

The endemial colic of Devon, not caused by a solution of lead in the cyder. A particular reply is here given to Dr. Saunders's answer, to cursory remarks; with some farther remarks on Dr. Baker's essay on that subject ... / [Thomas Alcock].

Contributors

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T H E
Endemial Colic of *Devon*,
NOT CAUSED
By a SOLUTION of LEAD
IN THE
C Y D E R.

A Particular REPLY is here given to
Dr. *SAUNDERS*'s Answer,
TO CURSORY REMARKS;
With some farther Remarks
O N
Dr. *BAKER*'s ESSAY
On that SUBJECT.

By *THOMAS ALCOCK* A.M.

Veritatem, non Famam, Sequor.

PLYMOUTH: Printed by R. WEATHERLEY, for
the AUTHOR; and SOLD by R. BALDWIN, in
Pater-Noster-Row, LONDON; R. GOADBY, in
SHERBORNE; E. SCORE, in EXETER; and
J. WALLIS, in PLYMOUTH.

To the Right Reverend

W. H. B.

Journal of the

NOT GAINED

Resolution of LEAD

IN THE

G. Y. D. E. R.

of the

REMARKS

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TO THE ONLY REMARKS

with some other

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REMARKS

OF THE

THOMAS ALCOCK A.M.

Remarks were

Remarks were

For the Information of some Readers it may be necessary to premise the following State of the Controversy.

Some Time about the middle of the Year 1767, Doctor Baker, an eminent Physician of London, printed an *Essay concerning the Cause of the Endemial Colic of Devonshire*, and sent down Copies to several Gentlemen in the West.

In this Essay the Learned Author maintains that there is a Portion of Lead in the Devonian Instruments of Pounding, but none in those of Hereford, Worcester, &c. that some of this Lead is dissolved by the Juice of the Apples, and *must* in the 'Time of Pounding and Pressing, and that this Solution of Lead in the Cyder is the Cause of the *Endemial Colic*.

Mr. Francis Geach, an ingenious Surgeon of Plymouth-Dock, and F. R. S. in the Autumn of the same Year Published some *Observations* in Opposition to this Hypothesis of Doctor Baker.

About the same Time I had also drawn up a few *Cursory Remarks* on the *Essay*. These by Mr. Geach's Desire, were printed with his *Observations*.

Dr. Saunders then stepped forth, and took up the Controversy, and Published his *Answer* to our Pamphlet towards the close of the Year.

The following Spring I drew up the principal Part of this *Reply*. The Finishing and Publication however were deferred to Autumn, partly on Account of some necessary Avocations; and partly, that I might have an Opportunity of making some Experiments on the fresh Must at the approaching Pounding Season.

In the mean Time the College of Physicians Published Vol. i. of *Medical Transactions*, and therein the above *Essay* of Doctor Baker.

The College declare, after the Manner of the Royal Society, *that they do not, as a Body, mean to Vouch for the Truth of any Relation*

lation, or to give Authority to any Opinion, contained in the Papers here Published.

In the *Essay*, as now republished, the Author has suppressed several Things, which appeared in the former Work; and has altered, transposed, and added other Things; and super-added a *Postscript* and *Appendix*.

Mr. Geach has lately Published his *Reply* to Doctor Saunders.

And I hope this Reply of mine will put an End to this Leaden Controversy.

A captious Disputant, like an obstinate Litigant, may always find something in the Proceedings to take hold of, in order to renew the Suit. But Doctor Baker is of too liberal a Turn, to continue a Controversy, if it should appear, that the main of the Cause is established against Him.

Redeunt Saturnia Regna.


B*R* Saturnia Regna the Ancients meant the happy Reign of Saturn, the Golden Age. It is not my purpose, by prefixing this motto to my Work, to signify, that I imagine, those happy Golden Days are now returned. And yet, if there were any hopes of their returning, I should think, we might reasonably expect them under the auspices of our present most Gracious Sovereign. But the Reader will soon perceive, that at present I have quite another meaning. This same Saturn, that Reigned and lived so deliciously, was rather a Sufferer by Deification, when he was Translated, or Converted into, the cold and leaden Planet, Saturn. Physicians and Chemists have long characterized the seven Metals by the seven Planets: Gold, the principal Metal by the Sun, the principal Planet; Silver by the Moon; Mercury, a Sort of Semi Silver, by the Planet of that name, nearest in Situation to the Sun; Copper by Venus; Iron by Mars; Tin by Jove; and Lead by Saturn, the most distant, and coldest of all the Planets. Hence Saturnine and Leaden is the same Thing. As then Leaden Subjects have of late been so much in debate, it is the Reign of Saturn only in his Leaden Capaciiy, that I am afraid the Public will suppose to be now Returned.

Redoubt Saturnin Regnum

By Saturnin Regum the Ancient, wond'ring
happy Reign of Saturn, the Golden Age
It is not my purpose, by pursuing this matter to
my Work, to Argue, that I imagine, those happy
Golden Days are now returned. And yet, if there
were any hopes of their returning, I should think
our night transitory, expect them under the auspices
of our present King, Christian Saxony. But the
Fate of this poor Nation, that at present I have
quite another manner. This poor Nation, that
Kingdom and land, so deliciously, and rather a soft-
fate by Desolation, which he was I thought, or
Contracted into, the old and broken Lines, Saturn
I have not thought, how long contracted the
from Matter by the Latin Plumes, Cook, the firm-
equal Matter by the same, the further that I have, Silver
to the Nation, the more, a sort of Silver, by
the Lines of that name, worth in relation to the
Sea; Copper by Name, Iron by Name, I in the Year
and Lead by Name, the most distant, and ready
of all the Plumes. Hence Saturnus and Jordan
is the same Thing. At this I have suggested here
of me even I wish in detail, in the Reign of
Saturn, only in his, under Capacity, that I am afraid
the Public will suppose to be my Kingdom.



T H E
Endemial Colic of *Devon*,
N O T C A U S E D
By a SOLUTION of L E A D
I N T H E
C Y D E R.

 DOCTOR SAUNDERS begins his *Answer*, by telling his Patron, Doctor *Baker*, a great Piece of News, that his *Opinion* had been attacked by a *Confederacy of Authors, Messrs. Geach and Alcock*.

MR. GEACH had drawn up his *Remarks* on the *Essay* before I saw them, and was no wise concerned in drawing up *mine*. Consequently there was no *Confederacy*; This implying an *Union of Strength and Counsel*. But there are evident *Marks of a Confederacy*, or combined *Authorship* in the *Piece* before us: And *this Answerer* issues forth, as a mighty *Second, ferro diverberans*, brandishing his pointed *Quill*, flashing and cutting down all before him; and like a true *Mercenary in War*, committing *Outrages*
on

on Characters which the Principal himself would have treated with more lenity.

HE then communicates to Doctor *Baker* some short Memoirs of my Life and Writings; which the Doctor very probably had just before communicated to him; it being pretty likely that a Native of *Devonshire* should know somewhat more of me, than this *Answerer* can be supposed to do, who, as I am informed, had his medical Education, if not his Birth, in *North-Britain*. A deal of this fulsom childish Stuff, of telling the Doctor, what the Doctor with more Propriety could have told him, appears in the Course of the Work,

P. i. *The Latter a Reverend Ecclesiastic.* Note, the *English* Word, *Reverend*, when used by a Polemic Writer, as a Title of address to his Antagonist, always means *irreverend*, contemptible; just as the Latin *Sacer Holy*, on some Occasions signifies *unholy*, *curst*, *damm'd*.

P. i. *Whose Studies, it may be presumed, have had but a small Connection with Medical Subjects.*

THIS *Respondent* seems to make himself sure of his Cause from the supposed Weakness of his Opponent; Presuming, that nothing

thing of importance on the present Subject can be expected from a Person, that is not One of the Faculty. But the Question is, non a Quo, sed quid? Not, by whom, but what is the matter advanced? A Determination on the present Point does not altogether depend upon medical Knowledge. There are some Facts and Reasonings, that lie open to every studious Enquirer. The Gentleman needs not blame me, as an Ecclesiastick, for going a little out of my Walk to touch on medical Subjects. Do not some of his Fraternity sometimes meddle with Divinity Topics? But whatever he may conclude from the Meanness of my Performance, I must confess, that my Studies have had some small Connection with medical Subjects,—that my Name was entered on the Physical Line in *Oxford*, and that I had Opportunities, if I had but made the proper use of them, of learning something both of Physic and Chemistry from a Professor * in those Sciences, perhaps not inferior to this great Doctor *Saunders*. The Clergy or Priesthood, it is well known, have in all Ages and Countries possessed a considerable share of the Learning of the Times, in which they lived, in consequence
of

* Nathan Alcock, M. D. Fellow of the College of Physicians, and of the Royal Society, and late Professor in Anatomy and Chemistry in the University of Oxford,

of their Education, Leisure, and Seclusion from worldly Employments; And have deserved well of the Common wealth of Letters, as being great Promoters of Arts and Sciences. And therefore to censure them for meddling with other Subjects, and confine them merely to Theology, would be Stopping up some of the principal Sources of Literature, and doing a great injury to the Public.

P. i. Who has the merit of having been one of the First Champions, who lately appeared against the Supreme Authority in the cause of Devonshire Cyder.

WHAT this *Answerer* here throws out against me, as a Reproach, some Persons very probably may look upon as an Honour. The County of *Devon* at one of their public Meetings at *Exeter*, ordered their Thanks to be given to me, and Printed for my *Observations on the Cyder Act*. Perhaps that Pamphlet might lay open some of the ill Consequences of the Act, and thereby be somewhat, although in a small degree, instrumental in procuring an *Amendment*, and afterwards a Repeal of the *Additional Tax on Cyder*. But was this appearing against the Supreme Authority? Have not Subjects a constitutional Right to lay open their Grievances in an humble and respectful

ful Manner, and in such a Manner I expressed myself, and to Petition the King, or either House of Parliament for Redress? Is examining the Contents of an Act of Parliament, and, with all due Regard to the Legislature, pointing out some Hardship or Impropriety; Is this *appearing against the supreme Authority*? Are our Laws like those of the *Medes and Persians*, never to be altered? Are not many Acts of Parliament passed, and, upon controverted and untried Subjects, passed only as Effays, or Sketches, rather than complete Drawings; And after having been canvassed by the Public, and shewn to be wrong, oppressive, unequal, or inadequate to the End, either judiciously Amended, or graciously Repealed? And was not this the laudable Conduct of the Legislature with respect to the Act in Question? But why does this Writer start up a dormant Subject, which, now the Evil complained of, is removed, ought to be buried in Oblivion, and all Animosities, whether public or private, be buried with it? Does he want still to proscribe our Cyder, and not only charge it with Lead, but Tax it again with Silver?

FOR my own Part, I shall take this Opportunity of congratulating with all the Cyder Counties on a Resolution of the House of Commons of the 8th. of *February* 1768;
In

In consequence of which all the remainder of 3,500,000*l.* borrowed iii George iii on the Additional Duty on Wine, Cyder and Perry, was paid off the 5th. of *January* 1769.

P. ii. Whether the Latter has taken up his Pen on a Patriotic, or Selfish Principle, it cannot easily be determined.

BUT it may easily be determined, on what Principle *this Answerer* took up his Pen. It was partly out of Resentment for the Publication of Mr. *More's Letters*; which expose a Blunder in the two *Assays*, as will be seen by and by, and shew they were made from incompetent Matter, that is from bottled Cyder impregnated with Leaden Shot: And partly, as was hinted before, to serve as a literary Mercenary, and take off the Drudgery of an Answer from his Principal.

P. ii. For although he appears to be a Cyder-Maker, and most probably is a Dealer in that Commodity, he must be allowed to have some share of public Spirit, who seems to be as zealous to get your Doctrine refuted, as he lately was to get the Cyder Act repealed.

I do really now and then sell a Hogthead or two of Cyder, when we happen to make more than is needful for the Consumption
of

of the Family. But I never Sold any as a *Dealer*, as one, that buys, to Sell again. When I do, I purpose to send it to the *London Market*, and consign it to Doctor *Saunders* for his *Affay*, and Certificate, specifying the Purity of the Liquor, or if not pure, what Degree of Saturnine Impregnation it may have received, and how many Scruples of Danger may be apprehended from it to the Consumer. Without such an *Affay* and Certificate, it will be very difficult now to dispose of any *Devonshire Cyder* at the *London Markets*. And I submit it to the County, whether it would not be right to appoint Doctor *Saunders* *Affay-Master* of our Cyder, with an Allowance of all the Lead he can pick out of it for his Salary; much in the Manner, as the *Affay-Master* of Plate takes as a Reward for his Trouble the several Bits of Silver, on which he makes *Affay*.

I had observed, Remark vii. ‘ that great
 ‘ Numbers every year drink immoderately
 ‘ of Cyder without perceiving any Symp-
 ‘ toms of the Distemper, while many La-
 ‘ dies, Children and Valetudinarians, who
 ‘ drink little or no Cyder at all, are fre-
 ‘ quently attacked with it. Mr. *Geach* af-
 ‘ firms too, P. iii. that Ladies who drink but
 ‘ little Cyder, and Children who drink
 ‘ none at all, are often troubled with Colics.

This

This Observation, says Doctor Saunders, P. viii. holds good all the World over; But proves nothing in the present Case.

By *Distemper* or *Colic* is plainly meant here the *Devonshire Endemial Colic*, attended with its usual distinguishing Symptoms. This is the only *Colic* we here refer to. The Course of the Argument necessarily leads to this; and it is idle and captious to wrest it to any other. Therefore *this Observation doth not hold good all the World over.* It may hold good all the World over, that Ladies and Valetudinarians, who drink little or no Cyder, may have the *Colic*. But then they have not the *Colic of Devon*. If they have the *Colic of Devon*, and yet never drank any Cyder, it most certainly follows, that Cyder, and consequently that Lead in the Cyder, cannot be the only cause of the *Devonshire Colic*. The *Observation* therefore *proves* something—it proves a great deal in the present Case, and carries a Force with it sufficient to shake, if not to overthrow, the *Leaden System*.

P. x. This *Answerer* quotes me for saying, ‘The *Distemper* rages most in great Bearings and cold moist Seasons.’ Mr. *Geach* had made nearly the same *Observation*. From the *Testimony* of both, says he to Doctor *Baker*, may we not conclude in favour of your *Opinion*. And

AND may we not as well conclude from hence in Favour of other Opinions? May we not as well conclude from hence, that the Moistness and Coldness, or other ill Quality of the Atmosphere, the Dampness of the Season, obstructed Perspiration,—the greater Degree of Acidity in the Liquor, * the Fruit in such a Season not being duly matured,—the immoderate use of Fruit, and more especially the great Quantity of Cyder that is drank in a plentiful Year, † and often drank too in a State, when the Liquor

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* Dr. William Mufgrave in his *Dissertation de Arthritide Symptomata*, published in the Year, 1703, in the 10th. Chapter de *Arthritide Colica*, has the following Passage as rendered in English. ‘ In Devonshire there is another Sort of Colic arising from the rough and acid Cyder, drank there in too great a Quantity. That the Cyder is the Cause, is manifest from hence, that this Colic infests only those who use themselves to that Liquor, and that less, or more, in Proportion as they make Use of it. So that in those Seasons, which abound with Cyder, the Disease prevails most, and grows Epidemic. On the contrary, when Pomona withholds a Plenty, it more rarely makes its Appearance.’

† The Reader is not to conclude, that I imagine, the same Constitution of the Air or Season, which is friendly to the Production of Cyder, to be productive also of the Colic. A plentiful Year, merely as such, has very likely no Effect. It is rather to the Quality or great Quantity consumed, than to the Abundance of the Crop, that we are to ascribe the Disease; A plentiful Year no otherwise contributing to it, than as more Fruit and Cyder are made Use of in such a Season.

is not half fermented, and abounds with what Doctor *Boerhaave* calls, wild Gas, * an expansive and explosive acid Spirit, so violent sometimes in its Operation, as to produce, by being received only into the Nostrils, instant Death, or at least occasion Apoplexy, Palsy, Stupor, Vertigos, † From whence, he saith, we may have a Notion of the more immediate Cause of Drunkenness, and Disorders of the Nerves; may we not conclude, that some, or all of these Causes, or other Causes in Concurrence, particularly an irregular Gout, may rather produce, or contribute to produce, and increase this Distemper in such Seasons, than this supposed solution of Lead; which in the Generality of Pounds, and consequently in the Generality of Cyder, as it comes down from the Press, does not appear to have any Existence? It is allowed, that in cold moist Seasons, the Fruit and Liquor are more acid; And that the more acid the Liquor, the more it is a Dissolvent of Lead. But how slowly does Vinegar itself dissolve crude Lead? The Metal must be formed into very thin Plates, and exposed to the warm circulating Vapour of this strong vegetable

* *Boerhaave's Chem. by Shaw, Vol. i. P. 547.*

† My Servants in racking of Cyder, frequently complain of Giddiness, Head Ach, and some Degree of Inebriation, although they have drank none of the Liquor during the Time.

getable Acid for a Fortnight or three Weeks together, before it will be considerably corroded. It may be observed too, that Lead dissolves but in a very small Quantity in Proportion to the Menstruum, in Vegetable Acids. One Quart of Vinegar, which is a much more powerful Solvent, than Must, or Cyder, will scarcely dissolve a Scruple out of a Dram of Lead. The Gentleman has not yet proved even in Pounds, where some Lead is run into the cramp Holes, and the Press covered with sheet Lead, that the Must dissolves any Portion, that can possibly affect such a Quantity of Liquor in so short a Time, as it flows in a few Hours immediately from the Press. *

Or if He should say, He can discover some saturnine Solution in the Must of twenty or thirty Pounds, where the Presses are plated with Lead; we can prove there is none in

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Hundreds

* I put a small Piece of Lead into a Glass of Must, taken immediately from the Pound. And notwithstanding the Lead here was so considerably more in Proportion to the Liquor, than it ever is in any of our Troughs or Presses, yet on the Application of the usual Tests, not the least impregnation of Lead could be discovered in the Space of three Days: A Space of Time much longer than the Must continues either in the Trough, or on the Press. By the by, I must observe that the pounded Apples at some of the leaden Presses are laid upon Boards, and do not come immediately in contact with the leaden Plate. This Contrivance is to prevent the paring Knife from cutting into the Lead.

Hundreds, I might say, some Thousands of Pounds, that have no such Presses or leaden Receivers. And how then can such a partial and local Cause produce a provincial, or general Effect? It is most certain the Endemial Colic appears in many Parts of the County, where no Lead is to be found in any of the Utenfils of Cyder making; * And doth not appear in other Parts, where some Lead may be found. Philip Cockey. of Totness, Esq; writes, ‘ that a Gentleman ‘ of Cockington, in that Neighbourhood, ‘ had an engine Pound, which since the ‘ present Dispute arose, he had ordered to ‘ be taken abroad, and that there was no ‘ Lead in any Part of the Construction, and ‘ yet that the Inhabitants of the Village, who ‘ Pound

* This is the Case in the Province of Normandy. The Domesticks, and Lower Sort of People there, whose common Drink is *Cidre Coupè*, a kind of sweet four, pricked Cyder, a mixture of new and old, are generally every Year more or less afflicted about the Autumnal Season with an Epidemic Colic; notwithstanding almost all their Utenfils of Cyder-making are composed of Wood, and on the nicest Analysis of the Cyder, and Application of the usual chemical Tests, not the least Atom of Lead could be discovered. See Doctor *Baker's Appendix, Medical Transactions*. P. 461. A Book, that did not come to my Hands, till long after I had drawn up the principal Part of this *Reply*.

Mr. Lechandelier, an eminent Chemist of the Academy of Rouen, in a Letter I have from him, confirms the above Account.

