

pendent Barometer

Marine Barometer

Weather all Sorts and Glasses of for Sea and Land

1 This rises and Falls above a Foot Perpendicular in an open Tube without a Cistern of mercury at the bottom of it

A Prof Glass to Show y^e Waight of Liquids

A Prof Glass to Show y^e Waight of Liquids



Approved by Several Persons of the Royal Society

2 This moves 30 Inches for Fair & Foul weather & hath on the right hand a Thermometer. Shewing 90 degrees between the greatest Heat & Cold and a large Looking-glass in the middle.

3 The Mercurial & Marine Barometer & Thermometer are for Sea, all fitted in one Frame.

Maid by J. Patrick In y^e Old Bailey London

A New Barometer with a Thermometer from a Span to any Length, fitted for Travelling;



BAROSCOPOLOGIA;

OR, A

Discourse of the

BAROSCOPE,

OR

Quicksilver Weather-Glass.

SHEWING,

I. The Grounds and Original of the Baroscope.

II. A Description of the Baroscope.

III. How to know the Goodness of a Baroscope or Quick-silver Weather-Glass.

IV. The whole Method of setting up the Weather-Glass, and filling it with Mercury.

V. How to adjust the Baroscope, that it may perform its Office well.

VI. Some Directions about removing a Baroscope, when there is occasion.

VII. Rules to foreknow or predict the Weather, by the Baroscope.

Very useful for all Gentlemen and others, that are Accommodated with this necessary Instrument.

By *Richard Neve, Philomath.*

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BAROSCOPOLOGIA,

OR,

A Discourse of the Baroscope;

OR

Quick-silver Weather-Glass.

I. *The Grounds and Original of the Baroscope.*

AMongst the many Worthy and Indefatigable Experiments, that have been made by the Ingenious and Judicious Philosophers of the last ^{Acroscopion.} Age; it was the lot of *Torricellius* (a Learned Philosopher of *Florence* in *Italy*) to be (in the Year 1643.) the first Discoverer of this *Pha-* ^{Essays of Nat. Exper.} *nominan*, of the subtle and Occult motion of *Mercury* or *Quick-silver*; which was by making this following Experi-

Experiment.

He took a Glass Tube of about a Yard in Length, closed at one end, and open at the other; at which open end he fill'd it with *Mercury* or *Quick-silver*; then stoping the open end with his Finger, he gently Inverted the Tube, and immers'd the open end into a Vessel of stagnant *Mercury*; and immediately found that the *Mercury*, which before filled the whole Tube, did now in part subside into the lower Vessel of *Mercury*, leaving a void space (in the top of the Tube) of about 6 or 7 Inches long.

The Learned Author having Published this his *Experiment*, (together with his Opinion about-it,) it soon run through all *Europe*, under the Name of the *Torricellian Experiment*,

riment ; and has since Employ'd the Thoughts of many Learned Men, and given them occasion (after they had Reiterated the Experiment) to Publish their several Sentiments thereon : Some of which were *Gassendus, Kircherus, Helmont, Scotus, Magnanus, Linas, Honoratus Faber, Monsieur Paschal, Monsieur Pacquet, Mr. Sinclere* : And of our own Nation, the Illustrious *Mr. Boyle, Judge Hale, Doctor Wallis, Mr. Hobbs, Mr. Charleton*, and others.

Now, while it was thus nicely Examining, by so many Ingenious and exquisite Searchers into Nature ; they found the *Mercury* not always keeping the same Station, but sometimes *ascending*, and then again *subsiding*, according as the Air was inclin'd to *Drought*, or *Moisture* ; the *Mercury ascending* against dry Weather, and *descending* against wet Weather.

By which means it is now become an Excellent *Weather-wiser*, to predict dry and moist Weather; as I shall shew in the following Pages of this Book.

