

the second Year. So that it is much the better Way to have fresh Roots every Year.

I am with the greatest Respect,

GENTLEMEN,

Chelsea, Feb.
4th, 1737.

Your most Obedient Associate,

PHILIP MILLER.

VII. *A Letter from T. Madden, M. D. of Dublin, to Cromwell Mortimer, M. D. R. S. Secr. giving an Account of two Women being poisoned by the SIMPLE DISTILLED WATER OF LAUREL-LEAVES, and of several Experiments upon Dogs; by which it appears that this LAUREL-WATER is one of the most DANGEROUS POISONS hitherto known.*

S I R,

A Very extraordinary Accident that fell out here some Months ago, has discovered to us a most dangerous Poison, which was never before known to be so, though it has been in frequent Use among us. The Thing I mean is a Simple Water, distilled from the Leaves of the *Lawro-cerasus*. The Water is at first

first of a Milky Colour, but the Oil which comes over the Helm with it, being in a good Measure separated from the Phlegm, by passing it through a Flannel-Bag, it becomes as clear as common Water.

It has the Smell of the bitter Almond, or Peach-Kernel, and has been for many Years in frequent Use among our Housewives and Cooks, to give that agreeable Flavour to their Creams and Puddings. It has also been much in Use among our Drinkers of Drams; and the Proportion they generally use it in, has been one Part of *Laurel-Water* to four of *Brandy*.

Nor has this Practice (however frequent) ever been attended with any apparent ill Consequences, till some Time in the Month of *September*, 1728, when it happened that one *Martha Boyse*, a Servant, who lived with a Person that sold great Quantities of this *Water*, got a Bottle of it from her Mistress, and gave it to her Mother *Anne Boyse* as a very rich Cordial.

Anne Boyse made a Present of it to *Frances Eaton* her Sister, who was a Shopkeeper in the Town, and who, she thought, might oblige her Customers with it. Accordingly in a few Days she gave about two Ounces of the *Water* to a Woman called *Mary Whaley*, who had bought some Goods of her.

Mary Whaley drank about two Thirds of what was filled out, and went away. *Frances Eaton* drank the rest. *Mary Whaley* went to another Shop to buy somewhat else, and in about a quarter of an Hour after she had drank the *Water* (as I am informed) she complained of a violent Disorder in her Stomach. She was carried Home, and from that Time she lost her
Speech

Speech, and died in about an Hour, without Vomiting, or Purging, or any Convulsion.

The Shopkeeper, *Francis Eaton*, sent Word to her Sister *Ann Boyse* of what had happened, who came to her upon the Message, and affirmed, that it was not possible the Cordial (as she called it) could have occasioned the Death of the Woman; and to convince her of it, she filled out about three Spoonfuls, and drank it. She continued talking with *Francis Eaton* about two Minutes longer, and was so earnest to persuade her of the Liquor's being inoffensive, that she filled out two Spoonfuls more, and drank it off likewise. She was hardly well seated in her Chair, when she died, without the least Groan or Convulsion.

Frances Eaton, who, as was before observed, had drank somewhat above a Spoonful, found no Disorder in her Stomach, or elsewhere; but to prevent any ill Consequence, she took a Vomit immediately, and has been well ever since.

Mary Whaley was buried without being examined by any one, that I can find, except the Coroner. I went to see *Ann Boyse* about Twenty-four Hours after her Death, but could not prevail to have her opened. She was about sixty Years old; her Countenance and Skin appeared well coloured, and her Features were hardly altered, so that she looked as one asleep. Her Belly was not swelled, nor had she any other external Mark of Poison.

This Accident brought into Discourse another of the like Nature which happened about four Years since in the Town of *Kilkenny*. A young Gentleman, Son to Mr. — *Evans*, an Alderman of the Town,

Town, mistook a Bottle of this *Laurel-Water* for a Bottle of *Ptisan*. What Quantity he drank is uncertain, but he died in a few Minutes, complaining of a violent Disorder in his Stomach. This Affair was not much regarded at that Time, because he laboured under a Distemper, to which, or to an improper Use of Remedies, his Death was attributed by those about him.

To satisfy myself farther as to the Effects of this Poison, I made some Experiments, in Conjunction with a few of my Friends, an Account of which follows.

I. *October 3, 1728*, We gave a large Setting-Dog three Ounces of *Laurel-Water* by the Mouth. In three Minutes after he had taken it, he began to be strongly convulsed. His Convulsions continued about five Minutes; after which I untied him. He then fell into a most violent Difficulty of Breathing, which lasted about eight Minutes, and abated gradually; upon which he endeavoured to raise himself, but could not.