‘ Pound their Fruit there, and the Gentle-
 ‘ man’s own Family in particular, have
 ‘ almost every Year been more or less at-
 ‘ tacked with the Devonshire Colic.—That
 ‘ Mr. Kitson, of Shiphay has also a Pound,
 ‘ in which there is no Lead, and yet the
 ‘ Drinkers of the Cyder made at that Pound
 ‘ are much afflicted with the Colic.’ And
 many other like Instances might be produ-
 ced. The same Gentleman writes, ‘ that
 ‘ He had a Press at Sharpham covered with
 ‘ Lead; that Mr. Pearse near Kingsbridge,
 ‘ and Mr. Rennel of Newton-Bushel, had
 ‘ likewise such a Press, that great quantities
 ‘ of Cyder were yearly made at these Pounds
 ‘ but that on the strictest enquiry, no Colics
 ‘ or bad effects had ever happened to the
 ‘ Drinkers of the Cyder made there.’ Mr.
 Searl of the famous Pound at Alphington,
 assured me, he never heard or found that
 the Cyder made at that Pound ever gave
 the Colic, more than any other Pound, that
 had no leaden Plate over the Press, tho’
 I think, he said, he sometimes Pounds there
 in a Season, five hundred Hogsheads; ‘ He
 ‘ never knew any to suffer, but for the want
 ‘ of it; that if the Learned Doctor lived in
 ‘ that Parish, he would find it a difficult
 ‘ Matter to make his People believe it to be
 ‘ unhealthy.’ Mr. Cockey very justly adds:
 ‘ I don’t know what further Proofs are ne-
 ‘ cessary to convince the World that Doctor

‘ Baker is mistaken, than that the Drinkers
 ‘ of Cyder made at Pounds, where no Lead
 ‘ is in the Construction, are remarkably
 ‘ afflicted with the Colic: And on the
 ‘ contrary, the Persons who constantly drink
 ‘ the Cyder made at Pounds, whose Presses
 ‘ are covered with Lead, are not afflicted.’
 ‘ The Rev. Mr. Francis Luce, Vicar of
 ‘ Broadhembury, acquaints me by Letter,
 ‘ that the Family and People, who drank
 ‘ the Cyder made at Grange in that Parish,
 ‘ were sometime heretofore troubled with
 ‘ the Colic, more than others of those Parts;
 ‘ which was attributed to a harsh Kind of
 ‘ Fruit, with which the Orchards then a-
 ‘ bounded.—That there was at that Time
 ‘ no Leaden Press, nor any Lead in the
 ‘ Pounding Utensils, that could occasion
 ‘ the Disorder: But that since the Orchards
 ‘ have been Planted with other, and milder
 ‘ Fruit, the Drinkers of the Cyder there
 ‘ have been as free from the Colic, as any
 ‘ of their Neighbours, notwithstanding the
 ‘ Press of late Years has been covered with
 ‘ Lead.

I likewise know for certain, that the Do-
 mesticks of a near Neighbour of mine are
 remarkably troubled with the Colic, feve-
 ral of whom I have Visited in that Disorder,
 and yet there is no Lead in any of the Cyder
 Implements, that can possibly Occasion it
 there,

there, more than elsewhere; nay, there is less Lead; for the Apples are ground in a Mill, and the Press is entirely of Wood.

But to proceed with our Subject; If the more Acid the Cyder, the more it be a Solvent of Lead; then the sweeter the Cyder, the less it is a Solvent. Doctor Saunders seems not to know, or doth not consider, how little is the Acid of Must, or new Cyder, as it runs down from the Press; the Time, when according to these Gentlemen it must be supposed to corrode the Lead.

The Must of Fruit, rightly mellowed for Cyder, is soft, mucilaginous, sweet as Honey, and affords to the Taste little sensation of Acid. Dr. Boerhaave has said: *The fresh expressed Juice of ripe Rbenish Grapes has a very sweet Taste, but when perfectly fermented, and suffered to rest in the Cask, it tastes gratefully tart and pungent. Other Wines not perfectly fermented, but stopped before the Operation is fully ended, remains sweet, but then easily fall back into a new Fermentation, and when this is finished, turn sour.* The chemical Master I am contending with could teach us from Newmann † or Boerhaave, * that Tartar is generated, or produced by Fermentation. Why could he

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no

† Pag. iv.

* Chemistry by Shaw, Vol. ii. Pag. 115.

not have told us from the same Authors, particularly from the last, *that an Acid is always combined with the Tartar, and that Fermentation seems to disclose, or increase the Acid, latent in Vegetables; and that although sweet ripe Vegetable Juices seem to contain little, or no Acid, for example, the Juice of ripe Grapes (ripe Apples) &c. yet after they are properly fermented, an Acid is directly extricated from them?* Sweet ripe Vegetable Juices then seem to contain little or no Acid. The Acid like the Salt or Tartar combined with it, is disclosed, or generated by Fermentation. Accordingly we find by Experience, that the brisker and longer the Cyder ferments, the rougher and sharper it becomes. And to stop too long a Fermentation, which frets and hurts the Liquor, it is customary with many Farmers to Rack off the Cyder into a fresh Cask, and *stum* or fumigate it with a Match of Brimstone: Which destroying the Elasticity of the Air, prevents a re-fermentation. Since then the native Acid in the Must of mellow Fruit appears to be so little, and latent, so enveloped and sheathed in the oleaginous saccharine Juices, as not at all to affect the Taste; little can be its dissolvent Power of crude Lead, although it should run over a Press lined with sheet Lead, as that at Alphington; which contains a hundred times more surface of Lead, than any of our ordinary Pounds, that have

no more, than what is run into the cramp-Holes. This is not mere Speculation; but is sufficiently confirmed by Facts. Mr. Cockey the Gentleman above-mentioned, who has very laudably interested himself in this dispute, sent me some Cyder with a Certificate, that it was made at the Pound at Sharp-ham, where the Press is covered with sheet Lead. Mr. Cookworthy an eminent Drug-gist and Chemist of Plymouth, Mr. Geach and Others, can testify, that this Cyder on Experiments, gave no Marks of a Saturnine Impregnation. The fore-named Clergyman Mr. Luce, sent me down in a clean wooden Cask, some fresh Must, which he saw immediately taken from the famous sheet Lead Press at Alphington. The Test was applied both by Mr. Cookworthy and myself; and no Signs of a saturnine Solution appeared. I likewise made an Extract of some of the same Must; but could not discover, by means of the black Flux, the least Particle of Lead. I poured a few Drops of the usual Test into a Glass of the Alphington Must, and into a Glass of my own Must, and also into a Glass of Must, which I had from a Tenant, taken from a Pound, that had not any Lead in the Apparatus, the Trough consisting only of one circular Moor Stone, and we have many such Troughs in the County; They all gave nearly alike the same white Precipitate. If there was
any

any Difference, the Precipitate of the last Must, which was the newest and foulest, was the least white. Tincture, or Hepar Sulphur is, applied to very sweet Must, immediately as it comes from the Pound, scarce throws down any Precipitation. whitish Flakes seem suspended in the middle of the Glass. A Proof there is not then Acid enough to unite with the Alkali, to make it quit its hold of the Sulphur. For the same reason a sweet sulphureous Cyder does not so effectually separate, and precipitate the Sulphur in the Decoction of Orpiment-Lime-Water, as a rough acid Cyder; its Affinity or Attraction with the being weaker.

Before I quit this Point, I would beg Drs. Baker and Saunders seriously to attend to what is offered above, to prove, that drinking immoderately of sour Cyder, especially in a State of Fermentation, or of the Must or Cyder un-fermented, may be one principal Cause of the Devonshire Colic, and to consider whether this in Conjunction with some other Causes already enumerated, does not appear sufficient, and promise fairest to account for the Nature and Effects of the Disease. *Hence we see,* says the fore-cited Author, * *what an incredible*

* Boerhaave Chemistry by Shaw, Vol. i. P. 548.

incredible Effect, the Fermenting Acid may have upon Animals, both to their Relief and Prejudice. And on this Account it seems to be, that the Cholera Morbus, (which is frequently the Consequence of Devonshire Colic) is often so suddenly fatal, viz. either from new Wine, or Summer Fruit, fermenting in the Stomach, and Intestines, and discharging their Gas in the nervous Coats of these Parts, so as to occasion a terrible Spasm. To which Purpose he mentions the Case of a Man who died of this Distemper, from drinking too freely of bottled Cyder. And in Vol. ii, P. 113 treating on the same Subject, he says: Hence Physicians should consider what Effect such Liquors may have in the Body, as are drank in a State of Fermentation, or that Spirit, which in the Summer Season is generated in a hot Body by too free a Use of ripe Summer Fruits, if prevented from escaping by any Convulsion, or Constriction of the Stomach. Whence these Fruits would acquire, and exercise a violent Elasticity, and Acrimony in so warm a Place.

Dr. Huxham observes in his treatise on the Devonshire Colic, P. 13, ‘ that there
 ‘ was such an Abundance of Apples in the
 ‘ Year 1724, that vast Quantities of them
 ‘ were thrown to the Hogs: And that the
 ‘ Swine-Hogs, as well as the Swine-Men,
 suffered from the gluttonous Abuse of the
 Apples;

Apples; and all of them wasted greatly in their Flesh, and *many died*. This Fact, the Truth of which is not controverted by Dr. Baker affords a very strong analogical Argument in Proof of what I advance, and makes directly against the leaden Hypothesis; as these Effects are entirely produced by the crude Apples, without any possibility of a saturnine Taint. The Stomach and Bowels must of course have been first and principally affected with Colicky Disorders.

The Author of the Essay, P. 15. 16. &c. takes a good deal of Pains to shew, and our Author P. 12, seconds him, that the immoderate Use of sharp acid Cyder cannot produce the Devonshire Colic; *Because Acids are found to be harmless, and in many Countries on many Occasions wholesome. The dry Belly Ach in the West Indies is frequently cured by Cream of Tartar. The Colic of Poitou is very little known in the Eastern Countries, where the Turks drink every Day very large quantities of an acid Sherbet.*

He says, *Physicians, who have resided some Time in the hotter Countries, have testified, that there are no better Remedies against Spasms, Dysenteries, and other endemial Diseases in hot Climates, than the acid Vegetables, with which Nature has most liberally supplied them.*

Now

Now allowing all this to be true of Acids in the warm Climates, it would be fallacious Reasoning to infer, that such Acids are equally useful and healthy in the colder Climates. If Nature's spontaneous Production of the Orange, the Lemon, the Lime, the Tamarind, &c. and of many sour cooling Plants; if Nature's spontaneous liberal Production of these in the hot Countries, plainly points out their Use to the Inhabitants, as no doubt it does; Nature's not producing them spontaneously in the colder Regions is also a latent Proof, that Nature did not intend them here. The Acid may prevail, and abound too much in the human Constitution in cold Climates; as the alkaline or putrescent State of the Juices is apt to get the Ascendency in warm Climates: And consequently the same Quantity of Acid, that may be refrigerating and salutary in one Country, may be noxious and fatal in another.

After some short Part of this Work was Printed, a friend of mine, whose abilities on these Subjects are unquestionable, sent me the following observations which greatly confirms the Point I am here establishing.

“ It is allowed on all Hands (vide Drs. Huxham, Hillary, Baker, Warren, &c.) that the Colic of Poitou, or Dry Belly Ach

Ach is an Endemial Distemper in the West Indies, and by all except Dr. Baker, unanimously imputed to the excessive Use of very acid Punch. No Cyder is drank in those Parts. Mr. Loyd a very sensible curious Man, who resided some Time in Oxford, and is now in great Practice at Wrexham, was, during the last War, in all the West India Islands, English, French and Spanish, as a Navy Surgeon, and made many judicious Remarks on the Diseases of those Countries. He lately informed me, that some Years ago they drank their Punch there very acid, and that the Colica Pictorum was then very common and grievous. Suspecting this very acid Punch to be the Cause of the Malady, they have since drank it much less sour, and have been proportionably more free from the Disorder. There were two Persons on board Mr. Loyd's Ship, who had this Distemper with paralytic Limbs. They both of them had drank Punch very freely, but neither of them ever any Cyder. Perhaps the new hot raw Rum usually drank here in Punch, may also contribute something to the Production of this Effect. The dry Belly Ach or Devonshire Colic is also to be met with on the Continent of North America though not so frequently as in the Islands.

Mr. E——. heretofore a healthy young
Gentleman

Gentleman of Oxford, born in Jamaica, returned thither to settle his Plantations; and, after a Residence there of some Years, where he drank four Punch freely, came back to England with pendulous paralytic Hands, and Legs not in much better Condition. Here then is an Endemial Distemper, exactly the same with the Devonshire and Poitou Colic, affecting the several detached Parts of an extensive Country, plainly owing to an excessive use of acid Punch, without any ground of Suspicion of a saturnine Solution. This Argument is still further confirmed, by a well known Fact, that in those Countries, where the rough acid Wines of the Rhine and Moselle are drank, the People are afflicted with this same Malady.

Doctor Baker's Argument, P. 283, &c. that the distilling Utensils of Rum have some Lead in their Composition, and therefore *that the Disease ought to be referred wholly to Lead as the Cause*, is utterly inconclusive. *leaden Alembics and leaden Worms*, as he himself allows, *are now entirely out of use*. And even if they were now in Use, no saturnine Impregnation would follow, Lead being absolutely indissoluble in all distilled Spirituous Liquors.

Nor do I think that Sugar or Cyder, boiled

ed in a Furnace capped with Lead, where the Liquor doth not reach up to the Lead, would dissolve that Metal; though we are told it would, P. 213, 285. The tops of Boilers in most Gentlemen's Houses, where the large salted Meats are daily boiled, are commonly rimmed with Lead, as being cleaner and less apt to Rust than Copper, or Brasses. But no ill Effect is found from any Solution of Lead made by the acid of the Salt in constantly dressing salt Beef, Pork, Hams, &c. If the Lead here were solveable by the Acid, according to the Essayist's Hypothesis, half the Nation would be poisoned, and we should long ago have frequently been alarmed with the terrible Consequences of the Use of such Vessels.

This Author contends, *that an Acid cannot be the Cause of the dry Belly Ach, or West India Colic, since an acid Sherbet is very freely used in Turkey, and elsewhere, without producing this Disease.*

By the wise Order of Providence, cooling acid Fruits abound in all hot Countries. These are of infinite Use to check and temper that strong Disposition of the Humours, and particularly of the Bile, to a putrescent alkaline State, which they acquire in warm Climates. But when acid Juices are taken in Excess, as is the Case in the West Indies, where

where they are used in Punch, on account of the Plenty and cheapness of Rum, in far greater Quantity, than in Turkey, they are oftentimes found to produce morbid Effects, and to occasion, especially in thin delicate Constitutions, the Colica Pictonum, the Disorder in Question."

P. 14, *No Acid, as I before observed, is to be found in the Blood.*

If Dr. Saunders had added, *in a sound State*, perhaps he would have been nearer the Truth. The best medical Writers talk of an *acid Acrimony* in the Blood and Juices. I know an eminent Physician, that frequently orders a little Blood to be taken from the Arm, in order to judge of its sensible Qualities by seeing, feeling and tasting. By the Taste, he saith, he can discover the Condition of it, whether it be soft, and bland, and neutral; or verging to a putrescent, or aciescent State. Dr. Saunders therefore might have spared his Joke, and wish, that Mr. Geach had determined this Matter by his Taste. For the Thing has been seriously put in Practice, and the Taste made one Criterion for ascertaining the Quality of the Blood.

P. 14. *What because sour Milk and Vinegar soften the cartilaginous, and tender Bones of Infants, and sometimes of Adults, that is*

I presume, of dead Infants, and dead Adults; does it necessarily follow, that the same Effect will take Place in a living Body? I will be bold to say, that Rickets are undoubtedly not produced by an acid.

Mr. Geach evidently speaks here of living Subjects. I remember some chemical Experiments were made at Oxford, to prove, that such Acids may soften the Cartilages, and Bones of living Infants, and living Adults. And the following Case of a Patient was then accounted for on that Principle. The Case was drawn up by Mr. Mudge, an eminent Surgeon of Plymouth, and was printed many Years ago, I think, in the Gentleman's Magazine. The Patient's name was Cofs, a Woolcomber of Plymouth. It would be too long to recite the Case at large. Suffice it to say, that the Bones of his Arms and Thighs gradually grew so soft and flexible, that they might almost have been bended double, like a Rod; the Skull became flattened and pappy, the Breast Bone softened, and shrunk in, the Neck and Spine yielded, and sunk down with the incumbent Weight, and the Man at about the Age of forty, when he died, fell in together like a funeral Pile, the Supporters having lost all their Stability.

But

But I leave some learned Gentleman of the Faculty to engage Dr. Saunders on this controverted Point. I should not have meddled with it, if he had not so very magisterially decided upon it by his own Ipse Dixit. For the Attack here was not made upon me. See a sketch of the Cause and Nature of Rickets by an eminent Physician, published in Mr. Geach's Reply to Dr. Saunders.

P. 16. *A French Writer is quoted by you to shew, that Rhenish and Moselle Wines Occasion the Colic by means of an Adulteration. The Passage referred to in your Essay is as follows † Ces Vins pechent souvent par trop de Verdeur, et les Marchands les ont long Tems altere avec la Litarge. But Mr. Geach attempts to prove from the Authority of this very Passage, that Rhenish and Moselle Wines produce the Colic, by means of their acidity.*

C 2

Mr.

† The whole Sentence as printed in the Essay, P. 14, runs thus. Ce qu' il y a de certain, c'est, que la Colique, dont il est Question, a ete epidemique, dans les Pays, ou l'on boit de Vins de Rhin et de la Moselle. Ces Vins pechent souvent par trop de Verdeur, et les Marchands les ont long tems altere avec la Litarge. That which may be affirmed here for certain, is, that the Colic in Question hath been Epidemic in the Countries, where they drink the Wines of the Rhine and Moselle. These Wines often hurt by their too much acidity, and the Merchants have a long Time adulterated them with Litharge. Examen d'un livre qui a pour titre T. Tronchin de Colica Pictonum, par un medecin de Paris, P. 7.

