Observations of the cure of the curved spine : in which the effect of mechanical assistance is considered / by James Earle.

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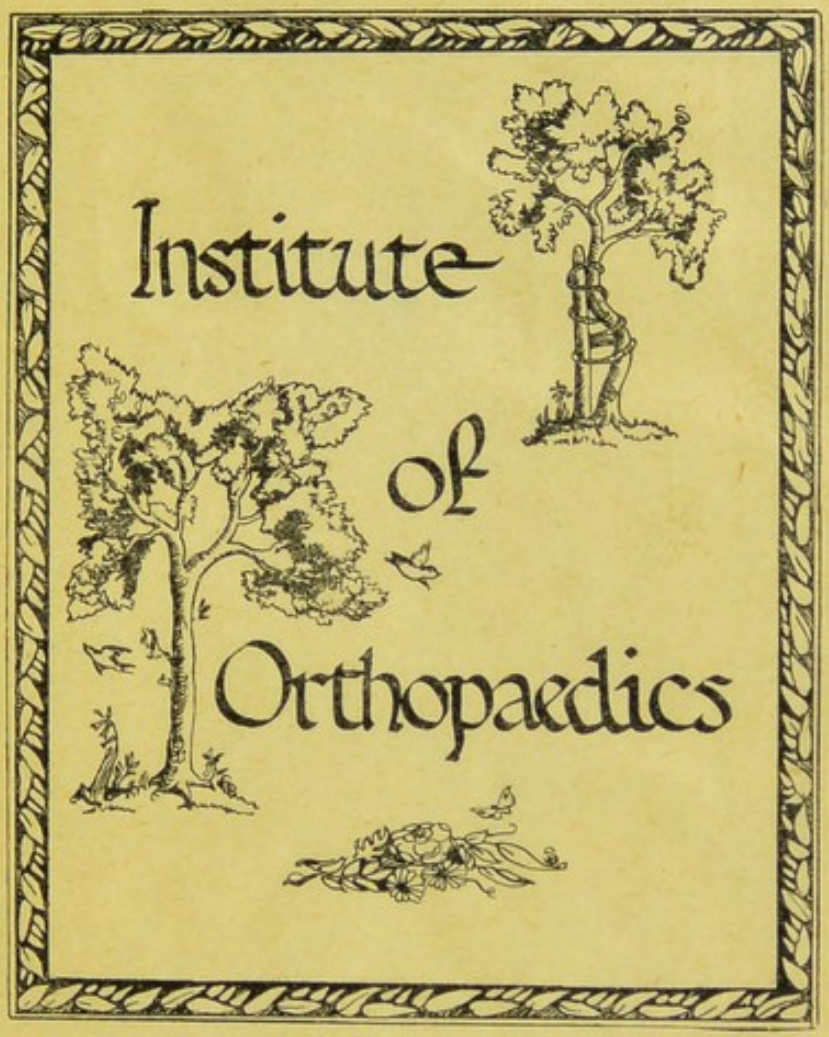
Institute
of
Orthopaedics

OBSERVATIONS

ON THE

CURE OF THE CURVED SPINE,

AND THE

Means of leſſening the Effects of Fire

ON THE

HUMAN BODY.

OBSERVATIONS

ON THE

CURE OF THE CURVED SPINE,

IN WHICH

THE EFFECT OF MECHANICAL ASSISTANCE

IS CONSIDERED.

By *JAMES EARLE*, Esq; F. R. S.

Surgeon Extraordinary to the KING and to
his MAJESTY's Houſehold;

And Senior Surgeon to ST. BARTHOLOMEW's Hoſpital.

LONDON:

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FAULDER, *Bond Street.*

1799.

To *JOHN LATHAM*, M. D.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS,
PHYSICIAN TO ST. BARTHOLOMEW'S AND
THE MAGDALEN HOSPITALS,
AND
PHYSICIAN EXTRAORDINARY TO HIS ROYAL HIGHNESS
THE PRINCE OF WALES.

DEAR SIR,

THE Object of the following Treatiſe being to aſſiſt in maintaining the upright figure of the human frame, could only with propriety be inſcribed to one who has an eye for ſymmetry and perfection, and a heart attuned to the diſtreſſes of others.

I beg the favor of your acceptance of it, and am,

DEAR SIR,

Your obedient

humble Servant,

JAMES EARLE.

Hanover Square,
Nov. 16, 1799.

OBSERVATIONS

ON THE

Cure of the Curved Spine.

THE effects produced by a curvature or diſtortion of the Spine are juſtly numbered among the moſt deplorable and diſtreſſing maladies to which mankind are ſubject: that ſuch muſt be the conſequences reſulting from this diſeaſe will evidently appear, if we conſider the important duties to which the Spine is deſtined, and which muſt be interrupted by the diſeaſes to which it is liable.

I am aware that this ſubject has been judiciouſly and amply treated by Le Vacher,

 and

and other Authors, and I ſhould not think it neceſſary to bring forward any obſervations of mine in a general view of it, but that it is introductory to, and leads me to take notice of, a particular ſpecies of curvature of great importance to mankind, and which poſſibly may receive ſome improvement from a reconſideration of the uſual mode of treating it. I ſhall therefore begin with briefly relating the uſual conſequences which are produced by morbid affections of the Spine.

The anatomical ſtructure, uſe, and offices of the Spine are well known; it may therefore be ſufficient in this place to obſerve, that, conſiſting of all the vertebræ, it forms a canal lined by membranes, which are a continuation of the coverings of the brain, within theſe the ſpinal marrow is contained, and is thus ſecurely defended againſt external injury; and that as a boney pillar, it ſupports

the

the ribs, and internally ſuſtains many of the organs eſſential to life.

It may eaſily be conceived that the natural form of this column cannot be altered without the medulla which it contains being compreſſed and injured: conſequently, the nerves given off below the compreſſion can have but very imperfect influence on the parts to which they are diſtributed, which therefore become relaxed and feeble. If the Spine be curved ſo as to leſſen the cavity of the breaſt,* the lungs cannot find room for expanſion ſufficient to admit the neceſſary quantity of air at each inſpiration; the maſs of blood, deprived of the ſalutary effects of free reſpiration, becomes thin and poor, and, ſo far from furniſhing an increaſe to the growth of the parts, is ſcarcely ſufficient for their ſuſtenance and nouriſhment; the Heart alſo,

* Vid. le Vacher.

being ſtraitened for want of room, cannot exert all its expulſive force, in conſequence of which the circulation grows weak, the ſecretions are imperfectly carried on, and all the animal functions languiſh; hence general debility, emaciation, and various chronic diſeaſes are deduced. Inflammations of the pleura, adheſions of it to the lungs, and dropſies of the breaſt are its frequent conſequences.

This unnatural alteration in the form of the breaſt, however, does not always produce ſuch bad effects. When the change is very gradually made, the organs in their growth ſometimes accommodate themſelves to their peculiar ſituation; ſometimes the form which the curve takes leaves as much room for the action of the organs as they naturally poſſeſs, inſomuch that perſons afflicted with this complaint not only live without much inconvenience,

nience, but even enjoy a good ſhare of health ; and the head being above the compreſſion is not affected, the intellect is often clear, the mind active and vigorous, and, whether it ariſes from their being prevented from following more active purſuits, or from having more time to cultivate the mind, certain it is that we often ſee deformed perſons remarkably acute, ſenſible, and well-informed. But however conſiderable the number of thoſe may be who live without much inconvenience from this complaint, it can be put in no compariſon with that of thoſe who linger out a miſerable exiſtence, and are prematurely deſtroyed.

What has been ſaid principally regards young perſons or thoſe little advanced in age ; but there are cauſes which may alter the natural direction of the Spine in any period of life. Perſons whoſe occupations oblige them frequently to keep the body in a bent poſition,

ſuch

ſuch as thoſe who are accuſtomed to carry heavy burthens on the head and ſhoulders, and thoſe who are employed in agriculture, have by degrees their Spines bent forward. Old age, which weakens the power of the ligaments and muſcles, often produces the ſame effect, when the bones give way and bend under the weight of the head and ſuperior extremities ; but in that caſe the ill conſequences which have been mentioned do not follow, becauſe the curvature has been gradually made and the cavity of the breaſt is not diminiſhed.

The diſtortion of the Spine in youth ariſes from various cauſes, among which may be enumerated bad nurſing, want of exerciſe, bad air, improper diet, and ſuffering children to get a habit of putting themſelves into, and remaining long in the ſame poſture ; weakneſs, either innate or accidental, of the ligaments, or muſcles of the Spine may alſo

produce

produce it, and curvatures may be brought on by the unequal action of the muſcles; from their being too weak or too ſtrong on one ſide, or the other; but the firſt principle of all is to be found in a weakneſs of the bones, from a ricketty or vicious ſtate of the conſtitution.

In early life this diſpoſition to grow awry may be often counteracted by proper management and attention, in uſing every means to oppoſe the diſeaſe at its commencement and to ſtrengthen the ſyſtem. If any curvature has taken place our endeavour ſhould be to erect the Spine, to raiſe it to its proper figure, and to maintain it in ſuch its natural ſituation until it has acquired ſufficient ſtrength to reſiſt the weight above; for whatever may be the cauſe of the miſchief, the preſſure of the head and other parts will, while any curve exiſts, tend to increaſe the deformity, particularly in young children. A ſlender

ſtick,

ſtick, whilſt upright, will ſupport a conſiderable weight, which when b nt; will ſink under it. It is the ſame with the Spine; when erect it is able to bear the weight of every part of the body above, but when curved, its ſtrength is diminiſhed in proportion as it deviates from the perpendicular.

The diſtortions which I have deſcribed frequently take a lateral direction, and ſometimes from within outwards, ſo as to bring the ſpinal proceſſes of ſeveral vertebræ nearly into contact; but however large and crooked theſe mal-formations may be, they rarely, if ever, produce paralytic affection, or prevent the perfect uſe of the limbs.

There is another diſeaſe of the Spine conſiſting in a diſtempered ſtate of the ligaments and bones, which, if ſuffered to proceed and increaſe, cauſes a paralyſis, or, more properly, an abolition of the powers of uſing, and ſometimes of moving the lower limbs.

To

the external ankles. This child had been ſhewn ſoon after birth to a practitioner of great eminence, who occaſionly ſaw it till his death, at which period the child had attained the age of nearly two years, without having uſed any means to give the feet the right direction. At the firſt view of the deplorable ſtate of the limbs, I adviſed the parents to apply immediately for the beſt aſſiſtance, and by careful and cloſe attention to the caſe, to make up as much as poſſible for the time and opportunity which had been thrown away. A pair of ſhoes with Irons and proper bandages were accordingly applied by Mr. Lawrie, and in a twelvemonth after I ſaw the child running about, upright and treading firmly on the ſoles of the feet. In no great length of time afterwards the inſtruments were quite unneceſſary. I have mentioned this caſe to mark the effect of prejudice, which prevented the child from

receiving

receiving the early benefit which it might have had, as was evident in another caſe of a child of the Reverend Mr. ——— of Putney, who was ſhewn to me at about the age of ten months. This child was born with the right foot inverted or clubbed, and held in the poſition deſcribed in the annexed Plate, by ſtrong muſcular contraction. The uſe of the foot was however perfectly reſtored in ſomewhat more than a twelvemonth, by the application of an Iron aſſiſted by a proper bandage, which gradually extended the contraction and retained the foot in a good poſition till the cure was effected.—

As I have touched on this ſubject I cannot but take notice of another caſe of this kind, the mode of treatment being ſomewhat different from the foregoing. This was a fine boy of two or three months old, who had the misfortune to be born with both the feet clubbed, the toes turning inward and the ſoles

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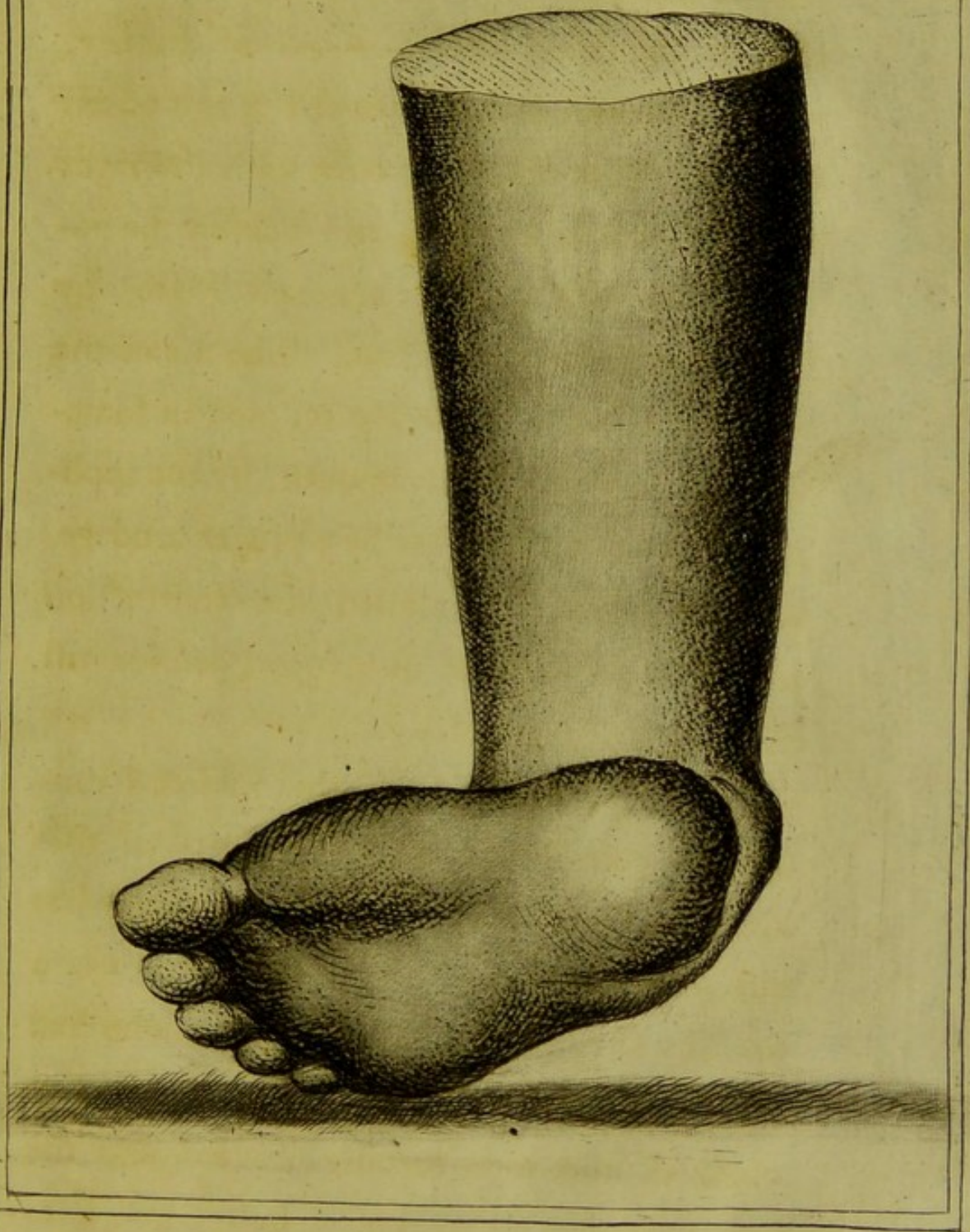

