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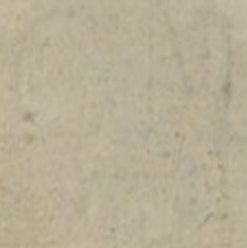
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S O M E
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CONCERNING
MERCURY.

By J. H. BOERHAAVE, *Professor*
of Physick at Leyden.

Translated from the *Latin*, communicated by the
Author to the ROYAL SOCIETY.



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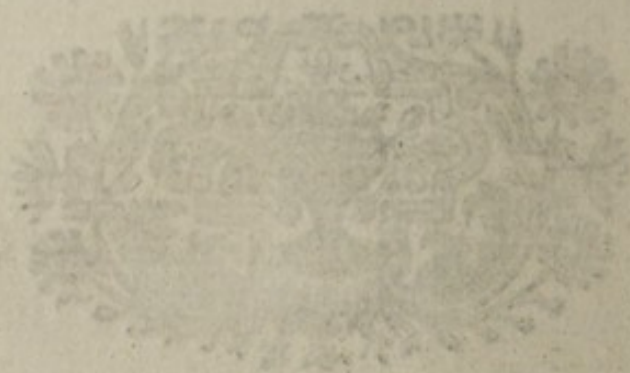
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S O M E
E X P E R I M E N T S
C O N C E R N I N G
M E R C U R Y.

TH E Y who by Experiments have most diligently enquired into the Origin of Bodies, and their peculiar Powers and Properties, are the only Men who have discovered sure Methods of acquiring a

true Knowledge of these Things :
 And whenever the Lovers of natural
 Knowledge enumerate the Instru-
 ments of this Science, they univer-
 sally agree that Chemistry has done
 the greatest Service, in most industri-
 ously promoting such Discoveries :
 And when they come carefully to
 examine the most celebrated Writers
 in this Art, they plainly perceive, that
 the most ancient Alchemists far sur-
 passed the rest in their Accounts of
 the Nature of Things. Of this *Geber*
 is an Instance, and the Writers nearest
 to him ; for they are content to de-
 scribe, in the plainest manner, such
 Things only as they had discovered
 by their Art ; to improve which was
 their great Application, having no
 other Design in view. And indeed
 no other Men whatever have so strictly
 and obstinately labour'd in the Search
 after natural Things, or have taken
 such great Pains to turn Matter, thro'
 all the various Modes of Enquiry, as
 the

the Alchemists. This is what will be readily granted by all those who read the Hermetic Writers, when they openly relate common Discoveries: But, on the contrary, when these Writers treat of the Grand *Arcanum* (or Secret of the Wise) they are accused of making a bad Use of their Knowledge, out of a Desire to conceal it, as if they intended, on that Occasion, not to be understood. They are said to deal in Paradoxes, to write in a strange manner, perfectly foreign to all that is known, and their Style is swell'd with hyperbolical and sublime Expressions; which makes them be exploded as Men out of their Senses, fabulous, false, and Liars: For whilst they affect to write in the gravest Terms, and are rich in Promises, they so cover the Thing they are treating of in Obscurity and Darkness, that they seem unwilling the Secret should be reveal'd. And on this account it is, that very many
wise

wise Men are of Opinion, that what the Alchemists promise, is a Thing impossible both to Nature and Art, and therefore count them unworthy the Perusal of Philosophers, as well as undeserving of the Name. But it is a Maxim, That it is safer to credit an Artist in his own Art, than one that is an utter Stranger to it; and consequently it is rash to condemn what the Alchemists have defined to be possible; especially, since these Chemists openly declare, that their Writings are to be weighed in the Balance of the most certain Laws of Nature, which have been discovered with the greatest Evidence by the Events of Things; (that is, by exact and repeated Experiments) and they desire not to be credited, whenever they produce any Thing contrary to the Powers of Nature truly known by Experiments. Moreover they alledge, that they express themselves in such an obscure manner,
only

only to keep profane Persons away from their Myſteries, which are unfolded to ſuch as are initiated in them; and ſo that it was neceſſary that Things ſtrange, obſcure, and often falſe, ſhould be mixed and interpolated with what is ſincere, clear, and true in their Writings.

