A second essay on burns, in which an attempt is made to refute the opinions of Mr Earle and Sir W. Farquhar lately advanced on the supposed benefit of the application of ice in such accidents : with cases and communications confirming the principles and practice brought forward in a former essay.

A SECOND

ESSAY ON BURNS,

In which an Attempt is made

TO REFUTE THE OPINIONS

OF

MR. EARLE, AND SIR W. FARQUHAR,

Lately advanced, on the supposed Benefit

OF THE

APPLICATION OF ICE IN SUCH ACCIDENTS;

With Cases and Communications,

CONFIRMING THE PRINCIPLES AND PRACTICE

BROUGHT FORWARD IN A

FORMER ESSAY.

Also Proofs, particularly addressed to

SURGEONS OF THE ARMY AND NAVY,

OF THE UTILITY OF THE STIMULATING PLAN
IN THE TREATMENT OF INJURIES CAUSED BY THE EXPLOSION
OF GUNPOWDER.

By EDWARD KENTISH,
AUTHOR OF THE FORMER ESSAY.

" Fire cools fire,
" Within the scorched veins of one new burn'd."
SHAKESPEARE.

NEWCASTLE UPON TYNE:
PRINTED BY EDWARD WALKER, PILGRIM-STREET.
SOLD BY JOSEPH MAWMAN, POULTRY, LONDON; J. BELL,
NEWCASTLE, AND ALL OTHER BOOKSELLERS.

1800.

(Price 3s.)

vinced the author that a slight variation in the treatment of burns will be beneficial—in superficial burns the application of Oleum Terebinthinæ rectificatum for 24 hours generally sufficient—secondary inflammation sometimes occasioned by longer continuance of it—mode of relieving this symptom, 58, 59.—Unnecessary caution in the use of opium in the favourers of the author's practice—advantages of counter-irritation, 59, 60.—Best mode of managing sloughs, 61, 62.—Of repressing fungus—singular advantage of chalk externally when the secretion of pus takes place—the author's mode of applying it, 63.—Probably similar in action and effects with powdered bark and rhubarb, &c. as recommended by Mr Home, surgeon—the author disappointed in giving the result of intended experiments with carbonic acid gas, 64.—Necessity of strict attention to regimen in suiting the internal to the external treatment, 64.—Full diet at the pus-discharging period of the complaint supposed by the author, in essay first, to be hurtful, confirmed in the following case—spontaneous diarrhœa, acting as a counter-irritation, suspended the excessive secretion of pus, 65.—Advantages of inducing discharge from the bowels under similar circumstances, 65.—Case George Clark; accident occasioned by the explosion of hydrogen gas; attacked soon after with a shivering fit—treated with æther and opium *internally*, rectified oil of turpentine *externally*, 66.—Poultices applied to the limbs on the second day, 68.—Secretion of pus on the third day, 68.—Functions of the brain morbidly affected, probably by sympathetic irritation, 69.—On the fourth day every symptom became favourable, 70.—Powdered chalk applied—secretion of pus continued from the separation of eschars, 72.—Spontaneous diarrhœa on the ninth day—striking benefit received by it, 73.—Ninth day frequently observed to be critical, 73.—Case Thomas Pyle, from a similar cause—a cathartic given at the stage when pus was secreted in quantity, 77.—Case, a boy—accident from the explosion of gunpowder, 78.—The full appreciation of the new method of treating burns comes much within the province of naval and military surgeons—Dr Trotter's attention to this subject, 80.—Letter from Mr Stephen Hammick, surgeon, Plymouth, 80.—Practice in burns at the Royal Naval Hospital—external application of vegeto-mineral water, &c. at one time very generally employed; afterwards spirit of wine with camphor—trial made with Ol. Terebinth. rectificatum—success, 81.—Remarks by the author 82.—Letter from Mr Horn, surgeon to the

Newcastle

APPENDIX.

A SECOND

ESSAY ON BURNS, &c.

INTRODUCTION.

CHAP I.

Preliminary Obſervations—Aitken's Syſtem of Surgery—Effects of Syſtems—Converſation concerning the new Mode of Treatment—On the Unity of Medicine and Surgery—External and internal Diſeaſes intimately connected with this Principle.

IN the former Eſſay on Burns, I entered ſomewhat at large on the different and inconſiſtent modes in which accidents of this kind were treated. It appeared to me that I had ſaid enough; and there were thoſe who thought I had ſaid too much: yet, from opinions lately publiſhed, it does not appear that what was done has produced the effect I wiſhed, in influencing the practice in theſe caſes, and in leading to thoſe deciſive and *marked* concluſions, which ought to be kept in view by men of ſcience.

It has frequently been wiſhed by many candid

practitioners, that *nature* had ſo marked the beginning of every diſeaſe, as that we might with certainty predict the future from the preſent; and that the reputation of a great phyſician might not be included in the term—*a lucky gueſſer:* but had even this been the caſe, what certainty have we that our art would have been much more advanced? Is not the phænomenon which I am inveſtigating one of the moſt palpable we can conceive of cauſe and effect; and is there one in which, ſince the earlieſt records of our art, there is more contradiction, or leſs certainty? To what are we to attribute this unaccountable diſcordance in a matter which is daily happening, (and wonderful to tell!) which every old woman thinks herſelf capable of treating? Perhaps this interference, and in ſome caſes the ſuperiority of the *old woman's* recipe over the *routine* of the *young artiſt*, may produce ſuch diſguſt as to prevent him from paying due attention to the moſt intereſting proceſſes of the animal œconomy. By way of illuſtrating this matter let us ſuppoſe a well educated (as it is termed) young practitioner, who may have ſtudied at Cambridge, Oxford, London, or Edinburgh, either with M. D. attached to his name, or not, as you pleaſe. Being called to an accident of this kind, from the few caſes he has ſeen in the hoſpitals he is undetermined in the mode of treatment, but goes home

home and conſults in his cloſet the Elements of Surgery by John Aitken:—

LIV.

" Combuſtura,
Encauſis,
Ambuſtio,
Aduſtum,
} of the Latins.

Brulure, of the French.

Burning,
Scalding,
} of the Engliſh.

Phlegmone, whoſe occaſional cauſe is heat.

LV.

" Organiſed matter of every kind, eſpecially the animal body, may be altered, or totally deſtroyed by the action of fire. It is the moſt ſtimulant of all the occaſional cauſes of phlegmonic affections. Thoſe which it excites are, however, not ſpecifically different from inflammations induced by other means. Their violence and extent are in proportion to the quantity acting, the continuance of its application, and the nature of the parts it affects.

LVI.

" Fire may be accumulated in bodies nearly in the degree of their denſity, and ſolidity; in oil therefore, more than in water, and in earths, and metals more than in either. Conſequently the quantity of fire which has acted as an occaſional cauſe of phlegmone may, in ſome meaſure, be eſti-

mated from the denſity of the medium through which it was applied, and the degree of accumulation and continuance.

LVII.

" Burning, like all other morbid affections, requires curative attention in proportion to its quantity. Sometimes it is ſuperficial, and circumſcribed, covered with veſications; at other times profound, extended and encruſted. It proportionally excites ſymptomatic fever, (XXXVI.) frequently to a fatal pitch. It may ſuffer any of the ordinary terminations, (XXIII. XXIV.) the ſuppurative one, for obvious reaſons, can ſeldom aſſume the form of abſceſs. (XXIII.)

LVIII.

" The combined effects of the general and topical antiphlogiſtic remedies (XLV.) are neceſſary in the cure of the more ſevere burnings. The exquiſite increaſe of ſenſibility not only forbids the external uſe of any ſtimulant matters, but, on the contrary, demands the moſt bland and ſoothing coverings.

" Is not opium peculiarly indicated? Are not *ardent ſpirit*, ſugar of lead, and lime water likely to prove hurtful external applications?"

He determines from this account in the Syſtem of Surgery to apply oil in which opium has been diſſolved, and ſome very *ſmooth bland* ointment;

ment; and to complete the treatment upon the ſame principle, orders bleeding *ad deliquium* (or fainting) and a ſtrong purge with low diet afterwards. How would he be ſhocked to hear from the by-ſtanders the propoſal of waſhing the parts with ſpirit; and to take a little internally would offend his *prejudices* ſtill more. Should they perſiſt, falſe ſcholaſtic pride would prevent his benefiting from this *experiment*, and he would leave them with an *Anathema*. The crimination and recrimination from ſuch conduct is eaſy to be conceived, and I leave them to the imagination of my reader.

In an experimental ſcience, in which *chance* has given the moſt valuable of the facts we poſſeſs to the cultivators of our art, arrogance ſhould be baniſhed; and it is our duty to receive and inveſtigate all the evidence we can poſſibly collect: we may then claſs the phænomena under different heads, and reduce them to that unity of principle which ſo beautifully governs the actions of the living animal ſyſtem. It requires ſome philoſophy to be thus ſchooled; but the moſt valuable of our acquiſitions frequently ariſe from ſuch a ſource. To prove that I am not preaching without practiſing, I refer the reader to a caſe I communicated to Dr Beddoes, in the Medical Contributions; he will ſee that I have had a leſſon in this ſchool. I now confeſs it was not the only one. During the time it is not plea-

ſant, but there are great benefits ariſing from it; and as we are mere creatures of habit, each repetition is more eaſy, and perhaps more beneficial. - In looking over what Aitken has ſaid upon burns, we ſee in a ſtrong point of view the *errors* that muſt be committed by all *ſyſtem* writers; they are obliged to enlarge upon all parts of a ſcience; but to comprehend the whole is more than the limited mind of man is capable of. Aitken had a vigorous intellect, and had he been placed in proper circumſtances, there are few men who would have ſooner detected error than himſelf; but he has written upon this ſubject as many others have done, with *little* experience and *great* prejudice. Would men in general confine their efforts to a few points, ſcience would make a more rapid progreſs, though there might be leſs brilliancy attached to individuals. It is by a diviſion of labor that perfection is to be attained in the ſcientific, as well as in the mechanic arts; and were we *truly* to appreciate the matter, we ſhould be convinced that there is more credit in eſucidating *one* uncertain point in the practice of medicine or ſurgery, than in loading many clear points with a farrago, which, by the inexperienced, cannot be diſtinguiſhed, and of which the bad is as likely to be choſen as the good. Thus may error become perpetual.

Mr

Mr Earle's pamphlet convinces me that mine upon the ſame ſubject is not much known, and is, I hope, a ſufficient apology for troubling the public with this ſecond eſſay. Perhaps the following converſation between Dr Blane, Dr Johnſton, and Mr Bell, when the latter was examined on his qualification as a ſurgeon for the navy, will be ſtill more convincing: "Having mentioned ſcalds and burns among the accidents during our cruize, Dr B. ſaid, 'pray, ſir, how did you treat them?' I replied, 'by bathing the affected parts with oil of turpentine.' 'Oil of turpentine! Good God, ſir! that is a practice I muſt condemn in the ſevereſt terms! and I think *you*, Dr Johnſton, will agree with me in reprobating it.' Dr J. ſaid, he never heard of ſuch a remedy before, but aſked on what principle, or theory, I could juſtify it? I ſaid, 'that when a perſon had any member ſo much expoſed to ſevere cold as to become *froſt-bitten*, it was uſual to apply, firſt ſnow or ice, and afterwards cold water, before any degree of ſenſible heat could be borne without injury; that, for the ſame reaſon, when a part had been violently ſtimulated, it was equally neceſſary to bring it by degrees down to the healthy ſtandard; that this object was beſt accompliſhed by the application of a ſtimulus a little leſs violent than that which had cauſed the diſeaſed action; and, that the Ol. Terebinth.

had been found by experience equal to produce that effect.' 'On what experience?' ſaid Dr B. 'On that of Mr Kentiſh, of Newcaſtle, who has written an eſſay on the ſubject, in which the ſuperiority of this method of practice is proved beyond a doubt, at leaſt in my opinion.' Dr B. 'Does it (meaning the Ol. Terebinth.) not produce great pain?' Anſ. 'Not in the leaſt; on the contrary, it is ſoothing and agreeable to the patient.' I then narrated to them the caſe that Mr Anderſon communicated to you; that of the child I noticed in my former letter; and alſo the innumerable caſes I had ſeen while with you, where the patients were *flayed* from head to foot."

The above was written to me immediately after his examination, which he paſſed with great credit to himſelf, being deemed eligible for the higheſt ſituation in that department. When I hear of men of ſuch eſtabliſhed reputation being unacquainted with the facts upon which I have grounded my practice, and knowing that conviction upon this point muſt cauſe a very conſiderable revolution in their opinions on many other *important* parts of their practice, I feel anxious that a more general circulation ſhould be given to the concluſions drawn from the facts adduced in my eſſay;—that if well founded, as I believe them to be, they may do good: if erroneous, the ſooner they are refuted the better.

The

The above is not meant in the ſlighteſt manner to reflect upon either Dr Blane or Dr Johnſton; on the contrary, the compliment they paid to Mr Bell in his qualification, ſhews they were pleaſed with his information, and that they heard his facts with that candor with which men of great minds are ever ready to receive the leſſons of nature, even though they contradict the leſſons they have been taught at ſchool, the acquiring of which coſt them ſo dear, and to part with them no leſs an effort; but "amicus Plato, ſed magis amica veritas."

I muſt confeſs I have found great aid in the whole circle of practice in *external medicine* from the application of theſe principles; and I hope at a future period to be able to bring forward ſome ſtriking facts, affecting the preſent practice in as great a degree as this treatment of burns compared with the old authors.

I uſe the term *external medicine* with a view of pointing out the unity of this ſcience, and that to divide it is impoſſible. That an individual may devote himſelf to a particular part of practice is true; but if he be ignorant of the vital powers of the ſyſtem upon which he works, he is unfit to exerciſe the art of healing, and ſhould not bear any of its appellations. If adequate, the name ſhould be the ſame to all. It was the Arabian phyſicians, who were in general great lords, courtiers,

tiers, or at leaſt wiſhing to be ſuch, in the eleventh century, that attempted to introduce a claſs of men to perform thoſe functions which their own pride and lazineſs prevented them from fulfilling. Such an attempt would have partiſans both for and againſt, and it was ſome centuries before the diviſion of doctors and chirurgeons was fully eſtabliſhed. The diſtinction has remained ever ſince, and many diſputes have ariſen between theſe claſſes, concerning the ſuppoſed priority or ſuperiority of the one over the other, ſometimes carried on with a diſguſting acrimony, at others with a childiſh abſurdity. To reſtore them to what they formerly were, i. e. to reunite them, may require ages to come; but after vacillating for ſome time, reunion is the point in which they muſt reſt.

The art of reſtoring health is one; the principles of action are the ſame, and the exerciſe of the different branches ſuppoſes the ſame fundamental knowledge. The accident of which I treat could not have been carried to that degree of certainty or perfection, merely by external means; nor do I aſſert more than what I believe, when I ſay, that I have received great advantage in the treatment of internal diſeaſes from my attention to theſe external proceſſes, where nature works in view. Should the principle be admitted in theſe extremes of heat and cold, (ſee Firſt Eſſay, p. 103.) we may alſo gain ſome light when the balance of the ſyſtem is

is leſs broken; for there are a great number of diſeaſes which take their riſe from a change of temperature, and there are *none* which are not influenced in their courſe by the modifications of heat and cold; and even in the preſent advanced ſtate of our knowledge, there are few ſubjects of which we know leſs than the effects of different degrees of heat upon the living body. For how many ages has it been repeated by the faculty, and believed by the public, that warm baths are debilitating? What a combination of relative ideas are neceſſary to determine this aſſertion! and even when determined it could only be relative to an individual, as different habits and circumſtances might reverſe the opinion. The public are indebted to Dr Beddoes for removing a conſiderable degree of prejudice which they had againſt warm baths; their utility in pulmonic complaints begins to be apparent, and I have no doubt in a little time they will come into very general uſe. As an agent, much may be done by them to aſſiſt medicine and reſtore healthy action.

From what has been already adduced, I truſt the importance of the inveſtigation in which I am employed, will be apparent, as will alſo the connecting medium of all the phænomena of the ſyſtem, which in this reſembles our portion of ſenſibility, that not

one

one part of it can be affected without the other feeling a conſentaneous ſympathy.

CHAP. II.

Mr Earle's Pamphlet on leſſening the Effects of Fire, &c.—Apology to Mr E. with Obſervations—Caſes related and quoted by Mr E. with Remarks—Caſe of a Lady under the Care of Mr Farquhar, now Sir Walter Farquhar, M. D. related by herſelf—Free Remarks upon this Caſe, ſhewing the Sources of Deluſion in Medicine—Opinions on the Doctrine of Heat, &c.—Caſe by Mr Anderſon, of Newcaſtle, in which the paralyſing and ſtimulating Practices were both uſed on the ſame Subject, at the ſame Time—Remarks ariſing from this Caſe—Remarks by the Reviewers—Cold recommended by others—Mr S. Lowdell—Alſo ſome Caſes by Mr Thos. Parkinſon, with Remarks.

AN Eſſay intitled the Means of leſſening the Effects of Fire upon the Human Body, from the pen of Mr Earle, bearing a very recent date, (Nov. 16, 1799,) having come to my knowledge through the channel of the Medical and Phyſical Journal, I anxiouſly procured the work. It would appear from this tract, that my eſſay upon the ſame

ſubject

ſubject had not fallen into the hands of Mr Earle, although it had been publiſhed near three years previouſly to his, and had gone through the routine of reviewers both medical and literary: for as I have therein endeavoured to maintain a theory and a *practice* founded on incontrovertible facts, diametrically oppoſite to thoſe wiſhed to be eſtabliſhed by Mr Earle, I have no doubt he would have noticed my eſſay had it come within the ſphere of his reading.

I have not the pleaſure of Mr Earle's acquaintance, and I hope he will excuſe any liberty I may appear to take in criticiſing the principles of his eſſay, as nothing perſonal can be meant: but in a matter of ſuch importance, where the intereſts of humanity are at ſtake, in fixing the rules of ſurgery on the broad baſis of the immutable laws of nature, ſilence or falſe delicacy would be highly criminal.

The art of ſurgery has been neceſſary ſince the creation of man, and the laws of the animal œconomy have always been the ſame; but the knowledge of theſe laws is even yet partial and imperfect. Some of them have been ſeen darkly by ſome obſervers; but even thoſe glimmerings have vaniſhed with the individuals, ſo that in a great meaſure each perſon has had to go over the ſame ground: but in theſe later times, ſince the art of writing, of printing,

printing, and more particularly now, that the mode of accumulating detached facts in periodical publications has taken place—a mode which renders them works of ineſtimable value—a maſs of evidence will be collected, from which the ſimple laws of the animal œconomy may finally be made apparent. In drawing concluſions from ſuch documents, it will be neceſſary that we ourſelves be placed in ſuch circumſtances as to be enabled properly to appretiate the value of the evidence; for on the proper uſe of theſe means depends the advancement of our ſcientific art. A fortuitous concourſe of events has placed me in ſuch a ſituation as leads me to think myſelf capable of arriving at ſome uſeful concluſions. The thought is ſufficient to induce the attempt; concerning the execution, I muſt truſt to the opinion of thoſe capable of forming a juſt one. Having made theſe preliminary obſervations, I ſhall proceed to reviſe ſome of the theoretical and practical doctrines of Mr Earle, as given in his eſſay.

