

**A treatise on the utility of sangui-suction, or, : Leech bleeding, in the treatment of a great variety of diseases : including the opinions of eminent practitioners, ancient and modern : with instructions for the process of leeching, and an appendix, delineating the characteristic distinction of true leeches : with directions for their management and preservation / by Rees Price.**

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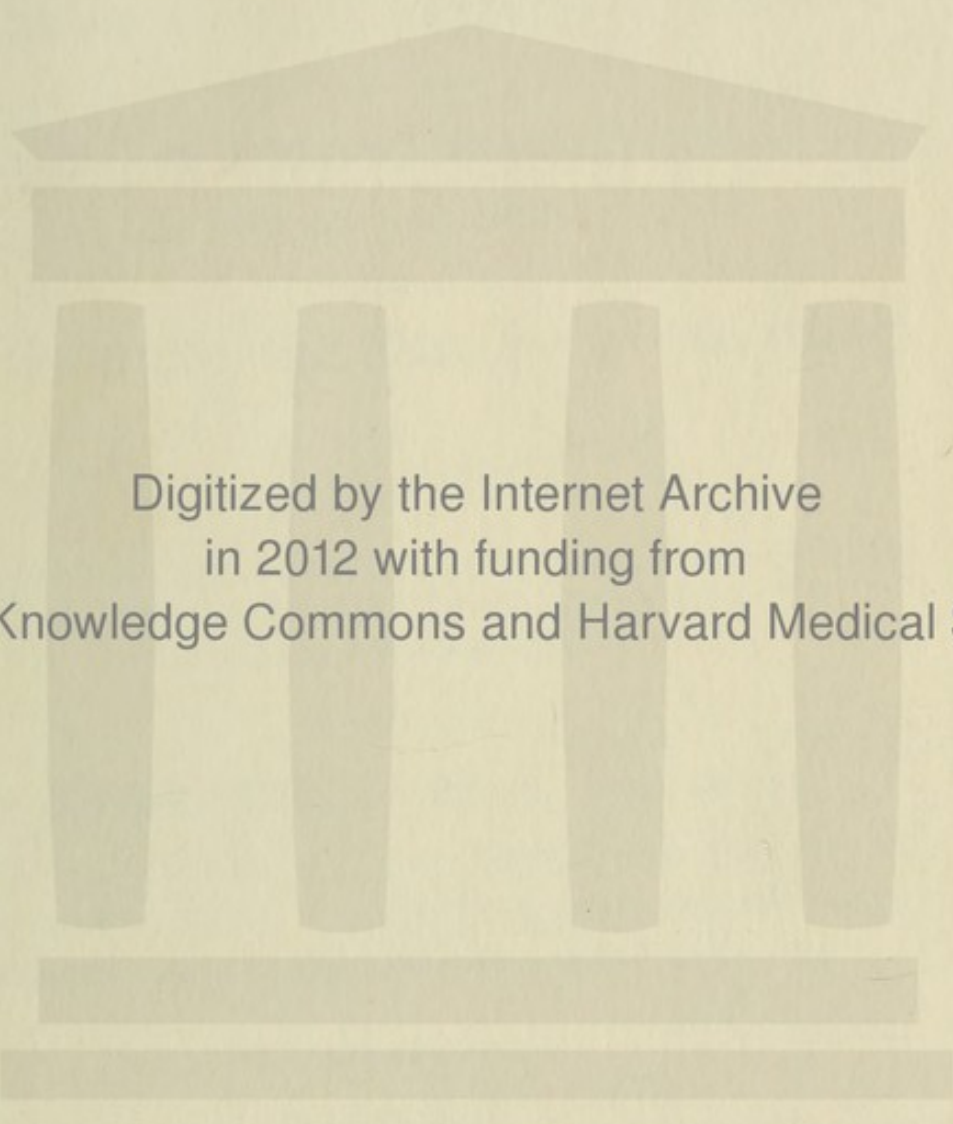


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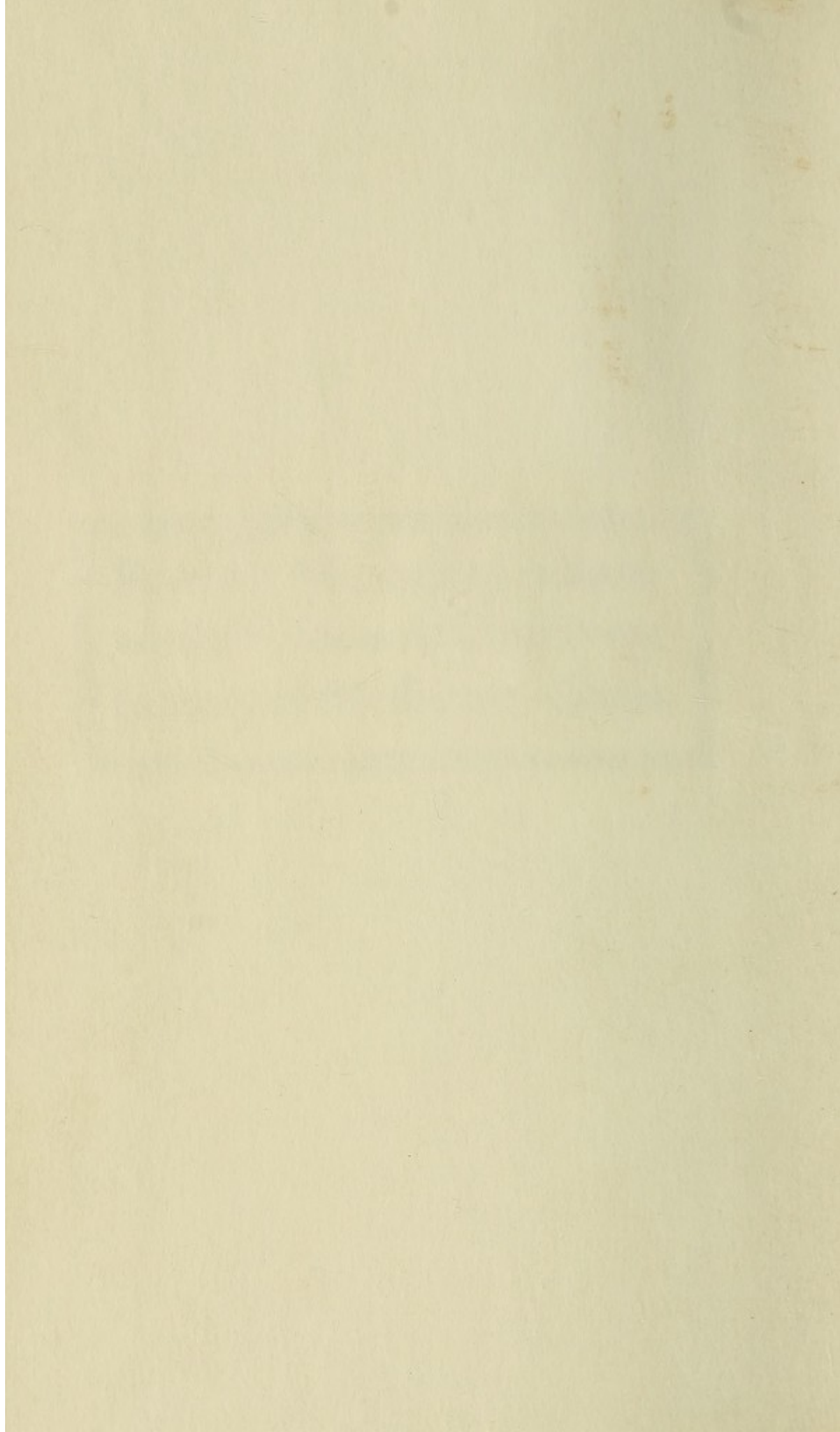


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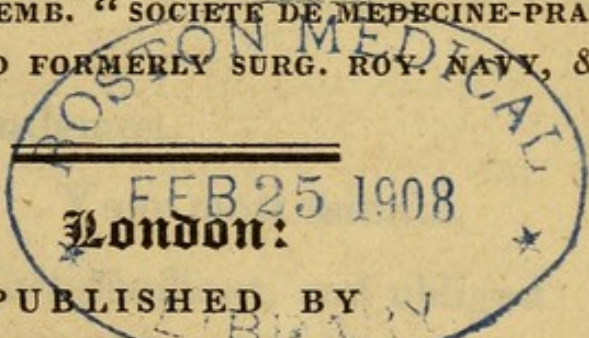




**A TREATISE**  
ON THE  
**UTILITY OF SANGUI-SUCTION,**  
OR,  
**Leech Bleeding,**  
IN THE  
TREATMENT OF A GREAT VARIETY OF DISEASES;  
INCLUDING THE  
OPINIONS OF EMINENT PRACTITIONERS,  
ANCIENT AND MODERN ;  
WITH  
**Instructions for the Process of Leeching,**  
AND  
**AN APPENDIX,**  
DELINEATING THE CHARACTERISTIC DISTINCTION OF TRUE  
LEECHES, WITH DIRECTIONS FOR THEIR MANAGE-  
MENT AND PRESERVATION.

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BY REES PRICE, M. D. SURGEON ;  
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TO

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SURGEON TO HIS MAJESTY'S PERSON; LECTURER ON

SURGERY, &c. &c.

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GENTLEMEN,

I AM induced to dedicate this Treatise to you—not from any presumption of its merit, but from the grateful recollection, that much of the practical knowledge I possess was inculcated by your valuable instructions.

That you may long continue to enjoy the distinguished professional reputations you have so honourably acquired, is the sincere wish of,

Gentlemen,

Your most faithful,

Most obedient, and obliged

Humble Servant,

THE AUTHOR.

*Cannon Street, London,*

*September, 1822.*



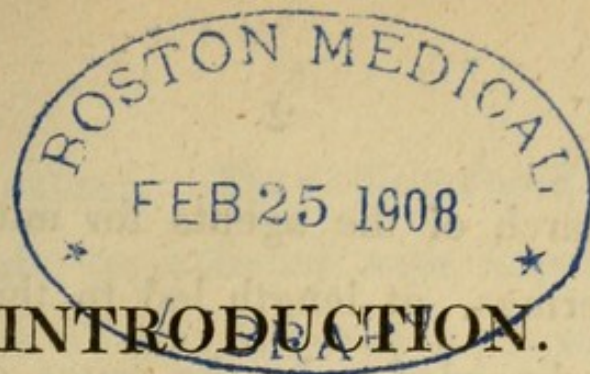
## ADDRESS.

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As there does not exist, at the present time, any work written professedly on Sanguisuction, I need offer no apology for publishing the following pages.

Works on detached subjects will at all times prove more instructive and useful than elementary publications of an elaborate kind; and the almost universality of cases demanding the application of Leeches, will, I trust, render this little Treatise deserving of the particular attention of the Medical Profession: indeed, nothing but a conviction of its utility, founded on much experience, has induced me to submit it to the public.





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THERE are not wanting scientific productions respecting the natural history of the Leech;—it is a subject that has engaged the attention and curiosity of naturalists, whose inquiries have now almost completely elucidated the vital economy of this singular insect.

The publication, then, of this little treatise has no such views: it is attempted, under the humble endeavour of converting the labours of the natural historian to a valuable end, by rendering the object of his researches more extensively useful to mankind, in affording relief under a great variety of diseases, by the abstraction of blood from the human body.

The practice of blood-letting, has been regarded as one of the most valuable means, for the subduction of disease, from that remote period, when the desire of relieving pain having first propelled



Man in search of the agents for mitigating corporal sufferings, at length led to the cultivation of medical knowledge by the sages of antiquity, whose sagacity and wisdom placed the healing art in a conspicuous rank amidst scientific researches.

At what period the practice actually commenced, we are totally ignorant; but we find an operator, (and he is the first who is positively known to have performed venesection,) in the person of *Podalirius*, one of the warriors engaged in the celebrated contest of the Greeks and Trojans: and who practised surgery at the same time in the Grecian camp; yet, remote as this period is, it is to be presumed the operation had been performed even antecedent to his day.

It is probable that the operation of taking away blood from the human body, with a remedial intention, was first practised, in a cautious manner, *on the surface* of the body only; and to the performance of such a process, the earlier inhabitants of the earth might have been induced, by witnessing the nature and effects of injuries done to the external covering of the human frame, by



accidental causes. They discovered that such injuries might be inflicted with impunity, being soon repaired by the preservative power of nature; and they must have observed also, that, in many diseases, benefit often accrued, as a consequence of the abstraction of blood, occasioned by the accidental mischief.

It appears, however, that even Hippocrates was quite unacquainted with the use to which we now so constantly subject the insects, called Leeches; and yet it is stated, by a late writer\*, that Hippocrates made use of them in his practice, frequently conjoining with them the use of an exhausted cup, to elicit a farther discharge of blood, after they were removed; but this, I believe, is a mistake, as the works of Hippocrates do not make any mention of it: nor does any author appear to be acquainted with leeching down to the time of Themison. The latter, who resided at Laodicea, was a pupil of Asclepiades, and the predecessor of Celsus; and is the

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\* Mapleson on Cupping.



first author we find who treats of their medicinal use;—and, it being often his practice to apply an exhausted cup over the bites of Leeches, the mistake may have arisen, in the work before alluded to, of ascribing to Hippocrates what belonged to Themison; and from the writings, therefore, which the revolutions of empires, the devastation of barbarian states, and the common vicissitudes of individual life, have left us, we may venture to assert, that Themison was the *first* who applied Leeches to the body as instruments of bleeding.

The reputation which Themison possessed for great talents and judgment, was a sufficient inducement to others to try the success of the practice; and the Leech, consequently, soon came into general estimation in that part of the world: even the opponents of Themison, amongst whom was Galen, (whose learning and wisdom were so eminent, that his opinions gave laws to medical science over three quarters of the globe, during the space of thirteen hundred years,) were convinced of its utility, and sanctioned its use;



as appears by the works of the latter, in which he has introduced the subject; thus presenting a liberality but too seldom recorded in the annals of modern disputation: for, though Galen was most strenuously opposed to the opinions and practice of the methodic sect, yet he did not hesitate to adopt, and recommend, such curative measures as he found actually useful, even though introduced by Themison.

From the time of Themison, we find Roman, Grecian, and Arabian physicians and authors, speaking highly in favour of Leeches; and the illustrious name of Pliny adds much force to such commendation. Antyllus, also, another celebrated physician of the first years of the Christian era, was much in the habit of directing local bleeding, by scarificating and cupping; but in all cases where this could not be conveniently done, he advised the application of Leeches. Thenemachus, a physician, and strenuous in support of the doctrines and practice of Themison, followed the steps of his great predecessor, in his partiality for



Leeching; and his writings contain various observations on his successful practice of it.

Since the introduction of the Leech, in the reign of Augustus Cæsar, it has remained in universal request, both by the ancients and moderns. Greece, Italy, and Arabia, are now no longer the confined sphere of its medicinal action; and to the names of Themison, Celsus, Antyllus, Pliny, Galen, Aretus, Oribasius, Ætius, Æginetus, Avicenna, &c., are now to be added those of the most celebrated of modern times, whose experience and practice have established its value.

It will, however, appear, in a future part of this work, that Leeching has never obtained, in England, the free and almost unlimited extension, as on the Continent; and it is even a matter of reproach, that our partiality for the lancet has thrown into some degree of neglect, this useful auxiliary to depletory measures.



# DISEASES

IN WHICH

## LEECHING IS BENEFICIAL.

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I SHALL first treat of the diseases requiring the application of leeches, in which I shall be as brief as the extensive nature of the subject will admit.

It may, however, be premised, as a general rule, that in all cases of local congestion, and febrile affections, accompanied with increased excitement of any particular organ or part, the abstraction of blood by leeches, immediately from the seat of the disease, or as nearly so as possible, tends to unload the blood-vessels, in a state of congestion, and to allay morbid action, in a more direct manner than can be accomplished by any other method of abstracting blood—particularly in those cases where, either from the peculiarity or state of the constitution, from age, sex, or a variety of other causes, general blood-letting is inadmissible; the application of leeches, in such cases, is our sheet-anchor, not to be supplied by any other remedy.



But it must here be noticed, that as leeches principally remove blood from the capillary system of vessels, the effect of the sanguineous discharge is not speedy enough upon the constitution in general; nor does it sufficiently unload the part itself, as to be trusted to without the aid of phlebotomy, where disease has attacked an internal structure or organ, immediately connected with the vital function of the body.

In acute inflammation, then, of the contents of the chest, abdomen, and of the head, or high inflammatory and febrile excitement of the general system, a prompt and copious blood-letting, by the lancet, should first check the violence of the malady, when leeches may afterwards keep down the disease, and conduct it to a favourable termination, without occasioning that expenditure of strength, produced by the loss of considerable quantities of blood from the larger venal branches.

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## FEVERS.

IN fevers, in general, the success of this remedy is eminently conspicuous, in relieving vascular excitement of the brain, and obviating the serious consequences of undue determination of blood to the head.



In the early stages of typhoid fevers, in particular, leeching the temples will afford considerable relief; and when further advanced, it removes that incoherent muttering, and low delirium, which demonstrate the state of the cranial organ; it relieves these urgent symptoms more effectually than general blood-letting, and with less loss of strength to the patient.

In the typhus fever, which prevailed in London in the year 1800,\* especially amongst the poor, occasioned by the extreme, and memorable scarcity of wholesome bread, and other provisions, I found general blood-letting could seldom be employed with safety; but leeching the temples, &c., at the commencement of the fever, usually afforded considerable relief; and in those bilious remittent fevers, which so frequently attack Europeans in tropical climates, where, on account of the usual relaxed state of the system, general blood-letting cannot always be carried to the extent required; local abstraction of blood, by

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\* At this time I attended, for the late Mr. Heaums, an eminent practitioner of Lambeth, the poor of that extensive parish,—the largest in England, and had, for a considerable time, seldom less than 60 or 80 cases of typhus daily under my management. Ultimately the fever became highly epidemic, and I was dangerously attacked with it, and experienced considerable relief from the application of leeches to the temples, under the direction of that skilful physician, the late Dr. Budd.



leeching, in those cases where I have had an opportunity of witnessing its use, has generally succeeded in moderating the excitement of the brain, and of rendering reaction less violent.

Dr. Welch, who has lately published a work on the utility of blood-letting in fever, a production reflecting the highest credit on his understanding and talents, points out, in a very satisfactory manner, the beneficial nature of sangui-suction.

This custom, of applying leeches during fevers, to relieve head-ache, is by no means of recent origin; for it appears, that Æginetus, who lived twelve hundred years ago, advises the back of the head to be shaved, and leeches to be applied with a similar indication. Other eminent physicians speak highly of leeching, in fevers; as Petrus Salius, and Zacutus Lusitanus; the latter placed ten or twelve leeches, in a circular row, on each temple: and Mundella, another ancient physician, recommends, in all continued fevers, the application of leeches to the hæmorrhoidal veins.

In a valuable and erudite work, lately published by Dr. Reid, of Dublin, on the pathology and treatment of fever, he speaks of the utility of leeching, when the symptoms indicate that local congestions have occurred. He says, “as soon, however, as pain in any part arises, or that it is



excited by pressure, the stage of secondary reaction is to be expected, local bleeding, by means of leeches, now proves highly efficacious. I have had reason to imagine, that the effect of leeches was more powerful than could be accounted for by the *quantity* of blood alone which they drew from the patient: this has been observed by Dr. Armstrong, and I have no reason to differ from his opinion."

But this fact may, I think, be solved on physiological principles, founded on a knowledge of the immediate exciting and proximate cause of fever and of inflammation, the theory of which has in all ages, and is, at the present time, a subject of much controversy: indeed there has been, perhaps, as many theories promulgated, as there have been writers on these extensive subjects.

Professor Cullen was of opinion, that inflammatory and febrile excitement arose from spasm, and atony, of the extreme branches of the arteries; but Sir Astley Cooper, and other eminent physiologists of the present day, have clearly demonstrated, that these vessels are *not* in a state of atony and spasm in an inflamed part, but of increased vigor and distention—that those minute capillary branches, which heretofore were wont to convey the serum of the blood only, now, in consequence of increased vascular action, carry



the red globular part also; hence the return of the blood from these, becomes difficult, and an effusion of serum, or lymph, into the cellular texture, or otherwise, is the result.

