

VI. *An Account and Abstract of the Meteorological Diaries communicated to the Royal Society, for the Years 1729 and 1730.*
By Geo. Hadley, Esq; F. R. S.

THE Society having been pleas'd to refer to me, on the Death of Dr. *Derham*, the Meteorological Diaries transmitted to them from the curious Observers both at Home and in foreign Parts; as soon as they were put into my Hands, I apply'd myself to make an Abstract of them in such Manner as I judg'd may be most useful, and have nearly pursued the Method of Dr. *Derham*, beginning at the Year 1729, where he left off. [See these *Transactions*, N^o 435.]

Before I proceed to the Tables, I think it proper to give some Account of each of the Diaries of these two Years, and their Contents, that any Member of the Society, that may have Occasion to make farther Inquiries into these Matters, may be acquainted what is to be found therein, and what Pains have been bestowed by the curious Observers.

The Diary kept by Mr. *Hauksbee*, by Order of the Society, at their House in *Crane-Court*, consists of Observations of the Barometrical Heights twice a Day, *i. e.* Morning and Evening, in Inches, Decimals and Centesimals; the Thermometer likewise, in its proper Graduations, which, I suppose, are already well known to the Curious, and the Weather, with the Hour of each Observation. The Winds are omitted. The Depth of Rain is set down several times for the most part in each Month, the Sum of which is to be divided

divided by 10, the Funnel which catches the Rain being so much bigger in Surface, than that of the Vessel which receives the Rain from it.

That from *Southwick* near *Oundle* in *Northamptonshire*, by *George Lynne*, Esq; contains the Height of the Barometer once a Day, and the Winds, the Steadiness and Strength of which is likewise mark'd with proper Marks and Figures. Observation is made of the upper and under Currents of the Air, when it so happen'd. The Thermometer is mark'd twice a Day; the Weather often, both by Day and Night; the Rain from time to time, and the Quantity of each particular Shower often set down by itself, with some other miscellaneous Observations, as Haloes, Thunder-storms, and sudden Changes of Wind, &c. He takes Notice of his Thermometer being placed in an Out-house expos'd to the Air, but screen'd from the Sun, which is a proper Precaution in using that Instrument. The remarkable Rises and Falls of the *Mercury* are also mark'd with proper Marks; which Method would be useful in the other Columns also, for Comparison of Diaries, if some certain Rule were agreed on.

That from *Kent*, 16 Miles South East from *London*, gives an Account of the Barometer once a Day, sometimes twice or thrice, with the Hour of each Observation, and the Winds, Weather, and Rain, the Proportion of which for every Day, is given at the End of each Month. There is also a separate Column for the Height of the Clouds, which he divides into three Orders; and where there are two Orders at a Time, they are both noted; as also when any of them move with different Velocities or Directions, which
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he supposes to be commonly a Sign of Change of the Wind: But he does not inform us by what Method he determin'd their Heights or Velocities. The reigning Wind, and general Strength of it, is noted at the End of each Month; the Eclipses also, and the Times of the New Moons; which he observes make it appear, that the Notion of the Change of Weather depending on the Age of the Moon, is without any Ground: With other Miscellaneous Observations; as the *Aurora Borealis*, Fruitfulness or Sterility of the Season. He had no Thermometer.

That from *Hudicksvall* in *Sweden*, by Mr. *Olave Broman*, shews the Height of the Barometer sometimes once, sometimes twice or thrice a Day, *O. S.* in *English* Measure, with the Winds, and the Strength of them, and the Weather. There is also to the Diary 1729, annex'd an Account of the Height of the Sea-water for every Day, which I observe varies in the whole about two Inches, and is sometimes interrupted by Floods from Rain. This, I suppose, may relate to the Tides in the Gulph of *Bothnia*. I have not insert'd these in the Tables, not being of general Use. There is no Thermometer, nor the Quantity of Rain, set down.

That from *Risinge* in *Ostrogothia* in *Sweden*, by *Sueno Laurelius*, Pastor and Provost, gives the Height of the Barometer for the most part three times, sometimes five times a Day, with the Hour of the Observations, *O. S.* in *English* Measure. He refers for the Descriptions of his Barometer and Thermometer to the Diary 1727. The Winds, with the Degree of their Strength, Weather, and Depth of Rain, are also set down.

In that from *Upsal* in *Sweden*, by Mr. *Andrew Celsius*, *Astr. P. R.* and *F. R. S.* Observations are made three times a Day, of the Barometer and Thermometer, both which Instruments were made by Mr. *Hauksbee*; the Winds, with their Strength, and the Weather, and Depth of Rain, from time to time.