II. *The description of the Baroscope or Quicksilver Weather-Glass.*

The *Baroscope* is an Instrument (now) well known to most Men; few Gentlemen being without one of them, tho' few of them understand its right *Management* and use: It consists of a Tube of Glass, in which the *Mercury* is put; and wherein it Works, to shew the Quality of the Air, in respect to drought and moisture. And this Tube is set in a Curious Frame of Wood; that is as well Ornamental, as useful for setting the Tube in: And about 28 Inches from the bottom of the Tube, are placed 2 Brass-plates; whereon on the Right-Hand are Engraved Inches, from 28 up to 31, and each Inch divided

divided into 20 Parts : In this space the *Mercury* ascends and descends ; and those Divisions Exhibit at all times its Hight. On this side is also fixed a Brass *Index* or pointer, that is made to slide, and is always to be set just even with the top of the *Mercury* ; so that when it rises or falls, you may see how much it is alter'd from the Place it stood at last. On the Plate on the Left-hand is Engraved the Quality of the Weather ; as, *Rain, much Rain, changeable, Fair, set'd Fair, Stormy.* At the bottom of the Frame is a little Cellar to contain the Glass-Cestern, that is to hold the Stagnant *Mercury.*

I think it need less to give any particular Directions for the making of this Instrument ; since any one may be easily furnished with it in *London*, at a cheaper rate than he can make it himself : But I shall give some Directions

III. To

III. To know the Goodness of a Baroscope.

Horolog. Disquis. The Goodness of a Baroscope, consists wholly in the largeness and depth of the Cistern below, and the quantity of Mercury contain'd therein. Now, to know whether the Cistern be large enough, cause the Workman that makes it, to fill the Tube about 3 Inches, with part of the Mercury design'd for its use; fill the Cistern almost full, with the best part of what remains; then clapping a cross the Brims of the Cistern; a Gage with a Pin driven into it, reaching just down to the surface of the Mercury; let the Mercury which before fill'd the 3 Inches of the Tube, be put therein, and if it raise not the Mercury in the Cistern above the thickness of a Six-pence, then is the Cistern of a sufficient Capacity.

A Cistern of about 2 $\frac{1}{2}$ Inches Diameter,

iameter, is large enough for any Tube that has not a Bore above a quarter of an Inch in Diameter, which is as large as is needful ; for if it be so large, as that when the Quick-silver in the Tube, by rising or falling, makes any considerable difference in the depth of the Mercury in the *Cistern*; then will you not constantly have that distance between the Surface of the Stagnant Mercury there, and the Numbers on the Register-Plates of the Weather-Glass ; for if the Glass be a good Glass, measure that distance when you will, and you will always find it just 28, 29, 30 or 31 Inches from the Divisions so number'd, to the Superficies of the Quick-silver in the *Cistern* below. And here it is to be noted, that the lower end of the Tube, ought to be immerst at least three quarters of an Inch within the Mercury in the *Cistern*, else the Air will be in danger

B of

of getting up into the Tube; For this reason there ought to be at least 28 $\frac{1}{2}$ Inches distance, between the Figure 28 on the Register-Plate, and the bottom of the Cistern. I come now to give some particular Directions.

IV. How to set up the Weather-glass.

And herein consists the Tryal of Skill; But before I lay down the Rules for this; I cannot but take notice of what the Honourable Mr. *Boyl* observes, concerning the Hight of the Mercurial Cylinder; in the

Exper. Phi- Torricellian Experiment.
siccMechan. Writing to his Kinsman the

Vicount of *Dungarvan*; My Lord, (says he) if in trying this Experiment here or else where, you make use of the *English* Measures; that Mathematicians and Tradesmen are wont to employ, you will, unless you be forewarn'd of it, be apt to suspect, that those that have writ-
ten

ten of this Experiment have been mistaken. For whereas Men are (generally) wont to talk of the Quick-silver's remaining suspended at the height of between Six and Seven and Twenty Inches, we commonly observed (when divers Years since we were first Sollicitous about this Experiment) that the Quick-silver in the Tube rested at about $29\frac{1}{2}$ Inches, above the surface of the Stagnant Quick-silver in the Cistern; which did at first both Amaze and Perplex us, because, tho' we held it not improbable, that the difference of the Grosser *English* Air, and that of *Italy* and *France*, might keep the Quick-silver from falling quite so low in this Colder, as in those warmer Climates; yet we could not believe, that *that* difference in the Air, should alone be able to make so great a one in the Heights of the Mercurial-Cylinders; and accordingly upon en-

quiry we found, that tho the various Density of the Air be not wholly to be overlook'd in this Experiment; yet the main Reason why we found the Cylinder of Mercury to consist of so many Inches, was this, that our *English* Inches are somewhat inferior in length to the Digits, made use of in Foreign Parts, by the Writers of the Experiment.