For my part, upon looking into chemical Matters, and peruſing the Writings of the Alchemiſts, I have found them all of the ſame Mind and Meaning as to the following Particulars: That Metals are naturally generated in their Veins, are nourished, grow, and multiply like other natural Things, each in their proper Place: That the Aliments or Nourishment of Metals, which before are of a foreign Nature to them, are, by the genital Power of the Metallic Seed, converted into a truly Metallic Nature; ſo that by this ſeminal Power alone they loſe their former, and re-

ceive a new Property by the sole cherishing of the pregnant Warmth ; for they will have all these Things to be effected entirely by the same Means : That as the Seeds of Animals and Plants change the Aliments they receive into their own Nourishment, so the vivifying Seed of growing Gold, having got a proper Food, in a fit Matrix, by the Help of a suitable and convenient Heat, digests the same into its own particular Nature : Therefore by that Means, according to a Law prescribed to subterraneous Things, they determine that true Gold is always produced by Length of Time out of a Matter of a different Nature from Gold : For having subdued its Aliment by its own Force, it grows, by vital Increase, into a Matter like to it, so long as those four Conditions that are absolutely required attend it. Upon pursuing their Researches into Nature with more Accuracy, they discovered

covered that the Metals which are produced, and especially Gold, are very closely confined within a very solid and pure Stone, which is on every Side so very carefully closed up, that no Passage leading to or from the Metal can be discerned. The Matrix of the growing Metal is thick, hard, impenetrable, without Mixture, closed up on all Parts, and resembles Glass. There is nothing more hard to understand, than to discern the Manner how the solid Substance of the Metal could penetrate or force itself thro' the ponderous Mass of the hard Stone, into the Veins that are found pregnant with Metal and loaded with it. Nor is it less difficult to conceive by what Way the same Metal secretly passes into those concealed Places, if it was liquid in its first Origin, as it is highly probable that it was. And thus the genuine Matrix of Metal is known; the Heat of the Metallic Mines is also known:

It seldom equals the Warmth of a Man in Health, but often sinks below the 66th Degree in the Scale of *Farenheitius's* Thermometer. Hence they who are versed in these Mysteries direct, That the breeding Matter of the *Arcanum* should be inclosed in a pure Glass Vessel, and cherish'd with a *Majal Heat*; which we find, by Experience, to be of 50 Degrees. And this has been found out to be at a Medium throughout the Year, by the most exact Observations; which we owe to the industrious Care of *Cruquius*. The Food of the Metal remains yet more obscure as to what is that seminal, proliferous and genital Matter. Most of these Philosophers say, That Quicksilver is the common Matter of all Metals: That this being changed by the Power of the vital Seed, gives a Metal which is defined or determined according to the peculiar Property of the seminal

nal Efficacy: That every Metal, when the Quicksilver and this Metallific Power (which they call Sulphur) are maturely and, as it were, thoroughly boil'd and concocted, is brought to a perfect Species of each such Metal. And from hence, That every Metal is again resolved into these two Principles, Mercury and Sulphur. But that there is an original Flaw or Blemish inherent in Quicksilver from its first Production, that wonderfully grows up with it, and is intimately concreated to it, and therefore not without the greatest Difficulty to be separated from it; and consequently the Quicksilver wou'd not be very simple, nor free, but is by that strange Matter inherent in it, of a definite Nature, and therefore wou'd hardly suffer itself to be obsequious to the particular Virtue of the Metallic Seed, and be drawn into the single Nature of one Metal: But if by a most difficult Art, the Quicksilver be thoroughly

roughly purged of that foreign Blemish or Foulness, then it would become liquid, metallic, most weighty, and most simple; neither by any Art or Nature divisible into different Things; and in which the vivified Seed of every dissolved Metal wou'd most perfectly multiply itself; in which the Gold itself dissolving, being cherish'd and maturated, wou'd be the last so much sought for, and so much celebrated Reward of the Labour.

When I found that the chief Persons of the Art agreed in these Principles for a long Time, I have endeavour'd to learn by Experience, by what Artifice a pure unmix'd Mercury might be obtained? Whether it cou'd be extracted out of Metals? What is that other Part of the Metal that is apt to force under its Yoak the free Quicksilver, or Mercury? I am glad to give an Account of what I have

have discovered; not that I pretend to teach the Art, which I am as far from as any one; but I will faithfully relate some laborious Experiments, and which are so very certain, that they may justly pass for true. Others will not need to repeat them, but may safely make use of these as true upon Occasion. And a diligent Artist, by assuming (or supposing) these Experiments, may apply his Mind farther to others, in order to promote the Study of Chemistry the more. It were to be wish'd, that every Man directed his private Labours to the public Good. Let the first Experiment be this:

EXPERIMENT I.