That from *Svenaker* in *Sweden*, near *Trollhetta*, by *Torstanus Wassenius*, *V. D. M. &c.* contains the Height of the Barometer twice a Day, sometimes three times, *O. S.* in *Swedish* Feet and Inches and Decimals, which being suppos'd to be in Proportion to *English* as 974, 375 to 1000, the mean Heights are reduced in the Tables following into that Measure. The Winds also, with their Strength, are noted, and the Weather. There is no Thermometer. Notice is taken of Thunder Storms, and other Meteors *.

That from *Lunden* in *Sweden*, by Mr. *Conrad Quensel*, Math. Prof. in Acad. *Carolina*, contains Observations of the Barometer twice a Day, *O. S.* in *English* Inches and Decimals, and 4ths of them; the Winds, with their Strength, and the Weather. The Thermometer is *Florentine*, and therefore the Observations not inserted in the Table. The monthly Mean there given, is taken simply between the two Extremes: I have given it in the Tables taken the other way, as all the rest are.

* Note, In the Account of the *Swedish* Diaries 1728, *Svenaker* is said to be 109 *London* Feet above the Surface of the Sea. The mean Height of the Barometer there in these two Years is but 29 Inches, 47, which would give the Height of the Place near 450 Feet, according to the Reckoning hereafter in this Paper; therefore I think there must be some Mistake. Perhaps some Air might have got into the Top of the Tube, or the Scale placed too high.

That from *Bygdea* in *Sweden*, by Mr. *John Tenius*, Pastor there, has Observations of the Barometer twice a Day, Morning and Evening, *O. S.* in *English* Inches and Decimals; the Winds, with their Strength, and Weather. The two last Months are wanting. There is no Thermometer.

That from *Betna* in *Sudermanland*, by Mr. *And. Geringius*, Pastor and Provost, has Observations of the Barometer thrice a Day, except in the first Part of *January*, *O. S.* in *English* Inches and Decimals; the Winds, with their Strength, and Weather, with other Meteorological Observations, and upon the Seasons, as to Fruitfulness and Sterility, &c. The *Aurora Borealis* is frequently mention'd. The Thermometer is peculiarly graduated, and so could not be inserted. There is a Column for Rain, with Marks, which I understand not.

From *Wittemberg* in *Saxony*, there are two Diaries communicated, one from Mr. *Mat. Hæsius*, Math. Prof. the other from Mr. *J. Fred. Weidler*, LL. B. and *Math. Prof. Primar.* That by Mr. *Hæsius* has the Height of the Barometer several times a Day, sometimes four or five times, *O. S.* in *English* Inches and Decimals, and the Parts of these in vulgar Fractions, but are reduc'd to Decimals in the Tables. He used two Barometers and Thermometers. Those mark'd I, are Mr. *Hauksbee's*, those mark'd II, *Florentine.* The coldest Day he ever observed, was *February* the 5th 1726. It contains also the Winds, with their Strength, and Weather. Mr. *Weidler* gives the Height of the Barometer three times a Day, *N. S.* in *Paris* Inches and Lines, and the Parts of these in vulgar Fractions; the Winds also, with their Strength, and

and the Weather, and Quantity of Rain, in Cubes and Lines, but at the End of each Quarter the Depth is given in *Paris* Inches and Lines. The Thermometer is Mr. *Hauksbee's*. There are some Astronomical Observations of Eclipses, &c. He takes Notice, that an Occultation of *Venus* by the *Moon*, observ'd with a Telescope of 18 Feet, may serve to prove the *Moon* to have an Atmosphere; for being then in its Quadrature with the *Sun*, it appear'd to lose its Cusps, and become oval, when it came near the *Moon*. I have in these two Years made use of Mr. *Hasius's* Barometrical and Thermometrical Observations, being in the *O. S.* and *English* Measure, though the three last Months of 1730 are wanting. The Depth of Rain is taken from Mr. *Weidler*, and reduc'd out of the *Paris* to *English* Measure, being suppos'd to be as 1068 to 1000, but is not reduc'd to the *Old Style*. Mr. *Weidler* refers to his Dissertation upon Meteorological Observations sent to the Society. The Year 1730 he observes to have been more than had been known wet and cold, and the Sky very misty.

That from *Padua*, by the Marquis *Poleni*, shews the Height of the Barometer once a Day, *O. S.* in *English* Inches and Decimals; the Winds, and sometimes their Strength, and Weather. A particular Account of his Thermometer has been publish'd formerly in the *Transactions*, and also his Observations upon his Diaries, containing in the whole six Years. (*Transf.* N^o 421). The Depth of Rain is given both for the *Old* and *New Style*.

