

**An account of a new and successful method of treating those affections which arise from the poison of lead : to which are added general observations on the internal use of lead as a medicine.**

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Clutterbuck, Henry, 1767-1856.  
University of Leeds. Library

**Publication/Creation**

London : T. Boosey, 1794.

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# ACCOUNT

OF A NEW AND SUCCESSFUL METHOD  
OF TREATING THOSE AFFECTIONS

WHICH ARISE FROM THE

## POISON OF LEAD;

TO WHICH ARE ADDED

### GENERAL OBSERVATIONS

*On the internal use of LEAD as a MEDICINE.*

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By HENRY CLUTTERBUCK,

MEMBER OF THE CORPORATION OF SURGEONS,  
AND SURGEON TO THE ROYAL  
UNIVERSAL DISPENSARY.

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"Semper enim existimavi, neque id sine ratione, majoris esse felicitatis, certum  
vel levissimi alicujus morbi debellandi methodum ægris mortalibus pro-  
didisse, quam vel Tantalæ, quod alunt, vel Cræti thesauros accumulasse."

SYDENHAM.

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LONDON:

SOLD BY T. BOOSEY, OLD BROAD STREET.

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1794.

AN ACCOUNT

OF THE PROGRESS OF THE  
ART OF TREATING THOSE AFFECTIONS

WHICH ARE CALLED  
POISON OF LEAD

IN THE  
GENERAL OBSERVATIONS

ON THE  
NATURE AND EFFECTS OF THE

POISON OF LEAD

BY  
HENRY CUTLER

OF THE  
FACULTY OF PHYSIC IN THE  
UNIVERSITY OF CAMBRIDGE

LONDON:  
Printed by J. B. ROBINSON, in Strand.

MDCCLXXIII.

1773.

1773.

T O

HENRY CLINE, ESQ.

SURGEON of ST. THOMAS'S HOSPITAL,

And Teacher of ANATOMY and SURGERY,

In LONDON ;

The following Sheets are inscribed,

As a small Testimony of the

AUTHOR'S Esteem for

*Private Worth,*

And very eminent

*Professional Abilities.*

KENHOUSE-YARD,

Nov. 1, 1794.

TO

HENRY CLINE, Esq.

PROFESSOR of ST. THOMAS'S HOSPITAL,

and Teacher of Anatomy and Surgery,

in London;

The following Sheets are inscribed,

As a small Testimony of the

Author's Esteem for

Friendship,

And very

Respectfully,

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A N

ACCOUNT, &c.

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WHOEVER undertakes to recommend to public notice a new remedy or mode of treatment, must expect to have his observations frequently received with reluctance, and sometimes, perhaps, the truth of his facts called in question. Authors and readers seldom see things through the same medium. Exaggeration is exceedingly apt to attach itself to the one; and, probably, too great a degree of scepticism to the other. In the science of medicine the establishment of a single fact, is a matter of extreme difficulty. It is seldom

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that

that demonstrative evidence can be obtained on this subject. Presumptive proof is all that in general can be had. To afford conviction, therefore, in this science, the evidence adduced should be clear, various, and comprehensive. This only can enforce belief, as this only can deserve it.

How far the following pages will bear a scrutiny on these principles, it is not for the Author to determine. It may be permitted him to state, that repeated experience has convinced him of the truth of his observations, and that they have received confirmation from those whose discernment will not be questioned.

Among the variety of objects which present themselves to the art of medicine, there are, unfortunately, some, which have entirely, or in great measure, resisted every effort to relieve them. Every rational attempt to afford relief in such cases, deserves to be candidly considered.

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It is with much satisfaction that I now publish an account of the good success, which has attended a particular method of treating a disease, which, whether it be considered with regard to the frequency of its occurrence; or to the painful and destructive train of symptoms it brings along with it, cannot but be estimated as of the first importance.

The affection of which I am about to speak, has been described under various appellations, according to the places, in which it has been most prevalent, or according to its most common, and striking symptoms. The terms *Colica Pictonum*, or Colic of *Poitou*, *Colica Damnonii*, or Devonshire Colic, *Colica Saturnina*, *Painter's Colic*, *Belland*, and *dry Belly-ach*, are all applicable to the same affection; they are all followed by the same paralytic state of the limbs, and undoubtedly originate in one common cause; to wit, the application of the poison of lead to the body.



Almost every day's experience furnishes us with examples, of painters, plumbers, and the other numerous artificers, employed, either in raising the lead from the mines, in manufacturing its several preparations, or in applying them to their respective uses, who, after a time, are attacked with a train of dreadful symptoms, tormenting to the sensation, and destructive of all the active powers of the body.

The various purposes to which this metal and its preparations are applied in the different arts, occasion a very great number of persons to be constantly employed in their use. The proportion of those that suffer in consequence is very considerable. Few, indeed, who have long been exposed to the influence of this metal, escape its ravages.

It is seldom that the poisonous effects of lead are observed until the workman has been exposed to it for a considerable length

length of time. In general, he will go on for three or four years, without perceiving that his health is at all impaired, and some for a much longer period. About this time a general unhealthy appearance takes place; a pale fallowness of the complexion; a want of appetite and indigestion. He finds himself more subject to costiveness than usual. He is frequently disturbed at night with cramps in the muscles of the extremities; and a general languor is felt through the day.

After some uncertain time, an aggravation of all these symptoms takes place. Frequent nausea, and sometimes vomiting, is superadded to the want of appetite. Costiveness increases to such a degree, that he will often remain a week without an evacuation: nor is this state of the bowels to be removed by an ordinary dose of any of the common purgatives. The most drastic kinds, and those in very large doses,

are found necessary to produce any effect. Along with this state of costiveness, he is frequently tormented with colicky pains. The seat of the pain is generally about the region of the navel, which is drawn inwards. Hard knotty tumours, also, may be felt in different parts of the abdomen, which subside, and again appear. The cramps become more troublesome and affect the sides, shoulders, &c. as well as the extremities.

These appearances will sometimes continue, fluctuating in their degree of violence, for a considerable time, without being accompanied with any other symptoms. In general, however, after the symptoms of colic have been violent, the extremities in a short time become affected; more especially the superior extremities. A weakness in the hands is the first thing perceived. He is unable to grasp any thing with firmness. This weakness seldom extends itself above the wrists, but  
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he is tormented with pains in the shoulders and upper arms, resembling chronic rheumatism. The weakness soon increases, so that he loses altogether the use of his hands. He is unable to support the hand in a line with the fore arm, and can with difficulty lift it to his head. The fingers are incurvated, and he is unable voluntarily to extend them; not that they are rigidly contracted, for they can with ease be straitened by any extraneous force; they remain bent, because the tonic power of the flexor muscles exceeds somewhat that of the extensors.