He begins by lamenting the want of principle in the treatment of ſuch accidents as happen from the influence of fire upon the human body, both in the ancient and *modern* authors upon this ſubject: he likewiſe notices ſome of the moſt common and contradictory applications, and adds that many more formulæ might be enumerated; that in general they

they are intended to cool, relax, or give eaſe; and that in ſome meaſure they anſwer theſe purpoſes, but do not furniſh effectual means to ſtop the progreſs, or leſſen the powerful action of the *matter* of fire, which probably continues to *exiſt* in the burnt part, and to extend its influence for ſome time. This opinion of the matter of heat I have mentioned in my former eſſay, (page 125) ſpeaking of Fourcroy's recommending the fluor volatile alcali as an application to burns, which he ſuppoſes may unite with ſome diſengaged matter of heat, previouſly to its having time to combine with the animal fibre. Chaptal appears to be of the ſame opinion; but I have there ventured to diſſent from theſe enlightened chemiſts, looking upon heat as an effect produced by the motion of the particles of matter changing their ſtate from a gaſeous to a liquid, or a ſolid form. But whether it is a material body, or only the effect of chemical changes in other bodies, ſeems to be of little conſequence in the preſent diſquiſition: let this abſtract queſtion be determined by the chemiſts. When they ſhew me the matter of heat palpable to the ſenſes, in a fixed ſtate, I ſhall be a convert; until then I may perhaps remain a ſceptic. We need only obſerve its effects as influencing a ſeries of actions in the animal œconomy, actions which differ according to the degree of heat, and its duration,

duration, following the laws of animated nature. All other than theſe effects are incapable of proof, and may lead us wrong, therefore ſhould be avoided.

The firſt caſe Mr E. relates is one which happened ſome years ago to a medical gentleman: being near a bottle of ſpirit of wine, which was imprudently heated, and by ſome accident caught fire, the bottle burſt and the contents were thrown over his hands, face, and the upper part of the neck, all of which were miſerably burnt. "At a conſultation," ſays Mr Earle, "on this unfortunate caſe, the uſual modes of treating burns were diſcuſſed; 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 conſtantly 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."

After this caſe, Mr E. narrates that of the illuſtrious Boerhaave, which happened from the burſting of Papin's digeſter. It was treated by profuſe bleeding,

bleeding, purging, low diet, and externally by the ſofteſt oily applications to be found in the ſhops. It was cured after a tedious ſuppuration, and with an unſightly ſcar. It is here brought into parallel, with a view to ſhew the ſuperiority of *cold* applications over unctuous or greaſy ones, as in every other reſpect the treatment was nearly ſimilar—bleeding in both, cold drink, and very little nouriſhment.

I wiſh this caſe of the medical gentleman had been drawn up with more exactneſs. The expreſſion, "*ſome bliſters* aroſe, which however in *little more* than a *week ſubſided*, and no ſcar was produced," is indefinite in reſpect both of time and matter. It may mean the *bliſters* ſubſided in little more than a week, and when the *ſores* were healed there remained no ſcar. But the healing of the ſores might be ſome time after the ſubſiding of the *bliſters*. From the obſervation at the beginning, "when, ſome years ſince, I was ſent for to a medical gentleman," it would likewiſe appear that this caſe had been drawn up from memory. Now as the recollection of a caſe *ſome years ſince* can only be general, the particularities muſt have eſcaped, and would if narrated perhaps have given a different ſhade to the whole. I do not mean to impute a wiſh in Mr Earle to miſlead; but when a medical man taxes his memory for caſes to ſupport a particular doctrine, he ſeldom admits any

 intruſive

intruſive facts which would weaken the concluſions he wiſhes to draw. I have likewiſe quoted this caſe of Boerhaave's in my eſſay (vide p. 30,) and have wiſhed it to be brought into compariſon with the treatment of a ſimilar accident which happened to a medical gentleman (Mr Hopper) at that time my pupil, (vide page 162, former eſſay) under my own care; the whole of which was drawn up at the *bed-ſide* of the patient, relating his feelings, and conducted on principles drawn from extenſive obſervations in ſimilar caſes—principles which were developed to me from the reſult of my own miſtakes, and which by their *force* and *truth* inſinuated themſelves into my mind, contrary to my routine, my prejudices, and even my intereſt. I wiſh theſe caſes to be compared, for in my own mind nothing more ſatisfactory as evidence can poſſibly be adduced; and there the progreſs of mind from error to truth may be traced.

I have wiſhed in my eſſay to bring into compariſon thoſe extenſive injuries only, where life or death would be the reſult of different practice. Such caſes have been related; and if from experience I am enabled to aſſert, that a caſe will terminate in the loſs of life, or the reſtoration of health, according to the mode of treatment purſued, I think I may fairly be allowed to conclude, that a procedure upon the ſame principle in injuries which would not affect exiſtence, would have a proportionate

tionate degree of ſuperiority over thoſe which would extinguiſh life were it primarily in danger. To have advanced thus far appears to me to be as much as can be expected in a *conjectural art*, even if it does not place it on a *firmer* baſis, and reſcue it from that *opprobrious title*.

After a diſplay of this caſe, in which cold water produced ſuch effects, Mr Earle confeſſes, "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." The next caſe related is that of a lady who had her neck and face much injured, from the burning of her neckerchief. There was a conſultation on this caſe, at which Sir Walter Farquhar was preſent. He propoſed the application of ice to all the burnt parts, although they were very extenſive. Mr Earle's predilection for cold applications induced his immediate aſſent, and ice was accordingly applied; which *appearing* to give immediate eaſe, was continued unceaſingly during ſeveral nights and days; after which the lady recovered without any ſcar remaining, or any injury to her health from the cold ſtate in which ſhe ſo long remained. This caſe is evidently, as was the laſt, drawn up from recollection, and little can be gathered of the ſtate of the lady from what is

related: that ſhe had ice applied to her for ſeveral days, and that ſhe avoided any ill conſequence from it, we are told; as alſo that ſhe afterwards, i. e. I ſuppoſe, after they ceaſed applying what is termed the remedy, recovered without any ſcar remaining. But of what did ſhe recover? Were the parts bliſtered, or were they deſtroyed? Was there ſloughing, or a purulent diſcharge (ſecretion) from the ſkin; and how long *after* was it before ſhe was well? Of all theſe particulars we are uninformed, and without ſuch information no juſt judgment can be made. It perhaps is one of the moſt difficult parts of a profeſſional author to convey *preciſe* ſtatements of particular actions in injuries happening to individuals under their care; but here there is no attempt of the kind; every thing is rounded off by general aſſertions.

A child of Mr Earle's, about three years of age, playing with his brothers, was thrown down upon the hearth: to ſave himſelf, he caught hold with one hand of a hot bar of the grate. His father ſaw him in leſs than a quarter of an hour after; he was in exquiſite pain, although the nurſe had wrapped his hand in oil; ice was inſtantly ſent for, with which his hand was covered, and he got 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,

[*This*

[*This ſhews that ice will not prevent the riſing of bliſters.*] which, by degrees, in one large 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 purſued during a week, at the end of which, an abſorption of the extravaſated 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 away without any painful ſenſation, a perfectly well healed ſurface appearing underneath.

This caſe, it appears, had been attended by Sir Walter Farquhar, to whom Mr Earle expreſſes his acknowledgments for his kind attention, alſo for being the firſt who ſuggeſted this mode of treatment. Their converſations frequently turned on the efficacy of the means employed, and

they mutually regretted that this practice was ſo little known. This ſeems to have induced Mr Earle to take up his pen upon the ſubject. He makes the following obſervations upon his ſon's caſe: "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 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."—Such are the concluſions attempted to be drawn from this caſe: I muſt confeſs the premiſes do not appear to warrant them; I muſt therefore beg leave to draw the reader's attention to ſome of the facts as ſtated above, from which I ſhall be induced to

draw

draw very oppoſite inferences. It is ſaid, "a *bliſter aroſe*, which, by *degrees*, in one large bladder, occupied the whole of the palm of the hand, and the inſide of the thumb and fingers."—From this it appears that the extravaſation of lymph had not taken place when the ice was firſt applied. I ſhould therefore conclude that ice applied to a burned part will not excite the abſorbents ſo as to keep up the equilibrium of action between them and the ſtimulated exhalents, upon which, in this ſtate of the irritated ſurface, chiefly depends the cure. I have frequently ſeen veſications quickly reabſorbed by the uſe of the ſtrongeſt ſtimulants; and in general bliſters are prevented from forming after their application. From ſeeing ſuch effects from known and demonſtrable cauſes, I cannot but ſuppoſe that they muſt ariſe from ſome certain laws of the ſyſtem; and as nature has allowed herſelf to be ſeen in theſe proceſſes, I bow with ſubmiſſion to her decrees, and look upon it as the higheſt honour mortals are allowed, to become her interpreters. For an explanation of thoſe laws I refer the reader to what I formerly advanced on the effects of heat, &c. (vide p. 103, Eſſay on Burns.) In this caſe Mr Earle has given me ſome certain data to form a judgment upon. The formation of a bliſter is with me a determined *point* to judge of the extent of the injury in that part. This accident

claſſes with thoſe in which there is an increaſed action, but no deſtruction of the parts. Had the cutis itſelf been deſtroyed there would have been no bliſter ; the bliſter therefore demonſtrates the extent of the accident ; and in this caſe, I can venture to aſſert, with the ſame conviction in my own mind, that *none* of the tremendous conſequences pourtrayed by Mr Earle would have happened, as I can, that two and two make four. Whatever mode had been followed the child would have recovered ; and I believe if nothing had been done he would have been well as ſoon. I do not ſee the reaſon why the opening of the bliſter was ſo much dreaded : irritation on any part of the ſurface, ſo as to produce the action of the exhalents to throw out ſerum, appears to me to be nearly the ſame, whether it ariſe from cantharides, muſtard, hot water, heated ſubſtances, &c. &c. Now we know it formerly was the cuſtom in taking off a bliſter to take away the whole of the cuticle, and rub the bare cutis with a coarſe towel. From this rough treatment no ill conſequences aroſe ; a greater ſecretion of pus might be the effect, but I never heard of the deeper ſeated parts being in any danger from ſuch irritation. With ſuch views, and ſuch experience, I hope my concluſions will not be deemed improper, ſhould I even venture to ſay, that had the mode pointed out in my former eſſay

been

been followed, he would have been well in half the time; in ſhort, I might almoſt aſſert he would not have been ill: for had the part been well bathed with ſpirit of turpentine, covered with a thick plaſter of digeſtive ointment ſoftened with the ſame ſpirit, a poultice of bread and milk applied *hot* over the plaiſter, and a ſpoonful of white wine, with ten drops of Tinc. Opii been given, and the child put to bed, at the end of twenty-four hours there would have been no veſtige of the accident.

Several caſes are then related, in which ice produced, according to the ſtatements, the moſt ſalutary effects: but leſt I may be thought too minute in this diſcuſſion, I ſhall paſs them over, and go on to the 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 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

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. Mr Earle then adds, that it is impoſſible to ſay what a more early application of ice might not have effected; but in his opinion much greater advantage would have been attained, ſince in other inſtances, where it has been applied early, although 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?

The foregoing caſe induced Mr Earle to make the above obſervations; to which I muſt requeſt the reader's permiſſion to add a few remarks. Thoſe parts of the caſe to which Mr Earle thinks his want of ſucceſs was *chiefly* to be attributed, viz. the *application* of *ſpirit of turpentine*, and the *length of time* which elapſed before the uſing of the ice and ice water, appear to me to be the chief cauſes of the *ſucceſs* he had in this caſe: for I muſt, knowing what I do, term it ſucceſs to have brought the parts

parts to a ſtate of ſecretion, though it may be ranked with Mr Windham's negative ſucceſs, as the patient was loſt afterwards. I hope Mr Windham's *caſe* will not keep up the allegory. We are not informed concerning the mode of treatment after the proceſs of ſuppuration commenced; but from the account, we have reaſon to conclude that the ice was continued during the whole three weeks of her exiſtence, as we are never told of its being deſiſted from. Now I can eaſily ſuppoſe the theory of abſtracting the redundant portion of heat from the ſyſtem, during what is called the inflammatory *attack*, but I do not ſee the neceſſity of continuing the ſame means when the ſyſtem is going through a various circle of actions, which require very different means to keep up the utmoſt of her powers in each. Thoſe who wiſh to be informed why, and upon what principles, I ſuppoſe beneficial effects to have ariſen from what Mr Earle imagines to have produced the contrary, I recommend to read my former eſſay, where they will meet with a full explanation. If, as in this caſe, I very much doubt of the advantages of the application of ice, I muſt alſo be allowed to doubt of its uſefulneſs in caſes of leſs magnitude; for I look at it *abſtractedly*, and as I find it contrary to principle in one inſtance, I conclude it is the ſame in all.

There is one caſe more related in Mr Earle's

eſſay

eſſay which I cannot refrain from noticing; not that the caſe itſelf requires much attention, but merely as it is announced to have happened under the immediate inſpection of Sir Walter Farquhar; on which account a degree of weight is attempted to be thrown into the ſcale, that may produce a falſe eſtimate, as the public are more eaſily induced to adopt an opinion countenanced by a popular phyſician, than from any real merit or truth the thing recommended may poſſeſs. Both thoſe gentlemen (I mean Mr Earle and Sir W. Farquhar) enjoy much of the public opinion; therefore their errors are of more conſequence, as implicating a larger ſphere. Beſides, one of them has the care of the miniſter's perſon; and ſhould an accident of this kind happen to him, and he be treated according to Sir W. F.'s plan, from his habits of ſtimulation there could be no doubt of his deſtruction. England would thus loſe her prime miniſter, and Europe, nay the civiliſed world might be endangered, and all be loſt by this ſingle miſtake. On what ſlight incidents do the moſt momentous events depend! Allowing this probability, the converſe muſt be admitted, and I may have the ſupreme ſatisfaction of preſerving the ſaviour of Europe, and to my feeble efforts the civiliſed world may owe its remaining upon its axis. The caſe is as follows, related by the lady herſelf:—"Early in the month of

of March, 1792, one morning juſt after breakfaſt, I went into the parlour to ſpeak to my mother, who was ſitting by the fireſide, 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; 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

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 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 I had a little recovered from the ſhock, I ſent off directly to requeſt the favour of Mr Farquhar, (now Sir Walter Farquhar, M. D.) 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 to ſit up with me all night, who was to keep conſtantly applying to the burns cloths *dipped* in the ice,

and

and to be changed as ſoon as the chill went off; that if I became weary, and could ſleep, they ſhould get ſome freſh hog's 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 hog's 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*. [*This would appear to contradict the terrible conſequences that Mr Earle predicted, ſhould the bliſter have broke ſpontaneouſly in the caſe of his ſon's hand.*] Conſidering how much I was burnt, the pain I ſuffered was comparatively trifling. [*From what could this lady judge? It does not appear ſhe had ever been burnt before, or ſeen*

others

others who had.] 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; [*This account does not ſpeak much for the comfort of this practice to the individual's feelings.*] 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 ſymptoms which my friends were apprehenſive would have been the caſe, after the terror and fright I ſuffered by the accident."

The whole of Mr Earle's eſſay ſeems more intended to recommend Sir Walter Farquhar's practice of applying ice in burns than any thing new of his own. This being the caſe, I am ſurpriſed Sir W. F. ſhould have let ſlip ſuch an opportunity as this of giving his own ideas on the above caſe, which moſt probably was drawn up at his inſtance. I have no doubt of the accuracy of the lady's relation; and had it been written as an intereſting ſcene in a novel, it would have had great merit: the fright of the mother and ſiſter, the alarm of the

whole

whole family, the young lady's preſence of mind, are all pourtrayed with a degree of intereſt that does credit to her deſcriptive powers; and her ſtoiciſm in refuſing relief from any but the hands of the happy Sir Walter, finiſhes the climax. Except in this inſtance of the power of imagination, the whole caſe does not furniſh a ſingle idea to the medical reader.

We ſee ſomething of the ſame kind of mental operation in inſtances related in Perkins's account of the metallic tractors. There are ſeveral accounts of ſcalds and burns being cured by the uſe of ſuch means; among the reſt I ſhall notice one: "Your tractors, which I lately purchaſed to uſe in my family, I have applied with great ſucceſs, upon a perſon *ſcalded* with boiling lie. A man by the name of Welch, who was at work in my potaſhery, when boiling down the lie, ſome of it flew into one of his eyes, which ſoon became very much inflamed, and ſwelled to ſuch a degree that he could not open it, and remained in that ſituation for the ſpace of three days. After the tractors had been uſed a few minutes, he was able to open it; and with two applications only, his eye was entirely free from pain and inflammation, and in a ſhort time was perfectly well, although ſo badly ſcalded that he had deſpaired of its ever recovering." [James Glover, Eſq. county of Troja, ſtate of

New-York; ſee the influence of metallic tractors, &c. by B. D. Perkins, A. M. page 67.] Having noticed this caſe, leſt my readers ſhould ſuppoſe it claims any merit as a medical application, I recommend them to read Dr Haygarth on the imagination, where the powers of the tractors are juſtly appretiated: * it is a curious ſubject, and will repay them for their trouble. They will there ſee the tractors treated as animal magnetiſm was upon the continent.

