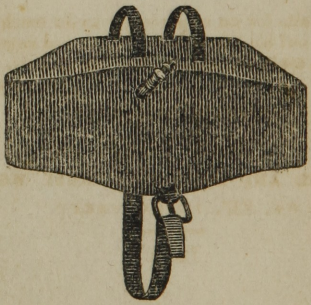
FRONTISPIECE.

vide p. 185.

DANIEL'S LIFE-PRESERVER,

from Shipwreck, Bathing, &c.



THE

ACCIDENTS

OF

HUMAN LIFE;

WITH

HINTS FOR THEIR PREVENTION,

AND

THE REMOVAL OF THEIR CONSEQUENCES.

BY NEWTON BOSWORTH,

HONORARY MEMBER OF THE LONDON PHILOSOPHICAL SOCIETY.

From a London copy, revised, amended, and enriched with a variety of interesting matter.

He that waits for an opportunity to do much at once, may breathe out his life in idle wishes; and regret, in the last hour, his useless intentions and barren zeal.

JOHNSON.

NEW-YORK:

PRINTED AND SOLD BY SAMUEL WOOD,

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1814.

DISTRICT OF NEW-YORK, ss.

BE IT REMEMBERED, That on the thirteenth day of April, in the thirty-eighth year of the Independence of the United States of America, Samuel Wood, of the said District, hath deposited in this office, the title of a book, the right whereof he claims, as proprietor, in the words following, to wit:

L. S.

"The Accidents of Human Life; with hints for their Prevention, and the Removal of their Consequences. By Newton Bosworth, Honorary Member of the London Philosophical Society. From a London copy, revised, amended, and enriched with a variety of interesting matter. He that waits for an opportunity to do much at once, may breathe out his life in idle wishes; and regret, in the last hour, his useless intentions and barren zeal.

JOHNSON."

In conformity to the Act of the Congress of the United States, entitled, "An act for the encouragement of learning, by securing the copies of Maps, Charts, and Books, to the Authors and Proprietors of such copies, during the times therein mentioned:" and also, to an Act, entitled "an Act, supplementary to an Act, entitled an Act for the encouragement of learning, by securing the copies of Maps, Charts, and Books to the Authors and Proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving and etching historical and other prints."

THERON RUDD,
Clerk of the District of New-York.

PREFACE.

Much has been said, in *jest*, about the "Miseries of Human Life;" why may not something be said, in *earnest*, about its ACCIDENTS—those frequent sources of *deep* and *lasting* misery?

By accidents, I mean simply those sudden and unexpected events, generally of a calamitous kind, to which we are all more or less exposed. Though they are often said to be *casual* in their occurrence, they are all produced by their proper causes, as much so as the most regular and uniform appearances in nature. They are only called accidents, because previous circumstances do not appear to indicate them, or, in simpler terms, because they come upon us unawares. The well-ordered mind admits not of so fickle a divinity as Chance, but

> ———sees a God employed
> In all the good and ill that chequer life.

Nothing, therefore, can be farther from my intention than, by the term I am obliged of necessity to use, to exclude the idea of an overruling Providence, extending to the minutest events, as well as the greatest.

To those, however, who are in the habit of reflecting upon what passes around them, it must have often appeared, not only that accidents are occasioned by inatten-

tion, ignorance, or presumption, but that their injurious consequences have been multiplied exceedingly by improper treatment, sometimes even more than by absolute neglect. The occurrence of an accident calls for prompt exertion ; and often leaves no time for reasoning, deliberation, or inquiry: if, then, the minds of the actors in the hasty scene, be uninformed as to the proper mode of proceeding, it is evident that, in many cases, the danger of increasing the evil will be at least as great as the probability of removing or lessening it. And how often, especially in the country, do we meet with persons so egregiously ignorant of what is proper to be done in any emergency, that their assistance is rather to be deprecated than desired !

The design of this little volume, is to do something towards the removal of the ignorance complained of, by communicating to general readers, and especially to young persons, such information as I have been able to collect on the subject of bodily accidents in general, whether arising from fire, water, journeying, heat, cold, amusements, violent exertion, or other cause, together with the best methods I could think, or hear, or read of, for avoiding those accidents, and alleviating or removing their consequences.

Having been long accustomed to the instruction of youth, it was natural that I should consider a course of Addresses to young persons, as the best mode I could adopt, of conveying the information I had to offer ; for, beside the advantages my pupils would derive from this plan, it would be likely that, in consulting their understandings, I should be able to adapt myself the more

readily to the comprehension of those classes of society, who are most in need of the kind of knowledge here communicated. These Addresses were accordingly, in substance, delivered to my resident pupils, at intervals, in the course of the last half-year; and the interest they excited and preserved in the minds of my auditors, encourages me to hope they will not be presented to the public in vain.

Our juvenile lectures were regularly honoured by the attendance of two gentlemen of this University: the Rev. James Plumtre, Fellow of Clare-Hall, and Vicar of Great Gransden in Huntingdonshire; and Frederic Thackeray, Esq. The former of these gentlemen, after witnessing the ravages of a dreadful fire, which, last autumn, destroyed a great part of Emmanuel College,* suggested to me the present undertaking; the latter furnished me with a variety of medical and surgical remarks; and to both I am highly indebted for many valuable hints and observations with which they favoured me, during the progress of our reading, and of which I have adopted as many as my limits would permit.

Other gentlemen, too, on being informed of my plan, readily communicated such suggestions as occurred to them, and were likely to be useful. My thanks are due, on this account, to Dr. Lettsom, the philanthropic Treasurer of the Royal Humane Society; W. Frend, Esq. of the Rock Assurance-Office; and my excellent friend Dr. Gregory, of the Royal Military Academy, Woolwich.

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* *See Address I. p. 5.*

The intelligent reader of this little volume will, undoubtedly, meet with many things in it which have occurred to his reading or his observation, before; but his benevolence will induce him to pardon, if not to applaud their introduction into a work, designed chiefly for those persons whose knowledge, and whose means of acquiring knowledge, are much more limited than his own. To have omitted them, with this end in view, would have been manifestly improper.

As *utility* is the *object* of these addresses, so *familiarity* is the *mode* in which I have studied to compose them: with what success, it would ill become me to decide; although, if I may judge from the readiness with which my young auditors understood me, perhaps I may venture to hope, that I have not altogether failed of my purpose. And since, according to a very ancient maxim, example strikes more forcibly than precept, I have enlivened my instructions by occasional anecdotes; taking care, however, not to insert so many of them as to give to my piece the air of a story-book.

Insignificant as this publication may be deemed, in a literary point of view—if it shall prove the means of saving a fellow-creature's life, or even of procuring him an hour's exemption from unnecessary pain—if it shall, in only one instance, prevent the sighing of the mourner, or mitigate the sorrows of the suffering—the time occupied in composing it will have been better employed than in the mere pursuit of honour or of fame.

Merton-Hall Academy, Cambridge,
Dec. 1st, 1812.

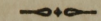
Note of the New-York Publisher.

The reader is respectfully informed, that among the additions made to this edition, are the facts on spontaneous combustion from the slaking of lime; on the extreme danger of the vapours from inflammable spirits; and on self-combustion, in certain cases, of the human body itself. The directions on the part of the New-York Humane Society were drawn up some years ago, by Doctors DINGLEY and SMITH, two men then among the most benevolent and active of our citizens, but not now inhabitants of this world. For the original experiments on swimming, and the remarks on catching cold, related p. 89, and p. 238, the publisher acknowledges his obligations to his friend Dr. MITCHILL.

CONTENTS.

THE FOX AND THE BOAR.

A FABLE, FROM ÆSOP.



The boar stood whetting his tusks against an old tree. The Fox, who happened to pass by at the time, asked him why he made those warlike preparations, since there was no enemy near that he could perceive.—"That may be, Master Renard," said the boar; but we should scour up our arms while we have leisure, you know,—for in the time of danger we shall have something else to do."

THE

ACCIDENTS

OF

HUMAN LIFE.

INTRODUCTORY ADDRESS.

MY YOUNG FRIENDS,

IT has pleased Almighty God to place us in a world where pain and pleasure, good and evil, are perpetually intermixed.—Though we are surrounded with the kindnesses of our benevolent Creator, we are exposed to calamities of various kinds; though we have many reasons for gratitude, we have also many for caution; and though it be true that "there is mercy in every place," it is equally true, that "dangers stand thick through all the road," which we are destined to tread in our passage through this mortal state.