Pure Quicksilver contain'd in a dry Glass Vessel that is very clean, being agitated only by a mechanical Shaking or Concussion, gives a soft, black, and very fine Powder.

The

The Operation.

Having bought 16 Ounces of Quicksilver of the Company at *Amsterdam*, I strain'd it thro' a Leather Bag; there remain'd no Dregs: I pounded it a long while with fair Water: The Quicksilver remained pure after pounding: It was then a long time pounded with Sea-Salt, but the Colour of the Salt was not fouled: after having poured Water to this Salt, and to the Mercury, the pounding was repeated; but neither did this change the Colour. In all this Work there appeared nothing black, nothing foreign or foul. Then the Quicksilver was washed and dried, and was bright. I poured it into a clean dry Glafs Bottle, made of the dark-green *German* Glafs. At the same Time I plac'd it in a Sand Furnace, with a Fire that almost made the Mercury rise; and to be sure that
all

all the Water was forced out, which is often secretly present in the Mercury, I kept it thus for three Days: Then having thrust a clean dry strong Cork into the Mouth of the Vessel whilst it was yet warm, I fasten'd it up as close as possible. The Head of the Bottle thus closed with a Cork, I dipt into a liquid Cement of Pitch, Rosin, Tallow, and Brimstone, and covered it over with a Linnen Cloth, which I tied fast with Packthread. When the Glafs was thus made ready, I put it in a small Wooden Box, which was so fitted to the Bottle, that it touched the Sides of it; and the empty Spaces between the Bottle and the Box, were well filled with Bran. Then I put on a Cover, with a Hole bored in the Middle, for the Top of the Neck of the Bottle to stand a little out. The Glafs was immoveable in the Box; and it being thus prepared, I had it fastened to the Hammering Block of a Ful-

C ling-

ling-Mill, which always moves Night and Day when there is any Wind. Being thus fixed, it was rais'd up and let down by a perpendicular Motion, from the 1st of *March*, 1732. *N. S.* to the 13th of *November* of the same Year.

The Effect.

The Bottle being opened, there was the same Weight of Mercury, which was covered on all Sides with a very soft, black, copious and fine Powder. I squeez'd it thro' a clean Leather Bag; the liquid and pure Mercury pass'd thro'. The Powder remained in the Bag of a sharp metallic Taste, somewhat resembling the Taste of Copper or Brass.

COROLLARIES.

1. Quicksilver, in itself very insipid, by meer shaking, acquires a metallic Taste of Copper.

2. From

2. From being very mild, it becomes sharp and penetrating.

3. From a very bright Silver Colour, it turns very black.

4. From a Fluid, it becomes Solid in the Form of Powder.

5. It may therefore be concealed under the Appearance of such a Powder, and deceive the Ignorant.

EXPERIMENT II.

Quicksilver exceedingly well purified, and treated as aforesaid (Exper. I.) gives the same Powder in much greater Plenty.

The Operation.

I suspecting that something of a foreign Nature to it might remain in the Quicksilver, and be separated

from it, by Motion, under the Form of that Powder, I brought over all the Mercury in a Glafs Retort with a Sand-Heat. When it was all over, I pour'd it again into the same Retort, and forc'd it by Fire, as before. This Method I repeated 60 times. The Mercury was thus distilled 61 times. In the Bottom of the Vessel there were five Drachms of Red Powder; of which hereafter. But this Mercury was very fluid and shining. I got 2 Ounces of this Mercury to be shaken by a Fulling-Mill in the same Manner, and by the same Operation, and for the same Space of Time as in the first Operation.

The Effect.

The Weight was the same: There was a Powder made, soft, black, of a sharp metallic Taste, like Copper or Brass, to the Quantity of 2 Drachms and 26 Grains: So it was above an eighth

eighth Part; whereas of the Mercury, as they sell it, scarce $\frac{1}{128}$ Part was turn'd into Powder by the same Operations; that is, by the shaking of the Mill.