Mr. Geach attempts to prove, that these Wines may produce the Colic by means of their *too much acidity*, not from the Authority of this Passage only, but from the Authority of other good Writers. *Spigelins*, he says, *observed a Colic to return periodically by drinking sour Wine.* *Piso*, *Sennertus*, *Citeseus*, *Cralo* and *Wepfer* made nearly the same Observation. *Doctors Musgrave* and *Huxham*, ascribe the *Devonshire Colic* to the *intemperate Use of acid Cyder.* P. 6, Mr. Geach, it must be owned, did not express himself rightly, in saying, *the Mischief proceeds, not from the Adulteration, but the sourness.* For it is plain this Author thought the Mischief might proceed from either. However he soon corrects himself, by saying, *greater Mischief may be done by the Adulteration.* These words, *Ces Vins pechent souvent par trop de Verdeur.* Mr. Geach Translates these Wines often hurt by their too much Acidity. It appears from Remark i, that I had made much the same Inference from these words, and thought this French Author was of Opinion, that these Wines might Occasion the Colic by their too much Acidity, as well as by their being adulterated with Litharge. Accordingly I am introduced by this wonderful Hypercritic, as a fellow Blunderer, or fellow Misrepresenter with Mr. Geach. For he scurrilously makes it a Doubt, whether to ascribe our Sense of the Passage to Ignorance

Ignorance, or wilful Misrepresentation :
 Though the Balance seems rather to incline
 to the latter, to a defect of Morals, rather
 than Intellect. Having in his own Con-
 ceit set aside Mr. Geach's Translation, par-
 ticularly that of the word *Pechent*, as most
 erroneously done, he then gives the fol-
 lowing of his own, as the true Construc-
 tion of the first Part of the Sentence, (about
 the latter there is no dispute) *ces Vins pe-
 chent souvent par trop de Verdeur; these
 Wines are faulty by means of their acidity.*
 A wonderful amendment this truly! I really
 must beg leave to replace Mr. Geach again.
 For this is no Translation at all. Only five
 radical Words occur here; and two of
 them, both Words of importance, *souvent*
 and *trop*, are entirely omitted. Well, but
 the Stress of the Controversy, he'll say,
 lies in the Word *Pechent*, which is most
 erroneously construed, *hurt*, and ought to
 be rendered, *are faulty*. I will not dispute
 his Sense of the Word, but I will dispute
 his Inference, *Pechent*, or *Pecher*, is a Verb
 neutral, and comes from the Latin *Pecco*,
 to sin or offend, to commit a fault. And
 this Idea being transferred to Subjects of
 Taste, Wines, which are faulty, not morally
 but physically, can only be faulty, as they
 are applied to Men, who drink them: And
 to those who drink them, they are faulty
 only, as being either hurtful to Health, or

disagreeable to the Taste. I ask then, what newer or better Sense does it convey, to say, these Wines are faulty by means of their Acidity, than to say, these Wines are often hurtful, or often hurt, by Reason of their too much Acidity? But this *Answerer* will have nothing to be hurtful, but Lead; and is afraid of admitting any Degree of Acidity to be hurtful, lest he should hurt his leaden Cause. Every Man is his own best Interpreter: And surely M. Bouvart, himself expressly saith, * see Remark i, that sharp austere Wines may produce nearly the same sort of Colics, as poisonous mineral Substances. Is not this as much as to say; *these Wines may hurt by their too much acidity?* What would this mighty Critic have more to fix the right Sense? If ever there was Lead in any Composition, there is in this extraordinary Piece of *Critique*, But I must ask, why does he conceal or drop the Words *souvent* and *trop*? His Translation runs; *these Wines are faulty*
by

* Ces trois causes, Scavoir la Bile, les Matieres minerales veni meuses, et les vins verds et austeres, quoique differentes en apparence, produisent, malgré ce qu' en peut dire Mr. Tronchin, des Coliques, a peu pres de même espece. These three Causes, to wit, corrupt Bile, poisonous mineral Substances, and raw austere Wines, however different in appearance, may produce nearly the same sort of Colics, notwithstanding what M. Tronchin may alledge to the contrary. Dr. Baker's Essay P. 13.

by means of their acidity. But the Words are, *These Wines are often faulty, or hurtful, by reason of their too much acidity.* It is not simply the acidity, as Dr. Saunders gives it, but the Degree or Excess of it, that constitutes, or causes the Evil. All Wines contain in them some acid, more or less. It is one of Nature's constant and necessary Ingredients in the Composition of Wine or Cyder; And the Fault and Hurt is, when the acid is too great and predominant. And therefore I repeat again here, what this Gentleman takes such Exceptions at, remark vii. that the acid of Wine, or Cyder, and the same may be said of the Tartar or essential Salt, with which the Acid is combined, in a moderate Degree is, a proper compotent Part of the Liquor, and *salutary*, altho' in Excess it becomes hurtful and deleterious, as I think, we have shewn above. Again, these Wines do not always hurt. They *often* hurt; particularly, when they are produced in wet cold Seasons, or from disadvantageous Exposures; when they are not duly fermented, or, by over working, approach the acetous Fermentation. In these Cases they disagree with many Constitutions, especially when drank in too large Quantities, and generally produce griping Pains in the Stomach and Bowels. But even in these Cases, some People feel no bad Effects from drinking these Wines;

Just as some People feel no bad Effects from drinking Cyders under the same disadvantageous Circumstances.

The whole of the mighty Matter here referred to is only this. The Wine-Merchants of the Rhine and Moselle, finding their Wines were too rough and sharp, and disagreeable to the Palate, and often produced griping Pains in the Stomach and Bowels, were informed by some profound German Chemist, that a small Quantity of Litharge, dissolved in them, would alter their Quality, and render them sweeter, and more agreeable to the Taste. For Lead Tin, Iron, like Pearl, Pot-Ash, and other alkaline, or testaceous Substances, absorb the acid, stop Fermentation, and give a sweetness to the Liquor. The Merchants very readily followed the Advice; cured the sourness, but poisoned the Wine. So that the remedy became more pernicious than the Disease; and, like Dr. Saunders's Translation, the Alteration was only for the worse. *

But

* Dr. Baker in the Republication of his Essay, see P. 190 191 has very judiciously omitted this famous French Quotation, *Ces Vins pechent souvent par trop de Verdeur*, as making directly against his Doctrine, and has thereby abandoned poor Doctor Saunders, and all his learned Criticism,

But to quit the Coasts of the Rhine and Moselle, and come to the more amiable Borders of the Ex, the Dart, the Plymp, and the sweet winding Tamar, where I much rather choose to dwell; it is most certain, that some of our pomaceous Wines do often hurt by reason of their too much acidity. And, on drinking sharp Cyder in any Quantity, especially what we call *Rackings*, and Cyder of the first Making, the usual drink of the lower Sort of People, who are most troubled with the Disorder, pricking Pains in the Stomach, and Colic generally ensue; and it is customary to mix a little Milk, or Sugar with such Cyder, in order to soften its Quality, and make it fit easy on the Stomach; or if the Cyder be new, to throw in a little powdered Ginger, as a Carminative, to prevent Flatulency.

Dr. Saunders indeed P. 18, ‘*talks of a certain white Powder, called Pearl, being thrown into Cyder to sweeten it.*’ But how does he know, it is not thrown in to *fine* it, and that it is not pounded Ifing-glass, Pearl Ashes, or common white Sand, all which may be sometimes used for this Purpose? *the Powder, it seems, is a Secret.* And yet he has got into the Secret, and has now divulged it. For every body must see, he means by it some powdered Preparation of Lead. Otherwise the Powder had no business

finess here. He adds, *that this is not an uncommon way of improving Cyder.*

I really believe, the Gentleman knows experimentally very little of the management, or improvement of Cyder. Lead may sheath Acrimony, but it does not improve Cyder. Good Cyder is spoiled by it. Lead gives a Sweetishness, but it is a mawkish fulsome Sweetishness. It destroys the Briskness, as well as absorbs the Acid, and renders the Liquor vapid, flat. And to Persons accustomed to Cyder, such an adulterated Liquor may very easily be distinguished, as wanting always that spirited racy high Flavour, so perceivable in generous pure Cyder. An *aigre* pricked Cyder may recover a sweetishness by Lead. And it is possible, that some Dealers in London, or other distant Places, when they happen to have a Cask, purchased and brought to them at a considerable Expence, turn sour upon their Hands, may try any means that may be advised, to make the Liquor saleable. But the Cyder-makers of Devon in general know nothing of this saccharine Power of Lead, unless they have lately learnt it from the *Essay*; nor, when they happen to have such a Cask of bad Cyder, do they think of any other Management, but that of giving it away more plentifully to their People and chance Comers, and thereby the sooner getting rid of it, Having

Having replied to every Thing respecting myself in the preceding Part of the *Answer*, we now come to the two Letters of Mr. More; One whom Mr. Geach calls a *Chemist*, and whom Dr. Saunders, an *ingenious Gentleman, who teaches Chemistry*,* doth not call a Chemist.

It should seem by the first Letter, that Mr. More gave the first Hint of Shot being in the bottled Cyder, from whence the first *Extract* and *Assay* were made; and that Dr. Saunders had not expressed any Suspicion thereof, 'till Mr. More convinced him of the Truth of it by sufficient Reasons. The Lead, which Dr. Saunders picked out of the *Extract*, was of a globular, or Shot like Form, and malleable. Now Mr. More considered, that Lead, dissolved by the acid of Cyder, must be somewhat in the State of *Saccharum Saturni*, a friable, unmalleable Substance, and, not to be reduced to pure Lead again, without some Phlogiston, and a degree of melting Heat. Mr. More therefore very pertinently asked, whether the *Extract* had been made as hot as melted Lead. To which Dr. Saunders replied; *He thought, it had not.* Mr. More considered

* So Dr. Saunders is Characterized: *Essay* P. 35, though it was thought proper to suppress this Compliment on a Revision and new Publication of the *Work*, P. 219.

dered farther, that although the *Extract* should have been made hot enough to melt Lead, that Lead dissolved by the Cyder, and diffused through the *Extract*, would not of itself have been regenerated. without some Phlogiston, nor, with a Phlogiston, have run into the form of Shot. Such Globules must be run by Art. This *Extract* had not yet been burnt in a Crucible. With Reason then he concluded, that these Globules could be no other than Shot, carelessly left in the Bottles after washing; And which, on the Bottles being now afresh moved and agitated, were disengaged therefrom, and poured out with the Cyder to make the *Extract*.

Dr. Saunders, jealous, lest this Gentleman should run away with all the Honour of the first Discovery, and that his own Sagacity might be called in Question, informs us, that He too was surprized to find in the *Extract*, a small Quantity of malleable Lead, and that he directly suspected it might arise from Shot in the Bottles; and meeting with Mr. More, immediately hinted to him his Suspicion.

Non nostrum inter vos tantas componere lites.

It is not for me to decide on so great a Contest. Perhaps Both might be original Discoverers. *Et*

Et vitula Tu dignus, et Hic.—Virg.

But whoever was the first Discoverer, it seems unlucky, that these Doctors should stumble, as I may say, in the very Threshold. Dr. Saunders should then have followed Mr. More's wholesome Advice—have desisted from all farther Attempts, as it seemed to be with unfortunate Omens, and iratis Diis, that they were prosecuting their Undertaking. Still however He will go on, but again with no better Success. The second Evaporation was made of Cyder impregnated with Shot in the Bottles. For Mr. More in his second Letter saith, *Dr. Saunders told him, that on straining this Cyder through a Cloth, some Shot were actually found in the Cloth.* * And how much more might be left stuck fast in the Bottles nobody knows. And from this Cyder Experiment V. P. 45 was made, on which the main Stress is laid to prove, that Devonshire Cyder is impregnated with Lead at the Pounds. It is amazing, that Dr. Saunders should still proceed to evaporate this Cyder, and think it a proper Specimen to prove the Matter in Question? He found some Shot actually
is

* Dr. Saunders informed Dr. Baker, that in the Cloth, through which the Liquor had passed, there were two or three *Granules* of Lead. Medical Transactions, P. 228, *Granules* in plain *English* here signify *Shot*.

in the Cloth. Some more very likely would have been found between the Bulge and the Sides, if he had carefully probed, or broken the Bottles. To what purpose should he strain the Cyder through a Cloth, but to catch the Shot, if there were any; and if there were any, to reject the Liquor? It is no wonder that Mr. More used many arguments P. 27, to dissuade him from pursuing such an Enquiry, and refused either to encourage, or even be Witness to any such Experiments, which might be conducted in such a Manner, as to prove very disagreeable, and prejudicial to his very good Friends of Devon. For what Stranger would care to buy, or what Native would choose to drink Devonshire Cyder, who knew the pernicious Effects of Lead, if they were made to believe, that four Gallons of that Cyder, made at a Pound that had no Lead in the Apparatus, except only the small portion that was applied in Composing the Trough, contained four Grains and a half of Lead. See Essay P. 35. Was it through Ignorance, that Dr. Saunders would go on with the Process, and did not know that this Cyder, as having stood upon leaden Shot, was an improper Subject for the purpose? Or did he wilfully mean to impose both upon Dr. Baker and the Public, and provided he could seemingly establish his Point, regard not by what Art, or Means

He

He did it? The Secret of the leaden Shot might never have come out, if Mr. More had not perceived and published it. The Experiment might have been deemed decisive as to that specimen of Cyder; (For *our Answerer* is not so candid as to inform the Public, what he acknowledged to Mr. More that Lead was found in the Cloth on straining the Cyder for the second Assay) and the innocent Pounds would have been wounded by the guilty Shot, through the Fault of the Operator. *By what name shall I call such a proceeding?* (For I may justly retort upon him his own severe words, in the famous *critical Stricture* above mentioned, P. 18, and which were very illiberally, and unjustly applied to me and Mr. Geach) *By what name shall I call such a proceeding?* *There appear to be too evident Marks of Ignorance, for us to suspect mere wilful Imposition: And at the same Time there appear too evident marks of Imposition, for us to suspect only Ignorance.*

P. 27, Dr. Saunders himself is aware, that every body would see the Imperfection and Futility of this last Assay; and therefore adds: *If the Public should still hesitate about the validity of this last Assay, as being made from bottled Cyder, their doubts will be removed, when your Papers are published.*

Their Doubts arise not merely from the Assay being made from bottled Cyder, but from bottled Cyder, confessedly containing leaden Shot; and from other reasons set forth in this Reply. Whether *their Doubts* will be removed by any future Publications, it will be Time enough to consider, when these promised Publications shall appear. *

P. 27, *It may perhaps be of some Service to Mr. More, if I publickly acknowledge, that he used many Arguments to dissuade me from pursuing such an enquiry; and refused either to encourage, or even be a Witness to any experiments, which might end in Discoveries in any way disagreeable to his very good Friends of the County of Devon.*

This frank acknowledgment is a very grateful return for Mr. More's Kindness; who endeavoured all he could to hinder the Gentleman from pursuing this visionary Search after Lead; which he thought would be as vain, as the Search for the *Philosopher's Stone*. It must also recommend Mr. More to the Inhabitants of Devon, as it shews how cautious he was of bringing any evil Report upon our Cyder, by refusing to become a Party to such vague and indigested

* These promised Publications have now appeared with what Effect, will be considered by and by.

gested Schemes. Not that he was apprehensive, these Experiments would end in any Discoveries, which would really shew the Devonshire Cyder to be infected by the Pounds, as Dr. Saunders ironically here insinuates. Only he thought some Doubts might arise—some absurd Prejudices might be taken—some timorous People might be frightened by a Shadow, and the poisonous Doctrine be propagated, where the Antidote might not have the good Luck to appear.

But although Mr. More declined being any ways concerned in these Experiments; yet for his own Satisfaction, and that of the Public, he made the following Experiment himself. He procured some Devonshire Cyder, which he knew had been brought to London in a Cask, and had never been bottled. He dropped into a Wine Glass full of this Cyder, four Drops of a filtered Decoction of Orpiment in lime Water. A small Precipitation followed; but the Liquor was not in the least discoloured. But about half a Pint of the same Cyder being poured into a Phial, into which he had previously put two small Pieces of Lead, and left to stand five Days; and four Drops of the Orpiment Liquor being dropped into a Wine Glass full of it; not only a Precipitation followed, but the Liquor became o

a darkish brown Colour: A Proof that some of the Lead was dissolved.

Here then is one fair Proof, according to Dr. Saunders's own Principles, that Devonshire Cyder from the Cask contained no Portion of Lead in it. In confirmation of this, I tried several Specimens of my own, and other People's Cyder, particularly some Cyder from the leaden Presses at Alphington, and Sharpham, with the usual Tests, and none of them gave the least Marks of a saturnine Solution; * as hath been partly noted before, and will be farther noted hereafter.

I now come to Dr. Saunders's particular *Answers to my Remarks*. For hitherto we have been debating only upon Preliminaries. I am afraid my Performance will make but a grotesque Figure, as the Porch or Entrance may be larger than the House. This Plan however my Antagonist has obliged me to follow: And Confinement to a Plan is always an Excuse for the Deformity of the Structure.

P. 28, *Mr. Alcock's Remarks are rather more sensibly Written, than the Observations of Mr. Geach; and, I think, they really deserve to have taken Place of the other Performance.*

In

* See back P. 19.

In the Beginning of this Piece we were called a *formidable Confederacy*. Here the Adversary is endeavouring to break the Confederacy, and artfully set us on quarrelling for Precedency.

Sed timeo Danaos, et Dona ferentes.

Small indeed is the comparative Complement here paid me, when it makes my Performance but just exceed such a *fimsy and shadowy Work, stigmatized for being so uncandid in its Observations, and so inconclusive as to its Argument.*

P. 28, *Why Mr. Geach, who asks Permission to prefix them to his Work, places them in the Rear, except from a Sense of his own superiority, I cannot conjecture.*

But did this Gentleman never read of the *Triarii* among the Romans, who were some of their most depending Troops, and were always placed in the Rear; and who, if the Front or Centre were broken, or gave way, seldom failed to restore the Battle, and carry off the Victory? Or if this doth not shew the Reason; perhaps Mr. Geach, might put *my Remarks* in the Rear, as the Epigrammatist puts the main Turn or Sting in the Tail, in order to give a Spirit and Poignancy to his Piece. Or if neither of these

Reasons will exculpate Mr. Geach from the Charge of assuming an undeserved superiority; still I say, he may be justified by a Figure in Rhetorick, called *Hysteron Proteron*, by which the last may be put first. This Figure Dr. Saunders himself must necessarily have recourse to. For P. 17, he calls my work a Supplement. Now it can only be by Virtue of *Hysteron Proteron*, that a Supplement can take the Lead.

P. 28, *These Remarks are according to Mr. Alcock, only cursory; and verily a man, who runs, may answer them.*

Here the Doctor retracts all the Complement of Superiority he had just before made me. I dare say, he *sat* down, when he Answered Mr. Geach. But my Remarks are so superficial, that he can *run, and Answer them.* This *Running Answer* however is *not an Answer.* An Answer implies, removing of Objections, invalidating Assertions, detecting false Reasonings, and re-establishing in the Mind of the Reader a Conviction of the main Point in Question. But has the Gentleman done this. Is one Reader in a Hundred, of those, who are proper Judges in this Controversy, who know how little Lead there is in our Pounds, and that in many there is none at all, how fast the Must flows down from
the

the Prefs, and how flow a Solvent it is, if indeed it be a solvent, of crude Lead * that the Lead in the Troughs seems to suffer no Diminution from the Liquor, and in many Pounds is not replaced again in a Century,——that what little Diminution it doth suffer, is aparently caused by Friction, or by the Acidum Vagum of the Air, like the corroded Lead in Windows, rather than by Solution from the Acid of the newly expressed Juice of the Apples; I say, is one in a Hundred of such Readers convinced, that the Lead in our Apparatus for Cyder-making impregnates the Devonshire Cyder, and is the only Cause of the Devonshire Endemial Colic? Have the Fellows of the College of Physicians, have the eminent Chemists of London all declared for him?

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I

* In a former Trial, I found the Must received no Impregnation in three Days, see P. 19, I now put three small Pieces of Lead into a half Pint Phial of very sweet Must, just taken from the Prefs. At the end of seven Days I tried it with Tincture of Sulphur. Some Precipitation descended, but very slowly, and some hung in Flakes in the middle of the Glass. The Precipitation was of a milky Colour: A sign that the Must had as yet dissolved none of the Lead, although it had now undergone some Degree of Fermentation, and was become new Cyder. Some of the Precipitate hanging in Flakes in the middle of the Glass shewed, as was observed before, that the Acid in the Liquor, even now, was very little, and not sufficient quite to disengage the Sulphur from the Alkali.

I am very sure that some of them have not. One of the College, a very good Judge in these Matters, writes to me thus. ‘ *I have perused all the three Pamphlets in Question. You may, I am satisfied, defy any man to prove a Solution of Lead, in Devonshire Barrel Cyder, as it comes from the Pound. The Notion is a mere Chimera. You have certainly the Truth of the Argument on your Side, &c.*’ I must take the Liberty therefore to offer an Amendment to the Title of Dr. Saunders’s Piece, and call it a *Reply*, not an *Answer*. The Reason of this, I presume, hath in Part appeared already, and will farther appear in the Sequel.

P. 28, *The first Remark has already been considered in Part.*

Yes, and it has been re-considered: And a satisfactory Reply, I think, has been made to what the Gentleman had offered upon it. See P. 35, 36, &c.