But there is, I conceive, another essential circumstance necessary to constitute inflammatory and febrile excitement, (for, as I shall presently endeavour to shew, the cause of both is nearly the same); and that is, *nervous energy*.

The whole, I conceive, is this: the nerves are first impressed by the stimuli, which act as the immediate exciting cause; they become disturbed by a peculiar irritability; to overcome this, they communicate the injury to, and call to their aid, the arterial system; an effort of nature is then, as it were, commenced, by increased vascular excitement, impelled by this nervous influence. If the exciting cause\* and state of the constitution be such, that some one particular part of the body be more susceptible of excitement than another, this united power directs its attack on that part, and *inflammation* results from congestion of the blood-vessels, and effusion occurs from the more minute branches, accompanied

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\* We are now speaking of *general*, not *specific*, causes, the theory of which can vary in no other way, than in producing its specific disease.



with more or less fever; for, I apprehend, the nerves, which are in a state of excitement in a particular part, will stimulate the *vascular* system of the same part to increased action: but if, on the other hand, no one of the viscera be more prone to this influence than another, *fever*, with more or less *general* inflammatory action throughout the system, will be the consequence: in the latter case, the nervous disturbance will be principally concentrated in the brain, as the centre of nervous energy; hence pain, more or less violent, within the cranial organ, will be experienced at the onset of all fevers. Resulting, also, from this cause, there will often succeed (as a secondary effect) a degree of increased vascular action and congestion in the minute ramifications of the vessels of the brain and its membranes, and these constitute what is usually considered as an inflamed state of the brain; but the approach towards inflammation of this organ will vary in proportion to the degree of excitement existing in it, which, in some instances, is sufficient to produce even phrenitis itself.

It is, I think, probable, that the brain, in this state, sympathetically communicates its disturbance to the stomach and other parts of the body; such disturbance, by a reflex operation upon the *nervous* system, increasing, in an inverse ratio, the force of the general excitement of the *arterial*.



The febrile phenomena now partake of the mixed qualities of *local* and *general* irritation, of congestion of one or more of the viscera, and increased action of the rest: the serous and mucous tissues of the body are the parts that more generally yield to the overwhelming influence of the exciting cause; and gastric fevers, in their various shapes, give to each case a form peculiar either to the individual state of the constitution, or the direct interposition of epidemic influence.

I have been induced to dwell on this subject, from the circumstance of its having been generally imagined, that the primary cause of fever and inflammation was attributable immediately to the *arterial* system.

To enter farther into this physiological inquiry is, however, foreign to the objects of a practical dissertation; having, I trust, already explained sufficient for our present purpose—to prove that the beneficial effects attributed to leeching may be accounted for, *first*, by an unloading of the engorged vessels, or their anastomosing branches, facilitating the current of blood through them, and by lessening the volume of fluid in the neighbouring vessels, by which its determination to those in a state of distension is considerably diminished, and their diameter reduced: *secondly*, it may with much reason be presumed, that the abstraction of blood from the immediate seat of inflamma-



tion, or of increased arterial excitement, has considerable influence in allaying that nervous irritability of the part which, I presume, keeps up increased vascular action; for I apprehend, that when a high degree of arterial excitement is once set up, it is continued by the united irritability of the nerves and arteries acting in concert, or, by the increased action of the one, keeping up that of the other. It is probable these beneficial effects of sangui-suction are then immediately communicated by the sympathetic connexion of nerves to the heart, and moderate its action; and account why a few ounces of blood, abstracted by leech-bleeding, should often diminish the force and frequency of the pulse, more than very large general blood-lettings; the fact, however, is certain, and has been noticed by many persons of experience: and *lastly*, it has been supposed, and I think with some probability of truth, that leeches excite an increased action of the absorbents of the part, and thus enable those vessels to take up a much larger quantity of effused serum than they otherwise would.

In support of the foregoing doctrine I can mention a case which came under my observation only a very short time back:—A person was attacked with powerful febrile symptoms, accompanied with considerable general inflammatory action



and acute pain in the head: blood-letting at the arm was twice employed, with purgatives and other appropriate medicines, but these afforded no abatement whatever of the latter symptom: I then directed four leeches to be applied to each temple; they bled very freely, and the pain entirely ceased immediately after the operation of sangui-suction.

Dr. Armstrong, in a work lately published on fevers, &c.,—a work replete with practical information, and devoid of those absurd theories of some of our former writers,—says, “The beneficial effects of local blood-letting, by leeches in particular, has not perhaps been rightly appreciated by the profession; and I was not myself aware of its great utility in this mode, until I strictly attended to its influence over the action of the heart. Eight or ten leeches applied to any part of the surface of the body, will rarely fail to reduce the force and frequency of the pulse, in cases where general excitement does not seem to run high; and it is somewhat surprising, that I have frequently known the application of this number of leeches reduce the pulse more than a general venesection, though far more blood was taken away by the latter than by the former.”



## INFLAMMATORY FEVERS.

FEVERS partaking of the inflammatory character, occur more frequently than any other; they are excited by such a variety of causes, assume so many forms, and attack such a diversity of parts, that it would be leading me beyond my intended limits, were I to attempt to give a delineation of the various symptoms that they occasionally exhibit. Suffice it to say, that fevers of this description ought to be treated, *at their commencement*, by copious abstraction of blood; first by the lancet, and subsequently with leeches; it is a practice which I have never found to be injurious, whilst I am convinced that many lives may be saved in timely resorting to it. By reducing the strength of the system early, fevers are often cut short, which would otherwise run on to considerable lengths; for, after the production of relaxation, the fever is deprived, as it were, of its pabulum, and it then usually subsides with little trouble.

In all attacks, therefore, of febrile complaints, accompanied with such symptoms as redness and quickness of the eyes, florid countenance, rigors, quick hard pulse; hot dry skin, violent head-ache,



and sometimes delirium, &c.; after abstracting from twelve to twenty-four ounces of blood by the lancet, according to the circumstances of the case, two or three dozen leeches may be applied to the temples, back part of the neck, and behind the ears, with considerable advantage; and the bleeding from the bites should be freely encouraged, till an evident reduction of the force and frequency of the pulse is induced, the patient become pale and faint, and the heat of the skin and pain of the head less intense. These operations may be repeated as the symptoms appear to demand.

If the inflammatory action more particularly affects the chest, lungs, liver, &c., accompanied with difficulty of breathing, the leeches must be applied to those regions; but as inflammation of the different viscera is hereafter separately spoken of, and as these symptoms, when they occur, must be treated in the same manner, the consideration of each subject is detailed in the following chapters.

There are, I may venture to say, more persons die of inflammatory and febrile affections, from a want of an early and prompt treatment, such as this, than from inefficient means in the cure of most other diseases. Those in high health, and in the prime of life, are more especially liable to



their destructive ravages, than the aged and debilitated: but fatal issues will rarely occur when the measures just recommended are timely and efficiently employed.

In corroboration of this fact, I can assert, that I have scarcely ever met with an instance of inflammatory fever, or acute inflammation of the viscera, treated in this manner, that the patient did not do well, whilst I have seen many instances of fatality where these active measures had been neglected. Two copious blood-lettings by the lancet, within the first twenty-four or forty-eight hours after the symptoms have become violent, and the same number of leechings, will usually be found sufficient even in the most violent attacks: but it is necessary to observe, that the propriety of abstracting blood by the lancet, when the fever is more advanced, will require some consideration; for the powers of life are then sometimes so much depressed, and the different functions of the body so deranged, that, instead of relieving the symptoms, it may perhaps hurry the patient to the grave. In cases, therefore, where the loss of blood is still in some degree indicated, yet a doubt may exist of the propriety of general blood-letting; and where it is also an object of importance to preserve the strength of the patient, moderate abstractions of blood, by *leeching alone*,



should be preferred; for the slow process of drawing away blood, by sangui-suction, does not tend to debilitate the system so much as the same quantity abstracted by venesection. In leeching, the vascular system adapts itself, in a gradual manner, to the loss of a portion of its contents, and the circulation soon becomes equalized, which is not the case after the shock it receives by general blood-letting. In cases of less violence than those I have described, in delicate habits, and in deliriums which often occur in the advanced stages of fevers, leeching alone will also be preferable, and will usually be productive of great relief to the patient.

The early and frequent administration of purgatives, particularly calomel, and other appropriate remedies, ought not, at the same time, to be lost sight of in the treatment of inflammatory fevers.

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## INFLAMMATION OF THE BRAIN

(*Phrenitis*),

Is not often a simple disease, but is more generally symptomatic of some other affection, as fever, gouty, rheumatic, or erysipelatous metastasis (i. e.



the transfer of the inflammatory action of those diseases to the head): intoxication, more especially from the use of ardent spirits, local injuries of the head, and concussion of the brain, likewise produce it, as does excessive anxiety and irritability of the mind\* ; and, in females, it is frequently the effect of uterine irritability, and obstructed menstruation.

This most formidable disease, from whatever cause it may arise, demands prompt and copious blood-letting. In short, the practitioner must cause the whole of his means to act upon the disease at once, otherwise his patient will fall a victim to his delay. Bleeding from the arm, jugular vein, or temporal artery, having been premised, leeches should be freely applied to the temples, behind the ears, and back part of the head. In the early part of my practice, I was called upon to a case of phrenitis, accompanied with strong convulsions and maniacal delirium, in a youth whose family were attended by that eminent physician, the late Dr. Lettsom. Combined

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\* It would appear from a perusal of the description of the symptoms, that the late Marquis of Londonderry was afflicted with Phrenitis; first, in an incipient degree, which progressively increased, till he became so furiously delirious, as to lead to the fatal catastrophe that resulted from it.



with copious blood-letting from the arm, and the administration of powerful purgatives, united with large doses of calomel, I directed twenty-four leeches to be applied to the temples, and around the head; from which so much benefit resulted, as to have removed the violence of the disease in so great a degree at the doctor's arrival, that his extreme satisfaction at the promptness of the measure, and the success of the practice, gained me a strong and flattering testimony of his approbation, and procured for me, ever after, the benefit of his patronage and the pleasure of his friendship.

I was lately requested to visit a young lady, about twenty years of age, who was attacked with phrenitis; the symptoms were so violent, that, on my arrival, I found her furiously delirious, with several stout persons, male and female, endeavouring to restrain her violence, which they found it impossible to accomplish. Twenty-four ounces of blood were with difficulty drawn from the arm, but it afforded no abatement of the symptoms; and a straight waistcoat was applied, as a matter of necessity, as early as possible. I then directed three dozen leeches to be applied to the temples and nape of the neck; they abstracted blood freely, and a profuse hæmorrhage



from some of the bites succeeded their application: the patient then became faint, and on the following day calm and collected, and recovered entirely in a very short time.

Zacutus Lusitanus speaks highly of leeching in this affection, and reports the case of a lady, who, whilst labouring under a retention of the menses, was attacked with phrenitis, as the consequence. Four leeches were fastened by their extremities to a thread, which gave the person who applied them the power of preventing their insinuating themselves beyond the part selected; and they were then placed within the vagina, very near to the uterus: a considerable quantity of blood was lost, to the complete relief of the disease. This author was not only very much attached to the practice of leeching, but he, also, was particularly biassed to the selection of the hæmorrhoidal veins as the most proper spot for their application, in consequence of the great connexion which, he justly supposed, there exists between these veins and other parts of the body. Zacutus Lusitanus, it appears, estimated the value of leech-bleeding so highly, as to be induced to assert, that there was no disease but would become mild under its treatment. Pliny and others were equally biassed in favour of the application of leeches to the hæmorrhoidal veins, in various



affections of the head, continued fevers, and in many other diseases.

Dr. Duchatelet, physician in chief to the fourth legion of national guards, in conjunction with Dr. Martinet, has published, at Paris, during the last year, an excellent and voluminous work on the subject of inflammatory affections of the membranes of the brain, &c., illustrated with one hundred and sixteen cases, most of which occurred in the *Hotel Dieu* and the *Hospice des Enfants*, under the care of Drs. Recamier, Jaboulet, and Nysten; and their treatment, and the appearances, on dissection, of those that died, are detailed with great accuracy. In this publication, the process of sangui-suction is strongly recommended in these affections, and, next to copious blood-letting, it appears to have been the remedy on which they placed their principal dependance. The process too, it would appear, was conducted on a liberal scale; for I find, in the course of the work, mention made of the application of a "swarm of leeches," "a cordon," "a cluster," &c. with much familiarity. In one case, twenty-four leeches were applied at one time *behind the ears alone*; and, in a case which arose from obstructed menstruation, fifteen to the pudendum, and the like number to the neck. In other cases twenty-four were applied to the neck, forty-eight to the



spine, &c. — The authors of this valuable work lay great stress on the necessity of leech-bleeding, in the affections alluded to, when they occur in children and weakly persons, and particularly in those cases where general blood-letting has been carried as far as may be ventured upon. As in blood-letting, they also prefer sangui-suction, when persevered in, till faintness is induced; in the former operation, they advise the opening of *two* large veins *at once*, to effect this purpose the more speedily; faintness, they state, acts like a charm in dissipating the symptoms. Dr. Recamier seems to prefer the application of “a cordon of leeches” to the crown of the head in these affections. This work has been submitted to the Institute and Academy of Sciences, and a very flattering report has been made upon it by those highly distinguished individuals, Drs. Portal, Dumeril, Pelletan, Hallé, and Baron Cuvier.

There can be no doubt, that, at the commencement of any dangerous inflammation, or fever of an inflammatory description, our grand object in abstracting blood should be to induce fainting, let the quantity necessary to accomplish it be more or less: fainting acts instantaneously in allaying morbid excitement of the nerves; and the velocity of the action of the heart, as a natural consequence, is no less speedily diminished; hence the



blood is propelled from this organ more slowly ; the pulse becomes less frequent ; the heat of the skin decreases ; and when re-action recurs, the impetus of the circulation does not acquire its former violence.

In cases, therefore, of high organic inflammation, venesection is unquestionably the best mode of depletion *in the first instance*, and it also saves time ; but it appears to me, from the reasons already assigned, that leeches, by abstracting blood from the capillary and anastomosing branches at the principal seat of excitement, although the effect is more slow, is ultimately more beneficial in equalizing the circulation, whenever congestions have occurred. In all cases, therefore, where their process is not too slow, or their action too limited, they are to be preferred. General blood-letting produces a sudden effect on the action of the heart ; sangui-suction, a slow, though decidedly a more certain diminution of the action of the reservoir of vital fluid. That the latter induces a state of relaxation of the nervous energy of the general system, similar to that which is caused by blood-letting, is the opinion also of the learned editor of the *Medico-Chirurgical Journal*:—" If food be taken soon after leeching, to any extent, or before the equilibrium of the blood is, as it were, repoised, a well-marked indigestion ensues,



manifested by paleness of the face, weakness, anxiety, vertigo, sickness at the stomach, and sometimes diarrhoea; symptoms which go off in twenty-four hours, if not imprudently kept up by too much food."

There is one great and insurmountable objection to the practice of carrying general blood-letting to the extent which is sometimes necessary to subdue active visceral inflammation;—that so much debility is incurred, as to give rise to another set of symptoms, more dangerous, perhaps, than those it was intended to obviate—excessive prostration of strength, weak fluttering pulse, irritative fever, &c.; symptoms which are less likely to result from the mild process of sangui-suction; in the latter way more blood may ultimately be taken, with less loss of vital power.

Leeching, I conceive, possesses another advantage, when a considerable abstraction of blood is required; for, if it be drawn from a large orifice, after the system has been considerably weakened by previous bleedings, the necessary equilibrium, which ought to exist in the circulation, is lost; the blood is driven by the vis a tergo, into the veins; the propelling power being languid, here becomes congested, and thus the disease is increased by the means intended to



remove it, a circumstance not so likely to result from local bleeding.

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## INFLAMMATION OF THE EYE.

(*Ophthalmia.*)

THERE is, perhaps, no remedy so prompt, and decisively beneficial in this disease, as leeching\*; and, in cases unconnected with constitutional disorder, (and which are by far the most numerous and general,) the copious loss of blood by this means, with the use of cathartics, I have usually found to be effective in subduing the inflammation. The leeches should not be applied on the eyelids, as they are apt to produce swelling and discolouration, and sometimes erysipelatous inflammation: they may be placed on the temples, as near the corner of the eye as possible, and one or two may be applied at the internal angle, where the upper and under eyelids join.

About half a dozen leeches, in common cases, will be required; but, in severe affections, a much

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\* The practice of applying leeches in this affection is very ancient; for we find Oribasius, a physician of the fourth century, (celebrated for his bold and remarkable scarifications of the legs of royalty), in the habit of applying leeches to the temple, nearest the inflamed eye.



greater number should be applied, and frequently repeated; copious blood-letting at the arm, or temporal artery, may also in some cases be found necessary.

*Chronic Inflammation of the Eye*, is likewise much benefited by a frequent recurrence to the use of leeches.

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## THE EAR-ACHE, OR INFLAMMATION OF THE EAR,

Is one of the most insupportable pains the body sustains. The aperture leading into the organ having been well cleansed, as many leeches as can be applied, should be fixed within it; taking care to prevent their creeping too far down the passage, as it would occasion excruciating pain, should one of them reach the tympanum, or drum of the ear.

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## THE MUMPS,

THOUGH generally so slight a complaint, as to obtain little or no medical attention, is so prone to metastasis to the breasts in females, and to the testes in males, and occasionally to the brain in both, that the surest practice is to consider it •



more in the light of an inflammatory disease at first, by which such consequences may be prevented. It is likewise frequently accompanied with, or precedes inflammatory rheumatism; and, in all such cases, I have found a particular disposition to metastasis to the brain. Leeches at the angles of the jaws should not, therefore, be dispensed with; from six to ten or twelve may be applied, according to the age and constitution of the patient, and repeated according to circumstances in the early stages of the disease.

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## QUINSEY, OR INFLAMMATORY SORE THROAT,

*And Diseases of the Fauces produced by Inflammation.*

LEECHING the sides of the throat, in all these affections, is of eminent service; children may have three or four leeches applied upon each side, as near the angle of the lower jaw as possible; and adults double the number, or more.

*Painful swellings of the face*, frequently so obstinate to every means used for their relief, will commonly yield to the attack of half a dozen leeches.

*Tooth-ache.*—A leech applied upon the gum, at the root of a painful tooth, will often relieve



that distressing affection, particularly if it be of a rheumatic nature. Alexander Benedictus speaks in strong terms of the benefit resulting from the application of leeches in rheumatic pains of the teeth.

*Inflamed or swollen gums*, often terminating in gum-boils, are especially relieved by the timely application of two or three leeches to the inflamed and swollen parts.

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### INFLAMMATION OF THE LUNGS, (*Peripneumonia*), and *Inflammation of the Pleura, or Pleurisy, (Pleuritis.)*

THESE affections derive great benefit from this mode of local abstraction of blood.

The advantage, however, of leeching the chest for inflammatory affections of its contents, will be in proportion as the inflammation is confined to the *membranes*, or as it more deeply penetrates to the *lungs themselves*. In pleuritic inflammation (or pleurisy), simply, leeches come so immediately contiguous to the diseased structure, by means of the anastomoses which exist between the blood-vessels of the external and internal parts of the chest, that much relief necessarily follows: where the symptoms, therefore, are circumscribed



pain, darting or lacerating during inspiration, (if carried to a certain extent,) with a hard pulse and dry cough, it is the pleura inflamed, and the disease therefore is more under the influence of the remedy. If the pain be dull, extending over the whole chest, and the cough attended by expectoration, the case is peripneumony, and less benefit results from the means in question, although sanguisuction will still prove highly beneficial, on account of the influence which small bleedings, by leeches, appear to possess over the general circulation.

Pulmonary inflammation, and irritation of the chest and lungs, excited by small-pox, measles, hooping-cough, and phthisis, or consumption, are likewise allayed by the application of leeches, and ought, therefore, to be preferred to general bleeding, particularly in cases where strength is valuable.