COROLLARIES.

1. The Mercury, which after being distilled 61 times, yet remained very tasteless and insipid, acquires a metallic Taste.

2. From being very mild, grows sharp and penetrating.

3. From having a bright Silver Colour, and shining like a Looking-Glass, becomes very black.

4. From being more fluid than it was naturally, comes to a consistent Powder.

5. Tho' forced by a long and strong Fire, so often repeated, the
Mercury

Mercury still retains this Property (of Fluidity).

6. Which therefore does not depend on any Feces or Dregs foreign to the Mercury, and that may be separated from it by Fire.

7. The Matter which, after the Distillation of the Mercury, remain'd in the Bottom of the Retort, red, shining, and sharp, is no more like the black Powder proceeding from the Shaking, than that Part is of the Mercury, which remained volatile.

8. Mercury is changed by Fire and Shaking; by Fire into red, by Shaking into black: Therefore Mercury changes Colour.

9. Whether Mercury shaken in a smaller Quantity, gives more of the black? (Powder)

EXPERIMENT

EXPERIMENT III.

The very black Powder (by Experim. 2.) if it is forced out of a Glass Retort by a strong Fire, returns to pure Quicksilver.

The Operation.

The 2 Drachms and 26 Grains of the black Powder (by *Operat. 2.*) I heated by a strong Fire, and forced out of a pure Glass Retort, in-somuch, that at last the Retort was red hot for 2 Hours.

The Effect.

There were in the Receiver 2 Drachms and 2 Grains of the purest Quicksilver, insipid and shining.

There

There stuck to the Sides of the Glass, which being join'd to the Retort, is luted to a Receiver full of Water, a little Quicksilver here and there, which I could not entirely gather together. In the Bottom of the Retort was a fix'd Spot, small, very thin and fine, and but just visible.

COROLLARIES.

1. Mercury, that has been 61 times distilled and shaken, and turned into the afore described Powder, returns by Fire alone into its first Form.

2. Of sharp and penetrating, it becomes very mild.

3. Of very black, it comes to resemble pure Looking-Glass, with a Silver Brightness.

4. Of

4. Of a consistent Powder, it becomes very fluid.

5. In these three Operations it remains the same in itself; in the mean time it alters its Appearance under various Disguises.

6. The Taste and sharp Power are wonderfully changed in the Mercury, by Motion alone, by Fire alone.

7. In the mean time there arises, from these Operations, out of the Quicksilver, a small Quantity of fix'd Mercury.

8. The black (Spot) was no Dreg, or any Thing foreign, and so separated from the Mercury.

D SCHOLIUM.

SCHOLIUM.

I exposed to a Fire of 180 Degrees, for several Months, some Quicksilver in Glass Conic Vessels, with flat Bottoms, that were stopt with a chemical inverted Phial: The Quicksilver became black, and gave a black Powder, in all respects alike; from which I learnt, that a Fire in this Degree, produced the same Effect in the Quicksilver as the shaking.

EXPERIMENT IV.

Quicksilver is changed by simple Distillation.

The Operation.

18 Ounces of Quicksilver, Weight of Amsterdam, I forced by a Sand-Heat,

Heat, out of a pure Glafs Retort, into the Receiver that was filled with the pureſt Water, 4 Inches high from the Bottom: This I continued to do till there was no more running Mercury left in the Belly of the Veſſel. I dried and cleaned the Mercury with clean dry blotting Paper, till it was perfectly dry, cleaned from any Dirt that might have fallen in, and from the Black which in diſtilling is raiſed every time with the Mercury as it diſtills: Then I poured this Mercury into another Retort, and forced it again as before. This I repeated in the ſame manner 52 times. In each Diſtillation there was produced in the Retort a red ſhining Powder.

The Effect.

There was then four Drams and a half after 52 Diſtillations of a ſharp,
 D 2 red,

red, shining Powder, purging upwards and downwards: There remained 16 Ounces and 5 Drachms of Quicksilver; so $6\frac{1}{2}$ Drachms were lost. This could not be help'd. Some part expires thro' the Glew; something black, with a little Quicksilver, sticks to the Blotting-Paper every time the Mercury is dried. This is but very little at one time; but when the Work comes to be often repeated, it comes by Degrees to be a considerable part. The Powder produced was heavy, of a red shining Colour, very brittle, of a very sharp, metallic Taste, nauseous, penetrating, hardly to be taken out of the Mouth, disordering the Human Body very much, and for a long time, and disposing to Excretions. The Mercury which had been thus treated, appeared more fluid than common Mercury.