No diminution of sensibility in the skin is perceived to accompany this paralytic state of the arms; the affection seems confined to the muscles alone. The legs are seldom affected in the same manner as the arms are found to be. The most common affection to which the legs are liable, is that of cramp, which is particularly violent and troublesome during  
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the night. The ankles seldom experience the same degree of weakness that the wrists do.

When the affection of the intestines has been particularly violent, it often happens that the feet are attacked with symptoms which resemble very perfectly the attack of gout. Pain, swelling, and that shining redness which is so remarkable in gout, take place in the feet: often beginning at the joint of the great toe, and spreading from thence, to the ankle joint. This pain, like the gout, also rages especially during the night, and undergoes the same remission towards morning. When the feet are attacked in this way, it is always found that the bowels are considerably relieved; and in general, an entire cessation of the colicky symptoms takes place during this time. This pain and swelling of the feet and ankles continue only a few days, and on the going off of these, the former affection of the bowels usually recurs.

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These various symptoms steal on by slow progression, each successive paroxysm becoming more severe than the former, till at length the patient is reduced to the most deplorable degree of infirmity. His muscles waste; his limbs are contracted; his respiration is difficult; and after having a long time dragged on a most miserable existence, he dies, generally either convulsed, or apoplectic.

The Colica Pictonum, undoubtedly the disease in question, is thus emphatically described by *Francis Citois*, a native of Poictiers, and afterwards physician to the French King (*De Novo & populari dolore apud pictones colico bilioso in 1617*)—*per vicos, veluti larvæ, aut arte progredientes statuæ, pallidi, squallidi, macilenti conspiciuntur, manibus in curvis, & suo pondere pendulis, nec nisi arte ad os & cæteras supernas partes sublatis ac pedibus non suis, sed crurum musculis, ad ridiculum, ni miserandum, incessum compositis,*

*compositis, voce clangosa & strepera.*—The same affection is described by Dr. Musgrave in his Dissertation *De Arthritide Symptomata et de Arthritide ex Colica Damnonii*, published in 1703; also by Huxham, in his Treatise *De Morbo Colico Damnoniorum* in 1739.

That these symptoms arise from the application of lead to the body, does not now admit of a question. They have indeed been attributed to other causes, such as the too free use of the vegetable acid. Accordingly it has been remarked that in those countries where large quantities of small wines or cyder are used, these symptoms are very frequently occurring.

Other fanciful causes of this affection have been assigned by different authors: as the remains of fevers, the crisis of which has been imperfect, or which have not been properly treated; mineral poisons, as  
antimony,

antimony, arsenic, copper, bismuth, and mercury. It has also been attributed to gout and rheumatism; obstructed perspiration; scurvy, and passions of the mind. But whoever reads the admirable treatises on this subject by Sir George Baker, in the first volume of the Medical Transactions, will have little hesitation in agreeing with him, that the disease originates in one simple cause, though often unobserved and unsuspected, to wit, the application of lead, in some form or other to the body. The constant and invariable consequences of this application, when long continued; the striking and uniform appearance of the symptoms, whenever this cause can be traced; the very extensive application of the other assigned causes without producing the same consequences; together with the great variety of ways, in which this poison may get admission into the body, unobserved; are sufficiently convincing proofs of the truth of this opinion.

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The number of persons employed in the use of the various preparations of lead, is very considerable, few of whom escape entirely the deleterious effects of this substance; and a very large proportion of them are deprived entirely of the means of subsistence by the excruciating colics, from which they are seldom altogether free, and by the total loss of power in their hands. Some of these are cured, but many receive no benefit from the common modes of treatment, and are left to linger out a wretched existence. The subject therefore will not be deemed of small importance, and it becomes the duty of every one to communicate what experience may have pointed out to him, as likely to afford relief to such a number of pitiable objects. From the year 1762 to 1767, we are informed there were admitted into the Devon and Exeter Hospital 285 patients in this disease; of whom were cured 209. (*Vide Med. Transf. vol I. p. 210.*) The violent symptoms of pain  
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and costiveness are commonly relieved before admission, and nothing but the paralytic state of the arms remains. Thus we find that more than one fourth of the cases admitted, resisted the effects of the common treatment. When no relief is experienced from all the common remedies, it is usual to send the patients to the Bath Hospital, where they use the waters both externally and internally. But these also frequently fail to cure. Of eighty patients in this disease admitted into the Bath Hospital in the year 1766, forty were said to be cured, and thirty-six more greatly relieved. Of these it is probable a considerable number remained incapable of active labour.

The ways by which the poison of lead may gain admittance into the human body are various; unobserved, and unsuspected. These are laid down very fully by Sir G. Baker, in the treatises above mentioned. Besides the ways in which the workmen  
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in this metal are exposed to its effects, there are several other ways by which it finds admittance. The power of sugar of lead and litharge in correcting that acerbity which is found in weak acid wines, and in checking the progress of fermentation to the acetous state, is well known amongst the manufacturers of wines and cyder; and there is much reason to fear, that they are very little scrupulous in their employment of them for these purposes.

Vinegar is frequently found impregnated with this metal, owing perhaps, to its being incautiously kept in glazed earthen vessels, the glazing of which is performed by a calx of lead.

In Holland, and perhaps in other countries, it has been customary to correct the more offensive expressed oils, so as to substitute them to the oil of olives, or oil of almonds, by means of this metal. The custom  
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which prevails in many parts of this country of keeping milk in leaden vessels, seems liable to particular objection. One would naturally imagine that it cannot turn sour in such vessels, without becoming impregnated with the metal. But Sir G. Baker observes, that on applying the usual tests to some milk, which had been kept in a leaden vessel for six days, no marks of a saturnine impregnation were perceivable.

Copper vessels lined with tin, when used for boiling any acid substances, are not altogether free from objection. These are usually lined with a mixture of tin and lead. Some artists indeed profess to use pure tin only; but this is so much more difficult to the workman, as well as more expensive, that it is probably seldom adhered to. It has been said, that this adulteration can readily be distinguished, by rubbing the finger over the surface: if lead enters the composition, it always contracts  
a livid

a livid, blackish colour, but is not discoloured, when rubbed on pure tin only.