Among the many inconveniences that human beings suffer, those which are occasioned by what are commonly termed ACCIDENTS, are not the least painful. So uncertain is every thing in this world, that no condition, rank, or situation can wholly exempt us from these. They sometimes happen to us when we least expect them, and at other times surprise us when we think ourselves best prepared to repel them. All the elements, as they are called, fire, air, earth, and water, seem fertile in calamity; and, however useful they are, in general, to man, they are often the causes of his severest suffering. As neither place nor condition is secure from accidents, so there is no time when we are not exposed to them in some way or other. In short, whether we are at home or abroad, on land or on water, at rest or in motion, asleep or awake, in darkness or in daylight, our comforts may be destroyed, our limbs, broken, or our lives endangered, by some sudden occurrence which we have neither the wisdom to foresee, nor the power to prevent. It is true, however, that care and knowledge are often very useful to us, though they will not absolutely in-

sure us from danger; for, as many of the miseries and accidents of life are the fruit of negligence and ignorance, it is but fair to believe that a prudent forecast may prevant many evils, and may lessen the bad consequences of others when they happen. And so it is in fact; as a little observation will convince you. Indeed, it always has been so; and Solomon has long ago remarked, as you may remember reading in the book of Proverbs, that "*The prudent man foreseeth the evil, and hideth himself, but the simple pass on, and are punished.*" It is no doubt for the purpose of self-preservation, as well as for the benefit of his fellow creatures, that the faculty of reason was implanted in the heart of man.

Young as you are, most of you have heard of, and several of you have seen, many distressing things. If you trace back the various events of your life, from the time you first began to think and to understand, you will doubtless call to mind many tales of wo, to which you have listened, or many shocking events which, perhaps, you yourselves have witnessed. Your attention has often been called to the destruction of houses, goods,

and even lives, by fire, and to other terrible effects of that element; to instances of the loss of life by drowning, falling from horses, the crush of carriage-wheels, and a multitude of other causes; and, in many cases, where death has not ensued, broken limbs or maimed bodies, or injured health, have been the consequence of accident or imprudence. Nor is it among strangers alone that these things have happened: your own play-ground will furnish you with examples, though you have reason to be thankful, and I join you with all my heart in the feeling of gratitude, that these have but seldom occurred, and none of them has proved of very serious consequence. Let not this remark lessen your care to avoid all improper exercise, or any excess of violence in that which is proper. You know the old saying, "*Verbum sat sapienti*," which, for the sake of those who do not learn Latin, I will state in their own language, "A word to the wise is enough." Shew yourselves wise by taking the hint, and proving that it is sufficient to restrain you from excess.

If you have paid much attention to what you have seen and heard, it is likely that you have

noticed or heard some other person remark, how much the danger on some occasions has been increased by the awkwardness or ignorance of those who have given their assistance. In the happening of a fire, for instance, how much confusion is produced, how much time is lost, and how much good is prevented, by the want of knowing how to act. People running in one another's way, and spilling upon themselves or their neighbours the water which ought to supply the engine ; some clamouring for one thing, and some for another ; till, having at length succeeded in putting out the flames, they find, that, had they employed other methods, or thought of something at the time, which occurred to them afterwards, they would have extinguished the fire more effectually, with less fatigue, less danger, and less loss. Such, you may remember, was for some time the case during the late alarming fire at Emmanuel College, which would probably have been much more speedily extinguished, if persons accustomed to the business, or furnished with the requisite information, had been present from the first to superintend and direct the operations of the work-

men. So also in the case of drowning; when a body which has not been long under water is brought to the shore, much depends upon the means used to restore its animation. To all appearance, perhaps, the vital spark is fled; no symtom of life remains; and very little hope is entertained of renewing activity in so pale and motionless a body. If improper means are resorted to, the question is soon fatally decided, and he who was so vigorous and healthy a short time ago, is to breathe no more. On the other hand, if the spirit has not actually left its habitation of clay, means may be employed so well adapted to the case as to restore to its use the powers of the body, and preserve a life which may possibly be one day an honour to society. A medical poet* of the last century asserts, that "thousands have died of medicable wounds;" and it is no less true that thousands have perished through improper treatment, who might have been saved by the prompt application of other means. The great success which has attended the benevolent exertions, and judicious plans, of the Royal Humane

* Dr. Armstrong, in his excellent poem on *Preserving Health*.

Society, of which I shall give you an account hereafter, both suggests and confirms the observation. I have just been favoured with the sight of a letter from the worthy treasurer of that excellent society, from which I learn, that, at the next annual meeting of the society, at least eighteen honorary medals, besides a great number of other rewards in money to assistants, &c. are to be distributed to persons, who, during the last year, have been successfully engaged in restoring animation to those who would otherwise have perished by drowning. Do you now feel anxious to know something more about a society whose object is so noble, and whose exertions, under the blessing of Providence, have been so often successful? And do you wish to learn the methods which have been attended with such happy consequences? I hope you do; and, in that case, I promise very soon to gratify your curiosity. In like manner, also, there have been instances, in which persons, who have had the misfortune to break a leg, or a thigh, or an arm, have, by the awkwardness of those who removed them to their homes, been disabled for life; and I have been

told that it is by no means uncommon for the simplest fractures to be so much increased by this very means, as to render both the pain, and the confinement, of the sufferer, three or four times as great as they need to have been: and all this, not so much from want of attention, as want of knowledge in the attendants. It would be easy to mention various other instances, in which ignorance has been attended with such terrible effects; but these are sufficient to convince you that it is worth while to obtain such knowledge as may be of the most essential service upon any occasion of this kind.

It is often impossible, even in ordinary cases, to act well without some degree of preparation. How much more, then, is that preparation necessary in sudden and unusual emergencies? These are not times to think and deliberate, so much as to act; and to act promptly, or it may be in vain. If our minds be uninformed, as to the nature of the case; we are as likely to be wrong as right in what we do. I do not say that it is possible for people in general to obtain an accurate and thorough acquaintance with every case; but there

are certain general principles, agreed upon by those who have paid most attention to these subjects, which it will not take any of you a long time, or much application, to learn. The advantage of this knowledge may be very great both to yourselves and others. Should you pass through life without meeting with any serious accident in your own person, you will have abundant reason for gratitude towards the great Author and preserver of your existence. But, even then, it is very likely your fellow creatures may some time or another need your aid. And would you not be glad to impart it? The next duty to self-preservation is that of benefiting, or striving to benefit, others; and surely the pleasure of such a duty is as pure as its practice is useful. Would it not delight your hearts to rescue a human being from danger, to snatch him from destruction, or to minister to his wants? If you saw him sinking into a watery grave, or, being brought to shore to all appearance dead, would it not be to you a gratification of the highest kind to be the means of restoring him, as it were, again to life, to his friends, and to society? If you happened to

meet with a person who had fallen into a fit, or broken a limb, or wounded himself dangerously, or exposed his life or his safety in any other way, would it not please you to be able to employ, or advise, such methods as would remove his danger, and diminish his suffering? I am persuaded it would. None of your amusements would give you half so much real and lasting satisfaction. You would be happy in the thought—happy in the action—and happy in the remembrance of your exertions: all the days of your life it would gratify the best feelings of your nature to think that you had thus been the means of making others happy. You would enjoy the high "luxury of doing good," and of knowing that you had done it.

But how shall you be able to act aright in any of these cases, without being acquainted beforehand, at least in some measure, with what is proper to be done? You would either be too much confused to contrive any thing to the purpose, or you would act at a venture, and your interference might do more harm than good. Let me entreat your attention, then, while I mention,

in order, some of the principal accidents to which we are liable, and present you with the best information I have been able to collect respecting the most proper mode of proceeding when they happen. There will be nothing, either in the subjects themselves, or the manner of treating them, that you cannot readily understand; and I shall endeavour to make the series of addresses which I propose to deliver to you, as plain and as entertaining as it is in my power to do. If you should gain any thing from them which may be useful to yourselves, or enable you to be of service to others, I shall be well rewarded for my trouble, and you for your attention.

ADDRESS II.

ON ACCIDENTS FROM FIRE.—DIRECTIONS HOW TO ESCAPE FROM A BURNING HOUSE.

WITH the useful and agreeable qualities of fire, we are all acquainted; and, if one may judge from the eagerness with which you all rush towards it in frosty weather, none would be more ready than you are to join in its praises. It is only, however, when it is under due regulation and control, that we have reason to admire it: when it bursts from its confinement, you know with what fury it rages, what dreadful effects it produces, and how difficult it is to stop its progress, as long as there is any thing within its reach which it is capable of consuming. No one of our common proverbs is more true than that which says,—"*Fire and water are very good servants, but very bad masters.*" It is to the former only, in its character of master, that we are now to direct our attention.

