—EAST MIDLAND COUNTIES—(continued).

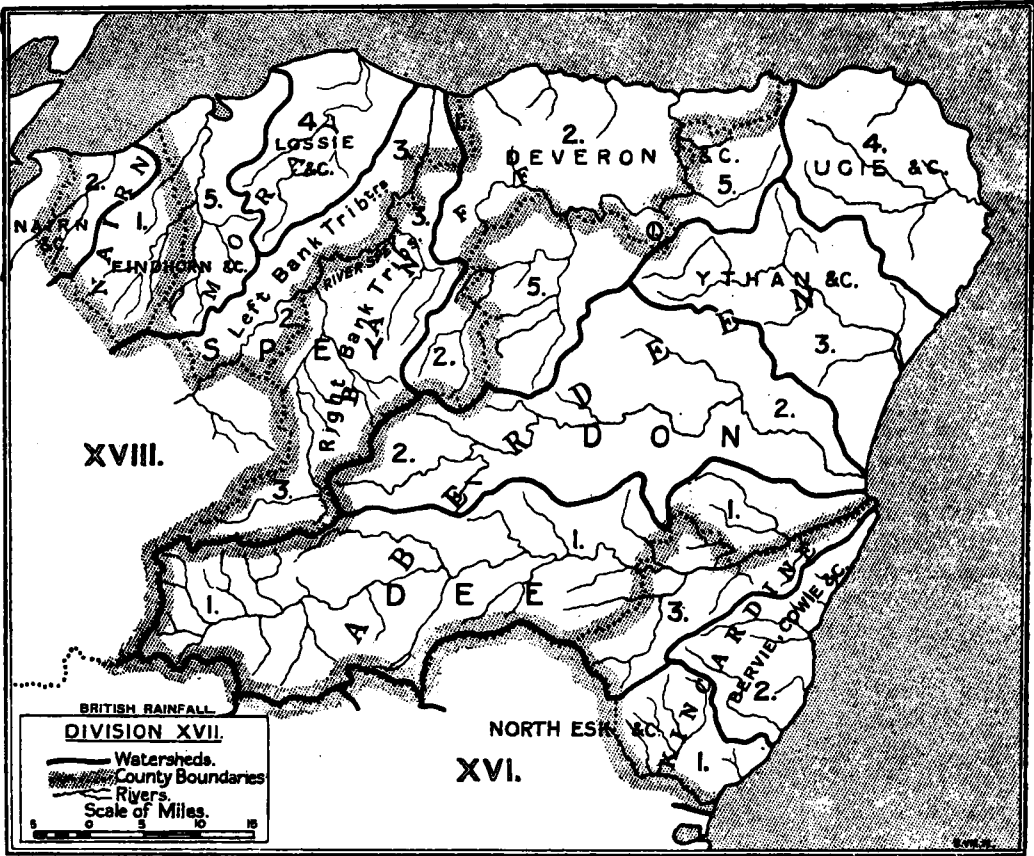
STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
FIFE—(con.)							
3.—EDEN & C—(con.)							
d St. Andrews (Water Works).....	W. Watson, Esq. ....	5	1	0	217 $\pi$	24.38	172
d „ „ (Brownhills) .....	G. Cheetham, Esq. ....	5	0	10	188 $\uparrow$	26.65	169
d „ „ (Queen's Gardens) ..	Miss Macadam .....	5	1	0	55 $\pi$	25.53	159
„ „ .....	Meteorological Office ...	...	...	...	20	25.69	...
4.—FIRTH OF TAY. 25 sq. mi.							
Newport (Tayfield) .....	W. Berry, Esq. ....	5	0	7	100	25.58	...
d Tayport (Lighthouse).....	J.H.Thompson, Esq., CE	5	1	0	27	24.45	172
5.—TAY—Earn. 1 sq. mi.							
6.—INSULAR.							
Inchkeith .....	Bd. of Northern Lights	...	...	...	160	15.40	...
Isle of May .....	„ „ „	6	3	0	...	16.63	147
PERTH. (Area, 2535 sq. mi.)							
1.—FORTH—Right Bank Tributaries. 17 sq. mi.							
2.—FORTH, UPPER—Left Bank Tributaries. 64 sq. mi.							
d Doune (Gartincaber) .....	G. Burn Murdoch, Esq.	5	1	0	200	40.29	205
†Aberfoyle (The Inn) .....	J.R.Sutherland, Esq. CE	8	0	6	60	60.65	...
†Loch Dhu .....	„ „ „	8	0	6	325	82.90	...
Ledard .....	„ „ „	8	0	6	1500	64.78?	...
3.—FORTH—Teith. 276 sq. mi.							
Ochertyre [Stirling].....	Capt. J. Dundas.....	5	1	0	18 $\uparrow$	37.70	...
Loch Drunkie .....	J.R.Sutherland, Esq. CE	8	0	6	420	59.80	...
†Loch Vennachar.....	„ „ „	8	0	6	275	57.05	...
†Bridge of Turk .....	„ „ „	8	0	6	275	60.35	...
Doune (Cauldhame) .....	J. Forbes, Esq. ....	5	1	0	830	46.62	...
†Loch Katrine (Tunnel Hill Top)	J.R.Sutherland, Esq. CE	8	0	6	830	75.90	...
Ben Ledi .....	No. 1 „ „ „	8	0	6	1800	65.75	...
„ „ „	No. 2 „ „ „	8	0	6	1400 ?	63.15	...
Callander (Leny House) .....	J. H. Buchanan, Esq. ...	5	0	6	340 $\uparrow$	56.80	...
†Glengyle .....	J.R.Sutherland, Esq., CE	8	0	6	380	84.00	...
†Balquhider (Blaircreach) .....	J. Carnegie, Esq. ....	5	1	0	460	98.23	...
d† „ „ (Stronvar) .....	„ „ „	5	1	0	422 $\uparrow$	74.98	190
4.—FORTH, LOWER—Left Bank Tributaries. 107 sq. mi.							
d Dunblane (Kippenross) .....	Mr. J. Doig.....	8	1	3	237	52.19	262
„ „ (Kippendavie) .....	Scot. Meteorological Soc.	8	2	9	300	43.00	...
Glendevon (Glenquey Reservoir)	D. Mackenzie, Esq., C.E.	11	0	11	945 $\pi$	49.10	...
d „ „ (Tormaukin) .....	Mr. W. Phillips .....	5	0	10	770 $\uparrow$	50.98	178
„ „ (Glensherup) .....	W. R. Maxwell, Esq. ...	12	0	4	945	66.19	...
Braco (Nether Cambushinnie) ...	J. W. Stirling, Esq. ...	5	0	10	380 $\uparrow$	41.96	...
5.—LEVEN. 1 sq. mi.							
6.—EDEN. 4 sq. mi.							
7.—TAY—Earn. 376 sq. mi.							
Auchterarder (Belhie) .....	Miss D. Cairns .....	5	0	10	...	24.46	...
Dunning (Duncrub) .....	Scot. Meteorological Soc.	...	...	...	150 ?	37.88	...
Abernethy (Aytoun House) .....	„ „ „	5	0	11	120	26.80	...
Bridge of Earn (Gateside) .....	John Ellis, Esq.....	5	1	0	26 $\pi$	26.78	...

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>PERTH—(con.)</b>						
<b>7.—TAY—Earn—(con.)</b>						
D† Lochearnhead (Edinchip) .....	Sir Malcolm MacGregor, Bt.	5	1 0	513	77·12	213
D† „ ( „ ) <i>Snowdon g.</i> .....	„ „ „ „ „ „	5	1 0	513	73·81	215
D „ (Ardvorlich) .....	late Col. J. Stewart, C.I.E.	5	1 0	325 †	79·00	227
D Comrie (Clathick) .....	Mr. T. Elvidge .....	5	1 0	300	47·12	176
D Crieff (Strathearn Hydro.) .....	Mr. G. Reid .....	5	1 0	436 †	38·16	200
<b>8.—TAY—Almond &amp; c. 149 sq. mi.</b>						
D Perth (Craigie Road) .....	Sydney Wilson, Esq....	5	1 0	56 †	26·52	175
<b>9.—TAY—Strathtay below Dunkeld. 33 sq. mi.</b>						
Murthly (Douglasfield) .....	W. A. Rae, Esq. ....	5	0 6	237 †	33·62	..
D† Dunkeld (Snaigow) .....	W. H. Cox, Esq. ....	5	1 0	370	34·99	186
<b>10.—TAY—Bran. 81 sq. mi.</b>						
<b>11.—TAY—Strathtay above Dunkeld. 95 sq. mi.</b>						
Aberfeldy (Urlar) .....	J. A. Macdonald, Esq..	5	2 0	1000 †	47·43	...
Dalguise Gardens .....	J. H. Tempest, Esq. ...	...	...	200	34·62	...
D† Aberfeldy (Dall Avon) .....	Dr. N. D. Mackay .....	5	1 0	300	39·38	203
D† „ (Dunros) .....	H. W. Johnston, Esq..	5	1 0	400	36·21	205
<b>12.—TAY—Loch Tay. 186 sq. mi.</b>						
D Kenmore (The Manse) .....	Rev. W. A. Gillies.....	5	1 0	550	48·25	192
<b>13.—TAY—Lyon. 142 sq. mi.</b>						
D Glenlyon (Meggernie Castle) ...	Mr. W. Taylor .....	5	1 0	760	73·42	203
<b>14.—TAY—Tummel. 587 sq. mi.</b>						
D Pitlochry (Bonskeid) .....	G. F. Barbour, Esq. ...	5	1 0	540 †	36·59	201
D† Blair Atholl .....	Mr. D. McLachlan.....	5	1 0	420	33·36	193
<b>15.—TAY—Isla. 282 sq. mi.</b>						
D† Coupar Angus .....	Mr. J. Robertson .....	5	1 3	183 †	31·02	175
D Blairgowrie (Kinloch Manse) ...	Ian Milne, Esq. ....	5	1 0	280 †	29·74	178
D† „ (Ballintuim House). .....	Miss M. A. Macdonald	5	1 4	700	42·19	224
<b>16.—TAY—Left Bank Tributaries. 51 sq. mi.</b>						
D Perth (Laurelbank) .....	A. M. Rodger, Esq. ...	5	1 0	85 †	26·41	166
Dunsinnan .....	J. Mackay Bernard, Esq.	...	...	400 ?	31·96	...
<b>17.—FIRTH OF TAY. 45 sq. mi.</b>						
<b>18.—SPEY. Right Bank Tributaries. 1 sq. mi.</b>						
<b>19.—LOCH LINNHE. Left Bank Tributaries. 2 sq. mi.</b>						
<b>20.—CLYDE—Leven. 36 sq. mi.</b>						