It has been supposed that the vapour arising from lead often produced the same ill effects as are observed from its application in other ways. This however, does not appear probable. If this poison were of a nature so volatile as to be capable of being diffused in the atmosphere, we might expect to find the lungs very frequently diseased from this cause. This is not the case. Asthma is a rare occurrence. Few of those who suffer from the poison of lead have this as a symptom. Besides, many people are frequently exposed to the fumes of lead, without being subject to its peculiar effects. It is true, indeed, that head-ach and sickness at the stomach, are very readily felt by those going into newly painted rooms, but these symptoms have no resemblance to those which the application of lead and its preparations to the body produce, and are probably

probably to be attributed to that chemical alteration which takes place in the properties of air which has been exposed to white paint, as first observed by Dr. Priestley, and after him by Dr. Percival.

Several pieces of paper, daubed with white lead paint, were put under a receiver, which was then immersed about two inches deep, in a vessel of water. In twenty-four hours the air was diminished more than one fifth part in bulk, and was become in a high degree noxious. It extinguished a candle, and destroyed animal life. This air was again rendered wholesome by agitation with water, which shews the propriety of placing vessels of water in rooms newly painted.

This experiment by no means proves that the air contained any portion of the lead. The effects of this air on animal life and flame, are probably owing to a portion of the *oxygen* being absorbed, and

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hence rendered unfit for the purposes of respiration.

It is highly probable, that lead and its preparations are applied in a fixed state to the body, when they produce their deleterious effects. I have often found in painters that the paralytic affection has been confined to the arm that held the brush; and when from finding themselves unable to continue their work, they have made use of the other arm; this also has in a short time become paralytic. But there can be little doubt that the most common way in which lead produces its effects, is by its being taken into the stomach. Few of those employed in the use of lead attend much to cleanliness; they usually go to their meals without washing, and of course are liable to take in no inconsiderable quantity with their food. It is a remark which those persons themselves make, that the chance of escaping the colic, depends very much on the cleanliness

ness they observe. I have been informed by a proprietor of mills, where they grind white lead for the use of painters, that his workmen have, for many years, remained uninjured; which he himself attributes to a great degree of caution, which he inculcates on this head.

The remedies which have been commonly administered for the relief of those affections have been various. For the paralytic symptoms, stimulants of various kinds have been employed, as well internal as external. The volatile alkali, resinous substances, essential oils, &c. have been used internally; whilst frictions with the most irritating substances, continued blistering, warm bathing, and electricity have been assiduously applied to the affected parts. For the affection of the bowels, purgatives of all kinds have been employed, and especially castor oil, together with the free use of opium. In addition to these the balsam of Peru has been



strongly recommended. The internal use of alum too has been advised by Dr. Percival.

Of all these it is almost superfluous to remark, that they very frequently fail of effecting a cure, and often do not give even temporary relief.

The remedy which I am to recommend for the removal of this train of symptoms is MERCURY. A substance which has frequently been had recourse to, when the practitioner has found himself baffled in the use of the more common remedies. A substance so powerful in its operation, that it has often effected a cure by the mere violence of its effects, and the consequent change of action in the system, in cases which, in a rational point of view, appeared very ill adapted to bear a remedy of this kind.

But the trial of mercury in those affections which arise from the poison of lead,

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was made on other grounds, than that of mere empiricism. A comparative view of the symptoms which arise from this source, with those occasioned by the use of quicksilver, will put this matter in a clear point of view.

The effects of lead on the system are exerted for the most part partially. On attentive consideration of the state of the parts immediately affected, it is impossible not to see, that it consists principally, if not totally, in a torpor or want of action of the muscular fibres. All the various symptoms admit of explanation on this principle. No rigidity or contraction is perceived in the paralytic limbs. An indisposition, or inability to contract at the instigation of the will seems to constitute the whole of the affection. On dissection, the affected muscles appear flabby and loose in their texture; of a pale, unhealthy colour; taking on the appearance of muscles which have remained long inactive.

The affection of the intestines probably arises from some part of the alimentary canal having lost its contractile power; hence the contents are not propelled forwards; this must give rise to flatulency and distention of the superior portion of the intestines; and to these will necessarily succeed, spasmodic contraction, and pain, of the parts not immediately affected by the lead.

That the affection is not simply spasmodic contraction of the intestines, is probable, from its dissimilarity to what takes place in the *Ileus*, or spasmodic colic. In the latter case, the constipation being removed, the complaint in general is instantly removed also; and it most commonly goes off with a copious evacuation. In the *Colica Pictorum*, the evacuation, when effected, is always sparing; and the relief obtained is of very short duration. A fresh accumulation of foeces immediately begins to take place, and distention and pain in a short time succeed. A di-

A diminished secretion of all the fluids naturally poured out into the alimentary canal accompanies this disease. The fœces are of a whitish clay-like colour, and of a hardened consistence; shewing the deficiency of bile, as well as of the other intestinal fluids.

The cramps which so frequently occur in patients of this description, serve, in like manner, to point out the debilitated state of the muscles. Thus we observe that muscles which have been fatigued by violent, or long continued action, as in running or dancing, are peculiarly liable to this affection. It is remarkable, however, that the muscles affected with cramps from the poison of lead, are not those which usually become paralytic. The larger muscles of the legs, and those about the back and shoulders, are generally affected with cramp; whilst the paralytic state of the muscles of the fore arm, is not, as far as my observation goes, preceded by any spasmodic contractions. That

That the disease arising from the poison of lead is owing to a want of irritability in the muscular fibres, is further evident from hence, that all those applications which contribute to the relief of the symptoms, operate by means of a powerful stimulus, and are calculated to increase action. Thus, the constipation, and pain of the bowels admit of relief only from the most active and drastic purgatives; in like manner, all the other remedies, commonly employed, such as balsam of Peru, volatile liniments, warm bathing, and electricity, are of the stimulant class. But however well adapted they may be in their nature to answer the end proposed, we have abundant cause to lament their insufficiency.

From the action of mercury, on the other hand, instead of that torpor which marks all the symptoms arising from lead, an increased irritability of every part of the system may be observed, disposing it  
to

to violent action. Thus, we may remark increased action of the heart and arteries ; a tendency to increased action in the vessels of the skin ; of the intestines ; of the kidneys ; of the salivary glands : in short, every secretion, and excretion of the body are, at times, preternaturally increased.

The effects of mercury, when long and largely applied, on the larger muscles, is not less striking. Gilders, and others, who suffer from quicksilver, are much affected with tremors and debility, particularly in their hands ; and when the disease is confirmed, like patients labouring under the *Chorea Sancti Viti*, they have no command over the muscles, which naturally obey the will.