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### CHRONIC INFLAMMATION OF THE LUNGS, PLEURA, &c.

FREQUENTLY occurs, more especially in persons of delicate constitution; and as general blood-letting in such cases is not always advisable, great benefit will result from the application of leeches to the seat of the affection; a measure which ought not to be dispensed with, lest, by a



long continuance of the inflammatory excitement, some obstinate disease may establish itself, as chronic cough, consumption, asthma, dropsy of the chest, &c.

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## INFLAMMATION OF THE HEART.

(*Carditis.*)

THIS disease is of rather unfrequent occurrence; and most of the cases that have fallen under my observation, have arisen from some sudden and very violent depression of nervous energy; as fright on the breaking out of a fire, &c.; and one case in a young lady at a boarding-school, which terminated fatally, was occasioned by a strong shock of electricity, from a large apparatus, being communicated to her at a time when she was not aware of it.

It is a fact (illustrative of the opinion I have already advanced, respecting the proximate cause of fever and inflammation), that stimuli of the most powerful kind, suddenly applied, will alone be sufficient to act directly on the viscus of the heart itself, the strongest and less vulnerable part of the circulating system, and, perhaps, of the viscera, so as to set up a high degree of excitement, sufficient to constitute inflammation of its



substance; that such powerful stimulus exhausts at one stroke the nervous system of its excitability, and general paralysis ensues; a return of this principle first begins to accumulate itself in the heart, and increased nervous excitement proceeds, by progressive steps, to carry it into a state of inflammation, its powers being too much diminished to set up increased action of the arteries of any of the weaker and more distant viscera, as it does when the stimulus is less violent.

This disease requires the most vigorous depletion; but the process of sangui-suction, on the first onset of the symptoms, would be too slow to be commensurate with the danger, although its subsequent adoption is of the utmost consequence, and should be freely and repeatedly resorted to as a secondary important measure, and the bleeding encouraged, after the leeches are removed, by exhausted cups placed over the bites; the exhibition of large doses of the tincture of *Digitalis*, to assist in quieting the action of the heart, and a strict antiphlogistic treatment, should be rigorously enjoined.

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## INFLAMMATION OF THE STOMACH,

(*Gastritis*,)

Is attended with acute and excruciating agony, increased by pressure, and by taking any thing in



considerable quantity into the stomach, whether fluid or solid. It is accompanied by vomiting and hiccup, and violent fever: the pulse is extremely quick, small, and hard; and the debility produced is excessive.

Bleeding ought not to be omitted; but leeches in particular are highly necessary. To an adult of moderately strong constitution, twenty or thirty may be applied to the pit of the stomach, and the bleeding encouraged, by warm fomentations. The subsidence of the pain and fever, the lessening of the frequency and hardness of the pulse, alone indicate when the necessity for farther leeching is removed.

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## INFLAMMATION OF THE SPLEEN

Is, comparatively, of rare occurrence as a primary disease. It is often the consequence of intermittent fever. The local abstraction of blood is, in this case, more beneficial than general blood-letting, and a repetition frequently requisite, before the disease has sufficiently yielded to the means employed.

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## INFLAMMATION OF THE LIVER.

*(Hepatis.)*

THIS disease is known to exist, by a tensive pain in the right-side of the abdomen, extending under the edge of the ribs, towards the pit of the stomach. It is increased by pressure, by inclining the body on that side, and by inspiration. There is also shortness of breath, sense of oppression at the pit of the stomach, a dry cough, and occasionally hiccup and vomiting, with a sallow, jaundice-like countenance, and, most commonly, a pain at the point of the right-shoulder. Although from the principles before explained, respecting inflammations of internal organs, bleeding will be often thought necessary in violent inflammation of the liver; it will be generally most advisable, *in this disease*, to take away blood by leeches from the part itself; and if a sufficient number of the insects be applied, it will be as fully effective, and less painful to the patient, than the operation of cupping. In sudden and acute attacks, from twenty to thirty should be put over the part which is the seat of the disease, and fomentations applied for an hour after they are removed.

This process of sangui-suction should be frequently repeated, till all symptoms of inflammation have subsided; and from six to a dozen leeches



may be also occasionally applied to the hæmorrhoidal veins.

If this plan be early adopted, together with the free use of mercurial and saline purgatives, it is seldom that suppuration of the liver will take place. No organ in the body is more liable to preternatural congestions than this; a fact which I have repeatedly witnessed in the inspection of dead bodies. Hence, in no complaint is local blood-letting more strongly indicated than in inflammation of the liver: but it is somewhat surprising and fortunate to see to what extent these congestions will sometimes proceed, without any suppuration supervening. In hot climates I have frequently witnessed cases where the liver has been so much enlarged, when it has been for some time in a state of chronic inflammation, as to form a projection on the external surface of the abdomen, as large as the head of an infant; and yet these have subsided by the plan above-mentioned actively pursued, conjointly with mercurial frictions over the region of the liver, without their proceeding to a state of suppuration.

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## INFLAMMATION OF THE BOWELS.

(*Enteritis.*)

IN this disease, as well as peritonitis, or inflammation of the peritoneum, (hereafter spoken of,)



leeching, by drawing blood immediately from the seat of the inflamed parts, is more to be relied upon, in the treatment of these dangerous cases, than any other remedy. General blood-letting often fails to afford relief; and the parts are usually so tender, that the operation of cupping would be more likely to increase than diminish the irritation and inflammatory excitement.

On examining the bowels of several persons who have died of intestinal inflammation, I have always found the inflamed portion of gut very much contracted, (occasioned, perhaps, by spasm,) with effusion of lymph, and the blood-vessels in a state of congestion. The abstraction of blood, in this manner, therefore, presents itself as an indication of the first consequence. It has been usual with me, in cases of this kind, to apply from two to four dozen leeches over the whole surface of the abdomen, and to elicit as much blood by hot fomentations after they have fallen off, as would induce a state of faintness and extreme languor. In very dangerous cases I have followed up the use of leeches by the application of a large blister, with a frequent repetition of these little animals applied around its edges; and since I have adopted this active plan, I have never lost a single patient, either in this disease or with peritonitis.

The propriety of purgatives of the stronger kind, in inflammation of the intestines, has of late been



much questioned; but castor oil and other *mild* purgatives, and enemata, may be safely employed along with the means before recommended, and occasionally opiates, to moderate the spasm. But, as far as my own experience has gone, I have seen large doses of calomel, united with the stronger purgatives, successfully administered in the first instance, and afterwards those of a milder nature.

*Strangulated rupture* is frequently mistaken for inflammation of the bowels; and many instances are now within my recollection, of the fatal consequences of such mistakes; made too by practitioners of considerable celebrity. Whenever a doubt exists of the nature of the disease, the practitioner should carefully examine the openings through which hernia usually descend; for a rupture may exist, and be in a state of inflammation, and yet so very small, as to have eluded discovery, or perhaps concealed from motives of delicacy,\* of which I have met with many instances, especially in females, one recently in an elderly lady, who, after taking powerful purgatives for some time without effect, and the pain and inflammation increasing, sent for me; and, on my inquiring if she had a rupture, replied, “Oh! dear me, no, Sir, I never had any thing of the kind in my life.” But when I

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\* This was the case of the Queen Consort of George the Second, and the late queen (Caroline), who both died of strangulated hernia.



apprised her, that her life depended upon my immediately ascertaining the fact by examination, she acknowledged she had been afflicted with a small rupture in the groin for many years; this I found in a state of strangulation; and from the time elapsed since the commencement of the attack, and the immediate reduction of the parts being impossible, her life was saved only by an operation. In these cases purgatives do much harm by irritating the bowels, and cannot possibly pass through them until the strangulated portion of gut is returned, — a circumstance which will not admit of the least delay.

Now that I am casually speaking of strangulated rupture, in reference to its being mistaken for inflammation of the bowels, I will just observe, that in the early stage of the attack, I have often found the application of a cluster of leeches, upon the tumour, of considerable use in unloading the parts, in a state of inflammation, of their superabundant quantity of blood, and have frequently reduced a rupture afterwards with ease, which it had been before impossible to effect. Sanguisuction ought, therefore, to be looked upon as a useful auxiliary to our other means for the reduction of strangulated hernia, as well as in preventing the parts running so rapidly into a state of mortification, as is usually the case. For what is the



immediate cause of danger in strangulated hernia, but so great a congestion of blood in the vessels of the protruded parts, that it is unable to circulate back through the opening? And I am not aware of any remedy for the purpose of obviating the serious mischief which might ensue from such an increased volume of blood existing in the parts, externally of the opening, more strongly indicated, than these abstractions immediately from the part itself, by leeches; and as the integuments covering the hernia are very thin, we may reasonably expect their operation will be very efficacious if timely employed.

**INFLAMMATION OF THE KIDNEYS** (*Nephritis*), should first be treated by bleeding; and if but little relief be obtained, twenty leeches should be put upon the loins, which will commonly prove more efficacious than another general depletion: the patient should sit in a hot hip-bath, for a considerable time after the leeches have fallen off, to encourage the hæmorrhage.

**INFLAMMATION OF THE BLADDER** (*Cystitis*), is a rare disease. Twenty or thirty leeches may be applied upon the lower part of the belly, and upon the perineum, and the hot hip-bath subsequently used, as above-mentioned.



RECENT COLDS AND CATARRHS.—Leeching is requisite for a variety of symptoms of these complaints. If the head be much affected with pain, and there be present much coryza, or discharge from the nostrils, half a dozen leeches applied upon each temple will be found to mitigate both.

The inflammation of the fauces, occasioning sore throat and difficulty of swallowing, is relieved by the same means, used to the parts about the angles of the under jaws.

The cough, soreness, and rawness extending down the trachea, pain over the chest, and other symptoms of pulmonary inflammation and irritation, should be treated by the application of leeches to the upper part of the chest and along the course of the sternum. In the latter case, much auxiliary benefit is derived by covering the bites with two or three exhausted glasses.

Catarrhal affections, in peculiar damp seasons, sometimes become highly epidemic; and then the disease is called *influenza*. In the autumn of 1796, it prevailed so much in Worcestershire and the adjoining counties, that there was scarcely a family in them but some of its members were dangerously afflicted with this disease. A good deal of inflammatory action of the lungs, pleura, throat, and fauces, prevailed in these attacks; and it was



in witnessing the success resulting from the early and active system of depletion, adopted in the practice of those skilful physicians, Drs. Johnstone, Cameron, Thompson, &c. of Worcester, that a lasting impression was first made upon my mind of its importance in the treatment of inflammatory diseases.

SCARLET FEVER, (*Angina Scarlatina.*)—I have often found it proper, at the commencement of this disease, to moderate the febrile action by lessening the quantity of circulating fluid, more especially when the head is much affected with pain or stupor, or symptoms of visceral inflammation exist, a circumstance by no means unfrequent; and where the throat is much inflamed; but it ought not to be forgotten, that although scarlet fever is usually accompanied with high inflammatory excitement, considerable debility is frequently induced by this disease; and when accompanied by visceral affections, it is now and then succeeded by dropsy. Bleeding, by leeches, will therefore be usually found a more safe way of abstracting blood, than venesection; indeed, general blood-letting in scarlet fever ought not to be used without discrimination; and, in cases of doubt, the application of leeches should be preferred. They should be freely applied to the temples, throat, region of the



liver, or other parts where the seat of the affection may indicate; and their number and repetition depend on the age, violence of the symptoms, and constitution of the patient,—but, above all, on the stage of the disease; for when scarlet fever has existed for some time, the propriety of the loss of blood, even by leeches, is often very questionable.

Purgatives should also be freely and repeatedly employed during the early periods of this disease.

**ASTHMA AND WINTER COUGH.**—These affections are frequently accompanied with a good deal of inflammatory action, and laborious breathing. In these cases, the free application of leeches to the chest, and, subsequently, cupping glasses, or hot fomentations, will be found of great use in relieving the respiratory organs of those congestions which oppress them.

**VOMITING OR SPITTING OF BLOOD, (*Hæmoptysis*.)**—Celsus, a celebrated Physician, of the enlightened Augustan age, justly observes, that if it be wished to suppress an hæmorrhage at one part, we must divert its source, or abstract blood from another. The vital importance of the organ, from whence the blood arises in hæmoptysis, would appear to render this remark more strikingly applicable to this dangerous disease than any other,



particularly as it is usually accompanied with more or less inflammatory excitement of the lungs and its membranes; but as vomiting of blood is frequently a concomitant or precursory symptom of consumption, and as it is often accompanied with a good deal of constitutional debility, we cannot always resort to the lancet, without incurring the risk of doing more injury to the general system than the bleeding would benefit the symptoms. The same objection, however, does not present itself with regard to small local abstractions.

I have employed sangui-suction in hæmoptysis in a great number of distressing instances with the most decided advantage; the vomiting of blood having usually ceased almost immediately after the operation; and a diminution of the arterial excitement of the lungs has also resulted from it.

In attending a patient some time ago, (who had been repeatedly attacked with hæmoptysis,) in company with an eminent lecturer on the practice of medicine in this metropolis, I suggested the propriety of leeches to the chest; and the success which succeeded the application of half-a-dozen of these medicinal animals, in the removal of the symptom, excited his astonishment. The remedy was subsequently resorted to on the recurrence of the vomiting of blood, with the same beneficial consequences.



## CONSUMPTION OF THE LUNGS,

*(Pthysis Pulmonalis,)*

AND CHRONIC INFLAMMATION OF THE BRONCHIA. — Occasionally leeching the chest in these affections is found to relieve that inflammatory irritation, and those congestions, upon which the cough and impeded respiration depend. General blood-letting, at the commencement of consumption, may prove useful; but as the preservation of the strength of the patient is an object of great consequence, it will, in most cases, be found preferable to rely on the reciprocal application of leeches and blisters, to diminish the increased arterial action of the lungs, which usually prevails in the early stages of this disease.

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## RHEUMATISM

Is a disease in which the practice of leeching is in many instances attended with considerable relief. It is most successful in that form denominated *acute rheumatism*, characterized by a quick, full, and hard pulse; hot, dry skin, and other phenomena of fever; pain, redness, and swelling of the joints, particularly the ancles, wrists, knees, elbows, &c. &c., often changing its



situation from one part to another. The liberal application of leeches to the pained joint, produces ease and alleviation to the sufferings of the constitution generally; and when the pain becomes fugitive, its migrations may be pursued by the same means to all its refuges. In severe cases, copious blood-letting from the arm should precede the use of leeches, to free the general system from the pressure of phlethora.

Dr. Fowler, of York, formerly physician to the Stafford Infirmary, in a work published in the year 1795, on the beneficial effects of blood-letting, &c. in acute and chronic rheumatism, says:—"If after the operation of blood-letting any particular part of the body should become more distressingly painful than the rest, it will in general be found more eligible to apply leeches to the part affected, as a local evacuant, than to repeat the operation with the lancet.

"But from the variation found in the size and vigour of leeches, circumstances to which sufficient attention is seldom paid, the quantity of blood taken away by this mode is rendered extremely uncertain. It appears, however, from observation, that four moderate or middle-sized healthy leeches will, upon a medium, cause an evacuation of four ounces of blood, allowing an ounce for every leech, one with the other, including what they take away by suction,



and what is collected upon cloths wrung out of warm water, and applied to the bleeding parts every five or ten minutes after the leeches have dropped off; and, therefore, considering four, five, or six moderate sized leeches, as taking away about as many ounces of blood, two of these operations will be fully equivalent to one with the lancet, as a general evacuant, and ought to be deemed so in our estimate of the loss of blood about to be sustained by the system. If leeches cannot conveniently be procured, the application of cupping-glasses, with scarification, will generally answer the same good purpose.

“The application of leeches will generally procure an immediate relief of the parts pained, as a local remedy; and at the same time some diminution of the morbid action of the system. Their prudent application, therefore, may often successfully supersede the farther use of the lancet, after the first operation with that instrument.”

*Metastasis of Rheumatism*, in weak constitutions, often takes place to the heart, producing congestion of that organ, with the symptoms of carditic inflammation, with the exception of pain. A long continuance of this affection produces an enlargement of the heart, and consequently palpitation, dyspnœa, cough, and irregular pulse, and terminating in dropsy of some of the cavities. If the



rheumatic metastasis produces immediate actual inflammation, the issue of course is more alarmingly impending. In all cases, leeching on the region of the heart should be used with persevering diligence, but venesection should be a concomitant measure.

Rheumatic metastasis also frequently takes place to the brain, peritoneum, &c.; in short, inflammatory rheumatism, in particular, is of so transient a nature, that it is impossible to say where it may not fix. It must be pursued by active leeching, as long as the symptoms of the disease and the strength of the patient demand that operation; but it must not be forgotten, that a certain degree of strength is required to support the necessary action of the part, and the integrity of the constitution at large.

*Acuto-Chronic Rheumatism*, exists in a state between what are called the acute and the chronic, and is by some denominated *rheumatic gout*.

This state of rheumatism, though attended by actual local inflammation, is accompanied with little or no fever; it is sometimes primary, but it is most commonly the consequence of acute rheumatism, or, in other words, a prolongation of the latter, in a subdued and less active degree. The knees and ancles are more particularly the parts affected; they are painful, stiff, and oedematous;



warmth aggravates the pain, and the patient therefore suffers most at night. Leeching is here also decidedly useful, and may be repeated as frequently as will be found requisite, the disease being of an obstinate nature, continuing sometimes many months.

*Chronic Rheumatism.*—It may not be improper in this place to notice, that, although I have preserved the term *chronic* in this treatise, a term long established by custom, I consider it an unscientific and undefined appellation to distinguish the stage of a disease. It would appear to imply, that what are called acute and chronic inflammations, or acute and chronic disorders of any kind, were distinct affections, depending upon different specific actions; but they are only the same disease existing in a different degree, and kept up by the same kind of action. Chronic, however, in the common acceptation of the term, is intended to convey an idea, that it is an affection originally existing in a mild degree, or become so after the more acute and dangerous symptoms have subsided as spoken of in the preceding page.

Chronic rheumatism does not always receive benefit by the abstraction of blood; it is not attended by fever or active inflammation: particular muscles and joints are attacked by stiffness and pain, especially during any motion of the part;



it is more generally cold than warm, and is often accompanied by a sort of paralytic torpor. This state of rheumatism should therefore be distinguished from the two former, as our remedy will be less beneficial, if resorted to, though, in many instances, it will prove serviceable.

*Hip-Gout, (Sciatica.)*—This painful affection is always considerably relieved and generally cured by leeching along the course of the pain. It is preserved often during a long period by a chronic inflammation of the sheath of the sciatic nerve. A liberal number of leeches must be applied, and an additional advantage is gained by the subsequent application of cupping-glasses, which acts favourably even as dry cupping. Zacutus Lusitanus relates the two following cases of this affection, which he cured in his time by leeching. I take them from Dr. Salmon's work, published in London about one hundred years back:—

*Case 1.*—“ After trying what he (Lusitanus) calls the *wonderful* ointment of *Ebulus*, described by *Lacuna*, in Dioscoridem, lib iv. cap. 175, and what he calls ‘ Great cupping-glasses, with scarifications and caustics without effect, he at length, by the advice of Paulus, lib. iii. cap. 77.; and *Cælius*, lib. v. cap. 1, tried leeches:— ‘ I set,’ says he, ‘ eight great horse-leeches upon the hip: after the sucking of the leeches, so great an



evacuation followed, that, after ten hours, the pain went away. This remedy I have happily experimented many times in gouts of the hand, foot, and knee, after the body had been well purged."

*Case 2.*—"A man of a melancholic habit of body was troubled with an old sciatica, whom the physicians had tormented with frequent bleeding, so often as the pain came. He being thus much weakened, instead of blood-letting, I caused leeches to be applied to the hæmorrhoid veins; which being used for a year together, he was perfectly cured. By this means, the fluxion which fell from the hip was derived to his fundament. And, indeed, opening the hæmorrhoid veins preserves from sciatica. And as retention of the menses oftentimes causes it, according to *Hippocrates, Epidem*, lib. v. numb. 33, where he relates, that *Polemarchus's wife*, upon the stoppage of the menses, was troubled with sciatica, so the provoking of them cures the said disease also."