P. 28, *In medical Matters we pay Adulation to no Ipse Dixit; nor do we allow, that the Authority of any Man can Stamp infallibility on Opinions, which are not established by Experiment.*

This Gentleman declares against all
Ipsē

Ipse Dixits, and yet he appears to be an *Ipse Dixit* himself in several Places, particularly where he so authoritatively pronounces, *that Rickets are undoubtedly not produced by an Acid.* But I never meant to set up Mr. Bouvart for an *Ipse Dixit*. The Authority of many of our own Physicians would go as far with me. It was *argumentum ad Hominem*. Dr. Baker gave Mr. Bouvart his Consequence—brought him into the Field; and I only turned his own Artillery against him. I am as much against Infallibility, whether religious or medical, as this Dr. Saunders can be. But some Regard is due to the Opinions of wise and experienced Men in their Professions. Dr. Huxham and Mr. Bouvart are mentioned as Authorities, that raw austere Wines or Cyder may produce, or contribute to produce, the Colic of Poitou or Devon. And their two joint Authorities, not to Mention Boerhaave, Musgrave, Citois, Crato, * &c. may perhaps carry as much Weight as *two other joint Authorities*, who are of a different Opinion.

P. 28, Remark ii. *The Gentleman is disposed to make himself merry on the Subject of Iron Cramps.*

D 4

And

* See Medical Transactions, P. 338.

And who could forbear Laughing, to see the Herefordshire, Gloucestershire, and Worcestershire People described, as so very sagacious and cautious with respect to the Article of Lead in their Utensils of Pounding? Would not any One think, that some kind Genius, or another good Dr. Saunders had gone round the Country to all the Gentlemen and Farmers there, telling them, ‘ Beware
 ‘ of Lead, beware of the least Portion
 ‘ of Lead in your Pounds. It will poi-
 ‘ son your Cyder, destroy your Health,
 ‘ and injure your Property, by bringing
 ‘ your Liquor into Disesteem, and your
 ‘ Cyder Manufacture to naught. This
 ‘ Secret I communicate only to you. Let
 ‘ the stupid Damnonians still go on in
 ‘ their own *leaden Way*, and be *colicked*
 ‘ and *palsied* to Death.

P. 28, *What is said of Herefordshire Troughs, stands on the Authority of Dr. Wall**
 of

* Dr. Wall's Words, as cited in the *Essay* P. 26, are these. ‘ *There is no Lead, which can give Occasion to that Colic, used in any Part of the Apparatus for grinding or pressing the Apples, or fermenting the Liquor. There is a Cyder Press covered with sheet Lead on the Borders of Warwickshire. But this is a singular, and perhaps the only instance of the Kind in this Part of England: On the Authority of another Person, Dr. Baker says: The Stones of the Troughs or Mills are joined together with Putty made of Whiting and Oil.*

of Worcester. A Gentleman, whose Learning and Accuracy are well known. No other Answer is necessary.

Perhaps the Public may think by and by, that some other Answer is necessary. Dr. Wall's Learning, Accuracy, and other good Qualities, no Body controverts. However I may observe, the Visiting of Pounds was not a likely Part of Dr. Wall's Business; and as there was no Dispute heretofore on the Subject, his Accuracy might not have extended to such minute Enquiries. Dr. Wall has for some Time, I apprehend, declined much of his *riding Practice*, and consequently cannot say with so much Certainty, as if he were an Eye witness, what is the State of Pounds in those Countries at this Time. Hereford always lay a good deal out of the Circuit of his Visitation; so that his Knowledge of the more distant Parts of that County, as to the Points in Question, must in all Probability have been received chiefly from the Information of Others. We may say therefore, that there may possibly be Lead in some, in many of the Pounds of these Cyder Counties, without casting any Reflection on Dr. Wall's Learning or Accuracy. Now I, and a Friend of mine lately talked with a Person, who was born and bred in Herefordshire

Herefordshire, who lived in the midst of
 the Cyder-makers, and yearly assisted in
 the Work; and he declared, that he has
 seen many Presses near the Borders of
 the Wye covered with sheet Lead. I
 must observe farther, that a Gentleman
 of Devon, a Neighbour of mine, Peter
 Madock Docton, Esq; whose Veracity
 and Attention may be relied on, happened
 to take a Journey not long since into Wor-
 cestershire; And hearing at the Inn, that
 a Person of the Neighbourhood was then
 Pounding, he had the Curiosity to go
 to see the Pound, and found the Inter-
 stices or Junctures of the Stones in the
 Trough filled up with melted Lead. This
 was at Upton upon Severn, but ten, or
 eleven Miles from Dr. Wall. This was
 the only Pound the Gentleman saw in
 Worcestershire, except one, which he did
 not examine as to this Article, Here-
 fordshire he did not go into: And it would
 be very extraordinary, if this first should
 be the last, and only one of the Sort
 in those Counties. Is no other Answer
 then necessary? However to put the Mat-
 ter out of all Dispute, and to shew, how
 very vague, and how little to be de-
 pended on these Gentlemen's Accounts
 are with respect to the Absence of Lead
 in the Apparatus of Cyder-making in these
 Counties; I shall pass from hearsay-
 evidence

evidence, and relate what I myself was *Autoptas*, an actual Spectator of in the Month of July last. In my Way from Worcester to Herefordshire, I stopped at the Crown Inn at Malvern. The Mistress of the Inn told me she laboured under a paralytic Stroke; Whether from drinking Cyder, or the Colic, I know not. I asked the Son, whether there were any Pounds in the Town. He said he would shew me one just over the Way. We saw it. The Trough consisted of four circular Pieces of Stone, and each of the four Junctures was filled up, not with Putty made only of Oil and Whiting, as Dr. Saunders teaches us, but entirely with *melted Lead*. Malvern is in Worcestershire. The Pound belongs to the Minister of the Place, the Reverend Mr. Philips, and seems, like the Building over it, to be of pretty long standing. I asked several Persons on the Road, as well as here, whether it was not usual to fill up the Chinks, or Junctures in their Troughs with Lead; And they said yes, it was always usual, if the Stones were not united so closely, as to prevent Leakage. The Cramps I learned on Enquiry are sometimes placed inside, but more generally outside the Curb. However in some Places they insert the Cramps in the bottom of the Trough or Groove,

and

and fasten them with Lead. But these Cramps, a Person told me, are found inconvenient, and apt to scratch the People's Hands in taking up the Pomage. Passing on by *Malvern Well*, where there seems to be a good House for the Reception of Strangers, and over Malvern Hills, which are very high, but not barren, or unpleasant, I proceeded to Ledbury in Herefordshire; a Place noted for making much and good Cyder. A great deal is bought here, as it comes from the Press, by Cyder Dealers in Upton; who, after having fermented, racked and fined it, Ship it down the Severn for the Markets of Gloucester, Bristol, Bath, London, &c. The Clerk of the Parish of Ledbury shewed me, in the Street leading to Gloucester, one of the best and largest Pounds in the Town. Many People bring their Fruit here to be Pounded. And I think, he told me they can break and press in one Day, enough to make ten of their Hogheads, which are equal to near twenty of ours. I observed some Particulars in the structure of the Machine, and the Execution of their Pounding Work, which would be improvements, if introduced into Devon. But what is most to my purpose at present, and which I mention, not to be imitated, but avoided; I observed that the whole Press or Vat here

was

was covered over with sheet Lead. I saw no other Pound in the Town, nor indeed did I enquire about any other. I asked if the Cyder of this Pound did not give the Colic. He answered, no, not any more than any other Pounds, that had no Lead at all. Some Persons however he said of late did not like these leaden Prefs. I could perceive he had heard something of the leaden Dispute. For he seemed shy of letting me see the Prefs, and guessed I was a Devonshire Man. My Informant farther told me, that for the readier Dispatch of Business, it was usual in some Places, he mentioned one Place within a Mile of the Town, to convey the Cyder from the Prefs by leaden Pipes into the Cellar. I must add, what Dr. Baker allows he has been informed of, P. 209, in the *Republication of his Essay*, that it is a *Method sometimes practised in Herefordshire to rack the Cyder into leaden Cisterns*, when the Liquor frets too much, and is in Danger of becoming acetous. The same Gentlemen also admits P. 206, *that if any of the Stones in the Troughs start, they are repaired with Iron Cramps fastened with Lead.*

Meeting with Lead thus both in the Trough and Prefs; and the Reader must consider, that I met with it, by taking
the

the first Pounds, that came in my Way, without any previous Information, and that therefore a great deal more might very reasonably be expected to be found on traversing the Country, and that these are only Specimens of many others of like Sort; I say meeting with Lead thus both in the Trough and Press, sufficiently confirming the Accounts of the two Persons above mentioned, I thought I had no need to go on farther in search of Proofs, that these Counties in several Places contain in their Implements of Cyder-making Lead sufficient to give them the Colic, according to the Arguments of the Gentlemen I am contending with; Since the same Portions of Lead, just so circumstanced, give it, as they allege, in Devonshire.

The Argument to be deduced from hence for the innocence of our Devonshire Pounds is very strong. Dr. Baker set out on this principle * and Dr. Saunders defends it, that the Lead in our Apparatus for making Cyder gives the Devonshire Colic. The Counties of Hereford, Worcester and Gloucester, according to these Gentlemen, have no such
Colic

* See Essay, P. 29. Dr. Baker acknowledges this P. 208 Medical Transactions.

Colic, and consequently can have no Lead in their Apparatus for making Cyder. But now it appears, that they have Lead in their Troughs and Presses, and other Utensils, in a Quantity sufficient, as it would be thought in Devon, to produce the Colic. If Lead in the Pounds and Presses be the Cause of the Colic in the West; Why should not the same Cause produce the same Effect in the North East? Either both countries must be *Culprits* in this Case, or both be innocent. These Gentlemen by their Tests and Testimonials have absolved the one. And therefore I shall take upon me to acquit the other.

P. 29. *Alphington being a Place famous for making good Cyder, and being so very near to Exeter, it was most obvious to try your Experiments on the Cyder of that Parish.*

How came Dr. Saunders to know, that Alphington is a Place famous for making good Cyder? Certainly it is not so famous as many other Places in the County. And the late Accounts given of it must tend rather to make it loose Credit. That it was most obvious, that is to say, most convenient for Dr. Baker, when he was at Exeter, to get his Cyder from hence, is very true.

But

But was the most obvious or easy Method the most proper? If the Essayist had only wanted to flatter self Deceit, and make Experiment quadrate with Hypothesis, the Cyder of this Pound, as having the Press covered with sheet Lead, might indeed be the most proper for the Purpose. But was the Liquor of such a Pound a proper Specimen to draw a general Conclusion from? Dr. Baker mentions only a leaden Press at Alphington. Dr. Saunders P. 24 says, the Cyder *flowed from leaden Pipes at Alphington.* A Conjunction of *leaden Press, and leaden Pipes,* if true, is very rare, and what renders a Specimen of this Cyder still more exceptionable. Must the Cyder of five Hundred, of five Thousand Pounds, many of which have no Lead in their Apparatus, and the rest none, except a little in the cramp Holes, which cannot possibly affect the Liquor, or not more than some of the Pounds in the North Eastern Counties must affect their Cyder, which is absolved by these Gentlemen of all saturnine Faultiness, and which I mean not to Charge with any Fault, but only to exculpate our own; I say, must the Cyder of five Hundred, I might say of five Thousand Pounds, which have no Lead in the Apparatus, or none, except a little as mentioned above, that is run into the,
 cramp

cramp Holes, not containing ordinarily above four or five square Inches of Surface, be therefore thought to be impregnated with that Metal, and in consequence thereof to give the endemial Colic; because twenty or thirty Presses lined with a Plate of Lead, containing, perhaps, some hundred square Inches of Surface, should be supposed to give some saturnine Impregnation to the Liquor? As well might *this Answerer* conclude, that all the Waters in our County are poisoned, because a Spring here and there, running over a large Bed of Tin, Copper, or Mundick, may happen to contract a bad Quality.

I had said under Remark iii. that very few Cyder Presses in Devon are lined with Lead. I know of none, I have heard of none, within 20 Miles of my Neighbourhood. The above named Mr. Cockey of Totness, writes, that he can hear but of five in all that District; a District remarkable for Plenty and Goodness of Cyder. On more particular Enquiry, I do find, that towards the eastern Parts of the County, there are more of these Presses. Dr. Saunders saith, they are got as far as Number xxx, with their List. For it seems, they have been searching as diligently for Lead in

E Pounds,

Pounds, as for *bid Treasure*. The Number of Parishes in Devon is near 400, and if with some Persons we suppose, there be 6000 Pounds in the County, tho' others think there are more, what a small Proportion do the leaden Presses bear to those that are not such? And how wrong must it be to draw such general Conclusions from such partial Premises? A provincial Disease must have a provincial Cause. Let them enquire, and search farther, and raise the Number to forty, fifty, or sixty, if they can; still we have super-abundant Odds against them, and can contrast their Units with Hundreds.

I have gone here on the Supposition, that Presses covered with sheet Lead, or a border of Lead, may impart some noxious quality to the Liquor: But I do not really mean to make this Concession. I believe, I had no need to object against the impropriety of Dr. Baker's Specimen, but might safely join Issue upon the Alphington Pound, and by That leave the Point to be tried, whether our Devonshire Pounds and Presses in general impregnate the Cyder with a saturnine Solution, sufficient to produce the endemial Colic, or, with any Solution at all. The Reader will be pleased to remember what was said before * that

Vinegar

* See P. 18, 19, 23, 52.

Vinegar itself is a very slow dissolvent of crude Lead,—that the Metal must be drawn into very thin Plates and exposed for a fortnight or three Weeks together to the warm circulating Vapour of this strong vegetable Acid, before it will be considerably corroded—that the Must as it runs down from the Press is bland, mucilaginous, sweet as Honey, and seems to shew little of that corroding Acid, which is extricated or developed by Fermentation—that a Piece of Lead put into a Glass of fresh Must gave not the least Impregnation in three Days—that not less than four or five Hog-heads of this sweet Must sometimes run down in so many Hours, particularly from the screw Presses. Doth it seem probable, doth it seem possible, that all this Liquor, so swiftly passing over the Press, should be so sensibly Impregnated by the crude Lead, as to produce the endemial Colic.

—————*Credat Iudæus Apella.*

Dr. Saunders talks, P. 21 of *the Agitation of the Must*, as a circumstance, *that will necessarily facilitate, and help to promote the Solution of the Lead.* Mere Words! I know of no such *Agitation* or *Reverberation* of the Must. The Liquor is pressed out on an inclined Plain, and im-

mediately flows off with a Smooth continued Stream through the Spout, like Water down a Brook. Surely Dr. Saunders must be hard pressed, or he would not have had recourse to such a trifling Argument, to procure a little Solution of Lead.

P. 29, *He now finds himself under the necessity of saying, that perhaps all the difference of Colour might be owing to a greater Degree of Acidity in the Devonshire Cyder.*

I found myself under no necessity of saying this, in Order to support my Cause. My Position was, 'that the Experiment
' made of the Alphington Cyder, allow-
' ing it to be conclusive at all, concludes
' only as to such Sorts of Presses, lined
' with Lead, and not as to the West-
' Country Cyder Presses in general.' This Position still remains unshaken. I added,
' it were to be wished, the Essayist had
' made his Trials from other and fairer
' Specimens. A Repetition of Experi-
' ments might perhaps Discover some
' Mistakes. * *Perhaps all the difference*
of

* Dr. Baker having observed, *Essay* P. 44, that four Experiments were made on Devonshire and Herefordshire Cyder, and that the former, on the Application of different Tests, gave Marks of a leaden

‘ of Colour might be owing to a greater
 ‘ degree of Acidity in the Devonshire,
 ‘ than in the Herefordshire Cyder.’

Rich good Cyder well fermented, and fine, turns of a bright amber Colour. Thin poor Cyder, made of Wind fallen, or unripe Fruit, or drawn from the Rackings, is always of a greenish or wheyish Cast. Cyder also made of certain Sorts of Apples turns blue on being exposed to Air. This Colour I then thought might possibly have been Mistaken for a plumbean Teint. I do not dispute the Principle, *that the more Acid the Cyder, the lighter the Colour of the Precipitate will be.* But I am doubtful, *whether the Dark Precipitation occasioned by the Tests*

E 3 be

leaden Solution, but that the latter gave none; adds: *The same Experiments were afterwards tried on several other Specimens of Devonshire and Herefordshire Cyder. The Result of them was constantly and uniformly the same.* And yet in a Revision of the same Essay published in *Medical Transactions* P. 226, he candidly acknowledges, that an Exception ought to be made as to three, or four Instances. *Three Bottles of different Kinds of Devonshire Cyder, shewed no Signs of having been Impregnated with Lead; and one of Herefordshire gave a darkish Precipitate.* Dr. Baker's Exception here is with me the Rule. For I have tried, and seen others try, Experiments on many different Specimens of Devonshire Cyder, especially that rough sharp Cyder, which is so apt to give the Colic; And all Exhibited a milky Appearance, without one Exception of a dark Precipitate.

be always an undoubted Proof of the Presence of Lead.

The Anonymous Author of an *Aufwer* to Dr. Baker's *Essay*, printed at Exeter, assures us; P. 18. that *a few Drops of a volatile Alkali, instilled into Cyder, which has been Sulphured, will produce exactly the same Phænomenon, or Colour, as was observed in the Devonshire Cyder.* If this be fact, * I suppose the Effluvia of Sulphur act upon the Semi-metaline Part of the Orpiment, and give it a darkish Hue. For the Fumes of Sulphur are sufficiently known to tinge Metals with this Colour. And the Cyder-makers of Devon, when they have got their Cyder sweet and fine, very often fumigate the Cask at the last Racking, with a Match of Brimstone, especially if it be designed for a foreign Market. This innocent Operation, by destroying the Elasticity of the Air in the Cask, prevents the Cyder from running into a fresh or acetous Fermentation, and consequently preserves the Sweetness. But not to rest on this; it is certain, that a little Sal Martis, or Iron put into Cyder, soon gives a darkish tinge, and, on the Application of Orpiment

* The Experiment with the orpiment Solution did not succeed with me.

piment Decoction, a very dark Colour. And as we have commonly a good deal more Iron than Lead, in our Pounding Utensils, a martial Solution might probably in some of the Trials be the Case. And in Confirmation of this, Dr. Baker saith, Experiment ii; *The Orpiment Solution occasioned a darkish Colour in the Body of the Liquor, approaching to Black.* Whereas the same Test, as he justly observes, produces only a brown, or Madeira-Wine Colour, in a Solution of Lead. It is remarkable, that Dr. Baker, in the Republication of his Essay, in the Medical Transactions, omits the Term *Black*, and changes it into *very Opake*; As if conscious that *Black* would lead other Readers, as it led me, to a martial Solution. This Variation of Terms shews a want of Precision in the Experiment. But by which of these two Colours are we to abide? Or may either the one, or the other be assumed, as shall be found most convenient? This makes me recall the Words of a learned Friend, in a Letter to me on this Subject: *I strongly suspect, that the Experiments in the Essay are not to be depended upon. They seem to be made with a view to a preconceived favourite Hypothesis, and a fear, lest they should not succeed.*

The ingenious Author indeed may say,

he has proved, that there was no Solution of Iron in the Devonshire Cyder, on which he made Experiments, and therefore the *darkish Colour approaching to Black*, could not be owing to that Metal. Now granting it to be so, the natural inference is this. It must be allowed, that there is more Iron than Lead, in the generality of our Pounds. It must also be allowed, that Iron dissolves more readily, and in greater quantity, in all vegetable Acids, than Lead doth. If then there be no Solution of Iron in our Cyder, as it comes from the Pound; it follows a *fortiori*, that there can be no Solution of Lead in it. *Utrum horum mavis accipe.*

In P. 33, of the *Essay*, it was said, *In many Parts of Herefordshire, and the neighbouring Counties, the Stones of the Mills are joined together with Putty, which is whiting mixed with Oil.*

Under Remark iv, I had said: I always ‘thought that Putty had been made of ‘White-Lead, Oil and Whiting;’ the last however in the greatest Proportion. My Thoughts arose partly from the Information of Artificers, who make, and Use it. But now I am told, P. 30, that something else is *Putty*, and am sent to *Chambers’s Dictionary*, and the *Pharmacopœia Vigornienfis*,

Vigornienfis, to learn, *that Putty denotes a cineritious Kind of Pafte, compounded only of Whiting and Linfeed Oil.* In my turn, I would advise Dr. Saunders to confult not a Compiler, but an original Author, and an allowed good Chemift, Dr. Neumann, who fays P. 88: *Putty is the Compound Calx of Tin and Lead. A Compound of Whiting and Oil, is a Cement but not Putty: This Name always fuggesting fomewhat of Lead, if not Tin, as an Ingredient.*

P. 30, Mr. Alcock may be affured, *the Farmers of Worcefterfhire put no White-Lead into their Putty.*

Here again the fuperior Sagacity of the Worcefterfhire Farmers appears, in throwing out fuch a main Ingredient from the Compofition of their Putty, in Order to keep clear of Lead. Lead muft on all Accounts be here avoided. Lead in any Shape, either in the Trough, or Prefles, would be a Rock, that thefe Gentlemen's whole Scheme would fplit upon. It is an eftablifhed Point with them, *that Lead is the fole Caufe of the Devonfhire Colic—that this Lead is in the Utensils of Pounding—that thefe North-eaftern Cyder Counties have no Symptoms of the Devonfhire Colic, and confequently cannot have any Lead*

in their Pounding Apparatus. And yet notwithstanding all this Care and Caution, we have found that considerable Quantities of Lead have crept into their Troughs and Presses,—that they have Vats covered all over with sheet Lead—that they sometimes rack off their Cyder into leaden Cisterns to check Fermentation, and that the Interstices at the Junctures of the Stones in the Trough are in several Places filled up, not with Dr. Saunders's *cineritious Composition of Oil and Whiting*, but entirely with a Mass of melted Lead.