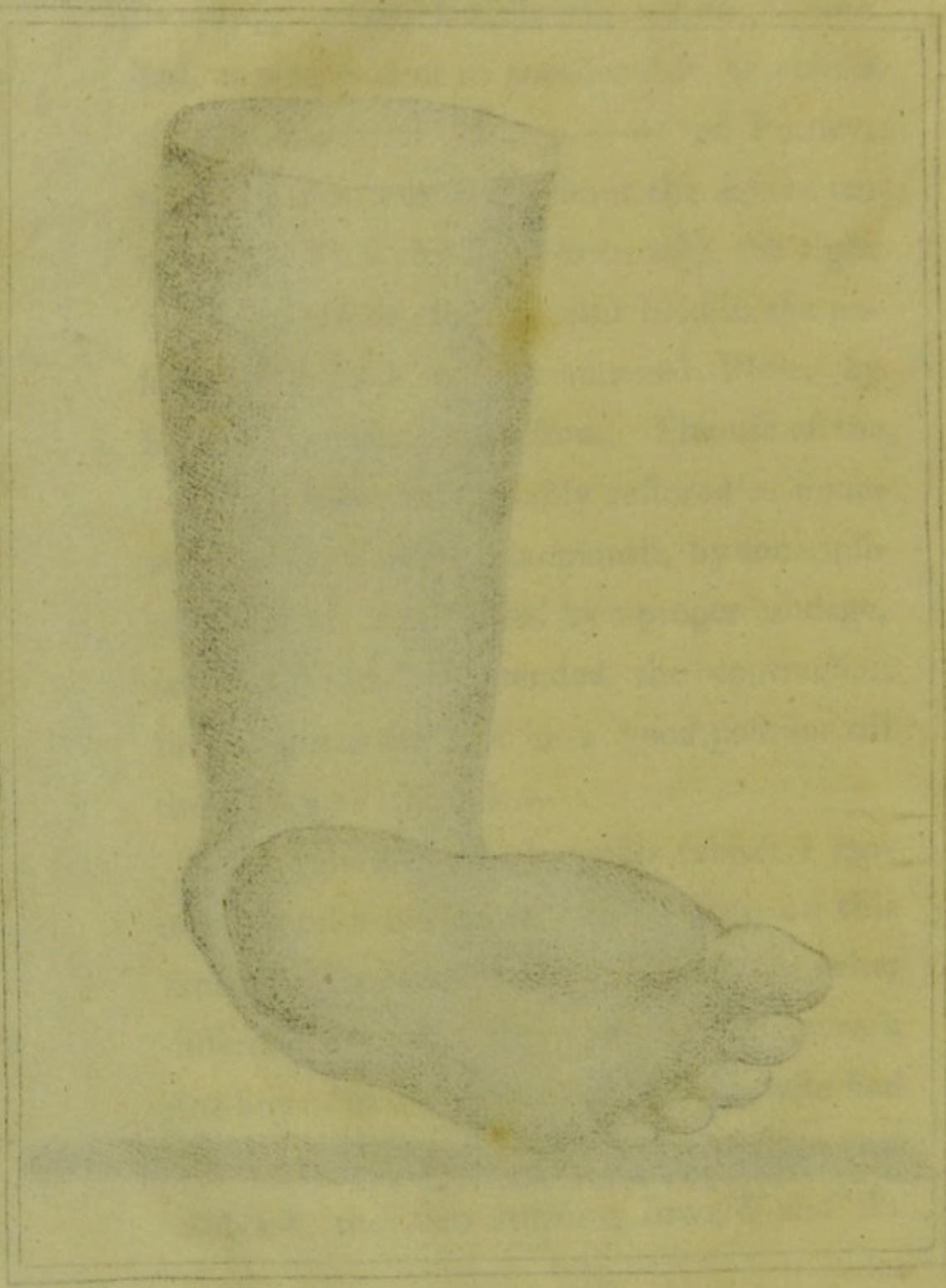

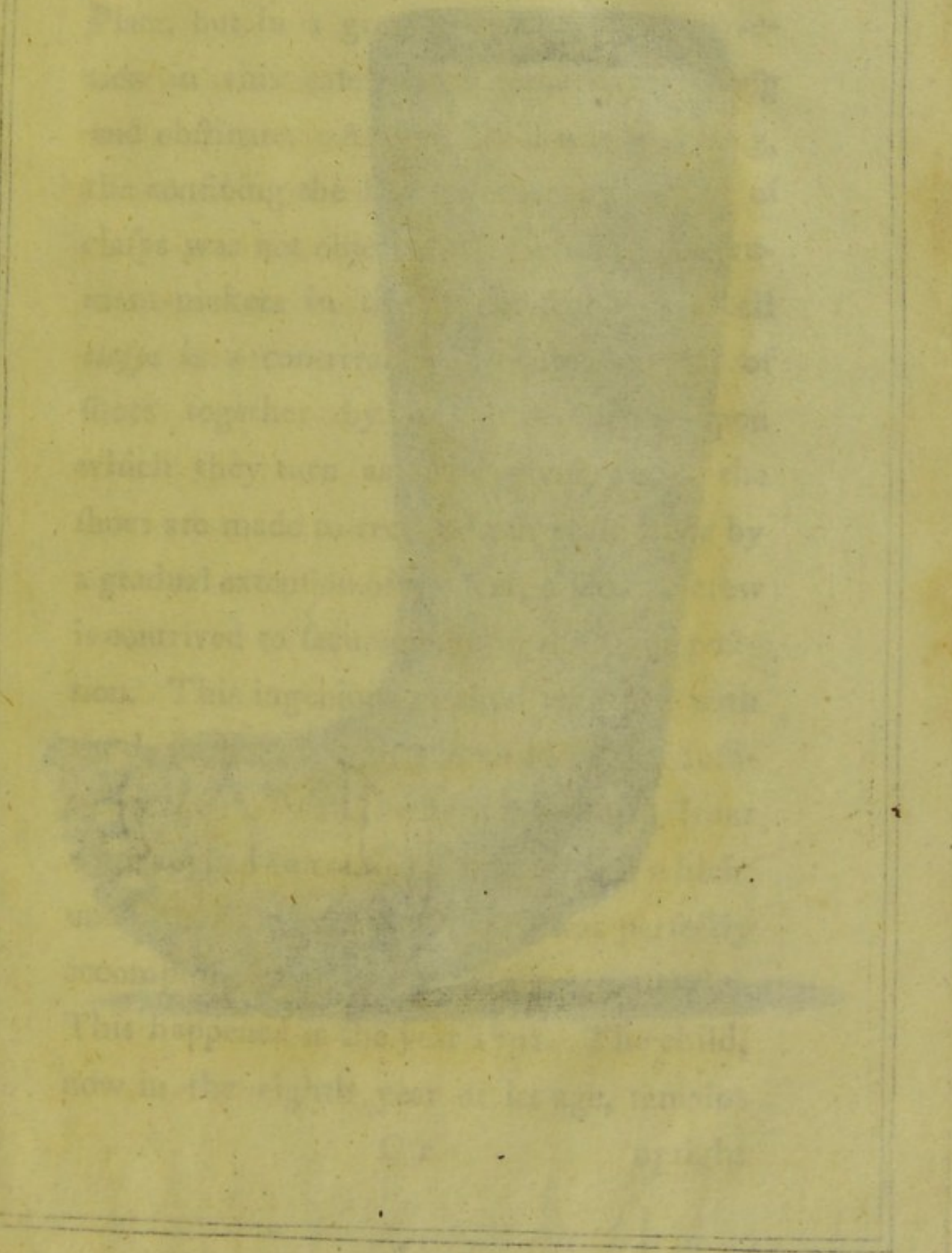

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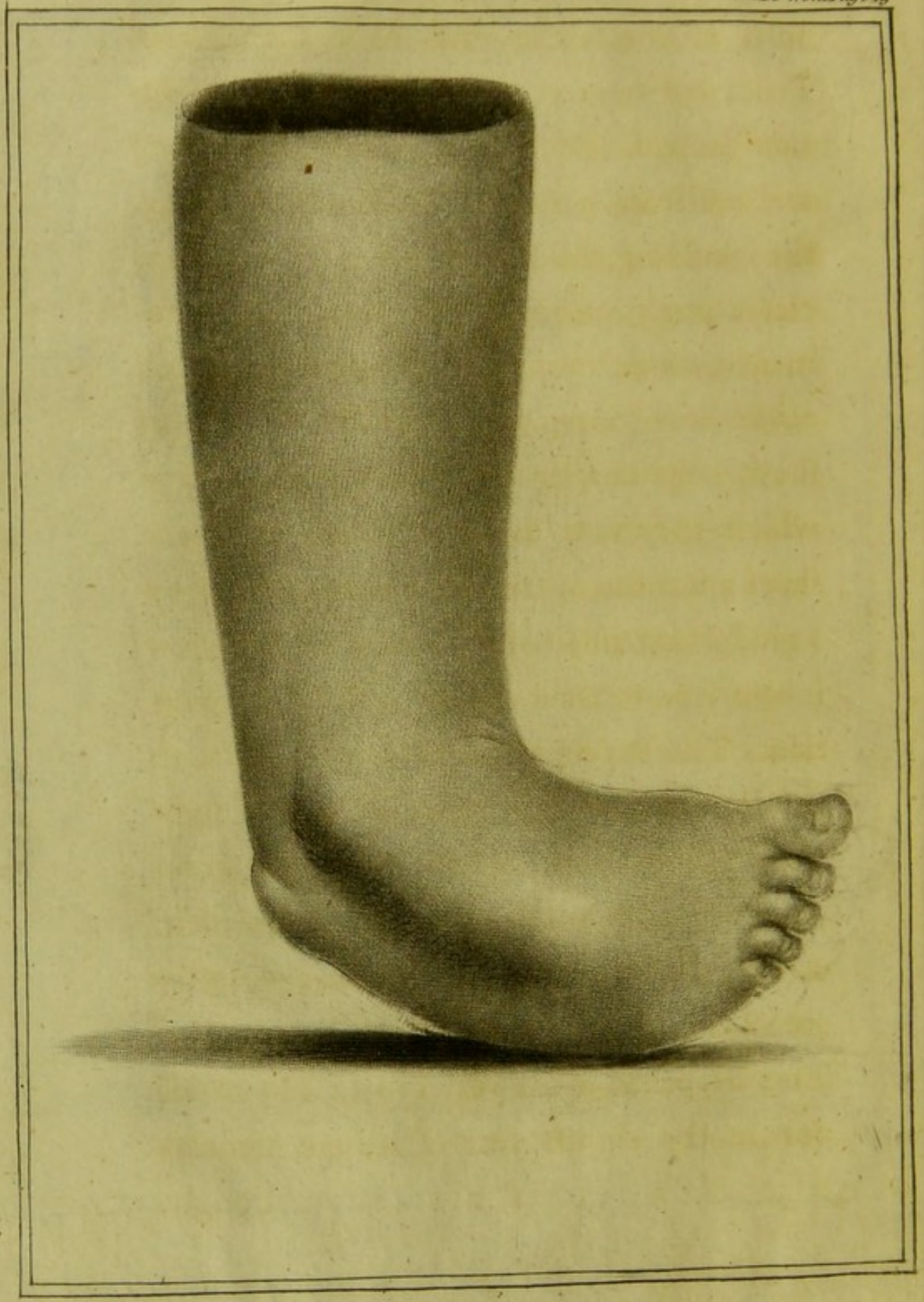

ſoles of the feet upward, as in the annexed Plate, but in a greater degree, the contraction in this caſe being remarkably ſtrong and obſtinate. As the child was ſo young, the confining the feet together by a pair of claſps was not objected to: what the inſtrument-makers in theſe caſes technically call *claſps* is a contrivance to faſten a pair of ſhoes together by a center-ſcrew, upon which they turn as on a pivot, and as the ſhoes are made to recede from each other by a gradual extenſion of the feet, a ſecond ſcrew is contrived to ſecure them in the right poſition. This ingenious method was uſed with the beſt ſucceſs until the child was of ſufficient age to walk, when the proper Irons were applied to confirm the cure, and which, under the care of Mr. Lawrie, was perfectly accompliſhed in about eighteen months. This happened in the year 1791. The child, now in the eighth year of its age, remains

upright and well, and has the perfect uſe of his feet.