That from *Bengal*, by Mr. *Bellamy*, Preacher to the Factory, has the Height of the Thermometer twice a Day, Morning and Evening; the Winds,

with their Strength, and the Weather, for the Year 1730. The Medium of the Thermometer is taken from both the Evening and Morning Heights, the Difference there being very great in Proportion between Morning and Evening.

That from *Boston* in *New-England*, by *Paul Dudley*, Esq; F. R. S. shews the Weather three times a Day, and Wind once or twice. No Barometer or Thermometer.

There is one of the Year 1729, seems to be *Swedish*; but finding neither the Author's Name nor Place, I have not inserted it.

In the Year 1730, those from *Crane-Court, Southwick, Kent, Hudicksvall, Ostrogothia, Upsal, Svenaker, Lunden, Betna, Wittemberg, Padua* and *Boston*, are continued in the same Manner. There is none from *Bygdea*. The *Abo* Observations for the Year 1730, by Mr. *D. Sporing*, shew the Height of the Barometer twice a Day, in *Swedish* Inches and Decimals, but the mean Heights are reduc'd to *English* in the Tables. They shew also the Winds and Weather, and in the last Column the *Aurora Boreales*, which are frequent in most Months of the Year.

That from *Naples*, by *Cyrillus*, shews the Height of the Thermometer, which is Mr. *Hauksbee's*, once a Day. The Winds, with their Strength, and Weather, and Depth of Rain in *Neapolitan* Measures, 23 of which make a *London* Inch, and are reduc'd thereto in the Tables. The Barometrical Heights he has not set down, because he found them not to agree with those of former Years, which made him suspect his Instrument to be out of Order; but as it appears he had remov'd his Habitation, it might be owing to its being
situated

situated higher or lower than the former. An Eruption of *Vesuvius* happening, an Account is given of it, and of Damage done by Lightning, and also of the Seasons, as to Fruitfulness and Healthiness. (See *Transf.* N^o 424).

Note, In some of the Diaries, the Numbers shewing the Decimal Parts of the Inches, are set down in single Figures, without any Rule or Cypher to distinguish them from the Centesimals, and in others the Centesimals in like manner; but 'tis easy to make a Judgment of the Author's Method by Consideration of them.

Having given an Account of the Method and Contents of the several Diaries, I now proceed to the Tables extracted out of them. The Barometrical Table consists of two Parts: The Upper shews the mean Height of the Barometer, taken in the Method propos'd formerly by Dr. *Jurin*, for every Month throughout the Year, for each Place; and in each Column the highest Month is mark'd with an *h*, the lowest with an *l*, to make them more observable to the Eye. At the Bottom, the Mean of the whole Year is set down for each Place. At the Foot of this Table is another, shewing the greatest Ascent and Descent of the *Mercury* in that Year, with the particular Day of each, the Difference of which is the Range: Which Circumstance Dr. *Derham*, and other Observers, have used generally to take Notice of.

Next follows the Table of the monthly Thermometrical Heights, extracted in Dr. *Jurin's* Method also, in every Place where the Society's Instruments were used; and at the Bottom the Mean of the whole Year, and also the hottest and coldest Day in each

Place. In the last Place, the Tables of the Depth of Rain, where it is contain'd in the Diaries.

I chose to put each of these Matters in separate Tables, that the Eye may be able to take a View of the Whole, and compare the State of each Place with the others, as to each Particular, with less Confusion, as also because several of the Diaries have nothing upon one or more of these Heads.

Note, The mean Heights of both Barometer and Thermometer are extracted only from the Morning Observations, some of the Diaries containing no more; and judging it sufficient to the present Design of these Tables, except in the mean Heights of the Thermometer at *Bengal*, which are taken from both Morning and Evening Observations.