It must, however, be observed, that when leeches are used in this manner, they should be applied close to the margin of the anus.

**GOUT.**—Amidst the conflict of opinions of the present day, with respect to the nature and the best method of treating gout, I will briefly observe, that I have always found the symptoms, in its



acute stage, to yield more readily when it is treated as a simple local inflammation, than when attacked in any other way. Hence the abstraction of blood by leeching,\* from the part immediately affected, becomes our primary object, and will seldom fail to afford considerable alleviation of the pain, as well as a reduction of the swelling of the inflamed part. Leeches will be found of still more utility, when the gout is become retroscedent, and attacks internal parts, as the stomach, brain, lungs, intestines, kidneys, or bladder; whilst, at the same time, local means are used to the part from which it has migrated to solicit its return.

The propriety, however, of abstracting blood in gout, is sometimes only to be determined by the experienced and discerning: perhaps no remedy in any disease demands more caution in its application; for, in the gouty habit, there is often more or less debility, and any evacuation which diminishes the strength when debility exists to any considerable extent, deprives the constitution of sufficient power to keep up the fit in that regular degree which is consistent with the safety of the patient.

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\* The ancients were much in the habit of employing leeches in cases of gout. Pliny, in particular, in his excellent work on Natural History, dedicated to Titus, speaks in strong terms of the great benefit derived from their application in this disease.



This disease too is usually accompanied with, or perhaps often dependent upon, the existence of some derangement of the digestive organs; the state of the stomach, therefore, in all cases of gout, demands our particular attention.

Whatever doubts may exist of the propriety of the application of other topical remedies in gout and rheumatism, from a supposition of their repelling power causing a transmission of the disease to the stomach, head, &c., there need be no apprehension of this kind, as it regards leeching, when this remedy is found necessary.

**ERYSIPELAS**, (*St. Anthony's Fire, Erysipelatous Inflammation.*)—The application of leeches in the early stages of this disease, is, in many instances, extremely beneficial and proper; but the appropriation of the remedy requires scientific discrimination previous to its adoption. The disease attacks so many parts of the body, partakes of such a different character from various circumstances, is so influenced by accidental and incidental causes, that the limited extent of this treatise will not permit me to give such a description of the numerous features of this disorder, as would furnish the proper information requisite to direct the judgment in all cases upon so extensive a subject; I can, therefore, only give the disease a place



among others, oftentimes benefited by sanguisuction, and observe, that where the vital powers of the constitution are able to sustain it, active depletion may be successfully employed; but, in cases accompanied with considerable debility, it ought to be cautiously abstained from. As far, then, as the disease, modified by peculiarity of the constitution, admits of depletion, so will leeching be an effective and proper remedy.

Erysipelatous inflammation occasionally attacks the intestines, peritoneum, liver, brain, the fauces, and oesophagus; and, in these cases, leeches will be found essentially necessary.

**DYSENTERY**, (*vulgarly called the Flux.*)—This disease is occasioned by sudden transition from heat to cold; exposure to damp night air, wet clothing, and the like; these obstruct the secretion from the perspirable pores of the skin, and throw an increased quantity of the circulating fluid upon the intestinal canal. Dysentery is also frequently excited or considerably aggravated (in tropical climates more especially), by the irritation arising from the discharge of an inordinate secretion of bile into the duodenum, or perhaps by some peculiar acrimony in its quality, or disease of the liver. Neglected diarrhoea will likewise occasion it, as will the too free use of fruits and



spirituous liquors; unwholesome diet, bad water, and in crowded situations, particularly where the disease occurs in hot climates, in camps, ships, military hospitals, &c., the effluvia of persons afflicted with it is often highly infectious; and facts illustrative of it have occurred under my own immediate observation, in numerous instances, though its contagious nature has been denied or doubted by the late John Hunter,\* and many other eminent practitioners. But I observed, that when the disease was the consequence of infection, it was usually accompanied with more or less fever of the typhoid kind.

In whatever way the disease may be occasioned, there is usually, at the onset, during its acute stage, considerable inflammatory excitement of the intestinal canal, marked by tension and tenderness of the abdomen, with distressing pain and tenesmus; febrile heat, quick hard pulse, and white tongue. A diseased secretion from the minute glands, or follicles of the villous coat of the intestines, occurs early in the disease, and slime or pus mixed with blood; and often the latter alone is discharged in larger or smaller quantities, in proportion to the violence of the attack. The bowels, at the commencement, are often constipated, notwithstanding

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\* See Hunter on the Diseases of the Army of Jamaica.



the frequent evacuations from the lower intestines, a circumstance which is liable to mislead the practitioner.

This disease is much more manageable in this country, than it usually is in tropical climates; in the latter it will often withstand the use of those remedies which, in temperate regions, are found to be successful.

When practising in hot climates, about eighteen years back, in situations where I had always a considerable number of dysenteric cases, I found the usual practice inadequate to the extreme danger of the malady; the disease would often run a rapid and mortal course, terminating life by extensive ulcerations of the intestines, in defiance of every judicious treatment by medicine that could be devised. I therefore determined to treat it as an active inflammatory affection, in the *first instance*. I accordingly employed copious and frequent abstractions of blood; and I had soon the happiness to find, that the result of this practice was to abridge, very considerably, the duration of the complaint; and fatal terminations rarely occurred in those cases where it was early adopted.

It has long been the practice to employ depletion in active, and even in passive hæmorrhages of various descriptions, with decided advantage; surely then it must be more urgently indicated in



hæmorrhagic affections, accompanied with such high inflammatory action as is generally found to be attendant upon acute dysentery. Sydenham, a hundred and fifty years ago, speaks highly of blood-letting in this disease.

Local abstractions of blood, largely employed by means of leeching, with the subsequent application of cupping-glasses, I have frequently found sufficiently effective; and preferred trusting to these measures, where there existed much debility of the constitution, and particularly in the various cases which, in hot climates, frequently commence during the convalescent stage of fevers and other complaints; but, in persons of full habits, I first endeavoured to subdue the violence of the symptoms by the lancet, and then employed sanguisuction with a view to diminish the remaining arterial excitement of the parts immediately affected, and to remove the general inflammatory diathesis when the system would be too much reduced to sustain the further use of venesection. Faintness, or a reduction of the force and frequency of the pulse, and a diminution of the symptoms, are the true criteria to indicate when sufficient blood has been abstracted.

I have since employed leeching in a great variety of cases of dysentery in this country, and it always afforded considerable relief to the patient.



From one to three dozen of the animals will be required in acute cases, applied over the abdomen, and ought to be occasionally repeated. These means, conjoined with the frequent use of mild aperients, to keep the bowels in a state of laxity, and to carry off accumulated acrimonious matter secreted within them, and occasionally a full dose of opium to allay their morbid irritability; a light bland diet, with mucilaginous sheathing drinks, will in most cases be found to succeed in the cure of this truly distressing malady.

Calomel, in cases where bile is supposed to be the exciting cause, should be occasionally administered in small doses; and if the disease has been produced by obstructed perspiration, ipecacuanha may be advantageously united with the opium, to produce a determination to the surface of the skin.

**CHRONIC INFLAMMATION OF THE LIVER, and Derangement of the Digestive Organs.**—In these affections there will often be found excessive tenderness about the pit of the stomach and right side of the abdomen. This arises, in these cases, where the disease having gradually made its progress from one stage to another (beginning in simple irritation of the stomach and first passages), now arrives at actual inflammatory action of one



or more of the digestive organs. The liver, stomach, spleen, pancreas, &c. in this state, form a series of phlogistic, organic derangement, until the former organ, more disposed, both from its anatomical structure and its functions, to inflammatory congestion, becomes the concentrated focus of the disease; and hepatitis, not its acute and violent form, but in an insidious chronic degree, is the consequence. In this stage of the disease there is no remedy so appropriate as leeching; in fact, without it, no benefit is to be obtained from any other source. After the application of ten or twelve leeches, the tenderness is relieved, the pulse softens, the breathing is easier, and the feverish tendency lessens. Blisters must be applied to the part, and their use alternated with the repetition of leeching, until the inflammatory diathesis has so far subsided as to admit of a tonic plan of medicine for the removal of the disease.

Much advantage and relief is also gained in these affections by applying leeches around the margin of the anus, by which the veins are unloaded that communicate with the vena portarum; and thus the column of blood, which has to pass through the liver and neighbouring organs (which, in these cases, are usually in a state of congestion, from the existence of a superabundant quantity of this fluid,) is diminished. As many leeches may be



applied as can be placed around the verge of the rectum, and repeated as circumstances may require. Eight or ten can be conveniently put on.

Dr. Thomas, of Cheltenham, in a work lately published on the digestive organs, dwells at some length on the utility of applying leeches to the anus in cases of hepatic derangement, as well as "chronic inflammation, or congestion of different cavities, particularly that of the abdomen;" in which he adds, he has "found much advantage in depleting those vessels that contribute to feed the vena portarum, as well as other veins in a state of congestion in the tissues or parenchymata of the abdominal viscera." The doctor has detailed several cases,\* where the application of leeches was eminently successful; to which I refer my readers for particulars. But the practice is by no means new; for it was resorted to in the same disease, fourteen hundred years ago, by that skilful physician, Ætius, whose remarks on the subject will be found in a treatise entitled, *De atra Bile sive Melancholia*; and Pliny recommends the same practice.

JAUNDICE is usually accompanied by more or less inflammation, particularly if it be combined

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\* Practical Observations on Chronic Affections of the Digestive Organs, &c. &c. by John Thomas, M. D. 8vo, 1820.



with hepatic congestion, or the presence of gall-stones; in either case, leeches applied to the pit of the stomach will generally relieve the symptoms.

**BILIARY CALCULI**, in passing from the gall-bladder into the duodenum, do not always necessarily occasion jaundice. The pain, during the time the stone is passing through the ductus communis, is the most acute of any to which the human body is susceptible. I have seen many cases where it has been so severe, that it was scarcely possible to confine the patient in any situation. To relax the ductus communis, so that the calculi may pass with less resistance, and to keep down inflammatory symptoms, are our chief objects in the treatment of these affections; and, for this purpose, after general blood-letting, twenty or thirty leeches, at least, should be applied to the upper part of the abdomen, and repeated as may be necessary. Hot fomentations, or the warm-bath, may be afterwards employed, with the two-fold view of eliciting as much blood from the bites of the leeches as is compatible with the strength of the patient, and of relaxing the spasmodic contraction of the duct, through which the calculi must pass. In three instances which lately occurred under my observation, copious leeching afforded almost immediate relief. Calomel, with other purgatives, and occasionally



opium, should at the same time be freely administered.

In cases where the methods just mentioned have been used without success, the stone continuing to be firmly lodged in the duct (which may be known by the peculiarity and seat of the pain), and where the strength of the patient has been greatly reduced; I have known the administration of chalybeate medicines to influence the propelling power of the duct in accelerating the escape of the calculi.

URINARY CALCULI act as mechanical agents in producing inflammatory action, either in the reservoirs, which are the natural cavities containing them, or in the canals through which they are forcibly protruded in their passage from the body. Leeching is a useful remedy in these cases, whether the kidneys, ureters, bladder, prostate gland, or urethra be the seat of the violence; and should be applied as near the part affected as possible. In short, most of the observations just made with respect to biliary calculi, are applicable in these cases.

#### DISEASES OF THE JOINTS, *usually called White Swellings,*

Often arise from external injuries; at other times, they are entirely constitutional. These



affections are much relieved, and their dangerous consequences often averted, through the local abstraction of blood by leeches. The number to be applied must be regulated by discretionary knowledge of the age and constitution of the patient. The chronic nature of the disease demands a persevering course in their application at short intervals, until the inflammatory action of the part is lessened. Whether the case before mentioned, related by Zacutus Lusitanus, of a man who laboured under an inflammatory affection of the hip-joint, came under the nature of the disease in question, is not positively known, who was cured by the application of eight leeches upon the part affected. General blood-letting had been used, but without any benefit.

White swelling is connected with a scrofulous diathesis, that renders the constitution obnoxious to general blood-letting. But the inflammatory excitement of the part requires counter-irritation and the local abstraction of blood for its removal; and no means effect these purposes better than leeches. In weak and debilitated habits, therefore, the occurrence of pain and tumefaction about the joint, whether of the shoulder, elbow, or wrist, the hips, knees, ankles, or feet, should be looked to with a suspicious eye, and leeches should be early resorted to. The state of the



general health will, at the same time, require particular attention.

SCROFULOUS *Enlargements of the Glands of the Neck, &c.*

Children, and young persons of delicate constitutions, are liable, after exposure to cold and moisture, to inflammation and swelling of the glands of the neck, which often terminate in troublesome abscesses, and leave unsightly scars. Two, three, four, or six leeches, according to the age and strength of the patient, occasionally applied around and upon the tumour, as soon as it is discovered, (a purgative of Basilic powder being administered at proper intervals), will generally check the inflammatory action, and render the subsequent progress of the disease tractable and simple.

SCROFULOUS INFLAMMATION OF THE EYE (*Strumous Ophthalmia.*)—I have often witnessed beneficial effects to result from a frequent repetition of leeching in this affection.

INFLAMMATION OF THE CELLULAR MEMBRANE, *producing painful suppurating Tumours in various parts of the Body*, are effectually treated by leeching, if resorted to at the commencement of the affection.



*Glandular Enlargements, arising from Inflammation of the Absorbents,* should be early attacked by a frequent repetition of the same means.

*Inflammation of the Joints, of tendinous and ligamentous structures, whether spontaneous or the effect of Sprains, Bruises, and other accidents,* likewise demand the exercise of the functions of the leech.

*In Inflammation which follows Operations, &c.*—Where this process becomes too vehement, as in operations on the eye—for the stone—on the brain—for hernia, and in all cases of high inflammation from fractures or other accidents, leeches are advantageously employed.

*Cholera Morbus and Colic,* are frequently combined with inflammatory symptoms of the bowels. Leeching in these cases, as recommended in enteritis, should be adopted and extended to the degree demanded by the violence of the symptoms.

### TETANUS, or *Locked Jaw.*

In this disease, (and I apprehend in most others of a spasmodic nature,) a liberal evacuation of blood is an indication of great importance; and I



likewise conceive, that in tetanus the frequent application of leeches about those parts, which are found to be in a state of spasm, will decidedly be useful as a secondary measure. General blood-letting, *ad deliquum animi*, should be employed at the commencement of the attack; and as soon as the system begins again to re-act, several dozens of leeches should be applied near to the angle of the jaws, and to the distorted muscles of the neck, breast, stomach, shoulders, and back; and the hæmorrhage from their punctures encouraged by the application of cupping-glasses, bathing the parts with warm water, or by causing the patient to sit in a hot-bath, until a state of faintness is induced.

The want of success, which has almost invariably attended the treatment of this disease, is owing, I am persuaded, to the real nature of spasmodic affections, from some unaccountable theoretical misconception or other, not having been well understood. Thus tetanus has been supposed to depend upon some peculiar atonic or debilitated state of the system; and bark, opium, wine, steel, musk, camphor, castor, and other stimulants, have been administered upon this principle, in large quantities: opium, to an extent which is almost incredible; doses of thirty grains of the crude, and one ounce of the tincture, have been frequently given without alleviating the violence of the spas-



modic affection:—in fact, these means have been found to aggravate the symptoms; and all the cases thus treated in this country have, I am well assured, terminated fatally; and we are told, by a gentleman who practised in some of the warmer parts of America, that, out of thirty cases which he treated in this manner, not one patient recovered.

It has frequently occurred to me, that in diseases not readily to be demonstrated by the researches of anatomy, the practice of medicine has not kept pace with the great improvements which, in other instances, have of late years been developed in the healing art; whilst physiologists appear to have been fearful of attempting the overthrow of doctrines, however absurd, which have long been established by custom.

Teachers, up to the present time, have therefore inculcated the theory which I have mentioned. Practitioners have invariably acted upon it; and writers, both of our own and foreign countries,\* have shewn a want of knowledge of the true nature of the disease.

Tetanus is usually excited by wounds of the

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\* See the observations of Professor Rush, of Philadelphia, on the cause and cure of tetanus, published in the 2d volume of the Transactions of the American Philosophical Society.



tendons, nerves, &c., or by sudden transition from heat to cold; and it is, I am convinced, attended with an opposite state of the system to that which has been ascribed to it—powerful nervous excitement, accompanied with a high degree of vascular action; and ought, therefore, to be attacked by those vigorous depletory measures before-mentioned; for, in all cases of a spasmodic nature, until a certain degree of muscular debility has been induced, stimulants are the worst remedies that can be employed; and if used before active depletion has been resorted to, the spasm is rendered by them much stronger.

I am confirmed in the justness of these observations, by the result of a case which occurred under my own care in the year 1803, on the southern coast of America; and I may, therefore, perhaps be excused of the digression in relating it:—A seaman, of the ship of which I was surgeon, being in a boat alongside, in boisterous weather, without shoes or stockings, (as is much the custom of sailors in hot climates,) the boat, by a sudden dash against the ship's side, severed the second toe of the right foot completely off at the second phalanx. On the sixteenth day from the accident, he was suddenly and violently attacked with that species of tetanus called opisthotonos; his mouth became so rigidly and firmly



clenched, that it was impossible to open it in the least; and the attempts to do so appeared to increase the spasm. The affection then extended itself with equal violence over the whole body, including the extremities, accompanied with a preternatural deformity. The chin was pressed forward, and fixed upon the chest; the upper part of the chest contracted backward, the lower part of the spine and abdomen forward, and the muscles presented to the feel the density of a hard board; the pulse was full and quick, the skin hot, respiration difficult, and the patient appeared to be in extreme pain.

Under a conviction, that a relaxing plan of treatment\* was indicated in this disease, I began the cure by copious blood-letting from the arm, and by the administration of calomel in scruple and ten grain doses, which were with difficulty insinuated between the teeth. These, with the use of glysters, operated briskly on the bowels. The hot-bath was daily, and sometimes twice a day, had recourse to, and the patient was continued in it until faintness occurred. Large blisters were

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\* Baron Larrey, Surgeon in Chief to the French army under Buonaparte, has tried amputation of the wounded limb in several cases of tetanus.—See *Larrey's Mem. de Chirurg. Militaire*. But this has been found ineffectual in every instance of acute tetanus in which it has been adopted.



applied to the throat, chest, and shoulders, and a moderate degree of warmth was enjoined. On the second day the blood-letting was repeated more largely; the calomel and enemata were continued on this and on several subsequent days; and, with a view to excite ptyalism, and a determination to the surface of the skin (which I apprehended might prove useful auxiliaries in relaxing the system), calomel, in three grain doses, with one of opium and half a grain of tartarized antimony, were administered every four or six hours; and, on account of the difficulty of breathing continuing so great, that I apprehended the patient would die of suffocation, the blisters to the chest and throat were repeated on the third day.

On the fourth day from the commencement of the attack, a slight ptyalism came on, and the patient was so much better, that the end of a spoon could be introduced between the teeth; by which means he was enabled to swallow a little chicken-broth. The same plan was persevered in on the fifth day: his pulse, which had been about 130 from the first, was now reduced to 96; and the activity of the spasms in every part were evidently on the decline; the ptyalism increasing rapidly. The warm-bath, the tartarized antimony, with calomel and opium, and occasionally purgatives, were continued till the tenth day; and, after that time,



the patient continued gradually to recover. But so strong had been the muscular contractions, that he remained, (when I left the ship a considerable time afterwards,) in the same deformed state as the force of the muscles had originally drawn him; the bones of the spine in particular had become permanently curved in different directions by the force of the spasms.

I have mentioned this case to shew what might be expected in the treatment of spasmodic diseases from active depletion, and from a treatment calculated to relax rather than to stimulate the system. Leeches were not employed in this instance, being at sea, and not having any on board; but I conceive that, had they been used, they would have afforded most powerful aid, and perhaps rendered the severe extent to which the other remedies were carried less necessary.