Suppose you were roused from your sleep with the cry of "FIRE!" *and were informed that the house in which you had been sleeping was in flames: how would you act?* You might reply, "I would leap out of the window, as fast possible, to save my life." Be not too quick, however, in your decision, lest you "make more haste than good speed," and break your neck in the attempt. As soon as you have received the alarm, *endeavour to collect yourself*, and be *as cool as possible*; otherwise you may, and without any good reason, expose yourself to as great a danger as that from which you are escaping, and from which a little thought and contrivance may enable you to escape without incurring any other. I no not mean that you should stand still and be burnt; but only that you should consider before you act, and "deliberate," as your copy says, "before you resolve," if it be but half a minute. You would then, perhaps, proceed in this manner:—Having slipped on any part of your clothes which lay at hand, and which would not detain you long, you might peep out at the window to see or inquire in what direction the flames were acting; you

would then judge whether there were any chance of going down as you went up, namely by the stairs; and, if so, it would be much better thus to escape than hastily and unnecessarily to expose your limbs or your life by a leap from the window. If you found it impossible to descend by the stairs you had been examining, there might be other stairs in the house of which you might avail yourself. Should these also disappoint you, it is possible that by walking upon the leads of the house, or creeping upon the roof, you might reach an adjoining house or other building, and thus be removed from danger, till some means were offered for you to reach the ground. Should all these trials fail, or should it so happen that you have no opportunity of making them, you must, after all, make your exit at the window. But when you have arrived at the spot, do not act without thinking, whatever speed it may be requisite for you to employ. Possibly some kind friend or neighbour may have planted a ladder against your window, to aid your escape, and it would be a great pity to lose the advantage of this for want of a single look. Should this not be the

case, you must consider about letting yourself down. If there be more than one window in the room, or within reach, it will be worth while to inquire which is best adapted for the purpose. Below *one*, may be iron rails or hard stones, and under the *other* a garden, or soft grass : it will take but a moment to decide in this case. Having chosen your window, throw out the bed, if you can conveniently, so as to alight in a place proper to receive you ; and then, if you have not a rope-ladder, or a fire-escape,* proceed to let yourself down by means of the sheets tied together, and securely fastened either to the window, the bed-post, or any thing else which will prevent them from slipping. You would, of course, be careful to keep such good hold of your sheets, as not to drop from them till you came to their lower end, or touched the ground, the last of which might be done if the windows were not more than 18 or 20 feet high. In descending, you would either let the sheets slip through your hands, and thus slide down as you do from a tree or a ladder, or else, which is perhaps preferable in most

* See an account at the end of this address.

cases, you would remove one of your hands, and then the other, alternately lower and lower ; and, finally, when you arrived at the end of the lowest sheet, if you could not yet touch the ground, you would either drop, or spring from, your hold, as circumstances or inclination might determine.

In fastening the sheets together, and in securing them at top, some attention should be paid to the kind of knot which is used ; otherwise they might slip from each other, and bruises or broken limbs, or death, might be the consequence. In substances of a uniform thickness throughout, as ropes or cords, almost any kind of double knot, if pulled tightly, will be sufficient to make a safe joint; but when sheets are tied together by their corners, which run taper, to a point, they are very liable to slip, unless great care be taken to make them secure. I would, therefore, advise, that before the parts are brought together to be fastened, a single but hard knot be tied at the extremity of each corner by way of safety, and which may hence be called the *safety knot ;* if then the sheets be tied together by almost any knot, in such a manner that the safety knots may act as checks,

it will be almost impossible for them to separate from each other. I will give you an example of this mode of fastening, by tying two handkerchiefs together; and, as you are so dexterous in making something like Gordian knots in your shoestrings, and in rejoining your broken whipcord, I have no doubt you will at once understand me, and learn my method in a trice. By the way, if you are desirous of seeing some other kinds of knots, which are not yet introduced into your practice, you may find plates of them in almost all the *Cyclopedias;* and I will shew to any young gentleman, who desires it, some curious specimens in Dr. Hutton's Mathematical and Philosophical Dictionary.

In the case of persons being so shut up by the flames, as to render it impossible for them to avoid passing through a part of them, I have heard of some wrapping themselves up in a blanket, which should be wetted if possible, and thus rushing through that part where there appeared the least danger. This ought evidently to be a last resort; and is so dangerous an expedient, that nothing but necessity can justify its adoption.

Though I have been thus anxious to urge upon you a proper care for your own safety, I would not wish you to be so selfish as to refuse your assistance to others who may be in equal danger. If you should consider your own place of descent to be more safe and proper than any other, you will, of course, if there be other persons in the house, be desirous to assist as many of them as possible, in making their escape by means of your contrivance. Children and timid persons, who have not presence of mind to descend safely by themselves, it has been suggested, might be lowered in a basket, or by a sheet tied round the body.

In favour of the method of letting one's self down by sheets, I could produce several examples in which it has been used with success, though I find, by talking with several persons, it is not nearly so well known as it deserves to be. I will, however, relate one remarkable escape which has lately taken place, though not from fire, yet from something as dreadful; and from which you will see the advantage of having useful knowledge stored up in the mind, and ready,

when wanted, to be brought into action. You cannot have forgotten the alarm which was occasioned, while you were at home during the Christmas holidays, by the terrible murders then perpetrated in London. About the middle of December (1811), Mr. Marr and his family, who lived in Ratcliffe Highway, were all most barbarously murdered, except a female servant, who happened to be out on an errand. A few nights afterward, a similar murder, and nearly equal in atrocity, was committed in the house of Mr. and Mrs. Williamson, New Gravel Lane, not far from the former scene of bloodshed. John Turner, who lodged in the house, hearing the cry of "Murder!" arose from his bed, went down stairs, and saw a villain rifling the pockets of Mrs. Williamson. He immediately ran up stairs, took the sheets from the bed, fastened them together, lashed them to the bed-post, and thus descended from the window, hanging by the sheets till the watchman came up, who received him in his arms. An alarm being immediately given, a crowd soon collected near the house, and the door was broken open; but the murderers were gone. From the

circumstances of the case, as related in the newspapers, there can be no reason to doubt, that, but for this means of escape, this man would as certainly have lost his life, as the rest of the family did theirs. Of so much importance, sometimes, are those things which, at other times, appear hardly to deserve remembrance or notice.

Though I have employed so much time, and so many words, in laying down the above directions, I hope you will not think me tedious, or suppose I want to detain you too long in deliberating in a case of such great and urgent danger. If you are well acquainted with the preceding particulars, and others which you may happen at any time to think about yourselves, it will take you but a few moments to run over the whole in your minds, and to determine accordingly. I wish to make these considerations as familiar to you as possible, that you may be able to choose the best mode of action when danger arrives; as the boar in the fable sharpened his tusks in the time of peace, that he might be prepared for war, if it should happen, and have nothing to interrupt him in the combat.

There is a story, I think in the Spectator, which will enliven this part of our subject, and at the same time shew that nothing that is likely to be useful to ourselves or others ought to be despised. "A certain Cham of Tartary, travelling with his nobles, was met by a dervise, who cried with a loud voice, 'Whoever will give me a hundred pieces of gold, I will give him a piece of advice.' The Cham ordered him the sum; upon which the dervise said,

'*Begin nothing of which thou hast not well considered the end.*'

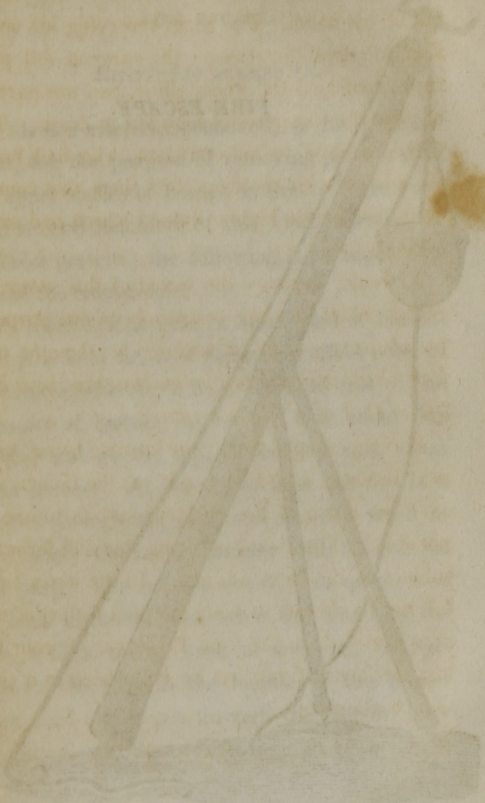
The courtiers, hearing this plain sentence, smiled, and said with a sneer, 'The dervise is well paid for his maxim.' But the king was so well pleased with the answer, that he ordered it to be written in golden letters in several parts of his palace, and engraved on all his plate. Not long after, the king's surgeon was bribed to kill him with a poisoned lancet at the time he let him blood. One day, when the king's arm was bound, and the fatal lancet in the surgeon's hand, he read on the basin,

'*Begin nothing of which thou hast not well considered the end.*'