A Table of the monthly mean Barometrical Heights, and also of the greatest Ascents and Descents of the Mercury observed in several Places, in the Year 1729, in Inches and Decimals,

| 1729. | Crane-Court, London. Lat. 51° 31 | Southwick in Northamptonsh. Lat. 52° 54 | In Kent. Lat. 51° | Hudicksvall in Sweden. Lat. 62° | Ofstrogobia in Sweden. Lat. 56° | Upsal in Swe- den. Lat. 59 48 |
|-------------------------------|--|---|----------------------|---------------------------------------|---------------------------------------|-------------------------------------|
| January | 30 08 | 29 70 | 29 41 h | 29 49 | 29 20 1 | 29 43 1 |
| February | 02 | 66 | 37 | 30 02 | 576 | 92 |
| March | 29 93 | 54 | 37 | 29 63 | 27 | 55 |
| April | 93 | 60 | 26 | 30 04 h | 62 h | 30 16 h |
| May | 95 | 57 | 29 | 29 82 | 38 | 29 71 |
| June | 30 07 | 69 | 36 | 86 | 35 | 74 |
| July | 29 97 | 64 | 28 | 69 | 20 1 | 60 |
| August | 30 09 n | 72 h | 38 | 78 | 35 | 65 |
| September | 29 69 | 42 | 09 | 90 | 42 | 81 |
| October | 83 | 52 | 09 | 55 | 32 | 54 |
| November | 61 1 | 32 1 | 28 94 1 | 45 1 | 25 | 54 |
| December | 83 | 52 | 29 25 | 75 | 52 | 79 |
| Mean of the whole Year. | 29 91 | 29 575 | 29 257 | 29 548 | 29 371 | 29 73 |
| ☉ Highest | 30 55 Feb. 20. | 30 11 Feb. 20. | 29 90 Feb. 20. | 30 00 Feb. 23. | 30 35 Feb. 27. | 30 59 Feb. 27. |
| ☾ Lowest | 28 75 Nov. 25. | 28 48 Nov. 25. | 28 16 Nov. 25. | 28 43 Oct. 12. | 28 15 Jan. 20. | 28 70 Jan. 18. |
| Differ | 1 80 | 1 63 | 1 74 | 2 17 | 2 20 | 1 89 |

C.

The foregoing Barometrical Table continued.

| 1729. | Svenaker in Sweden. Lat. 58° 10 | Lunden in Sweden. Lat. 55 42 | Bygdea in Sweden. Lat. 63 40 | Betna in Sweden. Lat. 52 | Wittenburg in Saxony, by Mr. Hafius. Lat. 52 | Padua in Italy. Lat. 45 15 |
|-------------------------|------------------------------------|---------------------------------|---------------------------------|-----------------------------|---|-------------------------------|
| January | 29 44 | 29 42 | 29 18 | 29 77 | 29 83 h | 20 74 |
| February | 62 | 54 | 76 | 30 18 h | 778 | 725 |
| March | 28 | 38 | 41 | 29 84 | 65 | 66 |
| April | 65 h | 57 | 82 h | 30 17 | 64 | 85 |
| May | 44 | 48 | 61 | 20 89 | 35 | 67 |
| June | 56 | 59 h | 63 | 88 | 77 | 74 |
| July | 43 | 44 | 50 | 72 1 | 34 1 | 63 1 |
| August | 52 | 57 | 57 | 84 | 79 | 79 |
| September | 51 | 44 | 76 | 92 | 65 | 65 |
| October | 37 | 46 | 33 1 | 76 | 67 | 75 |
| November | 18 1 | 33 1 | | 75 | 51 | 64 |
| December | 53 | 52 | | 99 | 74 | 89 h |
| Mean of the whole Year. | 29 46 | 29 47 | 29 557 | 29 892 | 29 643 | 29 727 |
| ♀ Highest | 30 41 Feb. 28. | 30 40 Feb. 27. | 30 36 Feb. 23 | 30 70 Feb. 18. | 30 50 Jan. 7. | 30 30 Dec. 20 |
| Lowest | 28 31 Jan. 18. | 28 23 Jan. 18. | 28 18 Oct. 12. | 28 75 Oct. 12 | 28 95 Nov. 27. | 28 90 Nov. 10. |
| Differ. | 2 10 | 2 17 | 2 18 | 1 95 | 1 55 | 1 40 |

b.

D.

A Table of the monthly mean Thermometrical Heights in several Places in the Year 1729.

| 1729. | Crane-Court. | Southwick. | Upsal. | Wittemberg. |
|-------------------|--------------|-------------|--------------|----------------|
| January | 67 3 | 70 | 80 | 70 9 |
| February | 69 2 | 74 | 82 7 | 67 5 |
| March | 60 8 | 69 | 70 6 | 56 3 |
| April | 55 2 | 61 | 58 9 | 51 6 |
| May | 42 6 | 53 | 48 5 | 36 0 |
| June | 34 9 | 43 | 37 3 | 30 2 |
| July | 33 1 | 42 | 35 1 | 29 0 |
| August | 33 8 | 43 | 40 4 | 29 65 |
| September | 38 6 | 46 | 47 1 | 37 6 |
| October | 51 1 | 57 | 60 8 | 50 2 |
| November | 56 8 | 60 | 66 3 | 59 6 |
| December | 58 8 | 63 | 71 4 | 70 6 |
| Mean of the Year. | 50 1 | 56 7 | 57 6 | 49 09 |
| Thermom. | | | | |
| Highest | 12 5 June 10 | 13 June 10. | 22 5 June 9. | 14 75. May 23. |
| Lowest | 80 5 Jan. 7. | 88 Jan. 4. | 97 Jan. 5. | 95 0. Jan. 1. |