I may just observe here, that sharp sighted People, by being too attentive to one Subject, often overlook another, equally important. The Worcestershire Farmers, according to Dr. Saunders's Receipt of their Putty, have run upon Scylla, by endeavouring to avoid Charybdis. By throwing out Lead from their Putty, they have spoiled the Cement, and in a great Measure defeated the Purpose of effectually stopping up the breaches and openings in the Troughs. For it is Lead that principally gives the Firmness and Durability.

Our *Answerer* seems Sensible, that his *cineritious Paste* would not pass for Putty; And therefore adds: *Supposing there had been*
been

been White-Lead in the Composition of this Putty, the Cyder would not have touched it, while it had Chalk or Whiting in the Composition to Act upon.

Here my Antagonist, I can perceive, is for drawing me out of my depth into *the Chemical Profound*; Following the Sagacity of certain amphibious Animals, which, finding themselves unable to cope with their Adversary on the dry Element, endeavour to get him into the Deep, as being able to fight there to greater Advantage.

Supposing there had been White-Lead in the Composition of this Putty, the Cyder would not have touched it, while it had Chalk or Whiting in the Composition to Act upon.

Dr. Saunders, like other great Masters in Philosophy, Geometry, Physic, contents himself here with barely delivering the Proposition or Aphorism, without descending to the Minuteness of proving, or explaining it. The Reader is supposed to be some Proficient in the Science, and able to make out these Things of himself. Or if not, he must rely on the Master's *Ipsè Dixit*. The involved philosophical, or chemical Principle here referred to, is this; That
there's

there's a stronger Attraction between the Acid of the Cyder and the Whiting, or alkaline Earth, than between the acid of the Cyder and the Ceruse or White-Lead; and consequently that the Acid, locked up in the Embraces of the alkaline Earth will not meddle with the Ceruse. But I apprehend, this Theory does not prove true in Practice. As the Acid of the Cyder is a solvent both of the Ceruse and Whiting, and their Particles are intimately combined, it will necessarily Act upon Both in that intimately combined State. This is proved in *Amalgams*, or mixtures of Metals with Quick-Silver; where the same Acid, though it hath a stronger Attraction or Affinity with one Part of the Compound, than the other, will yet Act upon, and dissolve Both at the same Time in that closely united State.

P. 50, *You never said that Cyder, was in the Condition of Saccharum Saturni.*

One would think, Dr. Baker's memory was impaired, and that he did not know what he said, without this Gentleman's reminding him. What he takes hold of here is only catching at Words. Dr. Baker had said in the Passage here referred to: P. 37, *vegetable Acid very readily receives an Impregnation from Lead, whether*

ther it be applied in its metallic, or calcined State. And it is evident, my meaning was to shew that Cyder is far from receiving an Impregnation from Lead so readily, when applied in its metallic, as in its calcined State—and that the Must, or Cyder as it flows down from the Press in the generality of our Pounds, if not in all, receives so little, if any impregnation, that it could ill be compared to, and hardly said to be in the Condition of Saccharum Saturnia, a strong corrosive Poison. *

As for the Gentleman's being *at a loss to guess how I could speak with so much certainty of the Quantity of Lead used in Pounds which were made seventy or eighty Years ago;* I will endeavour to satisfy him. My Words are: *'These Troughs, some of them at least I am certain, have been in Use these seventy or eighty Years.'* This is all the certainty he can charge me with. Now for this I have very good traditional or historic Proof, which is all the Proof, that a Case of this nature at such a distance of Time may admit of. There are living Witnessess, on, or near the Premises, whose Testimony can extend to a considerable Part of this Time, and they have

* No body disputes, that Lead dissolved by the Acid of Wine, or Cyder, is in the Condition of Saccharum Saturni.

have heard their Seniors report the same Thing; namely, that the Lead in the Pounding Troughs had not been replaced in all their Time. But the Lead, according to the Proportion of Solution in the Essay, could not stand seven Years. A Minute exactness as to the State of Pounds is not to be expected. A slight Inspection at present will enable any one to judge with sufficient Probability. The small Quantity of Lead, that was melted in with the Iron Cramps in my Pound, seventy or eighty Years ago, the Weight whereof I supposed to be about three or four Pounds, but be it more, it does not signify, the surface that comes in contact with the Cyder, being only to be considered, and this surface in the generality of Pounds, does not appear to be above four or five square Inches, although the whole Area of the Trough, of mine at least, be 6840 square Inches; I say, the small Quantity of Lead, that was at first run in with the Iron cramps in my Pound, seventy or eighty Years ago, is not visibly corroded, or fretted into Holes by the Cyder, but stands out nearly on a level with the Iron and Moor Stone, and the very Marks and Impressions made by the Chissel, or Punch, at first letting in the Lead, seem now just as fresh, where the Friction of the Roller did not bear,

bear, as if but lately done. Now the Common run of Pounding Troughs in the County is nearly the same as mine.

I hope this Account will satisfy the Gentleman as to this Point.

P. 54 of the *Essay*. *Que leur plomb differe du Notre.*

‘ If the Chinese Lead, I said, Remark vi.
 ‘ were of the same Nature with the Euro-
 ‘ pean, one might be apprehensive from
 ‘ the Doctor’s Principle, that the Vege-
 ‘ table Acid of Tea, which is imported
 ‘ in leaden Caddies, Canisters, and large
 ‘ leaden Chests, might imbibe some nox-
 ‘ ious Qualities from the Metal. But I
 ‘ do not know, that we have ever ex-
 ‘ perienced any bad Effects of this Kind.’

This, says Dr. Saunders, very cavalierly, is an insignificant Remark on a Quotation from a French Author.

I still think the *Remark* was not so *Insignificant*. The intent of it was to suggest, that Dr. Baker’s Principle might carry him too far, and that if we have Reason to be so much alarmed at the small Quantity of Lead used in some of our Pounds, we may have Reason to be alarmed at the
 the

the ordinary Use of many other Things, not hitherto thought hurtful, and particularly at the daily Use of Tea, which, as being packed and always imported in leaden Chests, might be supposed to corrode the Metal, and be somewhat injured by the Effluvia or Rust.

This Answerer runs off the Point, by saying; *Those whose Business it is to handle the Tea at the India House, are very apt to become Paralytic.* I am not talking of those who handle, but of those who drink the Tea, These handlers, whether Porters or Revenue-Officers, may become Paralytic, not from handling the Tea, but merely from handling or moving the leaden Chests, wherein the Tea is imported. Tea drinkers, it is very true, are subject to Nervous Disorders; But not in consequence of the Tea being impregnated by a Solution of Lead. That the Lead, in which the Tea is imported, does not differ from *ours*, is very certain. For it is our own Lead, carried out in Pigs or Bars, as Ballast and Freight, and worked up by the Chinese, in which the Tea is always packed and brought home to us. Lead is so very scarce in China, that I am told, our East-India-Company generally send out in every Ship bound to that Country, a considerable Quantity, sometimes three or four Hundred
Ton

Ton of English Lead; and no export is more readily disposed of, or makes a much better Return.

I mean not by any Thing here said, to plead for the innocuous Nature of Lead. We cannot be too careful in the Use of that Metal. Cyder fermented, or boiled, or left to stand in leaden Vessels, would be very hurtful. Vinegar, Pickles, acid Fruit kept in glazed-earthen-ware, soon corrode the Lead in the glazing, and imbibe a bad Quality.

Dr. Neumann says P. 59, *Culinary Vessels, lined with a mixture of Tin and Lead, which is the usual Tinning, are apt to communicate to acid Foods, pernicious qualities, and require to be used with great Precaution.* * No Body disputes with Dr. Baker the perniciousness of Lead. ‘I have said, ‘Remark 8, we should take Care to ‘profit by his Advice so far, as never to ‘admit any Lead (or as little as possible) ‘to come in contact with the Fruit, or ‘Juice, in the Implements of Cyder making.’ And instead of the Essay He has dispersed, I could wish He had only published some such Advertisement, as the

F following

* This Subject is ingeniously handled by Dr. Baker. See *Medical Transactions*, P. 257, &c.

following. *'The Gentlemen and Farmers
'of the several Cyder Counties, are cautioned
'not to Rack their Cyder through leaden Pipes,
'nor ferment, or keep it in leaden Cisterns,
'nor Boil it in leaden Furnaces, or Furnaces
'capped with Lead, nor to cover their Presses
'with sheet Lead, nor admit any of that Me-
'tal, or as little as possible, to come in con-
'tact with the Fruit, or Juice, in the utensils
'of Cyder-making; as the Acid in the Cyder
'may dissolve some Portion of the Lead, and
'the Liquor thereby contract an unwholesome
'Quality.'*

A Public Notice of this Kind would have alarmed no one, would have injured no one; And at the same Time might have answered Dr. Baker's kind Intentions of ejecting what Lead there may happen now to be in some of our Cyder utensils, and preventing the Admission of more. But now by the Doctrines published in the *Essay, a very great and needless Expence may be incurred, by breaking up old Pounds, and erecting new ones*; many of our own People, who used to drink Cyder, are alarmed, strangers are frightened; et, ni Fama mendax, Devonshire Cyder, notwithstanding the late great scarcity, is become a mere Drug at the London Market, and almost all Orders for that Liquor, are sent to Hereford, as I foresaw and predicted.

P. 31, *All this reasoning is absolutely inconclusive, as will appear to any one, who will consider the different Effects of all the nervous Poisons on different Constitutions.*

Why had not this *Answerer* entered a little into the Subject, considered the different Effects of nervous Poisons on different Constitutions, and shewn us, that Saccharum Saturni, the Cause, as is alledged of the endemial Colic, (for Lead dissolved in Cyder, is in the Condition of Saccharum Saturni, P. 37 *Essay*, P. 30 *Answer*) shewn us, I say, that Saccharum Saturni, the supposed Cause of our endemial Colic, and the Subject of our present Debate, is a nervous Poison? If He *expected* to produce Conviction in his Readers, He ought to have overthrown my *Reasoning* by Reasoning, and not so dogmatically have pronounced *all this reasoning absolutely inconclusive*. Any Thing may be answered this Way.

As then he has only flurred over the Matter here, I must take the Trouble to open it somewhat myself, and to that purpose I must Place again before the *Reader* my Reasoning, nearly, as it appeared in *Remark vii*.

Dr. Baker had observed, *Essay*, P. 56,
F 2 *that*

that some People, who have long accustomed themselves to Cyder, have never experienced any of its bad Effects. This difficulty, whatever general Cause be supposed, * can only be solved by recurring to that inexplicable idiosyncrasia, in which there is so remarkable a difference among Men. On which I had remarked, ' if it was true, that a Portion of Lead ' were dissolved in all, or most of our ' Devonshire Cyder, and this produced ' the endemial Colic; It should follow, ' that such a constant general Cause should ' produce a constant general Effect; And ' that, as great quantities of Cyder are ' every Year drank, the Distemper should ' uniformly every Year appear. But this ' is contrary to Experience. The Dis- ' temper is observed to rage most in great ' Bearings, and cold moist Seasons.

' From the same dissolution of Lead in ' our Cyder, it should also follow, that ' the more a Man drinks of this Liquor, ' the more he should suffer by the Disease; ' And that no *idiosyncrasia*, no strength ' or peculiarity of Constitution, could be ' superior

* Dr. Baker sensible I suppose, from what I had Remarked, that this Solution of the difficulty was rather too *positively* advanced, softens the Expression in a subsequent Publication, by saying, *this difficulty whatever general Cause be supposed, I do not take upon me to account for. Possibly it is resolvable only, by recurring to that inexplicable idiosyncrasia.*

superior to the bad Effects of the Poi-
 son. And yet great Numbers every Year
 drink immoderately of Cyder, without
 perceiving any Symptoms of the Distem-
 per; while many Ladies, Children, and
 Valetudinarians, who drink little or no
 Cyder at all, are frequently attacked
 with it. This shews, the Liquor is not
 the Cause, at least, not the only Cause
 of the Disease. There is great Reason
 to think, that several Causes may concur.
 Lead, no doubt, where used, must be
 very hurtful; we want no new Experi-
 ment to Teach us this. Drinking immo-
 derately of Cyder, foul, and not well
 fermented, is pernicious. Eating very
 much Fruit, whether ripe or un-ripe,
 may contribute to the disease. And far-
 ther, the Nature of the Season may have
 a considerable Effect. The Autumnal
 Season in every Part of England is more
 or less productive of Rheumatisms, Di-
 arrhœas, Colics, Palsies. Perhaps the
 West Country Atmosphere may some-
 what more peculiarly dispose the Inha-
 bitants to this Distemper. Devonshire
 especially the South-West Part of it, is
 known to be subject to much Rain. *

F 3

The

* Experiments have shewn, that commonly almost twice as much Water annually falls on the Western, as on the Eastern Coasts of England. See Neumann, P. 210.

‘ The immense Quantity of Vapour exha-
 ‘ led by the Sun from the vast Atlantic
 ‘ Ocean, and driven on Land here by the
 ‘ South-West Winds, is checked in its far-
 ‘ ther progress, by the Interruption of our
 ‘ Western Alps, the high Range of Dart-
 ‘ moor, and other Hills, running nearly
 ‘ East and West into Cornwall; And be-
 ‘ ing at these Hills repelled and conden-
 ‘ sed, falls down in Rain. This causes a
 ‘ more than ordinary moist Atmosphere.
 ‘ And such a moist State of Air stops up
 ‘ the Pores of the Body, checks Perspira-
 ‘ tion, and throws the Matter, that ought
 ‘ to pass through the strainers of the Skin,
 ‘ inwardly on the Bowels; And, in con-
 ‘ junction with other Causes, may produce
 ‘ an endemial Colic. Several Causes *
 ‘ then very probably conspire to produce
 ‘ this Damnonian Disease; And no one
 ‘ Cause of itself may be adequate to the
 ‘ Effect. But it is the Common fault of
 ‘ Writers to suit every Thing to a precon-
 ‘ ceived Hypothesis, and rejecting, or
 ‘ disregarding

* It seems, I am not singular in ascribing the De-
 vonshire Colic to several Causes. For Dr. Baker in
Medical Transactions, P. 364. &c. tells us, that in the
 Year 1757, a Physician of distinguished Reputation
 published a Latin Treatise on the Causes of the Colic
 of Poitou; which Dr. Baker undertakes to refute.
 And this distinguished Physician attributes it to eight
 several Causes. Some of the principal are the same
 that I have here, and above, adduced, see P. 12. &c.

‘ disregarding all other Causes, to rest the
‘ Matter absurdly upon one.

All this Reasoning, says Dr. Saunders, is absolutely inconclusive.

On the strictest review, I cannot perceive, that *all*, and consequently that every Part of this Reasoning, is absolutely inconclusive. Is obstructed Perspiration never the Cause of the Colic of Devon? Does new foul Cyder, drank immoderately in a State of Fermentation, never give this Disease? Is poor sharp, pricked Cyder the Common drink of the lower Sort of People, among whom the Disease chiefly reigns, never either a sole, nor an auxiliary Cause? Does a misplaced Gout or Rheumatism never fall on the Bowels, and produce all the Symptoms and Torments of the endemial Colic? Does the Season of the Year, or moistness of the Atmosphere contribute nothing? No. *All this reasoning is absolutely inconclusive, as will appear to any one, who will consider the different Effects of all the nervous Poisons on different Constitutions.*

But what have nervous Poisons to do with the latter Part of my reasoning? Nervous Poisons can only refer to the two Hypothetic Syllogisms mentioned in the
F 4 beginning

beginning of the *Remark*. And therefore tho' the first Part of my Reasoning should appear to be inconclusive, the latter Part cannot appear to be so, from the Doctrine of nervous Poisons. Here then the Doctor is guilty of an *Inconsequence* with respect to one Part of my Reasoning. And I will now endeavour to shew him to be erroneous with respect to the other Part; And that the Consideration of nervous Poisons will make against him, not for him.

Poisons are divided into two Classes, Acrimonious and Nervous. Nervous are such, as are endued with a Narcotic intoxicating Power; inducing stupor and insensibility: And seem to Act immediately upon contact with the Nerves; disturbing, or stopping their Functions, without sensibly wounding the other Parts of the Body, to which they are applied. And these are chiefly fetched from the Vegetable Kingdom; as Opium, Laurel-Water, Hemlock, Henbane, Aconite, or Monk's-Hood, Night-Shade, Tobacco, Distilled Oil of Kernels, &c. Acrimonious Poisons are such, as operate by a sensible mechanical Power, burning, cutting the Parts, to which they are applied: And when taken in by the Mouth, lacerate and wound the delicate sensible Membranes of the Stomach and Bowels. And these

these are commonly produced from the Fossil Kingdom, and chiefly consist of the several Metals and Semi-metals; As Aurum Fulminans, Lunar-Caustic, Corrosive Sublimate, Crocus Metallorum, Vitrum Antimonii, Blue Vitriol, Cobalt, Arsenic, Saccharum Saturni, &c.

These poderous Bodies, being combined with a saline Principle, become thus Acrimonious and destructive. Among these the Saccharum Saturni is truly an acrimonious Poison, as being composed, like the rest, of a metalline and saline Principle, and having no narcotic intoxicating Power. Our Adversary therefore has absolutely mistaken the very Class, in which this Poisonous Compound ought to be ranked, and refers us to nervous Poisons, when the subject is really acrimonious. According to Doctor Baker, Essay, P. 38, and Dr. Saunders, Answer, P. 30, *Lead dissolved in Cyder is in the Condition of Saccharum Saturni*: And this gives the Devonshire Colic. The Devonshire Colic then must be oweing to an acrimonious, not a nervous Poison, if it be oweing to Saccharum Saturni, or Lead combined with the Acid of Cyder.