## DIVISION XVI.—EAST MIDLAND COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
FORFAR. (Area, 875 sq. mi.)							
1.—TAY—Isla. 211 sq. mi.							
D Kettins School .....	W. Andrew, Esq. ....	5	1	0	218 $\nabla$	33·81	181
Glamis Castle.....	Mr. T. Wilson .....	5	1	6	250	26·83	...
D Forfar (Lilyfield) .....	D. M. Mackie, Esq. ...	5	0	5	225 $\uparrow$	31·02	169
Kirriemuir (Lintrathen) .....	M G. Baxter, Esq., C.E..	8	1	0	700	36·60	...
D " ( " ) .....	" " " " .....	8	1	0	700	35·27	196
" ( " Balnakeilly)M	" " " " .....	8	1	0	700	37·60	...
" ( " Creich Hill, S.)M	" " " " .....	8	1	0	1482	33·60	...
" ( " " " " )M	" " " " .....	8	1	0	1500	33·40	...
" ( " " " " N.)M	" " " " .....	8	1	0	1491	37·40	...
2.—FIRTH OF TAY. 80 sq. mi.							
D Buddonness (Low Light) .....	J.H.Thompson, Esq., CE	5	1	0	27	26·18	167
D Dundee (Harbour).....	" " " " .....	5	0	10	14	24·63	171
D Broughty Ferry (Tayside Cottage)	Mr. A. Robb .....	5	5	6	25	21·75	151
Dundee (Eastern Necropolis) ...	Mr. J. Carnochan .....	3	1	0	199 $\uparrow$	22·80	...
D " ( " " " ) .....	" " " " .....	5	1	0	199 $\uparrow$	23·24	165
" (Dens Works) ... roof g.	Messrs.BaxterBros.Ltd.	5	1	5	119 $\uparrow$	24·61	173
" (Camperdown Works)...	Messrs. Cox, Bros., Ltd.	5	1	2	290	29·27	...
" (Inniscarra) .....	Scot.Meteorological Soc.	...	...	...	130	25·30	...
D " (Balruddery) .....	J. Martin White, Esq..	5	1	0	266 $\uparrow$	25·05	147
Murroes Schoolhouse.....	H. A. Forsyth, Esq. ...	5	1	0	425 $\uparrow$	24·74	...
3.—SOUTH ESK & C. 371 sq. mi.							
D Carnoustie .....	D. Maxwell, Esq., C.E.	8	1	0	39 $\nabla$	25·15	184
D Craigton .....	G. Baxter, Esq., C.E...	8	1	0	484	26·95	163
" .....	M " " " " .....	11	3	0	484	26·22	...
" (Hillhead) .....	M " " " " .....	11	3	0	370	27·49	...
Crombie Reservoir .....	M " " " " .....	11	3	0	522 $\uparrow$	28·34	...
D Arbroath (Dishland Hill) .....	Mr. J. Campbell.....	5	1	0	69 $\uparrow$	20·51	181
" (Muirheads Reservoir)	P. C. Smith, Esq., C.E.	5	1	0	251 $\uparrow$	23·89	...
Montroseness .....	Bd. of Northern Lights	3	1	0	124	22·08	...
D Montrose (Melville Gardens) ...	S. L. Christie, Esq. ...	5	9	0	20 $\nabla$	22·19	144
D Forfar W.W. (Den of Ogil).....	W. Campbell, Esq. ...	12x4	0	3	633 $\nabla$	37·21	164
D Glen Prosen (Pearsie) .....	Scot.Meteorological Soc.	5	1	0	600 $\uparrow$	37·81	205
" " (Lednathie) .....	Mr. W. G. Lindsay ...	5	1	0	720	48·48	156
D " " (Balnaboth Gardens)	Mrs. Ogilvie .....	5	1	0	965 $\uparrow$	55·16	171
4.—NORTH ESK & C. 213 sq. mi.							
D Montrose (Sunnyside Asylum)...	Dr. J. G. Havelock ...	5	4	6	200	27·06	158
D " (Kinnaber W.W.).....	S. L. Christie, Esq. ...	5	1	0	38 $\uparrow$	24·29	162
Logie Pert (Loanhead of Craigo)	Mr. G. D. Cramond ...	5	0	9	200 ?	27·58	...
Brechin (Stracathro Gardens) ...	Mr. A. Dunlop .....	5	1	0	200 $\uparrow$	30·00	...

MAP OF DIVISION XVII.—NORTH EASTERN COUNTIES,  
Showing the River-Divisions.



DIVISION XVII.—NORTH EASTERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
KINCARDINE. (Area, 382 sq. mi.)						
1.—NORTH ESK & C. 99 sq. mi.						
Laurencekirk (Johnstone Lodge)	Scot. Meteorological Soc.	5	1 0	400	30.76	...
† Fettercairn (The Burn) .....	Col. C. McInroy, C.B. ...	5	0 11	250	34.81	192
„ (Police Station) .....	Mr. A. Mackenzie .....	5	1 0	230 †	34.17	176
† „ (Fasque Gardens) ...	Sir J.R. Gladstone, Bart.	5	1 0	320 †	33.78	177
2.—BERVIE, COWIE & C. 139 sq. mi.						
Todhead .....	Bd. of Northern Lights	3	4 0	135	20.76	...
d Stonehaven (Mains of Cowie) ...	John Hart, Esq. ....	5	1 0	93	23.83	167
Girdleness .....	Bd. of Northern Lights	7	4 0	185	20.73	...
3.—DEE. 144 sq. mi.						
Glen Dye (Cairn o' Mount) .....	Cecil H. Roberts, Esq. C.E.	5	1 0	1400	43.13	...
„ „ (Meluncart) .....	„ „ „	5	1 0	1500	42.81	...

## DIVISION XVII.—NORTH EASTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>KINCARDINE—(con.)</b>						
<b>3.—DEE—(con.)</b>						
Glen Dye (Cock Hill) .....	Cecil H. Roberts, Esq. CE	5	1	0	1100	44·92 ...
„ „ (Charr) .....	„ „ „	5	1	0	900	42·73 ...
„ „ (Finglenny) .....	„ „ „	5	1	0	1400	41·47 ...
† Strachan (Bridge of Dye) .....	„ „ „	5	1	0	515 T	46·94 ...
„† Crathes (Crossroad, Durris) .....	A. Macdonald, Esq. ..	5	1	0	420 T	35·70 189
Durris House [Drumoak]..... (R)	Mr. A. Reid .....	5	3	6	200 ?	30·18 ...
„† Banchory (Invercarnie) .....	Cecil H. Roberts, Esq. CE	12	0	10	205 T	31·73 154
† Crathes (Pinewood) .....	J. Smith, Esq. ....	5	1	0	145 T	33·24 175
„† „ (Woodbank Cottage).....	Mr. D. Murchison .....	5	0	6	165 T	32·95 168
Banchory (Hirn) .....	Mr. W. Caird .....	5	1	0	287 T	28·16 ...
<b>ABERDEEN. (Area, 1974 sq. mi.)</b>						
<b>1.—DEE. 672 sq. mi.</b>						
† Braemar (Canmore) .....	M A. M. Shirran, Esq. ...	8	0	9	1114 T	32·17 ...
„† „ (Bank) .....	„ „ „	5	1	0	1114 T	30·92 180
† „ (Derry Lodge) ... No. 6	Cecil H. Roberts, Esq., CE	5	1	0	1400	34·55 ...
„† Balmoral Castle Gardens .....	Mr. J. M. Troup .....	8	1	0	927 T	31·20 188
„ Abergeldie Castle .....	Mr. R. F. Chalmers ...	5	1	0	...	29·60 188
„ Ballater (Irrigation Farm) .....	Cecil H. Roberts, Esq., CE	5	1	0	637 T	30·93 172
„† Glen Gairn (Gairn Shiel Lo.) No 14	„ „ „	5	1	0	1100	31·46 181
† „ „ (Corndavon Lodge) No 13	„ „ „	5	1	0	1500	37·54 ...
Torphins .....	Aberdeen Free Press...	...	...	...	...	26·25 ...
„† Cromar (Logie Coldstone School)...	J. B. Anderson, Esq....	5	1	0	608 T	27·60 193
„† „ ( „ „ „ Loanhead)	Mr. A. Farquharson ...	5	1	0	743 T	30·97 195
„ Aberdeen (Mannofield Reservoir)	Cecil H. Roberts, Esq. CE	8	1	0	171 T	24·16 184
„ „ ( „ „ „ )	„ „ „	5	1	0	171 T	25·55 184
„† „ (Cranford House) .....	D. McHardy, Esq. ...	5	1	0	120 T	25·83 172
„ „ (Cornhill Road) .....	J. B. Innes, Esq. ....	5	1	0	150 T	25·99 185
„ „ (Richmondhill Road) ..	Mrs. Roberts .....	5	1	0	208 T	26·11 ...
<b>2.—DON. 512 sq. mi.</b>						
† Aberdeen (King's College) .....	Meteorological Office ...	8	2	0	44	23·81 178
Upper Don (Delnadamph) No. 15	Cecil H. Roberts, Esq., CE	5	1	0	1850	35·70 ...
„† Strathdon (Estates Office) .....	C. Christie, Esq. ....	5	1	2	990 T	31·69 172
„ Alford (Lynturk Manse) .....	Rev. J. B. Duncan .....	5	1	0	600 T	27·41 176
„ Dyce (Parkhill House) .....	J. E. Crombie, Esq. ...	5	0	11	200 T	25·84 179
„ Inch (Thornhill) .....	J. Bisset, Esq. ....	8	1	0	430 T	24·97 168
<b>3.—YTHAN &amp; C. 285 sq. mi.</b>						
„ House of Schivas .....	Lord Haddo .....	5	0	9	200 T	27·12 178
Fyvie Castle .....	Col. C. R. Burn, M.P....	5	0	6	200 T	28·27 ...
<b>4.—UGIE &amp; C. 257 sq. mi.</b>						
Buchanness .....	Bd. of Northern Lights	3	3	0	130	21·44 ...
„ New Deer Schoolhouse .....	H. Cowie, Esq. ....	5	1	0	397 T	26·12 172
„ Peterhead (Thunderston) .....	Miss Oldman .....	5	1	1	150	21·11 180
„ „ (Mains of Buthlaw)...	G. Johnston, Esq. ....	5	1	6	120	21·12 ...
Kinnairdhead .....	Bd. of Northern Lights	3	2	6	120	16·20 ...