C O R O L L A R I E S.

COROLLARIES.

1. Quicksilver thus forced by Fire, is turned from a Fluid into Powder, in about the $\frac{1}{28}$ part of its whole Weight.

2. From a Silver Brightness, like Looking-Glass, into a shining red Colour.

3. From very insipid Taste, into one very sharp, rough, metallic, and penetrating.

4. From very mild, into sharp, virulent, venomous, disordering the Body, and exciting Pains.

5. From volatile into more fixed; which is no longer volatile by the same Degree of Fire as it flew up with before.

6. As

6. As to its other part, it changes into more fluid, in other respects like what it was before.

7. When the Vessel is stopt close, a mechanic Motion, and a small Fire, give Quicksilver a black Colour; a greater Fire gives it a red Colour.

EXPERIMENT V.

I was desirous to know what would happen to the Mercury, if it was still forced by a Fire requisite to Distillation.

The Operation.

I took care to distill, as before, the 16 Ounces and 5 Drachms of Mercury remaining from the former Operation: I distill'd it so long,
'till

'till there remain'd none in the Bottom. What was came over, being cleaned and dried, I always poured again into the same Retort. This Work I repeated 448 distinct times. Now this Mercury had been forced by Distillation compleatly 500 times: It had risen always more fluid and pure. The last time I heated the Fire more, but then the red Powder seem'd rather to be lessened than increased, perhaps being in part revived.

The Effect.

The Powder in the bottom of the Retort, weigh'd 1 Ounce, 5 Drams, and 21 Grains. The Mercury remaining after 500 Distillations, weighed 9 Ounces and 5 Drachms: But it happen'd, in so often distilling, that sometimes the Retorts broke, and so some of the Mercury
got

got away, besides what was lost by so often cleaning and drying.

COROLLARIES.

1. The Corollaries of the second and fourth Operations, are likewise true in this Operation.

2. The Mercury is very unchangeable in one part,

3. Yet continually changeable in the other part.

4. Out of the altered Form, perhaps it returns into its former Shape.

5. And perhaps after Regeneration by a new Action of Fire, it is carried back again into the altered Shape.

EXPERIMENT

EXPERIMENT VI.

That Property of Quicksilver, by which it is turned into this Powder by Fire, is hardly taken from it by Distillation.

The Operation.

The very fluid and very pure Mercury (out of which I had made by 501 Distillations, 2 Ounces, 1 Drachm, and 51 Grains of Powder, by the 2^d, 4th, and 5th Operations) which remained to the Quantity of 10 Ounces, 5 Drachms, and one half, I distilled out of a pure Glass Retort, till the Mercury was all passed thro' into the Receiver. The Bottom of the Retort was as clean as if it had been just taken out of the Furnace at the Glass-House: But

E

at

at the Edge of the Surface, where it had stood before the Distillation in the Belly of the Retort, there was a shining Ring, of a beautiful red, fine and fair to the Eye. The Mercury that came out, being purified and dried, I poured again into the same Retort, and forced it into the Receiver. This was repeated ten times: Every time more of the red Powder was made, and in no less Quantity then from the crude Mercury.

The Effect.

The Mercury very vivid and very bright; the fix'd Powder of a beautiful red, but (as in 2^d, 4th, 5th Operations) to the Quantity of seven Grains.

COROLLARIES.

1. The Mutability of Mercury into this Powder by Fire, still remains

in the Mercury, after an eighth part of it has been changed into the Powder.

2. After 511 Distillations, each of which had produced some of that Powder, this Mutability remains, altho' no new Mercury has been added.

3. Therefore that Powder is scarce to be accounted the Dregs or Feces separable by Distillation from the intimate Substance of the Mercury.

4. And hence it is certain the Mercury is so changed by this Means; but it is not certain that it is by this Means defecated.