I do not mention theſe caſes as altogether new, or remarkably ſingular, but merely to obſerve on the beneficial effects to be derived from mechanical aſſiſtance properly applied; and altho' it ſhould be urged that much miſchief may have been occaſioned by the uſe of Irons, I conceive, when that is the caſe, it muſt ariſe from the abuſe or miſapplication of what is in proper hands a ſafe and powerful remedy. I might add many more ſimilar caſes which have paſſed under my own inſpection and which have been treated with equal ſucceſs but that they would ſwell theſe obſervations too much and lead me from the principal point to which my view is directed. How long it may be neceſſary to wear the inſtruments, or when it may be ſafe to lay them aſide, muſt be uncertain, as it muſt depend on the nature of the complaint, the

ſtrength

ſtrength of the child, and various other circumſtances. It may be obſerved that if the inverſion of the foot ariſes from muſcular action alone, we may expect to ſucceed ſooner than when it is attended with a relaxation of the ligaments, and a paralytic affection of the muſcles; and in general we may conclude, that the ſooner the inſtruments are applied, and conſequently the ſooner the natural growth of the parts is induced to take the proper direction, the better and more readily will our object be attained.

Mr. Pott had no objection to the uſe of inſtruments in caſes of diſtorted limbs, I have many times known them applied under his direction with great advantage; but he certainly did not entertain a favourable idea of any aſſiſtance to be gained by mechanical powers in thoſe diſtortions, or incurvations of the Spine which were the ſubject of his treatiſe; on the contrary, in ſeveral paſſages of

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the work alluded to, he ſhewed a marked diſ-approbation of them. He was of opinion that the diſcharge produced by the Iſſues was all which is requiſite for a cure, and ſo it has certainly often proved, no other means being employed in caſes which have ſucceeded perfectly; yet he agreed that other aſſiſtant means, ſuch as bark, cold bathing, frictions, *&c.* might occaſionally be added, in order to expedite the cure: but with regard to pieces of mechaniſm, as was obſerved, he always objected to them, and would not allow them to be in any degree aſſiſtant to his plan. I ſhould certainly be cautious in giving an opinion after ſuch reſpectable authority, yet I muſt obſerve, which cannot be diſputed, that ſcience is progreſſive, and that being mounted on the ſhoulders of another, we have ſometimes the means of ſeeing further; that the more reſpectable an author is, the more weight his opinions carry, and conſequently there

there is more reaſon why thoſe opinions ſhould be ſcrutinized if they claſh with ſubſequent obſervations apparently well founded. Thus, with all due deference to the judgment of a man of whom no one can entertain a higher opinion, I muſt obſerve that I think ſome powers of mechanic ingenuity may in many caſes of diſtortions of the Spine be made, not only to aſſiſt in accompliſhing the end which Mr. Pott intended by the cauſtics, but to produce effects more beneficial, and far beyond what he himſelf expected from their application.

Mr. Pott obſerves that "theſe pieces of mechaniſm are calculated to obviate and remove "what does not exiſt, that they are formed on "a ſuppoſition of actual diſlocation, which "never is the caſe, and therefore they always "have been and ever muſt be leſs." I readily allow that in thoſe caſes in which the

Iſſues

Iſſues have been ſo ſucceſsful there is no diſlocation; but it muſt be acknowledged that the part occupied by the diſeaſe is extremely weak, and incapable of ſupporting the weight of the parts above the curvature. On this head Mr. P. himſelf remarks that, "if the curvature "be of the neck the child finds it inconvenient "and painful to ſupport its own head, and is "always deſirous of laying it on a table, pil-"low, or any thing, to take off the weight." The ſame thing preciſely happens when the diſeaſe attacks the dorſal or lumbal vertebræ. Every one who has attended to theſe caſes muſt have remarked the efforts which children make under ſuch circumſtances; I ſpeak of children as being moſt frequently liable to the complaint, but adults and every one ſubject to a weakneſs in the back, from whatever cauſe, endeavour to take off the load which oppreſſes them, by ſupporting themſelves on tables or chairs, and when they

riſe

riſe to walk, they preſs their hands on their knees in order to relieve the Spine: All this points out the neceſſity of giving what aſſiſtance is in our power to the weak part.

In another place Mr. P. obſerves that the bones are already carious or tending to become ſo, the parts connected with them diſeaſed, and not infrequently ulcerated; that "there is no diſplacement of the vertebræ "with regard to each other, and that the "ſpine bends forward only becauſe the rotten "bone or bones intervening between the "ſound ones give way, being *unable* in ſuch "ſtate to bear the weight of the parts above." Surely then it appears reaſonable that thoſe parts ſhould be ſtrengthened and ſupported while nature with the aſſiſtance of the Iſſues is doing the work of reſtoration by putting a ſtop to the caries, after which boney matter is depoſited to ſupply the deficiency which the diſeaſe has produced. We apply

ſplints to a broken leg while oſſification is forming, we do not allow any preſſure to be made on it while that natural proceſs is going on, and the patient takes off the weight of the body from it by means of crutches, until it is perfectly ſtrong and capable of its own duty. I am at a loſs to find any good reaſon or ſound argument why the ſame means of aſſiſtance, at leaſt ſo far as lies in our power, ſhould, not be applied in caſes of a weakened Spine, in order to take off ſuper-incumbent preſſure, and to endeavour to reſtore the actual form of the Spine during the progreſs of the cure: if this be not attempted or cannot be brought about at this time, the conſequence muſt be that the back will remain crooked during the cure. Nature is obliged to do her work while it is in the bent poſition, and though the ſtrength of the pillar be ſubſequently increaſed, the cure itſelf becomes in ſome degree an evil, and a

laſting

laſting one, as the growth of new bone in that ſituation muſt conſolidate all the parts, and muſt confirm the curvature exactly, or nearly as it ſtood, before the cure was attempted; for whatever power the Iſſues have in ſtrengthening, it cannot be ſuppoſed that they can materially alter the curve which is already formed. The period when we are moſt likely to improve the form of the pillar muſt be during the progreſs of the cure, while the parts allow of ſome latitude of motion; when they are once become conſolidated and fixed by the growth of bony matter, no alteration ſcarcely can take place but what is effected by the future general growth of the whole body. In very young ſubjects this is certainly very conſiderable; but is not this an argument why the aſſiſtance to be obtained by growth ſhould as early as poſſible be determined in a proper direction? When that is accompliſhed, bark, cold-bathing,

and frictions may be uſeful; but till then, the aid which they may give only contributes to fix and confirm the parts in a wrong ſituation. From repeated obſervation I am ſo convinced, and conceive the benefit likely to reſult from mechanic aſſiſtance ſo ſelf-evident, that it would ſeem unneceſſary to advance any thing further in proſpect of convincing others, had not the objections to it originated in an authority ſo generally reſpected; I ſhall therefore continue my obſervations, and as a proof how neceſſary it is that by ſome means or other the preſſure of the parts above muſt be in many caſes taken off while the cure is perfecting, and to ſhew that Mr. Pott himſelf was convinced of the neceſſity of it, though perhaps it did not appear to him exactly in the ſame point of view, I muſt remark that in many caſes of curved Spines which Mr. P. attended, he thought it neceſſary to confine his patients to bed, or to

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a horizontal ſituation during the greateſt part of the cure, as they could not bear to remain in an upright poſition. I need not obſerve how irkſome this muſt be, how it muſt tend to relax and weaken the patient, and conſequently to retard the cure; ſeeing it only in this light, it muſt be acknowledged that any means which would render unneceſſary this ſevere and unhealthy proceſs muſt be deſireable and advantageous.

That many of the machines which have been invented to remedy diſtorted Spines, from having been imperfectly or improperly made, badly contrived, or injudiciouſly applied, are capable of doing much miſchief, muſt certainly be allowed: the neck-ſwing, and the ſcrew-chair, I ſhould conceive, can do little good, for it is obvious that a poſture produced by ſwinging a child by the neck, or ſtretching it in a chair, cannot long be born; he may be amuſed in it at firſt, but

in a ſhort time it will become irkſome, if not painful, and he will be urgent to be releaſed, and then, what good can an extenſion of ſuch duration have done? the weight of the ſuperior parts, all the reſt of the day, deſtroys the little effect produced. If it be often repeated, the alternative of extenſion and relaxation weakens the muſcles and ligaments, the Spine conſequently is more eaſily bent and increaſes in its curvature. In many caſes, when the parts are already weakened by the diſeaſe, much miſchief, even to fatality, may be the conſequence of imprudently or violently ſtretching them. The ſtays, which are intended to apply forcible preſſure to the prominent part of the curve, are alſo, in my opinion, inefficacious, and ſometimes detrimental; but if a machine be contrived to elevate the head, and ſupport the thorax, paſſing down the Spine, and ſtrengthening it, as a ſplint does a broken limb,

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reſting on the pelvis, as its baſis, and with a contrivance to give ſuch gradual and permanent extenſion as the weak parts will bear without injury, and to be continued until, by a depoſition of oſſeous matter, the yielding vertebræ become firm and compact bones, I am clearly of opinion that much good from it may be derived.

Such is the nature of the inſtrument deſcribed by Le Vacher and intended by him to remedy diſtortions or inclinations to grow awry in the early part of life. Various modifications of this and other contrivances with a ſimilar intention are well executed by ſeveral ingenious artiſts in this town.

A machine of this kind properly made and applied has certainly great power in remedying the diſtortions of early life, and the advantages to be derived from it are at firſt ſight manifeſt: by its aſſiſtance the Spine is ſtretched juſt ſo much and ſo long as is thought right and the patient while he wears

it

it may walk and amuſe himſelf in any manner he pleaſes. It does not prevent writing, drawing, or playing on the Harpſichord, nor does it prohibit dancing or uſing many kinds of exerciſe. The horizontal poſition makes it unneceſſary for the inſtrument to be worn in bed, but if from any peculiar circumſtances it might be thought right to keep it on all night, it may be done without diſturbing reſt.

It muſt be obvious that in all caſes of early diſtortion the ſooner the application is made the better, while it may be expected to meet with pliancy in the bones and ligaments, and may be aſſiſted by their future growth: after the age of ſixteen or ſeventeen, of courſe leſs is to be expected than at earlier age; tho' there have been inſtances of perſons, who have had curvatures from their infancy, being materially aſſiſted in the decline of life by the ſupport derived from ſuch an apparatus. Indeed,

Indeed the good effects ariſing from a *well-adapted* inſtrument in caſes of curvature, from various cauſes unaccompanied with caries, is ſo generally known and acknowledged that it is unneceſſary to ſay more on the ſubject in this place: but what I principally wiſh by the deſcription of it on the preſent occaſion, is to ſhew that it is ſafe and uſeful, and to endeavour to ſet aſide the diſinclination which I perceive in many practitioners, as well as in the writings of Mr. Pott, to admit of its uſe or aſſiſtance in caſes of curvature attended with caries: and further, I ſhall endeavour to make it apparent that, in ſome of theſe caſes, ſuch a contrivance is not only frequently uſeful but often abſolutely neceſſary. I need not obſerve that undoubtedly greater care and judgment are required in the application of it where ſome of the bones of the Spine being carious, the parts connected with them may more eaſily be injured by

improperly or ſuddenly ſtretching them, than when the curve has ariſen from muſcular action or other cauſes.

But I hope not to be miſunderſtood; I do not mean to ſay, indeed am far from thinking, that inſtruments of any ſort are wanting in every caſe of curvature ariſing from caries. The Iſſues are often ſufficient to complete the cure without any other aſſiſtance, as has been proved in numberleſs inſtances.

Mr. P. in his treatiſe has in his uſual perſpicuous manner given a circumſtantial account of the method of applying the cauſtics and conducting his mode of cure; but as ſome alterations have ſince been introduced which appear to be improvements on his plan, I think it right to notice them. Mr. P. has directed the Iſſues to be made of an oval ſhape, and has left a ſketch of one, as a pattern, one inch long by three quarters of an inch wide. From repeated experience I have found

ſound longitudinal eſchars according to the extent of the curve anſwer better. They ſhould be made ſo that the peas ſhould lie imbedded on each ſide, and near to the ſpinal proceſſes. Particular attention ſhould be given that the cauſtics ſhould be applied ſo as to reach juſt above the curvature. I have many times ſeen a large and copious drain maintained without effect becauſe it was made below the beginning of the curve; but, on its being opened above, the good effect derived from it ſoon took place. If peas or ſmall beans are uſed, they ſhould be ſoftened by ſoaking them in water; they ſhould then be ſtrung on a thread and ſuffered to dry, when they are to be cut into proper lengths according to the drain, which, as was obſerved, muſt vary with the circumſtances of the caſe: thus they are eaſily applied and eaſily removed. It has always been no ſmall difficulty to keep theſe Iſſues open and in a good ſtate, ſo as to furniſh a

proper diſcharge. The means which have been uſually employed for this purpoſe are painful, and the effects produced by them of ſhort duration; ſo that the Iſſues were perpetually cloſing and filling up with fungous granulations, in conſequence of which the unpleaſant taſk of uſing Eſcharotics became neceſſary, at leaſt once a week, or oftener in ſome ſubjects. This in adults was often as much as they could bear; in children peculiarly diſtreſſing to every one concerned. At ſome intervals this was neceſſary to be done with freſh application of cauſtic, perhaps more painful than the original one.

The powdered Ærugo Æris and the Unguentum Cantharidis, which are commonly recommended, are painful applications and their effects not laſting. The Unguentum Sabinæ anſwers our purpoſe better, as, with leſs pain, it produces a much more conſiderable and purulent diſcharge: that which takes place from the Unguentum Cantharidis is of a ſanious nature.

The following is the formula recommended by Mr. Crowther in his treatiſe on diſeaſed joints.

Ceratum Sabinæ.

℞. Sabinæ recentis contuſæ
Ceræ fluvæ ſingularum libram unam
Adipis ſuillæ libras quatuor
Adipe & cerâ liquefactis incoque Sabinam.

This may be applied from time to time as may become neceſſary; if it ſtimulates too much it may be lowered with Cerat. Sperm. Cet. In ſome thin emaciated children, lint, with this ointment occaſionally ſpread on it, will anſwer the purpoſe of peas and lie eaſier. In ſome perſons, with the previous application of a bliſter it is found a good ſubſtitute for cauſtic.