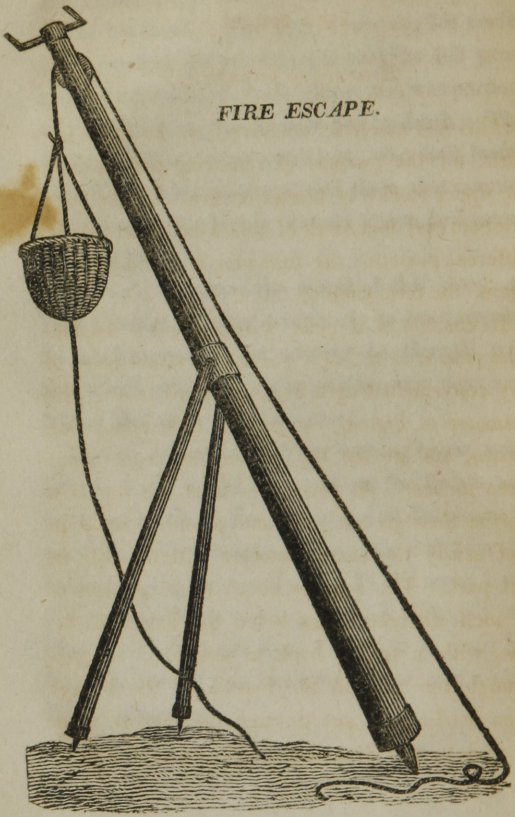
He immediately started, and let the lancet fall out of his hand. The king, observing his confusion, inquired the reason: the surgeon fell prostrate, confessed the whole affair, and was pardoned; but the conspirators were put to death. The Cham, turning to his courtiers, who had heard the advice with contempt, told them, that counsel could not be too highly valued which had saved a king's life."

I would improve the moral of this story, or rather adapt it more completely to our purpose, by advising you to *let nothing be thought trifling which may one day or another save your own life or that of a fellow creature.*

Having escaped from your burning house, your next business would be to put out the flames, and save as much of the building and furniture as possible. The means of doing this will form the subject of the next address. In the mean time, fail not to cherish in your hearts a feeling of sincere gratitude to the kind Preserver of your being, that none of you has ever yet been in a situation so alarming.



FIRE ESCAPE.



FIRE ESCAPE.

Referred to in page 15.

This is a machine, contrived, as its name imports, for the purpose of removing persons from the upper stories of houses on fire. There have been several machines of this kind invented by different persons: the following is an account of one of the most simple.

It consists of a pole, a rope, and a basket. The pole is of fir, or a common scaffold pole, of any convenient length from 36 to 46 feet. The diameter at bottom, or greatest end, about five inches; and at the top, or smallest end, about three inches. At three feet from the top is a mortise through the pole, and a pulley fixed to it of nearly the same diameter with the pole in that part. The rope is about three quarters of an inch diameter, and twice the length of the pole, with a spring hook at one end, to pass through the ring in the handle of the basket when used: it is put through the mortise over the pulley, and then drawn tight on each side to

near the bottom of the pole, and made fast there till wanted. The basket should be of strong wicker-work, three feet and a half long, two feet and a half wide, rounded off at the corners, and four feet deep, rounding every way at the bottom. To the top of the basket is fixed a strong iron curve or handle, with an eye or ring in the middle; and to one side of the basket, near the top, is fixed a small cord, or guide rope, of about the length of the pole. When the pole is raised and set against a house, over the window from which any persons are to escape, the manner of using it is so plain and obvious, that it need not be described. The most convenient distance from the house for the foot of the pole to stand, where practicable, is about 12 or 14 feet. If two strong iron straps, about three feet long, riveted to a crossbar, and spreading about 14 inches at the foot, were fixed at the bottom of the pole, this would prevent its turning round or slipping on the pavement; and if a strong iron hoop, or ferule, riveted (or welded) to a semicircular piece of iron spreading about 12 inches, and pointed at the ends, were fixed on

at the top of the pole, it would prevent its sliding against the wall.

When these two last mentioned irons are fixed on, they give the pole all the steadiness of a ladder; and because it is not easy, except to persons who have been used to it, to raise and set upright a pole of 40 feet or more in length, it will be convenient to have two small poles or spars of about two inches diameter, fixed to the sides of the great pole at about two or three feet above the middle of it, by iron eyes riveted to two plates, so as to turn every way; the lower end of these spars to reach within a foot of the bottom of the great pole, and to have ferules and short spikes to prevent sliding on the pavement, when used occasionally to support the great pole like a tripod. There should be two strong ash trundles let through the pole, one at four feet and one at five feet from the bottom, to stand out about eight inches on each side, and to serve as handles, or to twist the rope round in lowering a very heavy weight. If a block and pulley were fixed at about the middle of the rope, above the other pulley, and the other part of the

rope made to run double, it would diminish any weight in the basket nearly one half, and be very useful in drawing any person up to the assistance of those in the chambers, or for removing any effects out of a chamber, which it might be dangerous to attempt by the stairs.

It has been proved by repeated trials, that such a pole as we have been speaking of can be raised from the ground, and two or three persons taken out of the upper windows of a house and set down safely in the street, in the space of 35 seconds, or a little more than half a minute. Sick and infirm persons, women, children, and many others, who cannot make use of a ladder, may be safely and easily brought down from any of the windows, of a house on fire by this machine, and, by putting a short pole through the handles of the basket, may be removed to any distance without being taken out of the basket. The pole must always have the rope ready fixed to it, and may be conveniently laid up upon two or three iron hooks under any shade or gateway, and the basket should be kept at the watch-house. When the pole is laid up, the two spars should

always be turned towards the head of it. The basket should be made of peeled rods, and the pole and spars painted of a light stone colour, to render it more visible when used in the night. *Gregory's Mechanics*, vol. II. p. 173. A lantern with a lighted candle in it, might easily be fixed to the pole, and raised up with it.

Some machines on a different plan were made by M. Daujon, in France, and presented to the Lyceum of Arts, who thought them worth attention, and encouraged the inventor to proceed in his contrivances. They are too complex for description here.

In Plate I. I have given you a representation of a fire-escape, nearly resembling that which has been described, but in some respects altered with a view of improving it. Instead of the cross bars at the bottom of the large pole, I would propose a pointed iron, by means of which, I conceive, the whole may be more easily raised, and, being soon forced into the ground whether paved or otherwise, will tend very much to keep it steady. The men who assist in raising it may, if necessary, lean upon it, or otherwise preserve

it in a proper position. The short poles, also, which may serve as legs to sustain the apparatus, ought to have similar pointed irons at their lower ends. Instead of the semicircular piece of iron at the top of the larger pole, I have put two prongs in a different form, to keep it steady against the wall, when the side of the house is strong enough to allow the fire-escape to lean against it; but the form of these prongs is a matter of little consequence. The basket, as it descends, being liable to swing about, and thus perhaps to endanger or to injure the persons who are in it, a couple of strings or cords fastened to it, one on each side, would enable the persons below to regulate its descent so as to avoid any injury of this kind.

There is a patent fire-escape exhibited publicly every day at a house in the Strand, London; and persons are frequently descending by means of it, from a high window to which the machine it attached. If any of you have an opportunity, while you are in London, it will be worth your while to take a peep at it. In the mean time I am happy to lay before you the following description, with which I have been favoured.

The apparatus to regulate the descent consists merely of a roller or wheel, and brake, and flat bands. The frame which contains the whole is from two to three feet long, from 12 to 15 inches broad, and of a convenient height to be entirely covered by a neat double chair, or small sofa. This frame is screwed down firmly to the floor and rafters of a chamber immediately under a window; the chamber in which the master of the house sleeps will generally be preferable, unless there be something under the window withoutside which would impede a descent, or render it dangerous. In the frame there is placed a horizontal drum-wheel, or roller, sufficiently large to receive two distinct portions of strong flat band (like that of which horse-girths are usually made), one to be winding upon the roller, while the other unwinds, or winds off. Each of these bands has a noose at the end, and is adjusted in length according to the height of the window from the ground, so that a person who is let down by means of the band, and having the noose closed under his arms, shall just reach the ground with his feet, without being permitted to fall, or to receive any violent

concussion. A heavy weight, fixed to a horizontal iron bar, is made to press upon the revolving roller in the manner of a *brake* to a mill, and this weight is so adjusted that when acting against the weight of a man descending by one of the bands, it shall prevent his descent from being unpleasantly quick, and at the same time does not cause it to be unnecessarily slow. When a person wishes to let himself or others down from a high window by means of this apparatus, he first puts out of the window the sofa or chair which covers the apparatus itself, and which is attached to the window-frame by two short cords or bands which prevent its falling to the ground, but cause it to serve as a projecting platform, such as will prevent the person let down from striking against any part of the wall beneath the window. The noose at the end of one of the bands is then put over the head of the person who is to descend, and drawn sufficiently tight under his arms; after which, he immediately gets upon, or is put upon, the projecting platform, and sliding from it descends gradually to the ground. Such is the facility with which this contrivance may be used,

that the writer* has *seen* seven persons let dow from a four-pair-of-stairs window in *three* minutes. The use of the double band is, obviously, to bring up one noose as the other descends. By means of this apparatus, a master of a family, by simply taking the precaution of sending down first one who has sufficient presence of mind to loose himself and others from the noose, may liberate a very numerous family from a most perilous situation in the compass of five or six minutes.