I tied him down once again, and gave him an Ounce and an half more, upon which he sunk at once, and without any Return of his Convulsions, or Difficulty of Breathing, he expired in two Minutes.

Upon opening the Stomach, I found in it the whole Quantity of *Water* which he had taken; its Surface was covered with Froth, but it was not otherwise altered in its Colour, Consistence, or Smell. The Inside of the Stomach was not at all inflamed, nor was there any visible Alteration in the *Tunica Villosa*.

The Veins of the Stomach, all the *Mesaraick* Veins, and likewise the *Vena Cava*, were much distended with Blood; the *Arteries*, on the contrary, were remarkably empty. The *Liver* and *Gall-Bladder* were no Way altered. The *Kidneys* were unusually full of Blood, and appeared of a bluish Colour, almost as deep as that of the Violet Plumb. Upon making an Incision into one of the *Kidneys*, the Blood flowed in much greater Plenty, and was more fluid than usual. In the *Heart* there appeared nothing præternatural. The *Brain* was no way altered.

II. *October 24*, We gave an Ounce and an half of the same *Water* to a Bitch of a smaller Size. She was immediately let loose, and in two Minutes she lost the Use of her Limbs. She attempted several Times to raise herself, and walk, but she staggered and reeled about, and then fell down. She repeated this without ceasing about five or six Minutes. At last she was violently convulsed, especially in the Muscles that extend the *Head* and *Spine*. About the Space of a Minute she had that Sort of Convulsion called the *Opisthotonos*, the Back of her *Head* being drawn almost to her *Tail*.

After this she vomited plentifully, and her Convulsions ceased. She then lay still for seven or eight Minutes, labouring for Breath (though not so violently as in the former Case) and foaming at the Mouth. We gave her an Ounce more of the *Water*; upon which her Difficulty of breathing encreased, and she died in two Minutes.

Upon

Upon opening the *Abdomen*, the *Thorax* and the *Head*, we found every thing in the same State as in the former Instance.

III. *October 25*, We gave two Ounces of the *Water* to a Dog of the same Size with the former, which produced the like Appearances as in the foregoing Case. This Dog was dying half an Hour; for the Dose was not repeated, because he did not vomit up what he had taken. Upon opening him, we found every thing in the same State as in the former Instance.

IV. *October 26*, We gave two Drams and an half of the *Water* to a Dog of a middle Size, and immediately untied him. He then ran about the Room very briskly for about a Minute, and seemed to be no Way affected with it; yet he soon lost the Use of his Limbs. He often attempted to raise himself, and walk, but still fell down again before he had moved two Yards from the Place.

After this he vomited plentifully, considering that he had fasted 24 Hours, upon which he was seized with a Convulsion more violent than any of the former Dogs, especially in the Muscles that extend the *Head* and *Spine*. These Convulsions continued about eight or ten Minutes; upon their ceasing, he lay still, breathing deeply, though regularly, and seemed to be asleep. In about ten Minutes he raised himself, took some Food, and walked about tolerably well. We left him, and returning after three Hours, we found him perfectly recovered.

V. *October 28*, We injected an Ounce of the *Water* into the *Intestinum rectum* of a strong Spaniel Dog, and let him loose. In the Space of two Mi-

minutes he began to lose the Use of his Limbs, and to stagger as the others had done. He was convulsed more violently than any of the rest, and chiefly in the Muscles of the *Neck* and *Spine*. The Muscles of his *Eyes* were strongly convulsed, which Appearance was not observed in the other Dogs. He foamed at the Mouth, yelled frequently, and breathed with more Difficulty than any of the rest. His Convulsions continued twenty Minutes; upon their ceasing he lay quiet, as though he slept, only that his Eyes were open. His Limbs were now grown perfectly paralytick.

We raised him up several Times, and offered to set him on his Legs, but he did not attempt to use them. He continued in this Way about fifteen Minutes longer, and then was seized with another violent Convulsion, which in five Minutes put an End to his Life.

Upon opening the *Abdomen*, we found the Veins of the *Stomach* and *Guts* very much distended with Blood, as in all the former Instances. In the *Heart*, *Lungs* and *Brain*, there was no visible Alteration.

VI. *October* 30, We injected an Ounce and an half of the *Water*, diluted with three Ounces of common Water warmed, into the *Anus* of a small Bitch. Before we could untie her she was seized with Convulsions, and yelled much. She fell as soon as she was loosed, and never after endeavoured to rise. She had Convulsions, and great Difficulty of Breathing about two Minutes. She then lay still, with her Limbs stiff and extended, about three Minutes; during which Time her lower Jaw was convulsed, and pulled alternately to and from the upper Jaw, with a very quick Motion.