If it should be said; Lead also Acts as a nervous Poison on the Human Body
by

by external contact. I Answer; So do the acrimonious Poisons, Mercury, Cobalt, Arsenic, &c. These, by being handled and worked in, and by their noxious Effluvia, produce nearly the same Effects, Tremors, Vertigos, Palsy, Epilepsy, &c. Not that I take upon me to say, whether Lead, externally applied, be a nervous or acrimonious Poison. The Saccharum Saturni, prepared from it, with which only we are at present concerned, is most undoubtedly Acrimonious. If my Antagonist should say; The Case will still be the same; And that acrimonious Poisons, allowing Saccharum Saturni to be such, *have the same different Effects on different Constitutions*: I must take Liberty to deny it. For the acrimonious Poisons are found to vary much less in their Effects on different Persons, than the Nervous intoxicating ones. Almost all are nearly affected in the same Manner by the former. But a very great variety and difference is observable in the Effects of the latter, not only on different Persons, but on the same Persons at different Times: And although use, as is well known in the Case of Opium, Tobacco, will familiarize the intoxicating Poisons to our Constitutions, and enable us by degrees to bear with safety a Quantity, that would otherwise have been destructive; No Custom or
Habit

Habit seem to be able to lessen the fatal Effects of the Acrimonious; (for sharp pointed Instruments will always cut) and consequently, as I said Remark vii, ‘ from ‘ this supposed Dissolution of Lead in our ‘ Cyder, it should follow, that the more ‘ a man drinks of this Liquor, the more ‘ he should suffer by the Disease, and that ‘ no *idiosyncrasia*, no strength, or peculiarity of Constitution could be superior to the bad Effects of this acrimonious Poison.’ I think, *all this reasoning is absolutely conclusive.*

Dr. Saunders, not satisfied with his own Solution of the difficulty, adds: *Let me ask Mr. Alcock, upon what other Principle he conceives it to depend, that according to the Argument of his Friend Mr. Geach, not One in a Thousand of those, who drink Cyder, has the endemial Colic.*

It was remarked by Dr. Huxham, and it is most certainly true, that not One of a Thousand of those, who make Cyder their Common Drink, has the endemial Colic. Dr. Baker says, P. 56, *that some People, who have long accustomed themselves to Cyder, have never experienced any of its bad Effects. This difficulty can only be solved, by recurring to that inexplicable idiosyncrasia, in which there is so remarkable a difference among Men.*

If the difficulty can only be thus solved I am afraid, it will not be solved at all. This *idiosyncrasia* has often been brought to Account for Exceptions to a Rule—to shew, why One here and there amidst the general danger has escaped a general Malady, or epidemic Infection. We say, it is owing to this *idiosyncrasia*, to some strength or peculiarity of Constitution, that here and there a Person, suppose One of a Thousand, escapes the Small-Pox, and is not susceptible of that Distemper, either in the natural, or artificial Way. When the Plague raged in Marseilles, and made such dreadful Havock of the Inhabitants, when hardly a single Person escaped Sickness and but few Death, and the good Bishop, justly celebrated by Mr. Pope, did every thing in his Power for their relief, attended both Sick and Dead, and was every where all the Time, and yet passed free from the Contagion: Tho' a Divine might say, Providence preserved him; a Physician would properly say, it must be an *idiosyncrasia*, something peculiar in his Constitution, that made him Proof against such a general and virulent Infection. But when only One of a Thousand is taken down, as in the present Case of our leaden Cyder Drinkers, and Nine hundred and ninety nine feel no harm, it would be very absurd to bring in here this *idiosyncrasia*,

Idiosyncrasia, as the Cause. It would be inverting its nature, making *peculiar general*, and applying it to account for an Exception; which, as being near a thousand Times more numerous, ought to become the Rule. Dr. Saunders's Argument dressed up in proper Terms stands thus. 'All Devonshire Cyder Drinkers ought to have the Devonshire Colic, in consequence of a Solution of Lead taken in with their Cyder. But nine hundred and ninety nine out of a thousand of these Devonshire Cyder Drinkers, have not the Devonshire Colic; And therefore nine hundred and ninety nine out of a thousand must have this *idiosyncrasia*, something peculiar in their Constitution, that resists this Poison of Lead.' Is not the Peculiar Case here in reality made the general; a Contradiction in Terms and Sense? If only one of a Thousand of those, who use Devonshire Cyder for their common Drink, have the Devonshire Colic; the natural Conclusion is, that this Liquor for the most Part is sound and healthy, and that it must be owing to some accidental Circumstances, that do not ordinarily occur, either as to the Quality of the Cyder, or the state of the Person who drinks it, that it happens here and there to disagree.

After all; This *idiosyncrasia* is an inexplicable Term—is only another Word for our Ignorance. And as nothing, but what is *established by Experiment* will pass with Dr. Saunders; * He very inconsistently has recourse to such an *occult Quality* for the Sustainment of his Cause. Not to Mention, what was advanced above, that no *idiosyncrasia* can be Proof against the Power of an acrimonious Poison.

Now I am upon this Point, I shall stop a Moment just to remark, that, as not more than one of a thousand have the endemial Colic; this shews, that the Distemper is far from being so general and dreadful, as some Strangers may apprehend. Our Cyder and our Colic will now give People at a distance a terrible Idea of our County, and make them not only afraid of drinking our Liquor, but of inhabiting within our Borders. And yet the Devonshire People seem to be as healthy and long lived, as those of any other Parts of the Island; and there are some Disorders, particularly the Ague, endemial to some Counties, from which Devonshire is remarkably free. Cyder is generally allowed to be both diuretic, and antiscorbutic. M. Jacquin. the French Author *de la Sante* says, ‘*Cyder*
is

* Answer P. 28.

is a wholesome, pectoral, refreshing, nourishing Liquor—that it comforts the heart, and is good for the Scorbutic and Melancholic—that new sweet Cyder causes a Diarrhœa and Dysentery, sweet sour Cyder is apt to cause Obstructions i. e. the Colic. Some eminent Physicians * think good Cyder a very wholesome Liquor for Sailors upon a Voyage, and that, as containing so much vegetable acid, it might counteract, or prevent the putrescent Effects of the Sea Scurvy. This same endemial Colic, with which it is charged, and about which so much Noise is made, appears but here and there—kills very few Patients—continues but for a short Time—generally only during the Period of making and racking new Cyder, a Proof that the new Cyder is, in Part at least, a Cause; and Foreigners, that reside amongst us, scarce perceive any such Distemper, as peculiar to our County. The autumnal Season in every Part of England is more or less productive of Rheumatisms, Gout, Diarrhœas, Colics, Dysenteries, Biliary Affections: And it would be very wrong to ascribe all such Disorders in Devonshire to the endemial Colic. The Pathognomonic Symptoms of this Disease are not so precisely known, and ascertained, as to enable Medical Gentlemen always to

* Dr. Huxham.

to distinguish it from every other Colic; Constipation of the Belly, * Palsy, and Epilepsy are not, as is alledged, its certain or peculiar Criterions. The Devonshire Colic is sometimes attended with obstinate Costiveness; sometimes with a Flux, or Diarrhoea. † The Devonshire Colic does not always terminate in Palsy, or Epilepsy.

The Author of the Essay says P. 5. ‘ It
 ‘ seems very particular, that Dr. Musgrave
 ‘ should say so much of this Colic, which
 ‘ is represented to be the Effect of Cyder ‡
 ‘ and not mention those essential Patho-
 ‘ gnomonic Symptoms, by which it is at
 ‘ this Time distinguished. Are we to sup-
 ‘ pose, that, when Dr. Musgrave lived,
 ‘ this species of Colic had not been ob-
 ‘ served to terminate in Palsy, or Epilep-
 ‘ sy? Or is it more probable, that his at-
 ‘ tention

* Answer P. 7.

† This, Dr. Baker allows, Medical Transactions, P. 238, and quotes Citois, and M. Doazim for Authorities. The latter, who writes on the Colic of Poitou, says; Il en est Plusieurs, qui non seulement n’ont point eprouve de Constipation, mais meme qui se sont plaints d’un Flux de ventre. There are many, who have not only not suffered a Constipation, but who have even complained of a Flux of the Belly.

‡ He makes it to be the Effect, not merely of Cyder, but *Pomaceo immitti et acido, nimis usurpato,* of rough acid Cyder, immoderately used.

‘tention was so engrossed by the general
 ‘Subject of his Dissertation, that he forgot
 ‘to Mention such remarkable Phœnomena?

‘No; This is not at all probable. But
 the Truth seems to be, that Dr. Musgrave, an ingenious Physician of Exeter, who lived in Queen Anne’s Time, had not observed this Species of Colic always to terminate then, any more than it doth now, in Palsy or Epilepsy; And therefore he did not Mention these, as its constant and certain Criterions. It is a known Truth with Physical Persons here, that a great Number of Patients, by far the greater Number, attacked with this Disease, have been perfectly cured by Medicine, or have recovered by the help of Nature, without suffering any such bad Effects. I have seen some, and heard of many such Patients this very Autumn, who have thus perfectly recovered. Palsy, or Epilepsy is generally the consequence only, when the Disorder is very severe, and obstinate,—makes frequent Returns, and does not yield to the Power of Nature, or of Physic; And when at last there is not an Expulsion, but only a Translation of the Morbific Matter from the Bowels to the Limbs or other Parts. If, according to the Suppulation made above, about One Person in a thousand of Those, who commonly drink Cyder, has

the Devonshire Colic, and this Colic, according to Dr. Baker, were always to terminate in manual Palsy or Epilepsy; what a Number of such unhappy Invalids would every Year be here accumulated? And what a wretched Figure would our County make, with so many feeble shattered Creatures tottering about in every Parish and Place? But is any Thing like this, the real Case in Fact? Are not the Common People in general here, who are the principal Cyder drinkers, as healthy and robust, as those of any other County? Are not our Youth vigorous and active, fit for the Militia, and for any of the most laborious Offices in Life? And does any County in the Kingdom, Middlesex excepted, equal Devon for the Number of its hardy Fellows, constantly sent forth, as Recruits to our Fleets and Marines?

Besides, the Patients of this Kind, which we do meet with in the County, do not all suffer thus from the endemial Colic. Other Colics are attended with the same unhappy consequences. A Bilious Colic, when very bad, often terminates in Palsy, or lameness of Hands, and Limbs. So also does the dry Belly Ach of the West-Indies. The Arthritic Colic is likewise known to bring on a Paralyfis. Dr. Warner says, *Account of the Gout*, P. 86, *Both*
the

*the fixed and wandering Gout, the regular and irregular, the genuine and symptomatic sometimes appear in the Shape of the Colic. M. Liger, Professor of Physic in the University of Paris, in his Treatise on the Gout observes, that no Liquor brings on the Gout more readily, than some Sort of Cyder, and that the People of Normandy, who make this their Common Drink, are very much subject both to Gout and Colic. * And Dr. Warner also says, P. 133: It must be owned, that in the Cyder Countries, the Gout is frequent enough to countenance an Opinion, that it is in some Measure owing to that Liquor. The Gouty Matter, not rightly forming in the Extremities, falls on the Stomach and Bowels, and then shews itself, like a Bilious Colic; Or, falling on the Origin of the Nerves, causes a Palsy on the respective Parts, to which they belong. M: Lechandelier, the celebrated Chemist at Rouen, whom Dr. Baker through mistake Mentions by the Name of Chandelier, in his Obliging Answer to some Questions I proposed to him on this Subject among other Things, saith; ‘ Personne ‘ n’ignore que la Cidre Coupe est particu- ‘ lierment sujet a donner des Coliques. E- ‘ very one knows, that cut or pricked Cy- ‘ der is subject to give the Colic. The ‘ same Gentleman also observes: Il est no- ‘ toire,*

* See back, P. 58.

' toire, que la Goutte est frequente en Nor-
 ' mandie, ainsi que la Sciatique et la Rheu-
 ' matisme, qui en general sont plus rares
 ' dans les païs du Vin. Les Gouttes irre-
 ' gulieres se cachent quelque fois sous le
 ' masque de la Colique. It is notorious,
 ' that the Gout is very Common in Nor-
 ' mandy, as well as the Sciatica, and
 ' Rheumatism; which in general are less
 ' frequent in the Wine Provinces. Irre-
 ' gular Gouts sometimes conceal themselves
 ' under the Appearance of the Colic.'

An eminent Physician, a Friend of mine,
 told me, He was lately called in to a Patient
 troubled, about once a Month, with a pe-
 riodical Colic and Jaundice. He judged
 the Case to be gouty; And Medicines,
 ordered suitable to that Intention, soon
 made a perfect Cure. So that among the
 Causes of the Devonshire Colic, there is
 no Doubt but an irregular Gout is some-
 times one; And Medicines proper for
 bringing down the Gout into the Limbs,
 being Administered in such a Case, often
 produce a Cure, and plainly indicate the
 Disease.

The Pathognomonic Symptoms then of
 our endemial Colic are not so precisely
 known, and ascertained, as to enable us
 always to distinguish it from every other
 Species

Species of Colic. On visiting a Patient, labouring under a Colic, a Constipation of the Belly, a Diarrhœa, Dysentery, Cholera Morbus, Paralytic Weakness, the Doctors are often at a loss unto what to ascribe the Case, and frequently charge Devonshire Cyder, as the Criminal, when it had really no concern in the Evil. I myself a few Years ago, in the Month of November, was troubled with violent torment in my Stomach and Bowels, obstinate Constipation of the Belly for fourteen Days together, constant Nausea, and Vomiting, with other the usual Symptoms attendant on the Devonshire Colic. And an Ordinary Judge would have concluded That to have been my Disorder. But I am little or no Cyder Drinker: Nor could Cyder possibly have been the Cause. The Case was Bilious, and treated, and cured as such. Mr. Roberts of Plymouth, Saddler, had been long afflicted with the dry Colic. At last He entirely lost the Use of his Hands, and his Wrists hung dangling, as if they were broken. He went to Bath for his disorder, and was kindly admitted into the Hospital there. The Medical Gentlemen of the Hospital, on sight of the Patient, and hearing He came from Devon, immediately concluded, that He had been a great Cyder Drinker, and pronounced his Case to be the Devonshire

Colic. But he soon undeceived the Gentlemen, by assuring them, that he was no Cyder Drinker, and that he very rarely tasted any of that Liquor. He received little or no Benefit for near a Quarter of a Year's Time, and was disposed to go away, as despairing of Relief. But some of the Faculty very humanely and judiciously advised him to try longer. He complied with the Advice. And in about a Fortnight or three Weeks more, received gradual Strength in his Hands, and at last was restored to a surprising Use of them, considering his former debility. Miss Silly, now of Exeter, has, at intervals, been long tormented with a Bilious, or what has been called the Devonshire Colic; although she seldom Drank any Cyder. At last she became Paralytic, and lost the Use of her Hands. She went to Bath, and found some Relief there, but not a Cure. Mr. Scott, Druggist of Plymouth, died lately at Bath. He had been much troubled with the Colic; And was become quite a manual Paralytic, but not in consequence of Cyder; For he hardly ever Drank any. These may serve as some, out of many Instances that might be produced, to shew, that the Devonshire Colic is charged with more Patients at the Hospitals, than in Justice it ought to be, and that it is not easy always to distinguish it from Colics of another Original.

P. 32, *The vague Reasoning concerning the moisture of the Devonshire Atmosphere seems to deserve no Consideration.* *

G 4

If

* Dr. Baker in the Addition he has made to his *Essay*, as published in the *Medical Transactions* P. 193, Glancing at this same Argument of mine, asks; *Is it Rational to have recourse to the Moisture exhaled from the vast Atlantic Ocean, to shew, why the Air of Devonshire is unwholesome and the Apples sour?*

And yet this same Author tells us, P. 296; That M: Thierry, Regent of the Faculty of Physic at Paris, in his *Notes and Observations*, concerning the Colic of Madrid, and its Neighbourhood, which He makes to be the same, as the Colic of Poitou, or Devon, attributes it to the unequal Temperature of the Air, and the elevated Situation of Castile, and is of Opinion, that this Disorder is always more frequent near the Coasts bordering on the Ocean, than near Rivers or the Mediterranean.

The Leaden Sledge indeed, as usual, is brought to knock down this Regent's Argument, as well as mine. Still however I do think it *very Rational* to have recourse to the Moisture exhaled from the vast Atlantic Ocean, to prove, that our Apples are sour. This undoubtedly is the main Cause, why the West Country is more rainy, than the Eastern Parts of the Island. And surely much wet is a great check to the Mellowing of Fruit, and of course an Enemy to the mildness and sweetness of Cyder.

But I had not recourse to the Moisture of the Atlantic Ocean only to shew our Apples are sour. I said, and know it to be true, that our Apple Trees in Devonshire are planted much nearer together, than they are in the North Eastern Cyder Counties.

In

If the reasoning be *vague*, the Illation is very just: It deserves no Consideration. But the *Answerer* ought to have shewn it to be *vague*, before he threw out such a vague Censure, and pronounced it unworthy of Consideration. For my own Part, I am still of Opinion, that the Nature of the Atmosphere may have some Power to increase, if not produce our endemial Colic; And particularly, that there was something in the State of the Air, that co-operated to render the Disease so Epidemic in the Year 1724. The curious Dr. Kemerer relates, that the Hydrocele or Scroti Tumor is endemial to the Country of Malabar; And that those Persons, who have
not

In consequence whereof there is not so free an Admission of Sun and Air, nor is the Fruit so kindly ripened. I may add, that the three specified Cyder Counties of Gloucester, Worcester, and Hereford, are in general of a gravelly Soil, and thereby hotter than Devon; which partakes more of a Clayey Nature. For a gravelly Mould more copiously absorbs, and retains the Sun's Rays; not to Mention the different Juices of these different Soils. Devonshire too, as was said of Castile, may be considered as an elevated mountainous Country, in Comparison with these other Cyder Provinces. And all Hills, or mountainous Situations are found, *cæteris paribus*, to be cooler, than those of plainer surfaces. So that the circumstances of the Devonshire Climate must necessarily be productive of a more rough austere acid Cyder, than that of these other Counties, and consequently be more productive of the Colic, the Common Effect of such Cyder.

not the Tumor or Dropsy of the Scrotum, have most commonly an Œdematous, or large swollen Leg. On a change of Air, or Climate, the Disorder ceases. The Cause is partly imputed to the Water, and partly to the Atmosphere; which, from the effect of violent continued Rains, is always very Damp; the Winds being intercepted from blowing upon the Land, and drying it, by a long Ridge of high Mountains, which separate the Country from Coromandel. This may serve as some Proof, that the Moistness of the Atmosphere may, at least in Conjunction with other Causes, produce an endemial Disease.—It is certain, that in consequence of *our* Situation, we have more Rain in the Western, than they have in the Eastern Parts of the Island. It is also very certain, that Moisture under the Feet, and dampness over the head, are apt to check Perspiration, and produce Colds and Colics. Many Persons, especially those of a tender Inside, and who have a previous Disposition to griping Pains, by being wet in their Feet, or by walking or riding in the cold damp Air, frequently thereupon feel Disorder in their Bowels, and are thrown into the Colic. This obstructed Perspiration then occasioned by much wet, may be a primary; or if not a primary, may be an auxillary occasional Cause of the Devonshire Colic—
 may

may stir up the seed of it, where latent, and render it more frequent, and more grievous. A discerning Medical Gentleman, who practised in Plymouth in the Epidemic Year, 1724, thinks the Air and Season had a very great Effect then—that the Disease seemed to be catching—that when One in a House was taken ill, it often run through all, or a great Part of the Family, and that many were seized, who, he was very certain, had never been used to Drink Cyder. As the Disease, which was so Epidemic in the Year 1724, has not from that Time made any such formidable Appearance, notwithstanding we have since had several very plentiful Years of Cyder, * it seems to me plain, that other Causes must have concurred with the great plenty of Fruit and Cyder, to make the Disease at that Time so general and fatal. If there were only one Cause of the Disease, whatever that Cause be supposed to be, whether an abundance of Cyder,

* M: Lechandelier saith; Il n'a point observé, si les diverses Constitutions de l'air dans les Automnes contribuent au plus ou moins de Coliques: Mais il lui paroît que ce n'est point a l'abondance des Cidres qu'il faut s'en prendre. He hath not observed, whether the different Constitutions of the Air in different Autumns contribute more or less to the Production of these Colics. But it seems to him, that it is not merely to the Abundance of Cyder, that we ought to ascribe the Cause.

der, immoderate Quantity drank, a cold Moist Season, great asperity of the Liquor, Lead in the utensils of Pounding * &c; If there were only one Cause, I think the Distemper must have been nearly in the same Manner epidemic in every like plentiful succeeding Year of Cyder. For the same Cause arising, the same Effect should ensue. But when a Union or coincidence of several Causes is necessary for the Production of an Effect, that Effect doth not often wholly take Place.