5. Fire is not united to Mercury, as some celebrated modern Chemists have said it was, in their Writings.

6. Diligence can scarce teach the constant Artists those Bounds beyond which that Powder is no longer produced.

7. If that Powder is produced by Fire out of the crude Sulphur of Mercury, this Distillation does not purge the Mercury from it.

EXPERIMENT VII.

To examine the Powder produced by 2^d, 4th, 5th, 6th Operations.

The Operation.

Two Ounces, 1 Drachm, and 51 Grains of that Powder, I put into a clean Glafs Retort, covered with a Coat of Clay, mix'd or temper'd with Sand. I heated it by Degrees, till

till at last the Retort, the bare Fire being laid over it, grew almost red with the bright Fire that covered it in the Sand Furnace, for three Hours together.

The Effect.

There came out 1 Ounce, and half a Drachm of pure Mercury revived from that Powder: There remain'd in the Bottom of the Retort seven Drachms and a half of the bright red Powder. Something stuck in the Neck of the Retort, and in the Glass Vessel applied to the Neck of the Retort. Perhaps some was dissipated by so great and lasting a Fire.

COROLLARIES.

1. The Mercury returns out of the Powder into which it was turned by the Fire.

2. Being

2. Being revived, it recovers all its former Properties, and lays aside all those that it had acquir'd. Out of the Powder comes the same Mercury as at first.

3. The acquired Fixedness does not bear a great Fire.

4. Yet in that Powder one part is more fixed than another; this still remains a Powder, that returns to Mercury.

EXPERIMENT VIII.

Further to examine the Powder remaining after the foregoing Operation.

The Operation.

Seven Drachms and 37 Grains of that Powder in a very clean Glass Retort,

Retort, cas'd over with a Coat of Sand and Clay, I put into the naked Fire, which was carefully increased by Degrees, 'till the little Retort, which was entirely covered with the Coals, grew quite red hot. In this Degree of Heat I kept it for four Hours.

The Effect.

In the Receiver was seven Drams of most pure Mercury reviv'd from this Powder. In the Bottom of the Retort were 15 Grains of a dark, subtle, and fixed Powder, in so strong and lasting a Fire. There was a broad Spot, very thin, of a beautiful red, impress'd on the Bottom of the Retort, and, as it were, penetrating into the Glafs.

COROLLARIES.

1. Mercury by Fire alone is changed into the Powder above describ'd.
(2, 4, 5, 6, 7, 8.)
2. This

2. This Powder, by Fire alone, but a stronger, is changed into Mercury.

3. Thus the Serpent that has bitten itself dies.

4. It arises again more glorious from Death.

5. So much Labour, and so great Fire being so long sustain'd, out of 17 Ounces of Mercury, only 15 Grains remain'd fix'd in the Glafs, which was so hot, that it was ready to melt.

6. Silver, Gold, and other Metals sought for by this Art out of Quick-silver, is scarce any, in Proportion to the Charge and Labour.

7. Of the Powder so fix'd from Mercury, only the 7^d Part remains fix'd in this Fire, the rest returns to Mercury.

8. Twenty-

8. Twenty-two Grains were lost. Were they dispers'd? or was this Quantity of Weight first accreted to the Mercury by Fire, thence again separated by a stronger Fire?

9. The Nature of Mercury is constant, simple, and cannot be separated into dissimilar Parts by Distillation; not into fix'd and volatile; not into pure and impure; not into feces and defecated; not into different Elements.

EXPERIMENT IX.

I put thirteen Grains of this last fix'd Powder (VIII.) into a Crucible, and set it over an open Fire before the Bellows: I increas'd the Heat of the Fire, by blowing till the whole Crucible was red hot: I kept it so for a Quarter of an Hour. The Powder remain'd fix'd in the Bottom, but swell'd up like a Sponge,
F
and

and of a dark Colour. From hence I learn'd that this Powder had acquired a considerable Degree of Fixedness by Fire alone.

EXPERIMENT X.

Then I added to this fix'd Powder (IX.) some Borax in a Crucible, and increased the Fire by blowing. It became one Mass, brittle, growing like Glass, and fix'd in this great Fire.

EXPERIMENT XI.