It is true, that tremors, and pain in the bowels, have been enumerated amongst the symptoms arising from the application, both of quicksilver, and of lead, to the system. But, on examination, they will

will be found to differ *totâ facie*, from each other. In the palsy from lead, tremors are only observed, when the muscles are put into action by the will, as when an attempt is made to lift any heavy body; the want of power in the muscles occasions reiterated efforts to be made, which necessarily produces irregularity in the action. But in those tremors produced by quicksilver, the disposition to action in the muscular fibres is so great, that it takes place, independent of the will, and the shaking is observed, whether an effort be made or not.

With regard to colic, as arising from quicksilver, this also is totally different from that, which lead produces, and pain is, perhaps, the only symptom which is common to the two. The one is almost universally accompanied with, or soon followed by, dysenteric purging. The characteristic symptom of the other is constipation.

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The difference of the affections arising from quicksilver, and from lead, is clearly pointed out in the following passage of Ilsemann, as quoted by Sir George Baker.

“ Adficiuntur hydrargyri effluvia qui hau-  
 “ ferunt, lipothymia, sudore frigido, con-  
 “ vulsionibus, *ἀναισθησία*, apoplexia, epilep-  
 “ sia, et præsertim artuum tremore, pa-  
 “ ralyfi, ptyalismo, et dentium vacilla-  
 “ tione. Respondere quidem nonnulla  
 “ horum, quæ enarravimus, symptomata-  
 “ tum morbi nostri indoli primo intuitu  
 “ videbuntur, ast curatius rem si perpen-  
 “ derimus, differentia eorum haud diffi-  
 “ cile adparebit. Quæ enim ab hausto  
 “ mercurio oriri solent convulsiones, pa-  
 “ ralyfes, sudores frigidi, lipothymia, ex  
 “ idiopathia, absque prægressis gravioribus  
 “ malis, ægros infestant; cum è contra  
 “ eadem morbum nostrum symptomaticè,  
 “ præcedentibus nimirum ventriculi et in-  
 “ testinorum doloribus, à mercurii va-  
 “ pore minime oriri solitis, subsequantur.”

Thus



Thus it appears that the effects of mercury and of lead on the human body are not only different, but opposite. It appeared therefore no improbable supposition, *a priori*, that mercury might afford relief in those affections produced by the deleterious action of lead on the system, and the event happily justified the speculation.

In the course of the last year I had an opportunity of seeing several instances of the *Colica Pictonum* and consequent paralysis, which resisted every mode of treatment hitherto recommended. In consequence of the opinion I had formed to myself on the subject, I determined to make a trial of mercury, in the hope of confirming it by experience, or, if I were disappointed in that expectation, I should at least establish a negative fact, and, in the present imperfect state of the science of medicine, no fact can be without its use. I received ample gratification in the success of the first  
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experiment. Further opportunities were of course earnestly sought after, and I have much pleasure in saying that in every case which has come under my observation since, the use of mercury has succeeded perfectly in effecting a cure.

The first case in which the good effects of mercury were perceived, was one, in which the symptoms of colic and constipation had been previously relieved, and in which nothing remained of the disease, but the paralytic state of the hands. This being removed by the application of the remedy, it became a question of importance, how far the other symptoms admitted of relief from the same means? It was probable that the immediate state of the parts affected was the same, or very similar, making allowance for the variation in the structure and œconomy of different parts; and therefore might admit of the same mode of treatment. The next case which occurred served to determine this point.

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The affection of the bowels was there present, together with frequent cramps in the muscles of the legs, without any paralysis of the hands. The mercury in this case succeeded equally well in removing pain and constipation, as it had before done with regard to the paralytic symptoms.

No purgative that I have employed in these cases, has been nearly so effectual as calomel. A single grain exhibited mornings and evenings, has not only produced immediate evacuation, but, in several instances, the bowels have continued regular, and free from pain, during its use, although the most powerful purgatives, previously exhibited, procured only temporary evacuation.

It may be doubted whether there be any ground for choice in the application of the remedy, according to the particular symptoms to be removed. For the paralytic  
state

state of the hands, it is probable that the application will be made externally, as more consonant with the ideas of the patient; whilst, for the relief of the symptoms of colic and constipation, the internal exhibition will perhaps be most frequently had recourse to. But I am not of opinion that any particular advantage will accrue from this. I have found the paralytic weakness of the hands as effectually relieved by the *Hydrargyrus muriatus* given internally, as by frictions. In general no considerable alleviation of the symptoms is perceived, till there are marks of the remedy operating on the whole system; except indeed the constipated state of the bowels, which has appeared to be relieved, from the use of calomel, before it had been exhibited a sufficient length of time to affect the system generally.

The length of time necessary for the removal of the symptoms, appears to differ  
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in different instances, according to the violence of the symptoms and their duration. The relief has been much more rapid, in general, than one would, perhaps, have expected. A fortnight has, in every instance, produced very visible amendment: and a month or six weeks, have been sufficient to effect a cure in all the cases in which I have yet had an opportunity of making the experiment. The mercury has been pushed so far in all the cases as to affect the mouth. Indeed the mouth has become so soon sore after the exhibition of the mercury, that I have thought the system was, in those instances, more susceptible of impression from it, than in other circumstances. Whether this be really the case, I am not at present able to determine with certainty. It is what one would hardly expect *à priori*. That torpor of the system which is produced by the action of lead, one would rather suppose, would render it less liable to be acted on by mercury, [as is the case with regard to other stimulants.

It may naturally be asked, how it has happened, that a remedy, in such frequent use as mercury, should hitherto have escaped observation, with regard to its good effects in the disease above described? To this it is not easy to give an answer. Whether it may ever have been employed by individuals in practice, or not, it is impossible now to determine. Certain it is, that no such instance has been made public. Indeed, it is reasonable to conclude, that a trial of this kind has not been made, since, supposing the good effects to have been so decided, as they were in the cases which have fallen under my observation, it is impossible they should have been overlooked. Something perhaps has been owing to prejudice. The mineral poisons have generally been classed together, and probably they have been conceived to operate in a somewhat similar way. Hence it was not likely that one of them should have been thought of as a remedy for the ill effects produced by another.

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Another reason which may have prevented any trial with this medicine, may have been the loose and unguarded manner, in which several of the writers, who have treated of that species of colic, which is succeeded by a paralytic state of the limbs, have assigned the cause of the disease. Sometimes it has been attributed to the use of acids; sometimes to bismuth or lead; and sometimes even to quicksilver itself. Until this subject was better understood, this was sufficient to deter men from the use of mercury in this affection.