Moreover, I desire your Lordship to take notice, that the height of the Mercurial Cylinder, is not wont to be found altogether so great as it really might prove, by reason of the negligence or Incogitancy of most that make the Experiment: For often times upon opening of the inverted Tube into the vessel'd Mercury, you may observe a Bubble of Air to ascend from the bottom of the Tube, through the subsiding Quick-silver to the Top, and almost always you may, if you
look

look narrowly, take notice of a Multitude of small Bubbles all along the inside of the Tube, betwixt the Quick-silver and the Glass; (not now to mention the Particles of Air that lie conceal'd in the very Body of the Mercury) many of which, upon the Quick-silver's forsaking the upper part of the Tube, do break into that deserted space, where they find little or no resistance to their Expanding of themselves. Whether this be the Reason that upon the Application of warm Bodies to the empty'd part of the Tube, the subjacent Mercury would be depress'd somewhat lower, we shall not determine, tho it seem very probable, especially since we found, that upon the Application of Linnen-Cloaths dipped in Water, to the same part of the Tube, the Quick-silver would somewhat ascend, as if the Cold had condensed the
the

the Imprison'd Air (that pressed upon it) into a lesser Room. But that the deserted Space is not wont to be totally devoid of Air, we were induced to think by several Circumstances. For when an Eminent Mathematician, and excellent Experimenter, had taken great Pains, and spent much time, in accurately filling up a Tube of Mercury; we found, that yet there remain'd store of Inconspicuous Bubbles, by inverting the Tube; letting the Quick-silver fall to its wonted height; and by applying (by degrees) a red hot Iron to the outside of the Tube, over against the upper part of the Mercurial Cylinder; for hereby the little unheeded Bubbles, being mightily Expanded, ascended in such Numbers, and so fast to the deserted Space, that the upper part of the Quick-silver seem'd (to our wonder) to Boil. We farther observed

derived, that in the Tryals of the *Torricellian Experiment*, we have seen made by others, and (one excepted) all our own; we never found, that upon the inclining of the Tube, the Quick-silver would fully reach to the very top of the Tube, which Argu'd, that there was some Air retreated thither, that kept the Mercury out of the unreplenish'd Space; thus far the Honourable Mr. *Boyl*. I come now at length to shew,

How to set up the Weather-Glass.

First, let the Frame be fixed fast to the place you ^{*Horolog.*} _{*Disquis.*} design for it; which is done, by driving therein a Nail or Tenter-hook, (fitted for that purpose) upon which the Frame is to be hung; and with a Skrew (or some other device) let the bottom thereof be firmly fasten'd to the Place. The Frame being thus fixed, the next thing to be known is,

2. *How*

2. *How to prepare the Tube to be fill'd with Quick-silver.*

*Exper.
Phisico.
Mechan.*

In the first place, let the open end thereof be carefully Ground smooth and level upon a Grindstone, that the Orifice thereof may be the more easily and exactly stoped by the Finger, to prevent the Interception of any Air between it and the Quick-silver, which very often happens for want of a due observance of this Circumstance.

*Horolog.
Disquis.*

In the next place, make the inside of the Tube very clean and dry; by means of a bright and clean piece of Wyer, made red hot at the end in a Fire, and turned down for about half an Inch, like the Eye of a Needle; through which draw a long slip of fine soft lawn Paper, which I find best for this purpose, because it will not leave any Lint behind it, as a Linnen-Rag will; which Lint will always cause
a small

a small Bleb of Air to remain round it, so that in spight of all your Care and Pains, you shall never obtain a perfectly fine Cylinder of Mercury.)