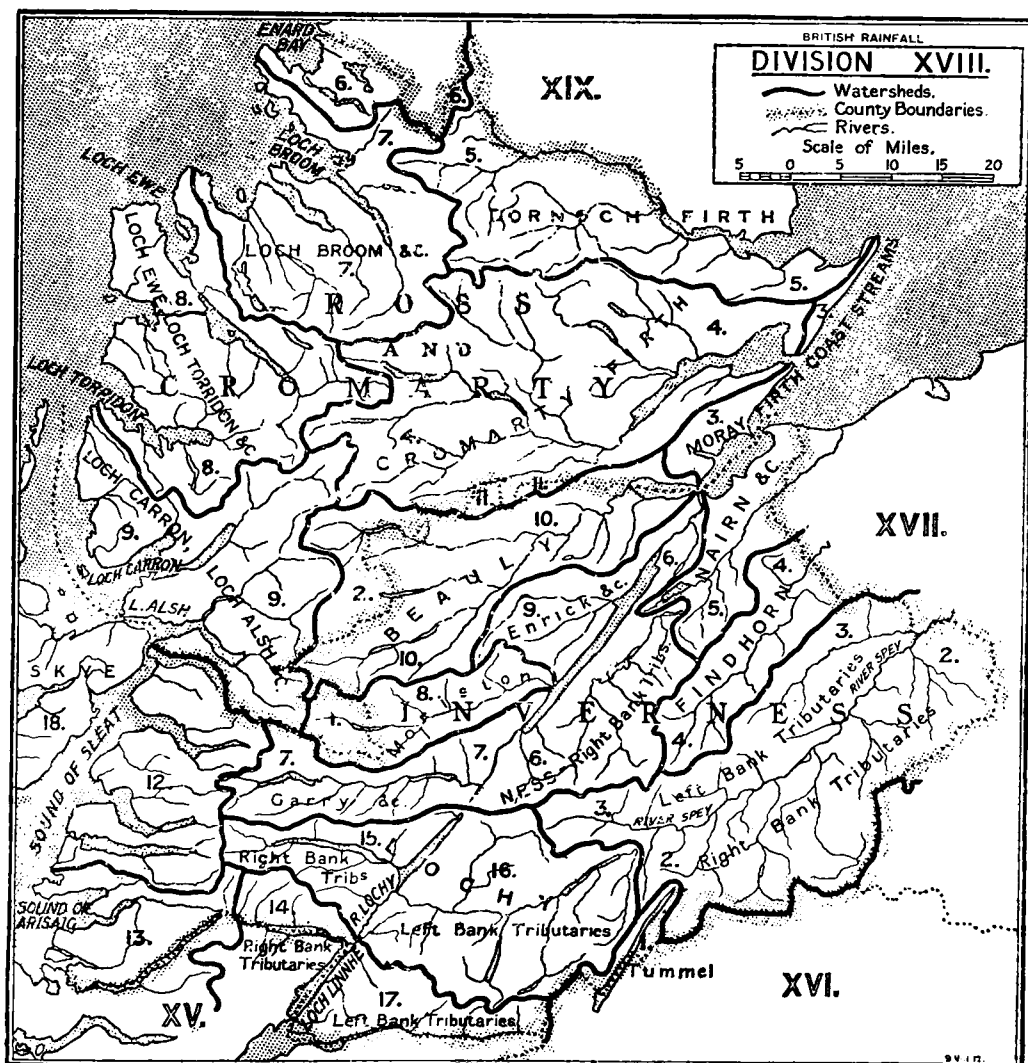
DIVISION XVII.—NORTH EASTERN COUNTIES—(*continued*).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>ABERDEEN—(<i>con.</i>)</b>						
5.— <b>DEVERON &amp; C.</b> 248 sq. mi.						
Drumblade (Public School) .....	G. Harper, Esq. ....	5	1 6	485 T	25.09	179
Huntly (Union Bank) .....	Alex. Smith, Esq. ....	5	1 0	450 T	24.67	...
D „ (Cruchie) .....	John Joss, Esq. ....	5	4 0	400 T	23.18	150
<b>BANFF.</b> (Area, 630 sq. mi.)						
1.— <b>YTHAN.</b> 1 sq. mi.						
2.— <b>DEVERON &amp; C.</b> 344 sq. mi.						
Drummuir .....	T. Gordon Duff, Esq. ....	5	1 0	600	23.85	187
D Keith Station .....	Mr. A. Kennedy .....	5	1 0	364 T	28.64	197
Cullen House .....	Mr. A. Grant .....	5	1 0	100 T	27.41	...
3.— <b>SPEY—Right Bank Tributaries.</b> 285 sq. mi.						
D Dufftown (Victoria Terrace) ...	Miss Walker .....	5	2 0	579 T	27.49	202
Aberlour .....	J. F. McGowan, Esq. ....	5	1 0	298	22.06	...
„ Orphanage .....	J. G. White, Esq. ....	5	1 0	320	24.05	...
Craigellachie .....	Scot. Meteorological Soc. ....	3	0 1	339 T	23.28	...
<b>MORAY.</b> (Area, 477 sq. mi.)						
1.— <b>DEVERON &amp; C.</b> 7 sq. mi.						
2.— <b>SPEY—Right Bank Tributaries.</b> 35 sq. mi.						
D Gordon Castle .....	Mr. C. Webster .....	5	1 0	107 T	22.04	174
3.— <b>SPEY—Left Bank Tributaries.</b> 133 sq. mi.						
D Grantown-on-Spey .....	Mr. W. Duncan .....	5	1 1	700	22.72	169
Archiestown (Benview) .....	the late Mr. J. Milne ...	5	1 0	750 T	22.63	...
4.— <b>LOSSIE &amp; C.</b> 154 sq. mi.						
Elgin (The Manse) .....	Rev. Dr. R. Macpherson	6	1 3	38 T	20.53	...
D Duffus House .....	Mr. W. Ogg .....	5	1 0	55 T	20.90	159
Covesea Skerries .....	Bd. of Northern Lights	7	3 6	52	16.43	...
5.— <b>FINDHORN &amp; C.</b> 148 sq. mi.						
D Darnaway Castle Gardens .....	Mr. A. Dow .....	5	1 3	...	19.88	160
Forres (Balnaferry) .....	Scot. Meteorological Soc. ....	5	1 0	65	18.99	...
Kinloss House .....	Mrs. Mackessack .....	5	1 3	23 T	20.04	...
<b>NAIRN.</b> (Area, 163 sq. mi.)						
1.— <b>FINDHORN &amp; C.</b> 102 sq. mi.						
D Ardelach (Glenferness) .....	Mr. A. McKenzie .....	8	1 6	750 T	26.91	169
2.— <b>NAIRN &amp; C.</b> 61 sq. mi.						
Cawdor .....	J. Birnie, Esq. ....	5	1 0	250 T	22.95	...
D „ Castle .....	(R) Mr. D. Chapman .....	8	4 3	225 T	24.36	162
D Nairn (Achareidh) .....	H. A. Clarke, Esq. ....	8	1 0	59 T	21.30	193
„ (Delnies) .....	Meteorological Office ...	8	1 9	84	21.76	200

MAP OF DIVISION XVIII.

NORTH WESTERN COUNTIES,

### Showing the River-Divisions.



DIVISION XVIII.—NORTH WESTERN COUNTIES.

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
INVERNESS. (Area, 4146 sq. mi.)							
1.—TAY—Tummel. 28 sq. mi.							
2.—SPEY—Right Bank Tributaries. 437 sq. mi.							
Nethy Bridge (U.F. Manse) .....	Rev. A. Sutherland ...	5	1	0	...	22·88	180
3.—SPEY—Left Bank Tributaries. 257 sq. mi.							
Cluny Castle .....	Mr. A. Macdonald .....	5	1	5	800 ?	37·99	...
Kingussie .....	Scot. Meteorological Soc. ...	5	1	0	840	29·08	195
Kingussie .....	Scot. Meteorological Soc. ...	5	1	0	828	24·91	194
Carrbridge Manse .....	Rev. Andrew Doag ..	5	0	11	850	23·09	168
Muckerach Lodge [Grantown] ..	Mr. J. Fraser .....	5	1	3	760	23·70	200
4.—FINDHORN. 164 sq. mi.							
5.—NAIRN & C. 131 sq. mi.							
Groy (Dalcross Castle) .....	The Mackinnon of Mackinnon	4	0	6	400	25·69	174
6.—NESS—Right Bank Tributaries. 252 sq. mi.							
Fort Augustus (St. Benedict's) ...	Rev. C. von Dieckhoff..	5	1	0	68 A	45·50	205
Loch Ness (Killin, Whitebridge).	British Aluminium Co.	5	1	0	1200	58·22	...
Garthbeg) .....	“ “ “	5	1	0	645 T	34·12	176
Foyers) .....	“ “ “	5	1	6	52 T	39·63	...
Aberchalder) .....	“ “ “	5	1	0	700 T	34·43	...
7.—NESS—Garry & c. 185 sq. mi.							
Loch Quoich (Loan) .....	W. M. Christy, Esq. ...	5	1	6	650 T	183·25	...
Kinlochquoich) ...	Col. D. W. Cameron...	5	1	0	560 A	142·44	227
Glenquoich) .....	Scot. Meteorological Soc.	5	1	2	569 A	119·55	221
Glen Garry (Inchlaggan) .....	Mr. M. Matheson .....	5	1	0	370 T	73·46	252
Invergarry .....	Mr. G. Robertson .....	5	1	0	130 ?	79·89	...
8.—NESS—Moriston. 120 sq. mi.							
9.—NESS—Enrick. 131 sq. mi.							
Drumnadrochit .....	Mr. Angus Grant .....	5	1	0	138 A	34·71	197
Inverness (High School) .....	W.G. MacConnachie Esq	5	1	0	98 T	24·29	152
10.—BEAULY. 341 sq. mi.							
11.—CROMARTY FIRTH. 13 sq. mi.							
12.—SOUND OF SLEAT. 259 sq. mi.							
Loch Morar (Meoble Lodge) .....	E. M. Crosfield, Esq. ...	8	1	3	104 T	112·95	...
Loch Nevis (Inverie Gardens) ...	Mr. J. Huggins ...	5	0	6	10	85·58	238
Glenelg Manse .....	Rev. A. Mactaggart ...	5	1	0	85 A	50·55	227
13.—SOUND OF ARISAIG. 126 sq. mi.							
Moidart (Kinlochmoidart) .....	J. C. Stewart, Esq. ....	5	1	3	13	68·73	198
Roshven) .....	Mrs. Blackburn .....	5	1	0	40 T	71·26	249
Loch Shiel (Glenfinnan) .....	Col. J. A. Macdonald...	5	0	8	50 ?	114·20	223
Arisaig (Point of Rhue) .....	Mr. D. McVarish .....	5	1	0	100 A	52·25	204
House .....	Mr. W. Grant .....	5	1	0	30 ?	61·54	230
14.—LOCH LINNHE—Right Bank Tributaries. 48 sq. mi.							
15.—LOCHY—Right Bank Tributaries. 143 sq. mi.							
Loch Arkaig (Achnacarry) .....	Col. D. W. Cameron ...	5	1	0	110	96·38	222
Glen Dessary) .....	“ “ “	5	1	0	300 T	111·66	220
16.—LOCHY—Left Bank Tributaries. 362 sq. mi.							
Spean Bridge (Spean Lodge) ...	Miss W. Davy .....	5	1	5	204	65·23	219
Loch Lochy (Invergloyle) .....	Major G. I. Bailey .....	5	1	0	210 T	57·90	196