There are in nature various substances, as well medicinal as poisonous, which have properties peculiar to themselves; and which are distinguished from others, by their producing constant and uniform changes, on the human body. It is the peculiar property of lead to excite the disease above treated of, the symptoms of which are most remarkably characterized. It is the property of quicksilver to produce effects

effects on the system different, and even diametrically opposite to those which are occasioned by lead. The same holds true with regard to a variety of other substances. Every poison in nature has perhaps its antidote, though from the present limited state of our knowledge we are yet in great measure ignorant of them.

It has been suggested, that those who are employed in the use of lead, might perhaps escape its pernicious influence, by the occasional use of mercury in small quantities. How far this might have effect, I am unable to determine.

It will perhaps be said that it would have been better to have waited the result of more experiments, that no doubt might remain of the efficacy of the plan recommended. Had the matter rested solely on my own observation I should probably not so soon have troubled the public with it. But several of the cases which are subjoined, passed under the no-



tice of the physicians of the Dispensary\* ; and the success of this mode of treatment has been hitherto so uniformly favourable that I thought it my duty to make known what I had seen, as early as possible, that others might make the same trial, and thereby propagate the benefit, if verified by their own experience. It is general experience which must determine ultimately the value of any proposed mode of treatment.

If the success of other practitioners with this remedy shall not be found equal to my own, no detriment can ensue from the trial ; but, if, on the contrary, the result of their trials should answer my hopes and expectations, a very valuable purpose will be served. I do not presume to flatter myself, that the same degree of success will invariably occur in future ; for this is more than happens in any disease, from any mode of treatment ; but I have seen enough to convince me, that what I have proposed, merits the attention of the faculty in general.

\* At that time Drs. Crichton and Bradley.

## C A S E I.

A young man of three and twenty years of age, became a patient at the Dispensary, for a paralytic affection of the hands. He had been for seven years employed in house painting, and had, during the greater part of that time, been frequently attacked with colic and constipation; from which he got temporary relief, by the usual evacuant remedies. The palsy of his hands had continued for three months before his admission, and he had used various means without relief. Every thing in common use was tried, as stimulating applications of all kinds; blistering the wrists; and lastly electricity was assiduously employed for the space of a month. He got not the least relief from any of these attempts.

In consequence of the ideas which I have mentioned above, it was determined

to give a trial to mercury. A drachm of the strong mercurial ointment was directed to be rubbed into the wrists and fore-arms every evening. Within a week, his mouth became sore, which obliged him to lay aside the ointment for a few days. A visible amendment, however, had taken place. After a few days, he returned to the use of the remedy, and at the end of a month had recovered the entire use of his hands, and was discharged.

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## C A S E II.

THE benefit derived from this mode of treatment in the above case, naturally excited our curiosity with regard to other cases, and, especially, to determine, whether the other symptoms admitted of relief from the same means. It was not long

long before an opportunity presented itself. A young man 21 years of age became my patient at the Dispensary, for a swelling in the groin, which on enquiry appeared to be venereal. He had been employed in the polishing of plate glass, (for which purpose a calx of lead is used) for five or six years, and for the last three years had been frequently tormented with excruciating pains in the bowels, together with the concomitant symptom of constipation. He was also very frequently attacked with the cramp in the legs, but no affection of the arms was present, excepting frequent pains about the shoulders, resembling chronic rheumatism, a symptom which very commonly precedes the paralytic affection of the hands. This afforded a fair opportunity of judging whether mercury was capable of relieving the other symptoms, as it had done the palsy of the hands. A quarter of a grain of *Hydrargyrus muriatus* was directed to be taken three times a day. The swelling of the  
 inguinal

inguinal glands gradually subsided. The symptoms of colic and cramp were much relieved, and by the time that the mercurial course had been continued a sufficient length of time for the removal of the venereal affection, the other symptoms had entirely disappeared.

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### C A S E III.

THE subject of this case was a man above fifty years of age. He had been from a boy employed in house-painting. During almost the whole of this time he has been much affected with colics and obstinate costiveness, which have obliged him to have recourse very frequently to strong purgatives. He has twice before the present been attacked with the paraly-  
 lysis

lysis of the hands, which has disabled him, for three or four months at a time, from continuing his business. The complaint has been in these cases removed by the ordinary methods of treatment. At present the paralytic affection of the hands has subsisted for near five months, in which time he has tried a great variety of remedies, but without any advantage. The affection of the bowels is not at present considerable.

He was directed to rub in a drachm of the mercurial ointment into the wrists, every morning and evening. In five days the gums swelled considerably, the quantity of ointment was therefore lessened. In about ten days the weakness of the hands began to disappear. The ointment was continued for five weeks, the mouth being all that time affected, and at the end of this time his hands had recovered their former strength. He has also a regular state of the bowels.

CASE IV.

## C A S E IV.

IN this case the disease was slight, the only complaint being that of great costiveness, with now and then, colicky symptoms. The subject of it was a house-painter, about 30 years of age. He had obtained relief from the common purgatives ; but it never lasted above three or four days, when he was again obliged to have recourse to the same remedies. I directed him to take a grain of calomel mornings and evenings, and to take three times a day thirty drops of the *Bals. Capivi*. In the space of three days, his bowels became regular ; he got an evacuation or two every day, and he continued the calomel for a month, when he remained free from complaint.

CASE V.

## C A S E V.

I SHALL give the history of this case more minutely, as all the symptoms of the disease were present in a considerable degree, and as it affords an opportunity of comparing the effects of the common mode of treatment, with the one I have ventured to recommend above.

The patient, Thomas Canfield, was a painter, 24 years of age. He had worked at this business for eleven years. During the first seven years he felt no ill effects from his employment; after which he began to be affected with frequent colicks, attended with obstinate costiveness; which complaints continued to torment him at times for three or four years. About eight weeks before he became a patient at the Dispensary, he perceived a weakness in his right hand, in which he usually held



held the brush. This soon encreased to such a degree as to prevent his using it altogether. He frequently suffered much from cramps in the legs, and has, two or three times in the last three years, after severe fits of the colic, been attacked with great pain, redness, and swelling of the feet and ankles, continuing for some days; during the continuance of which, his bowels were always entirely relieved.