About two hundred years ago, a celebrated Italian philosopher, named Galileo, described a very simple and ingenious contrivance, practised by a friend of his for the purpose of letting himself down from high places. He took a piece of wood of the shape of a roller, two inches thick, and eight or ten long, and cut a spiral groove all along it, consisting of one turn and a half, and no more. In this groove he placed a cord, strong enough to bear him, and of a length sufficient for

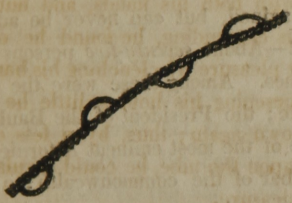
* Dr. Olinthus Gregory, of the Royal Military Academy, Woolwich, who furnished me with this description, and whom I have long had the happiness of calling my friend.

his purpose. He afterwards enclosed the whole in a wooden, or rather a tin tube, made with hinges to open or shut lengthwise at pleasure. Then fastening the upper end of the rope at the place from which he meant to descend, he grasped the tin case with both his hands, and hung by his arms; thus descending, he found he could stop himself at pleasure by clenching his hands closer, and by loosening his hold a little he could let himself down again; thus, by a less or greater pressure upon the tube, he could regulate his descent at pleasure.

Perhaps, after all, nothing is better calculated for general adoption, particularly where expense is an object, than a fringed or a knotted rope. A few yards of either of these, kept in a bed-chamber, ready to be fastened in haste to a window, the leg of a table, or a bed-stead, might often prove of very essential service. A rope ladder has been mentioned: the simplest form of its construction which I remember to have seen, is that recommended by Captain Manby: stiff loops are strongly spliced to a rope at the distance of a foot and a half each from the next, and are of suffi-

cient size to allow the foot to be easily placed in and drawn out, in descending.

Captain Manby's Rope Ladder.



The following is a short account of a dreadful Conflagration in the United States.

On the night of December 26, 1811, the theatre in the city of Richmond, Virginia, was unusually crowded; a new play having drawn together an audience of not less than six hundred persons. Toward the close of the performances, just before the commencement of the last act of the concluding pantomine, the scenery caught fire, from a lamp inadvertently raised to an im-

proper position, and, in a few minutes the whole building was wrapped in flames. The doors being very few, and the avenues leading to them extremely narrow, the scene which ensued was truly a scene of horror! It may be in some degree imagined, but can never be adequately described!—About *seventy-five* persons perished in the flames. Among these were the governor of the State; the President of the Bank of Virginia; one of the most eminent Attornies belonging to the bar of the commonwealth; a number of other respectable gentlemen; and about FIFTY FEMALES, a large portion of whom were among the ladies of the greatest conspicuity and fashion in the city.

ADDRESS III.

ACCIDENTS FROM FIRE, CONTINUED.—DIRECTIONS FOR EXTINGUISHING FIRES.

HAVING been directed how to make your escape from a house in flames, it is natural for you to inquire how the flames are to be extinguished? Most persons act at random on such occasions, especially in the country. Through want of experience on the one hand, and want of reflection on the other, they are often as ignorant of the proper method of proceeding, as if they had never seen any thing burning in their lives; and dash on, through thick and thin, sometimes labouring where their services are not wanted, sometimes rather increasing than stopping the flames, and sometimes running into the way of others, who, with less bustle, would do a great deal more good than themselves. To try how well you are qualified to render assistance in the event of a building on fire, I will, as before, propose an example.

Suppose you were to discover a house on fire, or to be informed of such a circumstance ; what would you do?

That you would be ready, and even eager, to assist in so kind an office as that of putting out the flames, I cannot for a moment doubt. The natural ardour of youth would conspire with the humane desire of doing good, to induce you to exert yourself to the utmost of your power, if you thought your services were needed, or saw any prospect of acting with advantage. But the question is, *how* would you act? If you lived in London, your business would be comparatively short. You would think it, perhaps, sufficient to alarm the family and the watchman; and give notice at some of the nearest fire-offices. During the time, however, that must necessarily elapse before effectual assistance could arrive, you would probably assist the inhabitants in making their escape, and saving their goods. You might also search for the nearest fire-plug to afford a supply of water; and then it is likely you would leave the management of the whole to the fire-men, who, being more expert in the business, and not liking

to act with inexperienced persons, would be better pleased with your absence than your help.

So far so good; but, in the country, where there are no such companies of trained men, and happily not so much occasion for them, every body may be of service who knows how to act; and, therefore, every body ought to pay so much attention to the subject, as may qualify him for being useful on these occasions.

Supposing, then, in the case before us, if it be a house, that the inhabitants have received the "dread intelligence," and are escaping from the scene of danger; they should be assisted also in the removal of their goods. At the same time, not a moment should be lost in giving the alarm as generally as possible, in order to collect assistance. Some persons should be sent for the nearest engines, and if there be none in the town or village where the fire happens, waggons should be sent for them, not only for expedition, but for safety. The utmost despatch should be used in collecting buckets, pails, and other vessels, which will be highly useful on many accounts. The nearest and best supplies of water should then be

sought for, and the passages to them cleared as much as possible, that no interruption or delay may take place in the operations. Supposing, now, all things ready, how would you supply the engines? If the water were near at hand, so that they could feed themselves by means of their own leathern pipes, so far all would be well; and the buckets and other vessels would be at liberty to convey water to those places where the engines could not act, or where it might be wanted in greater quantities than they could furnish. But, if otherwise, as it is evidently of the first importance that the engines should receive a full and constant supply of water, some effectual method must be adopted for this purpose. Most people, in this case, though they are ready enough to act, and act indeed with sufficient vigour, yet for want of a little thought and a very simple regulation, are not half so useful as they might be. Each one, filling and emptying his own bucket, or other vessel, for himself, is too much employed in running to and fro; and, meeting with others in the general bustle, the greater part of the water is lost by the dashing of the vessels, and the ground is

deluged with that which ought to have been applied to the quenching of the fire. You, I hope, will pursue a wiser plan; a plan which all would adopt, if they were aware of its advantages, or gave themselves time to think a moment about it. Let a lane be formed, by ranging the people in a double line from the water to the engine, or to any other place where a supply is wanted, and let the men be placed on one side to hand the full buckets, &c. from one to the other, and the boys and women on the other side to convey back the empty ones. Thus a sort of regular and perpetual motion will be kept up, and the water will be most effectually supplied, not only without confusion or loss, but with much less fatigue than by the common disorderly method. It is really surprising to me that people should not fall upon such a plan without delay; and yet, I believe, it is scarcely possible to attend a fire in the country, without witnessing the loss of time, inconvenience, and disorder, which prevail on these awful occasions, until some person of superior information or experience comes forward to regulate their proceedings. If persons, in general, would make

themselves acquainted with this simple fact, it would surely require no trouble to persuade them to act upon it from the first moment of assembling themselves together. You, I trust, will keep it in remembrance.

The person who happens to be stationed next to the water, and who fills the buckets, ought to be careful that no loose stones or gravel be taken up with the water, as these often stop the engine, and sometimes damage it materially.

Every thing being ready, where should the engines* play? Not, I conceive, upon the centre of the flames, unless there be a fair prospect of extinguishing them speedily; but rather on each side, to prevent them from spreading. If they should, nevertheless, appear to be extending them-

* I here take it for granted, that the engines are in good repair. That they are often found to be out of order, when they are most wanted, is too certain to be denied; and a very lamentable fact it is. What can be more fatal and distressing than to find that the principal instrument in the extinction of fire, and upon which, therefore, the greatest confidence is placed, proves upon trial to be utterly useless? The practice adopted in many parishes, of examining and repairing the engines at certain times, once a quarter at least, cannot be too highly commended. We have only to wish it were universally imitated.

selves, and the adjoining buildings be in imminent danger, it will be right to consider how the communication may be cut off, whether by pulling down a part of those buildings, or otherwise. Wet blankets or cloths may also be provided, to put upon the neighbouring houses, as well as stacks of corn, hay, &c. if such happen to be near. Should there be no hope of saving the house already in flames from being utterly consumed, it would be advisable to pull it down as fast as possible, by means of large fire-hooks, such as you have often, probably, seen at churches, or by some other instruments as well adapted to the purpose. Not only would some of the materials be thus saved, but the fire itself, by being either choked or dispersed, would be more speedily put out. It ought, however, to be considered, before this measure is resorted to, whether or not it will increase the danger of any buildings in the vicinity, which, in narrow streets and populous neighbourhoods, might sometimes be the case.