**PLETHORA.**—In those plethoric diseases of the brain of adults, marked by suffusions of the face and of the eyes, attended with head-ache, giddiness, and other concomitants of threatened apoplexy, the brain should be unloaded of its venous surcharge by the application of fifteen or twenty leeches about the temples, forehead, and neck. Cupping-glasses may be applied over the orifices, if the abstraction of a larger quantity of blood be



required. The remedy will prove equally efficacious in those common head-aches which arise from the fulness of the vessels of the head.

*Apoplexy.*—The remarks just made are applicable to this disease, and need not be repeated.

*Paralysis.*—The vascular turgescence, extravasation, or effusion in the head, in this disease, produces a compression of the brain, requiring abstraction of blood. Leeching the temples, neck, and upper part of the spine, is therefore eminently requisite in most instances of this affection, and should frequently be repeated.

Chronic cases of paralysis are often accompanied with great debility; hence this mode of abstracting blood is to be preferred to general blood-letting.

Sulphurous fumigation and galvanism will also be found extremely beneficial in most cases of this description.

*Lethargic*, or drowsy affections, (sometimes the precursor of apoplexy,) arise, in full habits more especially, from over distention of the blood-vessels in the head. A number of leeches occasionally applied in the hollow of the temples, behind the ears, or to the upper part of the neck, and subsequently cupping-glasses over the orifices, to induce a sufficient discharge of blood, will usually be found to relieve these unpleasant affections, and will, in many instances, prevent serious mischief,



*Hæmorrhage from the Nostrils*, in plethoric habits, is often a salutary, though an unpleasant occurrence. It is an effort of nature to get rid of a superabundant quantity of blood from the head, by the rupture of the branch of an artery ramifying upon the schneiderian membrane. It is fortunate on this account, that were the like occurrence to take place within the head, a dangerous apoplexy would be the consequence. This hæmorrhage is very liable to return at intervals, unless depletory means be occasionally resorted to; and leeching the temples pretty freely will, in most instances, be found to answer this indication.

**EPILEPSY**, (*St. Vitus's Dance*.)—A plethoric state of the brain prevails in this disease, often requiring the application of leeches to the temples. A dozen or more applied to these parts often relieves the symptoms. Gariopontus strongly recommends their application to the region of the spleen in epilepsy arising from melancholy, an occurrence by no means unfrequent.

*Mania*.—There is often a considerable determination of blood to the vessels of the head in this disease, though dissections of persons who have died insane, do not warrant us in saying this is always the case. Leeching the temples, and about the back part of the head, is, however, often



of essential service in moderating the symptoms, if not an effective remedy in curing the disease. It should be freely employed and frequently repeated.

*Vertigo, or Giddiness of the Head*, usually arises from some inequality in the distribution of the circulating fluid in the vessels of the brain and its membranes, or a too great determination of it to those parts. It frequently occurs in the aged and in the weak, where the use of the lancet would be improper: hence leeches present themselves very opportunely for its relief. Alexander Benedictus, so far back as his time, speaks in strong terms of the beneficial effects of leeching in vertigo, in his practice. He advises their application behind the ears.

*Nervous Head-ache.* A deranged state of the functions of the nervous energy of the brain frequently occurs in persons labouring under dyspeptic symptoms, and in debilitated and elderly persons. In these cases, too, there is often an undue distribution of blood in the vessels of the head; and sangui-suction in the usual manner will be found the surest method of restoring the due equilibrium in the circulation and tranquillizing the nerves. Actuarius truly says, in cases where we dare not open a vein, leeches have the happiest effect in various affections of the head, and constitute our best remedy.



**PILES**, (*Enlargement of the hæmorrhoidal Veins*), are sometimes attended with inflammation. The application of leeches in these cases immediately upon them, diminishes the bulk and distention, and allays the pain of the tumours more effectually than is to be accomplished by any other remedy. The patient should sit in hot water, after the leeches have dropped off, to encourage the bleeding, or the poppy fomentation may be applied.

*Prolapsus Ani*, or *bearing down of the Rectum*, is generally a concomitant of internal piles. It is accompanied with distressing pain, and sometimes febrile symptoms. The relief which the application of half a dozen leeches will afford to the unfortunate sufferer will be very great and effectual.

*Gutta Serena*, or *that species of Blindness where the Eye remains, to appearance, unaffected*, sometimes arises from plethora; and then this remedy will be found beneficial.

*Weakness, or dimness of Sight*, is likewise often the consequence of plethora, and is to be relieved by the application of leeches.

#### FEMALE DISEASES.

*Suppression of the menstrual Discharge*, (*Amenorrhœa*.)—This is a disease, demanding, under certain circumstances, the process of sanguisuction. If it arises from a debilitated state of the



system, with an evident paucity of the vital circulating fluid, the treatment must necessarily consist in those remedies which will restore tone and energy to the brain and vascular structure of the body. But it often occurs from excessive local or general excitement, the consequence of too great a plethora; the uterus is in a state of low chronic inflammation, often accompanied with pain, and a forcing sensation, which is sometimes observed to return periodically. Where there is evidence, then, that the disease depends upon plethora or excitement, abstraction of blood is highly necessary, and leeching is undoubtedly the best means of obtaining it. From twelve to twenty should be applied upon the lower part of the abdomen, or within and about the vagina, the nearer to the uterus the better; after which the hip-bath should immediately be prescribed. The use of the leeches should be resorted to about every return of the menstrual period, until the uterine organs, and the system generally, have been unloaded, and the natural secretion ensues.

In *Painful Menstruation*, and in cases where this salutary evacuation is *deficient in quantity*, leeching in the manner above mentioned will afford much relief.

*Fixed Pains about the lower part of the Abdomen in the region of the Uterus, and in the*



*Groins*, are frequently met with in the pregnated and in the unimpregnated state; sometimes they are of a dull or chronic nature, at other times pungent or acute; and, in both cases, evidently partake of an inflammatory character. These are occasioned by exposure to cold, especially during the period of menstruation; difficult labours; a too great determination of blood to the uterus; irregular menstruation, chlorosis, irritability of the uterus, and the changes necessarily occurring during pregnancy, and on the commencement and cessation of the menstrual discharge. In all these cases, I have invariably found the application of one or two dozen of leeches to the groins and above the pubes (their operation being subsequently favoured by the use of a hot hip-bath or fomentations), to afford more immediate relief than can be obtained through any other means.

In the unimpregnated uterus, these means should be used only during the interval of menstruation.

*Pains of the Head, Abdomen, &c. on the cessation of the Menses.*—Women, at and after the period of the cessation of the menses, are liable to be affected with giddiness and pain in the head, uneasiness at the lower part of the back, a bearing down of the uterus, and a variety of other unpleasant sensations. These, if they do not



produce serious effects, continue for a long time to harass the patient, until the constitution has recovered that due balance which the interruption of such an important function as menstruation had destroyed. Leeches applied to the verge of the anus afford the greatest relief. Six may be put on, and repeated every week, or oftener, if necessary; and this plan, with a proper purgative course, will generally be found effective.

*Hysterical Complaints* most frequently arise from irritability of the uterus; and the application of leeches to those parts afflicted with accumulated irritability, or plethoric congestion, will usually relieve the symptoms.

*Furor Uterinus, and Satyriasis, (Nymphomania,)* are relieved by local abstractions of blood. Two or three dozen leeches or more should be applied about the genital organs and over the pubes. The learned Aretæus recommends them to be applied upon the hips in this disease.

The irritability of the uterus, on account of the changes it undergoes from the enlargement of the foetus, extends itself by sympathy to the stomach; and sickness and vomiting, loathing of food, and other dyspeptic symptoms, occur.

*Sickness and vomiting, (during pregnancy.)*—In females of delicate constitutions, more especially, these symptoms, during the earlier months, are in some instances truly distressing.



In many of these cases I have found the application of a dozen leeches over the uterus, successful in allaying its irritability; and consequently, the irritability of the stomach, at a time when, from the reduced state of the system, general blood-letting would have been inconsistent.

*Immoderate Menstruation, and threatened Abortion.*—The remark of the learned Celsus, which I quoted when speaking of hemoptysis, or spitting of blood, is particularly applicable to these cases.

Immoderate menstrual discharge, and flooding, threatening abortion, very generally arise from some peculiar irritability of the uterus, or a too great determination of blood to that part; and as these will not always admit of general blood-letting, the application of leeches to the lower part of the abdomen will often be found to moderate the hæmorrhage, and not unfrequently prevent abortion. A low diet, cooling drinks, with mild acidulous medicines, and tranquillity, should be here enjoined.

*After Pains* have occasionally an inflammatory tendency, which may be ascertained by the patient complaining of much tenderness on pressure; the pain having no intermission, as is usual, and there being a deficiency of the lochial discharge. These cases must be treated by sangui-suction, and other means necessary for the reduction of inflammation.

*Inflammation of the Breasts.*—These complaints frequently occur, both in females who have borne



children, and in those who have not; they are occasioned by cold, a too great secretion of the milk, or the difficulty which frequently occurs in drawing it from the breasts, repelling the milk too suddenly, &c.

Whenever inflammation of the breasts occur, it ought to be checked as soon as possible, otherwise abscesses of a very painful and troublesome nature form; and no remedy is more likely to accomplish this desirable end, than the frequent application of leeches, and the use of some discutient topical remedy.

*Inflammation of the Womb, (Hysteritis), and Inflammation of the Peritoneum, (Peritonitis,) improperly called Puerperal Fever.*—These very dangerous diseases, (which are incidental to the child-bed state,) must be treated by the free application of leeches to the abdomen, as near as possible to the seat of the disease. In severe cases, I have frequently employed three or four dozen at one time, with the most decided advantage; and have attributed the recovery of my patients principally to their effective operation. In truth, I have never known a single case where this practice, when early resorted to, did not terminate favourably.

The hip-bath subsequently used, will be found an useful auxiliary in encouraging the bleeding,



and to moderate the pain; or if this cannot be procured, hot poppy fomentations may be substituted. These means should be repeated, as the circumstances of the case and strength of the patient may indicate. In many instances I have followed up their use by the application of a large blister; and (where the symptoms have still continued) applied leeches around its circumference pretty thickly planted. When the symptoms are violent, depletion generally should premise the use of leeches. Suitable aperients, enema's, demulcent drinks, &c. should also be enjoined.

*Cancer of the Breast*, is relieved in its early stages by the application of leeches. The pain generally remits at intervals, and suddenly comes on with excruciating violence. Ten or twelve leeches should be immediately applied around the tumour, and the operation frequently repeated, till the hardness of the part has subsided.

*Disease of the Breast, resembling Cancer.*—There is a disease of the breast of young females, not of a cancerous nature, in which there is first a great degree of tenderness, and soon after a small lump is observed, which differs from other tumours in not being circumscribed or well defined; it rather appears to be owing to a chronic inflammation of the gland itself. The application of eight or ten leeches once a week, is the principal



remedy, rubbing the tumour with a stimulating embrocation, and keeping the breast warm and perspirable. As it is sympathetic with the uterus, constitutional means should be also used.

*Cancer of the Womb.*—This fatal disorder sometimes arises from unknown causes, but is, in many instances, produced from the extension of gonorrhoeal inflammation into the uterus.

Before ulceration of the uterus has become extensive, the repeated application of leeches over the lower part of the abdomen, will frequently subdue the disease, and prevent the fatal consequences resulting therefrom.

*Gonorrhœa in Females.*—This complaint in the female, when it attacks an irritable constitution, is often attended with distressingly painful affections of the loins, hips, abdomen, and upper part of the thighs, accompanied with sympathetic febrile excitement. No remedy that I ever employed, have I found to relieve these symptoms so promptly as sangui-suction. Twelve or eighteen leeches should be applied around the lower part of the abdomen, and about the groins; and as soon as they are removed, the patient should be directed to go into a hip-bath, or hot fomentations be immediately applied by flannels around the pelvis. This not only assists the bleeding, but soothes the pain by its warmth and moisture. A purgative



being now administered, the gonorrhœal inflammation that had extended to the uterus, is immediately relieved, and soon subsides.

In some cases of gonorrhœa in females, considerable inflammation and swelling will exist in the external genitals and within the vagina; and, in these cases, the leeches should be applied upon these parts.

*Swellings of the Labia*, however, it is necessary to observe, arise from various other causes, as well as gonorrhœa; and these swellings will likewise generally yield to repeated leech-bleeding, if resorted to before suppuration has begun.

*Prolapsus of the Vagina*, is sometimes accompanied with inflammation, pain, and swelling; the application of leeches to the part, emollient poultices, and cooling lotions, will be found to relieve such unpleasant symptoms,

#### INFANTILE DISEASES.

Leeching is an evacuation peculiarly adapted to infantile constitutions, as it is very rare that blood-letting in the usual methods can be had recourse to, with requisite ease and propriety during the early periods of childhood; indeed, Horatius Augenius, in his treatise, *De Sanguinis Missione*, condemns bleeding children by means of the lancet, and advises leeches as a substitute.



Dr. Underwood also justly observes, “that in all cases of local inflammation, or a tendency to it, (he is speaking of the diseases of children), topical bleeding should have the preference, especially if it be not necessary to take away a large quantity of blood, (which it can rarely be in young children,) or if the operation be often repeated.”

It is requisite, perhaps, to observe, that in all cases where it may be necessary to resort to the process of sangui-suction in the infantile state, *small* leeches should be selected for the purpose; for the peculiar vascularity of children is such, that a tedious hæmorrhage may succeed the use of large ones.

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The following are among the leading diseases demanding sangui-suction:

*Irritability of the Brain, and determination of Blood to the Vessels of the Head, preceding Hydrocephalus, or Watery Head.*—There is no disease in which the necessity of leeching is so imperative, or the good effects more strikingly advantageous to life, than in that state of the brain of infants terminating in “watery head.” Parents and medical men should promptly have recourse to leeches, as soon as the insidious symptoms have sufficiently manifested themselves, so as to indicate the nature of the impending disease.



Watchfulness, unusual attention to sounds and light, irritability of temper, increased sensibility of the eye, frequent tossing of the head, general restlessness and uneasiness, with almost constant crying or fretting; suffusion of the eyes, with redness of the eye-lids, sudden startings, are symptoms indicating an irritation of the brain, most probably arising from a state of vascular excitement; for which the abstraction of blood is the most timely remedy. From four to ten or twelve leeches, regulated by the age and constitution of the child, should be applied to the temples and forehead; and may be repeated every day, or as often as circumstances require, to the same parts, as well as about the back part of the neck. A proper course of medicine is likewise necessary with the above: but on this subject, for the reasons already assigned, I shall not in the present work dilate.

*The Snuffles* is a disease that destroys the life of a great number of infants: it is known to be occasioned by a tumefaction of the schneiderian membrane under inflammatory action. The most effective treatment for this malady, is the application of leeches around and near the verge of the nostrils; but as it occurs in newly-born infants, it must be remembered, that they are incapable of losing much blood without danger; two or three



*small* leeches may be applied, and the hæmorrhage stopped as soon as they fall off; for, even were it advantageous, the bleeding could not be encouraged without much inconvenience to the nurse, and distress to the infant. The leeches may be re-applied, should circumstances arise to require it.

*Fever.*—In every case of fever, where the loss of blood would prove advantageous, leeching is a very proper method for that purpose. The abstraction of blood is generally too much neglected in febrile diseases of children, and yet it is a remedy as beneficial to them as to the adult, and ought to be adopted early in the disease. Three or four leeches to an infant cuts short the fever, and reduces the strength of the system much less than the disease would otherwise do; and it is the more necessary, if there be any symptoms of inflammation of the lungs, to which this viscus is extremely susceptible during febrile excitement in the infantile constitution; in which case the chest would be the most proper spot for their application; but in general they may be applied either to the temple, or inside of the arms or legs; two or three leeches to the youngest infant, and the number increased according to the age. Sydenham was particularly partial to leech-bleeding in the fevers of children.



**CROUP**, (*Cynanche trachealis*, or *Bronchitis*,) is, of all infantile diseases, one of the most dangerous and the most quickly fatal; it may be truly averred, that leeches have saved more lives in this disease, than any other means; they should be applied with an unsparing hand, and not a moment should be lost in affording the little sufferer their invaluable assistance.

A dozen or eighteen leeches, at the least, may be applied upon the front of the neck, along the course of the air tube, and repeated at short intervals; the bleeding, subsequently to their application, should be encouraged or repressed, according to circumstances. In all cases of croup, which have fallen under my observation, (where a recovery has taken place,) copious abstraction of blood by leeching was early adopted; it arrests the progress of the disease in the formation of that adventitious membrane in the trachea, and effusion of matter in the same tube, which interrupts respiration, and causes death by suffocation.

✓ **Measles**, (*Rubeola*).—There is often a disposition in this disease to unusual determination of blood to the lungs, intestines, or brain. When this occurs, it should instantly be met by the free application of leeches to the chest, abdomen, or temples, as the disease may be situated; and the



hæmorrhage from the punctures freely encouraged in the usual manner.

“If the child,” says Dr. Underwood, “be very young, or very weak, it may be sufficient to draw off a little blood by leeches from some part about the chest; but, should it be designed only to lessen the quantity of blood, they may be more conveniently applied to the leg or arm, as the child may be less exposed to taking cold during the application; and if the leeches should not draw well, these parts can afterwards be commodiously immersed in warm water, to promote the bleeding; or a bandage may be easily applied to restrain it, if it should flow too profuse.” The conclusion of this sentence is worthy particular consideration.

When, therefore, much fever prevails in measles, accompanied with great difficulty of breathing, and short hacking cough, it is sufficiently manifest, that the lungs (which usually suffer most in this disorder) are in a state of high inflammatory excitement; and unless the prompt measures before-mentioned be used to restore the due equilibrium in the circulation, the existence of life may be terminated by suppuration of the pulmonary organs, or a chronic cough or consumption supervene. In a case that occurred in my practice since writing the foregoing, where professional advice and the adoption of the necessary



means had been neglected until it was too late to afford any relief; I found, on examination after death, the blood-vessels of the lungs in a state of extreme congestion, with effusion of matter within its cells, and a layer of pus formed over a great portion of its external surface; yet it is probable these results might have been obviated by the timely application of leeches and blisters to the chest, with the use of other appropriate auxiliary means.

*Hooping-Cough, (Pertussis.)*—Although hooping-cough does not universally require blood-letting, yet, where an inflammatory diathesis prevails, of the pulmonary organs, demanding depletion, leeches may advantageously be applied to the upper part of the chest, followed by the use of hot fomentations. These will be found to lessen the inflammation, and thus to moderate the spasmodic cough, which is kept up by the inflammatory action of the mucous membrane of the bronchial tube.

*Convulsions* attack children at all periods during the first years after birth, and arise from a variety of causes, producing, however, more or less congestion in the blood-vessels of the head. When it is idiopathic, that is, arising from primary irritation of the brain, not referable to any sympathetic effect communicated by some other organ, leeching must immediately be had recourse to. Three



or four, or six leeches, according to the child's age, should be put behind the ears, upon the temples, or inside of the arms. If the convulsions attack one side of the body only, the leeches should be put upon the opposite side of the head. If the first loss of blood does not materially subdue the disease, a fresh number must be applied the next day; for, if this affection be not removed speedily, serious consequences ensue in a very few days. I have repeatedly employed leeches in those convulsive attacks which precede the appearance of the small-pox, and their use has been attended with the immediate relief of the symptoms.

*Teething, or Dentition*, frequently gives rise to a variety of dangerous symptoms; excessive irritability and excitement of the brain, from which result fever, convulsions, &c.; for, at this tender age, the excitability of the brain is very great, and when, from any exciting cause, derangement of its functions once takes place, it is difficult to restore tranquillity to this organ, and life is not unfrequently extinguished from symptoms of irritation. Leeches applied about the head must here be early had recourse to. — *See Fever and Convulsions.*

*Epilepsy.*—If the child be of a plethoric habit,



leeching the temples is often of great service.  
*See Epilepsy in adults.*

*Palsy, (Paralysis.)*—This disease, although not common to infants, yet does occur. Leeches should be applied to the head, as directed in convulsions.