With respect to this Argument drawn from the Nature of the Atmosphere, the Reader will be pleased to Remember, that no very great stress was laid upon it. I only said, 'Perhaps the West Country Atmosphere may somewhat more peculiarly dispose the Inhabitants to this Distemper.' † The main of the Question however is very little affected, if we give up this Point. Nor did

* Dr. Baker is of Opinion, that a Solution of Lead in our Cyder is the sole Cause of the Devonshire Colic. *It seems to me, says he, Postscript to the Essay, P. 256, most probable, that as it is adequate to the Effect, so it is the sole Cause of that Disease.* However he seems afterwards to fluctuate in his Opinion, saying P. 405, *I do not venture to affirm, that there does not exist another Cause productive of similar Effects.*

† See P. 57.

did I take upon me to ascertain the Causes of the Devonshire Colic, but only to shew, that Lead in our utensils of Pounding was not the Cause.

I have now gone through with my *Reply* to every Thing Material advanced against me by Dr. Saunders. And in doing this, I have had an Opportunity of farther clearing up, and more fully establishing the Truth of some Points, which were but slightly touched upon in the *Cursory Remarks*. And as I am still more convinced, that I had Truth on my side; I could not in Justice to myself and County patiently submit to be borne down by a Parade of Words, and seemingly leave this vaunting Adversary in quiet Possession of the *Field*, when He had not the least Pretensions to Victory.

I hope my Antagonists will now give up the Troughs and Presses, and acquit our Cyder, as it comes from the Pound, and our Cyder-makers in general, from all *leaden Imputation*.

As for any subsequent Adulteration by Litharge, or Saccharum Saturni; Dr. Saunders, as was observed before, says to Doctor Baker; * *You have not asserted, that*
the

* Answer, P. 16.

the Farmers of Devonshire use Litharge. Why are they defended against a Charge not brought against them? You have not said, that Cerusse was thrown into Cyder.

Indeed if this Charge was *brought against them*, it might easily be refuted. I have not heard, nor do I believe, that they ever throw any such Ingredients into their Cyder, or even know the Use of them, for the purpose here referred to. The crude, rough, sharp Cyder, which is usually drank by the Common People, and is the Common Parent of the Disease, sufficiently shews by its acerb Taste, that it never had been sweetened by the admixture of such Substances. And the many Experiments, which I myself have lately made on various Specimens of this Sort of Cyder, abundantly establish the same Conclusion, and prove, that no Lead in any shape had ever entered their Composition.

I might say too, that such a Practice, so rarely taking Place, if indeed it doth take Place at all, could never be a general Cause of a provincial Disease. Neither could such a Practice be peculiar to Devon. For may not the sharp Cyder in other Counties equally want such a remedy? And may not the Dealers there, as well as those of Devon, have both the know-
ledge

knowledge and wickedness to apply it? However it is none of my Business, as a Party in this Controversy, to enter farther into this Point. It is sufficient for my purpose at present to say, that such a Charge makes no Part of our original Dispute. Dr. Baker's Position was, and his *Second* maintains it, *that the Must, or new Cyder is Impregnated by the Lead in our Pounds and Presses; And that this leaden Impregnation is the sole Cause of the Devonshire endemial Colic.*
 * This Opinion I have combated, and by this Time, I believe effectually overthrown.

Dr. Saunders, sensible of the untenableness of their first Ground, seems to me to be for changing situation, and providing for a Retreat. After we have driven him out of the Pounds and Presses, and He can no longer maintain his Solution of Lead in the Must, it is probable, the Gentleman may have recourse to some subsequent Saturnine Adulteration. † In Pages 16 and
 and

* See Essay P. 29, 34, 35, and Dr. Saunders's Answer P. 25 and *Medical Transactions*, P. 208.

† In Order to Account for the different Effects of the Cyder of Devon, and that of Hereford, with respect to the Colic; Dr. Baker tells us P. 29 first *Essay*, *that the Devonshire Apparatus for making Cyder, Occasions such a difference.* But in a Revision of the Essay, as re-published in *Medical Transactions* P. 205, he

and 18 he gives some Intimations of this. But such a subterfuge will nothing avail him. This is not the subject of our present Controversy; Nor, after I have fairly beaten my Antagonist off his first Ground, shall I think myself obliged to pursue, and engage him here.

It was observed, P. 20, that the Devonshire Colic appears in some Parts of the County, where no Lead is to be found in the utensils of Cyder-making; And doth not appear in other Parts, where some
Lead

He softens his Expression by saying, *This at least in Part Occasions such a remarkable difference.* Here the Doctor seems to give up the Point first advanced, *that Lead in our Apparatus for making Cyder, impregnating the Liquor, is the sole Cause of the Devonshire Colic,* by altering his Terms, and saying only; *This, at least in Part, Occasions such a difference.* And in P. 208, he frankly acknowledges, *that when he first entered upon this enquiry, he was of Opinion, that whatever Mixture of Saturnine Parts there might be found in the Cyder of Devon, were wholly to be referred to the accidental Use of that Metal in the Troughs and Presses.* But now being hard Pressed for a sufficiency of Lead from the Troughs and Presses, he endeavours to procure a supply from various other subsequent Means of Introduction. See Pages 209, 210, 467, &c. Does it not appear by all this, that Dr. Baker himself is partly going off from his first Principle, and is shifting the Object of our Dispute; And that finding the Pounds and Presses utterly insufficient to his purpose, is forced to bring in to their Aid various other posterior modes of Leaden Adulteration.

Lead may be found. Mr. Geach has also observed, * ' that if the Lead in the Pounds ' was the Cause of the Disorder in Ques- ' tion, it would always prevail, wherever ' Lead was so made Use of; And, on ' the other Hand again, wherever Lead ' was not so made use of, the Disorder ' would never prevail: Both which are ' contrary to all Experience.'

These Objections to the leaden Hypothesis, which seem to be unanswerable, I find have also been made by a learned Physician, and Friend of the Author of the Essay. *An experienced Physician informs me, saith Dr. Baker, P. 245, that he found that several of his Patients, received into the Devon and Exeter Hospital, who laboured under the Colic of Devonshire, had never Drank any Cyder.*

The Essayist obviates this Objection by saying, *the Lead may by divers other means be admitted into the Human Body.*

True. It may possibly be admitted by some other means. But such leaden Cases are very rare. And just as rare in Devon, as in any other Counties. For I think, we have no leaden Mines in Devon

* Reply to Dr. Saunders, P. 3.

von. Whereas the Case before us was Common. *This experienced Physician had several of these Patients received into the Devonshire Hospital. If Lead by any other means had been the Cause, surely that Cause could not have escaped the Penetration of this experienced Physician in all these several Patients.*

The same experienced Physician, if I conjecture right, has also declared, *that He receives more Patients in this Disorder from the North of Devon, where, comparatively speaking, very little Cyder is made, or used, Beer and Ale being there the most common Liquor, than from the most noted Cyder Parts of the County; And that one Person in particular, who was sent to Him from thence quite a Cripple in this Disorder, had scarce ever drank any Cyder in his whole Life.*

The same experienced Physician also assures Dr. Baker, * *that the Cyder, which others of his Patients had drank, was made in Pounds, which had no Lead in any Part of their Composition. And a Case exactly of this Kind came within my knowledge this last Autumn. A Person was very bad of the provincial Colic, by drinking new Cyder made in a Pound consisting of one entire Moor Stone, without any Portion of Lead.* H This

* Medical Transactions, P. 245.

This evidence, replies our Author, may perhaps appear to have no great force, if we consider, that more than one way has above been pointed out, by which that Liquor may reasonably be supposed to be adulterated with Lead. P. 247.

I am very sure, there is not the least Reason to suppose This, in the Case that I have mentioned. And if it were necessary, I could produce an Affidavit, to shew, that there was no Adulteration. Nor is it a *Supposition to be supposed* in the other Case. For this *experienced Physician* would be trifling in his Objection, and uncandid in making it, if He had not first had all reasonable assurance, that the Cyder, which gave the Colic, was in every respect clear from all Suspicion of Lead, whether from Pounds, Presses, leaden Weights, Pipes, Furnaces, or any Saturnine Preparation. But at this Rate, we shall never get rid of Lead. One while the *Person* is made liable to be injured by *various* other modes of leaden Influence; One while the Cyder. When we have driven this Pestilent Enemy from our Pounds and Presses, it creeps in secretly afterwards by Adulteration. When we exclude Adulteration, it attacks us through the sides of our Kitchen Vessels, and even in our Sauces, Pickles and Tarts. And should we escape it here, still we may take it in from Quacks, and injudicious Phycic Mongers. *

Again,

* See Medical Transactions, P. 231, 363.

Again, our Author tells us, P. 247, *That a very learned Friend objects; ' If the Quantity of Lead, which was obtained by your Assay, were, in general, dissolved in our Cyder, scarce any One of our great Cyder drinkers, who must daily swallow a Grain, or two of dissolved Lead, could escape the Dry Colic; And, in consequence, this County must long since have been depopulated.'*

The Essayist's Reply to this is altogether unsatisfactory. He says; *The Argument adduced by his learned Friend against a metallic Solution, will be as valid against a poisonous Acid; And that the difficulty of accounting for the Reason, why the County is not depopulated, is as great, if we admit acid Cyder to be the Cause, as if dissolved Lead be supposed to be the Cause of the Disease.*

Surely this reasoning cannot be supported. The aciescent Juices of Fruits, and other vegetable Substances, and of fermented Liquors prepared from them, are not only innocent, but congenial to the Human Body, and afford proper wholesome aliment to the generality of People, especially to such, as are strong, healthy, and lead an active natural Course of Life; And only disagree by accident, and with a very Few, in Comparison, who are weak tender, and lead a sedentary unnatural

Course of Life, or use such Juices and Liquors in excess. But dissolved Lead, which is in the Condition of Saccharum Saturni, being a real acrimonious Poison, must be universally noxious, and produce deleterious Effects, in a greater or less degree, in All, who take it for any Time. Consequently the *Argument adduced against a metallic Solution, will not be as valid against a poisonous Acid.* The acid Cyder may bring on the Colic, and kill here and there; But the dissolved Lead must universally destroy. *

Now the learned Essayist allows, † that many, who drink large Quantities of Devonshire Cyder, supposed to be impregnated with Lead, are perfectly free from the Devonshire Colic. The Conclusion from these Premises is very Plain. The Cyder cannot be so impregnated.

Again, our Author in a Postscript to his *Essay, Medical Transactions*, P. 249, tells us, *That the same very learned Friend, in his Objections against the leaden Hypothesis, insists, that the Servants of those Farmers, who have a great deal of Lead in their Pounds and Presses, are not more subject to the Colic, than Those of their fellow Parishioners, who use no Lead at all; And that the Servants and Labourers*

* See back P. 88, 89, 90, 91.

† P. 56, first Publication.

bourers of those, who make very poor, crude, sour Cyder, are, of all Persons, the most afflicted with this Disease.

The Essayist replies. *The first Part of this Evidence is directly contradicted by that of several Persons of accuracy, who have communicated to me their Observations.*

When this Author was informed, that the North Eastern Cyder Counties had no Lead, in any Part of their Pounding-Apparatus, much was said of the Accuracy of the Information, and the Matter seemed to pass for established Truth. And yet on a slight Enquiry on the Spot, that Information was found to be vague, inaccurate, and not to be depended upon; And several Instances were produced in direct Contradiction to it. * And may not the accuracy in the present Case be justly suspected, when it is flatly contradicted by the Testimony of this *very learned Gentleman*, and *Friend* of the Doctor,—by the Testimony already adduced of Mr. Cockey, Mr. Pearse, Mr. Rennel, Mr. Searl, Mr. Luce, † and of many other Gentlemen, that might be mentioned, whose Judgement,

H 3

Veracity

* See P. 58, 59, 60, of this Reply.

† See back, P. 20, 21, 22.

Veracity, and proper Opportunities of information cannot be called in Question? And let not the Essayist except against this my Devonshire Panel, as interested in the Cause; Or say, as He doth say, P. 242, *it is difficult to establish a Truth in Opposition to the prejudices, the Passions, and interests of Men.* For we have the superior evidence of Facts, as well as of Persons, to corroborate our Cause. We have proved by Experiments, that even in Pounds, where there is some Lead in the Cramp Holes, or junctures of the Trough, or Prefs plated over with sheet Lead, the sweet Must is not, cannot be, in the least impregnated by the Metal, in the short Time it is running over, or comes in contact with it, at the Time of Pounding and Pressing.* And what if a Place here or there, that has some Lead in the Pounding Apparatus, should happen to be subject to the Colic, does it follow, that a Solution of Lead in that Apparatus is the Cause, when it is a Fact not to be controverted, that many
Places,

* See *this Reply* P. 18, 19, 24, 25, 26, 53, 67. See also, *Chemical Experiments*, by Mr. William Cookworthy, an ingenious Chemist of Plymouth, published in Mr. Geach's Reply; which shew, both by the Application of Hepar-Sulphuris, and by an Assay made of an extract of the Cyder, that there was not the least Sign of Lead in Cyder made at Pounds, that had Lead in the Troughs, and over the Area of the Prefs.

Places, which have no Lead, or next to none, in their Pounds and Presses, are just as remarkably troubled with the Disease? * Dr. Nooth of Dorsetshire is brought as an evidence, P. 466, that the Lead in the Pounds and Presses gives the Colic of Poitou. And yet in the same Page, Doctor Baker tells us, *That he has received Information from another Gentleman of the County of Dorset, that it is a common Practice among their Farmers to buy at the Apothecaries Shops large Quantities of Sugar of Lead, with which they are known to sweeten their Cyder.* Does not this Evidence seem to weaken, if not destroy, the former? Such Quantities of Sugar of Lead are alone sufficient to produce the Colic; And therefore if the *Practice be Common*, there is no need of having recourse to any other Cause, or of charging the Pounds and Presses. But what is this to the Devonshire Farmers? *You have not asserted*, says Dr. Saunders to Dr. Baker, † *That the Farmers of Devonshire use Litharge.* Why are they defended against a Charge not brought against them? The Devonshire Farmers then are here acquitted of this Adulteration. But if the Charge were brought against them, it would not be much to the Purpose in the present debate.

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The

* See back, P. 20.

† Answer, P. 18.

The Lead in the Pounds and Presses was first attacked, as the sole Cause of the endemial Colic: And my Business was only to exculpate the Cyder from all leaden Impregnation from Them, not from all future Adulteration. Such a future Adulteration however, I am fully persuaded, has no Place with the generality of our Devonshire Cyder-makers, nor in that crude, rough, sharp Cyder, * which is the common Beverage of our workmen, and Domestics, among whom the Disorder chiefly prevails; And which therefore is in vain now brought as a subsidiary Argument in support of the leaden Doctrine.

Dr. Baker adds: † *This evidence of his learned Friend, namely, that those, who have Lead in their Pounds or Presses, are not more subject to the Colic, than those of their fellow Parishioners, who use no Lead at all, may likewise be considered, as in some Manner contradicted by the Authority of Dr. Wall; who in a Cyder County, where the Dry Colic is almost unknown, attended several ‡ Patients under that Disease, occasioned by Cyder adulterated by means of sheet Lead nailed over the Press; And who likewise testifies, that All, who Drank of Cyder, which had been kept in a leaden Cistern, were affected by it, as the Lead workers usually are.* I

* See back P. 50, 69, 109.

† Postscript, P. 249.

‡ Two or Three, in the *First Essay*.

I never saw, nor heard of one leaden Cistern in Devon, kept for the above purpose, except That One mentioned by Dr. Baker, and which, He says, * is *now no longer used for that purpose*. No body denies the pernicious Effects of Cyder, boiled, fermented, and long kept in such a Vessel. But this Argument, which serves only to draw off the Reader's Attention from a weak to a stronger Part, and confessedly does not operate at all in our County at present, tho' the Disease still continues, has really nothing to do in the present Case. Our Dispute is about the Effect of Lead in the Pounds and Presses. It is the Lead in these only, that the Objection of this *learned Friend* respects. Dr. Walls Authority as to this Point can only be this. He *thought these two or three colicky Patients* became so, by *drinking Cyder adulterated with sheet Lead nailed over the Press*. He could not certainly know, that this Lead was the Cause. For we have shewn, that there may be such Colics without Lead. He could not be sure, there was the least Solution of Lead in the Cyder. He made no Experiments upon it, either by the Probatory Liquors, or by Evaporation. It is taking for granted, what ought to be proved, to pronounce, that a Solution of the Lead of the Press was the Cause.

And

* See *Medical Transactions*, P. 214.

And possibly this worthy man and excellent Physician, on farther Consideration, may now be of Opinion, that the Disease might be occasioned by the poverty, sourness, or newness of the Cyder, or by the immoderate Quantity drank, or some other Cause not then attended to, and not by the sheet Lead nailed over the Press. *The Press was in a Part of Worcester-shire, bordering upon Warwickshire, where very few Apples grow.* And where I know the Cyder (for I have frequently tasted it, in travelling from Long Compton to Stratford) to be a poor, weak, sweet-sour Liquor, and such, as in Devon, we should think would give the Colic. It is said, *This Fact of a Cyder Press covered with sheet Lead is a singular, and Perhaps the only Instance of the Kind, in this Part of England.* How careful are they to guard against a farther Number of such Presses! If it be a *singular*, I will grant without a *perhaps*, that it is the *only Instance.* But the leaden Press at Ledbury shews, that it is neither a *singular*, nor the *only Instance of the Kind, in that Part of England.* *The Dry Colic*, according to our Author, *is almost unknown in this Part of England.* And on the strictest enquiry, I could not find, I do not say, that the Dry Colic is almost unknown in Herefordshire; But I could not find, that the leaden Press at Ledbury had ever had any Effects

on

on the Drinkers of the Cyder made there, different from those of non-leaden Presses. But if a leaden Press solely caused the Colic on the Borders of Warwickshire; Why should not the same Sort of Press cause it at the large and much used Pound of Ledbury; Where perhaps five hundred Times more Cyder is made; And consequently the List of such Sufferers should be five hundred Times more numerous, and the bad Effects in Proportion be more conspicuous?

Dr. Baker here also adduces * the Testimony of Dr. Ingen Housz, in Order to prove, that, where there is no Lead used in the Apparatus for making Cyder, there the People are not troubled with this Colic. *Dr. Ingen Housz, it seems, was lately in Normandy; And enquired, whether or no any Lead is used there in the Apparatus for making Cyder. And he was informed, that no Lead is employed for that purpose in any Part of that Province. He likewise was informed, that in the Hospital at Rouen, there are generally many Patients under the Colic of Poitou, such as Potters, Painters, and other workers of Lead; But that there is in Normandy no endemial Colic, which can be attributed to Cyder.*

This

* Medical Transactions, P. 250.

This Argument, whatever force there might be in it, Doctor Baker himself has entirely overthrown. For in an *Appendix to the Essay*, * *We are told, that Dr. Ingen Housz, not being entirely satisfied with the Information He received, when He was at Rouen, has enquired of a Physician † of that Place by Letter, concerning the Method of making Cyder in Normandy; And particularly, whether there be any Disease in that Province, which may be supposed to be the Effect of the provincial Liquor. And that in Answer to his Queries, He has received an Analysis of two Dissertations, which were lately Read before the Academy of Rouen by M. Chaudelier, a celebrated Chemist of that City: By which it appears, that there is every Year an epidemic Colic among the Domestics and lower Sort of People in Normandy, which is to be attributed wholly to the Cyder, as, on the nicest Chemical Examination of that Liquor, both by the Application of the usual Tests, and in the Way of Extract, not the least Atom of Lead could be discovered. As Doctor Baker has given us only the French of the Analysis of the above Dissertations, I shall here present*

* P. 460, &c.