He was directed to rub into the wrists, two scruples of the *Ung. Hydrarg. fort*. In about a week all his symptoms were much relieved, and at the end of a fortnight finding the strength of his right hand sufficiently restored, he discontinued the medicine, and resumed his former employment. A month afterwards he returned to the Dispensary. The paralytic affection of the right hand had returned, together with the painful and costive state of the bowels. Being unable to hold the brush in the right hand, he continued to work  
with

with the left, which in a little while became paralytic, as the other. He was now treated in the common way, with purgatives and stimulants and those of the most active kind. The following with many other formulæ were prescribed him.

Ol. Ricini, pro re nata.

R. Assafœtidæ dr. 1. Camphor. scrup. 2, opii pur. grs. 15, ft pil. xx. Cap. 1 mane & vespere.

R. Bals. Peruv. dr. 2, mucilag. G. Arab. dr. 5. Sulph. Præcip. dr  $1\frac{1}{2}$ . Tr. opii cam. dr. 3. Spt. Cinnam. dr. 8. Aq. pur. oz. 5. M. Sumat. Coch. 2. Larg. 4tis. horis.

Enemata Terebinthinat. sæpius utend.

From these he got hardly temporary relief. He never was free from violent pain in his bowels for twenty four hours together, and the state of his hands was not in the least mended.

On the 20th of September I ordered him a grain of calomel night and morning,  
 conti-

continuing the former opiate medicine. The second day after taking the calomel he had two natural stools, and the pain in the bowels was much abated. On the third day his feet and ankles became painful, swelled, red, and shining. The pain began in the great toe and spread backwards to the ankle, resembling in all respects an attack of the gout; raging particularly, in the early part of the night, and having the same remission towards morning. This pain and swelling continued for about ten days, going off gradually, and during all this time he had regular evacuations and was entirely free from pain in the bowels.

The weakness of the hands continued just as before; but the calomel not having affected the mouth, was omitted, and he was directed to rub into the wrists a drachm of mercurial ointment every evening. In about ten days more the mouth became sore, and the weakness of the hands was  
much

much lessened. He persisted in this plan, and at the end of a month, had recovered the entire use of his hands, and had been altogether free from pain and costiveness, since he first began to take the calomel.

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C A S E VI.

FOR the following account I am indebted to my valuable friend, Dr. Bradley, late Physician to the Royal Universal Dispensary, and now one of the Physicians of the Westminster Hospital.

DEAR SIR,

“ SINCE you suggested the  
“ use of Mercury as an antidote to the  
“ poison of Lead, I have taken every  
“ opportunity of employing it. The event  
“ of those cases which we attended as col-  
“ leagues you already know: since our late  
“ sepa-

“ separation, I have seen only one, and  
 “ this, I apprehend; is rather to be confi-  
 “ dered as a prevention than a cure ; not  
 “ that I esteem prevention less important  
 “ than cure, but only that the evidence of  
 “ it, can never be so decisive. Those ca-  
 “ ses, undoubtedly, which have crept on  
 “ by slow steps, and at length become in-  
 “ veterate diseases, in all cases of poison,  
 “ are the most interesting subjects of spe-  
 “ cific remedies — Violent symptoms of  
 “ rapid accession, from any such causes,  
 “ may yield to common remedies early  
 “ applied ; but after they have become by  
 “ continuance a part of the constitution,  
 “ nothing but a specific remedy can re-  
 “ move them.

“ The case I have alluded to, was that  
 “ of a young woman, of about 20, from  
 “ South Wales, who was admitted into  
 “ the Westminster Hospital on Sunday  
 “ July 20th, 1794, as an accident ; the  
 “ case being considered as too urgent to  
 “ wait

“ wait for the usual forms of recommen-  
“ dation. The symptoms, on her admis-  
“ sion, were an obstinate constipation du-  
“ ring the last twelve days; violent disten-  
“ tion of, and pain in the stomach and  
“ bowels, accompanied with a general  
“ torpor in the voluntary muscles, but no  
“ abolition of voluntary motion.

“ The Apothecary of the Hospital im-  
“ mediately ordered castor oil with opium,  
“ both by the mouth and in glisters, which  
“ within twenty four hours relieved the  
“ constipation and tension of the stomach  
“ and abdomen.

“ On Tuesday the 22d I saw her, and  
“ thought the danger ought to be estima-  
“ ted from the joint consideration of the  
“ exciting cause, together with the state  
“ of the present symptoms, which were at  
“ that time by no means alarming. I was  
“ informed that the whole surface of her  
“ body had been exposed either to white

“ lead, or sugar of lead, for three weeks ;  
 “ as she had been employed in carrying  
 “ bags of cerusse till her cloaths were full  
 “ of it, and in washing the sugar of lead  
 “ out of the pans over which the cerusse is  
 “ formed. Therefore, though the present  
 “ symptoms were not alarming, yet from  
 “ the magnitude of the exciting cause, I  
 “ thought it but too probable that a foun-  
 “ dation was laid for a severe disease ; more  
 “ especially as she had complained of ex-  
 “ cruciating pains in both elbows during  
 “ the last two days.

“ Under this conviction I had recourse  
 “ to what I esteemed the only antidote,  
 “ and ordered her to rub in a drachm of  
 “ the strong mercurial ointment every day ;  
 “ and to repeat the castor oil occasionally.

“ The day after there appeared an  
 “ eruption of pustules, resembling those of  
 “ the chicken pox, about each elbow ;  
 “ on the breaking out of which the pain  
 “ left

“ left her. She was directed to apply  
“ some of the mercurial ointment to these  
“ parts, and in about seven days they  
“ dried up and desquamated.

“ By the 26th her mouth became so sore,  
“ that the ointment was necessarily inter-  
“ mitted.

“ On the 30th all her complaints were  
“ removed except weakness, and a slight  
“ foreness of the gums.

“ If you think the above instance any  
“ confirmation of your opinion respecting  
“ the virtues of mercury as an antidote to  
“ the poison of lead, you are at liberty to  
“ make what use you please of it.

“ I am,

“ Dear Sir,

“ Yours, &c.

“ T. BRADLEY.”

DELAHAY-STREET,

SEP. 4, 1794.



General Observations on the  
internal use of Lead as a Medicine.

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SEEING that such violent and calamitous effects are produced by the application of the preparations of lead to the human body, it becomes a question of considerable importance, to determine, how far they are admissible as articles of the materia medica. Very high authorities have viewed them in so very unfavorable a light, as to reject them altogether from practice.

Undoubtedly, when we contemplate the mischiefs which have arisen from this source, numerous instances of which are related, and the truth of which do not admit of a question, we must hesitate to employ a substance capable of producing so much injury. It may not be amiss to  
bring

bring forward a few of those deplorable cases, not with a view of dissuading entirely from the internal use of this substance, but to make us cautious when we do employ it, that by attentively watching its effects, we may be enabled to stop, before the mischief has proceeded to an alarming extent.