Dr Perkins's harveſt upon John Bull's credulity has been a pretty good one, though not equal to his predeceſſor, Mons. Meſmer's. That to act ſtrongly upon the imagination by the ſtimulus of hope or expectation is capable of drawing off the mind from its attention to certain degrees of bodily pain, is a fact that muſt frequently have fallen under the cognizance of the medical obſerver, and to a certain degree ought to be calculated upon; we ſhould only guard ourſelves and the public againſt that *dupiſm* which is too commonly practiſed by the bold and impudent quacks of the preſent age,

* He used pieces of wood shaped and painted like the tractors, which produced effects equal to the metallic ones. Dr Perkins now attempts to *amuse* the public by the effects produced upon animals. It ought to be noticed that this is changing the object upon which they operate, for here the spectator is acted upon instead of the patient, and nature works the cure.

age, not in *phyſic* only, but in all other profeſſions and concerns in life. The hiſtories of Magnetiſm and Perkiniſm ſerve to ſhew us how powerfully the body is acted upon by moral cauſes, and ought conſtantly to be held in view by medical philoſophers, whoſe taſk in drawing concluſions from the phænomena which may be preſented to them, is of the utmoſt import, as the lives of thouſands may be implicated by a ſingle error. Requeſting a lady to write her own caſe, and give her opinion upon the methods which relieved her and her mother, may produce an effect on that part of the public who are not better able to form an opinion than the lady herſelf. Who can doubt of the number of atteſted cures both by Magnetiſm and by Perkiniſm? The patients believe; the ſpectators believe: even when both of them claſs in the learned profeſſions! Nay there are even medical men ſo weak as to believe; and the truth is only apparent to the ſteady eye of the enlightened naturaliſt. He is accuſtomed to the taſk of obſerving; and by a glance of his tutored organ, acquires a knowledge of facts which are inviſible to the common obſerver. All appeal to facts, and to their own experience; but ſome forget, that they are not in a ſtate to judge of facts or experiments. As well might the drunken man ſay that every thing is double becauſe it appears ſo to his eyes,

or the imbecile, who ſees viſions, and converſes with airy nothing, affirm that they are true effects. I ought to beg pardon of the reader for being ſo diffuſe in noticing this as well as the other caſes; but as they imply concluſions which I cannot admit, and teach principles which I believe to be erroneous, I think it my duty to offer ſuch remarks upon the nature of this evidence as may lead my readers, on a compariſon of the facts I ſhall hereafter bring forward, duly to appretiate the value of the two modes of practice.

From the whole of what Mr Earle and Sir W. Farquhar advance, it appears that they conſider fire as a body which enters, or rather unites with part of the ſyſtem, and which they ſuppoſe is drawn out by any body, which, having a ſmaller proportion of caloric, is capable of receiving moſt quickly the ſurplus of heat in the part affected. Mr E. ſays, "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, and continues to ſpread its deſtructive influence until its *fury* is ſpent, or its power counteracted, as is evident from the continuance and even increaſe of the exceſſive pain and inflammation." Again—"Whether modern philoſophers will allow that fire applied to any part of the human body does remain united to it for a time,

time, I am not certain; but ſuch appears to me to be the fact, and this opinion, I find, has been maintained by ſeveral very reſpectable authors." As to the opinions maintained by either ancient or modern authors, we muſt wave all except thoſe who give us facts; for the human mind is the ſame at preſent as it has been for thouſands of years paſt; and if we follow either the one or the other into the regions of fancy, we may ſpend years in repeating idle viſions, or in forming new ones. But as I ſhould deem this an abuſe of time (the moſt precious gift enjoyed by man) I muſt be excuſed from entering upon the taſk.

I have in my former eſſay mentioned at ſome length the effects of different degrees of temperature upon the animal ſyſtem. It will there appear that animals endowed with the property of life, have a power of preſerving their exiſtence under a varied degree of temperature proportioned to the perfection of their organization, and if gradually applied, the extent of the ſcale is greater. Man will exiſt from zero to two hundred and ſixty degrees of Fahrenheit's thermometer; though rapid changes much within that range will deſtroy him. Such is his glaſſy eſſence, that it appears neceſſary to treat him as artiſts do that ſubſtance, viz. to anneal him, by allowing his temperature to be changed gradually. Such is in ſome delicate con-

ſtitutions the narrow ſcale of accommodating power in the ſyſtem, that a change which appears inſenſible to perſons of a more healthy frame, produces ſuch diſturbance in the actions of abſorption and ſecretion, as to bring on complaints of the moſt ſerious nature. Delicate ladies who keep cloſe within the houſe, in going from one room to another bring on that ſtate of the ſyſtem known by the term of *catching cold*. This ſtate is alſo very frequently induced by a too ſudden and great application of the ſtimulus of heat, after the torpor induced from lowering the temperature only a few degrees. The effect of a diminiſhed quantity of heat is proved by the facts adduced by Mr Hunter, of the rabbits' ears, (*vide Firſt Eſſay, p.* 108.) to have ſtopped all action in the part; and the effect of increaſed heat applied to my own body (ibid, p. 111.) proves the increaſed action induced by heat. I do not mean by this to deny the power of fire combining with, and decompoſing any part of the ſyſtem to which it has been ſo applied. I am well convinced I could burn my finger off over an Argand's lamp; but after this decompoſition, I ſhould not expect that ice would draw out the caloric, and reſtore me my finger. When caloric combines with any ſubſtance, a chemical union takes place; and when this is done with the living animal fibre, it is at the expence of a de-

ſtruction

ſtruction of organization, which no human art can reſtore in that individual fibre. Yet ſuppoſing a finger, or part of a finger, to be ſo deſtroyed, there muſt have been increaſed action previouſly to deſtruction; and where deſtruction ceaſes, increaſed action, from this greateſt of all known ſtimuli, will begin. Now as I think it will be granted that parts cannot be reſtored, thoſe which we have to take care of muſt claſs under the head of parts with increaſed action. If this be admitted, I believe I have formerly pointed out the beſt *known* modes of treatment. What to me is one of the moſt convincing proofs of the truth of the principles I wiſh to be made known, is, that the *inverſe* of them is proved to be true by the experience of all countries ſubject to a diminiſhed temperature; and, reaſoning upon the ſame data, Mr Earle's principle muſt be erroneous: for inſtance, if in a *plus* of heat it ſhould be drawn off by cold, in a *minus* of heat, it ſhould be added by the body which is the readieſt to part with its heat. The following caſe will illuſtrate theſe principles:—In the beginning of this year (1800) there was a ſevere ſtorm, in which many ſhips were loſt upon the coaſt of Northumberland, and a great number of men periſhed from the intenſity of the cold. Three were taken to a ſmall inn in a fiſhing town on the coaſt, and as one was very much *froſt-bitten*, with the beſt intentions

in the world the good people of the inn prepared a hot bath for him, in which having kept him a ſufficient time, they put him to bed, and gave him ſome hot ale and brandy. The conſequence of this treatment was, that the torpid actions of the ſyſtem were ſo rapidly put into motion, that the vital power was exhauſted in forty-eight hours, and the man died. The others, who fortunately had not ſo much *falſe* care beſtowed upon them, recovered with difficulty; for although they did not uſe the bath, they had a ſhare of the other ſtimuli applied, ſufficient to produce pernicious effects. Now had Mr Earle's principle been right, the man would have lived, as they took the readieſt way of applying, both externally and internally, the *deficient heat*. Had the oppoſite practice been taken with this man, I have very little doubt but he would have recovered: the froſt-bitten parts (the extremities, both ſuperior and inferior) ſhould have been thawed in water not above 40 degrees; he ſhould then have been put into a cold bed in a room without a fire; and if he had been allowed any ſtimulating drink (ſuch as ale) it at leaſt ſhould have been cold: but of the propriety of allowing, at an *early* period, even this ſtimulus, of *cold fermented* liquor, I have my doubts. For the danger of allowing too great ſtimulus after what is termed an accumulation of irritability, I refer the reader

to

to accounts of ſhip-wrecked people: the narrative of the loſs of the Bounty will ſupply them with ſufficient obſervations on this head. (See Medical Extracts.) As the powers of life returned to their uſual healthy action, a greater proportion of ſtimulus might have been indulged in without danger; and thus would the *unity of action* have been reſtored between the parts and the *whole*, upon which the cure depends in both inſtances, i. e. whether a part is thrown into exceſſive action from the ſudden application of heat, or becomes torpid from the ſudden diminution of heat.

Having now at ſome length reviewed Mr Earle's pamphlet, and combated the principle upon which it is founded, I ſhall wave any comment upon the inſufficiency of the detail, which is certainly great; and ſhall proceed to relate ſome caſes which may ſtill further demonſtrate its fallacy, and eſtabliſh the oppoſite principle, upon ſuch a baſis, as not to leave a ſingle doubt in the minds of impartial medical men.

Some of the following caſes have happened under my own eye; and others are related by gentlemen of whom I have no knowledge, and over whom I certainly can have exerciſed no influence. Their unbiaſſed teſtimonies therefore, will add conſiderably to the importance of the evidence, particularly with that claſs of readers, who judge merely from conſequences. To the admirers of principle

ciple in medicine as well as in other ſciences, it muſt give infinite pleaſure to ſee that the beautiful movements of the animal œconomy, which medical philoſophers in their cloſets have ſuppoſed to exiſt, are here diſplayed, and proved by careful attention to phænomena that appear during the different ſtages of dangerous actions in the ſyſtem; and that by different treatment during thoſe ſtages, the individual may be reſtored to health, or the living power exhauſted to death.

The following caſe, which was communicated to me long before the publication of Mr Earle's book, bears ſo ſtrongly on the point in queſtion, that I have much pleaſure in laying it before the public. We have here from accident, what the moſt candid practitioner would have wiſhed from deſign, had a compariſon been deſired of the efficacy of the different modes. Mr Anderſon, of Newcaſtle upon Tyne, ſurgeon, a gentleman who has practiſed for above twenty years with that reſpect which a liberal education enſures, writes as follows:—

"Sir,—My practice in collieries has not yet afforded me an opportunity of adopting your plan of applying ſtimulants, in any deſperate caſes of burns; but in the ſlighter, or ſuperficial caſes of burns, I have found them act like a charm. I am informed that the practice of immerſing the part in cold

cold water for the ſpace of twelve or fourteen hours after the accidcnt, is in general uſe in Edinburgh. As both the Ol. Terebinth. and cold water were uſed at the ſame time, but on different parts, in the caſe of Mrs. K. (which I formerly named to you) I ſhall give you ſome particulars of the caſe.

I am, Sir,

Your obedient Servant,

Bigg-Market,
Sept. 8th, 1798. } JOHN ANDERSON.

CASE.

A lady, in endeavouring to remove a pan from the fire which contained boiling fat, had the misfortune to receive ſome of it on her right arm and face: I ſaw her a few minutes after the accident, about nine o'clock in the morning; ſhe was ſitting on the floor, and her arm was immerſed in a pail of cold water; her face was fluſhed and appeared much ſcalded, and ſhe complained of great heat and pain. I immediately applied the Ol. Terebinth. to it, and continued it for a few minutes. She ſaid that her arm was ſo much relieved by the water, and that it had ſucceeded ſo well in a former accident, that ſhe wiſhed to continue it for a few hours. I ſaw her about four o'clock in the afternoon, her face looked much better, and was eaſy. She had continued the immerſion, *often*

changing

changing the water; but when her arm was taken out, though only a minute, ſhe complained much of the pain; *indeed* it appeared that the inflammation was increaſed. I recommended an emollient poultice, after ſhe ſhould be tired of the cold water. In the morning I called again, and was informed that the pain of her arm had been great during the night. The inflammation had extended above the elbow, ſeveral large veſications had been opened, and deep ſloughs formed on her hand and arm. I applied a digeſtive ointment to theſe parts, and a large warm poultice over the whole. The face was perfectly eaſy, and had no veſications, but the cuticle was a little abraded. I ſcarcely need add that the arm required dreſſing daily for a fortnight after the accident."

Such is the report which was given to me, and has been in my poſſeſſion ſince the date of Mr Anderſon's letter. The facts are ſo clearly ſtated, and the concluſion is ſo obvious, that it appears almoſt unneceſſary to make any remarks upon the caſe. We perceive the lady's predilection for cold applications, and her appeal to former experience: nay it is even poſſible that, had this lady's arm only been injured, and a leſs judicious gentleman of the faculty employed, the apparent eaſe, from the ſudden *ſtopping* of the increaſed action, and her getting well in a fortnight from the effects of ſuch a

a dreadful burn, when, from the hiſtory of ſome caſes, it has required ſix or twelve months, or even longer, we might have ſeen this caſe brought prominently forward in favor of Mr Earle's practice. Such is the difficulty in forming an opinion of medical effects from even what is ſo apparent to the ſenſes. The different effects produced upon a different part of the body ſimilarly affected, have impreſſed a conviction on the mind, both of the lady and the practitioner, that nothing will ever efface. With thoſe who have confidence in medical hiſtory, the above will have ſome weight: to thoſe who have any doubts, I ſhould wiſh ſuch an opportunity to happen: This caſe I hope will plead my apology for what I have aſſerted in reſpect to that of Mr Earle's little boy.

There is one obſervation to be made on this caſe, which is unconnected with the particular treatment, but relates to the practice of medicine at large. It is much the *faſhion* to yield to the particular feelings of patients in many diſeaſes; and as it is ſometimes attended with a good effect, it has with many practitioners become a kind of rule to invite their patients to ſtudy and expreſs theſe cravings: but as I have ſeen this ſtate of mind often troubleſome, both to the patient and friends, I think it ſhould not be wantonly encouraged. If a very urgent deſire ariſe, and neither my own experi-

ence

ence, nor the marked experience of others, militate againſt its uſe, I certainly ſhould yield to this impulſe, and would carefully watch the experiment: but, as I find in the caſe of burns, many are the dupes of their feelings, in running to an oppoſite extreme, I ſhould think it my duty to prevent them from purſuing every fallacious indication. This is a part of practical medicine, which has not been much cultivated, at leaſt not accurately. The preſent ſyſtem of periodical journals would, better than any other means, enable the practitioners of this iſland to form a collection of the good and bad effects of indulging the ſpontaneous cravings of the ſyſtem in different ſtates of diſeaſe.

As the authors of the Medical and Chirurgical Review (vol. 4th, p. 432, and following) in noticing my eſſay, affect to ſuppoſe that I am more governed by theory than practice in my diſlike to cold applications, I muſt relate to them the following caſe which happened under my own immediate inſpection to a medical gentleman, my aſſiſtant, Mr Bell (the ſame who has made the communications upon burns in the Medical and Phyſical Journal) a young gentleman whoſe extenſive knowledge of the living and dead languages, joined to a great turn for medical diſcrimination, leaves me little room to doubt but that the republic of medicine will owe much to his labors. He had

had the back of his hand ſeverely ſcalded by ſteam between nine and ten o'clock in the morning, in the ſummer of the year 1792. This was previous to my intention of publiſhing, and when I was undetermined myſelf as to the moſt effectual mode of relieving ſuch accidents. It would appear he was partial to the cold applications (no doubt from ſome preconceived theory), for immediately after the accident it was plunged into a jar full of Aquæ Lithargy. Acetat. Comp. which was renewed as often as it became warm. This was continued during the whole day: at night it being painful when taken out of the cold liquid, folded rags wetted with the mineral water were applied at bed-time, and thirty drops of Tinct. Opii taken. Notwithſtanding theſe means, it interrupted the night's repoſe, and frequently required freſh applications of the wetted rags. On the following morning it was bliſtered, and pretty eaſy, until he had occaſion to ride a few miles into the country, when the pain returned, though not with ſo much vehemence as at firſt. On his return he again reſorted to the jar of cold liquid, and in about two hours he was free from pain. Nothing further remarkable happened during the cure; the cuticle peeled off, and a week's dreſſing completed the buſineſs. The reviewers obſerve, "We cannot help ſuſpecting, that the author's objections

to

to the uſe of cold applications are more the conſequence of a previous theory, than founded in accurate obſervation of their full effects. The uſe of cold water in burns ſeems to us to be eſtabliſhed on the ſureſt foundation of *facts*; although it muſt be allowed that there are caſes in which, from the great extent of the injury, as well as from *other cauſes*, it may be inapplicable, and therefore it may be deſirable to have other remedies, to which we can occaſionally recur." If theſe gentlemen will look at the above caſe, they will ſee my opinions were not drawn from mere theory in reſpect of cold applications: beſides, I have in more extenſive burns, viz. in collieries, tried the effects of the aqua vegeto mineralis applied cold with rags wetted, which has always momentarily been attended with that deception of ſenſe, viz. producing eaſe, though it has *ever* been followed, in my ſphere of experience, by a greater ſubſequent degree of pain. They then quote my opinion, "that the action induced by the exceſs of caloric is paralyſed by the application of cold; which in this mode of treatment muſt be continued until the vital principle of the part ſo excited is deſtroyed, otherwiſe the pain returns with redoubled violence, ſo that this ought to be called the *killing cure*; for any thing ſhort of this would be ineffectual." "This ſtatement," they ſay, "is certainly inaccurate.

inaccurate. We can aver, from perſonal experience, what indeed has been obſerved by many others, that in burns of no inconſiderable extent, the application of cold water removes the pain almoſt inſtantaneouſly, which yet is *ready* to *recur* if the cold is diſcontinued; by perſeverance, however, for half an hour, or more, [*This certainly muſt be a miſtake, as we find an application of cold for twelve or fourteen hours is not adequate permanently to remove the pain.*] the action of the parts, productive of ſuch acute ſenſation, at length ceaſes to return, and the part is left in a ſound ſtate, *except* that the ſuperficial veſſels continue for ſome time to carry a larger portion of red blood."— On reconſidering this matter, (for I have no object in view but to aſſiſt the practitioner in relieving his patient) I cannot heſitate to own that I may have puſhed the argument too far when I called it the *killing cure*; for in the caſes alluded to by the reviewers, the quieſcent proceſs ſeems only to have gone to the extent of palſying; and the veſſels which were gorged with red blood ſeem to have taken on the ordinary actions at ſome time diſtant from the accident: but this mode of cure can only be attempted in burns of certain extent, to perſons of a certain ſtate of health, and by an adequate length of time for the application: for though it may in ſome caſes not be neceſſary to

check action to death, yet if the parts are not rendered perfectly quiescent, the pain returns with increased violence, as we see in the case related by Mr Anderson; and even in Mr Bell's case, after the part was quite easy the following morning, yet by exciting the system the palsied part again took on the action with diseased sensation, and was again obliged to be rendered torpid by the renewed application of cold, for two hours. The cases above-mentioned, I trust, will dispel these gentlemen's doubts, in respect to the different powers of the two modes; and I hope to strengthen their opinion of the use of stimulants by adducing further proofs of their efficacy.

Having assented to this reproof of the medical reviewers, I shall now notice wherein I dissent from them, lest silence on my part should add strength to what I deem error on theirs. They say, "even admitting the author's theory, that the cure depends on inducing a unity of action between the injured part and the system, the local application of cold may be defended; for the power of cold in lessening action is admitted, and by this means the excessive action of the part may be reduced to its proper level."—What is here meant by cold? I have wished to avoid the confusion arising from indefinite terms. If they mean by cold, the application of water at 40 deg. to a surface injured by

by water heated to 212 deg. which I ſuppoſe they do, I affirm it is not compatible with my theory, nor with my practice. To apply water at 200 deg. in ſuch a caſe is 12 degrees of cold; but ſuch is the ſtate of our language, that if we do this we ſay that heat, or a violent ſtimulating application is uſed; yet it is evident that it is not a ſtimulus in compariſon with that which cauſed the injury, but is applied to prevent the *too ſudden* diminution of the violent action cauſed by the injuring ſtimulus: now the application of cold water in the common acceptation of the term, cauſes the very *injury itſelf* which the whole of my practice tends to obviate.