I have certainly been much in the habit of following Mr. Pott's plan in procuring the requiſite drain by Iſſues made with cauſtic, and have beſtowed ſome pains to keep them in order,

order, and in a good ſtate; yet, after all our care and attention, it muſt be confeſſed that they are liable to many objections, and that the management of them is extremely difficult, and cannot with propriety or ſafety be entruſted to the care of ordinary nurſes and attendants. I have lately uſed Setons, and, on the whole, am very much inclined to give them the preference. The object is to procure a large diſcharge of matter by ſuppuration from underneath the membrane adipoſa on each ſide of the curvature, and to maintain it until the cure be accompliſhed, or ſo long as may be thought neceſſary. Whether this be brought about by Iſſues or Setons is not material, but the eaſieſt means will always be the beſt. Mr. P. diſliked Setons; he obſerves, "a Seton is a painful and naſty thing, "beſides which, it frequently wears through "the ſkin before the end for which it is made "can be accompliſhed." In the common way

way of making and managing Setons this was certainly the caſe; the uſual mode was in general to make the track of the Seton ſhort, but, be the length what it might, the ſilk, or whatever it was thought proper to uſe, was paſſed through and cut off an inch or two above and below, and a knot was faſtened at each end to prevent it from ſlipping out. This was ordered to be moved every day backward and forward, and the wounds at each end to be made clean; but the Seton was not changed, ſo that it conſtantly remained in the wound, immerſed in, and confining a quantity of putrid matter, the acrimony of which certainly tended to inflame the ſkin, and made it gull its way out; thus it certainly became a "painful and a naſty thing," but under different management I conceive the effect produced will be very different. The method I would take the liberty to recommend is the following. A Seton-needle ſhould be procured of ſufficient length, ſuppoſe about

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five inches long, nearly ſtraight, made to pierce its way like a lancet: by ſuch an inſtrument the track of the Seton may be carried to as great a diſtance as can be required. It ſhould be introduced at the ſuperior point of the track propoſed, and terminate at the lower. So much of a ſkein of coarſe ſilk as is thought neceſſary may thus be introduced, and when brought out at the lower wound, ſhould be cut off from the needle, leaving about an inch to be ſecured, either by a knot, or by a ſlip of ſticking-plaiſter, to prevent its being drawn back again. The remainder of the ſilk above ſhould be neatly coiled up, and confined by a ſlip or two of ſticking-plaiſter. When the ſuppuration is eſtabliſhed, and the Seton become looſe, it may be drawn down. The part which is ſoiled by the matter may be cut off, and a freſh portion of ſilk introduced. When one ſkein is uſed, another may be connected to it, and drawn through in the ſame manner. Thus it may

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be changed as often as neceſſary, and the wound be kept perfectly ſweet and clean. By theſe means the ſkin will not become inflamed or irritated, and the drain may be continued almoſt for any length of time.

I have often remarked that the firſt action or ſtimulus of the cauſtics frequently produces an almoſt immediate effect; the patients in a day or two after they are applied find a conſiderable alteration for the better in the general ſtate of their health, attended with a glowing warmth, and ſometimes a degree of motion in the limbs. I have deſired the young gentlemen in the Hoſpital to remark this, and I have foretold that this agreeable ſymptom would ſoon be leſs apparent; for until the Iſſues ſhould arrive at a more advanced ſtage, no permanent good effects would be obſerved; and my conjecture has ſeldom proved unfounded. I mention this that people may not be diſcouraged at experiencing this kind of check

upon their hopes; let them wait with patience till the drain is fairly eſtabliſhed, and they will rarely be diſappointed in their expectations.

Parents, nurſes, and perſons unaccuſtomed to theſe caſes, dread the quantity of the diſcharge, and conceive it muſt tend to weaken the conſtitution; but it certainly has not ſuch an effect. I have often remarked children improving in health and ſtrength and growing fat under a very conſiderable drain of this ſort. I do not mean to ſay that this alone is the cauſe of the amendment; the return of health probably ariſes from the ſtop which is put to the ravages of the diſeaſe; and I only mean to infer that neither health nor ſtrength appears to be diminiſhed by the diſcharge, which it is neceſſary to keep up in order to effect a cure.

Mr. Pott has remarked that "there can be "no curvature from within outward without "an eroſive deſtruction of the bodies of ſome

"of

" of the vertebræ; but that there is not infre-
" quently caries without any curvature being
" produced; that this happens more frequently
" in the loins than in any other part of the
" Spine; that what are called lumbal or psoas
" abscesses are not uncommonly produced in
" this manner; and that a caries of the Spine
" is more usually a cause than an effect of these
" abscesses." That caries of the bodies of the vertebræ may produce bad symptoms and may cause great mischief before it has destroyed sufficient of the boney support to make the Spine bend, is not only probable but a fact well known. Not only abscesses are produced by it, but it is frequently accompanied with grinding deep-seated pains in the pelvis and thighs, sometimes to such a degree as to produce an inability of motion in the limbs, bordering on paralysis, but not to such a degree as when the bones have given way and caused a compression on the spinal marrow.

It is reaſonable to conclude that the ſame means which are known to cure a diſeaſe in its advanced ſtate, would be more likely to prove efficacious in ſtopping its progreſs in the beginning; but Mr. P. has remarked that "when theſe complaints are not attended with "an alteration of the figure of the back-bone, "neither the real ſeat nor the true nature of "ſuch diſtemper is pointed out by the general "ſymptoms, and conſequently that they are "frequently unknown, at leaſt while the patient "lives." This is an obſervation of material import, and ſhould not be paſſed by without a comment, as it rather tends to damp our inquiry into this ſpecies of miſchief, the progreſs of which might often be arreſted if found out in time. It may be right therefore to obſerve, what from repeated inſtances I have learned, that, in caſes which have led to a ſuſpicion of the producing cauſe being derived from the back, if we attend to the patient's

tient's complaints and obſerve the part to which he points, the ſeat of the miſchief may often be diſcovered, by preſſure with the fingers, or tapping with the knuckles gently on each vertebra, ſingly, one after another. I need not repeat that this is a fact of great conſequence to be known, as when diſcovered, the incipient diſeaſe may often be ſtopped, and probably many lumbal abſceſſes, with all the conſequences of increaſe of miſchief, may be prevented. I will take the liberty to relate a caſe which will tend to illuſtrate this point of practice.

In April 1795, Mrs. F——, a Lady from Ireland, conſulted Dr. Turton on account of pains, with which ſhe was afflicted about the lower part of the loins and hips, which were thought to be rheumatic. As ſhe received no relief from medicine, and there was ſome inability to walk, Doctor Turton, with his uſual acuteneſs of judgment, ſuſpected that her com-

plaints

plaints might ariſe from the Spine. I was accordingly deſired to examine it; I found the ſpinal proceſſes of all the vertebræ perfectly regular and even, and could diſcover no reaſon to ſuppoſe that the diſeaſe had its ſource from that origin. On its increaſing, I was deſired to meet the Doctor again. She was now conſiderably worſe, her pains in bed were tormenting and almoſt conſtant; with great difficulty, and not without the aſſiſtance of a ſervant, ſhe could drag one foot after the other acroſs the room. I again examined the Spine, and could diſcern not the ſmalleſt deviation from the right line; but, on preſſing pretty firmly on every vertebra ſingly, I obſerved, when I came to the two lowermoſt of the loins, ſhe ſhrunk from the touch, and ſaid, in that part I gave her a ſenſation ſhe had not felt before, amounting to pain, tho' not acute. From theſe obſervations alone, it was determined to apply cauſtics on each

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ſide of thoſe vertebræ, the ſurpriſing and happy conſequence of which was, that in a few nights her pains grew better, and ſoon in a great degree left her. In a fortnight ſhe was able to walk without aſſiſtance acroſs the room; ſoon after ſhe went into the neighbourhood of Hampton Court, where her health and ſtrength improved rapidly, and in about two months ſhe was able to walk a couple of miles. In the autumn I ſaw her at Brighthelmſtone, where ſhe bathed, walked, rode on horſeback, and enjoyed good health and ſpirits; and I may add, that I afterwards met her frequently in London, where ſhe ſpent the winter, without any return of the complaint.

Many more inſtances might be adduced when the cauſe, tho' occult, has been diſcovered, and the miſchief, which we may poſitively conclude would have gone on from bad to worſe, has by the aſſiſtance of cauſtics been reſtrained and prevented. If any doubt

ſhould

ſhould ariſe about the preciſe ſpot where they ſhould be applied, the cauſtics, if it be thought proper to uſe that method, not being confined to ſmall oval ones, but made longitudinal, ſo as to take in one or more of the vertebræ, according to circumſtances, will be the means of finding out the diſeaſe and acting upon it: or if Setons are uſed, they may be made ſufficiently long to include with certainty the ſeat of the diſeaſe.

Since theſe obſervations were made, I have received the favour of a letter from an accurate obſerver and excellent judge of the ſubject, which is ſo much in point, that, with his permiſſion, I ſhall make no heſitation about inſerting it.

Dear Sir,

I have long entertained an opinion that in caſes of paralyſis of the lower limbs ariſing from diſeaſed vertebræ a more effectual diſcharge than ſuch as is uſually produced

duced by cauſtics might be obtained, and the cure thereby conſequently expedited. It is not merely an iſſue that is wanted, but a deep-ſeated drain ; and the nearer to the caries ſuch drain can be eſtabliſhed, the better chance there muſt ſurely be for the removal of the diſeaſe. I have for a few years paſt been in the habit of recommending a Seton on each ſide of the affected Spine ; and can, from my own experience, confidently aſſert that a very copious diſcharge may be maintained for many months together with little or no difficulty. The Setons have indeed a manifeſt advantage over common Iſſues—for they embrace a larger extent, which is of material conſequence when the diſeaſed part cannot very accurately be determined, or when there is reaſon to ſuppoſe that ſeveral vertebræ may be affected —they become efficient in three or four days, when the ſloughs from cauſtics do not ſuppurate generally in a week or ten days—they

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are not in the leaſt degree offenſive, as the Setons are daily drawn downwards, and the purulent ends cut off—they ſeldom or never need the application of eſcharotics, as there is no ſurface, except at the extreme points, from which fungous granulations can poſſibly ſhoot, and there is no trouble in keeping them in their places, as the upper and clean part is coiled up and ſecured by a ſlip of adheſive plaiſter. In a caſe about two years ago, where the effects of preſſure of the Spine were but too evident, from a total loſs of ſenſation in the lower extremities, and where, from the ſame cauſe, there were involuntary diſcharges of urine, and very obſtinate coſtiveneſs, and, in ſhort, every ſymptom which uſually characteriſes the diſeaſe, but where the preciſe ſpot of preſſure could not exactly be aſcertained, I directed a Seton to be inſerted on each ſide of the Spine, ſo as to include a ſpace of about ſix inches. In a very

few

few days ſome advantage was obſervable, and in three weeks he had a greater command over his urine than he had experienced for many months: the Setons were maintained for more than half a year, without any other difficulty than the inſertion of a clean ſkein of ſilk when the old one was nearly expended, and which was eaſily effected by looping that which was freſh into the end of the other; about which time the patient was ſo far recovered as to walk with the aſſiſtance of a ſtick. I might mention alſo a patient in the hoſpital, where the diſeaſed vertebræ could not with accuracy be determined, and where the chance of exactly hitting the proper ſpot with cauſtics would have been very doubtful. This man is happily recovering his limbs by the inſertion of Setons, which occupy a ſpace within which the diſeaſed part muſt neceſſarily be included. The circumſtances, however, of this caſe I need not particulariſe, as

you may remember I one day pointed it out to you, as being, in my opinion, an inſtance of the ſuperiority of Setons over common Iſſues.

I am,

Dear Sir,

Yours ſincerely,

Bedford-row,
April 8, 1799.

J. LATHAM.

I take this opportunity of thanking Dr. Latham for his obliging communication. It certainly ſtrongly corroborates the advantages to be derived from Setons, and ſhews how well calculated they are to ſearch out the ſituation of the diſeaſe when it is not perfectly apparent to the ſight or touch. However, whether the drain be made with the Seton or cauſtic, I feel the higheſt ſatisfaction in having it in my power to aſſert, that by ſuch ſimple means may one of the moſt deſtruc-
ved iſord ers which attack the human frame

be

be prevented, and the bleſſings of health reſtored. To him who diſcovered it every praiſe is due, and any attempt to improve on it, at leaſt, I may preſume, cannot fail of being well received.

The progreſs of the cure by cauſtics is deſcribed by Mr. Pott with his uſual accuracy, which I ſhall beg leave partly to quote, as the latter part of it may lead me to ſome further obſervations. By means of theſe diſcharges, the eroding caries is firſt checked and then ſtopped, in conſequence of which an incarnation takes place, and the cartilages between the bodies of the vertebræ having been previouſly deſtroyed, the bones become united with each other, and form a kind of anchyloſis.

The time neceſſary for the accompliſhment of this muſt, in the nature of things, be conſiderable in all caſes, but very different, according to different circumſtances.

No

No degree of benefit or relief, nor any the ſmalleſt tendency toward a cure is to be expected until the caries be ſtopped, when the diſeaſed parts will be removed by abſorption, and healthy granulations form, which ultimately become bone. The larger the quantity of bones concerned, and the greater degree of waſte and havock committed by the caries, the greater muſt be the length of time required for the correction of it, and for reſtoring to a ſound ſtate ſo large a quantity of diſtempered parts.

In the progreſs toward a cure the ſame gradation or ſucceſſion of circumſtances may be obſerved, as was found to attend the formation of the diſeaſe, with this difference, that thoſe which attend the latter are much more rapid than thoſe which accompany the former.

After the diſcharge has been eſtabliſhed ſome time, but that is uncertain, the patient

is

is found to be better in all general reſpects, and if of an age to diſtinguiſh, will acknowledge that he feels himſelf in better health, and that his appetite is improved, his ſleep refreſhed, and he has a more quiet and leſs hectic kind of pulſe; but the relief which he feels above all others is from having got rid of that diſtreſſing ſenſation of tightneſs about the ſtomach; in a little time more, a degree of warmth and a ſenſation is felt in the thighs which they had been ſtrangers to for ſome time; and generally much about the ſame period, the power of retaining and diſcharging the urine and fæces begins to be in ſome degree exerted.