Dr. Percival\* gives us an account, on the authority of a physician whose judgment and accuracy he could rely on, of three instances of the fatal effects of Gouiard's extract of lead externally applied. Two of the cases were incipient white swellings; the third was a tumour of a less uncommon kind. Each of the patients became paralytic, and two of them were convulsed several days before death.

The same author furnishes us with another instance† of very serious consequences  
hav-

\* Medical Commentaries, Edin. Vol. 3.

† Ibid.

having arisen from the same external application, to a scalded leg. On the sixth day from the first application, the surgeon was called to his patient, and found him violently afflicted with the colic, trembling of his limbs, continual nausea and frequent vomitings, together with constipation of the bowels. These symptoms soon gave way to some doses of castor oil, with small quantities of opium.

Mr. White of York\* says he has known flatulent distentions of the bowels, and obstinate constipations, brought on by a single dose of the *Tinctura Saturnina*.

In some experiments on the poison of lead by Sproegel † we are informed that he gave to a dog half a drachm of *Saccharum Saturni*, and to another a drachm. Vehement vomitings ensued, with convulsive motions of the whole body; after  
a few

\* Medical Commentaries. Edin. Vol. 3.

† D. Sproegel experimenta circa varia venena. Diss. Inaugur. Gottingæ, 1753.

a few hours, however, these effects disappeared. The same substance injected into the veins produced instant death.

A person who had been accustomed to sit before the fire, with his feet on a plate of lead, was attacked with a slight paralytic affection of his legs; and a dog, that used to lay down on the same place, almost entirely lost the use of his limbs. \*A boy, who was fond of amusing himself, by running barefoot over warm plates of lead, was seized with colic, violent convulsions of his extremities, and a palsy on one side.†

Avicenna calls litharge “lethale medicamentum, urinam fistens, ventrem et ureteres inflans, et distendens, respirationem coarctans.”

Sir George Baker has also brought forwards several instances of ill effects occasioned by the internal use of lead.

This

\* Dr. Percival's Observations on the Poison of Lead,

† Ibid.

This is one side of the picture, and shocking enough it is. But here, as on every occasion in human life, we must balance evils against each other, in order to choose the least destructive. We may be permitted to enquire, what are the benefits this substance is capable of affording, which can determine us to run the hazard of incurring its deleterious effects? And here we may certainly derive some satisfaction from knowing that however destructive it is capable of becoming to the human frame, yet, that there are ills of no less magnitude, which it is able to remove.

However much it be discarded from modern practice, it is certain, that in former times it has gained no inconsiderable degree of credit as a powerful and useful remedy, in various complaints. Like most other active medicines, it has been first taken up by bold and empirical practitioners, and hence, like them too, it has  
perhaps

perhaps, been much abused. But this can be no reason against its cautious administration, by the hand of a skilful practitioner. He should have other grounds for its rejection, than the mischiefs it has produced in ignorant hands.

The general idea, which has been entertained of the medical powers of lead is, that it is a powerful sedative and astringent. There can be no kind of doubt, but that it is capable of allaying inordinate action in the system. Its effects on the body, uniformly indicate this power, and the utility of it as a medicine, must be sought from this source.

Of the sedative powers of lead, internally exhibited, we have proof, from the observation of Mr. White, of York\*. He says, that he found the action of the heart and the frequency of the pulse, evidently  
dimi-

\* Med. Com. Vol. 3.

diminished, by the use of the *Tinctura Saturnina*. It seemed to act as a general sedative in cases of *phthisis pulmonalis*, constantly abating the hectic heat and sweats.

Dr. Heberden says, it is greatly to be wished that lead could be given with more safety, as it possesses powers which are often much wanted, and which are not to be found in any other simple. He mentions a case of a woman, who, by taking four grains of sugar of lead, had a flooding stopped, which had lasted for two months, unchecked by all the most powerful astringents in common use.

Hundertmarck\* relates that he employed the *Saccharum Saturni* to the quantity of four grains, with wonderful success, in some desperate cases of phrenitic delirium from fever; and in some cases of peripneumony.

Avicenna

\* *Dissertatio de Sacchari Saturni usu interno salutari. Acta naturæ curiosorum, vol. 7.*

Avicenna says, “ Mulieres nostrates propinant lithargyrium pueris, aduersus alvi fluxum, et ulcera intestinorum. Eædem subinde ipsum poculis injiciunt, ut vis aquæ noxia obtundatur.”

“ Saturnus purgat febres,” says Paracelsus.

The Chinese very frequently administer, internally, various preparations of lead, to which they ascribe extraordinary virtues.

The use of lead in consumptions has been so striking, that one of its preparations has acquired the title of *Tinctura Anti-phthifica*. It has been asserted, indeed, that this medicine contains no lead in its composition, but the observations of Mr. White, above recited, leave no room to doubt on the subject.

Thus



Thus it cannot be questioned that lead is capable of becoming a very powerful remedy in a variety of cases, and such as do not admit of relief from other means.

Allowing, therefore, that its deleterious effects were the general consequence of its exhibition, still, it must be admitted, that there are cases, where we might be induced to employ it, with all its disadvantages. Hæmorrhages threatening to become soon fatal, and perhaps dysenteries which had resisted all other means, might be considered a sufficient warrant for its cautious administration.

But, fortunately, the alternative is not so bad. It is highly probable that much of the evil has arisen from the unskilful, or incautious manner, in which it has been employed. Though in certain quantities and continued for a certain length of time, it is undoubtedly capable of producing very serious evils ; it is by no means clear, that a  
 guarded

guarded use of it, might not be very safely had recourse to. So much terror has been excited on this subject, that the matter has stood no chance of being fairly put to the test of experiment. Like all other remedies operating on the *genus nervosum*, its effects will be found to vary exceedingly in different instances. Opium, although in general a very safe and manageable substance, yet, in some persons, will occasion violent, and even dangerous effects. The quantity too, in which it can be borne, by different persons, admits of very great variation. And the same may hold true of the preparations of lead. They must be made the subject of frequent experiment, before we shall be enabled to form a just estimate of their value or danger as a medicine.

It is most certain, that lead has been employed internally in a great number of instances without being followed by its peculiar characteristic symptoms. Authors abound with instances of its exhibition, where no  
 ill

ill consequences are said to have arisen from its use. There are few practitioners, it is conceived, who have not repeatedly employed it. I have myself in many instances employed it with the best effect; and we have a formula of a pill at the Dispensary, containing half a grain of the *Saccharum Saturni*, which is very often employed by the Physicians, in cases of hæmorrhage, and in some obstinate diarrhæas; and not a single instance has occurred to us, of any injury arising from its use.