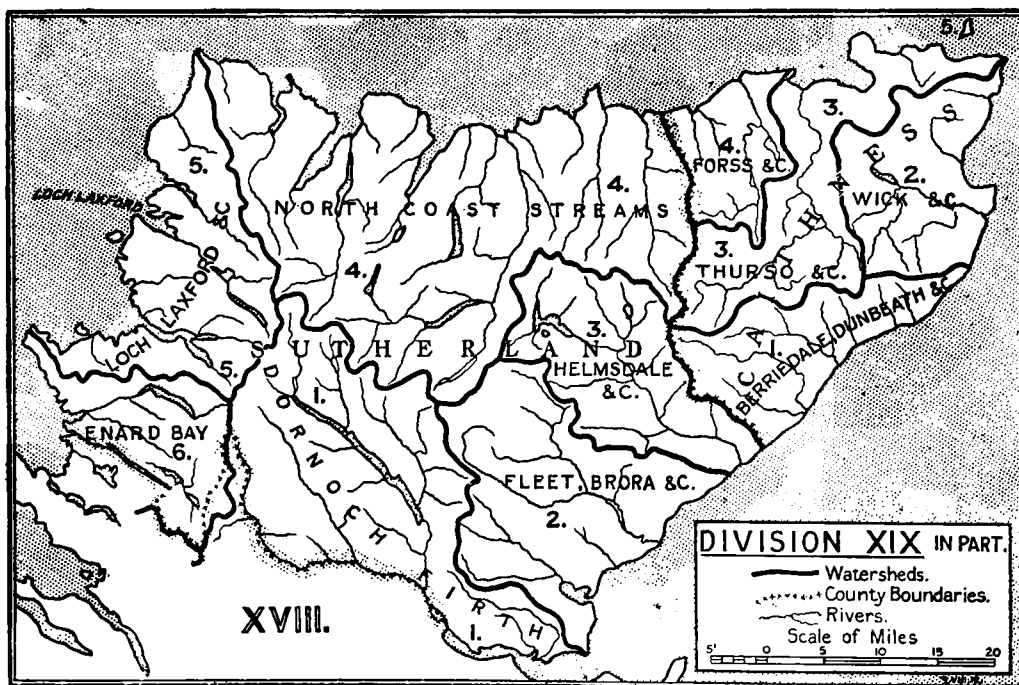
## DIVISION XVIII.—NORTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain	Days with $\geq 0.1$ or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
INVERNESS—(con.)							
17.—LOCH LINNHE—Left Bank Tributaries. 120 sq. mi.							
d North Ballachulish (Alltshellach)	B.Chinnery-Haldane Esq	5	2	1	80 B	79.25	225
d Glenleven (Blackwater Dam, N.)	British Aluminium Co.	8	1	0	1072	88.38	235
d „ (Kinlochmore Gardens)	Brian Bibby, Esq.....	5	1	0	115	100.26	234
d „ (Chiaron House) No. 3	British Aluminium Co.	8	1	0	1200 T	91.01	...
d „ (Cam Bridge) ...No. 5	W. „ „ „ „ „	8	1	0	1260 T	76.13	...
d Fort William (Atholl Bank).....	W. T. Kilgour, Esq. ...	5	1	0	171 A	80.19	230
18.—INSULAR, INNER HEBRIDES. 786 sq. mi.							
d Eigg (Kildonan).....	Mrs. Glendinning .....	5	1	0	35	58.99	190
d Hyskier .....	Bd. of Northern Lights	...	...	...	...	41.14	188
d Rum (Kinloch Castle) .....	Mr. P. R. Hills .....	5	1	8	17	91.04	241
d Skye (Oronsay) .....	Bd. of Northern Lights	...	0	6	58	59.25	213
d „ (Kyleakin).....	„ „ „	5	4	6	53	52.07	220
d „ (Scalpay Island) .....	Mr. D. Gunn .....	5	1	0	4	74.41	222
d „ (Glendrynoch, L. Harport).	Mr. A. Macaskill .....	5	1	0	40	65.59	...
d „ (Neist Point) .....	Bd. of Northern Lights	...	...	...	...	52.56	221
d „ (Portree) .....	D. Dewar, Esq. ....	5	1	0	65	55.23	224
d „ (Dunvegan) .....	Mrs. Mackenzie .....	5	3	0	47 A	75.65	242
d „ (Lynedale) .....	Lord Napier of Magdala	5	1	0	10 ?	81.53	238
d Rona .....	Bd. of Northern Lights	3	1	3	212	27.07?	198
19.—INSULAR, OUTER HEBRIDES. 243 sq. mi.							
d Barra (Barrahead).....	Bd. of Northern Lights	7	3	0	683	32.18	224
d „ (Castle Bay) .....	Meteorological Office ..	8	1	0	38	38.17	256
d South Uist (Ushenish) .....	Bd. of Northern Lights	3	1	0	178 ?	43.91	216
d North „ (Monach).....	„ „ „	8	5	6	20	45.28	200
d Harris (Island Glass)....	Bd. of Northern Lights	7	4	2	130	42.99	218
d „ (West Tarbert) ....	A. M. Fletcher, Esq....	5	1	6	33 L	78.75	219
ROSS & CROMARTY. (Area, 3237 sq. mi.)							
1.—NESS—Moriston. 35 sq. mi.							
2.—BEAULY. 109 sq. mi.							
d Achnashellach (Glenuaig) .....	W. M. Christy, Esq. ...	5	1	0	1150 T	124.60	...
3.—MORAY FIRTH COAST STRAITS. 64 sq. mi.							
d Fortrose .....	A. Thom, Esq. ....	5	1	0	69 A	18.22	153
4.—CROMARTY FIRTH. 714 sq. mi.							
d Strathpeffer.....	Meteorological Office...	8	1	0	210	25.63	195
d Achterneed (Glenskiach) .....	Mr. T. Dalling .....	5	1	6	458	32.98	216
d Cromarty.....	Bd. of Northern Lights	3	1	0	28	19.16	161
d Alness (Fyrish) .....	Oswald B. Cowan, Esq.	8	1	0	350	24.13	179
d Invergordon (The Ord).....	W. G. Paterson, Esq...	5	0	9	25 ?	19.35	183
d Kildary (Tarbat Gardens).....	Mr. A. Taylor.....	5	2	6	15	29.56	...
d Alness (Ardross Castle).....	Mr. W. L. Minty .....	5	1	0	450 A	30.20	213
5.—DORNOCH FIRTH. 355 sq. mi.							
d Fearn (Lower Pitkerrie) .....	R. Gordon, Esq., C.E..	5	1	0	95	18.54	142
d Tarbatness .....	Bd. of Northern Lights	8	4	0	175	17.66	...
d Ardgay (Gledfield House Gardens)	William Morrison, Esq.	8	1	0	80	27.69	187

## DIVISION XVIII.—NORTH WESTERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain. 1913	Days with 401 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level		
		in.	ft.	in.	feet.	inches.	
<b>ROSS &amp; CROMARTY—(con.)</b>							
6.—ENARD BAY. 78 sq. mi.							
7.—LOCH BROOM & C. 367 sq. mi.							
Loch Vhraoin .....	Lady Fowler .....	8	0	7	750	72·44	...
Loch Drome .....	„ „ .....	8	0	7	850 T	61·32	...
Braemore House.....	„ „ .....	8	0	7	750	64·81	...
8.—LOCH EWE, LOCH TORRIDON & C. 423 sq. mi.							
D Loch Torridon (Bendamph) .....	The Earl of Lovelace ..	5	0	5	20 T	86·10	209
D Gairloch (The Manse) .....	Rev. Dugald Maclean ..	5	1	0	40 B	49·83	219
D Poolewe (Inverewe Gardens) ...	Mr. R. B. Campbell ...	5	0	6	20	61·48	175
9.—LOCH CARRON, LOCH ALSH & C. 401 sq. mi.							
Glen Shiel (Shiel House) .....	M Mr. Colin Campbell ...	5	...	...	...	80·66	...
D Loch Carron (Plockton) .....	Mrs. Anstruther Mackay	5	1	0	4	58·11	233
Applecross Gardens .....	Mr. D. McCowan .....	5	1	0	70 T	53·62	...
D Glencarron Lodge .....	Mr. D. D. Munro .....	5	1	0	504 T	87·20	238
„ „ „ „ „ „ „ „ „ „ „ „	M „ „ „ „ „ „ „ „ „ „	5	1	0	504 T	93·95	...
10.—INSULAR, OUTER HEBRIDES. 691 sq. mi.							
Stornoway .....	Meteorological Office ...	8	1	0	52	46·99	249
„ (Tiumpanhead) .....	Bd. of Northern Lights	...	...	...	170	38·38?	194
„ (Butt of Lewis) .....	„ „ „ „ „ „ „ „ „ „	8	4	6	170	41·27	214

MAP OF DIVISION XIX.  
NORTHERN COUNTIES,  
Showing the River-Divisions.



STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with +0·1 or more recorded.	
		Diameter	Height Above Ground.				Height Above Sea Level
		in.	ft.	in.	feet.	inches.	
SUTHERLAND. (Area,	2080 sq. mi.)						
1.—DORNOCH FIRTH. 413 sq. mi.							
D Invershin .....	G. Young, Esq. ....	5	4	0	20 T	29·36	190
2.—FLEET, BRORA & C. 309 sq. mi.							
Dornoch .....	Scot.Meteorological Soc. ....	...	...	...	...	21·55	...
D Dunrobin Castle.....	Mr. D. Melville . ....	5	1	6	14 A	26·32	152
" " " " M	" " " " " " " " " " " "	5	1	0	14 A	27·17	...
D Brora (Gordonbush) .....	Mr. J. MacRae .....	5	0	11	100	33·98	157
3.—HELMSDALE & C. 226 sq. mi.							
4.—NORTH COAST STREAMS. 736 sq. mi.							
D Altnaharra .....	Rev. Malcolm Gillies... ..	5	1	0	300 T	45·22	228
Strath More (Governuisgach) ...	J. Mackenzie, Esq.....	5	0	10	200	69·23	...
(Altnacaillich) .....	Mr. Duncan Fraser ...	5	1	0	60 T	57·74	200
D Tongue Manse .....	Rev. David Lundie ...	5	1	0	180 T	32·75	260
D Bettyhill.....	Mr. Evander Mackay... ..	5	1	0	100	30·48	219
D Melvich Schoolhouse.....	Mr. A. MacIntosh .....	5	1	0	...	29·55	164
Cape Wrath .....	Bd. of Northern Lights	7	4	8	400	52·73	196
5.—LOCH LAXFORD & C. 256 sq. mi.							
D Loch Stack (Ardehullin) .....	Mr. J. Munro .....	5	1	0	167 T	71·02	235
6.—ENARD BAY. 138 sq. mi.							
7.—INSULAR. 2 sq. mi.							
CAITHNESS. (Area,	696 sq. mi.)						
1.—BERRIEDALE, DUNBEATH & C. 169 sq. mi.							
D Berriedale (Langwell) .....	Mr. M. MacKenzie ...	5	1	6	100 T	30·38	172
2.—WICK & C. 184 sq. mi.							
D Wick .....	Meteorological Office... ..	8	1	9	77	24·50	213
Nosshead.....	Bd. of Northern Lights	7	4	7	175	18·52?	150
D Watten (Stanstill) .....	Miss Davidson .....	5	1	0	127 T	22·42	181
3.—THURSO & C. 238 sq. mi.							
D Thurso (Buckies) .....	J. H. M. Davidson, Esq. ....	5	0	11	240 ?	31·45	211
Castletown (WestGreenlandFm.)	P. Finlayson, Esq.....	5	1	0	150	26·33	..
" (The Clett) .....	Capt. J. Calder .....	5	1	0	73 A	30·10	236
Thurso (Holburn Head) .....	Bd. of Northern Lights	3	0	8	75 ?	26·67	198
Dunnet Head .....	" " " " " " " " " " " "	3	1	0	246	24·42	...
4.—FORSS & C. 104 sq. mi.							
D Reay .....	Rev.Dugald Carmichael	8	1	0	50 T	26·78	210
5.—INSULAR. 1 sq. mi.							
Stroma .....	Bd. of Northern Lights	...	...	...	104	21·79	...
Pentland Skerries .....	" " " " " " " " " " " "	7	3	9	170	20·46	...
ORKNEY. (Area,	389 sq. mi.)						
Hoy(GraemsaySound,East=High)	Bd. of Northern Lights	5	0	4	115	28·32	188
" " " " West=Low)	" " " " " " " " " " " "	8	4	3	55	29·96	197
Pomona (Deerness) .....	Magnus Spence, Esq.....	5	1	0	161 T	28·77	206

DIVISION XIX.—NORTHERN COUNTIES—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with .01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
ORKNEY—(con.)						
d Pomona (Kirkwall) .....	A. G. Spence, Esq. ...	5	1 0	72	32·95	223
Hellyar Holm.....	Bd. of Northern Lights	3	1 0	60	26·82	198
Shapinsay (Balfour Castle) .....	Mr. W. Liddell .....	5	0 6	50	24·42	...
Auskerry .....	Bd. of Northern Lights	3	2 6	10	26·05	...
Sanday (Start Point).....	„ „ „	3	1 0	80	27·94	174
Westray (Noup Head) .....	„ „ „	3	1 0	260	26·90	223
North Ronaldshay .....	„ „ „	3	0 4	140	29·01	195
SHETLAND. (Area, 558 sq. mi.)						
Bressay .....	Bd. of Northern Lights	3	1 0	105	25·76	...
d Lerwick (Fort Charlotte) .....	J. B. Rundle, Esq.....	8	1 0	59 7	40·13	243
Sule Skerry .....	Bd. of Northern Lights	3	0 6	113	32·04	210
d Northmavine (Lochend) .....	Scot.Meteorological Soc.	5	1 10	10	42·92	221
d Fetlar (The Manse) .....	Rev. J. A. Campbell ...	5	1 0	30 1	30·96	241
Unst (Balta Sound, Halligarth)..	Meteorological Office ...	5	1 0	31 7	36·71	275



IRELAND.