I hope I ſhall not be ſuppoſed to entertain any doubts of the authenticity of what either Mr Earle, or the reviewers aſſert: on the contrary I ſuppoſe the truth of all their aſſertions; and from ſuch premiſes as I bring in parallel, I truſt I may be allowed to form my own concluſions, although they have a directly oppoſite tendency. In confeſſing I have urged the point too far in calling the cure by cold the killing cure, I beg leave to retract that term, and in its place call it the cure by *paralyſis*. I have lately been informed by a gentleman who has been ſtudying at Edinburgh, that the cold treatment is in general uſe there. He mentioned the caſe of a lady who had been ſcalded in her foot, and had kept it immerſed in water, fre-

quently renewed, for three days, and the two intervening nights. Even admitting the power of cold to cure burns by ſuch a continued application, it could only with ſafety be allowed to very limited injuries; for in caſes which frequently occur in collieries, of men engulphed in liquid fire, nothing ſhort of a cold bath could apply to the whole of the injured ſurface, and ſuch an application, for ſuch a length of time, I apprehend would bring on the grand paralyſis—DEATH.

This practice of applying cold water is not new. In the Memoirs of the London Medical Society, volume 1ſt, page 315, there is a paper which was read to the ſociety on the 18th April, 1780, by Stephen Lowdell, ſurgeon, F. M. S. where cold applications are recommended in caſes of burns; he ſays, "A lady's head dreſs having took fire, his hand was much burnt in extinguiſhing it. Finding his pain much relieved by applying cold oil, he immerſed his hand into a large pot of oil, and the interval of eaſe became longer. He afterwards uſed a poultice of oatmeal, extract of lead, and oil on going to bed, and waked next morning free from complaint, except that two ſmall bliſters remained which afterwards gave him no trouble."

This caſe is one of thoſe ſlight accidents which would have done well by any treatment, therefore no concluſions ought to be drawn from it either for or againſt the means uſed.

In

In the 5th volume of the ſame memoirs, page 62, there are ſome caſes related by Thomas Parkinſon, ſurgeon, Leiceſter, read in Feb. 1795, in which cold produced by the evaporation of ſpirit of wine, is recommended. He expreſſes his diſappointment in the uſual mode of applying cold, and points out the ſuperiority of this.

Caſe 1.—A young woman had her face, neck, ſhoulder, and part of the abdomen ſcalded by hot water. The uſual *oily* applications had been uſed for two hours previous to the author's viſit. During twenty-four hours a pint of ſpirit of wine was conſumed in moiſtening the affected parts, which were firſt covered with bladder. "Whenever the operator deſiſted for a little, pain recurred with ſeverity, but ceaſed upon reapplication of the means. The excoriated parts, which were much leſs than might have been expected, were dreſſed with common white cerate, under which they ſpeedily healed."

Caſe 2.—By the exploſion of ſome gunpowder, a young man, a blackſmith, was terribly burnt; having his coat off his ſhirt took fire, and increaſed the ſeverity of the accident. The parts injured were firſt waſhed with warm milk and water; rags ſpread with cerate were next applied, and on the outſide of this application ſpirit of wine was unremittingly uſed for twenty-four hours. This produced eaſe, with conſiderable abatement of in-

flammation. This plan was purſued till the evening of the third day. Two quarts of ſpirit of wine were conſumed; the deep ſloughs were dreſſed with ſoft digeſtive; a cooling purge was given; and wax and oil completed the cure. No deformity of conſequence remained. Some more caſes of ſmaller import are added.

Mr P's confeſſion of his diſappointment in the common mode of applying cold by ſaturnine applications, &c. induces me to think he has miſtaken in drawing his concluſions of the effects of alcohol. I rather ſuppoſe the ſtimulant effect of that application would have a conſiderable ſhare in producing the good conſequences Mr P. relates, notwithſtanding the care taken to prevent its entire good effects by intervening media. Several caſes of the ſuppoſed benefit from cold may be ſeen in my firſt eſſay, page 44, in a memoir from La Medicine Eclairée.

CHAP.

CHAP. III.

Further Obſervations on the Treatment of Burns, as recommended according to principles laid down in the former Eſſay—Caſe, G. Clark—Caſe, Tho. Pyle—Caſe from an Exploſion of Gunpowder—The Treatment recommended to the Attention of military and naval Surgeons—Letter from Mr S. Hammick, Surgeon, Royal Naval Hoſpital, Plymouth—Letter from Mr Horn, Surgeon to the Newcaſtle Infirmary—Letter from Mr Fife, Surgeon, Newcaſtle—Letter from Mr Bell, of Cheſter-le-Street—Caſe by Mr Bell, Surgeon of H. M. S. Pelican—Mr Weſtgarth's Obſervations.

HAVING reviewed the opinions of the faculty on the oppoſite ſide of the queſtion, it will naturally be expected that I ſhould bring forward ſome proof in confirmation of the practice I ſeem ſo anxious to eſtabliſh. I wiſh *nearly* to confine my own relation of practice to thoſe tremendous caſes which would inevitably terminate in life or death, according to the mode of treatment the practitioner ſhould be induced to follow, *except* perhaps a *few* others, which ſome particular circumſtances have rendered intereſting, as tending to illuſtrate what has appeared to me obſcure; likewiſe to ſhew its utility

in

in caſes of accidents happening from gunpowder, in which, from the preſent ſituation of the European world, there may be an extenſive field of practice. I am not ſo little acquainted with the human mind as to expect to overturn the former opinions of *all* old practitioners on this ſubject. The hiſtory of our art, as well as that of all ſciences, ſhews us the tenacity with which opinions are held. If men could reſiſt the evidence of the circulation of the blood, and even enter into combinations to prevent the belief of ſuch a *damnable hereſy*, the doubting of which at this day would be looked upon as an egregious folly, how can I expect to be more ſucceſsful? Upon the whole I have met with *much* more profeſſional candor than I expected; I have even ſeen habits of forty years bend to the influence of my arguments, and confeſs the ſuperiority of my mode; but on the other hand I have ſeen it reſiſted; and when the light was the cleareſt, inſtead of ſeeing they have ſhut their eyes. To attempt to convince ſuch men, would be equally as abſurd as to carry a torch to light a blind man.

About two years ago I had an opportunity of pointing out to the pupils of a public inſtitution, the ſuperiority of this practice in a very ſtriking manner. A child was brought for relief, who had been burnt by its cloaths taking fire. The neck,

breaſt, face, hands, and arms were very much injured. It was ordered to have the Ol. Lini c. Aq. Calcis applied to it, and afterwards to be covered with plaſters ſpread with ceratum flavum; and when the paroxyſms of pain recurred, to be again bathed with the liniment, as was formerly the practice. It was allowed a ſmall anodyne at night, but otherwiſe the practice was anti-phlogiſtic. The pain continued at intervals for ſeveral days; the parts did not ſuppurate; but on the the third and fourth day tumified, as did the contiguous cellular membrane. A fever, with thirſt, great reſtleſſneſs, and on the ſeventh and eighth day a conſiderable coma occurred; and on the ninth day the ſcene cloſed with the death of the patient. Nearly at the ſame time a ſimilar accident was received, which was treated according to the principles of my eſſay, both by external and internal ſtimulants. The ſtages of the complaint were ſo ſtrongly and favourably marked, and the child recovered ſo quickly, and perfectly without any ſcar, that the gentlemen who ſaw theſe two caſes, aſſured me they were well convinced of its ſuperiority, and I have no doubt it will always influence their future practice.

On a former occaſion, I contented myſelf with dividing this claſs of accidents into two ſpecies; ſince which I have not found it neceſſary to deviate from

from that arrangement: each ſpecies ſhould be again divided into two ſtages; and to diſtinguiſh them, the firſt may be termed the *ſtimulant*, the other the *equaliſing* ſtage; though in fact the firſt ſtage is not meant to ſtimulate, if by that term an *increaſed* action is meant, but only to prevent that dangerous torpor which would take place, if the violent action was too ſuddenly allowed to ceaſe. The former principle of treatment in theſe two ſtages I ſtill retain, though in the detail of practice I have been induced to make ſome alterations, the advantages of which have to me been very apparent. The reſult I ſhall relate for the guidance of thoſe who may be induced to follow the practice. In the firſt ſpecies, *where the action of a part only is increaſed*, I have not found any thing better for the firſt application than the *heated* Ol. Terebinth. and the digeſtive thinned with the ſame. In ſuperficial burns, when the *pain* has ceaſed, it will be adviſeable to deſiſt from this application in about four and twenty hours, as that time in many caſes will be ſufficient, and at the ſecond dreſſing a digeſtive ſufficiently thinned with common oil, will be adequate to the caſe; and on the third day to begin with the ceratum e lapide calaminari. I have frequently ſeen ſecondary inflammation excited by the remedy, which in the firſt inſtance puzzled and perplexed me conſiderably: I have likewiſe

likewiſe been informed of this conſequence by ſeveral gentlemen. The moſt certain *remedy* for this unpleaſant ſymptom is to apply a plaſter with digeſtive thinned with oil, or a plaſter of cerate, and over that *a large warm* poultice. This moſt effectually takes off the irritation of the part, and the cerate will finiſh the cure. Should there be much uneaſineſs of the ſyſtem, an anodyne proportioned to the age of the patient ſhould be given. And it may here be remarked that large anodynes in ſuch caſes ought to be uſed, as they always produce the happieſt effects; and I have never ſeen any ill conſequences from them, though given to a much greater extent than I have ever dared in any other circumſtances, (except in ſome caſes of Tetanus, where no good aroſe from their uſe.) I am ſorry to remark in the greater number of caſes I have been favoured with, that the gentlemen have not benefited ſo much as they ought to have done in exciting the ſtomach by the ſtrongeſt and quickeſt means we are acquainted with. Of the uſe of counter-irritation in ſuſpending ſome diſeaſed actions, the hiſtory of medicine affords too many proofs to leave a doubt in the mind of any medical philoſopher; but on whatever principle or law we explain it, the fact is undeniable; and though the external mode of itſelf may in moſt inſtances be equal to give greater relief than the old methods,

yet

yet finding the moſt ſtriking benefits in deſperate caſes to ariſe from ſuch means (for in ſome inſtances life itſelf would be forfeited without them) I cannot too ſtrongly recommend a *degree* of the ſame practice, though in leſs urgent circumſtances. I do not mean by the above obſervation to infer that a counter-irritation is the only benefit ariſing from ſuch a meaſure—no !—I alſo believe that as the irritation on the ſurface has increaſed the action of that part, and as that part ſympathiſes in a ſeries of actions with other ſurfaces of which the ſtomach is as it were a centre, the irritating that viſcus increaſes its actions, as alſo thoſe of all ſympathiſing parts, of which the ſkin is one; ſo that this *magic* circle of actions, conſtituting what is termed HEALTH, is thus broken in upon, in as *ſmall* a degree as poſſible, conſiſtently with the violence that was firſt offered to it.

In the ſecond ſpecies, or in thoſe caſes *where ſome parts have increaſed action, and other parts are deſtroyed*, for reaſons already aſſigned, it will only be neceſſary to pay attention to the living parts: and as thoſe parts will come under the denomination of parts having increaſed action, the ſame means muſt be uſed as in injuries of that ſpecies. The internal treatment ſhould be more ſtrictly attended to in theſe caſes, as in conſiderable accidents, where large eſchars are formed, the ſyſtem has ſeveral different

proceſſes

proceſſes to go through before it is again rendered perfect. In each of thoſe ſtates it may be conſiderably aſſiſted by art. The immediate increaſed action on the ſurface is to be kept up by a high temperature; and the equilibrium of the exhalent and abſorbent ſyſtem ſhould be continued by exciting artificially, by every means in our power (ſpirit of turpentine is the moſt effectual I have yet found) the abſorbent veſſels of the injured part, to equal the increaſed action of the correſponding ſecreting ſyſtem. When parts of the ſurface are deſtroyed, and eſchars formed, we muſt judge of our treatment of thoſe by the appearance of the parts *leſs injured;* for as ſoon as ſecretion takes place on the leaſt injured parts, we may reſt aſſured that the ſtimulant plan has produced its beneficial effects; for the ſeparating of the eſchars is a proceſs of the ſyſtem, to aſſiſt which is our duty; but we muſt here make a diſtinction between aſſiſting and hurrying. I have formerly fallen into this error myſelf, and have rendered the ſores extremely irritable by too great an anxiety to urge them to throw off the ſloughs. I am now leſs anxious in that reſpect, finding the leſs injured parts a juſt criterion for the mode of treatment to the others. When ſtimulants are indicated to be deſiſted from by the appearance of the one, I deſiſt from them in the other; always finding the ſyſtem adequate to com-

plete

plete her work. If it require more time, it produces leſs diſtreſs, and in the *end* facilitates the cure, as the ulcers afterwards heal much more readily, being leſs *irritable*.

In my former eſſay I was conſiderably at a loſs in recommending an adequate power to repreſs the growth of fungus, and to abſorb the redundant ſecretion. In the caſe E. F. (page 93, former Eſſay) which was more than a year under the treatment to the cure, various aſtringent and abſorbent means were uſed, all of which were inadequate to produce a permanent good effect, and required frequent changes to complete the formation of tender and unſeemly cicatrices. In the appendix I mentioned chalk as recommended by Mr Cleghorn. In my firſt trials upon ulcers I did not find this anſwer my expectations, as I thought it irritated the ſurface and increaſed the ſecretion of pus; but having ſince had it prepared under my own eye, as directed in Lewis's Diſpenſatory, and afterwards finely levigated, I am induced, from conſiderable experience, to *change* my opinion with reſpect to its powers; and here I freely offer the tribute of thanks due to Mr Cleghorn for recommending it. As ſoon as ſecretion takes place, I begin the uſe of powdered chalk, heated to the temperature of the body, which is plentifully applied to the whole ſecreting ſurface, and afterwards

covered

covered with a plaſter ſpread with cerate. In caſes of eſchars coming away, or while they are detaching themſelves, I fill up the hollow made by their loſs when ſeparated, and fill up the furrow at their edges when looſening, with powdered chalk, covered with the plaſter; and if the proceſs be tedious, a poultice of bread and milk is applied over the plaſter. In very ſevere and extenſive accidents of this kind, I have uſed this method throughout the whole cure after the formation of pus, and have in *general* found it prevent the neceſſity of either aſtringent or cauſtic applications: nor on the other hand have I found it retard the cure, by repreſſing the neceſſary ſecretion. Mr Home, in his Treatiſe on Ulcers, recommends powdered bark, and rhubarb; and various other ſubſtances have been tried by others, but as ſuch good effects ariſe from this, may we not ſuppoſe that the benefits derived from many of theſe articles ariſe in a great meaſure from their being inirritating abſorbing ſubſtances? I am the more inclined to this concluſion by finding chalk produce exactly the ſame effects when united with flour or ſtarch powder. Mr H. likewiſe mentions chalk, but does not appear to be acquainted with its powers.

I hinted in my appendix an intention of trying the carbonic acid gas as a means of cure. In ſome ulcers I have tried it; but from the complicated appa-

apparatus, and the difficulty of applying it, I was inclined to deſiſt: for ſhould even *ſuppoſed* good effects have accrued from its uſe, until a more advanced ſtate of knowledge in the management of elaſtic fluids, it could not be generally adopted. The many advantages ariſing from the uſe of chalk are ſuch as have induced me to remain content with it; and upon the whole I cannot too ſtrongly recommend its uſe. Should theſe hints induce others to make rational experiments of other ſubſtances from theſe known principles, I ſhould be happy to hear of them, and to benefit by them in my practice. Theſe are the principal alterations I have made in the external mode.

I cannot attribute the ſucceſs I have met with wholly to the application of external means; the treatment of the general ſyſtem bears a very great ſhare in my opinion; and that treatment is as extraordinary, and as contradictory to the old methods, as any other part of the practice. In my former eſſay, in the reflections upon the caſe of E. F. (page 98, 99.) I mentioned a *full diet* as allowed with the ſtimulant method of cure, which I ſuppoſed to have kept up the irritation of the ſyſtem, and cauſed the immenſe continued diſcharge by the expoſed ſurfaces of the wounds, which became like old ulcers; and the ſyſtem was ſo diſtreſſed as to take on the action of hectic, which it retained in

a degree for ſome time after the cure. A caſe which I ſhall afterwards relate (of George Clark) confirmed what I before from *theory* conjectured: on the *ninth* day a *counter-irritation* took place, by means of a violent diarrhœa; the diſeaſed action of the inteſtines, and the irritation of the ſphincter ani, ſuſpended the too great ſecretion of the ſores, and the ſurface became almoſt quite *dry*. Between this and its again ſecreting plentifully, there was a *point* or an *equilibrium* of action, at which the ſkinning proceſs was more rapid than I ever before beheld it in any ſubject. This accidental explanation of my preconceived theory, induced me to profit by it in ſubſequent caſes. I have with marked good effect produced an artificial counter-irritation with cathartics, and brought on a ſtate in the ſecreting ſurface which has very materially facilitated the proceſs of *ſkinning*—a proceſs over which art has, as yet, acquired very little influence. In the intervals of the uſe of cathartics, the diet was bland and nutritive, ſuch as bread and milk night and morning, boiled meat with potatoes for dinner, and no fermented liquor.

CASE.

October the 30th, 1798, George Clark, a workman in one of the mines upon the river Tyne, a

young

young and vigorous man of five and twenty, from a quantity of inflammable air taking fire in the mine, was immerſed for a conſiderable time in the flame of the burning air. He had neglected to put on drawers, which miners in general wear, and ought *always* to wear, and had on only a flannel ſhirt with ſleeves, which had large holes in different parts of the arms. The ſhirt collar was open, and expoſed the breaſt. In looking at the ſtate of the individual we ſhall ſee how he was protected from the flame: his legs, thighs, poſteriors, and privates were all burnt; as were his hands, large ſpots upon the arms through the holes in the ſhirt ſleeves, his neck, breaſt, and face. Immediately upon the flame ceaſing to act upon him, he had a ſevere ſhivering fit, which laſted ſome time, and alternated with a violent ſenſe of burning, from what I could learn, nearly every half hour, until he was viſited, which was full three hours after the accident, which happened about eight o'clock in the morning. A draught, with ſixty drops of laudanum and two drachms of æther, was given to him about eleven o'clock; and he was profuſely bathed with heated ſpirit of turpentine for ſome time, over which were applied plaſters thickly ſpread with digeſtive, rendered to the conſiſtence of a thick liniment with the ſame ſpirit. He had a volatile cardiac julep to take a doſe of every three hours; the

the anodyne was repeated at night with forty drops; and on the following morning, an hour before the time of dreſſing him, which was to be at nine o'clock, in caſe of thirſt he was to have a glaſs of port wine, or wine and water, half and half.