I gave 2 Grains of that Powder, which had remained fix'd, to the Weight of 15 Grains (VIII.) to a sworn and very skilful Essayer of Metals at Amsterdam, to examine it with all possible Accuracy according to the Rules of Art, with Lead. Nothing fix'd remain'd: Therefore in that Powder there was not the least Gold or Silver.

EXPERI-

EXPERIMENT XII.

The thirteen Grains melted down with the Borax into a Mass growing like Glass (almost vitrified) (x.) I gave to a sworn and very skilful Essayer of Metals at Amsterdam, to examine this whole little Mass with the greatest Accuracy, according to the Rules of Art, in Lead. Nothing fix'd remain'd of the whole Mass; so there was no Gold nor Silver in it.

COROLLARIES.

1. Quicksilver persists in the Fire, retaining its Nature unalterable.

2. Simple, and not separable, into different Parts by Distillation.

3. It is fixed by Fire, and seems changed in its outward Form.

4. Appearing so, in various Parts, it acquires different Degrees of Fixedness.

5. Yet none of these Parts acquired, by so strong and lasting a Fire, the Fixedness of Gold or Silver.

6. The fixating Cause is Fire passing thro' the Glass; thus changing part of the Mercury, either by its simple Action, or by its uniting itself with the Quicksilver.

7. The Fire so acting, by 511 Distillations, by its Action or Conjunction, could not yet change the smallest Particle of the Mercury into Gold or Silver.

8. But from the Mercury so fixed by Fire, a greater Fire restores true Mercury; or the known Power of Lead makes it vanish out of the Cupell.

9. There-

9. Therefore it does not appear, by these Experiments, that from Mercury and Fire so conspiring, any known Metal is produced. Those 13 Grains did not run by a Wind-Furnace; they did not persist in the Lead; they were not dissolved with the Mercury into an Amalgama.

10. Therefore Fire, by these Experiments, is not demonstrated to be the Sulphur of the Philosophers that fixes Mercury into Metals.

11. But it seems probable that the Sulphur of the Philosophers is something else very near it.

12. The fixed part is not the Feces of Mercury, nor its crude generating Sulphur; it returns into Mercury.

13. The

13. The Depuration of Mercury from the earthy Feces, and the watry Crudeness, seems scarcely to be obtained so easily by Distillation alone; perhaps by some more secret Work it is obtain'd.

14. To make Gold or Silver of Mercury, does not proceed. Ignorant Men are given up to Imagination, easy to Promises, rich in Hope. This Mercury remained Mercury.

15. Safe from the fallacious Writings and Prescriptions of the Philosophers, who promise such Things in a short Time, or a few Months from Mercury and Fire: Indeed, within the Space of many Years, I have not discovered the least Marks of a first beginning.

EXPERIMENT

EXPERIMENT XIII.

*Mercury kept under boiling Water,
is not rais'd from the Bottom of
the Vessel.*

The Operation.

I pour'd a Drachm of Mercury twice distilled into a Glafs Urinal, which I fill'd with Rain Water: Then I set the Vessel upon the naked Fire: The Water boil'd strongly for eight Hours, yet so that there still was some Water swimming over the Mercury. The Mercury being afterwards weigh'd, gave a Drachm without any Loss.

Again; I pour'd a Drachm of Mercury into a clean dry Glafs Vessel. This I so fitted in a Kettle, that it cou'd not fall aside. I filled the Kettle with Water; I made the
Water

Water boil eight Hours. This Vessel was cylindrical, open, two Inches and one half deep, and placed so that the Water cou'd not get in. After this was so done, the Mercury weighed one Drachm without any Loss.

I put pure Mercury into a Glass Vessel, I poured Water upon it; and setting the Still over it, I boil'd it for a long while: No Mercury ascended. I continued boiling, till all the Water being gone out, the Mercury remained dry in the Bottom of the Vessel. However, I did not then increase the Fire; but the Mercury presently ascended to the Sides of the Vessel, and into the Head. The Reason of this appears from what I have written in my chemical Institutions about Water and Fire.

EXPERIMENT

EXPERIMENT XIV.

Mercury may be chang'd by Art so as that it shall ascend from the Bottom of the Vessel, by the Heat of Vinegar, before it boils up.

The Operation.