With this Paper, in the Eye of the Wire, let the Bore of the Tube be well cleansed, by drawing it to and fro, from one end to the other, till you are sure that you have not mist any part thereof: And if you find when you have drawn it out, that the Paper be any whit soil'd; put in a fresh Piece, and after that another, till you find the Paper come out as clean as it went in; For should any foulness or moisture be left behind, the Mercury will not move freely up and down. The Tube being thus very well cleansed, you must next know how

III. To prepare and make the Mercury fit to fill the Tube with.

Take an Earthen Basin or *Herolog.*
Dish, and put therein half a *Disquis.*

Sheet of clean white Paper; then put the whole Quantity of Mercury (which the maker of the Baroscope has fitted) thereunto, and having put it into a clean Linnen Cloath, strain out gently so much of it as you judge will fill the Tube: I say strain it gently; for should you twist and wring the Cloath the Quick-silver is in, to strain it all through, you will (in so doing) find much Lint fall off from it, and foul the Surface of the Mercury strain'd out, so that you cannot fill the Tube with it, without conveying some of the Lint along with it, which will spoil the perfect smoothness of the Mercurial-Cylinder in the Tube. The Mercury being thus prepared, the next thing you are to know in order to the setting up of the Baroscope, is

IV. How to fill the Tube with Mercury or Quick-silver.

This is a Critical business, and requires

quires more than ordinary care and diligence to do it well. The best way to do it is, to take the Tube, and resting the closed end in some Wooden or Earthen Vessel, (to save the Mercury, should any spill in the filling ;) then graspe the open end of the Tube between the Root of the Thumb and Fore-Finger, somewhat low, that the hollownels between may serve instead of a Tunnel ; then fill the Tube with the pure clean strain'd Mercury, by taking it up with the clean Bowl-end of a Tobacco-Pipe, or by putting of it into the Cistern, First wiped clean, and so pouring of it in till it be full within a quarter of an Inch of the top of the Tube.

Then to cleanse it from Air, stop the end very close with your Finger, and raising the other end up, somewhat above a Level, let the Air, (included in the empty space at the o-

pen end) rise up very gently towards the top or sealed end, and this will take into it self, all the other little Bubbles of Air that lie in its way ; and when this great Bubble of Air is risen up quite to the end of the Tube, let it return again, by depressing a little that end, which before was uppermost, turning the Tube also at the same time, that the Bubble may take in its way, all those little Bubbles of Air that may yet remain on the other sides of the Tube, and thus, by turning the Tube a little, and making the Bubble several times to pass and repass from one end to the other, the Cylinder of Quick-silver, will be at last cleansed from all those little Bubbles of Air that appear'd by the Sides of the Glass, any of which should they remain in, would in time work themselves up to the top of the Tube, and be very Injurious to the

true Motion of the Mercury.

And lastly, as for those lesser <sup>Boyl's Ex-
per. Physi-
co-Mechan.</sup> and Inconspicuous parcels of Air, which cannot this way be gleaned up, you may (if you will) endeavour (before you invert the Tube) to free the Quick-silver from them, by shaking the Tube, and gently knocking on the outside of it, after every little parcel of Quick-silver which you pour in; and afterwards by forcing the small Latitant Bubbles of Air to disclose themselves and break, by applying a hot Iron in such manner as we lately mention'd. I remember, that by thus carefully filling the Tube, we have made the Mercurial-Cylinder reach to 30 Inches and above an Eighth, and this in a very short Tube: Which I therefore mention, ^{or} because we have found by Experience; that in short Tubes, a little Air is more prejudicial to the Experiment than in long ones, where
the

the Air having more room to expand it self, doth less potently press upon the subjacent Mercury.

*Horolog.
Disquis.*

But if, as I noted before, the least moisture or Lint be left in the Tube, the greatest care and Skill that can be us'd, will not be able so perfectly to cleanse it from Air, as not to leave the least speck remaining; in which case there is no remedy but to empty the Tube anew, according to the Method before prescrib'd.

When the Tube is perfectly cleansed from Air, turn up the open end and fill it quite full of Quick-silver yea so full, that the Finger (which is to stop it) pressing upon the Accumulated and Protuberant Mercury, may rather throw down some, than not find enough exactly to keep out the Air.

Then wipe the Cistern very clean and set it in its place in the Frame then put therein all the remaining

part

part of your Mercury, which you need not take care to strain, for Dust or Foulness in the Cistern signifies little; then take the Tube fill'd as before was taught, and stopping the end of it with your Fore-Finger, invert the Tube, and put your Finger and the Mouth of the Tube into the Stagnant Mercury in the Tube, so that the top of your Finger and Mouth of the Tube be wholly immersed; then quickly withdraw your Finger, and immediately the Mercury will fall and run into the Cistern, so much and no more as the present quality of the Air is (whether *moist* or *dry*) and Weight of the Atmosphere: If you perform this Operation nimbly and well, it will be done before the Mercury in the Tube is all sunk down to its lowest Station, and so the Tube will be put up well, without any admittance of outward Air.