In passing from room to room, where the flames do not prevail to such a degree as actually to endanger life, I have been informed, that the Lon-

don firemen creep along the floor, with their faces as near it as will allow them to move, and in this manner escape suffocation from the smoke and heated air. So expert are they in this practice, that it is said they will pass with ease and safety along many parts of a burning house, which to the spectators appear inaccessible. A striking example of the efficacy of this method is given in the Monthly Magazine for January last. The linen having taken fire in the laundry at Corby-Castle, it was found impossible to enter the room in an erect posture, without danger of immediate suffocation; but, by crawling or stooping low, the atmosphere near the floor was found so clear, that it was entered without inconvenience, the linen saved, and that part which was in flames dragged out :—thus was prevented the destruction of the premises.

The general plan upon which these firemen act, appears to be so excellent, and, in many cases, so effectual, that I have often wondered that its principles have not been detailed in printed directions for proceeding in cases of fire, and distributed by the managers of fire-offices; but I have not, upon

inquiry, been able to learn, that any such printed instructions are to be obtained, otherwise I should have been happy to lay a copy of them before you in this address. It would obviously be of great advantage to the public, and I should conceive not less so to the insurance offices themselves, if a system of instructions, derived from the great experience and address of the men who are constantly employed on these occasions, were so freely circulated as to be generally known. Such instructions, at least, might be deposited at the several fire-offices, both in London and the country, and ready access to them allowed at all seasonable times; their general distribution, however, would be much more likely to do good.

A friend of mine, to whom I am indebted for many valuable hints, has suggested, that there ought to be in every town some person resident, as superintendant, who has been accustomed to acting at fires, and who, being on or near the spot, would be ready on all emergencies: he might also follow some other business, as his principal means of support. Another suggestion of the same gentleman's is, that regulations should be proposed,

and, where practicable, societies formed, for the safe removal, preservation, and guarding of property of all kinds.

I shall conclude this address with a few remarks on the

Method of Extinguishing Fire in Chimneys.

As the inner parts of chimneys, when the soot has collected upon them, very easily take fire, it is no wonder that such occurrences very frequently happen. They are seldom attended, however, with any material danger, unless there happen to be beams or other pieces of timber wrought in the chimney, and accessible to the fire, as indeed is too often the case in old houses. At any rate, perhaps, you would not much like to sleep in a house while the chimney was on fire ; and even in the day time, you would judge it right to extinguish it as fast as possible. For this purpose, several schemes have been adopted ; such as firing a loaded gun or pistol up the chimney to dislodge the burning soot—letting down a rope, to the middle of which a bunch of wet straw or any similar substance is fastened, and by means of which it

can be drawn up and down within the chimney, thus clearing it effectually from its dangerous contents. Sometimes, when the fire is not very violent, so as to endanger the person, a chimney-sweep is sent up, or let down, with the same intention. In all these methods, it will be right to be careful of the fiery materials which fall down, lest, by being scattered along the floor of the room, they should set the whole house in flames: it will also be of advantage to keep the doors and windows shut.

Water thrown into the chimney at top is seldom of much use, as, if the tunnel be upright, the water is more likely to come down the middle of it, than to act effectually along the sides, unless a board were placed so as to make an inclined plane, for the water to be poured on, and direct it to run with force against the particular side or sides where it is needed.

A more rational method, if it can be adopted, and it may in all cases where the flue which contains the fire has no other flue opening into it, is to cut off the supply of external air, by which the fire is fed and sustained. This may be done,

either by stopping, with a wet blanket, the upper orifice of the chimney; or, which is better, by applying also a similar blanket either to the throat of the chimney, or over the whole front of the fire-place, closing the orifice with the utmost care to prevent the admission of the air. If there happen to be a chimney-board, or a register, nothing can be more effectual than to apply them immediately: and having by that means stopped the draught of air from below, the burning soot will be put out as completely, though not quite so speedily, as a candle is put out by an extinguisher, which acts exactly upon the same principle. If you fix your attention for one minute upon this scheme, you will see that, to insure its complete success, it is necessary that the external air be unable to find a passage to the fire, in any part whatever, from the top to the bottom of the chimney; and, with this view, it will be right to examine it carefully, before you put full confidence in the method, in any particular case. You will find, in this, as in many other occurrences of life, that a little thought will often prevent a great deal of trouble.

The best preventative of fires in chimneys, is evidently to have them kept as free from soot as possible, by frequently sweeping them, or, as the lawyers would add, "causing them to be" swept. Unless you are more fond of the sooty business than I wish you to be, you will think the addition very necessary here.

ADDRESS IV.

ACCIDENTS FROM FIRE, CONTINUED.—COMPOSITIONS TO EXTINGUISH FIRE.—DANGER FROM BURNING CLOTHES, WITH DIRECTIONS TO PUT OUT THE FLAME.

WATER and fire have long been accounted enemies; and it is in consequence of this enmity that the former is always resorted to whenever the latter is likely to do mischief—indeed, it is almost the only ingredient which is thought of, in general, when we want to put out a fire. It is not the only substance, however, that may be useful

on such occasions, as you must have noticed, if ever you paid much attention to the subject; though from its fluid nature, which renders it exceedingly easy of application, and from its cheapness, as well as from its natural and inveterate hostility to fire, it is not likely it will ever be out of repute as an able extinguisher. Still, it has often been a question, whether some other things might not be thought of, which, by being mixed with water, or dissolved in it, would render it more eminently useful. Several persons have turned their attention to the subject, and with some degree of success.

Among others, Mr. William Knox, of Gottenburg, in Sweden, made many experiments with compositions for this purpose. He divides them into simple and compound solutions. Of the latter sort, which he prefers as the surest and most powerful, I shall give you a few examples.

1. Water ---------- 75 galls.
   Clay ---------- 10 qts.
   Vitriol ---------- 10 do.
   Common Salt ---------- 10 do.
2. Water ---------- 75 galls.

Strong solution of wood ashes - - - 18 qts.
Fine clay reduced to powder - - - - 18 qts.

3. Water - 75 galls.
Red ochre, or the residuum of aqua-fortis - - - - - - - - - - - - - - - - - - - 15 qts.
Common Salt - - - - - - - - - - - - - - - - - 15 qts.

4. Water - 75 galls.
Strongest herring pickle - - - - - - - - 15 qts.
Red ochre - - - - - - - - - - - - - - - - - - - 15 qts.

That these mixtures, or indeed almost any other which will render the water more dense without much decreasing its fluidity, would put out a fire more speedily than water alone, is very likely, since it is principally by covering the burning body and keeping from it the air which would feed the flame, that water itself is so useful for this purpose. There may be other qualities, however, of a chemical nature, which may render some things much more suitable to be mixed with water than others; and it is only experiment that can determine, with sufficient accuracy, which are absolutely the best. It would not be difficult to make such experiments on a small scale; and as I really think the subject is

of importance, and may prove useful, I shall be happy to assist you in the pursuit, whenever we have opportunity.

The following is the preparation of M. Von Aken, which I give you on his authority, as quoted in the *Pantalogia*, and which appears from his account to have been eminently successful:

Burnt alum	30 lbs.
Green vitriol in powder	40
Cinabrese, or red ochre powdered	20
Potter's or other clay, finely pounded and sifted,	200
Water	630

With 40 measures of this liquor, an artificial fire, which would have required the labour of twenty men, and fifteen hundred measures of common water, was extinguished, under the direction of the inventor, by three persons only. The price of this compound solution is estimated at one halfpenny per pound.

If such be the case, surely it would be worth while to keep in the fire-offices a quantity of the most approved ingredients, laid up in proper proportions, that on the first alarm of fire they might

accompany the engines without delay, and be considered as necessary a part of the extinguishing apparatus as the engine itself.

Other mixtures have been, at different times, proposed by various persons; but it would be tedious and perplexing to enumerate them all. Some have recommended the strewing of sand or mould upon the burning or heated parts; and when this can be done with convenience and in sufficient quantity, it might have its use; but, in general, I am afraid the method will be found too much like catching birds by laying salt upon their tails!

Several years ago, a Dr. Godfrey, improving upon the hint of Mr. Greyl, a foreigner, tried a curious scheme for putting out fires, when they had not extended themselves beyond the room in which they began. He constructed a number of wooden vessels, which he filled with water, oil of vitriol, and sal-ammoniac: these being thrown into rooms that were purposely set on fire, burst, after the manner of bombs, and scattering their contents by the explosion, very speedily and completely extinguished the flames. This contrivance ap-

pears better adapted to ships than houses. It does not appear to have been at all in use lately, or even to have been tried since the inventor's experiment.