The firſt return of motion in the limbs is rather diſagreeable, being involuntary, and of the ſpaſmodic kind, recurring principally in the night, and generally attended with a ſtate of pain in all the muſcles concerned.

At this point of amendment, if it may be

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ſo called, it is no uncommon thing, eſpecially in bad caſes, for the patient to remain ſome time without making any further progreſs: this in adults occaſions impatience, and in parents deſpair, but in the middle kind of caſe, the power of voluntary motion generally ſoon follows the involuntary.

The knees and ancles by degrees loſe their ſtiffneſs, and the relaxation of the latter enables the patient to ſet his feet flat upon the ground, the certain mark that the power of walking will ſoon follow: but thoſe joints having loſt their rigidity become exceedingly weak, and are not for ſome time capable of ſerving the purpoſe of progreſſion.

The firſt voluntary motions are weak, not conſtantly performable, nor even every day, and liable to great variation from a number of accidental circumſtances, both external and internal.

The firſt attempts to walk are feeble, and

bear

bear every mark of nervous and muſcular debility; the patient ſtands in need of much help, and his ſteps with the beſt ſupport will be irregular and unſteady; but when patients have arrived at this point, I have never ſeen an inſtance in which they did not ſoon attain the full power of walking.

When the patient can juſt walk, either with crutches or between two ſupporters, he generally finds much trouble and inconvenience in not being able to reſiſt or to regulate the more powerful action of the ſtronger muſcles of the thigh over the weaker, by which his legs are frequently brought involuntarily acroſs each other, and he is ſuddenly thrown down.

Adults find aſſiſtance in *crutches*, by laying hold of chairs, tables, &c.—but the beſt and ſafeſt aſſiſtance for a child is what is called a *go-cart, of ſuch height as to reach under the arms*, and ſo made as to incloſe the whole body:

this takes all inconvenient weight off the legs, and at the ſame time enables the child to move them as much as it may pleaſe.

Time and patience are very requiſite, but they do in this caſe, as in many others, accompliſh our wiſhes at laſt.

The deformity remaining after recovery is ſubject to great uncertainty, and conſiderable variety, as it depends on the degree of caries, and the number of bones affected: in general it may be ſaid, that where one vertebra only is affected, and the patient young, the curve will in length of time totally diſappear; but where *two or three are affected this cannot be expected.* The thing aimed at is the conſolidation and union of the bones which had been carious, and are now become ſound: without this there can be no cure, and this muſt in ſuch caſes render the *curvature*, and conſequently *the deformity, permanent.* The Iſſues will reſtore the uſe of the limbs, but *not the loſt figure of the Spine.*

Thus

Thus has Mr. Pott deſcribed the progreſs of the cure: the correctneſs of the repreſentation I have had many opportunities of proving; but muſt confeſs was never ſatisfied with the concluding paragraph, any more than with the following obſervations by the ſame author, "that, when three, four, or "more of the vertebræ are concerned in the "curve, the trunk of the body will have ſo "little ſupport from that part of the Spine "which is diſtempered, that *no degree of de-* "*formity* can be wondered at, nor can it be "expected that ſuch deformity ſhould be "removed (by the Iſſues) whatever other "benefit ſuch patient may receive." Again, "when two or more vertebræ are affected, "forming a large curve, however perfect the "ſucceſs may be with regard to the reſtora- "tion of health and limbs, yet the curvature "will and muſt remain, in conſequence of "the union of the bones with each other."

Theſe obſervations and others of the ſame tendency, added to the many melancholy inſtances which I have ſeen after a cure had been affected by Iſſues alone, had long obtruded unpleaſantly on my recollection. Prolonging life merely to lengthen out a miſerable exiſtence, and enabling a wretched being to crawl a little longer on the earth, appears very unſatisfactory, and ſtopping ſhort, if the idea be indulged, that by any aſſiſtance from art, more may be done. I have often thought it would be a moſt happy circumſtance could we go a ſtep further, and cure the deformity ſo well as the diſeaſe; for beſides the diſguſting appearance of the crookedneſs which remained, want of health, debility, and inactivity uſually accompanied it; and another very material conſequence reſulted from it, namely, that the largeneſs of the remaining curvature rendered the Spine *mechanically* weak, which probably being

added

added to a tendency to the ſame ſoftneſs of bones as was the foundation of the original malady, was the efficient cauſe of the diſeaſe being liable to return. This was a very ſtrong and additional reaſon why the improvement of the form of the Spine ſhould be equally the object of our attention with the cure of the diſeaſe. Some caſes of relapſe and of peculiar difficulty occurring to me in practice, firſt led me to conſider the ſubject in this light, and made me ſeek for mechanical aſſiſtance. The crutches and go-cart which Mr. Pott recommended, appeared to me very inadequate to the purpoſe; for a little time in the day indeed they might elevate the ſhoulders, but could not ſupport the head: from this, I ſhould conceive, it muſt be obvious that little good could be derived. But I am ſo clearly convinced that in many ſuch bad caſes as Mr. Pott has deſcribed, his excellent plan may be rendered

more

more efficacious by *proper aſſiſtance*, I mean the judicious and careful application of a mechanical apparatus ſimilar to what I have before deſcribed, and I am ſo confident that I have often ſeen advantages derived from it, that I conceive I ſhould be wanting in the duties of my ſituation, did I not deliver my ſentiments on the ſubject. I therefore embrace this opportunity to ſay, from many obſervations which I have made, that it appears to me that the majority of thoſe deſperate and unfortunate caſes, which have not ſucceeded after the eſtabliſhment of a drain, and which conſequently may have tended to bring the mode of cure itſelf into ſome diſrepute, owe their failure to the want of employing a proper ſupport, and taking off ſuperincumbent weight and preſſure. In caſes, then, where the curvature is large, the miſchief of long ſtanding, the local weakneſs great, producing, and at the ſame

time

time increaſed by want of general health and ſtrength, I earneſtly recommend mechanical aſſiſtance; and, even in many caſes which are not ſo bad as I have repreſented, but where the curve is ſmaller, of no long ſtanding, and the ſtrength of the patient not diminiſhed, it is my firm opinion that a proper ſupport would greatly aſſiſt, enable patients ſooner to take exerciſe, and conſequently to gain ſtrength, would ſhorten the neceſſary continuance of the diſcharge, and expedite the cure. Upon the whole, I am moſt clearly of opinion, that, in this ſpecies of curvature ariſing from caries, as well as in caſes of common diſtortions of the Spine from other cauſes, *mechanical powers*, if *judiciouſly* and *carefully applied* under the direction of an experienced ſurgeon, can do no harm, but may be productive of incalculable advantages.

As phyſical arguments are beſt ſupported by facts, I ſhall take the liberty to ſtate the

circum-

circumſtances of the firſt caſe which led me to conſider the ſubject in the light I have mentioned, and I ſhall ſubſequently take notice of a few more which have confirmed my opinion, in the relation of which will plainly be ſeen the wonderful power which the cauſtics had, and the points at which they failed; in ſhort, they will evidently demonſtrate what cauſtics can do in theſe caſes, and what they cannot do.

CASE I.

Auguſt 25, 1788.

I was deſired to viſit a young lady, about eleven years of age. She had been a remarkably active, upright girl, and in her ſchool was allowed to excel in dancing. About the 18th of March immediately preceding the time mentioned, her friends and herſelf began to obſerve a want of action in the lower limbs. No cauſe could be aſſigned, but ſhe found

found a diſinclination to walk, and this gradually increaſed, until, on the 1ſt day of May following, the lower limbs became entirely uſeleſs. Examining the Spine, I found a protruſion of ſeveral of the ſuperior dorſal vertebræ, forming a large curvature. She was much emaciated, had loſt appetite, and complained of pain at the pit of the ſtomach. Unable to turn herſelf in bed, ſhe was obliged to remain in any poſture in which ſhe was placed. As ſhe ſat confined in a chair, ſhe had not power even to kick the feet forwards. If ſhe was ſupported on her feet, the extremities of the toes reſted on the floor, without her having power to raiſe them, ſo as to admit the ſole of the foot or heel to touch the ground. The calves of the legs were become ſmall and flabby. In ſhort, ſhe was as deplorable an inſtance of the effect produced by preſſure on the ſpinal marrow, as I had almoſt ever ſeen. I recommended to try

the power of the cauſtics, which were accordingly applied on each ſide of the curvature. The eſchars ſeparated in about the uſual time, and a large diſcharge was produced. In about a fortnight, as ſhe ſat in a high chair, I obſerved ſhe began to kick with both her feet, at firſt a very little way; in a few days this power increaſed, and ſhe was able to extend them conſiderably further. The calves of the legs became firmer, her appetite improved, her digeſtion was perfectly good, and (September 16,) ſhe was able to turn herſelf in bed without aſſiſtance. September 25, I went to ſee her; ſhe was ſitting in her chair as uſual, kicking to ſhew how ſhe could uſe her legs. I aſked her, if ſhe thought ſhe could walk? She ſaid, ſhe believed ſhe could with ſome aſſiſtance. I lifted her from her chair, and to my great ſurpriſe ſhe walked acroſs the room, only taking hold of one of my hands, and this ſhe repeated ſeveral times

with

with her feet flat on the ground. After this period ſhe continued to acquire ſtrength gradually. November 17, ſhe walked very well, but *the curvature* cauſed her to walk in a bent poſture. November 21, ſhe was rather more upright, and walked round the room by herſelf, only taking hold of the chair or wainſcot, whichever happened to be near: ſhe was alſo able to walk up ſtairs or down. November 26, ſhe walked acroſs the room without any aſſiſtance whatever; but, as I did not chooſe for her to ſtrain herſelf too much, I gave her my finger, with the help of which ſhe could walk for any length of time. November 30, ſhe walked round the room only preſſing with one hand on the wainſcot, and did not complain of fatigue. December 10, ſhe continued to improve in ſtrength, and walked without any aſſiſtance but a ſtick.

Thus far my notes on this caſe lead me. I ſoon after took my leave, only viſiting her

occaſionally. Her health and ſtrength continued to improve, but the curvature remained nearly as at firſt, which, as before obſerved, was very large. The Iſſues were continued nearly a twelvemonth, when they were ſuffered to heal. Soon after this period this young lady again began to feel ſymptoms and ſenſations ſimilar to what ſhe had experienced before the cauſtics were applied; pain at the pit of the ſtomach, difficulty in moving the lower limbs, and in a ſhort time ſhe was growing rapidly worſe. It was thought adviſeable to open the Iſſues again, which being done, ſhe ſoon perceived an amendment in all her complaints. But reflecting on the caſe, I attributed her relapſe to the largeneſs of the curve which was left, and which, added to general weakneſs, was not capable of ſuſtaining the weight of the parts above; I therefore deſired that an ingenious mechanic might be ſent for,

for, to take meaſure and fit her with a proper apparatus, which was accordingly done by Mr. Jones; from the time it was applied ſhe improved in health and ſtrength, and in a few weeks gained ſeveral inches in height: neither the Iſſues nor the inſtruments were left off, till it was judged that ſhe had no further occaſion for them; after which ſhe continued to increaſe in ſtature, the curvature became leſs conſpicuous, and ſhe had no return of her former ſymptoms.

CASE II.

October 1791.

I ſaw a child about five years old, who had loſt the uſe of his lower limbs; he was juſt returned from the ſea-ſide, where he had been all the ſummer. On account of a conſiderable curvature in his Spine, Iſſues had been made in his back in the preceding Auguſt. When I ſaw him in London, the nurſe ſaid,

ſaid, he complained ſo much of pain, that ſhe thought it impoſſible to keep the Iſſues open any longer, though ſhe was convinced the child had received ſome benefit from them. On looking at his back, I obſerved that the peas were put in ſingly, four or five on each ſide, all over the ſurface of the ſores made by the cauſtic, which in one place extended over the Spine, ſo that ſome of the peas lay on the projecting part of the Spine: As this was probably the cauſe of the extraordinary degree of pain and uneaſineſs, I concluded that if the peas were confined to a line, as we uſually recommend, they would lie eaſier; four peas were accordingly threaded and applied on each ſide, letting the other parts heal; but it was not poſſible to keep them ſo near the Spine as was adviſable, owing to the original cauſtics having been applied too wide: the child became eaſy, and, though a miſerable little being, certainly

gained

gained ſtrength. December 4, he was able to walk acroſs the room, though with his body much bent. The 23d, I found his health conſiderably improved, and he walked better. After this time, as he was at ſome diſtance from town, I ſaw him ſeldom, but from time to time he appeared to gain ſtrength. March 20, 1792, I called on him, and had the pleaſure to find the Iſſues well taken care of, and of ſeeing the child walk without pain or difficulty, carry a box, pull out a heavy drawer and puſh it in again with eaſe, and in every reſpect he appeared to have gained great ſtrength and powers. In about a twelvemonth, the Iſſues were ſuffered to heal; ſoon after which the child again grew weak, and walked with difficulty, in a bent poſition. He was again ſent to the ſea, and the cauſtics were renewed, from which he ſoon began to find benefit; but, as the curvature was very large, it was determined

mined to add the aſſiſtance of ſupport by a mechanical apparatus, which was accordingly applied: the child grew rapidly better. The inſtrument was from that time worn for ſome years, during which he continued to improve without any further interruption; and I may add, that in May 1795, he called on me healthy, upright, and grown to a moderate height.

CASE III.