October 31ſt, (ſecond day) ſays he grew eaſier ſoon after we left him yeſterday, but did not remain long ſo, as the pain ſoon after returned as violently as ever, and had done ſo by intervals ever ſince. Has had a good deal of thirſt, and taken above a pint of wine beſides his medicines. The face is very much ſwollen, particularly about the lips. The face of a perſon in the confluent ſmall-pox without the eruption conveys an idea of his appearance; or what is ſtill more like, a certain ſtage of an eriſipelas of the face. Some veſications upon the neck, which are all carefully punctured with the ſharp point of a probe to diſcharge the ſerum. Some veſications upon the wriſts and hands. The cellular membrane of thoſe parts ſo puffed as to obliterate the feel of the artery at the uſual place. His pulſe, felt in the axilla, beats 130. Several veſications had appeared upon his legs and thighs, which were treated as the others. The left thigh, the buttock, and round the verge of the anus ſeemed to have ſuffered the moſt: a dry brown eſchar appeared in different parts of the thigh. From the aſpect of the face I was apprehenſive of ſome inter-

nal

nal cauſe of irritation from having inſpired the flame, and the appearances altogether ſeemed ſo formidable as to leave me little hopes of his recovery; yet being confident of the propriety of my practice, I had no heſitation in the manner of proceeding, though I might ultimately be foiled in my attempts of ſaving the individual. The dreſſings were the ſame as the day before; but in addition his lower limbs were laid upon large towels, covered with hot emollient poultices, which enveloped the thighs, and came over the plaſters. Several bags of poultice were ordered to be applied upon any part, in caſe he found more pain there than in any other, particularly over the face. The internal treatment was continued the ſame, except that the æther was taken from his draughts, and he was ordered forty drops of laudanum night and morning; but to continue his wine, and have ſome panada, or both if he could take them.

November 1ſt, (third day) has been very uneaſy during the laſt twenty-four hours. His ſlumbers much diſturbed; incoherent when he firſt awakes, and has been delirious at different times in the night. The *puffineſs* of the cellular membrane of the face and hands ſtill continues, and a degree of ſecretion is appearing in places where the ſkin had been veſicated. This is the only favourable ſymptom that appears to-day: had it not

not been for this I ſhould have thought him worſe, as the functions of the brain ſeem very much affected. Probably the ſame irritation which has affected the whole of the apparent cellular membrane, even in external parts that are not burnt, may be communicated by ſympathy to all that membrane which accompanies the nervous ſyſtem, and forms that ſtate of the ſenſitive powers which we obſerve in coma, and in ſome ſtates of fever. This is what the experienced Dr. Clark (of Newcaſtle) terms engorgement of the brain. The pulſe was ſtill 130; the urine ſmall in quantity, and high coloured. He has had no motion ſince the accident. As his ſtomach will bear nothing but liquids, and as every thing now depends upon keeping up the powers of that organ, which is the great centre of ſympathy, leſt it ſhould be put out of humour by cathartics, which might induce nauſea, I ordered the bowels to be relieved by a clyſter. The ſame dreſſings with the poultices were applied; and the diet and medicines continued the ſame.

November 2d, (fourth day) the clyſter procured an evacuation which gave him much relief. Has had an eaſier night. A conſiderable quantity of pus is formed on places where the cuticle was off. The eſchar on the left thigh is beginning to ſhew a diſpoſition to looſen. The dreſſings are changed to the unguent e. lapid. calam. made warm by ex-

poſing them to the fire, and applied as ſoon as poſſible after the others are taken off. Pulſe 124. Urine more in quantity, but ſtill high coloured. Tongue moiſt, and leſs thirſt. There has been an aſtoniſhing change during the laſt twenty-four hours: the whole ſyſtem which yeſterday was labouring, and appeared nearly overcome, with the leaſt poſſible mark of ſecretion, has re-eſtabliſhed itſelf in its ordinary functions, entirely, I believe, from receiving that aſſiſtance of drawing forth, as it were, every latent power of the machine. The extent and ſcale of ſtimuli have to the utmoſt of my power been continued from the beginning of this caſe to this period; always having in view to avoid as much as poſſible the inducing debility from exceſs. The ſtomach has fortunately aſſiſted me much; and I muſt give a due proportion of merit to the application of caloric externally by the means of emollient cataplaſms, though I muſt obſerve they were not uſed, or meant as emollient, but merely as vehicles to convey poſitive heat, as they were applied above the plaſters. I have never yet ſeen a caſe in which the benefits of both external and internal ſtimulation were ſo apparent, and I have no heſitation in affirming my belief, that had a leſs active mode of practice been adopted, this individual would have been added to the thouſands who have loſt their lives by an oppoſite treatment.

treatment. I wiſh to impreſs this ſtrongly upon the minds of practitioners, as it may not fall to the lot of every gentleman to have an opportunity of making theſe comparative trials, and I wiſh my experience to be of uſe to ſuch, and render it unneceſſary for them to loſe ſome patients before they become convinced of this TRUTH.—The wine was ordered to be withheld; the ſtimulating julep was deſiſted from, and only the anodynes continued: even theſe were diminiſhed to thirty drops at night and twenty in the morning. Boiled bread and milk were ordered to be the chief of his diet; but a little ale poſſet was allowed with a view of not too ſuddenly diminiſhing the great ſtimuli to which he had been accuſtomed. The poultices were likewiſe continued to-day.

Nov. 3d, (fifth day.) The appearances to-day give me great ſatisfaction. He has paſſed an eaſy night. The ſwellings of the face and limbs are much ſubſided; the functions of the nervous ſyſtem ſeem reſtored to their accuſtomed action, and the ſecretion of pus is much greater than yeſterday.

Having in ſeveral ſlight inſtances, ſince my publication, ſeen the good effects of powdered chalk as an abſorbent, I determined to try its powers in this caſe. Some pounds of prepared chalk were accordingly finely powdered. I put it upon a plate, and placed it in an oven, in the patient's room, to

acquire about the hundredth degree of heat of Farenheit's ſcale. Immediately upon expoſing the ſurface of the wound by taking off the plaſter, I threw on the ſurface of the ſore as much chalk as would ſtick to the moiſt parts, and inſtantly covered them with the plaſters previouſly heated. The poultices were deſiſted from to-day. His anodynes continued as before. Diet as yeſterday.

On the ſixth, ſeventh, and eighth days nothing remarkable happened, except that the ſecretion of pus, from the coming away of the eſchars, was much more profuſe; and on the latter day, on the different plaſters, as near as I could aſcertain, there would be at leaſt a *pint* of matter. The diet and dreſſings, as well as the medicines, were continued the ſame.

Ninth day. The appearances in the morning the ſame as before; but in the evening, his father came to inform me he had a looſeneſs, which attacked him about noon. A pint of julepum e cretâ, with two ounces of camphorated tincture of opium, was ordered for him to take a ſmall teacupful of after each looſe ſtool, and ten additional drops of tinct. opii to the night draught.

Tenth day. I found him conſiderably exhauſted by the diarrhœa. He had had nearly *twenty* ſtools with great pain and irritation in his bowels. The riſing to ſtool and the teneſmus had fatigued him much.

much. The diſcharge by the bowels was not much at a time; after the firſt motion or two little feculent, but it had more the appearance of ſlime and matter. The moſt aſtoniſhing alteration was that which ſhewed itſelf on the diſeaſed and ſecreting ſurface of the ſores; inſtead of being deluged with pus as formerly, they appeared nearly dry. His pulſe was ſlower than it had been for ſome time—under a hundred—which it had not been before during the accident, and was for ſome time up to one hundred and thirty. He was ordered to have rice milk with a little cinnamon boiled in it, and to continue the julep with creta. To what law of the ſyſtem can we aſcribe this extraordinary appearance? That the ninth day in accidents of this kind has to me ever appeared *critical*, may be ſuppoſed, when I recollect the fatal termination of many caſes on that day, as recorded in my former eſſay (vide chap. iii. p. 70.)—I have likewiſe obſerved in ſeveral diſeaſes which are generally termed inflammatory, that about the ninth day a criſis happens. Is it that the ſyſtem is fatigued by this action, and that an oppoſite ſtate is required as a ſpecies of antagoniſm, ſuch as we obſerve in the retina of the eye, which ceaſes to act although the ſame ſtimulus is applied, and an oppoſite ſet of fibres take on the action from early aſſociation, as is beautifully illuſtrated by the ocular ſpectra in

Darwin's

Darwin's Zoönomia? Or may this too abundant ſecretion of theſe extenſive and ſuperficial ſores, be looked upon as the ſame ſtate of veſſels which produces colliquitive ſweats, that in ſome ſtates of the ſyſtem alternate with diarrhœa? On the ſame principle perhaps we may account for the good effects of bliſtering in certain ſtages of inflammation of the head, cheſt, or abdomen, with a tendency to effuſion. The counter-irritation ſeems to ſuſpend the diſeaſed action of the primarily affected part. Thus it is an obſervation frequently made by practitioners in inflammations of the breaſt, that a bliſter not only inducing irritation where applied, but alſo on the neck of the bladder, more effectually relieves the original attack.

Eleventh day. If the appearances of yeſterday ſurpriſed me, thoſe of to-day have done ſo equally, and at the ſame time given me infinite ſatisfaction. I repreſented the extenſive ſores as yeſterday having ceaſed to ſecrete with that profuſion which they had done for ſome days before; and if I may be allowed ſo to expreſs myſelf, a *ſheet* of ſkin has been formed over the very extenſive ſores which two days ago were diſcharging a profuſion of pus. I am confident the quantity of new cuticle formed theſe laſt twenty-four hours on the different and diſtant parts of the body, would require more than a ſheet of letter paper to cover it; a greater quantity of

cuticle

cuticle than I ever before have ſeen made in the ſame time. It appeared as if the balance of the exhalents and abſorbents had been ſo nicely kept, and the ſkinning proceſs had been ſo rapid, that the wound might be compared to the ſurface of an agitated lake, which, on a ſudden, ſubſiding to a perfect calm, is iced over in a ſingle night.

The circumſtance of the accidental diarrhœa has convinced me of a fact which might have remained long in obſcurity, had it not been for this opportunity. It will be recollected by thoſe who read my former eſſay, that in the caſe of E. F. in the ſecond mode of treatment, I mention his being above a twelvemonth under cure; and I there hazard a conjecture, that it was very materially owing to an ill conceived prejudice which I had adopted of *ſupporting* the ſyſtem under that diſeaſed action. This caſe convinces me that I was right in my opinion of that caſe being rendered ſo tedious by my being unacquainted with this law of the ſyſtem. Chance has here unfolded to me the neceſſity of reſtoring the equilibrium of the ſyſtem, by leſſening the action of the arterial ſyſtem, which prejudice would have prevented my daring to adopt. To have given a ſevere cathartic at this period would have appeared like madneſs in my eyes at one time; but now I look upon it as dictated by experience.

Little further need be remarked in this caſe. The parts continued to heal rapidly; and in leſs than three weeks from the accident, (i. e. from the 30th of October to the 18th of November following) he was *perfectly well.*

This caſe is ſo deciſive, 1ſt, of the advantages ariſing from the ſtimulating treatment to the eſtabliſhing of ſuppuration, and 2dly, of the *extraordinary* benefit to be obtained by deſiſting from that plan, when that proceſs is eſtabliſhed, as to leave no doubt in my mind of the perfect conſonance of this mode with the laws of the ſyſtem. I wiſh others to benefit from it, and I ſhall be happy to hear the reſult, as I do not fear being put to the bluſh for the conſequences.

CASE.

Thomas Pyle, a boy of fifteen years of age, was burnt by the ſame exploſion with G. Clark, not quite ſo ſeverely, though conſiderable eſchars formed on ſome parts, and the ſymptomatic fever ran to an alarming height. He was treated according to the principles already laid down, both internally and externally, and was ſoon brought to a ſtate of ſafety—i. e. the injured ſurface became a ſecreting one. Chalk was applied externally, as an abſorbent, and the internal ſtimulus was deſiſted from, as before recommended; yet the diſcharge continued too profuſe. I have already mentioned

that

that he was not ſo ſeverely burnt as Clark; but the accidental diarrhœa produced ſuch an effect upon Clark's ſyſtem, that he was well ſooner than this boy. Suppoſing the beneficial effects in Clark's caſe to have ariſen from counter-irritation, I attempted to imitate this accident by a ſtrong doſe of julep and calomel. It certainly produced a very good effect, though not ſo marked a one as the accidental diarrhœa, as I durſt not puſh my efforts ſo far as to equal what nature had done in the former caſe. At the interval of a week the purge was repeated; between the purges the diet was nutritive, but not ſtimulating; all fermented liquors were forforbidden, and nothing *hot* was allowed to be taken. This injury required near a fortnight more than the other for its cure, though of *conſiderably* leſs import: yet, though a fortnight longer, I eſteem it a *very* ſpeedy cure, for it was completed in leſs than five weeks; whereas, I am well convinced, that if a different mode had been purſued, it would have required as many months—I mean, to have cured theſe ſurfaces after they were brought to a ſtate of ſuppuration. In the former, or what I have called the firſt mode of treatment (vide p. 70, firſt eſſay) I have no heſitation in ſaying he would have been loſt. It is by what I term the ſecond mode (vide p. 80, firſt eſſay) I ſuppoſe he might have been ſaved; and the caſe E. F. (p. 93, firſt eſſay)

eſſay) will give ſome idea of the length of time required in curing ſuch injuries upon the *old plan*.

I muſt here obſerve that I have frequently benefited in other caſes from this leſſon nature gave me; and I am induced to record it that others may profit by my experience, if they dare venture to follow a practice ſo contrary to the prejudices of the ſchools.

In my firſt eſſay, p. 11, I have noticed the ſimilarity of the materials in the exploſions of mines with thoſe of gunpowder, only the order ſeems to be inverted. The caloric or generated heat appears to be exactly ſimilar; and it will readily be ſuppoſed, that I ſhould be induced to uſe the ſame means in accidents happening from gunpowder, as in burns of any other deſcription. Accordingly the few of that kind which have fallen to my ſhare, I have treated upon the ſame principles, and with ſimilar good effects.

CASE.

A boy, aged ten, having his face and hands burnt from an exploſion of gunpowder, I was ſent for to ſee him in the country. His face was much burnt; the eye-laſhes and the hair of the eye-brows were much ſinged, more on the right ſide than on the left; the eyes were conſequently expoſed to the ſame effect, and he felt very great pain in them.

They

They had applied oil to the whole of the burnt parts before I ſaw him, which might be an hour after the accident. He was in great pain—crying, ſhivering, and ſtamping about the room like a little madman. I gave him an anodyne immediately, and bathed the whole of the parts well with Ol. Terebinth. and dreſſed them afterwards with the ſtimulating ointment. He was immediately put to bed. I ſtaid about half an hour with him, when he began to be eaſy. His anodyne was repeated at night. On the following day I found he had paſſed a pretty eaſy night. He was again dreſſed with the ſame ointment; in the courſe of two days more ſuppuration took place in parts about the right eye, and a great portion of the ſkin cracked and peeled off in ſcales. The dreſſings were changed to the abſorbing ones, and in about ten days he was perfectly recovered, except a little tenderneſs of the eyes, which yielded to purges taken at proper intervals, and a collyrium with vitriolated zinc.

I could add many more caſes of the efficacy of this mode; but as they offer nothing remarkable, and were under my own care, they would only uſeleſsly ſwell this work, which, I am afraid, may even now be thought too extenſive. To ſurgeons of the army and navy, and thoſe employed in naval or military hoſpitals, I cannot too ſtrongly recommend this mode. From converſations with

ſome

ſome public characters, I find a number of men are *expended* by exploſions which happen in laboratories, in the field, and on ſhipboard. It will be ſome conſolation to me to think, that if I have it not in my power to prevent the *mad efforts* of man in going to war, yet I may be the means of ſaving the lives, or mitigating the ſufferings of ſome of my ſpecies, who were brought into ſuch ſituations by a concourſe of circumſtances, over which they had no controul. I muſt here beg leave to pay the tribute of thanks due to Dr. Trotter for recommending my eſſay to the attention of the navy ſurgeons. To his activity and inveſtigation the public already owe much, and the ſpirit he has unfolded in the medical department of the navy, leads us to hope for much more.

I ſhall now adduce the teſtimonies of others in ſupport of the facts I have been induced to give to the world. The following is a letter from Mr Stephen Hammick, jun. of the Royal Naval Hoſpital at Plymouth, whoſe zeal in the cauſe of our art is well known to medical men, and needs no panegyric from my pen.

" *Fountain Court, London,*

" Sir, *Sept.* 26, 1799.

" In anſwer to your letter, which I had the honour of receiving a few days ſince, requeſting my treatment of burns, I beg to ſtate, that during the laſt ſeven years, whilſt I was employed as

as an aſſiſtant ſurgeon, at the royal naval hoſpital at Plymouth, I had frequent opportunities of having under my care and management, a number of men who had been ſeverely burnt by the exploſion of gunpowder. At the beginning of this war it was our general practice to keep the parts conſtantly wet, either with vegeto-mineral water, crude ſal ammoniac waſh, or vinegar. Although theſe applications gave our patients eaſe for a time, yet this eaſe was not of long duration, neither were the benefits derived ſuch as to ſatisfy our minds of their utility; as we found that our patients did not receive thoſe permanent beneficial advantages whith had been attributed to them; we therefore had recourſe to rectified ſpirits of wine, in which was diſſolved a pretty large quantity of camphor. This mode ſucceeded more to our wiſhes. But when your ingenious treatiſe on burns fell into my hands, I reſolved to put it to the trial in the firſt recent caſe of burn that preſented itſelf, and unfortunately I had not long to wait for ſuch an one; to which I immediately applied the ſpirit of turpentine, in a full and free manner, (though I muſt admit that I did not give my patient, internally, the liberal allowance of ſpirit and laudanum which you have ſo forcibly recommended.) The application of the turpentine was attended with much burning and ſmarting, as the patient expreſſed it, for about an hour: at the expiration of which he fell aſleep, and reſted tolerably for about two hours; and when he awoke, he declared that he found himſelf much relieved. No ill ſymptoms ſupervened, and the proceſs to ſuppuration in this caſe was rather more rapid than in any I had before witneſſed. The after ſtages, however, were nearly, if not quite, as ſlow as in thoſe patients who had been treated by the cold applications.—Prompted by the ſucceſs of this caſe, I tried it in ſeveral others, and with equally beneficial effects; and from ſtrictly watching and minutely attending to burnt patients, (my reſidence having been within the walls of the hoſpi-

tal for more than ſeven years) I am decidedly of opinion, that the practice of applying immediately to burns the ſpirit of turpentine, is the beſt I have ever yet ſeen adopted, as the proceſs to ſuppuration is in general more rapid, and thoſe irregular marks or ſeams found after other applications are not to be met with after the turpentine; neither is the ſkin ſo diſpoſed to crack, or break open again, as was formerly too often the caſe, an event producing the moſt troubleſome and irritable ſores.