DIVISION XX.—MUNSTER.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height above Ground.		Height above Sea Level	
		in.	ft.	in.	feet.	inches.
CORK. (Area, 2873 sq. mi.)						
1.—SHANNON—Left Bank Tributaries. 79 sq. mi.						
2.—DINGLE BAY. 4 sq. mi.						
3.—KENMARE & C. 47 sq. mi.						
4.—BANTRY BAY. 197 sq. mi.						
5.—DUNMANUS BAY. 57 sq. mi.						
6.—BANDON & C. 694 sq. mi.						
D Castletownshend (Glen Barrabane)..	Sir E. B. Coghill, Bart.	5	3	0	25 A	64·93 193
Skibbereen (Hollybrook) .....	Col. A.H. Morgan, D.S.O.	8	1	2	60 T	59·03 212
D ,, Rectory .....	Rev Canon H.W. Townsend	5	1	6	55 A	54·95 204
D Caheragh (The Rectory) .....	Rev. A. W. Whitley...	5	0	11	98 T	62·45 214
D Clonakilty (Shannon Vale House)	T. J. Bennett, Esq. ...	5	1	3	135 T	46·21 214
Ballineen (Kilmeen Rectory) ...	Rev. W. A. Lamb.....	5	1	6	370 T	62·45 211
D Dunmanway (The Rectory) .....	Rev. A. Wilson .....	5	1	6	205 T	66·63 225
7.—CORK HARBOUR. 726 sq. mi.						
† Roches Point .....	Meteorological Office...	8	1	9	32	45·68 270
D† Midleton (Ballynacurra) .....	J. H. Bennett, Esq. ...	8	1	0	24 A	43·46 189
D† Cork (Corn Market) .....	D. J. O'Mahony, Esq... 12	1	9		19 A	44·49 169
D ,, ( ,, ,, ) .....		5	1	0	19 A	44·16 170
D ,, (Wellington Road) .....	R. C. Sikes, Esq., C.E.	5	2	6	120 T	44·38 182
D† Queenstown (Fota Island) .....	Mr. W. Beswick.....	5	1	6	35 B	49·69 207
D† Glanmire (Lota Lodge)..... No. 1	A.F. Sharman Crawford, Esq.	5	1	0	200 T	46·42 199
D† ,, ( ,, ,, )..... No. 2	,, ,, ,,	5	1	0	100 T	44·64 202
8.—WOMANAGH & C. 118 sq. mi.						
Shanagarry (Kinoith) .....	Miss L. P. Strangman..	5	1	0	75 T	39·76 181
9.—BLACKWATER. 922 sq. mi.						
D Mallow (Summer Hill) .....	J. F. Williamson, Esq.	5	1	10	261 T	46·37 207
D ,, (Longueville) .....	R. E. Longfield, Esq... 5	1	1		310	45·49 211
D Mitchelstown Castle .....	W. D. Webber, Esq.... 8	3	0		340 A	46·86 193
10.—SUIR. 3 sq. mi.						
11.—INSULAR. 26 sq. mi.						

## DIVISION XX.—MUNSTER—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.	
		Diameter	Height Above Ground		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
<b>KERRY. (Area, 1851 sq. mi.)</b>							
1.—SHANNON—Left Bank Tributaries.	372 sq. mi.						
2.—TRALEE BAY & C.	221 sq. mi.						
3.—DINGLE BAY.	789 sq. mi.						
†Cahirciveen .....	Meteorological Office ...	8	2	0	45	63·10	260
†Gap of Dunloe (Gearahameen) M	Dr. H. R. Mill .....	8	3	0	75	103·60	...
Lough Caragh (Lickeen) .....	AdmiralJeffreys, C.V.O.	5	1	0	60	87·85	250
Killarney (Muckross Abbey) ...	Mr. L. Nelson.....	8	2	6	...	77·50	...
D† „ (District Asylum) ...	E. W. Griffin, Esq., M.D.	5	0	10	178 T	58·86	242
4.—KENMARE & C. 426 sq. mi.							
D†Darrynane Abbey ..	D. O'Connell, Esq.....	5	1	1	13 T	60·23	269
D Kenmare (Derreen) .....	Mr. W. H. Arrowsmith	5	1	0	74	86·79	233
D Waterville (Iveragh Lodge).....	R. J. Hughes, Esq. ...	5	1	0	86 T	44·14?	225
Kenmare (Dunkerron Castle) ...	Miss L. Palmer .....	5	1	6	70	68·93	209
D „ (Dromore) .....	E. Hood, Esq.....	5	1	2	90	65·68	206
5.—BLACKWATER. 30 sq. mi.							
6.—INSULAR. 13 sq. mi.							
Valencia (Glanleam) .....	Meteorological Office ..	8	1	0	12	65·92	230
<b>WATERFORD. (Area, 715 sq. mi.)</b>							
1.—BLACKWATER. 243 sq. mi.							
Lismore Castle .....	J. E. Penrose, Esq.....	5	2	9	115 T	46·66	...
2.—COLLIGAN & C. 259 sq. mi.							
D Tramore (Midvale).....	E. B. Jacob, Esq. ....	11	6	0	130	31·34	169
3.—SUIR. 213 sq. mi.							
D Knockaderry .....	No. 1 J. J. Fleming, Esq., C.E.	5	7	7	247 T	44·16	161
D „ .....	No. 2 „ „ „ „	5	7	7	247 T	43·23	161
D†Waterford (Brook Lodge).....	C. P. Bolton, Esq., C.E.	5	1	0	104 T	40·42	182
D „ (Mt. Congreve Gdns.)	Mr. D. E. Smart.....	5	1	0	...	42·14	197
D† „ (Tycor Waterworks).	J. J. Fleming, Esq., C.E.	5	0	7	171 T	40·06	151
D „ (Grange House) .....	G. D. Croker, Esq.....	5	1	0	200 T	36·29	193
D „ (De La Salle College)	Meteorological Office ...	8	1	0	20 T	40·61	174
D† „ (St. Andrew'sTerrace)	E. A. White, Esq.....	5	1	0	28	39·50	170
D† „ (Rocklands).....	J. N. White, Esq. ....	5	2	0	40 ?	41·57	173
D Portlaw (Mayfield).....	J. Anderson, Esq. ....	5	4	0	70	47·69	195
„ (TheGardens, Curraghmore)	Mr. D. Crombie .....	5	1	0	95 T	50·90	159
D Seskin [Carrick-on-Suir] .....	J. Ernest Grubb, Esq...	8	1	4	542 T	50·95	211
<b>TIPPERARY. (Area, 1660 sq. mi.)</b>							
1.—SHANNON—Left Bank Tributaries. 582 sq. mi.							
D Ballina [Killaloe] .....	F. Dudley Fletcher, EsqC.E	5	2	0	...	47·20	221
D Templederry Rectory.....	Rev. C. W. McDowell..	5	1	0	...	44·99	207

DIVISION XX.—MUNSTER—(continued).

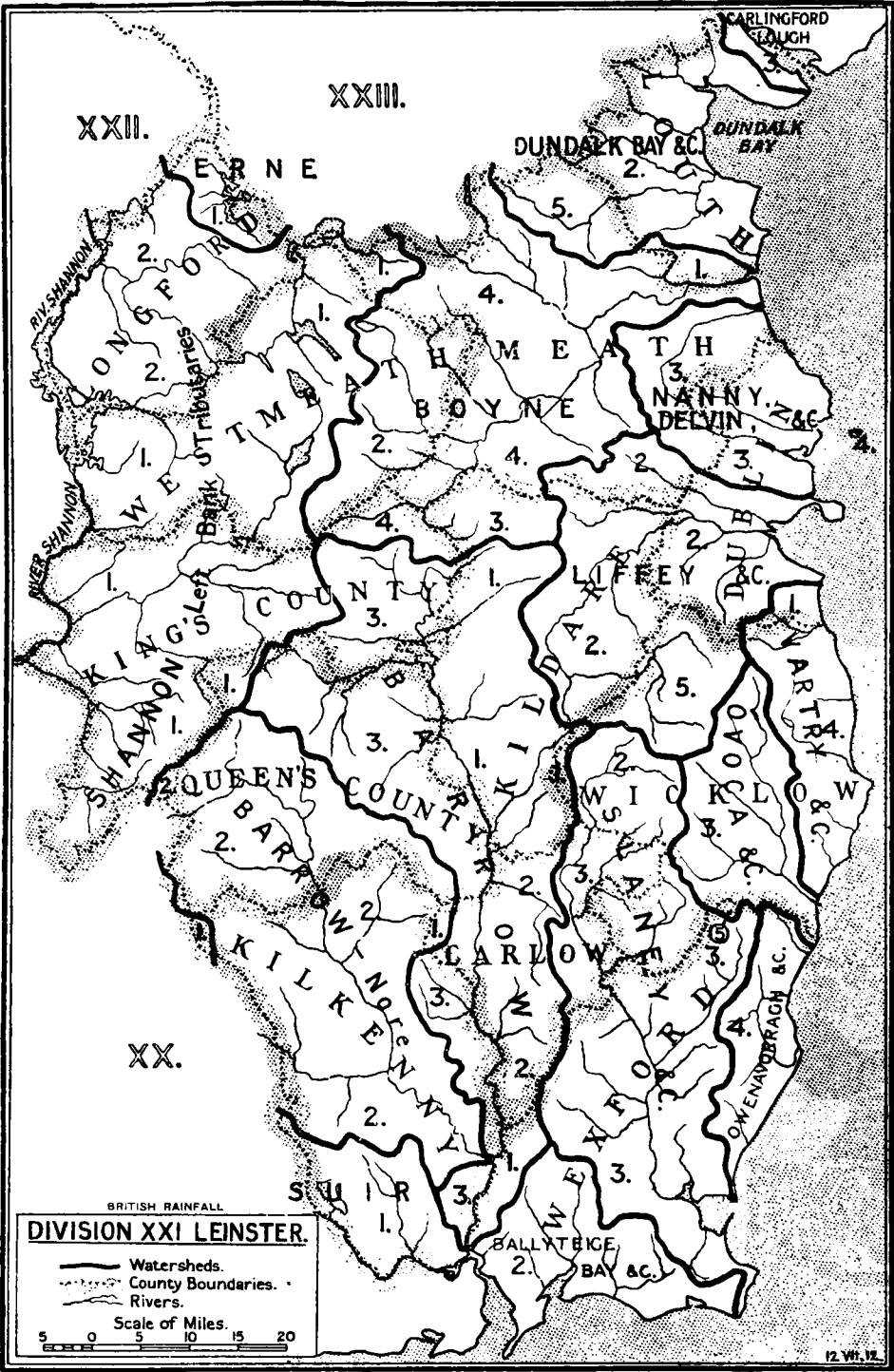
STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with .01 or more recorded.
		Diameter	Height Above Ground		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
TIPPERARY—(con.)						
1.—SHANNON—Left Bank Tributaries—(con.)						
D Nenagh (Traverston) .....	Miss Norris .....	5	1	0	...	49.44 259
„ (Kilboy) .....	The Lady Dunalley ...	8	1	0	326	49.01 231
D „ (Castle Lough) .....	S.G.J.Parker-Hutchinson Esq	5	1	3	120 T	42.26 207
2.—BLACKWATER. 21 sq. mi.						
3.—SUIR. 965 sq. mi.						
D Clonmel (Bruce Villa) .....	J. H. Grubb, Esq. ....	8	1	3	110 T	40.27 202
D „ (Oaklands) .....	A. E. Rogers, Esq. ....	5	1	0	220 T	35.24 209
D Cahir (Suirvale) .....	George Palmer, Esq., CE	5	1	0	200	35.45 187
D „ (Bengurragh) .....	R. W. Smith, Esq., junr.	5	1	0	199 T	42.59 227
„ (Abbey) .....	Mrs. W. Rochfort .....	5	1	0	...	40.40 196
D Cashel (Ballinamona) .....	E. W. M. Murphy, Esq.	5	1	0	260 T	41.47 234
Ardmayle .....	L. H. Grubb, Esq. ....	5	1	6	260 T	31.93 ...
4.—BARROW—Nore. 92 sq. mi.						
D Roscrea (Timoney Park) .....	S.G.J.Parker-Hutchinson Esq	5	1	0	475 T	37.89 201
LIMERICK. (Area, 1040 sq. mi.)						
1.—SHANNON—Right Bank Tributaries. 7 sq. mi.						
2.—SHANNON—Left Bank Tributaries. 944 sq. mi.						
Foynes .....	Meteorological Office ...	5	1	0	108	44.25 246
Limerick (Mungret College) ...	„ „ .....	5	1	0	49 T	39.83 200
† „ (O’Connell Street)* ...	J. Horan, Esq. ....	5	1	0	52 T	39.61 197
D „ (Lansdowne) .....	W. J. C. Horne, Esq. ...	5	1	0	50	41.18 230
„ (St. Michael’s School)..	Mr. J. G. Boyd .....	5	1	3	43 T	38.10 ...
Glenstal Castle .....	Mr. W. Earley .....	8	1	0	400	45.70 171
3.—BLACKWATER. 64 sq. mi.						
4.—SUIR. 25 sq. mi.						
CLARE. (Area, 1270 sq. mi.)						
1.—GALWAY BAY, SOUTH. 100 sq. mi.						
2.—MAL BAY & C. 294 sq. mi.						
D Inagh (Mount Callan) .....	Lt.-Col. F. Tottenham..	5	1	0	479	72.33 238
Lahinch (Moy House) .....	Dr. C. H. Blood .....	5	1	0	175	46.56 241
D Ennistymon House .....	H. V. Macnamara, Esq.	5	1	0	37 T	52.20 235
3.—SHANNON—Right Bank Tributaries. 854 sq. mi.						
D Carrigaholt Castle .....	W. C. V. Burton, Esq.	5	1	0	16 T	41.75 240
† Derravoher [Limerick] .....	Sir A. W. Shaw .....	5	1	0	40 T	37.52 205
D Whitehall [„] .....	M. D. Shaw, Esq. ....	...	...	...	...	40.28 176
D Killadysert (Paradise Hill) .....	F. B. Henn, Esq. ....	5	0	11	125 T	51.18 245
D Newmarket-on-Fergus (Carrigoran)	Mr. A. Barker .....	5	1	0	86 T	46.65 225
D „ „ (Fenloe)..	Maj. S. C. Hickman ...	5	1	2	152 T	42.45 251
D Broadford (Hurdlestown) .....	Colonel W. A. Bentley.	5	1	0	167 T	48.05 240
D Scarriff (Woodpark) .....	R. F. Hibbert, Esq. ...	5	1	0	170 T	44.96 213
4.—INSULAR. 22 sq. mi.						