In September 1793, Miſs ——, of Briſtol, about ſix years old, was obſerved by the perſon who had the care of her, to have a lump or riſing on her back, which gave no pain, nor had ſhe any complaint or uneaſineſs. The lump continued to increaſe in ſize, and towards the end of the year, her friends began to obſerve that ſhe walked awkwardly, and dragged her feet along the ground. Early in 1794, the difficulty of walking increaſed, and

ſhe

ſhe frequently fell down on plain ground: her debility increaſing to a moſt alarming degree, in March 1794 ſhe was brought to London; her legs were now uſeleſs, and ſhe was obliged to be carried like an infant. I found a protruſion of three of the lumbal vertebræ; the middle one had ſtarted ſo as to form rather an acute angle. As there was no doubt but that preſſure on the medulla ſpinalis, owing to the giving way of the bodies of ſome of the vertebræ, probably from caries, was the cauſe of the miſchief, I recommended a drain to be opened on each ſide of the curve. Her remaining in London not being convenient, ſhe returned to Briſtol, where the Iſſues were made: In a ſhort time ſhe felt good effects from them, and ſoon found the uſe of her feet. In Auguſt 1794, ſhe was again brought to London; I was agreeably ſurpriſed to ſee her perfectly lively, ſtand upright, and walk well. I was the

more aſtoniſhed at the great alteration, as the Iſſues had been made very ſmall, and were nearly healed. The child being ſo well, I did not chooſe to enlarge them; but particularly charged the perſon who had the care of her, and who was remarkably attentive and intelligent, that if the child at all receded, or if any of the old complaints returned, the Iſſues ſhould be immediately enlarged, as I ſuſpected the drain had not been ſufficient to cure the diſeaſe. She continued well till October following, when her friends remarked that ſhe did not like to ſit in a chair, but preferred to ſtand and lean on her elbows, and often complained that her ſides were tired, that ſhe began to ſleep ill, would cry in the night, and ſay ſhe felt fatigued. All theſe complaints increaſing, in January 1795 ſhe could not walk at all. The gentlemen of the faculty in Briſtol were conſulted, who thought the complaint was in

the

the hips and lower part of the back, which were repeatedly bliſtered without effect. In March of the ſame year, I was conſulted by letter; but it being a caſe not to be judged of without ſeeing the patient, in April ſhe was brought to London. I found her totally unable to ſit in a chair, her legs being perfectly uſeleſs. She was carried about in her nurſe's arms. She looked ill, and ſlept badly: when bed in her legs were always cold, ſhe was tormented with pains in the hips and ſides, and required frequently to be moved into a different poſition. I made no doubt that all theſe complaints aroſe from the original malady, which had been ſuffered to get worſe and become active by not attending to the management of the Iſſues, which, though not cloſed, were now ſmall, with one pea in each, and one of the Iſſues at a conſiderable diſtance from the Spine. The arch of the curve was alſo enlarged ſince I firſt ſaw

her, but fortunately the angle which I before remarked was not more acute. I again adviſed Iſſues to be opened, and ſhe remained in London under my care. April 13, cauſtics were applied on both ſides of the curvature; the following day the nurſe informed me that ſhe had had a better night than uſual: in a few days after ſhe ſaid ſhe had loſt her night-pains. Her legs were warmer, and ſhe ſlept well, not wiſhing to be turned or have her poſture varied as before. In one week ſhe began to ſtand and uſe her legs a little; in a fortnight ſhe walked with the aſſiſtance of her nurſe's hand. She now caught cold and had a little fever, which weakened her and ſomewhat retarded improvement; notwithſtanding, in three weeks ſhe walked acroſs the room alone. In a month ſhe had regained her health and ſpirits, walked uprightly, and, greatly to the alarm of the nurſe, who was abſent a few minutes, had

walked

walked down ſtairs. Though the curvature in this caſe was not very conſiderable, it occurred to me, that ſome contrivance to take off the preſſure of the ſuperior parts would be a great ſecurity againſt the return of the complaint. I repreſented this to her friends; but ſhe was now ſo well, and the idea of caſing her in irons, as it was called, ſo diſagreeable, that it was not complied with, and ſhe returned to Briſtol. I heard from thence repeatedly, that ſhe walked, played, and ran nearly as well as the other children. She continued well to the end of September (1795), when I had a letter ſaying, ſhe was not ſo well as ſhe had been, that ſhe again began to be fond of leaning on her arms, and her legs began to fail her. Oct. 9, ſhe returned to London; I found her in good health and ſpirits, but ſhe walked with difficulty, and there was an evident and rapid diminution of her loco-motive powers

taking

taking place. The Iſſues were ſtill open, and diſcharged moderately, yet ſufficiently, in many caſes, to have anſwered the purpoſe; but in the preſent it appeared to me, and I again repreſented to her father, that though the curvature was not very large, it probably gave a mechanical weakneſs, independent of any diſeaſe the progreſs of which appeared to be ſtopped, and that it would be in vain to put the child to more pain and trouble by enlarging the drain, unleſs her figure and ſtrength could be at the ſame time ſupported and maintained by a proper inſtrument. Having before been foiled, I now readily got conſent to do what I thought right. The Iſſues were accordingly carried rather higher toward the ſuperior part of the curve, at the ſame time a proper ſpinal apparatus, made by Mr. Jones, was applied, from which ſhe became more upright, ſoon regained the perfect uſe of her limbs, and acquired permanent

health

health and ſtrength. I may now add, February 20, 1799, that I am informed that ſhe has not diſcontinued either the Iſſues or the apparatus, but that ſhe remains perfectly active and well.

CASE IV.

In the autumn of 1798, a young woman was placed under my care in the hoſpital, who had loſt the uſe of the lower limbs. On examining the Spine, a ſmall protruſion was obſerved of only two of the vertebræ of the loins, forming nearly an acute angle. By the application of cauſtics, in no great length of time ſhe regained ſtrength, and was enabled to walk without aſſiſtance. After this ſhe continued in the houſe a much longer time than is uſually allowed; becauſe, though capable of walking, ſhe felt a weakneſs in the back, which would not ſuffer her to continue long on her legs, or even to ſit

up

up for any length of time ; but ſhe was obliged frequently to procure eaſe in the day, by lying on the bed. As there was no appearance of the weakneſs getting better, I conceived, although the curve, as was obſerved, was ſmall, that ſhe would find relief from the aſſiſtance of an inſtrument, to leſſen the ſuperincumbent weight. It was accordingly applied. From the time it was put on, ſhe felt immediate benefit, no longer wanted to indulge on the bed, and in a fortnight after was diſcharged. I have repeatedly ſeen her ſince her diſmiſſion. She has had no return of ſenſation of weakneſs in the back, but continues to receive, as ſhe expreſſes, great comfort and ſupport from the ſpinal apparatu.

I have now ſaid all that appears to me neceſſary on the preſent occaſion. The further conſideration of the ſubject I take the liberty

liberty to recommend to thoſe who have opportunities of applying it to the teſt of practice. If I have been ſomewhat prolix in the detail of ſome of the preceding caſes, I muſt beg leave to obſerve that I have ſelected them from many others, and have thought it right to record them particularly, as ſtriking and remarkable ſpecimens of the powerful effect ariſing from the application of cauſtics, and of the further benefit which is ſometimes to be derived from the aſſiſtance of mechanical powers.

THE END.

Printed by *C. Clarke*, Northumberland Court, Strand.

AN

ESSAY

ON THE

Means of leſſening the Effects of Fire

ON THE

HUMAN BODY,

BY

JAMES EARLE, Eſq; F.R.S.

SURGEON EXTRAORDINARY TO THE KING AND TO HIS MAJESTY'S HOUSEHOLD,

AND

SENIOR SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

LONDON:

Printed by *C. Clarke*, Northumberland Court, Strand.

And ſold by JOHNSON, *St. Paul's Church-yard*; and FAULDER, *Bond Street*.

1799.

To *EDWARD ROBERTS*, M. D.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS,

AND

PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

DEAR SIR,

I HAVE taken the liberty of addreſſing to you the following Eſſay, and beg the favor of your acceptance of it, as a ſmall token of the great regard and eſteem with which I have the honor to ſubſcribe myſelf,

DEAR SIR,

Your faithful

humble Servant,

JAMES EARLE.

Hanover Square,
Nov. 16, 1799.

ERRATUM.

Page 8, Line 11 *for* aqua-fortis, *read* the flame of alcohol.

THE Publication of "Obſervations on the Cure of the Crooked Spine," which were adverti-ſed, has been delayed ſome ſhort time, that the opportunity might be taken of accompanying them with remarks on the following ſubject, which have been rather haſtily drawn up, that they might appear before the winter ſeaſon, as they were thought important and intereſting, in no ſmall degree, to every family, more eſpecially in the preſent times, on account of the prevailing faſhion in female dreſs.

AN

ESSAY, &c.

THE object of the enſuing pages is to endeavour to prevent or leſſen the deſtructive effect of fire, when applied to the human body, by means which ſeem to be not generally known, or not ſufficiently attended to.

There are few accidents or maladies to which mankind are ſubject, which have met with a greater variety of treatment than burns; and, as it appears to me, theſe various methods have in general been received and adopted as things of courſe, and handed down without any fixed principle or determined idea annexed to them: as we continually ſee

in ſimilar caſes of burns, ſcalds, &c. applications made uſe of which entirely vary from each other in their nature and effect.

If we conſult the ancient writers on this ſubject, we find a great variety of remedies, conſiſting of decoctions of different herbs and ointments of various ingredients, many of which form compoſitions totally oppoſite to each other; but which were all in their turns recommended and brought into uſe.

There does not appear any great improvement in the applications introduced by the moderns on ſuch occaſions. As far as I have been able to collect from obſervation and enquiry, the treatment of theſe caſes for years paſt has been confined to the following or ſimilar remedies.

Linen dipped in ſpirit of wine, applied to the burn and often renewed, is now in frequent uſe. This was alſo adviſed by Sydenham and other authors; but whatever advantage

tage is to be derived from it, it can only, with propriety, be applied to ſuperficial burns; ſhould any ulceration, or even excoriation have taken place, ſpirituous applications would be more likely to increaſe than abate the pain and inflammation.

Some practitioners think it right to bleed, to take away the wrinkled cuticle, and then to apply to the part, ointments compoſed of preparations of lead, and poultices impregnated with this mineral.

Some recommend the extract of lead and tincture of opium, mixed with water to be applied immediately, and ſimple dreſſings afterwards.

Or a mixture of vinegar and water, or of fine oatmeal and cold water.

Or ſpirits of wine and vinegar, in the proportion of two ounces of each, mixed with eight ounces of water, and applied *warm*.

Another remedy which has been much com-

commended, conſiſts of potato-juice and diſtilled water, to which is added as much common ſalt as can be diſſolved in it, with a ſmall quantity of crude opium.

Greaſy applications alſo are commonly uſed, ſuch as olive oil by itſelf, or mixed with ſpermaceti ointment, or oil and lime water well ſhaken together.

There are other formulæ which might be mentioned; but theſe will ſuffice to ſhew the common practice, and to prove the diſcordance and uncertainty prevailing in the treatment of burns. In general they appear to be intended to cool, relax, or give eaſe, and ſeveral of them anſwer theſe purpoſes in ſome meaſure, but they certainly do not furniſh effectual means to ſtop the progreſs, or leſſen the powerful action of the matter of fire, in whatever it conſiſts, but which probably continues to exiſt in the burnt part, and to extend its influence for ſome time.

I muſt

I muſt confeſs that I had been long diſſatisfied with all theſe methods of treatment, as they ſeemed of very little efficacy, for notwithſtanding their application, I had too often witneſſed that the pain was very little abated, that bliſters aroſe, and ſloughs took place in no very inferiour degree to what might have been expected if no means had been employed; theſe obſervations often led me to wiſh for a better method than the uſual practice ſeemed to offer; when, ſome years ſince, I was ſent for to a medical gentleman, who being near a bottle of ſpirits of wine, which had been imprudently heated to a great degree, by ſome accident it took fire, the bottle burſt and its contents flew over his hands, face, and upper part of his neck, all of which were miſerably burnt. At a conſultation on this unfortunate caſe, the uſual modes of treating burns were diſcuſſed,

and

and from a thorough conviction of the little good to be derived from the applications in common uſe, it was agreed that after the loſs of ſome blood, cold water alone ſhould be applied to bathe the parts; and this, being found to give eaſe, was continually renewed, and the patient during ſeveral days drank nothing but cold water, and took very little nouriſhment. By theſe means he was kept in a cool and tolerably eaſy ſtate, though the pain often returned at ſhort intervals; ſome bliſters aroſe, which however in little more than a week ſubſided and no ſcar was produced.

A misfortune of a ſimilar nature is related to have happened to the illuſtrious Boerhaave by the burſting of Papin's machine or digeſter, in conſequence of which his face and arm were ſcalded by hot water. The whole face was in a little time bliſtered and the eyelids ſo much ſwelled as totally to obſtruct his ſight.

ſight. He immediately ordered himſelf to be bled *ad deliquium*, and the next day cauſed the venæſection to be repeated; and afterwards took a pretty ſtrong purgative, although he had been reduced nearly to *a ſtate of fainting* by the ſlighter purgatives. He took care to have his face anointed only with unguentum nutritum, and covered with emplaſtrum ex lapide calaminari. After theſe profuſe evacuations the tumour of the parts ſubſided and by the uſe of a thin diet, and the plentiful drinking of cooling liquors, the cure of this dangerous ſcald was ſo happily advanced in eight or nine days, that he was able to appear again in public, his eyes having eſcaped from ſo great a danger; an unſightly ſcar however remaining in his arm after a *tedious ſuppuration.*

Now it appears to me that in this caſe had more cooling topical applications been uſed, ſuch plentiful evacuations and ſuch ſevere treatment of his conſtitution would not have

been neceſſary. If for inſtance ſome cooling fluid had been applied which would have been ſoon evaporated, inſtead of the burnt and inflamed parts being covered with greaſy ointments and plaſters, which neceſſarily ſtop the pores, obſtruct perſpiration and confine the heat, perhaps the accident might have ended ſtill more favorably, and poſſibly without any tedious ſuppuration. We know from experiment that the effects of aqua-fortis when applied to the body are more violent than thoſe which ariſe from hot water, yet the gentleman before alluded to, by the plan which he purſued, avoided any ſuppuration, and even the ſeparation of the cuticle to any conſiderable extent. As I had every reaſon to be pleaſed and ſatisfied with the termination of his caſe, I frequently afterwards on ſimilar occaſions uſed cold water, and all applications in as cold a ſtate as poſſible, notwithſtanding the opinion of many reſpectable

ſpectable authors and practitioners in favour of warmth to be applied to the parts. The good effect of this mode of treatment I experienced on many occaſions, yet ſomething further ſeemed wanting; for though this plan well followed up and renewed as often as poſſible, leſſened the pain, and abated the heat, it did not quickly ſubdue them; and in large and ſevere burns it ſeemed diſproportioned to the violent effect produced by the fire.