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After this her Limbs became paralytick, and she gasped for Breath about two Minutes longer. She was quite dead in seven or eight Minutes from the Injection of the Clyster.

In the *Abdomen*, *Thorax* and *Brain* every thing appeared as usual.

VII. *November 2*, We injected half an Ounce of the *Water*, diluted with three Ounces of common Water warmed, into the *Anus* of a small Bitch. In the Space of four Minutes she began to breathe with Difficulty. We let her loose, but she was not able to stand, or walk without stumbling. The Muscles that extend the *Head* were convulsed, and her Fore-legs were affected for three or four Minutes with a *Tetanus*, but had no convulsive Motion. She vomited and purged plentifully. She did not yell, nor seem to suffer much Pain, nor did she lose her Senses all the Time. In half an Hour she recovered.

VIII. The next Day, we injected a Drachm of the *Water* into the external *Jugular* of the same Bitch. She was seized with Convulsions as violent as the former, before we could untie her. They lasted about five Minutes; after which she recovered gradually, and continued well.

IX. *November 20*, We injected four Ounces of the *Water* by the *Anus*, without any Dilution, into a strong Dog of a middling Size. He was seized with Convulsions and Difficulty of Breathing, in less than two Minutes after the Injection. He fell to the Ground as soon as his Convulsions began, and never once attempted to rise; nor were his Convulsions in any Sort so violent, neither did they continue so long as in the former

mer Instances. He bled at the Nose about four Spoonfuls. The Blood was of a very bright florid Colour, His Convulsions lasted about four Minutes; after which he became entirely paralytick, and died in three Minutes more.

We found the *Stomach, Intestines, Liver, &c.* in the same State as those above-mentioned. Upon cutting about an Inch from the lower Part of one of the Lobes of the *Lungs*, the Blood flowed from it in great Plenty, and appeared more florid and fluid than usual.

X. *Decemb. 14*, We gave five Ounces of *Laurel-Water* by Clyster to a Dog somewhat of the Size and Shape of the *Italian Greyhound*. He seemed at first to be no Way affected with it, but in about five Minutes he began to droop, and lose the Use of his Limbs. He did not once yell, or struggle as the others had done, but sunk gradually, till he became at last entirely paralytick. He had not any Convulsion, except a kind of *Spasmus Cynicus*, a few Minutes before he died, which happened in half an Hour after the Injection of the Clyster.

Upon opening the *Abdomen*, we found the Veins much distended with Blood, as were also the Veins and Sinuses of the *Brain*.

XI. *December 19*, We gave three Ounces of the *Water* in the same Manner to a Cur of the Lap-dog Size. He died in seven Minutes, without any Convulsion, except a *Tetanus* in the Muscles that extend the *Head*.

The *Lawro Cerasus* being an Ever-green, and abounding with a warm essential Oil, we imagined that other
Ever.

Ever-greens might partake of the same poisonous Quality.

Accordingly we made Trial of a *Water* distilled in an *Alembick* from the Leaves of the *Yew-Tree*, so much talked of by the Ancients, and whose very Shade they supposed to be fatal to those who sat or slept under it.

XII. We gave three Ounces of this *Water* by Clyster to a very small Cur Dog, but he was not in the least affected with it.

XIII. We also gave, by the Mouth, two Ounces of a *Water*, distilled from the Leaves of the *Bay-Tree*, to a young Spaniel, without any Effect.

XIV. We afterwards made an Experiment with the distilled *Water* of *Box-Leaves*, which had a very strong *Narcotick* Smell. We injected five Ounces of this *Water*, by the *Anus*, into a small Cur Dog, but he was no Way affected with it, though we kept him twelve Hours after the Operation.

XV. Being desirous to know whether the Virulency of *Laurel-Water* was owing to the Fire in Distillation, we poured warm Water upon some *Laurel-Leaves* bruised, and made a strong Infusion of them. We poured an Ounce of it down a Dog's Throat, half of which was supposed to enter the Stomach, and five Minutes after another Ounce was given in like Manner. The Dog seemed to be somewhat sick at his Stomach, but was soon as lively as ever. A few Minutes after this another Ounce was given to him by the Mouth, of which we suppose a fourth Part to have been lost. He soon after stared, and trembled very much. In five Minutes another Ounce was exhibited, upon which

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he trembled as before, but in a little Time he appeared easy and lively.