But

But in case any Air should get into the Tube, in your attempting to set it up in its place, (as sometimes happens) then you must take it down again, by getting your Finger under the open end to stop it, before you take it out of the Mercury in the Cistern, and so Repurge it of the Air got in, as you have been already taught how. Then try again to set it up well, and if you should miss this second time, try a third, for Experience will at length make you perfect.

When the Tube is put up, observe whether it stand well in the Cistern, for some Cisterns are so ill placed, that the Tube (by reason of its being set too near one side) cannot be well surrounded with Mercury, by which means, the Air will be apt to Insinuate it self, and get up into the Tube, and spoil the Mercury's true motion. The Tube being thus fill'd and set up, you must next know

V. How

V. *How to adjust the Baroscope, that he may perform his Office well.*

If the Glass be already adjusted to your Hand, by the Workman that made it, you have then no more to do but to put into the Cistern all the Mercury, that remains when the Tube is fill'd: But in case the Glass be not already adjusted, or that some part of the Quick-silver should be spill'd or lost, you must then prepare to adjust it, thus: Take a small streight Rod of Wood, of the just length of 28 Inches, (this is generally call'd an *Adjusting-Gage*,) and by putting more Mercury into the Cistern, or taking more out, (with the Bowl-end of a Tobacco-Pipe) make it just 28 Inches from the Surface of the Mercury in the Cistern to the Number 28 on the Register-plate; and then is the Glass compleatly and well adjusted. I shall next give

V.I. *Some Directions about removing*
D. a

a Baroscope or Quick-silver Weather-Glass.

If you have occasion to remove a Baroscope, out of one Room into another ; you need only to loosen the Frame, and take it from its Place, and so upright, in the same Posture it stood in, let it be carefully convey'd by Hand, so gently, and with a careful step, that the Quick-silver may not surge over the Sides of the Cistern ; another Man in the mean time, making all things fit to set it up in its new Place, according to the Directions before given.

But, if the Baroscope be to be remov'd from one House to another, it must be quite taken down : In doing which observe, First, to incline the Tube so low as it stands in the Cistern, that the Quick-silver may rise up quite to the top, then lift it out of the Cistern, and let the Mercury run out ; for should you lift the
Tube

Tube out in the posture it stands in, when going, the Mercury by the force of the Air pressing in at the open end, would fly up to the top with such Violence, as to endanger the breaking off of the top of the Tube. I have known Exper. Phisico-Mechan. (says *Esq; Boyle*) the top of the Tube, thus broken off with such violence, that the Mercury has flew out of the top of the Tube, to the Hight of 3 or 4 Foot.

Note, That if the Tube be not well Purg'd of Air, the Quick-silver will by long standing, be apt to move contrary to the true Nature of a Baroscope, by reason that the Air which has been left in the Tube, has by degrees got up to the top or empty part of the Tube, where being expanded by any accidental Heat of Air, it occasions the *Mercury* to sink (by its Pressure upon it) tho the Weight of the Air or Atmosphere be

Philos. Transf.
Num. 9. Pag.
 157.

Exper. Physi-
co. Mækka.

no ways alter'd; this is observ'd by *Dr. Beal*, that a Baroscope ascended higher in cold Mornings and Evenings than at Mid-day, (and *Esq; Boyle* has also observ'd the same;) which doubtless proceeded from the aforesaid cause; for if you leave, for tryal sake, a little Bubble of Air in the Tube when you set it up, you will find the same Effect (or rather Defect) as the aforesaid Authors have observ'd.

Wherefore 'tis necessary to rectify your Weather-Glass once in a Twelve-Month, by taking it down, and Repurging the Tube from Air, as you have already been taught. But that you may not put your self to more trouble than needs, you ought to be first certain, that your Weather-Glass does want rectifying which you may know thus; let the Tube as it stands in the Cistern be inclin'd

inclin'd so low, till the Mercury rise up quite to the top of it; and if you then perceive a Bubble of Air at the top of the Quick-silver, (hindring it from rising quite to the top of the Tube) it is a certain sign of its wanting to be new rectifi'd; clap then your Finger under the open end in the Cistern, and take it out, and purge out the Air, as has already been shew'd how. I come now to shew

The Uses of the Baroscope or Quick-silver Weather-Glass.