"Not thinking ever to be called upon to give particulars of my practice in burns, I did not make any notes;—what is above ſtated is given merely from memory: but the ſucceſs of the practice was ſo great, that it was engraven ſo forcibly on my mind as not to be eaſily effaced; and ſhould you think this letter of any importance, it is entirely at your ſervice.

"Should you wiſh any further information on the above points, I wiſh you to wave all ceremony, and demand it from

Your obedient ſervant,

STEPHEN HAMMICK, jun."

From this letter the ſuperiority of the ſtimulating, over the torporiſing mode of treatment, is clearly decided; and it alſo proves that the Oleum Terebinthinæ poſſeſſes greater efficacy as a ſtimulant than the ſp. vini rect. c. camphorâ.—I am ſorry Mr H. did not purſue the whole of the mode recommended; but ſhould further occaſions preſent themſelves, and he ſhould try the *internal* ſtimulant plan to ſuppuration, and afterwards the plentiful uſe of chalk as an abſorbent, I think he will then confeſs, that to have advanced from the chaotic ſtate in which this department of our art was three

years

years ago, to the degree of certainty we have now arrived at, is a moſt rapid and highly gratifying progreſs towards that goal of truth where we all wiſh to arrive.

Mr Horn, ſurgeon to the Newcaſtle infirmary, has favoured me with the following letter:—

"*Newcaſtle, 11th May*, 1800.

"DEAR SIR,

"I have not been able to find the account I mentioned to you, about the child who was ſcalded by boiling water, and who was the firſt patient whom I treated in the manner recommended in your book; I muſt therefore content myſelf by ſaying it induced me, as much as one caſe could do, to give your method a preference to every other I was acquainted with.

"The colliery for which I am employed is ſo fortunately ſituated, and ſo judiciouſly managed, that no accident from fire has occurred ſince the year 1786, ſo that I have had but a very confined practice in burns. The trifling things of that nature which I have had under my care, in private practice, have been uniformly treated in your way, and the reſult has always added to my confidence in the method.

"From the time of your publication until the 7th of September, 1799, I had no caſe worth communicating. On that night, Mr Row's tar-yard caught fire, by the blowing off of the head of a ſtill, in which they were preparing coal oil. Several butts of this burſt into flames, while a poor ſailor was in the midſt of them, endeavouring to puſh them into the river. He was very ſeverely burnt in various parts of his head, body, and limbs. It was about an hour after the accident before I got to him, during which time the neighbours had been continually employed in anointing the burnt parts with oil, by means of fea-

thers.

thers. The poor fellow (although very reſolute) was complaining much of the ſevere pain. I began immediately to apply the Ol. Terebinth. from which he felt a moſt pleaſing relief, and was ſo ſenſible of its good effects, that he carefully placed one arm under the other to catch every drop that fell from the part I was applying it to. I dreſſed him with ung. reſin. flav. thinned with the Ol. Terebinth. and as the man was in a very indifferent lodging, I ſent him to the infirmary, where you would ſee the event of the caſe. I will juſt remark, that from the careleſſneſs of a perſon who was holding a candle, my patient had nearly undergone a ſecond burning; and from the very inflammable nature of the turpentine, and the hurry people are in on theſe occaſions, ſuch a thing might eaſily happen.

"The 10th of March laſt, I was called to a little girl, 7 years of age, daughter of Capt. Bainbridge, of the Ferry, Dentſhole. Her clothes had caught fire from a hot poker, placed perpendicularly againſt the wall, while the child was ſtanding near it. She was very ſeverely burnt all over the face and breaſt; her neck and left arm-pit had ſuffered very much, and many parts of her body in a ſlighter degree. Cold water, ſcraped potatoes, and whatever the neighbours could ſuggeſt, had been uſed until I got there. The child was complaining very much when I began the application of the oil of turpentine, previouſly made warm; and although it was applied to the naked cutis, in ſeveral parts where the bliſters had been injudiciouſly cut, ſhe ceaſed to complain as ſhe had been doing during the former treatment. While I was ſpreading the plaiſters (of ung. reſin. flav. c. Ol. Terebinth.) I deſired the attendants to uſe the oil freely to all the parts which were ſuſpected to have been affected by the fire, particularly to the right ſide of the breaſt, neck, and ſhoulder, where an appearance had taken place very much like an eriſipilas, when the ſkin begins to form bliſters. Theſe I afterwards covered (as well as the parts more ſeverely burnt) with the

ointment

ointment ſpread on linen, and I gave the child a glaſs of brandy and water, with twenty drops of the tinctura opii; and another anodyne at night with fifteen drops.

" Next morning I found ſhe had paſſed a very quiet night, of which her mother's expreſſion will give you a better idea than any thing I can ſay. On my aſking her how the child had been? " Finely," (ſays ſhe) " ſhe has never ſaid *Oh dear!* ſince you left her." I removed the dreſſings, and was much pleaſed to find the parts where the ſkin was juſt beginning to form bliſters, in the manner I have before mentioned, had gone no further in that proceſs. They now aſſumed a browniſh appearance, and no other effect was produced in the progreſs of the cure, than a deſquamation of the cuticle.

" The cheeks and parts where the burns had been deepeſt, were covered with a thick yellowiſh cruſt, of a purulent and ſomewhat *curdly* appearance. The oil of turpentine and the ointment were continued the firſt four days; after which ſhe was dreſſed with a cerate of wax and oil, and I had no other trouble in her cure than being obliged to apply occaſionally a little of the vitriol. cœrul. to a fungus which aroſe on the wound in the neck. I diſcontinued my viſits on the 6th of April, and yeſterday I ſaw the child, who is very little marked, and that merely where the parts were moſt ſeverely burnt.

I am, dear ſir,

Your's truly,

FREDRICK HORN."

I feel myſelf much obliged to Mr Horn for the above letter, and alſo for his ſcrupulous attention to the *whole* of the treatment according to the plan of my eſſay. The minute attention paid to the caſe, and the *decided* benefits which aroſe from the treatment, will produce a proper effect on the medical reader.

Mr Fife, ſurgeon, Newcaſtle, has favoured me with the following letter :—

" Dear Sir,

" Since you favoured me with your ideas on the treatment of burns, I have had frequent opportunities of trying the Sp. Terebinth. as an external application, and I feel peculiar ſatisfaction in ſtating, that in every inſtance the employment of it has been attended with uniform ſucceſs.

" As I am not engaged in colliery practice, the caſes which have hitherto come under my care, have been principally of the nature of ſcalds; and when I contraſt them with ſimilar caſes conducted under a different order of treatment, the reſult is truly aſtoniſhing.

" The firſt that I ſhall notice is that of John Weatherſpoon, a brewer, who, on the 25th of November, 1797, fell into a copper boiler: they had fortunately juſt before pumped off the greateſt part of the boiling wort it contained, ſo that not more than eighteen or twenty gallons remained in the copper at the time he fell: he was, however, moſt ſeverely ſcalded; and I being immediately ſent for, ſaw him very ſoon after: I found him almoſt frantic with pain, and trembling to as great a degree as any one I ever ſaw during the cold ſtage of an ague. On taking off his cloathes the epidermis peeled off from the whole ſcalded ſurface; the parts which had ſuffered the moſt materially were the lower extremities, back and one arm. I gave him a draught containing fifty drops of laudanum, and immediately began to apply very liberally the Sp. Terebinth. to all the affected parts. At firſt he complained of increaſed heat and ſmarting, but this was quickly ſucceeded by a ſoothing ſenſation; and continuing to apply it ſome minutes longer, he ſaid he felt himſelf almoſt quite eaſy. As a dreſſing I now made uſe of the ung. reſin. flav. rendered ſoft with the Sp. Terebinth.

and

and being put to bed, the ſhivering ſoon went off. He paſſed a tolerably quiet night, and on removing the dreſſings the next day, the ſcalded ſurfaces appeared clean, florid, and very moiſt, with a copious thin ſecretion. The ointment was again applied, but with a leſs proportion of Sp. Terebinth. On the third day the ſecretion put on a purulent appearance: the Sp. Terebinth was now entirely omitted, and the parts dreſſed with ung. reſin. flav. alone. By the fourth day ſuppuration was completely eſtabliſhed, and the ſurfaces exhibited a healthy aſpect; and as the diſcharge of pus was conſiderable, I laid aſide the ung. reſin. flav. and ſubſtituted the cerat. e lapid. calamin. which was continued until he got quite well. In leſs than a fortnight from the time of the accident, the arm which had been ſtripped of its epidermis from the ſhoulder down to the fingers, and a great part of the back and legs were perfectly cicatrized; the only parts then remaining open were about the ancles and the lower part of the back, and theſe were healed in the courſe of the week following, ſo that his cure was compleat within three weeks from the accident. He was allowed to live as uſual without reſtraint, and his health and ſtrength were very little impaired.

"This caſe brought to my recollection one of a ſimilar nature, which occurred about ſixteen years ago: this patient was a brewer likewiſe, and he by ſome accident ſlipped into a boiler nearly up to the knees; the epidermis came almoſt entirely off with his ſtockings, and he ſuffered extreme pain, with repeated ſhiverings. A liniment, compoſed of equal parts of the ol. lin. and aq. calcis, was plentifully uſed for ſome time to the whole ſcalded ſurface, over which ſoft old linen, ſpread with ung. e ſpermacet. was applied; opiates were given to aſſuage the pain, but at the ſame time the antiphlogiſtic regimen was ſtrictly enjoined until ſuppuration took place, which I remember was very profuſe; he was then allowed a more generous diet, but the diſcharge continuing very great, he became much reduced in

fleſh and ſtrength, and the cure proved extremely tedious, in ſpite of every care and attention: to the beſt of my remembrance it was between three and four months before he got quite well.

"Were it neceſſary, I could mention ſeveral other caſes of different degrees of injury, in all of which the external uſe of Sp. Terebinth. proved equally ſerviceable; but not having particularly recorded them, I ſhall only obſerve, that in every trial I have made, the reſult has been ſo highly ſatisfactory, as to leave the fulleſt conviction in my mind of the ſuperiority of this mode of treatment over every other I am acquainted with.

"Allow me now to acknowledge the obligation I feel, as an individual, in being thus enabled to afford more effectual relief to ſuch as may require my aſſiſtance; and I think it but juſtice to ſay, that the profeſſion, as well as the community at large, are much indebted to you for your indefatigable exertions in the improvement of this important branch of ſurgery.

I am, dear ſir,
With great eſteem,
Yours very ſincerely,
WILLIAM FIFE."

Weſtgate-Street,
May 20th, 1800.

The above teſtimony of Mr Fife is intereſting and ſatisfactory. I know few men more capable of making the compariſon: his talents for obſervation and diſcrimination are well known to thoſe who have the pleaſure of his acquaintance.

I am favoured with the following letter from Mr Bell, ſurgeon, of Cheſter-le-Street, in the county of Durham, which adds weight to the evidence already given:—

"DEAR

" Dear Sir,

" I have juſt completed the cure of a perſon ſeverely burnt, and it is the firſt time I have had it particularly in my power to adopt the method of cure ſo juſtly recommended by you in your late publication. The patient was a workman at the brewery in this town; and in February laſt, on deſcending by means of a ladder into a large copper or veſſel, in which was ſome boiling wort, (to rectify ſomething that prevented the free evacuation of the liquor out of the veſſel) his foot ſlipped off the ladder, he fell on his ſide, and on attempting to extricate himſelf, he again fell, by which his legs, arms, &c. (particularly his right leg and arm) were ſeverely ſcalded. As I was much engaged in general buſineſs at that time, I had not leiſure to write down the particular circumſtances of the caſe as they occurred, (which I much wiſhed to do); however, I had much pleaſure and ſatisfaction in finding, that your method, hitherto new to me, ſucceeded to my utmoſt wiſhes, and better than any mode I have before ſeen, and ſhall in future be the rule of my practice in ſuch caſes.—Should any thing of the like kind occur to me, I will take the liberty of communicating it to you.

I am, dear ſir,

Yours faithfully,

Cheſter-le-Street,
May 4th, 1800. } RICHARD BELL."

Mr Bell, ſurgeon of his majeſty's ſloop Pelican, in a letter to me ſays " Another caſe, beſides that I have mentioned in the Medical Journal, occurred during our paſſage from Liſbon, that I think deſerves notice:—A man was ſtanding near to the cook's coppers, in which ſalt pork was boiling, drying a pair of trowſers, during a hard gale of wind, when

when the ſhip *lurched* ſo much as to throw a quantity of boiling water and greaſe over that ſide of the boilers where he ſtood; he received the greateſt part of it upon his arms and hands, and complained of moſt violent pain. The Ol. Terebinth. was inſtantly applied warm, and in about an hour he became eaſy; on the following morning they were found perfectly *cured*, except a ſmall place on the left wriſt, where the epidermis had been ſtripped off by endeavouring haſtily to wipe off the hot greaſe with his trowſers. I think this caſe ſpeaks ſufficiently for itſelf, and I ſhall only add that the ſmall place mentioned was well in *four* days." I ſhall not comment upon this caſe, but leave the reader to form his own concluſions.

In a caſe related by Mr Bell in the Medical and Phyſical Journal, vol. iii. p. 296, it is mentioned that an infant who was ſcalded, very ſoon fell aſleep after it was copiouſly bathed with the Ol. Terebinth. and that it had alſo a *remarkably* good night. Mr Weſtgarth, an ingenious pupil of mine, has alſo remarked this anodyne quality of the Ol. Terebinth. when applied to the irritated ſurfaces of young children, in ſome caſes he ſaw in the country. I am induced to account for this fact in the following manner:—Heat to a certain degree produces pleaſurable ſenſation; beyond that it excites pain. Now if we can *nicely* lower the action, we ſhall again

again come to pleaſurable ſenſation. Senſation produces ſympathetic effects through the ſyſtem; when theſe are of the pleaſurable tribe, the *thoughtleſs vegetative* ſyſtem of a child is ſoon placed in that ſtate known by the name of ſleep: it is alſo a very frequent effect produced upon older ſubjects, although they are liable to a mental ſtimulus. A good dinner and a few glaſſes of wine frequently produce this effect on grown people.

APPENDIX.

SINCE the foregoing was ſent to the preſs, I have been favoured with a complete treatiſe upon the ſubject of burns by Mr George Wilkinſon, of Sunderland, member of the Medical Society of London, of the Royal College of Surgeons, and honorary member of the Chirurgo-Phyſical Society of Edinburgh, &c. The introductory diſcourſe contains many ingenious and judicious arguments, pointing out the cauſes of the abſence of principle, as well as the abſurdity of the modes generally reſorted to in accidents of this claſs: but theſe obſervations exceeding the limits I had preſcribed myſelf in an eſſay of this kind, and Mr W. wiſhing only to diſplay the powers of the new mode of practice, has been kind enough to allow me to extract the caſes, for which he has my thanks, as they are highly ſatisfactory, and prove the univerſality of the principles developed in the former eſſay.

CASE I.

On the 15th December, 1797, a woman, 27 years of age, ſubject to fits, was attacked by one of them in the act of taking from the fire a pan of boiling water, which overturning, ſcalded

ed her face, neck, and breaſt; by falling againſt the hot grate, the palms of her hands were likewiſe burnt. The agony ſhe ſuffered was extreme: her eye-lids cloſed and ſwelled. The whole of the parts injured were liberally bathed with ſp. vini rect. and covered with the liniment, as you have directed, compoſed of ung. reſin. flav. incorporated with the Ol. Terebinth. The relief obtained by this mode of treatment was truly wonderful, it ſeemed to operate as a charm. As this was the firſt inſtance that occurred in my practice, I could not help feeling a high degree of ſatisfaction at the aſtoniſhing eaſe given by the ſtimulating plan. An anodyne being adminiſtered, ſhe paſſed a tolerably good night. The ſame dreſſings were uſed the day following, and the inflammation ſeemed to be ſubſided. But as this perſon was not my own patient, and I attended only on the account of another gentleman who happened to be out of town, and who, after this time, attended her himſelf, I am unable to particularize the treatment he ſubſequently adopted; whatever it might be, I found, on enquiry, that ſhe recovered very rapidly. The gentleman acknowledged the fact, but deemed the quantity of ſp. vini rect. which was got from his ſhop on this occaſion, and amounted to above a pint, highly extravagant. He ſaid he had lately uſed vinegar, and was an advocate for Mr Cleghorn's plan, which he had ſucceſsfully adopted in ſeveral caſes. I had done the ſame; but from the great ſuperiority of this new mode of treatment, in the *quickneſs of the cure, and the ſudden ceſſation of pain*, I determined to perſevere in the ſame treatment in future.

CASE II.

Elizabeth Fraſer, an infant, aged three years and an half, on the forenoon of the 5th January, 1798, ſitting on the floor, and having no other covering but a light outer garment, was terribly

terribly ſcalded by a large iron pot full of boiling water ſlipping ſuddenly from the fire. On my arrival very ſpeedily afterwards, I found that the poſterior part of her thighs, buttocks, (particularly the right) part of the left leg to a conſiderable extent, the exterior part of the right leg, near the ancle, the right groin, and *mons veneris*, were the parts on which the injury was principally inflicted. Theſe being well bathed with the Ol. Terebinth. and covered with cloths ſpread with the ointment deſcribed in the former caſe, the child received relief almoſt inſtantaneouſly. This was experienced during the bathing of the parts: for on my entering the room, her cries were piercing; but by the time ſhe was dreſſed, which took up about twenty-five minutes, or little more, they had ſubſided to ſobs. Being put to bed, a gentle anodyne was adminiſtered, and ſhe very ſoon fell aſleep, and paſſed a tolerably eaſy night.

The day following ſhe was again bathed with the Ol. Terebinth. and the ſame liniment was applied. The poſterior parts, ſuch as the buttocks and thighs, from preſſure by lying on her back, were abraded of their cuticle, part of which came away with the dreſſings. The anterior veſications on the belly and other parts taken notice of, which were entire, were now punctured.

The third day, January 7th, ſuppuration had begun to take place upon thoſe parts from which the cuticula had ſeparated: theſe were dreſſed with the ung. e lapide calamin. The parts on which the ſkin had remained after being punctured, were ſtill dreſſed with the liniment.