Having made a Mass of a Pound and a half of Mercury, with half a Pound of Lead (the Chemists call such a Mass an Amalgama) I shook it in a Glass Vessel. There was produced a very black Powder. This I put into a Glass Cucurbite 14 Inches high; I pour'd pure distill'd Wine-Vinegar over it. By a gentle Distillation I took away the Phlegm. I then increased the Heat a little, but so that the Liquor did not boil. The Mercury ascended into the
 G Head,

Head, together with the Phlegm, and thence into the Receiver. The same I tried and experienced other Ways. It is a Circumstance worthy a Chemist's Speculation; but I shall say no more of it here. By much the like Artifice, I have seen Quick-silver made so volatile, that it was rais'd in my Digestory-Furnace with a less Degree of Heat, than that of a Man in Health, and ascended to the Sides of the Vessel. Do you think the Mercury was then purer? It was mix'd with Metal, and very dry. But perhaps I may some other time relate some very laborious Experiments which I have made for several Years, in examining Mercury and Metals, if I find that such Things are likely to meet with the Approbation of the Learned.

EXPERIMENT

EXPERIMENT XV.

Geber has written, that pure Mercury is heavier than Gold: For a long time I endeavour'd to learn, Whether Mercury could be brought to a denser, and consequently a heavier State, than that it is naturally in? I began to attempt this by a Separation of the lighter and more changeable Part, from the more heavy Remainder, but cou'd not do it. I afterwards strove to defecate it by various Methods: It did not succeed. However, I discovered some Things that deserve the Contemplation of curious Observers, which I beg leave to mention, as follows: Two Ounces of pure Gold in a Mass, by hydrostatical Examination, in Rain-Water, defecated by gentle Distillation, I

G 2

found

found to weigh in proportion to Water, as $19\frac{119}{500}$ to 1. Common Mercury, as sold, once distilled from the Retort to the same Water, weighs as $13\frac{57}{100}$ to 1. Mercury amalgamated with purest Gold, and then distilled some hundred times, as $13\frac{55}{100}$ to 1. Mercury so treated with the purest Silver, was to Water as $13\frac{57}{100}$ to 1. Mercury united with Lead, and with it all turn'd into Powder, and thence resuscitated by a strong Fire, was to Water, as $13\frac{58}{100}$ to 1. Mercury 511 times distilled, was as $14\frac{11}{100}$ to 1.

These Statical Weighings were made by Instruments that cou'd not be found fault with, and with the most prudent Care. I spent some Years to prepare Mercury for this Purpose; and, for ought I know, no one else has had any Regard to it. Afterwards, many Things proper for
Meditation

Meditation may be drawn from thence, by proper Judges in this Matter: But I may be allowed to make a few Observations.

COROLLARIES.

1. If Mercury, when defecated, becomes lighter, then it is rendered most defecated by Gold and Lead. By the Art of *Suchtenius* and *Philalethes*, it remains the same.

2. If Mercury, when defecated, becomes heavier, then it is rendered most defecated by Silver, in proportion to other Metals; but most of all by simple Distillation, by a Conversion into a Red Præcipitate of itself, and a Refuscitation thence made.

3. Mercury may be made thicker (condensated) by Silver and Fire.

4. Mercury

4. Mercury may be thickned by Distillation by Fire most of all. Is this then the best Way to depurate and perfect it?

5. Does Mercury deposite its heaviest Part in Gold? Is this deposited Matter the Seed of Gold?

6. Does Mercury deposite its heaviest Part in Lead? Is this deposited Matter the Seed of Gold?

7. Does Fire, boiling the Mercury 511 times, fixing and resuscitating it, increase that heaviest Part? Can Mercury, by a continued Work, at length be thickned into the Weight of Gold? Would it then be live Gold, or the Mercury of the Philosophers? This let proper Judges examine.

Let

Let these few Remarks, and yet not made without Trouble and Caution, concerning the Purification of Quicksilver, suffice at this time. I have some by me much more operative concerning the extracting of Mercury out of Metals, of its Action upon Metals, of Metals themselves; perhaps, when I have Leisure, I may offer them to the Public, that Persons, after being warned, may spare a fruitless Labour and Expence.
Farewell.



I have been told, that the
 accounts without the
 fact, containing the
 Quicksilver, which
 have come by me
 the concerning the
 victory out of
 upon which of
 perhaps, when I
 offer them to the
 loss, after being
 a twisted labour
 I have