And here I shall not insist upon the various *Opinions* of *Philosophers*, concerning the *Reason* of the *Mercury's* being suspended in the Tube. I shall only intimate, that it is now generally agreed by all the *Best* and most *Modern Philosophers*, that 'tis the *Gravity* or *Pressure* of the *Air* or *Atmosphere*, that buoys up the *Mercury* in the Tube; and that the Air being
some-

sometimes lighter, and sometimes heavier, is the cause of its ascending and descending therein. And that the cause of the Air's being sometimes lighter, sometimes heavier, is its being more or less, repleat with humid Vapours. For when the Air is fill'd with watry Vapours, it becomes lighter; and so lets the Mercury in the Tube subside; but when it is empty of those watry Vapours, it becomes heavier again, and so causes the Mercury in the Tube to ascend. And tho' this *Ascension* (of watry Vapours making the Air lighter) may seem a Paradox; yet they thus demonstrate it. It is a Principle in Philosophy, (say they) that whatever rises up and swims in any *Medium*, must Bulk for Bulk be lighter than the *Medium* by which it is sustain'd: Hence it follows, that all kinds of watry Vapours must be lighter in specie than the Air, else they

they could never rise up therein, and be suspended there, as they are, till by another Principle in Nature, they are condensed and precipitated in Rain or Snow. But some may object, if we grant watry Vapours to be specifically lighter than the Air; yet the Addition of that lesser weight must make the Air more heavy than it was before. To this the *Philosophers* will answer, (or I'll answer for them,) that, either the Repletion of *one part* of the *Atmosphere* with watry Vapours, makes the Air flow off to *other parts* that are not so fill'd; or else, that the Ascension of watry Vapours, keeps back or hinders (in some measure) the Pressure of the Air. But I shall insist no longer on those Philosophical Nicities; but proceed to lay down,

VII. *Rules to fore-know or predict the Weather by the Baroscope.*

I. From what has been said it appears,

pears, that the Baroscope gives a very good account of the temper of the Air, as to Moisture and Dryness; and that the lower the Quick-silver stands in the Tube, the fuller of Moisture the Air is; and you may always observe, that then our Bodies are more listless and out of order, than when the Mercury stands high in the Tube; for then our Bodies are more brisk and lively. The Reason is, because Moisture is disagreeable to humane Nature; Man not being made to live in a watry Element. So that, by the Weather-Glass, one may give a good guess, whether the *Disorder* and *Melancholy*, or the *Periodical Pains* and *Aches*, to which we are sometimes subject, is really occasion'd by a new bodily Distemper or not; for this happening when the Mercury is low, it may be judg'd to proceed from the Humidity of the Air, and consequently, that it will

go off of it self when the Mercury rises; for a too moist Air, has a stranger effect on Men's Bodies than is commonly taken notice of.

II. The Baroscope predicts only *Fair* and *Foul Weather*; and therefore that you may be the better directed, which of these to expect; you must still note the rising and falling of the Mercury; for its rising in any part of the Glass, betokens a tendency to Fair, as its falling in any part, shews an Inclination to Rain and Wet: As for the *Words* Engraven on the *upper part* of the *Register-Plate*, they are then only to be noted when the Mercury rises from *changeable* upwards, and those on the *lower part*, are to be noted only when the Quick-silver falls from *changeable* downwards. In other Cases the *Words* are of no use; for if its *rising* in any part, fore-shews a tendency to be *Fair*, and

its *falling* in any part, a tendency to be Foul Weather; then it follows, that if it falls from *settled Fair* to *Fair*, it may yet Rain a little, tho the Quick-silver stand as high as *Fair*; the like may be said, if it rise from the Word *much Rain* to *Rain*; for tho its rising betoken a tendency to *Fair*, yet since 'tis so low as the Word *Rain*, there may yet be some *Wet Weather*, tho not so much as there was before the *Quick-silver* began to rise. But if the *Mercury* mount upwards from *changeable*, then will the *Weather* for the most part be such, as the Words in the upper part of the *Register-Plate* import; and if from *changeable* it falls downwards, the *Weather* likewise will be much the same as the Words in that part express; but in the *Mercury's rising* when 'tis below *changeable*, or *falling* when above it, the Words (as I said before)

fore) signifie nothing. Most Gentlemen that have *Weather-Glasses*, not knowing (or, at least, not minding) this Rule; always expect such *Weather* as the Words (against which the Mercury stands) express, and thereby deceive themselves and others.