Fourth day, January 8th, the whole were dreſſed with the cerate, which was continued throughout the courſe of the cure, which took up juſt ſixteen days, thoſe parts on which the cuticle remained being healed up by far the ſooneſt. The anodyne was adminiſtered for about three nights only, it being no longer neceſſary. Three doſes of calomel e pulv. cathartic.

were

were given at intervals towards the latter end of the cure; and, ſtrange to ſay, this child, although very delicate and puny, from being previouſly affected with the hooping cough, recovered moſt ſurpriſingly, and that to the aſtoniſhment of all the ſpectators who ſaw her, many of whom ſcrupled not to declare, that they had known accidents of far leſs conſequence, oppoſitely treated, take up more than double the time occupied in this inſtance.

CASE III.

Another infant, Elizabeth Catty, aged only ſeventeen months, was on the 21ſt September, 1798, by a ſimilar accident, ſcalded ſhockingly. The injury extended from above the left knee down the whole external ſurface of the leg and ancle, and on the right arm from the top of the deltoid muſcle to the articulation of the joint of the elbow, ſpreading to the fingers down the exterior ſurface of the arm, and alſo the greateſt part of the right cheek. The ſcreaming of this little creature on my entering the room, which was almoſt immediately after the accident, was lamentable, and ſhe was ſhivering as if in the fit of an ague, a circumſtance I ought to have noticed in the two former caſes. The Ol. Terebinth. was applied liberally with a feather: I could plainly perceive, during the proceſs, that the pain gradually diminiſhed, ſo that by the time ſhe was dreſſed with the liniment ex Ol. Terebinth. ung. reſin. flav. which took up more than half an hour, ſhe had nearly ceaſed crying. As I had heretofore given an anodyne after the firſt dreſſing on former occaſions, I omitted it in this caſe, with a view of aſcertaining the full effects of the application in appeaſing the pain. An hour after this I ſaw her again; ſhe appeared quite eaſy, and ſoon after ſlept, but was diſturbed at intervals by the recurrence of pain, which was always mitigated by moiſtening the dreſ-

ſings

ſings as they became dry, with a feather dipt in Ol. Terebinth.

On the 22d the appearances of the parts were very promiſing, (although ſhe had now and then been diſturbed in the night) and the inflammation was pretty much abated, particularly on the face, right arm and hand, and part of the left leg. The deltoid muſcle, elbow joint, part of the arm, and below the knee, were covered by large and extenſive veſications, which were carefully punctured, and the dreſſings again applied as before.

The 23d, ſome portion of the cuticle came away with the dreſſings about the elbow, and a little below the knee, theſe parts having juſt begun to take on the ſuppurative proceſs: they were, however, once more dreſſed with the ſtimulating applications.

The 24th, a plentiful diſcharge appearing, the whole of the parts were dreſſed with the cerate e lap. calam. The ſwelling of the face in particular, and indeed of the whole, had ſubſided; the former being about to heal, as the cuticle was now beginning to peel off dry. But theſe ſurfaces abraded of their cuticle, that had ſuffered the moſt from the hot water being longer in contact, ſeemed to feel much on their expoſure to the atmoſpheric air, a circumſtance that almoſt invariably takes place, particularly in cold and froſty weather. Hence ariſes the abſolute neceſſity, (which I wiſh ſtrongly to inculcate) of humanely leſſening the miſeries of theſe unfortunate objects, by always having the new dreſſings ready, prior to the removal of the old ones.

The 25th, the diſcharge was by no means diminiſhed, but as ſhe had appeared peeviſh and reſtleſs for the laſt two nights, a ſmall quantity of an anodyne julep was directed to be taken at bed-time, more eſpecially as ſhe was about her teeth, and was affected with a moderate looſeneſs. From this time the ſores began to heal rapidly, and the whole cure was completed in about

about ſixteen or ſeventeen days. A gentle purge or two were exhibited towards the latter end, to obviate the coſtiveneſs cauſed by the anodyne. The tenderneſs, and diſpoſition of the ſkin to fret and crack, which often takes place after the cuticle is firſt formed, was relieved by the application of the liniment ex aq. calcis c. ol. lini, which alſo prevented the contraction of the muſcles ſurrounding the joint.

A brother of this child, about ſix years of age, was hurt by the ſame accident: his left foot was much ſcalded from above the ancle exteriorly to the heel; and the injury included nearly half the foot: the boiling water had undoubtedly been in contact with it for a long time, as a large veſication, about the ſize of a duck's egg, occupied the foot. I did not puncture it for three or four days, when fearing it might be broken accidentally, and the cuticle thereby be torn off, I was induced to do it. He was treated exactly in the ſame way as his ſiſter, and obtained eaſe from the ſame applications; but his cure, (I mean the healing of the ſore) took up nearly a month.

CASE IV.

John Reed, aged 13 years, apprentice to Capt. David Hughes, of the ſhip Elizabeth, of Sunderland, while ſetting fire to a compoſition of gunpowder, in the ſtreet, on the night of the 15th January, 1799, a ſpark of fire came in contact with ſome gunpowder he had imprudently put looſe in his waiſtcoat pocket, and he was thrown by the exploſion to a conſiderable diſtance acroſs the ſtreet, its violence being ſuch as to raiſe him ſome height from the ground. He was immediately taken to the diſpenſary, which was near to the place where the accident happened. All the injured parts were anointed with the liniment ex aq. calcis, et ol. lini, before I ſaw him. On my arrival, I found him ſhivering, as if in the

cold fit of an ague, his teeth chattering, and he complained of great pain and intolerable heat over his body, *not being in the leaſt relieved by the applications which had been uſed.* I removed the dreſſings, which I diſcovered to be the cerat. e lap. calam. put over the liniment. I loſt no time in applying the Ol. Terebinth. made warm by placing it in a ſmall baſon, ſurrounded with hot water, while my aſſiſtant was ſpreading the cloths with the liniment uſed on former occaſions. The extent of the injury was very conſiderable in this patient: the belly, above the *umbilicus*, and the right ſide of that region, with a conſiderable portion of the left, and ſome parts below it, were much ſcorched; a large portion of the ſkin of the right pectoral muſcle, the top of the right ſhoulder, nearly the whole of the face, but particularly the lips, the inſide of the mouth, noſtrils, and a part of the breaſt and left ſhoulder, a large portion under the right axilla, which was diſcovered on the enſuing day after dreſſing him, as alſo a ſmall part near the falſe ribs, poſteriorly, were much burnt. An anodyne cordial draught, containing about thirty drops tinct. opii was exhibited, and he paſſed as good a night as could be expected, his ſleep being diſturbed by ſome paroxyſms of pain.

The enſuing day, on dreſſing the parts, the injury they had ſuffered was diſcovered, to the extent already mentioned; the eyes and eye-lids fortunately, however, had eſcaped being hurt. Innumerable ſmall particles of the gunpowder were found ſticking every where, particularly about the belly, breaſt, face, &c. ſurrounding as it were the eſchars, which in many places were deeply ſeated, and extenſive. The face being leſs injured, was now anointed with the liniment ex aq. calcis et ol. amygd. and a ſmall portion of camphor; the reſt of the parts were dreſſed as at firſt. A ſaline mixt. c. conf. card. was exhibited, and the anodyne was repeated at bed-time; his pulſe was at 115, and he complained of thirſt.

On the 17th, he was eaſier than on the day before, the appearances of the parts in general were favourable, particularly the face; the pulſe ſtill continued at nearly the ſame ſtandard.

On the 18th, he was much the ſame as the day before; ſome parts had put on the appearances of ſuppuration around their edges: theſe were dreſſed with the cerat e lap. calam. and thoſe on which it had not taken place, had the former dreſſings applied. The medicines as yeſterday were continued, and the patient being coſtive, an enema was injected, which, with the aſſiſtance of two or three grains of calomel, procured ſome motions; his pulſe was reduced to 90; the anodyne was continued at bed-time.

On the 19th, he felt much eaſier, having paſſed a very good night. Some more of the eſchars on the belly, breaſt, and ſhoulders, appeared to looſen; thoſe under the axilla felt very troubleſome: the face, noſtrils, lips, and mouth appeared to mend rapidly. The diſcharge in this patient, which had begun to take place, ſmelt very ſtrong, and conſiderably fœtid, much more ſo than in any of the former caſes deſcribed.

On the 20th, (ſixth day) the ſtimulating plan was gradually withdrawn, both with reſpect to external applications and diet; the former being now changed entirely to the cerat. e lap. calam. From this period to the twelfth day, the amendment became viſibly progreſſive. The face, (as I have invariably obſerved in almoſt all caſes of this ſort, although in this it was by no means ſo much injured as other parts) was the firſt that healed. This, with great part of the breaſt and ſhoulders, had taken on the ſkinning proceſs. The eſchars, which were deeply ſeated on each ſide of the umbilical region, as alſo that near the axilla, did not ſeparate completely till about the eighth or ninth day. The ſurfaces of the tender ſores, previouſly to the application of the cerate, were well duſted through the perforations of a tin box with pulv. e creta pp. et pulv. amyli, in the

proportion

proportion of four parts of the former to one of the latter. This method I had adopted on a former occaſion of a moſt alarming and dangerous nature, (which will be the ſubject of the following caſe) with uncommon ſucceſs. The gleety troubleſome diſcharge which always takes place in deſperate and deeply ſeated injuries of this ſort, and alſo the pain and irritability were by theſe means much leſſened, and the cure rapidly advanced, which in this ſevere caſe was effected in about thirty days; and what is alſo pleaſing, no unſeemly ſcars enſued, a circumſtance that has ſcarcely ever failed to happen in ſuch caſes under the old treatment. His bowels were kept open during the cure by clyſters, and he was occaſionally purged with calomel et pulv. cathar. towards the end of the time. He kept his bed for the firſt ten or twelve days, after that time he ſat up in the day time, and on the twentieth day went out of the houſe, coming afterwards every day to be dreſſed at my houſe.

CASE V.

On the 6th November, 1798, Mrs E. Foreſide, aged 56, lately reſident in Sunderland, but now living at No. 20, John's Street, Surry Road, Black Friars, while reading, about eight o'clock at night, it is ſuppoſed ſhe had approached too near the candle, being alone at the time, and was found ſitting upright in a blaze on the floor, while the candle lay burning by her, the flame of which had not only penetrated through a thick oil-cloth, but had actually communicated to the boards. How long ſhe had continued in this ſituation cannot well be aſcertained; but when the woman with whom ſhe lodged found her in the poſition above deſcribed, ſhe was burning, and in a ſtate of ſtupefaction. On my entering the room ſhe ſcarcely uttered a ſyllable, and appeared to feel but little all the time I was dreſſing

dreſſing her, which, from the nature and extent of the injury, muſt have taken up a conſiderable extent of time.* The parts expoſed to the contact of the fire were conſiderable; they extended from under the right ear a little towards the ſhoulder, and in the direction of the maſtoidœus muſcle, including the clavicula from its articulation with the arm to the ſternum, and nearly the whole of the pectoral muſcle, advancing towards the axilla. Below this, it was ſeparated by a ſmall ſpace, and covered the ſuperior and anterior portions of the right mamma, juſt above the nipple. The burn in this part was nearly three inches acroſs, and two and an half from above downwards. In the centre of the ſternum, immediately below the inſertion of the ſterno-maſtoidœus muſcle, appeared a ſpace above an inch and an half in breadth, and more than an inch from its ſuperior to its inferior termination, and again beneath, another ſpace preſented itſelf, of a ſize ſomewhat leſs. The greateſt part of the right ſhoulder blade, extending croſsways three and an half inches, and more than two and an half from above downwards, appeared to be moſt dreadfully affected, and the injury very deeply ſeated. From the top of the left ſhoulder, beginning immediately below the glenoid cavity of the ſcapula, a ſpace covered the whole of the deltoid muſcle, from above downwards, and extended a little forward to the left pectoral muſcle, and ſomewhat backward to the ſame ſhoulder. Immediately above the left eye-brow a large eſchar appeared, in ſize an inch and an half acroſs, and an inch from below upwards.

But

* The ſhivering or rigour usually attendant on accidents of this ſort, and which is more or less vehement, according to the degree of danger, extent, or violence of the injury inflicted, was in this instance abſent. How far this is to be imputed to the effects of terror operating powerfully upon the nervous ſyſtem, and thereby depreſſing the vital energy, I ſhall not take upon me to determine.

But the worſt of all was the crown of her head, which was ſcorched moſt terribly. The fore part being defended by a cuſhion, over which her hair had been laid, was preſerved from injury. The breadth of this eſchar was three and an half inches, and its length, extending acroſs the head, ſomewhat leſs than five inches. The cuticula on this part ſeemed quite deſtroyed, and no appearance of veſication preſented itſelf. The whole of the cutis in general was dreadfully ſcorched; that on the fore parts of the body, from the ear, clavicula, breaſt, &c. appeared of a dirty white, or aſh colour, interſperſed with ſome ſtreaks of a reddiſh hue; that on the left arm and right ſhoulder blade was hard, dry, and contracted, of a dark brown colour; and that on the top of the head almoſt black. She was dreſſed with the Ol. Terebinth. and the liniment was applied as uſual over the whole ſurface of the parts injured, and an anodyne, with 30 drops of tinct. opii, was immediately given. The diet was directed to be rich and nouriſhing.

Nov. 7.—She had paſſed but an indifferent night, had ſome ſmall intervals of repoſe, but at times appeared uneaſy. She had come more to herſelf, but appeared much dejected, and ſpoke but little. The appearances of the parts much the ſame as yeſterday; her pulſe 114. She was ordered a ſaline cordial mixture, and the anodyne was again repeated at bed-time. She was allowed rich negus, and whatever kind of food ſhe pleaſed. The eye-lid being tumefied, from an idea of the Ol. Terebinth. being improper, I ordered a ſolution of the ceruſſa acetata to be applied conſtantly to it.

Nov. 8.—The appearances of the injury much the ſame; the medicines and diet were continued, pulſe the ſame as the day before.

Nov. 9.—She ſeemed much the ſame, excepting that ſhe felt her eye-lid very ſore, and ſaid it had given her more pain and uneaſineſs than any other part. At this time a diſagreeable

vapour

vapour ſeemed to ariſe on taking off the dreſſings, which began to exhibit ſome moiſture.

Nov. 10.—The neck, pectoral muſcle, and ſome parts of the breaſt, appeared moiſt around their edges; the eſchars on theſe parts had begun to ſeparate, but no alteration appeared on the left arm, right ſhoulder blade, or top of the head, which were hard, dry, and contracted. The ſame dreſſings were ſtill continued as at firſt, as was the anodyne at bed-time, and a few grains of calomel c. pulv. cath. to procure a motion, which ſhe now wanted, were given. Her pulſe had fallen to 100.

Nov. 11.—The diſcharge from the parts which were above-mentioned to be in a ſuppurative ſtate, was now conſiderable, and ſmelt moſt remarkably fœtid, ſo as to be quite diſtreſſing and inſupportable to the patient, and even to myſelf. Some ſloughs had come away from the ſternum, and part of the right clavicle: the eſchar above the eye-brow had begun to ſeparate, but ſhe complained much of it. It was dreſſed with the cerat. e lapid. calam. as were thoſe other parts which had ſeparated their ſloughs.

Nov. 12.—From this period to the 20th, nearly the whole of the eſchars had gradually ſloughed away: the diſcharge continued to be very profuſe, and had ſomewhat abated of its fœtor: the patient appeared much dejected, nervous, and irritable, although ſhe was eaſier with reſpect to pain; and when I purpoſely omitted the anodyne, ſhe felt worſe for want of it. She took decoct. cort. c. ang. conf. card. with evident advantage. The large and extenſive ſloughs on the left ſhoulder, right ſhoulder blade, and top of the head, had not been caſt off; all of theſe, however, diſcharged freely; the two latter, viz. the top of the head and ſhoulder blade, being remarkably deep ſeated, I was induced to continue for a much longer time the ſtimulating applications, and digeſtive to them. I was extremely apprehenſive that the pericranium had been injured, and ſo far was I

from being in haſte for the removal of this ſlough, and that on the ſhoulder blade, that I ſuffered them to be completely detached before they were taken away. That on the head was not removed till about the twenty-firſt day from the accident, and that on the ſhoulder blade ſome days later. I ſtate theſe particulars, becauſe I generally perceived that the outer edges on which the operation firſt took place, had even begun ſlowly to aſſume the healing proceſs, prior to their complete ſeparation. In the interim the raw ſurfaces of the ſores were well duſted with pulv. e creta. pp. ſubtiſ. levigat. prior to the application of the dreſſings, the parts being previouſly waſhed and cleaned round their edges with a ſoft ſponge. The weather being froſty, my patient felt very uneaſy from the atmoſpheric air, always having much pain on its acceſs. The creta appeared to anſwer the purpoſe of a complete defence, and occaſioned the dreſſing to be much leſs painful. The firſt two or three days that the creta had been uſed, my patient felt herſelf diſordered in her whole ſyſtem: no irregularity had been previouſly committed in her diet, neither were her bowels lax, or coſtive, nor were the ſores more painful; but ſhe was about this time ſeized with gripes, and a profuſe diarrhœa, although the anodyne was ſtill continued at bed-time. At other periods prior to this, ſhe had uſually been coſtive, and it was found neceſſary to keep her open with gentle purges. An idea then occurred to me, that it might proceed from ſome chemical combination that had taken place from the creta applied ſo freely. It was then that I thought of combining it with the pulv. amyli as mentioned in John Reed's caſe, and I have ſince applied it to the denuded ſurfaces in that form. By the uſe of the julep e creta c. conf. card. et decoct. cort. anguſt. together with a decoction of rice, in which a ſmall portion of radix tormentillæ e cort. cinnam. was boiled pro potu commune ſhe revived apace. The cicatrization advanced pretty rapidly on the ſternum, pectoral muſcle,

and

and clavicula. Various iſlands ſeemed as it were to ariſe, which became continents, and were followed by a ſucceſſion of ſmaller iſlands as the ſkin covered the ſores, in a variety of directions. The miſery this poor creature ſuffered was extreme. The podex by continual preſſure became painful and ſore, (as ſhe was unable to lie on either ſide, but was propped by ſoft pillows) it was defended by adheſive plaſters of the ung. litharg. The anodynes were continued, with ſome intermiſſions, to the 14th December, and then left off. Her appetite was various, ſometimes failing very much, but was uſually reſtored by the cort. anguſt. which I tried alternately with the cinchona, but always found the former agree much better. Abſorbents, ſuch as magneſia, given with conf. card. et aq. menth. e kali, pp. produced great benefit when ſhe appeared uneaſy at her ſtomach, which was ſometimes the caſe, and never failed to remove the acidity which prevailed at times. Notwithſtanding the unpromiſing appearance of the deep and large ſurface that covered the right ſhoulder blade, it healed pretty faſt after the ſeparation of the eſchar, which appeared the moſt deeply ſeated, and much ſooner than the crown of the head, or that on the part of the arm covering the deltoid muſcle, this laſt being leſs preſſed upon, as ſhe inclined moſt to reſt on the left ſide. The right ſhoulder blade ſeemed to benefit from the warmth and preſſure that took place. While the ſkinning proceſs was going on, which, in ſuch extenſive ſores as exiſted in this ſubject, is a work of ſlow progreſs, my patient became often peeviſh and remarkably ill tempered. Having been indulged to live freely from the firſt, ſhe was not eaſily reſtrained to a more abſtemious diet; hence the diſcharges were profuſe, and frequently acrimonious, fretting and irritating the parts with which they came in contact. It was in this ſtate of the caſe that the abſorbent powder already deſcribed was of moſt ſingular benefit, not only in abſorbing the moiſture, but defending the tender parts already

cicatrized,

cicatrized, and moreover, relieving the intolerable itching which aroſe. Paroxyſms of fever now and then intervening towards the evening, and her pulſe being full and increaſed, ſhe was purged with calomel et pulv. cath. in the form of a bolus; and when this proved not quite ſufficient, as ſometimes happened, ſhe took at bed-time, (the opiate being omitted) pil. ex colocynth. c. calomel. The benefit ſhe experienced from this treatment was viſible, and the troubleſome diſcharge became leſs and leſs. The period of time taken up in healing the anterior parts injured was about ten weeks; but the right ſhoulder blade, the left arm, and the top of the head were ſo much injured, that their cure took up about ſix months. The head and left ſhoulder, after being cicatrized, repeatedly became inflamed, and broke out afreſh from the ſcratching cauſed by the itching. The hair beginning to grow, notwithſtanding the head was often carefully and cloſe ſhaved, it of courſe remained tender for ſome time after.