It is common to join with it a portion of opium or the spices, with the view of correcting its ill qualities, but it may be doubted whether this be of any advantage. I have been able to perceive no difference in the effect, from this circumstance.

Upon the whole, the evidence on the subject stands thus: the use of lead externally is almost universally adopted, and  
not

not a few instances have occurred, wherein it has exerted its poisonous influence. Yet, no one, on this account, abstains from a very free use of it. The same substance has been given internally in a great number of instances with success, and its peculiar ill effects, though frequent, are, by no means, the necessary or general consequence. Certainly it ought to be employed with the greatest caution, and in those cases only, which cannot be relieved by safer means.

The deleterious effects of lead are not, in general brought on, till it has continued to be applied for a considerable length of time. Thus we observe, that the workmen remain free from any symptoms of disease, long after their first application to their employment, although it must have been as copiously applied at first, as afterwards. Hence we may collect, that the temporary use of it as a medicine, is not so detrimental, as is commonly imagined.

Besides,

Besides, it may be observed, that the state of the system, in which it is indicated, is itself, perhaps, a powerful preventative of its ill consequences. That state of violent action where alone it should be employed, is, probably, incompatible with the symptoms of debility, which its continued application so readily induces.

There does not, therefore, appear to be sufficient reason, for rejecting altogether from practice, a substance which is capable of producing such very powerful, and frequently desirable effects. As well might we refuse to receive the benefits which arsenic, hemlock, &c. are capable of affording, because, under a certain management, and in certain quantities, they become real poisons.

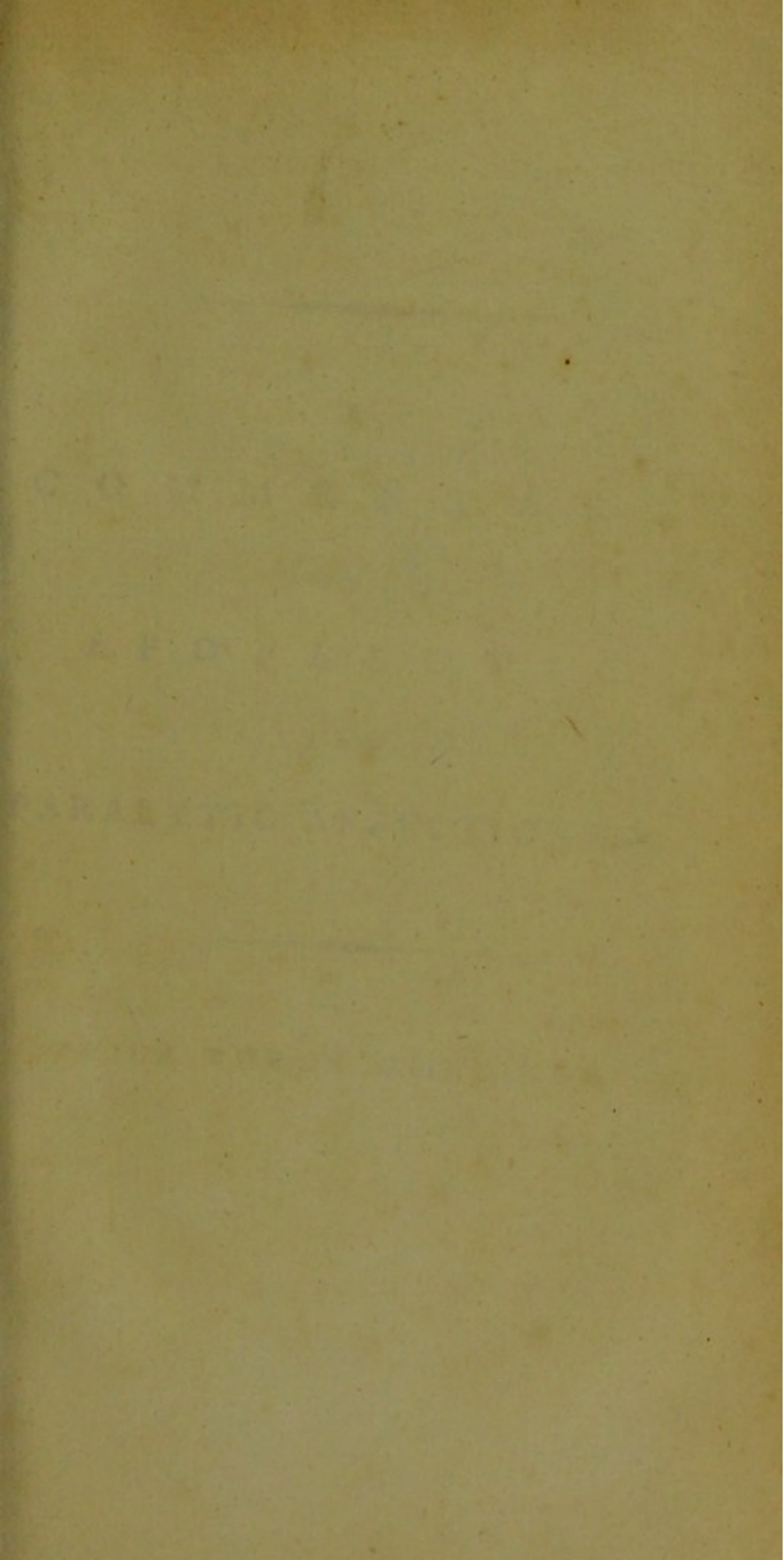
If it be proved, by future experience, as I flatter myself it will be, that quicksilver is so powerful in removing the ill effects of the application of lead to the  
system,

system, a great part of our fears of employing the latter will be done away. We shall, with less hesitation, avail ourselves of its good effects, when we know it is in our power to remove the occasional mischief it may produce.

It is worth enquiry, to determine, how far the preparations of lead are capable of relieving those affections, which arise from the excessive application of quicksilver to the system. If quicksilver be an antidote to the poison of lead, it is not speculating entirely without foundation, to suppose, that the converse of this may be true; that lead may, in its turn, become the means of correcting the ill effects of mercury. I have, in one instance, exhibited it with this view, and apparently, with advantage; but I am by no means prepared to speak with confidence on the subject; future experience will determine it.

F I N I S.







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P R I C E T H R E E S H I L L I N G S