A Table of the Depths of Rain which fell in several Places in the Year 1729. in Inches and Decimals.

| 1729. | Crane-Court. | South-wick. | Kent. | Ostrogothia. | Upsal. | Wittembergs, Stylo Novo. | Padua. |
|-----------|--------------|-------------|--------|--------------|--------|--------------------------|---------|
| January | 1 379 | 1 16 | 1 499 | 3 30 | 1 153 | | 1 585 |
| February | 1 785 | 1 48 | 1 569 | 1 050 | 1 027 | | 1 5245 |
| March | 1 125 | 1 31 | 1 286 | 3 600 | 3 826 | 1 48 | 2 5902 |
| April | 1 600 | 1 10 | 2 197 | 3 005 | 3 000 | 2 5905 | 2 5768 |
| May | 1 515 | 1 55 | 2 216 | 3 865 | 3 875 | 1 94 | 2 5634 |
| June | 1 200 | 0 83 | 1 730 | 2 930 | 2 450 | 3 815 | 3 134 |
| July | 1 54 | 2 26 | 2 153 | 1 615 | 2 578 | 1 31 | 4 526 |
| August | 3 94 | 2 44 | 2 533 | 1 405 | 3 747 | 1 365 | 5 578 |
| September | 3 505 | 5 32 | 2 343 | 2 940 | 2 687 | 1 78 | 3 5267 |
| October | 1 420 | 2 20 | 2 218 | 1 050 | 3 139 | 1 43 | 6 5294 |
| November. | 2 425 | 4 18 | 4 334 | 2 150 | 3 855 | 1 305 | 4 5186 |
| December | 1 950 | 1 68 | 1 947 | 3 040 | 1 140 | 1 295 | 2 5804 |
| Total. | 20 3144 | 23 51 | 23 525 | 21 480 | 14 477 | 11 5625 | 35 5423 |

A Table of the monthly mean Barometrical Heights, and also of the greatest Ascents and Descents of the Mercury observed in several Places, in the Year 1730, in Inches and Decimals.

| 1703. | Crane-Court, London. Lat. 51° 31 | Southwick in Northamptonsh. Lat. 52° 54 | In Kent. Lat. 51° | Hudicksvall in Sweden. Lat. 62° | Oftrogotbia in Sweden. Lat. 56° | Upsal in Swe- den. Lat. 59 48 |
|-------------------------------|--|---|----------------------|---------------------------------------|---------------------------------------|-------------------------------------|
| January | 30 ,04 | 29 ,79 | 29 51 h | 29 61 | 29 50 | 29 66 |
| February | 29 ,61 | 39 | 06 | 50 1 | 29 | 60 |
| March | 52 1 | 34 1 | 03 1 | 77 | 45 | 79 |
| April | 90 | 66 | 37 | 77 | 52 | 77 |
| May | 76 | 55 | 15 | 68 | 58 | 72 |
| June | 83 | 60 | 24 | 75 | 35 | 75 |
| July | 84 | 61 | 31 | 82 | 21 | 78 |
| August | 94 | 70 | 39 | 75 | 38 | 74 |
| September | 90 | 34 1 | 37 | 75 | 44 | 75 |
| October | 68 | 49 | | 06 h | 64 | 93 h |
| November | 79 | 55 | | 50 1 | 26 1 | 56 1 |
| December | 30 ,09 h | 83 h | | 84 | 68 h | 80 . |
| Mean of the whole Year. | 29 ,825 | 29 ,57 | 29 ,27 | 29 ,725 | 29 ,455 | 29 ,745 |
| ♀ Highest | 30,35 Dec. 1. 13. | 30,30 Jan. 10. | 30,01 Jan. 10. | 30,30 Dec. 1. | 30,40 Dec. 1. | 30,71 Dec. 1. |
| Lowest | 28,70 Mar. 8. | 28,53 Mar. 8. | 28,28 Mar. 8. | 28,70 Dec. 10. | 28,45 Jan. 18. | 28,90 Dec. 10. |
| Differ. | 1,65 | 1 577 | 1 573 | 1,82 | 1,95 | 1,81 |