Occaſionally the granulations, which aroſe above the ſurface, were touched by an armed probe dipped in a ſolution of the cuprum. vitriol. ceruſſa acetat. et zinc. vitriolat. made of ſuch a ſtrength as not to give great pain; and the cracked parts already ſkinned were anointed with ol. amygd. c. camph. et aq. calcis. The patient is now alive, in an excellent ſtate of health, and from the few ſeams which now remain, (and which are hardly deſerving of the name) it will ſcarcely be credited that her ſufferings were equal to what I have deſcribed.

Mr Kentiſh was conſulted in this caſe about the twelfth day; he adviſed the application of the chalk, which I found of great uſe. I afterwards added ſtarch powder to the chalk, with a very good effect. This application I have continued ever ſince in my general practice.

The following caſe in Mr Wilkinſon's treatiſe was meant to contraſt the conſequences of the different

different methods of treatment: as it ſtrongly illuſtrates the ſuperiority of the ſtimulant mode, and adds one more to the recorded caſes of victims who have ſuffered from the practitioner being unacquainted with theſe principles, I am induced to lay it before the reader.

CASE VI.

On the night of the 14th December, 1788, a child of my ſiſter's, aged ſeventeen months, and at that time in perfect health, unfortunately fell backward into a large iron pot, which contained a quantity of hot water, and had juſt been removed from the fire. At that time ſhe had on a looſe garment above her ſhift. She was inſtantly taken out, and the whole of her dreſs removed. On my arrival about half an hour after, I found her ſhivering in a moſt violent manner, as if in an ague fit; while by her ſhrieks and cries ſhe appeared to be in great agony. The parts injured were about three inches in breadth, ſituated between her ſhoulders, juſt below her neck, a part of each ſhoulder was alſo included, and the burn extended, ſomewhat leſs in breadth, down the courſe of the ſpine to her loins. In pulling off her clothes nearly the whole of the cuticula was torn off, except ſome ſmall veſicles on the exterior parts of the ſhoulders. Soft cloths well ſoaked in the aq. ſaturnini (Goulard's) were applied, and continually repeated, as cold as could be made, at intervals during the night, and an anodyne was exhibited.

Second day.—The ſame applications were continued: ſhe had paſſed a very troubleſome night, being often diſturbed by paroxyſms of pain: the anodyne was repeated, and ſhe was kept as cool as poſſible. Her diet conſiſted of ſago and panada,

given

given cold, and a mixture was given c. ſal. nitri, &c. to obviate inflammation, and keep down the fever.

Third day.—The cloths adhering to the ſores, which appeared dry, and of a darkiſh red hue, without any moiſture, they were dreſſed with the cerat. e. lap. calam. and cloths dipped in the aq. ſaturn. applied over the whole as cold as poſſible. The parts now appeared tumefied and inflamed.

Fourth and fifth days.—The ſwelling ſtill continued, without any appearances of ſecretion on the ſurfaces. The poor creature felt moſt ſenſibly on taking off the dreſſings, ſhivering at every application, as they were ſtill applied cold, and the cold waſh ſtill repeated. The terror this ſenſible little creature expreſſed every time ſhe was to be dreſſed, and which never will be effaced from my mind, formed the ſtrongeſt contraſt to the ſenſations of E. Frazer and E. Catty, the other children, whoſe caſes I have already mentioned; they expreſſing a ſort of pleaſure, and ſcarcely ever uttering a whimper, or appearing to dread me, except while taking off the dreſſings. At this time the pulſe felt very quick, and being coſtive, a grain or two of calomel was given to open the bowels.

Sixth and ſeventh days.—No appearance of the eſchars ſeparating, nor had any moiſture or diſcharge proceeded from the ſmaller veſicles, which had ſubſided, except what might be occaſioned by the dreſſings, which were the ſame as before. The pulſe continued quick, and ſomewhat irregular; and a conſiderable degree of irritability ſeemed to pervade the whole ſyſtem.

From this period to the ninth day, ſhe appeared much ſunk, weak, and even comatoſe. The appearances of the ſores were very unpromiſing, and there were no ſigns of pus, or ſeparation of the ſloughs. She had been allowed wine, or any thing nouriſhing, and even ſome decoct. cort. peru. to all of which ſhe now ſeemed quite averſe. Her pulſe, after this, was extremely low,

tremulous,

tremulous, and irregular; ſhe took very little ſupport, and all medicine was diſcontinued as inefficacious. Deglutition was impeded by a convulſive hiccup; the tumefaction of the parts entirely ſubſided, and the inflammation ſeemed to be quite gone. The eſchars were of a brown colour, and emitted a fœtid vapour, indicating putrefaction. She continued in a ſtate of ſtupor till the eleventh day, when ſhe was happily releaſed from her miſerable exiſtence.

From the obſervations I have made in the introduction, it will appear how pernicious I eſteem the generality of ſyſtems to be. Had I been leſs decided in my opinion, Dr Underwood's treatiſe on the diſeaſes of children would have determined me. It has this moment been put into my hands, in time to notice it. Under the head AMBUSTIONES, page 106, volume 2, ſcalds and burns are treated of. The doctor allots four pages to this ſubject: the remedies are *wine*, *brandy*, *ſpirit*, and *holding the part to a moderate fire;* on the other hand *lime-water*, *with litharge-vinegar*, *cold water*, and *ice*, to be renewed day and night; but the beſt remedy, according to Dr. U's opinion, is a liquid ſoap, made with ſix ounces of oil, ten ounces of water, and two drachms of aqua kali. He ſays, "could a perſon, ſcalded all over, be inſtantly put up to the chin in a cold bath of this kind, and the head at the ſame time be frequently immerged, or well waſhed with the liquor, I believe very little injury would

would enſue." What contradiction!—It is hardly poſſible to ſuppoſe he could have collected a greater confuſion of ideas in the ſame ſpace. The medical reader I refer to the work; and caution the public from forming their opinion on this part of the doctor's advice. To argue on this farrago of oppoſite preſcriptions (for there is no pretenſion to principle in the whole ſection) would be uſeleſs, as in the ſecond chapter of my former eſſay, the heterogeneous opinions of authors for centuries paſt are canvaſſed. Dr U. in a note at the end of this article, ſays, "for ſome new ideas on the nature of burns, and their treatment, the reader is directed to an eſſay written by Mr Kentiſh, 1797." The doctor certainly has not read the eſſay he refers to, or he could never have written the article as it at preſent ſtands in his work. He likewiſe mentions Dr Perkins' tractors, and very properly adds a caution not to truſt to them. Dr Warwick, of Rotherham, informs me, that to cure a perſon in his neighbourhood of the belief in Perkiniſm, he allowed his hands to be ſcalded; the one was *tractoriſed*, and the other was done nothing to; they both went through their different ſtages in the ſame time and manner, in reſpect both to inflammation and pain, and healed together. The character of Dr. W. is ſuch as to leave no doubt of the *non*-effect of the tractors in this, and in all ſimilar caſes. In

In the former eſſay I recommended the uſe of ſtimulants to the point of ſuppuration; and this eſſay had for its object, chiefly, to point out the uſe of abſorbents and cathartics in the ſtages from ſuppuration to the cure. The following caſe by Mr Horn ſo ſtrongly illuſtrates the utility of theſe modes, that I have delayed the publication to be enabled to give this account. Mr H. had followed the practice recommended in my former eſſay, fully, freely, and judiciouſly to the point of ſuppuration: on the eighth day I ſaw the ſubject of this caſe; there was a profuſe diſcharge of thin ichorous matter; the application of chalk was recommended; from accident it was not applied to the hands, and afterwards but to one in the firſt inſtance: the marked advantage it had over the application of the poultice is ſet forth in the caſe. The ſtate of fungus, ſo difficult to be repreſſed by the old mode of treatment, by this ſeems to be nearly prevented; for the parts ſkin ſo rapidly as to hinder the eſtabliſhment of an ulcerous ſtate of ſore.

" *Newcaſtle, 25th July,* 1800.

" Dear Sir,

" I have great pleaſure in communicating to you another inſtance, where your method of treating burns has been ſucceſsfully employed.

" George Smith, an under-viewer, in Ravenſworth colliery, was ſeverely burnt on the 3d July, 1800, by a quantity of inflammable

flammable air taking fire in the pit, into which he had juſt deſcended to give directions to the workmen. The exploſion was ſo violent as to drive up ſtones, &c. to the top of the ſhaft, (above ſixty fathom); and the ſhock was felt, and the report which accompanied it was diſtinctly heard, by ſome farmers who were in bed in their houſes, at ſome diſtance from the place.

" I found him two hours after the accident, with his hair ſinged cloſe to his head. The whole cuticle was peeled off from his face and neck, which were quite black with the fine coal duſt, which had been driven ſo forcibly upon them. He was burnt in different places about his loins, and from the knees to the ancles, except ſome ſmall patches where the ſkin had only been ſcorched.

" On looking at his hands I was ſhocked with their appearance: on taking hold of them, the ſkin and nails came off exactly like a torn glove, and the extenſor tendons of the fingers were bare in ſeveral places. In ſhort he was the moſt ſeverely burnt of any patient who ever came under my care.

" Nothing had been done to him before I ſaw him, as he had only juſt been brought home. He had frequent ſhiverings; and, although a very reſolute man, complained much of pain, and thought he muſt have been injured in his lungs, from the ſenſe of heat he felt there, and from the bad taſte in his mouth.

" There was ſome ſtrong gin and water on the table when I went in, and I immediately gave him a large tumbler glaſs full of it. I warmed ſome oil of turpentine, by holding a cup of it in boiling water, and I directed the attendants to bathe him aſſiduouſly with it, by means of probes armed with lint, and dipped into the ſpirit. This was continually done while I was employed in ſpreading plaſters, (viz. ung reſin. flav. c. Ol. Terebinth) and the poor man found much relief from it. He however complained much of his hands, which were very painful, and ſmarted at the time of the application, but ſoon

had

had a much eaſier feel. I applied the plaſters to every part where I ſuſpected the fire to have reached, gave him another glaſs of ſtrong gin and water, to which I added ſixty drops of laudanum, and I deſired he ſhould have more of the ſpirit if the ſhiverings ſhould recur.

" In the evening I found him tolerably eaſy, and, conſidering his ſituation, wonderfully ſo.—He had been my patient fourteen years ago, when he had been pretty much burnt, although not near ſo ſeverely as at this time ; and had then been treated with ol. lin. c. aqua calcis, to which a portion of the tinct. opii. had been added, and he remarked, " *that the fire, he thought, ſeemed likely to be killed ſooner now than before.*" He had taken gin and water only once ſince morning, when he had a return of the ſhivering, and his attendants had moiſtened the plaſters with Ol. Terebinth at his own requeſt, from the relief he thought he felt from it. I gave him ſixty drops of laudanum in a little ſpirit and water, to be taken at bed-time.

" In the morning I found he had paſſed a tolerable night : I removed the plaſters, and found ſome ſlight appearances of ſuppuration, particularly on the face, where a lardaceous appearance had taken place, but of a black colour from the coal-duſt. I bathed the burnt parts again with the Ol. Terebinth. renewed the dreſſings, and allowed him gin and water, to be taken when ſhivering (which now and then threatened him) ſhould occur. At night he took ſixty drops of laudanum ; his bowels kept open, and he made no complaint of pain except in his hands.

" Third day.—There is a tolerable ſuppuration on the face, neck, body, and legs. The blackneſs, from the coal-duſt which appears to be firmly attached to the cutis, is ſeparating faſt, in the form of black lard. He remarks, *that the fire is killed every where but in his hands.* He was dreſſed with ung. reſin. flav. with a leſs proportion of Ol. Terebinth. He is forbid the uſe

of ſpirits, but allowed porter as far as three pints in the 24 hours, if he chuſes ſo much. His anodyne is continued.

" Fourth day.—The ſuppuration in the face, body, and legs goes on well, and ſeveral parts are now turning florid, as the blackneſs diſappears. The ſcorched parts have neither bliſtered nor run into ſuppuration. There is a large diſcharge of thin ichor from the hands; and on ſome parts of the fingers there is ſtill a thick gelatinous matter adhering. His allowance of porter is continued. He has no ſhiverings. Dreſſings are changed for cerat. e lapid. calamin. Anodyne continued.

" Fifth to the eighth day.—Going on well;—treatment continued;—bowels open;—allowance of porter diminiſhed to a pint and a half per day.

" Ninth day.—Suppuration large;—all the blackneſs gone off;—diſcharge from the hands ſtill thin, and in great quantity, attended with much pain. Prepared chalk, finely powdered, is ordered to be ſprinkled on all the ſores, covering it with cerat. e lap. calamin. ſpread on rags. He is to take five grains of calomel at night, and to have a purge in the morning.

" In the afternoon I was ſuddenly ſent for to him:—The pain in his hands was intolerable, and he had two ſmart ſhivering fits. Having never before ſeen chalk applied, I attributed the pain to its uſe, but on taking off the dreſſings, I found my aſſiſtant had not applied any of it to the hands. He had uſed it liberally to the face, neck, body, and legs, and theſe parts were *perfectly eaſy*. I ordered emollient poultices to be applied to the hands and arms, and renewed every eight hours. The chalk was continued to the other parts.

" Tenth and eleventh days.—The treatment continued. Pus on the face, neck, and legs of good conſiſtence, and no pain in theſe parts. The hands are eaſier after the poultices are firſt applied, but ſoon become ſo painful as to make him urgent for a renewal of them; and when they are taken off, the diſcharge

of

of thin matter pours from them. Finding the chalk agree ſo well with the other parts, I ſprinkled his right hand freely with it, and covered it with the cerate plaſters. He felt, as he ſaid, a little tingling from the application, and wiſhed to have the poultice continued to the left hand. I was glad of the opportunity of making this comparative trial, and allowed it to be ſo.

" Twelfth day.—Head, neck, and legs much better;—loins nearly healed. I ſpeak within bounds, when I ſay four ſquare inches of ſkin have been beautifully formed on one leg ſince yeſterday. I know no term which will give ſo good an idea of this proceſs as *icing over;* the extent covered, and the ſmooth ſhiny appearance being ſo like an icy pellicle formed on a ſmooth piece of water.

" Fifteenth day.—Face and legs mending faſt;—loins well;—his hands completely raw, and bleeding from every point;—the poultice on the left hand is deluged in thin matter, and this hand is by far the moſt painful. The right hand covered with the chalk, although painful, is not nearly ſo much ſo as the left, and the man is anxious to have the chalk applied to it, which is allowed;—anodyne continued;—five grains of calomel at night, and a ſmart purge to be taken early in the morning.

" Sixteenth day.—Has had two copious evacuations from the calomel and purging powder;—every part better;—the left hand much eaſier, but the granulations much looſer than the right; they bleed more readily, and are more painful.

" Seventeenth day.—One leg quite ſkinned over; face and other leg much better.

" Twenty-firſt day.—The face and neck quite ſkinned over, except a ſmall part of each eye-lid, and the noſe;—right leg almoſt healed;—right hand ſkinned over from above the wriſt to the ends of the fingers on the inſide, and much better on the back part;—left hand, to which the poultice had been ſo long applied, begins to grow better, but is far behind the other, ſo

as

as to give a moſt decided preference to the chalk. He is now ſo well that I have allowed him to go into his garden.

" You ſee, my dear ſir, that I have been tediouſly circumſtantial in my account of this caſe. I now deem my patient ſo near well, that I ſhall diſcontinue my journal; and I have only to add, that I have been ſo particular in the recital of the treatment, becauſe perhaps you may have no caſe which furniſhes ſuch a fair opportunity for comparing your method with others commonly uſed. The poor fellow had felt the old method with oil, &c. and was therefore well enabled to appretiate the preſent plan, eſpecially as he is a man of great reſolution, and of ſtrong natural ſenſe. You have alſo had frequent opportunities of ſeeing him during the cure, and of convincing yourſelf of the truth of every circumſtance. And I think the trouble you have had in reſcuing this important branch of practice from the rude hands who ſo long held it, will be well repaid, were it only with the reflections this caſe will give you.—As a memento of my ſenſe of the obligations the profeſſion have to you, and to ſhew, as my poor patient ſays, there was *ne bairn's play in this burn*, I will beg your acceptance of a preparation I have made of the ſkin and nails.

" I am,

" DEAR SIR,

" Very ſincerely, yours,

" FREDERICK HORN."

There ſtill remain ſome parts to heal in the above caſe, and I have no doubt Mr H. will ſee, in the ſubſequent part of the cure, the benefit of cathartics.—I have a pleaſure in adding the opinion of Mr Nelſon, of Cheſter-le-Street, in the county of Durham, who has had very extenſive practice in

in burns in the collieries on the river Wear :—he ſays, when the ſores have taken upon themſelves the ulcerous diſpoſition, nothing but *repeated purging* at due intervals has ſucceeded in enabling him to finiſh the cure.

Having thus developed the principles, and detailed the practice in injuries of this claſs, from the point of health through the circle of diſeaſed actions, till we again arrive at health, the ſubject appears to be nearly exhauſted ; I ſhall therefore at preſent take my leave of the reader.

FINIS.

ERRATA.—In page 74, for *colliquitive*, read *colliquative*. In page 77, for *julep*, read *jalap*.

[Newcaſtle upon Tyne: Printed by E. Walker, Pilgrim-ſtreet.]