III. If the *Mercury* rises very high, the *Weather* will continue *Fair*, so long as it stands at that Pitch, and you will not find the *Weather* change much, till the *Mercury* falls down a good space lower: So likewise when 'tis fallen down very low, you must expect *Wet Weather*, during all the time of its so continuing; in both these particulars you will be certain, provided the *Wind* and the *Moon* Concur. For

IV. Both the *Wind* and the changes of the *Moon*, are to be well observ'd in order to make the truer *Predic-*

tion. And first, for the *Wind*; this is found to be of very great Moment; for if the *Glass* fall, and the *Wind* sit in those *Quarters*, from whence much *Rain* is observ'd usually to come; (as with us about *London*, are the *South* and *South-west*) then 'tis not to be doubted but *Wet* will follow. On the contrary, if the *Glass* rise when the *Wind* blows from a dry *Quarter* of the *Heavens*; (as with us are the *North* and *East*) then 'tis a hundred to one, but the *Weather* will be *Fair*: But if the *Glass* rises and the *Wind* be *South*, the case is doubtful; so also if it falls, and the *Wind* be *North*, for then it often happens that the *Weather* does not prove always such as the rising and falling of the *Mercury* Predicts. As to the *Moon*, 'tis well observ'd, that the *Weather* is generally Inclinable to *Moisture* about three Days before,
and

and three Days after, both the *New* and *Full Moon*; if therefore when the *Glass* falls, the *Wind* be *South*, and the *Moon* near the *New* or *Full*, the certainty of *Rain*, is still much the greater.

V. If the *Mercury* be high in the *Summer time* when the *Weather* is *Hot*, and does of a suddain fall down a pretty considerable distance; then certainly expect great and suddain *Storms* of *Rain* and *Thunder* to follow soon after.

VI. When the *Glass* is risen very high in the *Winter*, and the *Wind* sits then *North*, or *East*, it certainly presages *Frost* to ensue; and the same will continue as long as the *Mercury* continues thus high; but when you perceive it begin to sink somewhat considerably, then be assured a *Thaw* will quickly follow.

VII. If in a *Frost*, the *Air* becomes

comes over-cast, and the Quick-silver rises of a suddain yet higher, when it had stood high for a time before; then look for *Snow*; for the Cold above, which is the cause of *Snow*, causes also the *Air*, to become more heavy by condensation.

VIII. If the Glass rise and fall but a little, or it be unsettled in its motion; then it Argues an unconstant *Season*, and the *Weather* will not then long continue in one State: The like happens when it is about the Word *Changeable* or *Uncertain*, for then no true Guess can be made what the *Weather* will be.

IX. When *Foul Weather* happens soon after the falling of the *Mercury*, expect but little of it; and judge the same when the *Weather* proves *Fair*, shortly after the *Mercury* has risen.

X. If

X. If in *Foul Weather* the *Mercury* rises much and high, and continues so for two or three Days before the *Foul Weather* is over; then expect some continuance of *Fair Weather* to follow.

XI. If in *Fair Weather* the *Mercury* falls much and low, and continues so for two or three Days before the *Rain* comes; then expect a great deal of *Wet* and *High-Winds*.

XII. The *Mercury* is always observ'd to be lowest in extream high and strong *Winds*: But the *Glass* does no ways predict *Winds*, for the extream lowness of the *Quick-silver* happens only at the very time the *Wind* blows; and as soon as the *Wind* ceases, the *Mercury* is then found to rise apace; but, such Risings as immediately follow *Storms*, are no Signs of *Fair Weather*; except it rises

rises much higher than it was, at the time of the *Wind's* beginning to blow.