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The foregoing Barometrical Table continued.

| 1730. | Svenaker in Sweden. Lat. 58° 10 | Lunden in Sweden. Lat. 55 42 | Betna in Sweden. Lat. 58 49 | Abo in Finland. Lat. 60 40 | Wittemburg in Saxony, by Mr. Hafius. Lat 52 | Padua in Italy Lat. 45 15 |
|-------------------------|------------------------------------|---------------------------------|--------------------------------|-------------------------------|--|------------------------------|
| January | 29 39 1 | 29 57 | 29 96 | 29 68 | 29 823 h | 29 88 |
| February | 46 | 23 1 | 81 | 435 | 428 1 | 55 |
| March | 42 | 34 | 97 | 61 | 48 | 46 1 |
| April | 59 h | 56 | 30 03 | 705 | 677 | 69 |
| May | 54 | 46 | 29 89 | 55 | 99 | 67 |
| June | 53 | 55 | 89 | 60 | 667 | 67 |
| July | 40 | 51 | 87 | 665 | 671 | 69 |
| August | 53 | 59 | 89 | 56 | 776 | 80 |
| September | 48 | 57 | 30 04 | 30 05 h | 80 | 82 |
| October | 56 | 61 | 11 | 29 76 | 72 | 76 |
| November | 46 | 30 | 29 74 1 | 355 1 | 96 h | |
| December | 43 | 65 h | 30 12 h | 68 | | |
| Mean of the whole Year. | 29 48 | 29 495 | 29 943 | 29 537 | 29 501 | 29 505 |
| ♀ Highest | 30 42 Dec. 1. | 30,22 Dec. 1. 13. | 30,98 Dec. 1. | 31,20 Dec. 1. | 30,37 Jan. 30. | 30,40 Dec. 20. |
| Lowest | 28 43 Dec. 10. | 28,61 Dec. 31. | 28,96 Dec. 10. | 28,64 Nov. 23. | 29,00 Feb. 27. | 28,98 Feb. 27. |
| Differ. | 1 99 | 1,61 | 2,02 | 1,56 | 1 37 | 1 42 |

B.

D.

A Table of the monthly mean Thermometrical Heights in several Places in the Year 1730.

| 1730. | Crane-Court. | Southwick. | Upsal. | Wittemberg. | Naples. | Bengal. |
|------------------|------------------------|--------------------|------------------------|-------------------------|---------------------|----------------|
| <i>January</i> | 67 9 | 69 | 74 | 72 | 50 5 | 30 |
| <i>February</i> | 63 | 68 | 72 | 67 | 48 3 | 22 34 |
| <i>March</i> | 56 27 | 62 | 74 5 | 60 | 40 | 6 29 |
| <i>April</i> | 50 2 | 58 | 56 2 | 48 | 40 | 4 30 |
| <i>May</i> | 41 30 | 49 | 42 4 | 35 | 40 | 5 2 |
| <i>June</i> | 37 7 | 46 | 29 9 | 29 | 19 5 | 5 3 |
| <i>July</i> | 35 22 | 42 | 21 90 | 26 | 16 7 | 8 38 |
| <i>August</i> | 33 8 | 44 | 34 05 | 29 | 14 2 | 9 34 |
| <i>September</i> | 39 8 | 47 | 50 21 | 40 | 22 6 | 6 32 |
| <i>October</i> | 50 1 | 55 | 62 20 | | 29 | 14 34 |
| <i>November</i> | 55 5 | 59 | 72 27 | | 40 1 | 23 34 |
| <i>Decemb.</i> | 49 51 | 70 | 73 10 | | 49 9 | 32 33 |
| Mean | 48 35 | 55 | 55 22 | | 34 3 | 14 302 |
| Highest | 10. 5. <i>July</i> 25. | 16 <i>July</i> 24. | 9. 1. <i>July</i> 27. | 11. <i>July</i> 25. | 9. <i>Aug.</i> 17. | 0 <i>Jan.</i> |
| Lowest | 77. 5. <i>Jan.</i> 7. | 83 <i>Dec.</i> 14. | 86. 7. <i>Mar.</i> 16. | 81. 50. <i>Jan.</i> 15. | 60. <i>Jan.</i> 10. | 40 <i>Dec.</i> |

A Table of the Depth of Rain which fell in several Places in the Year 1730. in Inches and Decimals.