*Purulent Ophthalmia* is the effect of so vehement an inflammation as soon to destroy the organs of vision, if effective steps be not promptly taken to check its ravages. As soon as the child is attacked, leeches should be applied to the temples and nape of the neck, to the number of three, four, or five. We must not be deterred by the extreme tender age of the infant from putting on a sufficient number of these medicinal animals; the application of one or two would be mere trifling.

*Suppression of Urine*, but rarely attacks infants or children. The instances that have been known of it have been supposed to arise from inflammation of the mesentery, and leeching the belly is the most appropriate and successful remedy to remove it.

*Watery Gripes.*—This complaint frequently occurs in young infants. The intestines at this age must necessarily be very irritable, and therefore, whatever acts in an acrimonious manner upon their internal coat, will often give rise to



this disease; even food, instead of the natural milk of the breast, &c. An inflammatory state of the mucous membrane is thus produced, which occasions the secretion and evacuation of a serous fluid, constituting the disease in question; it is a disease somewhat analogous to dysentery in the adult. The application of a leech to the belly I have frequently found to cure this complaint completely in a very short space of time, where internal medicines had not relieved the symptoms; a small blister may be subsequently applied, for the disease must be treated as strictly inflammatory. Aperients, antacids, and sometimes mild anodynes, may be advantageously administered at the same time.

#### DISEASES OF THE ADULT CONTINUED.

*Gonorrhœa*.—The inflammatory affection of the urethra in this disease, in irritable constitutions, is often so severe, as to require the local abstraction of blood. Four, six, or eight leeches may be applied along the under part of the penis, and over the perineum, as the seat of the pain and circumstances of the case indicates. By an active treatment of this kind, at the commencement of the inflammatory stage of gonorrhœa, much future mischief may be prevented, as swelling of the testicle, stricture, and diseased prostate



gland; affections which most generally owe their origin to the long continuance of the inflammation within the urethra. In fine, it may be inculcated as a general maxim, that in all disorders of the generative system, partaking of an inflammatory nature, no remedy is so prompt and efficacious as leeching, if it be timely used and recurred to as often as is requisite. It not only affords more relief from pain and anguish than any other single remedy, but diminishes the danger of those subsequent organic derangements that often leave the patient a prey to anxiety and disease for the rest of life.

*Swelled Testicle, (Hernia humoralis.)*—Whether the consequence of suppressed discharge, or irritation in gonorrhœa, of external accidents, or of specific inflammation, demands the application of leeches; and a more convenient part of the body does not present itself for this purpose, than the scrotum. The hæmorrhage from half a dozen or a dozen leech-bites, favoured by hot fomentations, seldom fails of giving great and speedy relief; and the operation should be repeated frequently, until the pain in the part has ceased, and the swelling is become less intense.

*Chordee* is a most painful and distressing symptom, occurring during the inflammatory stage of gonorrhœa. It results from a determination of



a superabundant quantity of blood into the body of the penis. The great relief which I have known to be derived from the copious discharge of blood that has succeeded the rupture of a blood-vessel within the urethra, first induced me to try the effect of leeching in this affection; and I have always found this operation to be attended with the immediate cessation or diminution of the inflammatory and painful action of the part. Four or six leeches daily applied along the dorsum penis, for a few days, conjoined with hot fomentations, and, if requisite, warm poultices and opiates at night, will be found effective in most cases. Warm applications do not, as is generally imagined, tend to increase the symptom; on the contrary, they relax the vessels of the part, and reduce their turgescence.

*Retention of Urine*, arising from obstruction in the urethra, caused by diseased prostate gland, is often relieved by leeching the perineum and verge of the anus. A dozen and a half, or two dozen, should be fixed, if possible, and warm-bathing used subsequently.

*Strictures in the Urethra*, are the most unmanageable and tedious complaints of any that a surgeon has to treat, and perhaps there are none more distressing to the patient. As strictures are excited by inflammatory action in the urethra, so they



continue to be attended by more or less of its action during their existence; and as no remedy is better adapted for the prevention of these affections, than leeching, in no other remedy shall we find so much aid in the cure. Previous to the commencement of the use of bougies, or other means for the palliative or radical cure of stricture, therefore, much benefit will result from their application as near to the situation of the stricture as possible, and the subsequent evacuation favoured by the patient sitting in hot water. A repetition of these means should be resorted to as often as may be found requisite. Sangui-suction removes that irritability and soreness of the urethra which frequently renders the passage of a bougie or other instrument distressingly painful. By thus diminishing the increased action of the part, that callosity and contraction of the urethra, which constitutes the stricture, is more readily dilated by the introduction of the necessary instrument.

*Bubo, (Venereal,)* is a painful inflammatory enlargement of the glands in the groin, excited by absorption of the venereal virus. This symptom, in both sexes, is relieved of that obtuse pain which accompanies it, and is often arrested in its progress, towards the formation of matter, by six or eight leeches being put upon it, and the subsequent use of hot fomentations. This process may



be repeated every other day, till the inflammatory symptoms have entirely subsided.

*Enlargements of the Glands of the Groin*, are frequently excited by some peculiar irritation being communicated to them through the medium of the absorbent vessels, not of a venereal character. Thus the irritation arising from chilblains on the feet, corns too much cut, punctures of the feet or legs, and wearing tight shoes, which have abraded the skin, I have frequently known to produce these enlargements. The glands of the groin likewise frequently become enlarged during the inflammatory stage of gonorrhœa; but even these enlargements should not be treated as syphilitic; they are merely sympathetic inflammations, unaccompanied with any specific infection.

It is of the utmost consequence for the practitioner to distinguish these enlargements of the glands from the syphilitic bubo: the character, and perhaps the future happiness, and not unfrequently the life of the patient, may depend upon this circumstance; for if these enlargements should be syphilitic, and treated as mere local inflammations only, the disease will make unrestrained and rapid strides in its ravages throughout the general system, and the patient will probably be doomed to suffer either from the disease, or the effects of the severe remedies which will then



become necessary, during the remainder of his days; whilst, on the other hand, should these affections be merely local, and treated by mercury as venereal, still greater evils may arise. I have frequently known large indurated tumours, phagadenic, sloughing ulcers, accompanied with extreme constitutional debility, paralytic affections, consumptions, &c., the consequence of practitioners and empyrics treating these enlargements as syphilitic buboes.

From whatever cause these glandular enlargements last spoken of may have arisen, early and repeatedly leeching the inflamed tumours, accompanied with appropriate constitutional means, and local remedies, will, in most cases, be found sufficient to subdue the inflammation, and to prevent suppuration from taking place.

*Diseases of the Bones.*—The bones are subject to inflammation, which occurs either in their interior, or what is called the medullary membrane, or cancellated structure; or in the membrane which envelopes their external surface, named the periosteum. In both instances there is an enlargement of that part of the bone, a node being produced. Leeching is essentially necessary, combining counter irritation; a dozen leeches should be applied once or twice a week near the enlarged part.



## CONCLUDING REMARKS.

In concluding this part of the work, I must observe, that were I to go minutely into an enumeration of all the incidental ailments of the body to which the application of leeches are found applicable and useful, I should very far exceed the limits which I have been desirous to preserve in this little treatise. In the brief manner even in which I have given the leading and more general diseases requiring leeching, I have occupied more time and space than I originally intended: enough has at least been said to convince my readers, that in these useful little animals we possess auxiliaries to our other methods of cure, of great importance in the treatment of some stage or other of almost every disease to which the human body is susceptible. Nor is this valuable remedy to be superseded by any other means in those various and multifarious cases of local inflammation, that every part of the body occasionally sustains, a process from which no structure is exempt, and whether arising from spontaneous or accidental causes, is more immediately within the reach of the means in question, than can be expected from those remedies whose utility is only received through the medium of the circulation, or the circuitous channels of absorption.



## OPERATION OF LEECHING.

THE mode of application of leeches is next in order for me to describe, and this I shall do as briefly as possible.

The part selected for their application being cleared of hairs, (if there be any,) by a razor; and having been washed with *plain* soap and water, and again with water alone, should be lightly moistened with milk, or, what is still better, with a little porter; the latter is in frequent use by the lower class, and amongst them I first discovered it. I have found it successful in luring the leech to fix itself, when, after the most tedious and sedulous endeavours, every other means had failed. They will generally fix themselves to a puncture made with the point of a lancet, when they refuse other solicitations.

It is injudicious to set the leech about the performance of its task, just as it is taken from the water in which it has been inclosed. The ancients were in the habit of putting it into moderately warm water for a few minutes previously; but the best method is to place them on a dry cloth, and allow them to crawl over it for a few minutes, by which they cleanse their skin of all adhering matter, and particularly of the cuticular secretion, which, if allowed to be spread over the skin of the



patient by the motion of the insect, prevents frequently their attack upon it; for I have often witnessed their refusal to bite, whilst the part was imbued with their own secretion; but, upon its being wiped carefully off with a clean dry napkin, they have instantly begun their operation.

It has been recommended to remove the leeches from their vessel of habitation, four or five hours before they are applied; and to confine them in a cup tied over with linen, that their appetite may be *whetted* by *thirsting*, so that they will fix the more readily. If the weather be cold, they will often be found so torpid, as to be nearly insensible to the stimulus presented to them; but if they are warmed, either by breathing upon them, or placing them near the fire, their sensibility is rekindled, and they begin their task with avidity. I am not, however, aware, that they bite more readily by being removed from the jar so long a time previous to their application. The ancients thought one hour sufficient; but this is the opinion and practice of many persons, and may be adopted when it is convenient, which will not often happen, if the surgeon has the management of the process, as it would prove too great an inroad upon his time and various other occupations.

Leeches may be best applied by means of a wine or cupping-glass. A piece of stiff paper



should be first introduced into it, so as to lessen the size of the cavity by acting as an artificial bottom, leaving just room enough for the number of leeches which are to be applied. This obviates an inconvenience often experienced, of some of them retiring to the bottom of the glass, and thus preventing a sufficient number from being applied; and another important use of the paper is, that after the leeches have fixed themselves, the glass may be slowly withdrawn, leaving the tails of the insects attached to the paper, producing no disturbance to their functions. Without this precaution, it is very common to dislodge some of them in removing the glass, which, towards the latter end of the process, becomes necessary, from the increase in bulk of the leeches, who are not disposed to continue their employment, if much inconvenienced by the pressure of each other. A glass thus prepared, is inverted on the part, and the leeches, if nothing disagreeable to their palate or organs of smell presents itself, will soon fix themselves to the desired part. This is supposing their application is required to a surface; for if it be wished to apply them to a small circumscribed spot, a more convenient instrument for their application is a leech-glass, which is a tube four or five inches long, just large enough to admit the body of one leech. The insect, being inserted with its



head at one extremity of the tube, soon attempts its escape from the glass, which, being placed in contact with the skin of the patient, the leech fixes itself, and the tube is then gently withdrawn. I beg to recommend a little expansion of the tube at its largest extremity, as it will give the leech a choice of a greater surface whereon to fix itself.

Antyllus, when he directed leeches to be applied to the hands, feet, or other convenient spot, desired his patient to put the part into a vessel containing the insects, by which a sufficient number were soon and easily affixed.

It is to be observed, that the less leeches are handled the better. A healthy leech will soon become sick, from being held in a warm hand. It is therefore advisable, in applying them, to do so by any other means than by the fingers; though some persons are pretty dexterous in applying them in this way; for if they manifest any disinclination to bite, they are rendered still more obstinate by the attempts to force them, and at length become really ill, and physically incapable.

“As these little animals,” says Dr. Hooper, “are depended on for the removal of very dangerous diseases, and as they often seem capriciously determined to resist the endeavours made to cause them to adhere,” he judiciously observes, in order that their invaluable assistance may with



more certainty be obtained, that “ the introducing a hand to which any ill-flavoured medicine adheres, into the water in which they are kept, will be often sufficient to deprive them of life ; the application of a small quantity of any saline matter to their skin, immediately occasions the expulsion of the contents of the stomach ; and, what is most to our purpose, the least flavour of any medicament that has been applied, remaining on the skin, or even the accumulation of the matter of perspiration, will prevent them from fastening.”—*Hooper's Medical Dictionary*.

It may not be amiss to remark, *en passant*, that it would be advisable, for persons employed to apply leeches, to take with them a considerable number more than it is intended should be applied ; for by this means much valuable time may be saved ; as it generally happens, that out of a small and limited selection, some either refuse to bite at all, or require a patient and long solicitation to induce them to do so ; whereas, if double or treble the number required be at hand, the proper quantity may be fixed generally in a few minutes, to the satisfaction and convenience of both practitioner and patient.

If a sufficient number of leeches be not at hand to effect the operation to the extent required, and in times of scarcity of them, they may be removed



after bleeding for a few minutes in one place, when they will in general eagerly attach themselves to another, and then, if necessary, be removed to a third spot. By this method, three or four leeches may be made to answer the purpose of a dozen, in consequence of the blood which may be elicited from the several orifices.

The leeches being fixed, should be left uninterrupted, and covered with a napkin or piece of flannel to defend the part from the effect of cold. This should be particularly attended to, when the chest or abdomen is the part to which the application is made. They should, however, be occasionally looked to, that they may not creep about and soil the linen when they drop off. Care should also be taken, that the whole number used be collected after they have fallen off. They generally remain fixed about half an hour, but this much depends upon their size, and the vascularity of the part.

Leeches will often remain a considerable time quite passive during the process of sangui-suction ; but if a drop or two of cold water be sprinkled on them, they will be immediately roused from this state of apathy. This circumstance occurs when the leeches have been kept for a great length of time, and are become relaxed, or when in a sickly state. They ought to be either suffered to fall off, (as they usually will when gorged,) or



they may be displaced by raising their lips with a pin, or by making a noose of silk thread or horse-hair, and drawing it close between the mouth of the leech and the part to which it is affixed; but it is by no means to be *pulled* away, for, by such violence, its piercers or teeth (which are three in number, corresponding to the figure of the triangular opening it makes,) will be destroyed so as to render the leech for ever after incapable of performing its office, besides rendering its punctures liable to inflammation. The ancients dreaded tearing them away, fearful their piercers might be left in the wound, an event which, Pliny says, happened to Messalinus, a patrician consul, and proved fatal.

*The Methods of encouraging the Bleeding* after the leeches have fallen off, and the means by which it may be best accomplished, have been already so fully shewn, that I have little in this place to say further than recapitulation. In the process of sangui-suction, we depend more upon the quantity of blood subsequently produced from the orifices, than that which is abstracted by the leeches themselves. We ought, therefore, to be acquainted with the best methods of accomplishing our object in this respect. Heat, on account of its exciting blood to the leech punctures, is usually resorted to with effect. It may be applied by



means of a sponge and hot water, and should be persevered in every five minutes, until a sufficient quantity of blood has been lost; but if the process has been performed on any part of the body which can be conveniently immersed in a vessel of hot water, or where, by sitting or reclining in a hip-bath, &c., the bleeding orifices can be covered by the water, these methods should be preferred. Even the warm-bath generally, in some instances, will be requisite and useful during the continuance of the bleeding; as in inflammation of the bowels, &c. The warm hip-bath will also afford essential auxiliary assistance in the subduction of the inflammatory excitement; these are peculiarly appropriate to be used in cases of internal, visceral, or deep-seated inflammation; but when the disease is situated superficially, the poppy fomentation will be the most desirable application to encourage the discharge, and emollient poultices, composed of the same liquid and crumb of bread, applied over the orifices after the bleeding has continued for some time. The poultices will absorb the blood as it is discharged, and, by their soothing and anodyne properties, prevent the punctures from inflaming. They will also allay the irritability and pain of the affected part better than any other application.

*Cupping-glasses* (in cases where it is wished to



abstract a larger quantity of blood than can be readily obtained by leeches), may be applied over the punctures in the same manner as after the use of the scarificator in the operation of cupping, provided the part be not too tender to bear their application. In this way almost any quantity of blood may be usually taken; but as leeches are frequently applied to parts highly inflamed, or in a very irritable state, the application of cupping-glasses cannot always be employed without increasing these symptoms; in such cases I would recommend those invented by that ingenious surgeon, Mr. Welsh,\* of Haddington. With these the blood is extracted by the suction of the mouth, and are not attended with the same inconveniences as the common glasses.

There is another method by which the bleeding by leeches may be encouraged, and to cause one leech to answer the purpose of several; and that is, either by making an incision into the tail of the leech whilst in the act of sucking, or by snipping off that extremity with a *sharp* pair of scissars; then by hanging the extremity over a glass, or any other proper vehicle, the blood will flow into its guttation as fast as the leech receives it, and by this

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\* An excellent account of these glasses is published in the 11th volume of the Edinburgh Medical and Surgical Journal, p. 193.



method, as large a quantity may be received as is wished; for they continue to suck, to make up for loss they sustain. The only objection to this is, that leeches will not always remain affixed after suffering this mutilation, so that it will not in every instance be practicable to leave a sufficient number on the part to answer the expectation. This experiment should be tried soon after the leeches have fixed themselves, whilst they are yet hungry; for if it be resorted to when they have nearly had their fill, they will immediately drop off. The instrument likewise should be particularly sharp, that the operation may be effected in an instant. I have known many leeches regenerate, and survive these operations.

*Quantity of Blood abstracted by Leeches.--*

Very erroneous notions are entertained respecting the quantity of blood which leeches are capable of extracting; and as these errors have been repeated by high authority, I must take leave to state my own experience, which is confirmed by the testimony of many persons whom I have consulted. The quantity, as stated by numerous authors, varies from three drachms and a half to an ounce to each leech. I have, it is true, sometimes known very large foreign leeches, from whom an ounce of blood has been pressed, but the average quantity obtained by those in the most



general use is about two drachms each ; but there is usually more lost by the subsequent bleeding than is taken by the leeches, (*See the last article, and an extract from Dr. Fowler's work, under the head Rheumatism:*) but the quantity must necessarily vary very materially in different cases, and where cupping-glasses are subsequently applied, or the blood is collected into a vessel by puncturing or cutting off the tail of the insect, the quantity may be readily ascertained.

*Appearance of the Blood.*—Persons often draw conclusions of the state of the constitution and danger of the disease, from the appearance of the blood brought away by leeches. Now, though the appearance of the circulating fluid often presents characteristics, when received into a vessel, after flowing quickly from an opening made by a lancet into a large vein or artery, by which much assistance is derived in the knowledge and treatment of disease, yet this cannot be expected to be obtained from the peculiar manner in which local bleeding is performed, and especially that by sangui-suction. It is well known to medical practitioners, that the apparent properties of the blood abstracted by venesection is considerably modified by the manner in which the operation has been conducted, whether flowing freely through a large orifice, or trickling guttation from a small one. How much then this fluid is influenced by the peculiar circumstances



of the case, in the operation of leeching, can be readily imagined. The insect takes the blood extremely slowly; this alone modifies the result. It is next subject to the action of its gastric organs; and, as far as we know, (and it is at least a reasonable supposition), undergoes some change from this source; next, some leeches abstract venous, whilst others are feeding on arterial blood; they are now made to reject the engorged fluid, perhaps at separate periods, or at least in distinct portions, and, to crown this absurdity, as a physico-pathological inquiry, the rejection is effected by a chemical agent (salt or muriate of soda) which not only instantly communicates to dark venous blood the florid hue of arterial, but has the property of preventing its coagulation, a process by which alone we can form any estimate of its state relative to health or disease; nor is the matter much bettered in evacuating the leeches by stripping them, as the blood is still influenced by a sufficient number of the preceding objections to render its appearance fallacious. No sort of information is then to be obtained by this test; and the hopes of some, and the apprehensions of others, which have been excited by the variety of appearances induced, are thus shewn to be totally without foundation.