Imagining that these small Quantities lost their Power, during the Intervals of giving them. in ten Minutes after his taking the former Dose, we poured down his Throat two Ounces and a half at once. He immediately tumbled on his Back convulsed, and tumbled over three or four times, but quickly returned to his Feet. He staggered, his Eyes stared, and he fate down like a Dog that is tired. At length he shut his Eyes, his Neck became extended, and we apprehended he was falling into Convulsions; but instead thereof he vomited a vast Quantity of indigested *Chyle*, in which appeared a great Portion of the Infusion; after which he seemed to be perfectly recovered.

XVI. In about twenty-five Minutes after this we gave the same Dog by the Mouth two Ounces of the Juice expressed from *Laurel-Leaves*, and in about ten Minutes more another Ounce was given him in the same Manner. In a few Minutes he began to lose the Use of his hinder Legs, but he quickly recovered them. Upon his taking another Ounce soon after the former, he fell into a great Difficulty of Breathing, and yelled much. After this he was seized with very strong Convulsions, which affected his lower Jaw and hinder Legs most remarkably.

In about the Space of five Minutes these Convulsions were succeeded by an entire Resolution of all the Limbs. He breathed with great Difficulty, and very slowly. No Appearance of Expiration. Sometimes we observed two Attempts at Inspiration without Intermission, or closing of the Mouth. At other
times

times there was near the Space of a Minute between two Inspirations.

After this he was seized with a Trembling in his Limbs, and in about three Quarters of an Hour from his taking the last Ounce, he died without any Struggling, with his Tail extended.

There were several other Experiments made of the same Kind, by some Gentlemen of the Profession here, which corresponded exactly with the foregoing, excepting this one Circumstance, that they were of Opinion, that this Poison occasioned an Inflammation in the *Stomach* and *Guts*.

Towards clearing this Dispute, We, who thought otherwise, put together the following Hints, from which it appears that the Fact is not as they imagined, and that notwithstanding we find, upon an Animal's being killed by this Poison, the Veins greatly distended with Blood, yet there is not any Inflammation produced by it.

I do not know any thing that will illustrate this Matter better, than the Analogy which may be observed between the Convulsions occasioned by the Epilepsy, and those which are the Effect of *Laurel-Water*.

For Instance, in the Epilepsy, the Body is universally convulsed, especially the Muscles of the *Neck*, the *Tongue*, the lower *Jaw*, and those of the *Arms*.

The Effect of these Convulsions is this: The *Heart* beats with unusual Violence and Frequency, the necessary Consequence of which is, that the Blood will be thrown in greater Plenty from the Arteries into the Veins. But because the Muscles do compress the Veins

more than the Arteries (whose Systole does enable them to overcome that Pressure) therefore the Blood, which is still pushed forward by the Systole of the Heart into the Veins, will be retained there by the afore-said Pressure of the Muscles, and will return in a very small Quantity to the *Heart*.

For Example, the *Abdominal* Muscles being convulsed, press the *Stomach* and *Intestines* upon the *Vena Cava ascendens*, and likewise upon the *Vena Portæ*; by which Means the Blood, returning from the lower Extremities, is retained in those Vessels. Accordingly we see the visible and immediate Effects of this Pressure are the forcing out the Excrements of the *Bladder* and *Intestines*, and very frequently the *Profluvium Seminis*.

In like Manner the Pressure of the Muscles of the *Neck*, *Tongue*, and lower *Jaw* upon the *Jugular* Veins and their Branches, will not suffer the Blood to return to the *Heart* by the *Vena Cava descendens*.

To this we may add the Pressure of the *Diaphragm* and *Ribs* upon the *Lungs*, by which Means the Trunks of the *Vena Cava ascendens* and *descendens* are compressed at their Insertion into the *Heart*.

Hence follows that frightful Blackness of the Face during the Paroxysm, and the prodigious Swelling of the Veins of the Head, especially the Temporal.

The necessary Consequence of all this must be, that if the Convulsion lasts long enough the Man must die, on Account of the Blood being thrown out of the Arteries into the Veins, and not returning to the Heart. And I make no Question, that if such a Person was opened after Death, we should find the *Vena Cava*, the *Vena Portæ*,

Portæ, the Veins and Sinuses of the *Brain*, together with all their smallest Ramifications, very much distended with Blood, and the Arteries on the contrary almost empty.

But if the Epileptick Convulsion ceases before the Circulation of the Blood is entirely stopped, then all becomes calm again, the Pressure is taken off the Veins, the Blood returns to its usual Course, and in a few Hours the sick Person is perfectly recovered.

And yet all this violent Convulsion of the Body, this prodigious Distension of the Veins, and Interception of the Course of the Blood passes without any Inflammation, as appears from the speedy Recovery of the sick Person: For if the Convulsion had occasioned an Inflammation, a Fever must necessarily have ensued, which would discover itself by manifest Tokens, and would require a much longer Time for its Abatement.