† This Physician's Name is M. *Dambourney*; as I find by a Letter which I have from this celebrated Chemist, M. *Lechandelier*. For so his Name ought to be Written, as was noted before.

sent the Reader with an English Translation.

‘ In Rouen there is scarce, or not at all,
 ‘ a Year, wherein there are not Colics;
 ‘ which ordinarily attack the Domesticks,
 ‘ more than any others, and, in a greater
 ‘ or less Number, in the same Houses: A
 ‘ Fact, which gives Reason to presume, that
 ‘ they are caused by the Cyder, which is
 ‘ the common Drink of the lower Class
 ‘ of People.

‘ In the Months of August and September,
 ‘ 1766, the Masters of several considerable
 ‘ Families, having a great Number
 ‘ of their People attacked with Colics,
 ‘ engaged a Chemist of our Academy of
 ‘ Rouen, to examine and analyse their
 ‘ Cyders, in Order to discover the Cause
 ‘ of this Disorder. He executed with
 ‘ great Zeal and disinterestedness the
 ‘ Examination of these Cyders. And as they
 ‘ had an agreeable Taste at first, which
 ‘ however left behind it a perceivable
 ‘ sharpness, and roughness, that affected
 ‘ the Mouth with a Sort of Astringency
 ‘ and dryness; He began to assure himself
 ‘ of the presence of the Acid, &c.

‘ But suspecting, that the Maladies attributed
 ‘ to Acidity, might come from
 ‘ some

‘ some Calx of Lead, and fearing, that
 ‘ the pernicious Practice of some Wine-
 ‘ Merchants might have been communi-
 ‘ cated to some of the Cyder-Merchants,
 ‘ He neglected no means that were pro-
 ‘ per to satisfy himself as to the presence
 ‘ of Lead.

‘ The Hepar Sulphuris Arsenicalis.—*
 ‘ the Exsiccation of the Liquor to an Ex-
 ‘ tract, and the Calcination with a sufficient
 ‘ Quantity of Phlogiston, were all employ-
 ‘ ed; And yet, notwithstanding the nicest
 ‘ Attention not to take up any of the Ashes
 ‘ without making the Lotions necessary for
 ‘ the Discovery of the Contents, not the
 ‘ least Atom of Lead could be found.

‘ He did not however conclude from
 ‘ thence, that the Cyder was not the Cause
 ‘ of the reigning Colics. But as the Cy-
 ‘ der was sweet and sour, a mixture of
 ‘ old and new, that which they here call *cut*,
 ‘ † or *pricked* Cyder, and is much used;
 ‘ He concluded, that the pricked Cyder
 ‘ was the Cause of the Colics, and that it
 ‘ was dangerous to use it.

‘ It

* *Le Foye de soufre Arsenical, Hepar Sulphuris Arsenicalis*, I take to be the Digestion of Orpiment and Quick-Lime in Water, mentioned by Neumann, and used by Dr. Baker. Orpiment contains a great deal of Sulphur, and some small Portion of Arsenic.

† *Cidre Coupè*.

‘ It is to the Cyder then that they attribute the * Colics, which reign here from Time to Time. But one seldom, or never sees Palfies to be the consequence.

‘ Almost all the circular Troughs, wherein they Pound their Apples, are made of wood, and fastened together with wooden Pins, without any Sort of Metal. There are Some however, that are constructed of Stones, particularly of Moor-Stones, hollowed for the purpose, and joined end to end; The junctures of which are filled up with Lead.

‘ The Bed, or Floor of the Prefs, over which the Juice of the Apples runs, is every where throughout our Province made of Wood, without any Plate of Lead.’

This is the substance of the *Two Dissertations of M. Lechandelier*, read before the Academy of Rouen, with a view to the Investigation of the true Cause of the Norman epidemic Colic.

Now although Dr. Baker had before argued on the Authority of Dr. IngenHoufz, that

* It is *Les Coliques violentes*, the violent Colics, in my Letter from M. Lechandelier.

that Cyder alone can never produce an endemial Colic, as the People in Normandy, whose common Beverage is Cyder, and who have no Lead in their Pounding Apparatus, have no endemial Colic, that can be attributed to that Liquor; Yet here is a Proof of Dr. Baker's own producing, that They have every Year, more or less, an epidemic Colic in that Province, which they can attribute to nothing but Cidre Coupe *

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* As some Readers may not understand what is meant by *Cidre Coupé*, I shall here give an Explanation, as I have it from M. *Lechandelier*. *Personne n'ignore, que le Cidre Coupé est particulierment sujet a donner des Coliques. Le Goust acerbe, qui devient ensuite aigre, ne permet plus d'user de Cidre en cet état. Et c'est dans l'unique vue de s'en procurer la vente, que les Marchands ont pris l'usage de corriger ce gont desagréable par la douceur flatteuse du Cidre nouveau. Or cet usage est généralement adopté; Ils emploient même des proportions différentes selon le degré d'ancienneté du vieux Cidre; Et lorsque le Cidre est peu dur, et encore potable, ils se contentent d'une quatrième partie de Cidre nouveau pour le rendre plus agréable. Every one knows, that *pricked Cyder* is particularly subject to give the Colic. The sharp acid Cyder, which afterwards becomes sour, can no longer be used in this State; And it is only with a view of procuring Vent for it, that the Merchants have taken up the Custom of correcting this disagreeable Taste by the flattering sweetness of new Cyder. This Practice is now generally adopted; And they use different Proportions, according to the Degree of Age of the Old Cyder; And when the Cyder is only a little hard, and still drinkable, they think it sufficient to add about one fourth Part of new Cyder, in Order to render it more agréable.*

a pricked, sweet-four Cyder, the common Drink of the Country; As *all their Presses, and a most all their Pounding Troughs are entirely composed of Wood, and on the nicest examination and chemical Analysis of the Cyders of some of the principal Families, where the Disease reigned most, not the least Atom of Lead could be discovered.* If the sharpness of the Cyder then, where there is not the least ground to suppose a Particle of Lead, produce an endemial Colic every Year in Normandy, why not in Devonshire? Can any Argument hold stronger, that the Devonshire Colic may be oweing, allowing for some Difference of Circumstances, to the same Cause, merely to the sharpness, or bad Quality of the Ordinary Cyder; which is the common Beverage of the lower Sort of People, among whom the Disorder chiefly reigns, in Devonshire, as well as in Normandy? For my Part, I think the *Case is full in Point*, and that our Author, as a controversialist, is here a *Felo de se*. It is amazing how so ingenious a Writer can afterwards gravely say; * *It is fairly then to be inferred from the Testimony of M. Chaudelier, that the Colic, which, from Time to Time, infests the Inferior Class of People in the Province of Normandy, is not Analogous to the Colic of Devonshire.*

I

Can

* P; 464.

Can any Thing be more analogous? Can any two Cases be more similar? No Cases are exactly alike in all their circumstances.

The Reason our learned Essayist gives, why the Colic of Normandy is not Analogous to that of Devon, is, *that Palsies are rarely, if at all, observed to be the consequence of the Norman Colic*

Is Palsy always the consequence of the Devonshire Colic? Far from it. * Numbers of Instances, I believe I might say, by far the Majority of Instances of the Devonshire Colic, do not terminate in such Paralytic Affection. I have seen three, or four Persons in my own little Parish this very last Pounding Season, who had the Colic of the Country, without any Sign of Palsy. Sometimes no doubt this Colic does End in Palsy. And the Colic of Normandy, even according to this Account, is not absolutely free from it. Different Degrees of sweetness, or Acidity, in the Liquor——Difference of the Quantity Drank——Different Physical Treatment, ——Difference of Climate, Food, Way of Life, or other local circumstances, may operate so that the same apparent Cause shall not always be attended with the same Effect, nor the same Disease with exactly
the

* See P. 97.

the same consequences. It is sufficient, if the Analogy hold as to all the main essential Parts. But I have indisputable Authority, that the Analogy is still stronger, and that the Palsy is more often the Effect of the Norman Colic, than this Account makes it. In the Letter before mentioned, M. Lechandelier, in Answer to some Queries proposed to him, very modestly and ingenuously replies, *‘ Les Questions proposees, sont elles bien du ressort d’un Chymiste confine dans le Laboratoire? Is a Solution of the Questions * proposed within the reach of a Chemist, confined to the Laboratory?’* He then saith; *‘ He had not himself observed Palsies to be the Ordinary consequence of the Colics; As he had before declared in his Dissertations. Mais comme sa seule experience eut ete bien insuffisante, &c.*

‘ But as his own Experience might not have been sufficient in this Case; He applied himself to some of those, who had the inspection of the Sick, and who therefore might be supposed to be better qualified to decide on this Question. However They could not take upon them to say, that the Thing had ever happened.

* One of the Questions I proposed to Him, was, whether the Norman epidemic Colic ever ends in Palsy.

‘ Ne voulant rien affirmer, qui ne soit conforme a la verite et a l’experience, il vient de consulter de nouveau un Docteur en Medecine, qui lui a dit avoir vu une femme Paralysee a la suite de cette Colique, qu’ on apelle Vegetale, et qui succomba. Not being willing therefore to affirm any Thing that might not be strictly conformable to Truth and Experience, He just now comes from consulting a Doctor in Physic, who told him, He had seen a Woman, that became Paralytic in consequence of this Colic, which they call Vegetal, and who died of it.

By this it appears, that M. Lechandelier, who was chiefly confined to the Works of the Laboratory, did not think himself sufficiently qualified to decide on this Question from his own knowledge, or experience, and therefore made fresh enquiry; And on consulting a Doctor in Physic, found that the Colic did sometimes end in Palsy. He farther adds: *Monsieur Bontè Medecine a Coutances en Bassè Normandie, a donne, il y a quelques Annees, dans le Journal du Medecine, une Dissertation sur les Coliques causees par le Cidre. C’est cet auteur, qu’il convient de consulter pour en bien connoitre le Caractere et les suites.*

M. Bontè,

Mr. Bontè, Doctor of Physic at Coutance in Lower Normandy, hath given some Years ago, in the Journal of Physic, a Dissertation on Colics, caused by the Cyder. And this Author it would be proper to consult, in Order thoroughly to know their Nature and Consequences.

I have not had an Opportunity of consulting Mr. Bontè's Dissertation. But here, I doubt not, we shall find more frequent instances of this Colic ending in some Paralytic Affection.

A sinking Person is ready to lay hold of a Twig, or a Straw. And our Author endeavours here to save himself by catching at a Bit of Lead. If we even suppose, says He, * what however is not proved; Yes, now it is proved; If we even suppose, that the Norman Colic does now and then end in a Paralytic Affection; Such Cases may reasonably be referred to Lead, as the Cause; Since, although wooden Troughs be in general used in Normandy, it is acknowledged by M. Chaudelier, that il s'en trouve quelques unes, qui sont construites de pierres, dont les jointures sont garnies de Plomb; There are some to be found, that are constructed

* Medical Transactions, P. 464.

of Stones, whose Junctures are filled in with Lead.

Now to make this Argument of any Force, our Author ought to shew, 1st. that the Woman just mentioned, and all those in Normandy, whose Colic ended in Palsy, had happened to Drink of Cyder, made in Stone Troughs, whose Junctures are filled up with Lead. And 2^{dly}. supposing them to have Drank of Cyder made in such Troughs, He must shew, that such a very small surface of Crude Lead would so much impregnate the Juice, in the very short Time the Apples are in Pounding, as not only to produce the Colic, but that aggravated Sort of it, which ends in Palsy. And consequently in the third Place, That this Apple Juice or Cyder, on the Application of the Liquor Probatorius, would give Marks of a Saturnine Solution, and some Portion of real Lead on Evaporation. But as all the Presses, and almost all the Pounding Troughs in the Province are constructed entirely of Wood; I suppose, it is more than a Thousand to one, that the Cyder, which this Woman or other Paralytic Patients had been used to Drink, did not happen to have been made in such Stone Troughs, which are so extremely rare in the Country. And it is very certain, if they had Drank of Cyder made in such Stone Troughs, with
the

the Junctures filled up with Lead, the Cyder would not have been so much impregnated by so small a Portion of Lead, in the short Time of Pounding, as to cause not only the epidemic Colic, but that aggravated obstinate Degree of it, terminating in Palsy.

We have shewn, that there are the same Sorts of Troughs, dont les jointures sont garnies de Plomb, in the County of Worcester. And yet according to the Essay, This is a Country, where the Dry Belly Ach, and consequently this Palsy, its Offspring, is almost unknown. How can such Troughs be innocent in Worcestershire, and so hurtful in Normandy? We have also found by experiment, not only that such a small surface of Lead in the Troughs would not impregnate the Liquor, but that even the large extent of sheet Lead over the Press will not do it. And to put the Matter out of all Dispute, our Author himself has informed us, that on the strictest Examination, and most judicious Analysis of these Norman Cyders, which are annually so productive of an endemial Colic, M. Lechandelier, the most eminent Chemist of the Province, could not discover the least Atom of Lead.

It follows then, that the Norman Colics,
I 4 which

which sometimes terminate in Palsy, can not be reasonably referred to Lead as the Cause. These Colics appear to be, what M. Dambourney calls them, purely *Vegetal*, oweing entirely to a vegetable Acid, or a vegetable Substance, without any admixture of Lead, or other Mineral. And if an endemial Colic be yearly produced in Normandy by Cyder, without any leaden Solution; may we not by parity of Reason conclude, that the same Cause may produce a similar Effect here; And that our Author's Opinion concerning the Cause of the *Devonshire Colic*, is not, as He saith, greatly confirmed, but absolutely overthrown, by the experience of the Inhabitants of Normandy.



POSTSCRIPT.

SINCE the preceding Work was put to the Press, an eminent Physician and learned Friend of mine, sent me the following Sketch of the Cause of the Devonshire Colic, which, I imagine, will be acceptable to the Medical Readers.

“ The Devonshire Colic, or Dry Belly Ach, appears to be really owing to the rough Acid in the Cyder of that Country; And the same Disease in the West-Indies is owing to a perfectly similar Cause, the acid of Limes, &c. taken in excess. I apprehend, the Disease, which is the subject of Disquisition, is produced by the Cause here assigned in the following Manner.

The Bile in a sound State has very important Uses in the Animal Economy. It is a finely elaborated Liquid Soap; And as such, dissolves the oily fatty Parts of our Food, renders them equally miscible with the watery Parts, and by that means incorporates the Juices of the various Kinds of Aliment, on which we live, into a white milky homogeneous Fluid, called Chyle.

The Duodenum, into which the Gall is
poured

poured from the Cystic and Hepatic Ducts, being a Continuation of the substance of the Stomach, is, in common with that Organ, the Seat of Appetite and Digestion, as well as it is found to be of Sickness and Vomiting. The Gall then being a saponaceous elaborated Bitter, like all the Simples of that Class, greatly excites Appetite, and is, on both these Accounts, a great Instrument of Digestion. Farther; The Gall, by its saponaceous slippery Quality, and by its Acrimony, at the same Time lubricates the sides of the Intestines, and excites their Peristaltic Motion; and consequently greatly promotes the Progress of the Contents through that convoluted Canal. Hence appears the Reason of that obstinate Costiveness, which ensues upon the Obstruction of the Bile, and Jaundice. But acids coagulate the Bile—destroy its Soapy Alkaline Nature, and quite enervate its Virtue. Hence Indigestion, Flatulency, Spasms, Tormina Ventris, Obstruction of the Biliary Ducts, Costiveness, Dry Belly Ach, Icteric Symptoms, Sickness, Vomiting. When the other two Digestions, the Blood and Secretions, begin to be deeply infected with an Acid Taint; The Nervous System must of Course be affected: And, when very much affected, Palsy, Epilepsy, &c. are the usual consequence.

It

It is probable, that several Causes may concur to produce this greater Degree of Roughness and Acidity in Devonshire Cyder, than what obtains in that of Herefordshire, Gloucestershire, and Worcestershire. *

The Apple Trees in the Devonshire Orchards are planted thicker and closer together, than in those of the Cyder Counties just mentioned. This Circumstance screens the Power of the Sun, and hinders his Rays from having their due influence in bringing the Fruit to Maturation.

The Soil of the three specified Cyder Counties is generally of a more gravelly Nature. That of Devonshire partakes more of a clayey Constitution. But an open gravelly Mould more copiously absorbs, and retains the Sun's Rays, than a clayey one; Consequently the Former must, *cæteris paribus*, be warmer than the latter; Not to Mention the different Nature of the Juices of these different Soils.

Devonshire, in Comparison with these other Provinces, may be considered as an elevated mountainous Country. And all
high

* Several of the following Observations, the Reader will recollect, had before occurred to me.

high, hilly, or mountainous Situations, are found to be, *cæteris paribus*, cooler than those of plainer surfaces.

Devonshire is also more wet or rainy, than the other inland Cyder Countries before recited, in consequence of its Exposition to the Clouds and Vapour brought hither in great abundance by the West and South West Winds from the vast Atlantic Ocean; which are stopped here by the Opposing high Hills, and condensed into Rain. This must be another great Check to the Mellowing of Devonshire Fruit. For the more the Apples are exposed to the Sun, the less of an austere Acid, and the more of a Saccharine Sulphureous Principle they acquire in their Composition. Probably too, the Fruit of Hereford, &c. may be of a milder, or less Austere Kind, and consequently contain less of an austere Acid.

We see then, that the circumstances of the Devonshire Climate, here briefly sketched, are naturally productive of a more rough austere acid Cyder, than that which is produced in the other Counties, where this Liquor is cultivated. And of this Kind of sharp austere Cyder, when Drank in excess for a Course of Time, especially by Persons of delicate, tender, valetudinary

valetudinary Constitutions, the Dry Belly Ach, or endemial Colic, must appear, from what has been advanced, to be a very obvious Effect."

F I N I S.

E R R A T A.

- Page 6, Line 24, For *capaciy*, r *capacity*.
 — 20, — 10, at the end dele the full stop.
 — 22, — 8, 9, dele the dots in the beginning.
 — 23, — 22, dele *s* at the end: and insert *r* in *Chemisty*, in the Note.
 — 26, — 4, for *Sulphur is*, r *Sulphuris*.
 — 26, — 12, for *seperate*, r *separate*.
 — 26, — 15, after the Words, *with the* r *Alkali*
 — 27, — 4, for *frequently*, r *sometimes*.
 — 28, — 7, for *are*, r *were*.
 — 28, — 11, for *Colichy*, r *Colicky*.
 — 29, — 23, dele *stort*.
 — 29, — 27, dele *s* in the first Word.
 — 31, — 24, for *l*, r *L*. beginning the Sentence.
 — 35, — 6, in the Note for *out*, r *ont*.
 — 36, — 5, for *Spigelins*, r *Spigelius*.
 — 36, — 8, for *Crato*, r *Crato*.
 — 36, — 20, after *verdeur* for a full stop, r a semicolon, and a semicolon after *Translates*.
 — 37, — 24, r a full stop after *inference*.
 — 38, — 21, r a full stop after *Critique*.
 — 44, — 5, dele the full stop after *Phlogiston*.
 — 49, — 10, for *o* r *a* in *propogated*.
 — 77, — 12, for *Saturnia*, r *Saturni*.
 — 80, — 13, r a full stop after *Tea*.
 — 86, — 12, for *most* r *moist*.
 — 89, — 8, for *poderous*, r *ponderous*.
 — 97, — 30, for *Suppulation*, r *Supputation*.
 — 99, — 22, for *Chandelier*, r *Chaudelier*.
 — 99, Note for 58, r 18, 87.