| 1730. | Crane-Court. | South-wick. | Kent. | Ofrogothia. | Upsal. | Wittembers, Stylo Novo. | Naples. | Padua. |
|-----------|--------------|-------------|---------|-------------|---------|-------------------------|---------|---------|
| January | 450 | 45 | 624 | 795 | 164 | 78 | 3 89 | 112 |
| February | 1 230 | 1 53 | 2 054 | 870 | 412 | 1 68 | 1 434 | 2 906 |
| March | 3 595 | 2 61 | 4 067 | 2 730 | 1 983 | 2 86 | 739 | 4 592 |
| April | 5670 | 84 | 985 | 605 | 105 | 1 98 | 2 39 | 1 638 |
| May | 1 755 | 2 5 | 1 805 | 2 260 | 4 120 | 3 23 | 1 39 | 4 467 |
| June | 3 755 | 3 39 | 2 876 | 1 535 | 755 | 2 31 | 1 00 | 6 505 |
| July | 2 390 | 1 93 | 2 598 | 2 445 | 1 904 | 2 01 | 2 173 | 2 339 |
| August | 020 | 0 85 | 131 | 595 | 525 | 3 07 | 0 0 | 4 269 |
| September | 2 100 | 1 65 | 2 043 | 3 140 | 1 579 | 2 16 | 2 67 | 1 090 |
| October | 2 460 | 2 94 | 2 424 | 1 670 | 1 103 | 61 | 2 52 | 5 254 |
| November | 1 570 | 1 93 | 2 065 | 915 | 831 | 2 97 | 2 91 | 0 534 |
| December | 1 500 | 81 | 1 322 | 890 | 1 105 | 2 09 | 3 22 | 0 894 |
| Total. | 21 5495 | 21 50 | 22 5924 | 18 360 | 14 5646 | 25 375 | 24 3336 | 34 3300 |

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First, I observe upon the Barometrical Tables of these two Years, that they confirm former Remarks made by Dr. *Derham* and others, of the Consent of the Barometers in Places at a good Distance from each other. Not only the monthly mean Heights agree in the three Diaries of these two Years here in *England*, but also the greatest Ascent and Descent of the *Mercury* happen commonly on the same Day, and the Barometers have been found to agree in their Motions to an Hour, so far asunder as *Townly* in *Lancashire*, and *Greenwich* near *London*, which is near 160 Miles, although that might be partly accidental. The Barometer at *Crane-Court* and *Southwick*, distant about 55 Miles, being compared, seem very seldom to vary from their mean Difference above $\frac{1}{10}$ and $\frac{1}{2}$ each way; at *Southwick* and *Kent* something more. From whence it might be expected, that the Weather should be much the same in all these Places; which nevertheless seems not to agree with Accounts in some Years from different Parts in this Island, not very far distant: And I myself have observed sometimes Clouds to lie in one Part of the Horizon for a great Part of a Day, which have discharg'd a large Quantity of Rain in Places not far off, while the Place, where I have been, has all the while enjoy'd fair Weather, and *vice versa*. Whence it appears, that the Barometrical Alterations of the Air extend farther than their Effects, as to the Production of Rain, at those times. Comparing the Diaries of *Crane-Court* and *Upsal*, I find the Barometers vary from their mean Difference an Inch and half each way; *Crane-Court* and *Padua* as much, or more, and often go a pace quite contrary ways at the same time, and their
monthly

monthly Differences are also very variable, so that their Agreement at any time seems to be but accidental.

Secondly, I observe, that the Descents of the *Mercury* below the mean Heights of each Place, taken in this way of Dr. *Furin's*, are generally much greater than the Ascents of it above; and there are also other extraordinary Descents of the *Mercury* in every Year, of the same kind. The Reason I take to be, because the Expansion of the Air, whereby it becomes lighter in some one Place, being the Original of the Alterations in the Atmosphere, its Effects by Condensation or Accumulation of the Air in the Places round about will be more dispersed, and therefore less sensible.

Thirdly, The Variation or Range is greater the farther North, as has been heretofore observed, and appears in these Tables, in which I have put the Latitude of each Place; and likewise 'tis greater generally in the Winter than Summer Months. The Sum of the Motion of the *Mercury* upwards and downwards, taken from the *Berlin* wandering Line, with a Pair of Compasses, in the Year 1726, amounts to about 76 Inches, which gives $5\frac{1}{2}$ for a Month, and about 0,21 for each Day. But the Barometer is by much most steady in the Summer.