*Profuse Hæmorrhage succeeding the application of Leeches, and the methods of suppressing it.—*



The bleeding from the perforations made by leeches, is not only occasionally very tiresome and difficult to stop, but it now and then pursues a most obstinate course; and a severe hæmorrhage, bidding defiance to a great variety of applications, for its suppression, is the consequence. This usually happens when the leech has fixed itself upon the branch of an artery of some size, or perhaps on a vein (though it is very rare that any considerable hæmorrhage will occur from the latter); it becomes therefore necessary, that we should be acquainted with the most essential methods of putting a stop to it as soon as we believe that a sufficient quantity of blood has been obtained, otherwise life might be endangered by a continuation of the hæmorrhage, beyond what is necessary to the relief of the disease, or incompatible with the powers of life to support. Infants, persons of delicate constitutions, and the aged; those reduced by protracted maladies, or affected with disease, in which, to sink the constitution below a certain standard, is to plunge the patient into an irremediable state of collapse, might be fatally injured by a neglect of this kind. When, therefore, it becomes desirable to stop the bleeding, and the part will allow of the application of a bandage, a piece of sticking-plaster may be put upon each wound; a soft slip of folded linen or lint laid over



them, and a roller around the whole, so as to give sufficient pressure to close the bleeding orifices: or a pledget of lint alone, folded hard, will often answer the purpose. But it will sometimes be found, that the blood, still continuing to ooze, prevents the plaster or pledget from adhering to the skin, and the compresses are found soaked with the discharge. The whole should now be removed, and the part having been well sprinkled with flour, or, what is better, powdered gum arabic; or, if it can be obtained, the *Lycoperdon bovista*, or puff-ball; pledgets of linen or lint should be placed over them, and the roller applied in the same manner as before. A substance in common use is a bit of felt, scraped from a beaver hat, which can at all times be readily procured. A pledget of this substance, rolled up hard, and confined on the bleeding orifices, I have frequently found to answer the purpose of checking these tedious hæmorrhages, as I likewise have the sponge-tent, or even small bits of sponge, rolled in flour, starch, or powdered gum arabic. The ancients applied bole, and a sponge dipped in liquid pitch.

Should the hæmorrhage pertinaciously continue, or the part be such as not to admit the use of a bandage, the wounds should be wetted with vinegar, or some kind of ardent spirits, as brandy or spirits of wine; and if these fail, the spirits of



turpentine should be used, or the muriated tincture of iron, or the diluted sulphuric acid; the latter I have found very effectual. Pledgets of lint may be soaked in either of these fluids, and laid on the bleeding orifices. The leech punctures, in cases where the hæmorrhage continues to resist the usual means, may be touched with a piece of blue vitriol scraped to a sharp point, so that it may penetrate the bottom of the wounds.

Some persons have recommended a red hot knitting needle to be introduced into the bleeding openings; it is true, that the actual cautery will almost certainly instantly stop the hæmorrhage, though even a blood-vessel of some size should have been opened; but, to most persons, it is a terrific remedy, that would alarm the mind, and would be submitted to but in a very few instances. The best and quickest method of checking these obstinate hæmorrhages is, to scrape a piece of lunar caustic to a fine point, and introduce it for an instant into the perforations. It instantly stops the bleeding in most cases, which does not again recur. In less urgent cases, a small bit of lint moistened with a weak solution of the caustic, introduced by the point of a probe into the openings, will procure the same desirable effect. A weak solution of tartarized antimony in water, I am told, has lately been much used in some of the



hospitals in town, to suppress these hæmorrhages, and has succeeded, it is said, in many cases where other means had been ineffectually employed. Pressure on the bleeding orifice with the finger, will at all times restrain the hæmorrhage (with or without a small dossel of lint upon the opening,) so long as such pressure is continued; and, in some obstinate cases, I have caused it to be persevered in until the bleeding has entirely ceased; but, as the practitioner can seldom devote sufficient time for this purpose, and as persons charged with its performance cannot always be depended upon, it will at all times be more desirable to suppress it completely by some of the means which I have before mentioned. If a branch of an artery of any size has been opened by the leech, and the hæmorrhage should not be readily suppressed by the common means, the most effectual method will be to take up the artery, and tie it with a ligature in the usual manner.

I cannot in this place forbear relating a curious circumstance which occurred in my knowledge a short time since. A young lady had been leeches and blistered upon the chest, for inflammation of the lungs. A hasty message was sent, requesting my immediate attendance. On my arrival at the house, I found the whole of the patient's friends in a state of dismay, occasioned by the appearance



of the blistered surface, which they assured me was in a "frightful state of mortification." The part being exposed to my view, the appearances seemed to justify their fears; a large purple bag, corresponding with the size of the blister, elevated about an inch above the neighbouring parts, and certainly partaking of all the external characters of sphacelus, presented itself; and it was not till after a close examination, that I discovered this appearance to be occasioned by an oozing from one or more of the leech-bites, the blood having trickled down and insinuated itself under the cuticle, previously separated by a blister.

*Inflammation and Soreness of the Punctures made by Leeches.*—In encouraging the bleeding after the application of leeches, care should be taken not to irritate the bitten parts by too much rubbing or wiping; as the punctures, by such means, will become inflamed and troublesome. In short, pain, irritation, and erysipelatous inflammation, not unfrequently supervene to the application of leeches when even the greatest care has been used; there are some constitutions peculiarly susceptible to such consequences, arising probably from some idiosyncrasy. Where there exists a great diminution of the powers of life, in the aged and in very young infants, these effects are most liable to happen. Such untoward symptoms may be often



prevented by the application of bits of adhesive plaster to the punctures immediately after the bleeding has ceased, covering them over with fine linen, lint, or a warm dry napkin. A soft poultice, composed of decoction of white poppies and crumb of bread, as already recommended, is likewise an excellent application to prevent inflammation of these punctures, and to subdue it when it occurs.

*Management of Leeches after they have been used.*—Leeches possess this singularity, that, although they prefer to subsist on food, yet they can live for years without it, or at least upon that trifling nutriment they necessarily obtain in suction from water. They are of the species usually denominated cold-blooded animals—that can take a sufficiency of food at once for their subsistence for a considerable period, on account of the extreme slowness of the process of their digestive powers. But the time must necessarily arrive when the nutriment originally taken will be wholly exhausted; and this, I think, must occur in a much shorter period, where there are a great number confined in the same vessel; where the animalculæ generated in the water are merely sufficient to preserve the vitality of a few, instead of the supply of a congregate body. They then no longer preserve their wonted tone, firmness, and vivacity, but become weak, flaccid, and torpid; and cannot always be



induced to perform the office of sangui-suction, at least without much trouble and solicitation; they will be devoid of sufficient strength for the exercise of their functions; and when they do attach themselves to the skin, will suck very slowly, being sometimes more than an hour before they fall off. It is the want of nutriment, too, I conceive, that is often the cause of the great mortality which occasionally prevails among leeches, and yet, strange as these circumstances may appear, a notion exists, (for persons are too much led by received opinions,) that these useful creatures will not only live for an unlimited time without any food at all, but it is absolutely necessary for their preservation, (after the process of sangui-suction,) to divest them of that nutriment they have so eagerly obtained. The liberal application of salt to cause them to eject the blood, has therefore been generally resorted to; but it is a cruel and unnecessary expedient; it severely blisters the part with which it comes in contact, and very frequently occasions the death of those thus treated. Besides, the sprawling about of leeches ejecting the fruits of their toil, has an unsightly appearance in the chamber of the sick.

In the course of numerous experiments, I have found, that if leeches, after the operation of sangui-suction, be suffered to retain the blood, and



merely thrown into a jar of fresh water, they will become remarkably healthy and firm in their texture, gradually losing their increased bulk, and, after the lapse of a month or two, will be found to perform their functions again equally, and perhaps better than leeches which have not been employed for the same purpose. I have likewise observed, that these leeches have remained perfectly healthy during the season when great mortality has prevailed amongst others. The blood is preserved by the gastric juice of their stomachs, in a state of fluidity, until it is entirely consumed. But instances will frequently occur where the same leeches are almost immediately required for another application. In cases where this is likely to happen, the best method is to *strip* them, which is done by taking hold of the leech between the thumb and finger, and drawing it between the two fingers of the other hand, thus forcing the blood mechanically through the mouth. If this be conducted slowly and carefully, avoiding any violence, it may often be effected without injuring the organic structure of the leech; but so tenacious is it usually of the fruits of its labour, that it does not always surrender it, until it has received more violence than it is capable of surviving; when, however, this has not been the case, leeches thus stripped will in general immediately resume their functions



with as much eagerness as in the first instance. If, however, their services be not required for present application, they should be suffered to retain a portion of the blood for their support—one third may be sufficient.

Vinegar makes them sick without injuring their bodies; the head may be dipped into it, and the leech will immediately vomit; the whole of the blood will thus be regurgitated, and the insect again be capable of an immediate re-application.

If salt be used, a few grains only will suffice, instead of covering the leech over, as is usually done; but a weak solution of salt and water is preferable to salt alone. There is one great objection to the employment of these chemical agents, which is, that they usually cause the leech to throw up the *whole* of the blood, leaving none for its nourishment.

*Prevention of the ill effects resulting from the accidentally swallowing of Leeches.*—In the event of other insects being taken into the stomach, the action of the gastric juice upon them, and the want of air, will be immediately destructive to their existence; but these causes do not appear to have the like effect upon the leech, which is a species of vermes, (*intestinalis*); on the contrary, they will take advantage of their situation, by commencing the operation of their natural functions.



Small leeches are occasionally admitted into the fauces, throat, and stomach of country people, in drinking the waters of ponds, rivulets, &c.; and this would appear to have been a frequent occurrence in ancient times, if we may judge by the number of remedies adopted to prevent the ill effects arising from such accidental circumstances.

I am well assured, that a great number of distressing instances of this kind occurred amongst the troops of the allied army in the Peninsula during the late war. In some cases, soldiers were attacked with spitting of blood, which continued for several days before the cause was ascertained; and, on examination, small leeches were discovered about the root of the tongue, &c. In horses they were frequently discovered underneath the tongue.

The following extract from an article in the *Medical and Physical Journal*, will shew the manner in which these accidents were successfully treated in the French army in Egypt:—

“ When the French army entered upon the deserts which separate Egypt from Syria, the soldiers, pressed by thirst, threw themselves on their mouths and nose, and drank freely of the muddy water they met with, and which, unknown to them, contained leeches, having the form of a horse-hair, and being only of a few lines in length. Many of



them felt immediately stings or pricking pains in the posterior fauces, followed by frequent cough, glairy spots lightly tinged with blood, and a disposition to vomit; with a difficulty of swallowing, laborious respirations, and sharp pains in the chest; loss of appetite and rest, attended with great uneasiness and agitation. On pressing down the tongue of the individual first attacked, a leech was discovered, which was with difficulty removed with the forceps. Little or no hæmorrhage followed, and the patient recovered. Leeches that had attached themselves to the posterior fauces, were removed by the use of gargles, composed of vinegar and salt water. The chief of a brigade, Lauteur Mauberg, commander of the 22d regiment of chasseurs, swallowed two in the desarts of St. Makaïre, a day's journey from the pyramids; which so weakened him, that his convalescence was long and difficult."

Ætius says, when a leech is swallowed, it may be ascertained by a burning sensation in the stomach and throat. If the pain is confined to the stomach, he advises a large draught of salt and water, in which assafoetida has been dissolved: and if the leech be fixed in the throat, he advises the holding of cold water in that canal, to allure him to retreat from his position. He also recommends sternutories of hellebore and elaterium.



## APPENDIX.

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IT is not my intention, as I have already observed, to enter into a description of the natural history of the leech, except, by way of appendix, to give a sufficient delineation of its external structure, as to enable my readers to recognize it correctly; next to add a few short directions for its management and preservation; and, lastly, to point out the diseases to which it is subject.

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### DIFFERENT SPECIES OF THE LEECH.

OF the genus *Hirudo*, there appears to be several species; but of these, there are but two kinds which are properly adapted for our purpose, viz. the *Hirudo Medicinalis*, or the medicinal leech; and the *Hirudo Troctina*, or the trout leech. An interesting work\* has been published on this subject, to which the naturalist may refer, containing

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\* "A Treatise on the Medicinal Leech, by James Rawlins Johnson, of Bristol, M.D. F. L.S." Published at London, in 1816.



a copious description of all the species of leech that have been known.

The distinguishing marks of the true leech are,

(a) THE MEDICINAL LEECH, (*Hirudo Medicinalis*,) or the striped leech. (*Hirudo nigrescens flavo variegata*.—HILL'S *Hist. Anim.* p. 16.)

Small head, flat shining body, of a blackish or dull olive green colour; six yellow lines running down the back, the belly variegated with ash-coloured and black spots; length about three inches. Is an inhabitant of rivulets, stagnant waters, and shallow muddy ponds.

(b) THE TROUT LEECH, (*Hirudo Troctina*,) so called from its resemblance (as regards its coloured rings or spots) to the trout. Colour brown, studded on the back with black spots, surrounded by golden coloured rings; the sides of a yellowish hue, the belly a yellowish green, with black spots. Inhabits the sides or banks of muddy ponds.

It is to be observed, that the yellow lines or spots on this and the last species grow very faint in some leeches, at certain seasons of the year. The ground colour also much depends upon the colour of the soil producing them, and the belly of the continental leech is more uniform in its colour, than streaked, like the English.

2. THE HORSE-LEECH, (*Hirudo Sanguisugæ*—*Hirudo Maxime vulgaris*—*Raius*; Ins. 3.—*Hirudo*



*nigra Abdomine Plumbeo.*—HILL's *Hist. Anim.* p. 16.) Skin smooth and glossy; the body is depressed, the back is dusky, with brown and green stripes, the belly of a yellowish green. It wants the yellow stripes and variegated spots of the two former species; but still it approaches nearer in likeness to them than any others do. Inhabits stagnant waters and running streams.

Dr. Johnson describes the three species just mentioned as possessing ten eyes.

3. THE COMMON LEECH, (*Hirudo vulgaris.*) Yellow belly, and black lines on the back. This species is said to possess only eight eyes. It is found in ditches, &c., and is of no use for medical purposes, as it will not perform the office of sanguis-suction. Is usually small in size.

For a description of the other various species of leeches, with a detail of their anatomy and natural history, I refer the curious reader to Dr. Johnson's excellent work, the perusal of which alone can afford him sufficient satisfaction on this interesting subject.

A German author, who has devoted many years to the study of the leech, differs with Dr. Johnson respecting its possessing eyes. He observes, that on each side of the first ring of the upper lip, three small black spots or tubercles make their appearance, elevating themselves in a somewhat globular



shape; and two similar ones are seen on the upper rim of the following rings. These spots, which, in the largest leeches and in the clearest light, can scarcely be perceived by the naked eye, *when the lip is distended lengthways*, he supposes, have erroneously been taken for the eyes of the insect, but he is of opinion, that the leech is entirely destitute of the faculty of sight, and considers these supposed eyes to be mere organs of feeling; which he endeavours to prove, partly by the animals not shewing the least sensibility of light, and partly by its actions, as it always bends the lip in the shape of a hoof whenever it is going to quit its place, not previously touching every occurring object with the point of the lip, but rather touching, and in a manner feeling for it, with the sides where the eyes are supposed to be situated.—Vide *London Medical and Physical Journal*, vol. xli. p. 312.

I had not been betrayed so far into any part of the anatomical structure of the leech, but to mark the discrepancy in the opinions of two authors, whose works are both highly respectable, and must necessarily influence the minds of their respective readers. As far, however, as my own microscopical observations have enabled me to judge, I have no doubt of the leech possessing eyes.

The medicinal and trout leeches are therefore



the only ones proper for application to the human skin. The ancients were very fastidious in their selection of the proper species, and somewhat whimsically attributed many diseases, both local and general, to the bites of such as are improper to be used. Their directions for the selection of the true kind are, however, very judicious, and are found very nearly to correspond to the description of those which we prefer at the present time. Leeches, say they, fit for applying to the body, have small heads, and are of a brown or green colour, with longitudinal lines on the back, whilst they rejected those of a very red or black colour; and yet it would appear, by a case before related, that even horse-leeches were occasionally applied without any ill effects. Indeed, I do not believe in the notions respecting the noxious effect of the bites of some kind of leeches, for I have not been able to discover a specific quality in any of the species; foreign leeches, on account of their size, running larger than those of our own country, I have observed to make larger orifices, and these orifices are consequently more prone to inflammation than the perforations of smaller ones.

But there are peculiar constitutions to whom the bite of the leech is particularly obnoxious, producing erysipelatous inflammation and swelling, and even occasionally much constitutional disturb-



ance ; and these effects I have witnessed after the application of the best selected species ; there exists, however, a violent and general popular prejudice against the horse-leech. A medical gentleman of my acquaintance, directed a leech to be applied to the temple of a child, who subsequently died. A by-stander having capriciously observed, that the leech was a " horse-leech," an alarm was communicated ; the child's death was attributed to the leech, and a violent clamour in consequence was raised in the neighbourhood.

The purchaser, therefore, whether a medical practitioner or not, would do well to examine the leeches which he is about to receive, to ascertain the species to which they belong, and particularly to distinguish them from the horse-leech, as it is called.

The medicinal leech has become so very scarce in England, a circumstance which may be attributed to the increased demand for them, and to agricultural improvements in draining waste lands, that we obtain from France and Portugal the greater number of those supplied to us by the leech-dealers. These continental leeches are preferred to the English of the same species by some persons, being considerably larger. It seems that they do not arrive at that state of perfection in growth in northern climates, as in more temperate ; those



found in tropical countries being twice the length and size of the natives of colder regions. I have been informed by one of the dealers in leeches, that the best trout leeches are to be obtained near Axminster, in Devonshire; and these he describes as being superior to any other, either English or foreign.

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### PRESERVATION OF LEECHES.

The necessity of knowing how to preserve these useful creatures will be apparent to all, when the extent to which they are used, and the still greater extent to which they may be employed, are generally known.

The number of leeches every day used for the purpose of local bleeding, is so very considerable, even in England\*, (where, by comparison, the practice may be said to be neglected,) that it is a proof that they are considered as truly valuable adjuvants in the treatment of disease. On the Continent, however where they are obtained at a much cheaper rate, their numbers employed are enormous. We hear, indeed, of individual cases,

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\* There are four principal importers of leeches in London alone, whose average imports are said to be 150,000 per month each; making a total of 600,000, or *seven millions two hundred thousand* in one year.



where 250 leeches were applied to the same patient within twenty-four hours; and it appears, that in the year 1819, *several hundred thousands* were employed in the Parisian hospitals alone. It is more than probable, that could leeches be procured with as much facility, and with as little expense in England, our consumption would fall little short of our Gallic neighbours; but a competition in numbers with them, it can hardly be expected we can maintain, when the price is considered; and it is known that we already employ *one hundred* foreign leeches *to every individual British one*; the importation (which is attended with considerable expense, and a heavy duty imposed by government) having a ratio of demand, which, to many poor families, amounts to a prohibition. The decrease of the English leech, and the great devastation of those which are imported, from the diseases to which they are subject, and the want of knowledge in persons how to preserve them, adds to the evil of rendering them, in the issue, still more expensive; and, I might have added, the increased reputation which the leech has, of late years, acquired. Again, times of scarcity are sometimes occurring, when they are to be obtained only at a most enormous rate: half-a-crown and five shillings per leech has been demanded and obtained



during the late war, before their importation (which, by the way, is a new species of merchandize in our catalogue of imports) commenced.

To prevent the recurrence of such circumstances as this, to bring the possession of these useful little animals more within the means of every one where their services may be required, in lessening the obstacles and expense, by pointing out a few concise outlines of the best methods of preserving them, has been one of my objects in taking up my pen: if I should succeed in any of my endeavours, I shall be amply repaid for the trouble I have taken, and my pretensions assume no higher satisfaction.

Previous, however, to giving any advice or directions of my own on this subject, let us inquire into the usual habits and economy of the leech. Let us first investigate "Nature's laws," and these will instruct us more than a volume of directions.

In winter the leech resorts to deep water, and in severe weather retires to a great depth in the ground, leaving a small aperture to its subterranean habitation. The leech begins to make his appearance about the latter end of March, or in the beginning of April; and in a bright sunshine day will swim from place to place, delighting in shallow water, where it can be exposed to the sun. In summer, when there is danger of the drying up of



the pools it inhabits, it will retire to a great depth in the mud. In rainy and stormy weather leeches will disappear from sight; and just before a thunder storm, they will come to the surface of the water in great numbers, when the leech collectors find it a good opportunity to gather them.