\* Formerly called George Street.



MAP OF DIVISION XXI.

LEINSTER,  
Showing the River-Divisions.



DIVISION XXI.—LEINSTER.

STATIONS.	AUTHORITIES.	Diameter	Rain Gauge.		Depth of Rain.	Days with .01 or more recorded.
			Height Above Ground	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>WEXFORD. (Area, 902 sq. mi.)</b>						
1.—BARROW. 43 sq. mi.						
2.—OWENDUFF & C. 240 sq. mi.						
D Fethard-on-Sea Rectory .....	Rev. W. F. A. Ellison..	5	1 0	40 B	32·16	189
3.—SLANEY & C. 467 sq. mi.						
D Wexford (Tate School) .....	C. Bain, Esq. ....	5	1 0	117	36·29	174
D Templeudigan (Ballindoney) ...	Janssen Budgen, Esq... 5	1 0	434 B	45·77	187	
D Enniscorthy (Ballyhyland) .....	Mrs. Moffat.....	5	1 0	365 T	45·77	240
D „ (Summerville) .....	W. Waring, Esq. ....	5	6 10	106 T	33·76	180
„ (Monksgrange).....	Goddard H. Orpen, Esq. 5	1 0	565 B	52·44	155	
„ (Woodbrook) .....	E. C. Blacker, Esq. ... 5	1 0	370 T	52·48	185	
4.—OWENAVORRAGH & C. 146 sq. mi.						
D Gorey (Courtown House) .....	The Earl of Courtown.. 5	3 0	60 T	33·80	178	
5.—OVOCA & C. 6 sq. mi.						
<b>KILKENNY. (Area, 798 sq. mi.)</b>						
1.—SUIR. 162 sq. mi.						
D Rockenham [Waterford] .....	A. E. Graves, Esq..... 5	1 0	140 T	42·24	196	
D Piltown (Bessborough) .....	Mr. T. E. Tomalin..... 8	3 7	60 T	43·72	206	
2.—BARROW—Nore. 527 sq. mi.						
Inistioge (Woodstock, Mt. Alto).	Mr. W. Leath.....	9	0 3	...	47·75	...
„ „ „ .....	„ „ „ .....	6	1 0	400 T	36·42	184
D Thomastown (Ballyduff) .....	Lt.-Col. Hon. F. Shore 5	1 5	65 T	46·05	201	
Kilkenny Castle .....	Meteorological Office... 8	1 0	195	35·13	234	
† „ (Lavistown House) ...	Miss Butler.....	5	2 5	170	31·46	181
D Castlecomer House .....	R.H. Prior-Wandesforde, Esq 5	1 5	380	43·08	195	
3.—BARROW. 109 sq. mi.						
D Goresbridge (Barragheore House)	H. de M. Fleming, Esq. 5	1 0	130 T	35·03	208	
<b>WICKLOW. (Area, 781 sq. mi.)</b>						
1.—BARROW. 12 sq. mi.						
2.—SLANEY. 200 sq. mi.						
D Shillelagh (Coollatin Gardens)... 5	Duncan Brough, Esq...	0 7	383	45·71	212	
3.—OVOCA & C. 241 sq. mi.						
D Rathdrum (Avondale) .....	A. C. Forbes, Esq..... 5	0 6	414 T	41·90	186	
† Laragh (Glendalough) .....	J. B. Wynne, Esq..... 5	2 9	460 T	56·16?	...	
4.—VARTRY & C. 193 sq. mi.						
Arklow (The Sycamores) .....	Mrs. Udal .....	5	3 0	40	29·48	...
D Wicklow (Leitrim Place) .....	Rev. H. Ellison .....	5	0 7	0	37·18	169
D Rathnew (Clonmannon) .....	Rev. W. H. A. Truell.. 5	1 0	27	33·92	170	
D Roundwood (Vartry Lodge) .....	M.J. Buckley, Esq., C.E. 5	1 6	720	47·72	197	
D „ .....	„ „ „ .....	5	1 6	800 A	49·81	219
D „ (Knockatemple).....	„ „ „ .....	5	1 6	760 A	49·87	203
D „ (Filter Beds) .....	„ „ „ .....	8	1 6	640	48·81	199
D Newcastle (Killadreenan) .....	Dr. C. D. Hanan .....	8	1 2	260 T	38·71	171

## DIVISION XXI.—LEINSTER—(*continued*).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet	inches.	
WICKLOW—(con.)							
4.—VARTRY & C—(con.)							
Tithewer.....	M.J.Buckley, Esq., C.E.	5	1	6	1000 N	47·07	...
Annacarter Schoolhouse .....	" "	5	1	6	750 N	49·23	...
Greystones (Auburn).....	Sir J. W. Moore, M.D.	5	0	8	50 T	36·53	194
" (Coolagad) .....	Dr. J. H. M. Armstrong	5	0	9	190 T	41·63	203
Kilmacanoge (Carrigoona).....	Sir W.F.Barrett, F.R.S.	5	1	0	460 ?	44·16	...
d†Bray (Fassaroe) ...	R. M. Barrington, Esq.	10	5	0	250	45·06	191
D " " ) .....Snowdon	" " "	5	1	0	250	44·18	191
5.—LIFFEY & C. 135 sq. mi.							
CARLOW. (Area, 346 sq. mi.)							
1.—BARROW—Nore. 9 sq. mi.							
2.—BARROW. 216 sq. mi.							
Bagnalstown (Fenagh House) ...	D. R. P. Beresford, Esq	5	1	0	340	39·11	205
" " " " ) M	" " "	5	1	0	340	35·91	...
Carlow (Browne's Hill).....	Major Browne Clayton.	5	1	0	291 N	36·85	...
3.—SLANEY. 121 sq. mi.							
Hacketstown Rectory .....	Rev. C. S. S. Ellison ...	5	1	2	600 T	41·13	202
QUEEN'S COUNTY. (Area, 664 sq. mi.)							
1.—SHANNON—Left Bank Tributaries. 25 sq. mi.							
2.—BARROW—Nore. 339 sq. mi.							
d Abbey Leix (Blandsfort) .....	H. Bland, Esq. ....	5	2	6	532 N	40·59	219
Mountrath (Castletown) .....	Dr. T. E. Dunne .....	5	4	9	452 T	38·72	165
D " (Ballyfin).....	Mr. H. Thornton .....	8	1	0	600 T	45·79	183
3.—BARROW. 300 sq. mi.							
Sunnyside [Carlow] .....	E. Shackleton, Esq. ...	5	1	0	178 N	37·38	201
Mountmellick (Summer Grove)...	Meteorological Office ...	8	1	0	252	41·39	218
KING'S COUNTY. (Area, 772 sq. mi.)							
1.—SHANNON—Left Bank Tributaries. 560 sq. mi.							
d Birr Castle .....	No. 1 Dr. O. Boeddicker .....	8	1	0	183	35·38	224
d Victoria Lock [Meelick] .....	F Dudley Fletcher Esq CE	5	2	0	119	30·03	208
d Tullamore (Rathrobbin) .....	(R) Lt.-Col. M.W.Biddulph	8	1	6	400	28·55	212
" (St. Catherine's) .....	Rev. R. S. Craig.....	5	1	0	201 T	33·87	...
" (Union Workhouse)...	Dr. G. A. Moorhead ...	5	1	0	225	35·85	242
d Ferbane (Turraun) .....	Leinster Carbonizing Co.	8	1	0	167	30·38	201
d Ballycumber (Mooreck Lodge)...	H. P. Mulock, Esq. ...	5	1	0	210	30·95	169
D " " ).....	Mr. Michael Glasheen..	5	1	0	261 T	31·41	202
2.—BARROW—Nore. 5 sq. mi.							
3.—BARROW. 156 sq. mi.							
4.—BOYNE. 51 sq. mi.							

DIVISION XXI.—LEINSTER—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level		
		in.	ft. in.	feet.	inches.	
<b>KILDARE. (Area, 654 sq. mi.)</b>						
<b>1.—BARROW. 332 sq. mi.</b>						
D Castledermot .....	Very Rev. M. Walsh...	5	2 8	...	34·45	171
D „ (Millbrook) .....	T. Westland Greene, Esq.	8	1 4	225 T	33·73	193
D Monasterevan (Moore Abbey) ...	Mr. C. Pilgrim .....	5	1 0	236 T	34·44	203
<b>2.—LIFFEY. 246 sq. mi.</b>						
D Sallins (Palmerstown) .....	The Countess of Mayo..	5	1 0	321 T	29·46	197
D Straffan House .....	Mr. F. Bedford .....	5	1 0	240 T	29·87	196
Clongowes Wood College .....	Rev. J. Neary, S.J. ...	8	1 0	246 T	27·39	211
<b>3.—BOYNE. 76 sq. mi.</b>						
Kilcock (Knockanally) .....	W. C. Coates, Esq.....	5	1 0	290 T	36·28	...
<b>DUBLIN. (Area, 354 sq. mi.)</b>						
<b>1.—VARTRY &amp; C. 23 sq. mi.</b>						
Carrickmines (Claremont).. .....	John Read, Esq. ....	5	0 11	250	33·94	154
D Ballybrack (Marino) .....	Rt. Hon. L. A. Waldron	5	3 6	...	27·10	152
<b>2.—LIFFEY &amp; C. 188 sq. mi.</b>						
D Glen-na-Smoel (Rathmines W.W.)	F. P. Dixon, Esq., C.E.	5	1 0	510 T	51·16	223
Crooksling Sanatorium .....	Dr. A. Y. Blake .....	5	1 6	970	37·68	...
D Ballyboden (Rathmines W.W.)..	F. P. Dixon, Esq., C.E.	5	1 0	344 T	40·72	182
† Blackrock (Charleville).....	S. Harold Pim, Esq. ..	5	1 0	260 ?	31·87	...
Dundrum (Manor Mill Lodge)...	G. B. Edmondson, Esq.	5	1 3	192 T	34·26	189
D Kingstown (Harbour Yard) .....	Office of Public Works	8	1 0	52 T	28·93	155
Rathmines (Terenure) .....	F. P. Dixon, Esq., C.E.	5	0 6	125 T	29·07	174
D „ (Highfield Rd., Rathgar)	H. Fayle, Esq. ....	5	1 8	127	29·84	177
D „ (Leinster Road) .....	E. H. Cannon, Esq. ...	5	0 11	125 T	30·30	184
D „ (Ormond Road) .....	W. R. Stephens, Esq. C.E.	5	1 0	99 T	30·33	180
Donnybrook (Belmont Avenue)..	Douglas Waring, Esq..	5	0 9	100 ?	32·44	179
Clondalkin (Cheeverstown) .....	Sir J. W. Moore, M.D.	5	1 4	350 ?	34·95	195
Dublin (Leeson Park) .....	„ „ „	5	1 4	75 ?	27·54	176
D† „ (Fitz William Square) ..	„ „ „	8	1 6	54 T	28·84	191
† „ (Trinity College) .....	Prof. W. E. Thrift...	8	1 0	13 T	27·64	163
D† „ (Phoenix Park) .....	Ordnance Survey Office	8	1 0	155 T	28·45	185
D „ (Ringsand Pumping Sta.)	M. J. Buckley, Esq., C.E.	10	1 1	...	28·62	169
D Clontarf (Pumping Station)... (R)	„ „ „	5	4 9	22	26·09	171
D Dublin (Drumcondra Road).....	A. Roycroft, Esq. ....	5	4 9	76 T	29·62	191
D Glasnevin (Roy. Botanic Gardens)	Sir F. W. Moore .....	8	1 0	55 T	29·05	184
Howth (Balkill Reservoir) .....	Messrs. Kaye-Parry & Ross, CE	8	1 0	304 T	27·74	...
D „ Castle .....	J. G. St. Lawrence, Esq.	5	1 6	50	27·05	177
<b>3.—NANNY, DELVIN &amp; C. 142 sq. mi.</b>						
D Malahide (Seamount) .....	J. G. Jameson, Esq. ...	5	1 0	150 T	29·26	177
„ (The Green) .....	T. Bateman, Esq. ....	5	1 0	25 T	28·60	178
D† Skerries (Milverton Hall).....	Capt. E. G. Woods.....	5	1 0	190 T	29·29	190
D† Balbriggan (Ardgillan) ... No. 1	Capt. E. R. Taylor.....	5	1 0	211 T	31·20	184
† „ „ „ „ „ No. 3	„ „ „ „ „	5	1 0	211 T	31·34	...
<b>4.—INSULAR. 1 sq. mi.</b>						
D Lambay Island .....	Hon. Cecil Baring .....	5	1 0	20	26·91	161