Fourthly, The mean Height of the Barometer hath already been apply'd to determine the respective Heights of Places, and also the absolute Height above the Surface of the Sea. Dr. *Scheuchzer*, in his Tables publish'd in the *Transactions* of this Society, N^o 405, 406. supposes, from Mr. *Marriot*, the mean Height at the Surface of the Sea to be 28" 1''' *Paris* Measure, which
reduced

reduced to *English*, gives 29 Inches, 993. This agrees very well with a Diary communicated to the Society, containing 10 Months of the Year 1723, and *January* 1724; the Author of which found by Experiment, that in the Place where his Barometer was kept, the *Mercury* stood $\frac{1}{10}$ and $\frac{1}{2}$ higher than at the Surface of the Sea, which was not far from his Habitation. The mean Height of the Barometer for those 10 Months (leaving out the *January* following, which seems to be a very irregular Month) I find to be 29, 825, to which adding $\frac{1}{10}$ $\frac{1}{2}$, it will give the mean Height at the Surface of the Sea 29, 975; so the Difference between these is only .018, and therefore probably may be near the Truth, but may hereafter be more exactly determin'd by Experiments. Then allowing about 90 Feet, or rather less, for each 10th of an Inch in Height of the *Mercury* in smaller Altitudes, or in greater according to the Tables calculated for that Purpose, by Dr. *Scheuchzer* and Dr. *Nettleton*, and publish'd in the *Transactions* of this Society, *l. c.* & N^o 388. you will have the Height of each Place pretty near, provided the Observations be carefully made, and continued for a sufficient Time; for the yearly mean Heights in one of the Places in these Tables appear to differ near $\frac{1}{10}$ of an Inch in these two Years; and in most of them, the last of these two Years exceeds the first, two or three Hundredths: The Barometer also ought not to be remov'd to a lower or higher Place.

Upon the Thermometrical Tables, and those of the Rain, I have at present no Remarks to make, but what are obvious on first Sight; only that the Thermometers agree, especially as to the hottest Days in the Year,

Year, more than might be expected from Places at such a Distance.

The Winds are of so uncertain and variable a Nature, that they require a more than ordinary Care and Diligence in making the Observations, and a great Length of Time, and Comparison of a vast Number of them, before any thing can be deduced more than is commonly known; and therefore I shall not endeavour to do it at this Time, but only give this Hint, that if the Observers would take particular Notice, in great Storms, of the Time when the *Mercury* first begins to rise, whether before, or after, or in the very Height of it, it might be a Direction to judge when an Abatement or Increase of it might be expected, (if any regular Order should be found therein) which might be serviceable on some Occasions. But if any Attempt should be made to lay down any thing certain concerning the Rise and Progress of the variable Winds, it will appear, by considering the Cause of the Trade-Winds, that for the same Cause the Motion of the Air will not be naturally in a great Circle, for any great Space, upon the Surface of the Earth any-where, unless in the Equator itself, but in some other Line; and, in general, all Winds, as they come nearer the Equator, will become more and more easterly, and as they recede from it, more and more westerly, unless some other Causes intervene.

These are all the Observations I have at present to offer on this Subject, which I should have been glad if they had been more material, and answerable to the Labour bestow'd by the curious Observers; but they may assure themselves, that the Diaries communicated to the Society will be carefully preserved, for the Perusal

fal of those who may be inclin'd to inquire farther into this Part of Nature ; and perhaps by the Continuance of this Method, in Proceſs of Time, a Diſcovery may be made of ſome regular Courſe in theſe Things, which may be of Uſe.

VII. *A Collection of the Observations of the Solar Eclipse, Feb. 18. 1736-7. ſent to the Royal Society.*

I. *The Sun's Eclipse on February 18. 1737. obſerved in Fleetſtreet, London, by Mr. Geo. Graham, F. R. S.*

| | | Apparent Time. | | | |
|----|---|----------------|------|------|---|
| | | Ho. | Min. | Sec. | |
| At | 2 | 25 | 9 | | P. M. a ſmall Impreſſion appear'd on the Sun's Limb; I judge the Beginning to have been about five or ſix Seconds ſooner. |
| | 3 | 21 | 28 | | The Middle of the firſt and larger Spot was cover'd. |
| | | 29 | 30 | | The Middle of the ſmaller Spot. |
| | | 40 | 4 | | The Cuſps perpendicular. |
| | 4 | 3 | 34 | | The Cuſps horizontal. |
| | | 35 | 32 | | The Middle of the larger Spot emerged. |
| | | 38 | 21 | | The ſmaller emerged, or a little before. |