Danger from burning clothes. How to extinguish the flame.

Let us now turn to another view of the subject, less awful in its appearance, less destructive to property, but not less fatal to life. Indeed, so numerous of late have been the instances of the death of females by setting fire to their clothes in the parlour or the drawing-room, as well as among children who have been left alone in the cottages of the poor, that it may justly be doubted, whether more persons do not perish by this means alone, than by all the other descriptions of fire put together. You think this strange, perhaps; and can hardly believe there is any good reason for saying it; but if you had noticed, as I have done for some months past, the very great number of deaths from this cause which have been from time to time reported in the newspapers, you would be less surprised at the opinion. The fact

is, these cases are very much overlooked, from the shortness of the accounts, and from their occurring privately; while the burning of a house not only commands attention while it lasts, but is generally attended with so many circumstances as to require a length of statement to describe it. Besides, it is certain that the number of lives lost by the burning of houses, is few, compared to the number of fires that happen, as any one may satisfy himself by an inspection of the accounts for any given time.* If I were to give you an account of all the cases which have fallen under my notice within the last five or six weeks, and which may fairly be ascribed to this cause alone, I should fill up the remainder of this address with the names of the persons who have been thus awfully cut off, and of the places where these sad events occurred. I shall, however, select a few from the number, to give you an idea of the dan-

* This estimate is confined to England alone. I do not therefore take into the account the number of victims at the late tremendous fire at Richmond, in Virginia. This, however, is a most extraordinary case.

ger, and to produce in the minds of those who may read them hereafter, a salutary caution which may enable them to avoid it.

On Sunday, the 1st of March, in the present year, Miss Hannah Rhodes, aged 17 years, departed this life, after enduring seven weeks unparalleled sufferings, which were occasioned by her clothes catching fire. She was so dreadfully burnt in every part of her body, that a mortification ensued, which put a period to her existence. In a moment, while she was standing at the fire, the flame ascended above her head, and before it could be extinguished, produced the awful consequences above related. It appears, that the tortures she endured in the interval between the accident and her death, were too excruciating to be described. Miss R. was a young lady of considerable abilities, had an amiable disposition, and was a most affectionate daughter; circumstances which render her loss the more to be regretted. The concourse of people assembled at Margate, to witness her interment, sufficiently evinced their regard for departed worth. *London Newspapers*, March 9, 1812.

An inquest was held at Louth, in Lincolnshire, on the 4th instant, on the body of Susan Taylor, a child of 10 years of age, whose clothes caught fire on the 14th of February, by which accident she was so dreadfully burnt as to occasion her death on the 3d of March, in violent tortures. *Stamford Paper*, March 20, 1812.

Mary Snowden, aged 14, of Burley, in Yorkshire, was standing near the fire; her clothes caught fire, and in the fright she ran out of doors: she was so miserably burnt, that, after lingering till the following Sunday, she died. *Monthly Magazine*, March, 1812.

In the United States, frequent accidents of the same kind occur. In Baltimore, not long since, a very amiable and excellent lady was scorched to death by the blaze of her clothes, as she was engaged at her toilet.

It is needless, however, to multiply examples in so plain a case. You must all have heard of other instances. Even when death does not take place, very painful sufferings are often endured, and the person is perhaps deformed for life—a pitiable and unsightly object. During the last

winter, a friend of mine was drinking tea with some company in the parlour, while her children were playing in an adjoining room. On a sudden, a cry was heard; and one of the children was found in flames. She had been "doing dares," as it is called, with her companions, and among other things, amused herself with swinging by her hands from the chimney-shelf. Thus her clothes caught fire, and were with difficulty extinguished; but not before she was so dreadfully burnt that her life was despaired of for several weeks. In one hospital alone, the Bath Infirmary, it appears that not fewer than thirteen children, miserably burnt, have been received within these few weeks: several of them died soon after admission.

Among the higher classes, these distressing things are chiefly to be ascribed to the lightness of the ladies' dresses, and the quick draught of modern fire-places, by which not children only, but grown-up persons, and even some more advanced in years, have lost their lives. If ladies will make fashion every thing, and think no risk too great to run, no danger too fierce to brave, to shew their allegiance to this tyrant, they must

take the consequence; though it is to be lamented their courage is not devoted to a better cause. At all events, a little more care might be taken to avoid the fire; and it is, perhaps, not too much to hope, that when a few more have fallen victims to the flames, the adoption of fire-guards will become more general.

Among the poor, the danger is in great measure confined to children, who, being left alone where there is a fire, have not sense or experience enough to keep out of harm's way. A striking caution to mothers, never to leave their children alone in such a dangerous situation: and to those who have children placed under their care, to watch over them with the utmost attention.

It is well for you, my boys, that your garments are made of "sterner stuff"* than those of your sisters, otherwise, instead of scorching your trowsers or your coat-lappets, by approaching too near the fire, some of you would long before this have scorched your bodies, and perhaps have endangered your lives.

* Shakespeare, Jul. Cæs. act III. sc. 2.

But how is the fire to be put out, when it has once seized upon a female's clothes? This question it is full time to consider. How, then, would you proceed, if unhappily one of your sisters, or any other of your friends, should, while standing before the fire some cold winter's evening, find her gown in flames? This is a case that would try both your courage and your skill. Perhaps you would run into the street, and cry "Fire!" This would be a most fatal step—the flames would be making progress, the sufferer would be in the greatest danger—and her only chance of escape, as far as depended upon you, would be lost. No, no! Do not leave the room till the fire is out, unless it be to fetch something that is very near at hand to put it out. If you discern the fire at the first moment, as soon as it has caught the garment, you may perhaps muffle the flames, by hastily gathering up a part of the dress with your hands, and clapping them together. You can easily take hold of the two corners of your pocket handkerchief, and bring the parts near together, by hastily closing your hands: this is similar to what you may do to quench the fire. If this should not

succeed, or if the flames have advanced too far to try it, let the person roll herself upon the floor, in such a manner that the flames may be as much as possible under her body: if the carpet be moveable, throw a part of it over her, and thus stifle the flames. A hearthrug would answer the same purpose. In the absence of these, a cloth from the table, or even your own coat, might be thrown about her: whatever it is that you do, let it be done expeditiously; for upon this, more than upon any thing else, its success may be said to depend. As it may happen that there is no carpet in the room, or that it may be fastened down, some persons have recommended a cloth to be kept in some well known place in the house, and to be distinguished by some appropriate name, as the safety-cloth, the extinguishing-cloth, the fire-check, or any other by which it may immediately be called for and known. In poor houses and cottages, a bed quilt, hastily snatched off, and thrown round the person on fire, would soon put out the flames. In all these cases, you see, we have recourse to our old general principle, that of preventing the access of the ex-

ternal air to the substance on fire; and whenever we have an opportunity of bringing this principle into action, we may, sooner or later, be sure of succeeding.

ADDRESS V.

MODES OF GUARDING AGAINSR FIRE.—MISCELLANEOUS CAUTIONS.

WE are so liable to the attacks of fire in various forms, and from numerous causes, that it is no wonder many persons have at different times endeavoured to find out some security against them.

Among others, lord Stanhope, an active and ingenious nobleman of the present day, has directed his attention to the subject, and has invented a method of securing floors from the attack or progress of fire; a method which it is not difficult to employ in building new houses, or relaying floors, and which appears to be well calculated to answer the purpose his lordship had in view.

The general method is divided into three parts, any, or all, of which may be adopted as occasion may require. 1. Under-flooring. 2. Extra-lathing. 3. Inter-securing. If you attend carefully to the following description, you will soon understand the principles of the method in general, and be able to determine which particular part of it is to be preferred in any case that may occur to you.

1. Under-flooring. This method is either single or double.

In single under-flooring, a fillet of common oak or fir laths, about a quarter of an inch thick, is nailed all along each side of every joist and of every main timber of the floor which is to be secured. The top of each of these laths or fillets ought to be an inch and a half below the top of the joist and timbers against which they are nailed; and they will thus form a sort of small ledge on each side of all the joists. These fillets, in nailing, are to be well bedded in a rough plaster, formed as directed below, so that there may be no interval between them and the joists. The spaces between the joists are to be filled up with

short pieces of common lath, laid by the side of each other in a row, so that their ends may rest upon the fillets, and their direction be in a direction contrary to that of the joists: these cross pieces ought also to be well bedded in the rough plaster, but are not to be fastened with nails. They must then be covered with one thick coat of the rough plaster, which is to be spread over them to the level of the tops of the joists; and in a day or two this plaster should be trowelled over close to the side of the joists, without covering the tops of the joists with it.