Some years after this, I was ſent for to a lady whoſe neck and face were very much burnt, from her neck-kerchief having taken fire: at a conſultation on her caſe, Sir Walter Farquhar, who was preſent, propoſed to apply ice to the whole of the burnt parts, although they were very extenſive. As my experience had hitherto been ſo much in favor of cold applications, my aſſent to the propoſal was moſt readily given, ice was accordingly applied, and appearing to give immediate eaſe, was conti-

nued unceaſingly during ſeveral nights and days, after which I had the ſatisfaction of ſeeing the lady recover without any ſcar remaining, and without any injury to her health from the cold ſtate in which ſhe had ſo long remained.

Not long after this accident, I had occaſion, in my own family to make trial of this plan. A little boy about three years old, playing with his brothers, was thrown down on the hearth, and to ſave himſelf caught hold, with one hand, of a hot bar of the grate. Before I ſaw him, which was in leſs than a quarter of an hour, the nurſe had wrapped his hand in oil. I found him in exquiſite pain, and inſtantly ſent for ice, with which I covered the hand. The child felt immediate eaſe; but as ſoon as the ice was melted, which was at firſt in a ſhort time, the pain returned, and he cried out for more. A bliſter aroſe, which, by degrees, in one large

blad-

bladder, occupied the whole of the palm of the hand, and the inſide of the thumb and fingers, and it increaſed ſo as to become globular, and nearly of the ſize of a hen's egg. The opening or breaking of this was moſt carefully avoided; and ice was conſtantly applied to the whole hand, it being immerged, during the day, in a baſon of ice and ice-water, and at night wrapped in cloths, or covered with ſcraped potatoes, ſoaked in it. Whenever this application was recent, the child was eaſy and ſlept; but at intervals, as the hand grew hot, from the melting of the ice, he became reſtleſs and cried until it was renewed, when his ſleep was again compoſed. This plan was continued during a week, at the end of which an abſorption of the extravaſed lymph took place, the cuticle which had been elevated, to ſo great an extent, began to ſhrink and ſhrivel; in a few days it became ragged and torn, and was

taken

taken away, without any painful ſenſation, a perfectly well-healed ſurface appearing underneath.

This method having been thus fortunately purſued, I have the happineſs to ſay that my boy enjoys the perfect uſe of his hand, and I take this opportunity to expreſs my obligation to Sir Walter Farquhar for the firſt ſuggeſtion of the plan, and for his obliging attention on this occaſion. In ſome ſubſequent converſations which have paſſed between us, it has been mutually regretted that this practice was ſo little known, which has probably given riſe to the preſent attempt toward introducing it to more general notice.

If I am allowed to judge from the ſeverity and ſituation of the burn and from the ſoft and tender ſtructure of the parts concerned in the caſe juſt deſcribed, and to reaſon from what I have ſeen, in many others, I am decidedly of opinion that, had it been treated by any of the

the means commonly employed, the inflammation would have riſen much higher, and continued much longer; conſequently the pain would have been more ſevere and of longer duration, accompanied with fever. From the greater degree of heat and irritation the bliſter would have continued to increaſe, and, if the intentional opening of it which by ſome was adviſed, had been avoided, it would have burſt. The admiſſion of air would have produced a ſlough, in which the tendons would have been implicated, in conſequence the muſcles no longer ſerviceable would have become contracted, and the hand for ever been left maimed and uſeleſs.

Some years previous to this accident my own leg was ſcalded with hot oil, on the outſide, from the knee to the ankle. The beſt remedies then in practice were applied, but did not prevent my ſuffering exceſſive pain for many hours, which was followed by the ſepa-

ration

ration of the cuticle and an ulceration which was not healed for a conſiderable time.

Since I have found the advantage ariſing from ice, I have had many opportunities of uſing it on large and extenſive burns, which have ſerved to confirm me in my good opinion of its beneficial effects, whenever it has been timely and properly applied. In ſeveral caſes it has happened, that either from motives of delicacy on the part of the patient, or from the attention of every one concerned being occupied with the moſt apparent injuries, parts which were burnt have not been diſcovered in time to receive benefit from the cold application, in conſequence of which the cuticle in thoſe parts has ſeparated, ſloughs have formed, and have been caſt off, leaving ſores difficult to be healed; while the parts in their neighbourhood more ſeverely burnt, but covered with ice, have eſcaped without a blemiſh.

I could detail many inſtances of miſchief

pre-

prevented, and cures effected by theſe means; but as the progreſs of them was in general ſimilar to the two caſes already mentioned, it does not appear to be neceſſary to add to their teſtimony.

I ſhall however take notice of one which occurred very lately.—A gentleman was much ſcalded by the overturning of a tea-urn. I ſaw him ſoon after the accident, and ſent to the neareſt confectioners for ice, with which the burnt parts were bathed; the heat and pain were ſoon leſſened, and afterwards he felt very little inconvenience.

And I cannot paſs over another unhappy caſe of a poor woman, who, in a fit, fell into the fire. The injury extended over the whole of the neck, back and breaſts, in ſhort nearly half of the body was ſcorched, and there was one continued burn, which made a ſurface, by meaſurement, of more than four hundred inches. A conſiderable time had elapſed after

the accident before ſhe was brought to the hoſpital, ſo that the heat of the fire had had ſcope enough to do great miſchief; added to this, the inflammatory attack had been aggravated by the injudicious application of ſpirits of turpentine, ſo that her ſufferings were extreme. The burnt parts were covered as ſoon as poſſible with pounded ice and ice-water, from which ſhe found immediate eaſe, and lived three weeks without complaining of much pain, and without that diſtreſſing fever, which uſually accompanies ſevere burns; after which ſhe ſunk under the profuſeneſs of the diſcharge from ſo large a ſurface, and expired.

In this caſe probably the injury was too deeply inflicted at firſt, to allow of a poſſibility of the burnt parts being prevented from ſloughing off and leaving a ſore; for it cannot be ſuppoſed that any means can prevent the effects ariſing from the deſtruction which the firſt contact of the fire has cauſed. If

that

that has been ſufficiently violent to deſtroy the living principle of the parts in the firſt inſtance, ice being applied may take off the heat, abate inflammation and give eaſe, but if the patient lives, the dead parts muſt be thrown off by the living, as happens in all caſes of mortifications from other cauſes.

Yet, ſevere as this caſe certainly was, it is impoſſible to ſay what a more early application of ice might not have effected; but in my opinion, much greater advantage would have been obtained; ſince in other inſtances, where it has been applied early, and where, though the burn has been both extenſive and deeply inflicted, a ſtop has been put to the heat and inflammation, and ſloughs have been prevented from forming. But conſidering this caſe abſtractedly, if ice could act with ſuch effect as to keep this patient ſo long alive and eaſy, what may not be expected from it in ſlighter burns?

From repeated obſervation of ſimilar caſes, I am confident that this wretched woman by the common modes of treatment would have continued to ſuffer great pain, and would have exiſted but a few hours longer.—Perhaps the prolongation of life in ſuch a ſituation, and under ſuch circumſtances is not greatly to be deſired; but to preſerve it in all caſes, as far as lies in our power, is our duty.—The reſt we leave to Heaven.

It was not my intention, as I have obſerved, to adduce any more inſtances, but ſince the preceding pages were printed, I have been favoured with an account of an accident which happened to a young lady, in Curzon Street, May Fair, written by herſelf, and which having permiſſion to inſert, I conceive it would not be doing juſtice to the ſubject of this eſſay if it were omitted; it will therefore be related in her own impreſſive words.

Early

Early in the month of March, 1792, one morning juſt after breakfaſt, I went into the parlour, to ſpeak to my mother who was ſitting by the fire-ſide, ſo that I ſtood on the hearth with my back to the fire; and as ſoon as I had communicated what I had to ſay to her and my ſiſter, who was with her, I was going to quit the room, when the latter looking up, perceived that the back of my dreſs was on fire. Fright deprived her of all power to act, but my mother immediately endeavoured to extinguiſh the flames by wrapping her clothes round me, but in vain; the fire was become too ſtrong; and as ſhe concluded the carpet was nailed to the floor, ſhe went out of the room to get ſomething to throw over me; my firſt impulſe was that of following her, when, providentially, I had the preſence of mind to ſee that ſuch a ſtep muſt prove fatal;

tal; and throwing myſelf down on the carpet, I rolled over and over, begging my ſiſter would try and cover me with it, which ſhe could not do, being deprived of ſtrength by her fear; my mother ſoon returned with a large mat, and the ſervants, who had been alarmed by my ſcreams, came in at the ſame inſtant to my aſſiſtance; they threw the mat over me, and themſelves upon it, in order to ſmother the fire; and after ſome little time ſucceeded; but not before I was ſeverely burnt in two places in the ſmall of my back; the back of my neck, and the under parts of both arms, juſt above the elbows. I had burnt the fingers of my right hand in attempting to untie my muſlin ſaſh. My mother's hands alſo ſuffered; as, on raiſing me from the floor, ſome fire ſtill blazed from the back of my handkerchief and cape of my gown, which ſhe ſtroked down from my head and preſſed out with her hands.

When

When I had a little recovered from the ſhock, I ſent off directly to requeſt the favour of Mr. Farquhar, if at home, to come to me immediately; if not, that he might be informed of the accident as ſoon as he returned, and that I was impatient to ſee him; three or four hours having elapſed, I ſent again to Mr. F. and as he was not come home, one of the gentlemen from his houſe very obligingly came to me; yet I declined availing myſelf of his advice, being determined to wait till Mr. Farquhar could come to me, owing to the anxious wiſh I had of having his opinion and advice in preference to all others. In the mean time I had applied ſcraped potatoes to my hand, and ſome oil to the reſt of the burns. About ten o'clock in the evening Mr. Farquhar arrived; and after he had ſeen the places which were burnt, he ordered ſome ice to be ſent for inſtantly, and that I ſhould have ſomebody ſit up with me

all

all night, who was to keep conſtantly applying to the burns cloths dipped in the ice, and to be changed as ſoon as the chill went off; that if I became weary, and could ſleep, they ſhould get ſome freſh hogs-lard, and firſt waſh it extremely well with water; after which it was to be beat up with ice ſpread on linen, and laid on the burns: but as ſoon as I waked, to uſe the ice ſimply as before. When Mr. F. left me, I had my bed immediately laid on the floor, as being more eaſy and convenient to thoſe who attended me, and ſtrictly followed Mr. Farquhar's directions the whole night. On firſt applying the ice, it made me ſhudder for a minute or two; but the pain I felt was ſoon abated, and in the courſe of the night I got a little ſleep. At noon, next day, when Mr. Farquhar came, he found me in a fair way of doing well, and only requeſted I would perſevere in applying the ice frequently, and in the intervals keep the

hogs-lard

hogs-lard and ice to the burns. I ſoon experienced the benefit of this method of treatment, for in a few days the fire was entirely drawn out, and though all the bliſters had broke, not one of them had the leaſt tendency to become a ſore. Conſidering how much I was burnt, the pain I ſuffered was comparatively trifling; which I am perſuaded, was entirely owing to the application of the ice: and my mother, who alſo uſed the ice to her hands, was cured in a few days. In the courſe of a month or five weeks, I perfectly recovered; and have never ſince ſuffered the ſmalleſt inconvenience from that accident; nor did I at the time catch any cold, though I ſat up for the moſt part of the firſt night, with ſcarce any cloathing, and as the ice diſſolved, of courſe I was very wet, and although I had before this accident, been for more than two years greatly indiſpoſed by nervous complaints, I had not any fit, or thoſe nervous

ſymptons which my friends were apprehenſive would have been the caſe after the terror and fright I ſuffered by the accident.

A conſiderable time appears to have elapſed in this lady's caſe before the ice was reſorted to, notwithſtanding which it ſeems to have acted with great power and efficacy. On the whole I cannot too ſtrongly recommend the uſe of this remedy in burns of every deſcription, as I preſume we may fairly conclude from what has been premiſed that it poſſeſſes great capability of giving eaſe, and preventing the deplorable ravages and miſchief which ſuffering the heat to remain in the part produces, for from every obſervation I have made, the fire does not produce all its effects on the firſt attack, or immediate contact with the part; but afterwards lies rankling in it,

it, and continues to ſpread its deſtructive influence until its fury is ſpent, or its power counteracted: as is evident from the continuance and even encreaſe of the exceſſive pain and inflammation.

Whether modern philoſophers will allow that fire applied to any part of the human body does remain united to it for a time, I am not certain; but ſuch appears to me to be the fact, and this opinion has, I find, been maintained by ſeveral very reſpectable authors.

Hildanus mentions it as his opinion, and ſeems to lay great ſtreſs, as indeed moſt of the old writers did, on the frequent change of the dreſſings in burns. In a caſe which he deſcribes, he ſays, that he renewed the plaſters four times every hour, for the firſt day, and by thoſe means drew out the greateſt part of the fire.

Fernelius aſſerts that fire itſelf applied near, is its own antidote to drive out the fire of the burnt part, and by which pain is aba-

ted. He adds that ſome remedies applied to the parts entice out the fire.