Water alone is not the natural element of leeches, as it is supposed, but conjointly with ground or mud. They will even live on the dry earth for a very considerable time, crawling about like earth worms. I knew an instance where a leech made its escape from a phial, in fine summer weather, and was found perfectly healthy, on dry soil, after the lapse of several weeks, though there was not a drop of water near the place.

*The usual food of the medicinal and trout leech* is derived from the suction of the spawn of fish; and leeches will not unfrequently be found adhering to the fish themselves; but frogs form the most considerable portion of their food. Hence it is, that the best leeches are found in waters much inhabited by these animals. Dr. Johnson relates an instance where a frog was put into a vessel containing six *medicinal* leeches; the whole number were seen to fix themselves on the animal immediately, and the next morning it was found dead, and no doubt drained completely of the whole of its vital fluid. Medicinal leeches have also been



known to attack, in like manner, and destroy the common water lizard.

The medicinal and trout leech, however, do not, I conceive, like the horse-leech, take any *solid* food; nor have they the like propensity to destroy their own, or any other species of the genus: but these the horse-leech will not hesitate to devour.\*

Dr. Johnson, in a series of experiments which he made relative to the natural history of the leech, placed a medicinal leech in a vessel containing about forty horse-leeches. In a short time he observed the leeches to be clustered together, and the medicinal leech making great efforts to recover its liberty. On separating them, he observed the latter to have received three wounds, of which it soon recovered, when replaced with its own species. He likewise presented a large-sized medicinal leech, gorged with blood, to about thirty horse-leeches. As soon as the medicinal leech saw the others in motion, it endeavoured to avoid them, by swimming to the surface. It was, however, in a little time seized upon, and dragged to the bottom of the vessel. In a few minutes the water

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\* This affords a wholesome hint to leech dealers, to carefully examine their stock, and separate the different species from each other, and particularly to remove those which may be considered "horse-leeches."



had assumed a bloody tinge, and the leech was quickly deprived of life. To ascertain whether the medicinal leech was destroyed merely from the natural ferocity of its enemy, or to serve as food, the Doctor repeated the experiment, taking care previously to feed the horse-leeches with earth-worms. He then presented to them two medicinal leeches, which immediately swam to the surface, and attached themselves to the upper part of the vessel, in order to avoid their enemies; but the horse-leeches did not make the slightest attempt to molest them.

The Doctor counted into a glass vessel sixty-five horse-leeches. Five days afterwards, he found the number reduced to fifty-two: no less than thirteen having, in the short space of five days, been destroyed; not even a vestige being left to denote their former existence!

The same learned author presented two common rivulet-leeches to a horse-leech. In a short time he observed the head of one of the former in the mouth of the latter, who, by the force of suction alone, drew the whole animal into its stomach. The operation took up a quarter of an hour; but its gluttony was not then satisfied, until it had swallowed the other. Three days afterwards one of these leeches was thrown up *in a living state*, having suffered but little injury from its confine-



ment; and, after the lapse of a few hours, was again swallowed.

The Doctor, wishing to ascertain the number of common leeches (*Hirudo Vulgaris*) which two horse-leeches would devour in a given time, placed two horse-leeches in separate vessels, supplying them constantly with dead and living common leeches; and the numbers devoured in *one month* were as follows:—

<i>Devoured by the Horse-leech,</i> No. 1.	<i>Devoured by the Horse-leech,</i> No. 2.
10 living, and 5 dead .....15	13 living, and 7 dead.....20

Total, *thirty-five!*

During the whole of this period, the water was turbid, notwithstanding its frequent renewal, from the vast disengagement of foecal matter which floated about, having a thread-like appearance.

In pursuing these experiments, Dr. Johnson opened three horse-leeches five days after each had swallowed a common leech. In two he could not trace the least vestige of a leech. In the third he found one about half digested, surrounded by a brown-coloured fluid; a proof of the strength of the digestive powers of the horse-leech.

Fothergill gives us an instance of a tench which was taken in the river Ouse, and put into a stone-trough, full of water, that stood in a pasture-field



for the use of cattle. A number of leeches (*Hirudo sanguisugæ*) inhabiting the spring that supplied the trough, came and surveyed the tench, and soon fixed themselves to different parts of its body. The tench was quickly deprived of life.—They then tore it (by inflicting a vast number of wounds) into such pieces as they could readily receive into the stomach; and, so persevering were they, that in a few days nothing but the mere skeleton of the fish remained.\*

The preservation of leeches intended for immediate use, (to insure success,) depends much upon the methods used with them; for even under the best regulated management, the greatest mortality will often prevail. The evil, however, may be remedied in a considerable degree, and numerous lives saved, by an attention to the following particulars:—Leeches should be kept in large stone jars which are *unglazed*; the lead which is employed for this purpose proving deleterious to the insect. Whether this occurrence is very likely to happen under proper care and attention, I am not prepared to assert; but it is true that the wholesale dealers strenuously prohibit the use of glazed vessels; and it is most probable, that their

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\* Essay on the Philosophy, Study, and Use of Natural History, p. 222.



antipathy to them is founded upon an experience, demonstrative of pecuniary failure, as leech-merchants are less addicted to abstract reasoning, than to calculations in the simple rule of "profit and loss."

Wooden vessels are equally proper: indeed, leeches are now usually imported in small casks, the size of an oyster-barrel, each containing about 2000, instead of in bags, as formerly. These are peculiarly convenient for the purpose, having a head made of stout canvass, affixed to a hoop, which is screwed on, and removed at pleasure, thus admitting the air to the leeches.

Pond, rain, or river water is the most proper for the preservation of leeches. It should not reach beyond the height of one-half of the vessel, by which means sufficient room is left for them to ascend from the water, whenever they are impelled to do so by those inscrutable laws of nature which govern their living economy.

The wholesale dealers prefer for their leeches water which has been standing a fortnight or three weeks, and they justly give, as a reason, that the animalculæ generated in it, are necessary for their support; and that if the leeches be put into fresh water, they receive no nourishment until these animalculæ are produced, and in consequence often become weak and unhealthy, through want of food.



It is on this account that water from ponds, where it can be conveniently procured, ought to be preferred. The vessels, also, which are used for the reception of leeches, must, as before stated, be large and capacious, capable of holding a gallon, whilst the leeches should not be congregated in too large a number; fifty being the utmost which it is proper to put into a vessel of this size intended to preserve them, even for a short time. If a greater proportion be put into such a vessel, with the quantity of water before stated, the largest and strongest leeches, impelled, as it would seem, by hunger, sometimes commence a destructive warfare upon their weaker fellows; restoring the proper equilibrium, by depriving of life those incapable of offering an effective resistance. This destruction usually occurs during the summer months, when the digestive powers of the leech appear to be in the most active state. It is the season of hunger in the leech, and for its taking a sufficiency of food to supply its wants for the ensuing winter. But, although medicinal leeches will frequently kill each other, by severe biting, yet I do not apprehend they ever devour those they destroy, like the horse-leech.

When the water becomes of a greenish hue, with the presence of a good deal of excrementitious matter adhering to the sides of the vessel, it



is a sure sign of the healthy condition of the leeches confined in it.

It is not necessary or proper, therefore, to change the water in the vessel so often as it is commonly done; once in every two months in winter, and every month in summer, is often enough, except under peculiar circumstances; as, in very hot weather, when it may be changed once or twice a week; or upon the water becoming bloody; in which case, it requires changing every day or two, as long as it continues to be in the least tinged: but when a repetition of this occurrence once takes place, it is a certain indication of the presence of disease amongst the leeches; and unless the precaution be taken, of immediately separating them into small parties, by placing them in different vessels, and supplying them with nutriment, a mortality, of a contagious nature, will speedily be destructive to nearly the whole of them. Let the stock of leeches be frequently examined, by removing them one by one. All those who do not contract themselves, and feel hard and firm, when grasped in the hand, should be put into a separate jar: a flabby, loose condition of the body of the leech is a never-failing indication expressive of debility and disease, and most frequently the precursor of death. The bloody appearance of the water is also produced



by the destruction amongst leeches of each other, and requires the same precaution. It will be right to throw a little clean sand into the water. This assists the leech in casting its coat, as well as to cleanse itself from that tenacious secretion which is exuded from a set of vesicles within the body, for the purpose of affording a viscid covering of defence to the external surface. They may be cleansed of this mucous substance, by placing them in a sieve, and pouring fresh water over them; at the same time cleansing with sand all those who are observed to have any excrementitious matter upon them. An extensive leech-dealer informs me, that he accomplishes this object, by placing them on a sheet, and suffering them to crawl about upon it.

The vessels containing leeches should be placed in a situation secluded from all kinds of scents or effluvia\*, and so chosen as to preserve, as much as possible, an equality of temperature in all seasons. Sudden changes of temperature appear to be hurtful to the constitution of the leech; and this is one reason that it is recommended not to change the water in which they are contained very often. Dr. Ferguson relates, in the London

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\* Does not this afford a hint, that the dispensary or shop of the practitioner, or chemist and druggist, is an improper situation for them?



Medical and Physical Journal, (vol. xiii. p. 302,) that he kept leeches more than twelve months, and only removed the water twice or three times, which continued pure, and free from smell. The only change observed was, that a small quantity of greenish matter had gathered around the sides of the vessel. Dr. Johnson mentions, also, that a leech had been kept in water unchanged nearly two years. It then died, and was found reduced one-third its original size, (a proof that something more than water is required for the support of the leech;) but the water remained pure. Dr. Kurtzmann, Physician to the King of Prussia, kept leeches alive longer than three years, without ever giving them fresh water during the whole period, except when it had become partly evaporated, he added some fresh to it; nay, he has even purposely left the dead leeches to putrify in the jar, without it seeming to be detrimental to the living ones.\*

Instances are also upon record of leeches having lived in confinement five, and even eight years. A very low degree of temperature does not appear to be prejudicial to leeches: they have, indeed, as reported by the Editor of the London Medico-Chirurgical Review, been known to survive a month's confinement in a piece of ice; and Mr. Colesworthy,

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\* Vide London Medical and Physical Journal, vol. xli. p. 484.



a druggist in Whitechapel, (who was the first that imported leeches into this country to any extent,) informs me, that he has frequently witnessed the same circumstance. About fifty degrees of Fahrenheit's thermometer is, however, a very proper medium to be preserved.

In the preservation of leeches, it is not only merely necessary *to keep them alive*, but to secure that state of health and vigour, which will enable them to execute their functions boldly, whenever their services are required.

When it is wished, therefore, to preserve leeches for any length of time, I would recommend that they should be confined in small numbers, (not exceeding four or six together,) in earthen pots, holding about half a gallon. Each of these should contain about one pound of gravel, a quart of water, and be tied over with strong canvass. The more animalculæ, small fish, &c., which inhabit the water, the better; but in case of a deficiency of these for the support of the number of leeches, a small quantity of the fresh blood of animals, in a state of coagula, may be occasionally thrown into the vessels. The observations of Horn (speaking of the impropriety of causing the leech to ungorge itself of blood) are peculiarly illustrative of the utility of this measure. He says, "Those persons do not consider that blood is the most favourite



and most salutary nourishment of this extraordinary creature (the leech); and I would ask such inconsiderate persons, how they would feel themselves, if, immediately after eating a hearty dinner, any person was to give them a violent emetic."

Where leeches are required to be kept in any considerable quantity, Dr. Johnson recommends a large vessel, provided with a false bottom, to be used for the purpose, with a turf\* placed between the bottoms; the turf, from its fibrous and matted structure, affording the leech a ready means of disencumbering itself of its epidermis, which, if suffered to remain, would not only prove troublesome, but occasionally give rise to disease. The false bottom, he says, should be raised about six inches from the real bottom, and so perforated, as to allow the leeches a ready passage; and the vessel should be furnished with a stop-cock, that the water may be drawn off as often as it may be required.

But, in the preservation of leeches for an indefinite time, it is necessary to consider whether this is not to be accomplished in such a manner that they will "increase and multiply;" an object of considerable importance, in case of war with those countries from which we receive our principal supplies.

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\* The leech-dealers frequently use the marsh horse-tail.



It is a question in dispute amongst naturalists, whether the leech is viviparous, or oviparous; the advocates for the first assert that its young (which, according to their notions, it brings forth alive) are small, numerous, and transparent, like bits of thread, and are some months before they take on their natural colour. Those who believe the leech to be oviparous, are of opinion that it deposits its ovum on the sides or banks of ponds, or conglutinate them to the larvæ of aquatic plants, and the heat of the sun is necessary to hatch them; whilst there are not wanting those who believe the leech to be both viviparous and oviparous.

Be these as they may, it has been fully ascertained, that leeches are seldom or ever productive of young when in a state of confinement. It results, therefore, that artificial ponds would be the best means to assist them in the procreation of their species, as well as to preserve them in a more healthy condition than can be accomplished by confinement in small vessels. These ponds should be made in a sandy or gravelly soil, broader at the top than at the bottom, so as to afford a bank for the leeches to creep about.—It is a plan which, I am informed, has been successfully adopted in some parts of Devonshire.

Leeches produce their young about the latter



end of April and in May; and, consequently, this is not a proper season to collect them. It has indeed been remarked, that leeches, caught at this time, die in great numbers; whilst those collected in autumn, after the month of August, in the winter, and very early in the spring, will remain healthy during the ensuing summer. The stock of leeches should therefore be purchased at these seasons.

It is scarcely needful to add, that newly-collected leeches, those which have been used, as well as the different species, should be kept separately.

The leech is supposed to be about five years in arriving at its full growth, and the duration of its life about twenty years.

## DISEASES OF LEECHES.

THE diseases to which leeches are subject, as far as our knowledge goes, are not numerous; and for those, with which we have an acquaintance, we do not possess any appropriate remedies. It is only by precaution and management that these can be averted, and their progress arrested, as well as the contamination of healthy subjects prevented.



In the treatise on the medicinal leech, to which I have before alluded, the author gives the following description, which, as it comprises most that is known on the subject under our consideration, I cannot do better than lay before my readers in his own words:—

“1st. An ulcer seated on various parts of the body, but more generally affecting the side. The part on which it is situated is usually contracted.

“When this disease first manifests itself, it presents only a small ulcerous speck, which, in the course of a few days, spreads with such rapidity and malignity, as to destroy life. This ulcer is frequently tinged with blood, and occasionally works a passage internally. Sometimes it is of little or no depth, and of no extent, appearing to be a simple abrasion of the skin. Trifling, however, as this may appear, it proves, as many must have witnessed, abundantly destructive.”

“2d. Another disease, of equal malignity, is when one portion of the body is narrowed in its diameter, and rigid, whilst another portion is studded with tumours, which, on incision, present nothing but black putrid coagulated blood.”

This constriction of the body is sometimes found to arise from a girth of exfoliating cuticle, a process which takes place every four or five days, or a portion of extremely viscid mucus from the skin



of the leech, and drawn in a rope around the body. The method I have found the most successful in cleansing them of this, is to put those affected with it into a garden pot, and to cover them lightly with fresh earth: they soon make their way through it to the surface, leaving their incumbrances behind them.

“ 3d. A disease that occasionally falls under our notice, and in its pernicious tendency equals those already described, is when the whole body puts on a flaccid appearance, with the exception of the lips, which are hard and swollen, of a purple cast, and frequently bloody.”

**CHANGES OF THE WEATHER** *are said to be predicted by leeches*; and I have heard persons assert, that they wanted no barometer whilst they possessed a globe of these animals. Indeed, Cowper, the poet, has said, that leeches, “ in point of the earliest intelligence, are worth all the barometers in the world.”

In the Supplement to the *Encyclopedia ou Dictionnaire Raisonne des Sciences*, art. Sanguse, (vol. iv. p. 773,) there will be found a curious account of some observations made on this subject by a French clergyman, who preserved a leech inclosed in a phial in the window of his chamber, for some years, which, he states, answered every purpose of a barometer. Others have made similar



observations; and from these we collect, that if serene and beautifully fine weather be expected, the leech will lie motionless at the bottom of the glass, and rolled together in a spiral form. If rain be portended, the little animal will be found to reside at the summit of its apartment, and there it will remain till the weather is settled. If boisterous winds are about to visit us, the poor little prisoner will gallop through its limpid habitation with amazing swiftness, and seldom rest till the wind begins to blow hard. If a severe storm of thunder be shortly expected to rage through the ærial element, the leech will be found to take up its abode almost continually without the water, and to discover uncommon restlessness, in violent throes and convulsive-like motions. In frost, as in fine summer weather, it lies constantly at the bottom; and in snow, as in rain, it pitches its dwelling upon the very mouth of the phial. "What causes," says one of these accurate observers, "can be assigned for these phenomena, I must leave for the philosopher to determine. One circumstance, however, is evident, that the same power which influences the mercury in the thermometer, determines the action of the leech."

That the leech is greatly affected and influenced in its motions by different states of the atmosphere, there can be no question; but in what particular



manner, the curious, who have more time for such investigations than myself, will, perhaps, ere long, more satisfactorily inform us; for I must observe, that notwithstanding the appearance of extreme accuracy in the foregoing observations, they do not accord, exactly, with the natural habits of the leech in its original place of abode, nor with the few remarks that I have myself made on the subject, having usually noticed the leech to reside at the *upper* part of the vessel in fine weather.

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#### ERRATUM:

Page 5.—for “ Thenemachus,” read “ Menemachus.”



REVIEWERS' OBSERVATIONS upon the foregoing Treatise on Sangui-suction, or Leech-bleeding.

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“WE cannot take our leave of Dr. Price's work without again recommending it to the attention of our readers; not only to the medical, but to the general reader. To the heads of families the directions for the application and preservation of Leeches are invaluable.”—*London Journal of Sciences and Arts*.

“We have extracted from this work sufficient to show, that we have derived pleasure from its perusal. It contains many hints relative to Leech-bleeding not generally known, and which cannot fail of being extremely useful to the profession at large. Dr. Price has advocated the employment of Leeches in no less than ninety-two different complaints.”—*London Medical and Physical Journal*.

“An ingenious work, on the beneficial effects of Leech-bleeding in the cure of various inflammatory, febrile, and acute diseases.”—*European Magazine*.

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\* \* \* Several medical gentlemen, and some respectable druggists, have complained to the Author of the difficulty they experience in procuring Leeches in a healthy condition, or such that they can preserve for any length of time, and have expressed their opinion that he ought to have mentioned the names of some of the principal importers of Leeches in London, by whom they might be supplied with the best selected species: the Author begs to assure his Readers that he never intended his Work to recommend the sale of Leeches,



but to point out the multifarious cases wherein their *use* would be beneficial, and other circumstances attendant on their application; those best adapted for *medicinal* purposes, and the methods of preserving them. He has endeavoured to show, that if Leeches, of different species, be confined together in the same vessel, they will destroy each other; and he has likewise ascertained that this will occur where the same species, collected from *different waters*, are mixed together. These considerations have induced the Author to affirm, that it is due to Mr. Hunter\*, to say that his assiduity and attention to this subject entitle him to the commendations of every person interested in the use or sale of Leeches. His premises and grounds are capacious and airy, and well supplied with river and spring water (the occasional use of the latter, particularly in summer, he finds to cool and harden the Leech.) He has fitted up, at a very considerable expense, a range of ventilated rooms for their habitation in winter, and a Well in his grounds for their preservation in summer. In the former are arranged numerous tubs, of a very large size, covered with canvas, which afford to the Leeches confined in them abundant room for the supply of water, and for exercise. Mr. Hunter constantly attends the foreign markets, in person, during those seasons of the year proper for collecting Leeches; and, from the care with which he selects them from the Leech-gatherers, and his precautionary methods in preserving them just mentioned, his stock has been found in general extremely healthy, and so well assorted, that their application has usually been unattended with that trouble, or their preservation with that mortality, which usually occurs where sufficient attention has not been paid to these circumstances.

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\* Mr. ZACCHEUS HUNTER, Importer of Leeches, 44, Webber Row, Blackfriars' Road, London.











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