XIII. It is to be Noted, That, when *Wet* is predicted by the *Glass*, or by any other Sign or Token; it generally begins to Rain, either when the *Moon* is due *South* or *North*, or else when the *Sun* comes upon the same Quarter from whence the *Wind* blows; and if it Rains not at the time of the *Moon's* Southing or Northing, nor when the Sun and Wind comes together, then 'twill hardly Rain till the same times return again; which is a good Note in times of *Harvest*, and very seldom fails, tho' sometimes it may.

XIV. Note also, that most great changes of *Weather* happen, with us, either at the New or Full Moon; and if the *Weather* change
not

not then, 'twill hold on as it is, till the next New or Full Moon comes. Frost generally breaks at the Changes, when it does break; and 'tis commonly at the Change or Full, that Rain comes after a dry Season has long continu'd.

For the more easy and certain predicting the *Weather* by the Baroscope, I shall here add

Some Natural Predictions of Fair and Foul Weather: And first, of Fair Weather.

I. The much hooping of *Owls*, after Sun-set, in the Summer time, and in the Night also, foreshews a Fair Day to follow.

II. Swarms of little *Gnats* and *Flies* sporting together, in the Evening, is a certain Token that the Day following will be Fair.

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III. If

III. If the *Sun* set red in the Evening, and the Place be free from Clouds, and the next Morning rises clear and bright; these are good Tokens that the Day will be Fair.

IV. The Soaring of *Kites* aloft in the Air, is a Sign of Dry and Hot Weather.

V. When the *Bat-Mice* are seen to fly to and fro, in the Evening, it shews that the next Day will be Fair.

VI. If, in the Morning, *Mists* descend from the *Hills*, and settle in the *Vallies*; 'tis a Sign that the Day will be Fair.

VII. If it Rain in the *Summer*, and Horses and Kine do thereupon leave off Feeding; 'tis a certain

tain Sign the Rain will not continue long.

VIII. If *Crows* Caw or Cry early in the Morning, with a loud and clear Voice; it shews that the Day will be Fair.

Signs of Rain and Wet Weather.

I. If, in the Evening, the *Sun* set behind a dark black Cloud; and his Body appear also greater at that time than usual; it certainly betokens *Wet* the next Day.

II. If *Water-Fowl* wash themselves much, and dive more than usual under Water, and also Flutter and Clap their Wings, and Oil their Feathers more than usual; 'tis a Sign of Rain.

III. If *Toads* are in the Evening,
F 2 found

found leaping in the Paths or High-ways; or if the great *Shellefs-Snails* are found creeping about more than usual; it fore-shews Rain.

IV. An unusual *Circle of Light* about the *Moon* or *Stars*, when no *Mist* or *Fog* appears below; is a Sign of Rain soon to follow.

V. If the Sun, at his first rising, or sometime after, shine *Waterish*, that is, *Paler* than ordinary, 'tis a Sign of a *Wet Day*; especially if the Air be soon after obscur'd with thick *Clouds*.

VI. If in the *Summer*, in a fair clear Day, you perceive the *Clouds* to gather of a sudden on all Sides, and appear thick and curled; then prepare your self for Storms

of Rain and Thunder soon after.

VII. *Hoggs* crying in an unusual Manner ; and running unquietly up and down, with Litter in their Mouths ; foreshews Rain and Storms at hand.

VIII. If *Crows* cry much in the Evening ; 'tis a Sign of Rain the next Day.

Any of these, or the like Signs, happening in the Summer time, will, if the Baroscope Concur, help you to make the more certain Guess at what *Weather* will ensue ; especially if the Glafs be at *Changeable* and *Uncertain*, for then, by these you may the better guess at what Weather will follow.

Some particular Places have also Signs of *Rain* and *Fair Weather*, which others have not, which observ'd

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serv'd, together with the Glass, may make your Guess more certain, than they can otherwise be.

The Nature of Countries also differs; for whereas in *England* especially near *London*, and the Southern Parts, a S. Wind always brings the most Rain, and a N. or E. Wind dry Weather; on the contrary, at *Edenburgh* in *Scotland*, a S. Wind brings the fairest Weather, and a N. or N. E. the greatest Wet: These things consider'd; every Man that lives in Countries which differ in Temper, from that for which these Rules serve, ought to frame Rules to himself, by observing the changes that follow the Glass's rising and falling, the change of the Wind, and the Southing of the Moon, &c.

F I N I S.