Let us now observe the Analogy between these Appearances, and those produced by *Laurel-Water*.

We find by Experiment, that an Ounce, or even two Drachms and a half of *Laurel-Water* will occasion more violent Convulsions than three Ounces, or even five of it. *Exp.* 4, 5 to 11. If therefore an Inflammation was the necessary Consequence of this *Water* being taken into the *Stomach* or *Guts*, the more violent the Convulsion is, the greater the Inflammation ought to be.

On the contrary we find, that the more violent the Convulsion is, the greater is the Probability that the Creature will recover. *Exp.* 4 to 7. And when it so falls out, the Manner is exactly the same as in the Recovery of an Epileptick Person. In a few Minutes the Creature becomes as brisk as if no such Thing had happened.

Now if an Inflammation was at all the necessary Consequence of this Poison, though the Creature recovers, yet there must be some Inflammation, greater or less, produced, which must occasion more violent and lasting Symptoms. But since none such appear, since the Recovery is so sudden and effectual, it is the strongest and plainest Argument, that there is not any Inflammation produced.

If the *Laurel-Water* is administered to the Quantity of an Ounce or more, the Creature unavoidably dies in a few Minutes, and upon opening him the Appearances are these. Both the Trunks of the *Vena Cava*, and all the Ramifications of the *Meseraick* Veins are greatly distended with Blood. These Vessels are easily distinguished from the Arteries, not only by the Thinness of their Coats, but also by the Colour which the Blood exhibits to the Eye. Now I conceive that all Inflammations have their Beginning in the Arteries, and that they are produced, because there is no free Passage for the Blood into the Veins. But if once this Passage becomes free (as in this Case it surely is, for we find all the Veins distended with Blood beyond their natural Dimensions) the Inflammation is then at an End, the Cause which produced it being taken off.

Moreover, the Fact laid down, that the Veins are preternaturally distended with Blood, does necessarily conclude, that the Arteries are not distended with it, and consequently that there cannot be any Inflammation; for if the Quantity of Blood is increased in the Veins, it must be proportionably diminished in the Arteries.

To what has been said, we may add the following Observation; *viz.* that if there was any Inflammation produced by this Poison, it ought to appear most remarkable

markable on the Inside of the *Stomach* and *Intestines*, because of the immediate Contact it has with those Parts.

All other Poisons which occasion Inflammations in the *Stomach* and *Guts*, do first operate upon the Blood-Vessels, and corrode the Parts inflamed. They occasion Vomitings and Fluxes of Blood, which at length terminate in Convulsions.

One may very easily be deceived upon opening the *Stomach* of a Dog, and may mistake the Redness of the *Tunica Villofa* for an Inflammation.

The inner Coat of a Dog's *Stomach* is naturally of a ruddy Flesh-colour, and therefore of all domestick Animals a Dog has the quickest and strongest Digestion. Accordingly we see, that they swallow Bones, and digest them perfectly well ; and although they are but half chewed when taken into the *Stomach*, yet they are at last reduced to as soft a Consistence as any other Part of their Aliment. It is for this Reason therefore, that the *Stomachs* of Dogs are more plentifully supplied with Blood than those of other Animals ; by which Means not only the muscular Force of the *Stomach*, but its Warmth also, which is the principal Instrument of Digestion, is very much increased.

N. B. The 15th and 16th *Experiments* were communicated to me by Dr. *Stephens*, a Fellow of our College of Physicians. I am,

S I R,

Dublin, April
29, 1731.

Your most Humble Servant,

T. MADDEN,

DR. John Ruty of Dublin, informed the Publisher, That whereas there were several other Experiments made at the same Time by other Gentlemen, as Dr. Madden mentions, which agreed with these, some Persons who were present at them proposed several things to be tried as Antidotes to this Poison; accordingly Bole, Vinegar and Milk were given to a Dog which had swallowed some of the Laurel-Water: The Bole and Vinegar were not observed to do much good, but the Dog which drank the Milk recovered without any bad Symptoms; but at that Distance of Time the Doctor could not recollect the Proportions that were given: He thinks a Pint of Milk. The Publisher hath tried several Experiments in Essex and in London, which correspond with, and confirm the above-related, and will be communicated to the Publick in some other Transaction.

F I N I S.

E R R A T A.

PAG. 78. l. 2. from the Bottom, dele *Spirits in the*. P. 81. l. 7. for *Fr. r. Martin*; as likewise N^o 498. p. 39. l. 3.