Ambroſe Parey alſo ſays, if we carry the burnt part near to a candle, or live coal, and hold it there long enough, the fire will attract the igneous particles which have been imbibed, and which are the cauſe of the pain. This, though a painful proceſs, will, I believe, be generally allowed to be efficacious, as it certainly does after a time cool the part and give eaſe. May not this effect be cauſed by the attraction which takes place between ſimilar particles, and from the abſorption of a ſmaller body of fire into the larger maſs? Or may it not happen from the air ſurrounding the burn being rarified and deprived of its oxygen by the preſence, of the larger body of fire, ſo as to become leſs capable of affording pabulum to the heat in the burnt part, and which is thus gradually extinguiſhed? Or does it ariſe from the ſame principle, whatever

ever that may be, by which the rays of the ſun thrown on a fire extinguiſh it ?

However, in whatever way it is accounted for, if it be admitted that, by any means, we can immediately abate pain by leſſening heat in a burnt part, it ſurely proves that it did there ſuperfluouſly exiſt ; and as there is perhaps but one ſpecies of heat throughout all nature, which, whether evident to the ſight or only ſenſible to the touch, whether it gives life to the blood and vegetation to plants, or fuſes metals, and decompoſes combuſtible ſubſtances, is ſtill only a different modification of the ſame element, it may be eaſily conceived that a much greater quantity of its particles may be added to a living part, to which fire itſelf has been applied, than can poſſibly be produced by the powers of animal life ; and with regard to the retention of it, the temporary continuance of ſuperabundant heat in every ſpecies of matter is ſelf-evident. If then

dead

dead animal parts are capable of retaining it for a time, is it not likely to be longer preſerved in living parts, whoſe powers of perpetually keeping up a conſiderable degree of heat under every variety of climate are ſo univerſal? In ſome meaſure to prove that this is the fact, it may be obſerved, that if any ſuch ſubſtance as ſcraped potatoes be applied to a burnt part of the body, it will very ſoon become heated, and to ſuch a degree, as to emit ſmoke; and if the ſame be made to cover an inflammation on the ſurface of the body, from an internal cauſe, it will certainly grow hot, but in a very inferior degree: which ſurely ſhews, that heat in a part ariſing from a burn, is ſomething more than mere inflammation.

But whether the theory be doubted or not it muſt be univerſally allowed, that the moſt rational and beſt practice will be to oppoſe the action of fire as ſoon as poſſible, by every means in our power. And to effect

fect this purpoſe, I muſt again obſerve that I think myſelf well warranted in maintaining ice to be ſuper-eminently uſeful. The mode of its action on a burn may poſſibly be accounted for on the ſame grounds as the paſſage of the electric fluid, by the doctrine of plus and minus, ice being a ſubſtance which has acquired ſolidity by the deprivation of heat, readily abſorbs it from warmer bodies till they become of the ſame degree of temperature. Ice applied to a hand in a natural healthy ſtate, gives pain, and why? becauſe it deprives it of its due, inherent, vital heat; on the ſame principle if a part ſuffers pain by being overcharged with heat from having been expoſed to the application of fire, ice will give eaſe, by abſorbing the ſuper-abundant heat which had taken poſſeſſion of it.

It follows then that the ſooner it is applied after the accident has happened the better, as the

the fire will have leſs time to do miſchief, if the application be deferred till bliſters are formed, and ſloughs produced, a great degree of eaſe may be obtained, but the deſtruction of parts which has already taken place, cannot entirely be prevented from going through its uſual courſe of ſloughs and ſuppuration.

In London this remedy may be readily procured, indeed it is now ſo common an article of luxury, that in moſt large towns, and often at gentlemens country ſeats, it is to be had at all ſeaſons. If however it ſhould at any time be wanting, the coldeſt water, or any other good conductor of heat may be ſubſtituted. The method of freezing water by the ſolution of neutral ſalts may in caſes of urgency be well adapted to our purpoſe; and as this can be performed with materials to be procured in almoſt every neighbourhood, we have happily this valuable application ſeldom out of our reach.

Equal

Equal parts of ſal ammoniac and ſalt-petre finely powdered and mixed together, in the proportion of three ounces of each put into four ounces of water, produce a ſolution which ſinks the thermometer thirty ſix degrees, and as it is eaſy even in ſummer to procure water as cool as fifty degrees, a ſufficient degree of cold may be obtained at once to freeze water in a glaſs veſſel immerſed it it.

Even a ſaturated ſolution of common ſalt in water, will conſiderably increaſe the cold of water immerſed in it.

Cold fluids may be uſed either by plunging the burnt parts into them, if the limbs have received the injury, or by ſcraped potatoes, or linen moiſtened with them, or by other means, and the plan ſhould not be diſcontinued ſo long as heat and pain remain, the idea being conſtantly kept in view, that the effect of heat in theſe caſes is beſt counteracted by cold.

There is certainly ſomething alarming

and very repugnant to our feelings, in the application of ſo cold a ſubſtance as ice to a large ſurface of the body, particularly of perſons of a weak and delicate conſtitution; and it cannot be wondered at if the friends of the party, and alſo medical men ſhould at firſt object to it, as likely to give cold, cauſe rheumatiſm, or do perhaps as much harm, as the burn itſelf might have occaſioned; but from repeated experience, I can affirm that it may be uſed with ſafety; indeed it appears that the ſame effect does not follow the application of cold to the body in this ſituation, as would infallibly happen at any other time; which may, I think, be accounted for from the body being in a ſtate of heat and irritation, and therefore capable of reſiſting the effect of cold more than at another time, or in other words, from the additional heat counteracting the cold, and preventing its uſual effect on the conſtitution.

Ever

Ever ſince I have been convinced of the powerful effect of ice in theſe caſes, I have endeavoured by practice and converſation to inculcate the uſe of it. If by thus making it more publicly known I ſhall at all contribute to reſtrain the ravages cauſed by fire applied to the human body, or prevent the deformity which is the uſual conſequence of ſevere burns, my feelings will be abundantly gratified.

Having mentioned the deformity which is often cauſed by burns, I ſhall take the opportunity of adding a few words on that ſubject.

The cicatrix which takes place on the healing of a wound, after the deſtruction of the ſkin and cellular membrane by fire, generally makes a very unſeemly appearance,

even where it is ſuperficial, owing principally to the contraction of the circumference toward the center, and the loſs of the true ſkin which is never perfectly reſtored. But when unnatural adheſions take place between parts which ſhould be ſeparate, it becomes an object of infinitely greater importance, as beſides the ſhocking ſight which ſuch inſtances exhibit, the uſe of the parts concerned, if not wholly deſtroyed, will be, more or leſs according to circumſtances, reſtricted and diminiſhed. Every one muſt have obſerved melancholy inſtances of this nature, and profeſſionally I have been obliged to ſee many; in ſome the head drawn down ſideways has been fixed to the ſhoulder, in others the fore arm bent has adhered to the upper arm: the leg I have ſeen contracted and firmly in contact with the thigh. Such and ſimilar caſes are not infrequently brought to St. Bartholomew's Hoſpital, in hopes that the parts may

be

be reſtored to their natural functions; but in general, the aſſiſtance which ſurgery can afford in theſe caſes is by no means adequate to the expectation or wiſhes of the unfortunate ſufferers, for although the moſt prominent part of the contraction, and that which appears to be the main cauſe or hindrance to the replacement of the parts in their natural ſituation be divided, ſuch is the rigidity produced in all the neighbouring parts, from the loſs of the cellular membrane, and from that degree of criſpation which is cauſed by the fire in all the ſurrounding muſcles, membranes, and ligaments, that after the diviſion of the principal cord, as it may be called, is performed, the parts contiguous will not recede or give way; and when joints are included in the burn they too often remain completely locked, or retain a very confined motion. But although a complete cure cannot be promiſed, theſe miſerable caſes are not to be abandoned without

out attempting ſome means for their relief, as they may ſometimes receive advantages beyond what could be expected.

I have lately ſeen a boy about ſix years old, who nine months before had been moſt dreadfully burnt in the neck and face, the cicatrix had drawn the under lip down toward the lower part of the neck, over which the ſaliva was conſtantly flowing, the under jaw was connected by a tight rigid cord to the breaſt; on the whole, as may be eaſily conceived, the child was a moſt pitiable and frightful object.

Although conſiderable benefit was not expected to be derived from any operation in this caſe, it was in itſelf ſo deplorable, that it was determined to give it the chance of what might ariſe from the diviſion of that part of the cord, which appeared to be the prominent or principal cauſe of detaining the chin in ſo diſtreſſing a ſituation, more eſpecially as it appeared to be formed in a great

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degree of hardened ſkin which with perfect ſafety might be divided. On the diviſion I found as I had ſuſpected, that it was compoſed of a rigid maſs which gave but little way, while all the parts contiguous retained an unalterably fixed contraction, and no great advantage appeared likely to be gained from the operation; however, the edges of the wound being kept apart as much as poſſible during the healing of it, I had the pleaſure to find, that by the aſſiſtance of ſticking plaſter and bandage we were enabled to raiſe the chin, and bring the lip much nearer to the mouth; and thus, with conſtant attention, the appearance which ſuch a diſtortion of ſo principal a feature had occaſioned is conſiderably leſſened, the ſaliva and food no longer eſcape from the mouth and the ſpeech is rendered articulate.*

* The caſe was ſo remarkable that I have been induced to inſert two ſketches, one drawn before the operation, the other to repreſent its preſent ſtate, by an ingenious ſtudent in ſurgery.

But

But though the chirurgical art is much reſtricted in its powers of remedying theſe dreadful conſequences of fire, it can do a great deal by way of preventing them from taking place. This however will depend not only on the ſkill and management of the ſurgeon, but often on the attention of nurſes, and in many caſes the reſolution and aſſiſtance of the patients themſelves muſt be called in aid.

If the effect of the fire has been ſo violent as to cauſe the ſkin and cellular membrane and perhaps the faſcia, or even the parts ſtill deeper to ſeparate from the living, at the time when the ſloughs are caſting off and during the healing of the wounds, great care ſhould be taken to keep the parts aſunder by every means in our power; if for inſtance the fingers are burnt, they ſhould be carefully kept apart by dreſſings and bandages, otherwiſe they will adhere together and become one maſs as I have often ſeen. When the parts

fur-

ſurrounding joints are burnt, the patient, if let alone and truſted to his own judgment and diſcretion, in order to obtain a little eaſe will generally place the ſuffering limb in a ſtate of flexion; but this ſhould be oppoſed as much as can prudently and properly be done, and the patient alſo ſhould be warned of the ill conſequences ariſing from ſuch poſition, and be perſuaded to lend his aſſiſtance toward placing and maintaining the limb in a proper ſituation; for if the joint muſt neceſſarily be locked, as frequently in ſpite of all our endeavours will be the caſe, the parts connected with the joint will be more uſeful in an extended than in a contracted ſtate. But though this will apply to joints in general, as the neck, knee, or ancle, the lower-arm is an exception; for if the parts ſurrounding the joint of the elbow be ſo burnt that all hopes of preſerving its motion are given over, and conſequently there is no expectation when the

wounds are healed, but that it muſt remain locked, it will be a more uſeful member in a bent poſition than in a ſtrait one. The fingers alſo will be moſt properly left in in a ſtate of ſemiflexion.

What has been obſerved with regard to the burns of the arm will apply to fractures in the elbow joint, in which it ſometimes happens that a portion of one of the condyles of the humerus, or the head of the radius is broken off and forced into the joint, or placed in ſuch a poſition as to cauſe an anchyloſis. In all theſe caſes when it can be brought about, the arm ſhould be placed in a bent poſition: if then a ſtiff joint be the conſequence, the hand can aſſiſt in adminiſtering food, and be uſeful for moſt of the ordinary purpoſes of life. Theſe circumſtances may appear too obvious

obvious to require to be noticed; but the plaineſt facts do not always occur moſt readily to the recollection. And this is a caſe which requires immediate deciſion; for if the limb be not laid properly very early, before tenſion and inflammation take place, it ſoon becomes out of our power to alter it. I have more than once ſeen an arm laid and kept ſtrait with a fracture in the joint of the elbow, in conſequence of which an anchyloſis was formed, and the limb became irrecoverably uſeleſs: I have therefore thought the caution not unneceſſary.

However ſevere and irremediable the effect of fire on the joints may be, in many inſtances, after the firſt and moſt violent inflammation is a little ſubſided, ſome degree of motion may be given, at leaſt an attempt from time

to time ſhould be made, and continued if poſſible during the progreſs of ſuppuration and cicatrization.

Parey and Hildanus adviſe opening the bliſters ariſing from burns, and ſome modern ſurgeons recommend this practice, but I am clearly of opinion that the cuticle ſhould not be removed ſo long as it will remain to cover the part and defend it from the air. Every one knows how extremely painful it is to have any part of the body touched from whence the cuticle is abraded; if the bliſters are let alone, the extravaſed lymph will often be abſorbed and diſſipated, and when the ſubjacent ſkin is covered with a new cuticle, that which was elevated into bliſters ſpontaneouſly ſeparates of itſelf without any pain. Soft ointments, fomentations and poultices may be occaſionally applied, but great attention ſhould be paid to repreſs and keep down the granulations, which in the healing of wounds after burns,

are

are particularly apt to be luxuriant, and to cauſe an uneven, unſightly cicatrix.

That miſerably maimed and deformed objects ariſing from burns, often happen through neglect, I am ready to admit; but am far from concluding that the ſurgeon is always to blame: I know the peculiar difficulties which attend theſe caſes, where, beſides the diſpoſition which after loſs of ſubſtance by burns, the parts ſurrounding have to contract, the natural inclination which patients feel to obtain eaſe, by putting the parts in a wrong ſituation, will often counteract the beſt intentions; and in infants, added to the cries and reſiſtance of the child, the miſplaced tenderneſs of parents and nurſes is ſometimes to be encountered. But in ſpite of every obſtacle, it ſhould never be ſuffered to eſcape the memory, that if ulcerations ariſing from burns, are not watched with the moſt ſcrupulous and daily attention, contractions and unnatural adheſions

will

will often take place, which will remain to the end of life; but which, by artificial and ſkilful management, may be very frequently prevented. However, I ſhall conclude with repeating what I firmly believe to be true, that theſe dreadful caſes would happen much leſs frequently, or might often be totally and abſolutely prevented by the timely application of ice.

FINIS.

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