## DIVISION XXI.—LEINSTER—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with '01 or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>MEATH.</b> (Area, 909 sq. mi.)						
1.—SHANNON—Left Bank Tributaries. 32 sq. mi.						
2.—LIFFEY & C. 72 sq. mi.						
D Dunboyne (Stirling, Clonee).....	Mr. J. Pilkington .....	8	1 0	231 T	31·90	194
3.—NANNY, DELVIN & C. 150 sq. mi.						
D Drogheda (Mullacroghan).....	W. Brydon Hill, Esq... ..	5	1 6	300	27·96	174
4.—BOYNE. 560 sq. mi.						
D Summerhill House.....	Lord Langford .....	5	1 0	372 T	34·25	200
D Athboy (Mitchelston) .....	W. J. Hopkins, Esq....	5	1 0	260 ?	35·19	201
„ (Frankville) .....	C. P. Coghill, Esq.....	8	1 3	227	37·15	185
Navan (Durhamstown) .....	Miss M. Roberts.....	5	0 8	...	32·84	194
D „ (Staffordstown) .....	R. J. Butler, Esq. ....	5	2 0	250 T	30·78	194
D Kells (Headfort).....	The Marquis of Headfort	8	0 6	227	36·58	201
5.—DUNDALK BAY. 95 sq. mi.						
D Drumconrath (Aclare House) (R)	Mrs. Singleton .....	10	1 0	153 T	32·50	200
<b>WESTMEATH.</b> (Area, 712 sq. mi.)						
1.—SHANNON—Left Bank Tributaries. 517 sq. mi.						
D Athlone .....	F Dudley Fletcher Esq CE	5	2 0	128 T	28·67	189
D „ (Twyford) .....	J. P. Hodson, Esq.....	5	5 0	188 T	43·33	228
D Moate (Coolatore) .....	H. A. S. Upton, Esq... ..	5	1 6	369 T	38·05	207
D Mullingar (Belvedere) .....	Mr. J. Bayliss .....	5	1 0	367 T	38·18	214
Rathowen (Cromlyn)..... (R)	Gen. J. P. Battersby ...	8	1 6	250 T	36·88	222
D Castlepollard (Gillardstown Ho.)	W. Hardy, Esq. ....	5	1 0	290	37·41	197
D „ (Pakenham Hall)...	Mr. G. Bogie .....	5	1 6	300 ?	39·69	210
D Coole (Mayne Rectory) .....	Rev. R. Butler .....	5	1 0	300	39·57	219
2.—BOYNE. 195 sq. mi.						
<b>LOUTH.</b> (Area, 316 sq. mi.)						
1.—BOYNE. 32 sq. mi.						
2.—DUNDALK BAY & C. 264 sq. mi.						
D Drogheda (Black Hall) .....	G. H. Pentland, Esq....	5	1 0	170 T	26·55	...
D Dundalk (Mount Pleasant) ...	Telford Macneill, Esq... ..	5	1 0	60 T	36·36	207
3.—CARLINGFORD LOUGH. 20 sq. mi.						
D Greenore.....	T. Chambers, Esq., C.E.	5	1 0	20 ?	33·48	206
<b>LONGFORD.</b> (Area, 424 sq. mi.)						
1.—ERNE. 61 sq. mi.						
2.—SHANNON—Left Bank Tributaries. 363 sq. mi.						
D Ballymahon (New Castle).....	Col. W. H. King-Harman	5	2 5	250 T	38·68	225
D Cloondrah .....	F Dudley Fletcher Esq CE	5	2 0	130	31·90	240
Longford.....	J. W. Gunnis, Esq. ....	8	3 6	180 T	41·80	...
D Castle Forbes Gardens .....	The Earl of Granard...	8	1 0	168 T	41·44	218

MAP OF DIVISION XXII.

CONNAUGHT,

### Showing the River-Divisions.



## DIVISION XXII.—CONNAUGHT.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.	Height Above Sea Level	1913	
		in.	ft. in.	feet.	inches.	
<b>GALWAY.</b> (Area, 2377 sq. mi.)						
1.—ERIFF & C. 141 sq. mi.						
2.—GALWAY BAY, NORTH. 277 sq. mi.						
D Knockboy House .....	D. H. Thompson, Esq....	5	0 10	150 T	42.25	218
3.—CORRIB. 846 sq. mi.						
D Ballynahinch Castle .....	R. Berridge, Esq. ....	5	1 9	41 T	67.08	263
D Tuam (Castle Hacket) .....	Capt. D. K. Bernard ...	5	1 0	..	45.48	171
„ (Gardenfield) .....	R. J. Kirwan, Esq.....	5	1 0	155 T	47.99	...
4.—GALWAY BAY, SOUTH. 281 sq. mi.						
D Woodlawn .....	Mr. C. Farmer .....	5	3 6	300 T	45.78	232
5.—SHANNON—Right Bank Tributaries. 803 sq. mi.						
Ballinasloe (District Asylum) ...	Dr. J. St. L. Kirwan ...	5	1 0	154 T	36.36	213
D Ahaseragh (Clonbrock) .....	Lord Clonbrock, K.P....	10	5 6	200 T	57.90	191
6.—INSULAR. 29 sq. mi.						
<b>ROSCOMMON.</b> (Area, 961 sq. mi.)						
1.—SLIGO BAY. 6 sq. mi.						
2.—MOY. 11 sq. mi.						
3.—CORRIB. 16 sq. mi.						
4.—SHANNON—Right Bank Tributaries. 928 sq. mi.						
D Strokestown (Castlenode) .....	W. J. Walpole, Esq....	5	1 0	182 T	39.81	186
D Albert Lock [Jamestown] .....	F Dudley Fletcher Esq CE	5	2 0	146 T	37.75	202
French Park .....	Lord De Freyne .....	8	1 2	250 P	48.70	...
<b>MAYO.</b> (Area, 2149 sq. mi.)						
1.—SLIGO BAY. 10 sq. mi.						
2.—MOY & C. 797 sq. mi.						
D Castlebar House .....	A. C. Larminie, Esq....	5	3 4	...	49.84	254
D Crossmolina (Enniscoe) .....	J. Pratt, Esq.....	5	0 11	74 T	60.21	253
3.—BLACKSOD BAY & C. 411 sq. mi.						
Blacksod Point .....	Meteorological Office...	8	0 10	41	57.01	261
4.—CLEW BAY. 254 sq. mi.						
Westport House .....	Marquis of Sligo .....	5	12 0	35	55.50	242
D „ (St. Helen's) .....	Miss Kelly .....	6	0 11	35 T	51.14	251
D Newport (Burrishoole House) ...	H. M. Anketell Jones Esq	5	1 10	30	56.21	245
5.—ERIFF & C. 121 sq. mi.						
Aasleagh House .....	Marquis of Sligo .....	5	1 0	35	86.05	201
6.—CORRIB. 432 sq. mi.						
D Cong (The Glebe) .....	Rev. Canon R. Y. Lynn	5	1 11	112 T	51.64	233
7.—SHANNON—Right Bank Tributaries. 35 sq. mi.						
8.—INSULAR. 89 sq. mi.						
D Dugort (Slievemore Hotel) .....	Mrs. J. R. Sheridan ...	5	1 0	50 P	65.30	245

DIVISION XXII.—CONNAUGHT—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with $\geq 0.1$ or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
SLIGO. (Area, 716 sq. mi.)							
1.—DROWES & C. 49 sq. mi.							
2.—SLIGO BAY. 444 sq. mi.							
D Collooney (Markree Observatory)	J. R. Armstrong, Esq..	5	1	0	127 $\frac{1}{2}$	45.64	223
" " "	" " "	5	1	0	143 $\frac{1}{2}$	44.18	222
D Sligo .....	R. J. Kirwan, Esq. "	5	1	0	30	45.89	222
3.—MOY & C. 166 sq. mi.							
4.—SHANNON—Right Bank Tributaries. 56 sq. mi.							
5.—INSULAR. 1 sq. mi.							
LEITRIM. (Area, 615 sq. mi.)							
1.—ERNE. 152 sq. mi.							
Carrigallen (Bredagh School) ...	Meteorological Office ...	5	0	8	285 $\frac{1}{2}$	38.18	...
2.—DROWES & C. 85 sq. mi.							
3.—SLIGO BAY. 135 sq. mi.							
4.—SHANNON—Right Bank Tributaries. 47 sq. mi.							
5.—SHANNON—Left Bank Tributaries. 196 sq. mi.							
D Ruskey .....	F Dudley Fletcher Esq CE	5	2	0	139 $\frac{1}{2}$	28.42	207
D Mohill Rectory .....	Rev. H. Justice .....	5	1	0	300 $\frac{1}{2}$	44.24	222
Drumshanbo (Lough Allen Sluices)	F Dudley Fletcher Esq CE	5	2	0	169 $\frac{1}{2}$	41.70	...





DIVISION XXIII.—ULSTER.

STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain.	Days with $\geq 0.1$ or more recorded.	
		Diameter	Height Above Ground.		Height Above Sea Level		1913
		in.	ft.	in.	feet.	inches.	
CAVAN. (Area, 753 sq. mi.)							
1.—ERNE. 489 sq. mi.							
D Killeshandra (Castle Hamilton) ..	Major W. J. Hamilton	5	1	0	251 T	31.58?	173
D „ (Drom Mullac) ...	Miss Prudence M. Lough	5	1	0	280 T	40.22	217
D Cootehill Workhouse .....	T. Conolly, Esq. ....	5	0	9	306 T	38.62	198
D „ (Errigle) .....	Dr. T. H. Moorhead ...	5	0	9	273 T	32.23	196
D Belturbet (Cloverhill) .....	Mrs. Sanderson .....	5	1	0	202 T	37.71	211
2.—SHANNON—Right Bank Tributaries. 34 sq. mi.							
3.—SHANNON—Left Bank Tributaries. 91 sq. mi.							
4.—BOYNE. 122 sq. mi.							
5.—DUNDALK BAY. 17 sq. mi.							
FERMANAGH. (Area, 713 sq. mi.)							
1.—ERNE. 667 sq. mi.							
D Newtownbutler (Crom Castle) ...	Mr. A. Reid .....	5	0	9	174 T	41.16	262
Enniskillen (Portora) .....	W. N. Tetley, Esq. ...	5	1	0	251 T	41.46	...
Irvinestown (Northern Bank) ...	W. S. Wilkinson, Esq.	5	1	0	289	44.26	212
Belleek (Heronshaw) .....	J. Beacom, Esq. ....	5	1	5	150 B	43.79	224
2.—DROWES & C. 46 sq. mi.							
MONAGHAN. (Area, 498 sq. mi.)							
1.—ERNE. 208 sq. mi.							
D Dartrey [Cootehill] .....	The Earl of Dartrey ...	5	2	6	265	39.88	212
2.—DUNDALK BAY. 132 sq. mi.							
3.—BANN—Lough Neagh, West. 158 sq. mi.							
D Monaghan (Rowantree House)...	Dr. J. Campbell Hall...	5	5	6	240	30.14	206
ARMAGH. (Area, 514 sq. mi.)							
1.—DUNDALK BAY. 118 sq. mi.							
2.—CARLINGFORD LOUGH. 23 sq. mi.							
D Bridge Street [Newry] .....	J. L. D. Meares, Esq. C. E.	5	0	9	22 T	40.95	191
D Bessbrook (Deramore) .....	Mr. W. Smith .....	5	1	6	252 T	42.41	194
3.—BANN—Lough Neagh, East. 37 sq. mi.							
D Lurgan (Belle Vue) .....	S. A. Bell, Esq. ....	5	0	5	200 T	29.95	192
4.—BANN, UPPER. 144 sq. mi.							
D Tanderagee .....	Dr. J. Taylor .....	5	1	6	198 T	35.27	191
„ „ „ „ (R) .....	„ „ „ „ .....	8	1	6	198 T	35.12	...
5.—BANN—Lough Neagh, West. 192 sq. mi.							
D Armagh Observatory .....	Dr. J. L. E. Dreyer ...	8	1	0	210 T	35.07	200
D Loughgall (Manor House) .....	Mrs. Sowter .....	5	1	0	210 T	31.57	190
DOWN. (Area, 961 sq. mi.)							
1.—CARLINGFORD LOUGH. 104 sq. mi.							
Warrenpoint (Clonallon) .....	Lt.-Col. A. W. Mansergh	8	1	3	15 T	41.11	193

## DIVISION XXIII.—ULSTER—(continued).

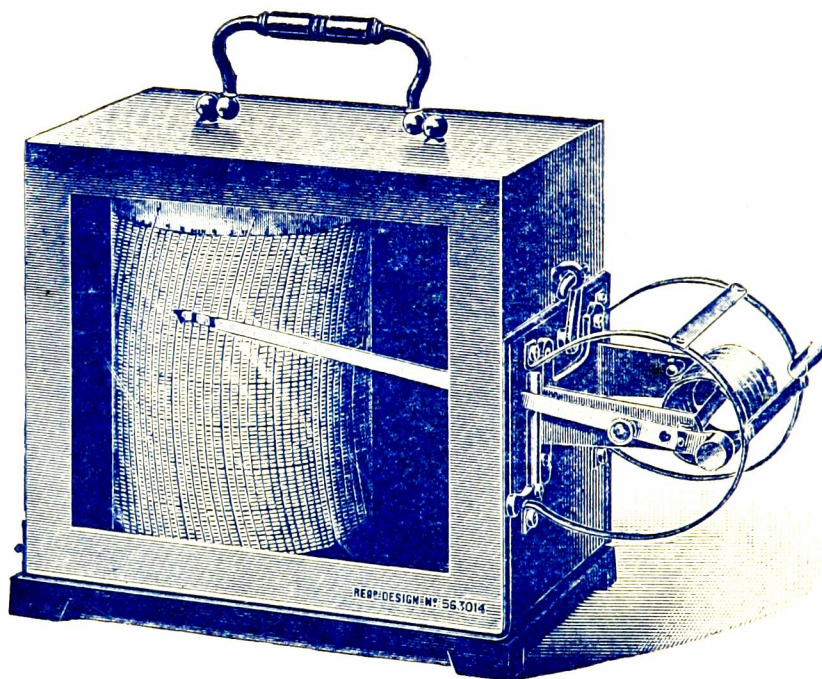
STATIONS.	AUTHORITIES.	Rain Gauge.			Depth of Rain. 1913	Days with '01 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	
		in.	ft.	in.	feet.	inches.
<b>DOWN—(con.)</b>						
2.—DUNDRUM BAY & C. 173 sq. mi.						
Newcastle(R. Co. Down Golf Club)	J. Howden, Esq. ....	5	1	8	10	43·34
D " (Tullymore Park).....	The Earl of Roden.....	5	1	0	276 T	66·19
D Seaforde .....	Major W. G. Forde ...	8	0	5	180 T	40·31
3.—STRANGFORD LOUGH. 260 sq. mi.						
4.—COAST STREAMS. 47 sq. mi.						
Donaghadee .....	Meteorological Office...	8	1	6	40	30·91
5.—BELFAST LOUGH. 206 sq. mi.						
6.—BANN—Lough Neagh, East. 7 sq. mi.						
7.—BANN, UPPER. 162 sq. mi.						
D Mourne Mountains(Fofanny Res.)	J.H.H.Swiney, Esq.C.E.	5	1	0	938	82·32
D Rathfryland (Ballynagappoge)...	J. Smyth, Esq., C.E....	5	1	0	300	34·59
Castlewella (Lough Island Res.)	" " " " ...	5	1	0	440 T	52·82
Banbridge (Katesbridge) .....	A. A. Mulligan, Esq...	5	1	0	230 T	32·12
D " (Corbet Reservoir) ...	J. Smyth, Esq., C.E....	5	1	0	234	30·65
" .....	Mr. H. D. Fleming ...	5	1	6	210	34·90
D " (Milltown) .....	J. Smyth, Esq., C.E....	8	0	8	200 T	30·33
D Moyallon House [Portadown] ...	Mr. J. Lynas .....	5	0	5	130 T	32·39
8.—INSULAR. 2 sq. mi.						
<b>ANTRIM. (Area, 1193 sq. mi.)</b>						
1.—BELFAST LOUGH. 107 sq. mi.						
D Lisburn (Ulster Provincial School)	J. Ridges, Esq. ....	5	1	6	208	41·64
D† Belfast (Queen's University) ...	Mr. G. Robinson .....	5	1	0	62 T	37·68
D " (Cave Hill Road) .....	Miss Firth .....	5	1	0	200 T	40·06
D " (Sewage Outfall Works)(R)	Belfast Corporation ...	8	2	11	19	34·55
" (Oldpark Filters) .....	F.W.McCullough Esq.CE	5	3	6	203 T	39·51
Carrickfergus (Dorisland) .....	" " "	5	3	0	250 T	32·35
" (South Woodburn) .....	" " "	5	3	0	640 T	38·60
" (North " ) .....	" " "	5	1	0	735 T	44·06
" (Copeland) .....	" " "	5	3	0	424 T	36·35
" (Lough Mourne)...	" " "	5	3	0	596 T	36·97
2.—GLENARM & C. 186 sq. mi.						
D Glenarm Castle .....	The Earl of Antrim ...	8	0	9	70 T	42·68
3.—BUSH & C. 193 sq. mi.						
D† Bushmills (Dundarave).....	Mr. J. Hatty .....	5	1	0	162 T	31·76
4.—BANN, LOWER. 112 sq. mi.						
Ballymoney (Balnamore) .....	George Smyth, Esq. ...	5	1	5	50 T	27·11
5.—BANN—Lough Neagh, East. 590 sq. mi.						
Stonyford (Belfast W. W.) .....	FWMcCullough Esq.CE	5	1	6	437 T	34·17
Antrim (Ardnaveigh) .....	H. B. Murray, Esq. ...	5	1	0	210	30·11
D Ballymena (Harryville) .....	J. R. Williams, Esq....	5	1	5	150 T	45·40
D Broughshane (Quolie) .....	H. O'Hara, Esq., C.E..	5	1	4	893	39·37
6.—INSULAR. 5 sq. mi.						

## DIVISION XXIII.—ULSTER—(continued).

STATIONS.	AUTHORITIES.	Rain Gauge.				Depth of Rain.	Days with 401 or more recorded.
		Diameter	Height Above Ground.		Height Above Sea Level	1913	
		in.	ft.	in.	feet.	inches.	
<b>LONDONDERRY.</b> (Area, 816 sq. mi.)							
1.—LOUGH SWILLY. 6 sq. mi.							
D Londonderry (Dunruadh) .....	J. H. Welch, Esq.....	5	0	6	130 T	37·23	225
2.—BUSH & C. 9 sq. mi.							
3.—BANN, LOWER. 240 sq. mi.							
4.—BANN—Lough Neagh, West. 196 sq. mi.							
5.—FOYLE & C. 365 sq. mi.							
D Londonderry (Creggan Res.).....	Mr. W. Hutchison.....	8	1	0	320 T	37·73	260
Limavady (Drenagh) .....	M.M. McCausland, Esq.	5	1	6	80 T	34·26	225
D „ (Culmore Ho., Myroe)	J. B. Martin, Esq.....	8	1	0	13	33·41	196
Bellarena.....	Dowager Lady Heygate	5	1	3	7	35·10	219
<b>TYRONE.</b> (Area, 1257 sq. mi.)							
1.—ERNE. 46 sq. mi.							
2.—BANN—Lough Neagh, West. 442 sq. mi.							
Dungannon (Killyman Rectory)...	Rev. E. F. Campbell ...	5	0	11	150	32·21	...
D Cookstown (Lissan House) .....	J. H. Staples, Esq.....	5	0	10	310	33·55	190
3.—FOYLE. 769 sq. mi.							
D Omagh (Edenfel) .....	Lt.-Col. J. B. Buchanan	8	1	0	280 T	40·64	219
D Newtown Stewart (Baron's Court)	Mr. R. Bell.....	5	1	0	250 T	41·59	197
D Sion Mills (Sion House) .....	Miss G. I. Herdman ...	5	3	0	100 T	38·52	221
<b>DONEGAL.</b> (Area, 1875 sq. mi.)							
1.—DONAGH & C. 146 sq. mi.							
2.—LOUGH SWILLY. 273 sq. mi.							
D Letterkenny (District Asylum)...	E. E. Moore, Esq., M.D.	5	1	0	183 T	47·85	243
Rathmullen (Fort Royal) .....	Col. C. Montgomery ...	5	1	4	35	45·78	...
Buncrana (Rockfort).....	late T. Colquhoun, Esq.	5	1	0	55 T	41·53	201
3.—SHEEPHAVEN & C. 307 sq. mi.							
D Milford (The Manse) .....	Rev. W. J. Young.....	5	1	6	150	44·00	237
Dunfanaghy (St. Helen's).....	J.J. MacGrath, Esq., MD	8	1	0	55 T	48·52	234
D „ (Horn Head) .....	C. F. Stewart, Esq. ...	5	2	0	163	47·82	242
4.—GWEEBARRA & C. 341 sq. mi.							
5.—DONEGAL BAY. 322 sq. mi.							
D Killybegs (Rockmount).....	Comm. G. G. Philipps, R.N.	5	1	0	65	59·38	248
6.—ERNE. 68 sq. mi.							
7.—DROWES & C. 10 sq. mi.							
8.—FOYLE. 396 sq. mi.							
D Convoy .....	Rev. Preb. K. Thompson	5	0	9	150 T	49·66	234
9.—INSULAR. 12 sq. mi.							



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