In double under-flooring, the fillets and short pieces of laths are applied in the manner above described; but the coat of rough plaster ought to be little more than half as thick. While this is spreading on, some more of the short pieces of laths must be laid upon it between the joists, and be dipped deep in it. They should be laid as close as possible to each other, and in the same direction with the first layer of short laths. Over this second layer of laths, there must be spread another coat of rough plaster, which should be

trowelled level with the tops of the joists without rising above them.

This rough plaster may be made of coarse lime and hair; or, instead of hair, hay chopped to about three inches long, may be used with advantage. One measure of common rough sand, two measures of slaked lime, and three measures of chopped hay, will form, in general, a very good proportion, when sufficiently beat up together in the manner of common mortar. The hay should be put in, after the two other ingredients are well beat up together with water. This plaster should be made stiff; and, when the flooring boards are required to be laid down very soon, a fourth or fifth part of quick-lime in powder, formed by dropping a small quantity of water on the lime-stone a little while before it is used, and well mixed with this rough plaster, will cause it to dry very fast. If any cracks appear in the rough plaster work near the joists, when it is thoroughly dry, they ought to be closed by washing them over with a brush wet with mortar wash, which may be prepared by putting two measures of quick-lime and one of common sand in a pail, and

stirring the mixture with water, until it becomes of a proper consistence.

Before the flooring boards are laid, a small quantity of very dry common sand should be strewed over the plaster-work, and struck smooth with a hollow rule, moved in the direction of the joists, so that it may lie rounding between each pair of the joists. The plaster-work and sand should be perfectly dry before the boards are laid, for fear of the dry rot. The method of under-flooring may be successfully applied to a wooden stair-case; but no sand is to be laid upon the rough plaster-work. The expense of under-flooring, his lordship estimates at little more than 9*d.* per square yard.

2. The method of extra-lathing, by which the second layer of laths may be imbedded in the rough plaster with which the first layer is covered, will afford additional security to ceiling joists, to sloping roofs, and to wooden partitions—to which indeed it is more especially applicable. Expense 6*d.* per yard for partitions; 9*d.* per yard for the ceiling.

3. Inter-securing, is very similar to that of under-flooring; but no sand is afterwards to be laid upon it. This method is applicable to the same parts of a building as that of extra-lathing; but it is seldom necessary.

Such is the substance of lord Stanhope's directions for securing the wood work of buildings from destruction by fire. It is evident, at first view, that the method would tend very much to stop the progress of the flames (and his lordship has proved its efficacy by experiments); which is a very material consideration, since floors and partitions, as they are generally constructed, have a contrary effect, and, instead of checking, only feed and extend the fire. The additional expense of lord Stanhope's plan is now somewhat more than the estimate above given, owing to the advanced price of materials and labour. Though I cannot take upon me to recommend this plan, from any actual experience of its advantage, yet I confess it appears to be deserving of your attention, whenever you are going to build a house, or alter one.

Another method of securing floors has been recommended by Mr. B. Cook, of Birmingham, who proposes that not only the rafters and beams should be formed of Iron, and cast hollow ; but that the flooring joists should be also made of cast iron. If these latter were made light, and laid nearer each other than the wooden joists commonly used in flooring, and if they were cast with a small projecting edge all along the bottom of each joist, so that when laid down, a flat tile, or thin quarry, would just fit in between each pair of joists, and if the spaces were filled up with cheap tiles or quarries made on purpose, or even with rubbish well pressed, the floor would become fire-proof; or at least, it would be exceedingly difficult for the fire to make its way through such a floor, even with the assistance of the boards to be placed upon the joists. The boards might be screwed down with very little trouble; and the whole plan appears to be at least as effectual as that of lord Stanhope, with the additional advantage of adding scarcely any thing to the expense, especially in those parts of the country where the iron-work can be obtained in the neighbourhood,

without the charge of any great length of carriage.

The same gentleman has proposed the application of iron to another purpose in building. You would think it odd, perhaps, to have iron stairs and stair-cases: yet such are actually recommended by Mr. Cook. They might be made of cast and sheet iron combined, or of cast iron only. In the former case, when the framing was fixed, the front and top of the step might be attached to it with six or eight screws; and in order to give it a neat finish, a light bevelled moulding might run all around the front of every step, and the jointings be neatly fastened to it with small screws, with heads countersunk into the mouldings. On the other hand, if the whole were of cast-iron, the front and top of the steps might be cast in plates, and the framing cast with sunk edges, so that the steps would just fit into the groved framing; and four or six screws would fasten them in a few moments. A whole flight of stairs thus formed, would very speedily be put together. Such stairs would be much handsomer than stone, and of half the price, or less. They would ap-

pear very beautiful, if well painted, to imitate mahogany, or any other substance that fancy might dictate; and it is evident, from their construction, that such stairs and their railings would allow much scope for taste and genius in the patterns from which they were to be cast, and admit of every variety of ornament that inclination might desire. At the same time, also, that the rich might gratify their fancy in the form and embellishments of their stairs, persons in lower circumstances might avail themselves of so durable a material. Common stair cases of iron would probably be made as cheap as those of oak, if not cheaper; and Mr. C. thinks, if a manufactory were established, and a trade made of it, they might be afforded as cheap as those of any kind of wood whatsoever. But the grand advantage of these stairs would be their safety in case of fire. "Dreadful," observes Mr. C, "must be the situation of those persons, who, waked by the cry of fire, rush to the landings, find the lower rooms are burning, the stair-case blazing and falling, and no escape left but the terrible one of precipitating themselves from a window, and running

the risk of being dashed to pieces; when, if the stair-case had been of iron, all might have escaped with little or no injury."

Having once thought of iron stair-cases, beams, and flooring joists, it will be no wonder if in other parts of buildings, especially the roof, it should be proposed to use iron instead of wood. This has accordingly been done. A few years ago, I saw in one of the iron works, near Dudley, a model of an iron roof, nearly fit to receive the outer covering of slates or tiles. It appeared exceedingly light in its construction, much more so than those made of wood, and I thought it very likely that the plan would some time or other be adopted. I have since learned that several roofs in different parts of the kingdom, have been lately constructed, as to their spars, rafters, beams, and laths, entirely of iron, but whether after the above or a similar model, I do not know; nor is it of much consequence, since as great a variety may take place among iron roofs as among those formed of timber. An iron roof has lately been put up at Newport, in Monmouthshire. It covers

a building 40 feet long and 21 feet wide over the walls; and consists of seven main couples, two leading couples, and wall plating, all of cast iron, wrought iron laths, screw-pins, &c. total weight 2 tons, 4 cwt. 2 qrs. 20 lbs. being sufficiently strong to sustain the heaviest stone tile of this country, and is in itself lighter than one of wood, of which substance there is not one particle. The main couples are made in three pieces, the collar or tie beam of which forms part of a circle, thereby giving much more head-room than is possible with wood: it requires neither side pieces nor rafters, the wrought iron laths being a substitute for both. The whole roofing, after having been fitted together, and taken to pieces again, at Aberdare iron-works, where it was cast, was conveyed in a wagon to Newport. It was fitted together again, and fixed on the walls in less than five hours, completely ready for the tiler, who, having no laths to prepare or nail on, can tile a roof in half the time it could be done on one constructed of wood. These roofs, it is said, are applicable to buildings of all sizes, can be put up at a much

less expense per square than any other, and are evidently far more durable.*

In a large public building, called the Coloured Cloth Hall, lately erected at Leeds, and consisting of five streets, averaging one hundred yards each, cast iron is substituted for wood in the main beamings, for the purpose of guarding against fire.*

I have heard of an asylum for insane persons, but I forget where it is erected, in which, not only all the parts before mentioned, such as beams, roofs, flooring joists, and stairs, but the very doors and door-cases, are all formed of iron; and there is no doubt that the scheme has been more or less adopted in various parts of the British empire, much to the safety of the buildings and those who inhabit them.

What should you think of iron bureaus, chests of drawers, book-cases, and other articles of furniture? The same Mr. Cook, whom I have mentioned before, has written a letter to recommend such things; and has pointed out a method in

* See the Monthly Magazine for Aug. 1810, pp. 66, 83.

which they may be made,not only light and cheap, but ornamental also. I have said so much about buildings, that I have neither time nor room left to say much about their furniture; I must, therefore, take leave of this subject, and refer you to the letter itself, which you will find in the 99th number, or the XXII. volume, of Nicholson's Philosophical Journal. The other paper, about the iron stairs, is printed in the XXIV. volume of the same work.

When houses are built close together, as in streets, it is of great importance to have *party-walls*, as they are called, by means of which, especially in crowded cities, the progress of the flames has often been stopped, when otherwise they would have proved much more destructive. In London, this plan is enforced by act of parliament. Those partitions between rooms which are plastered or stuccoed, are much more safe than those which are wainscoted. Solid brick partitions, even if only four inches broad, are better still.

It is not enough that you build your house with as much attention to security as possible, it is

necessary also, when you inhabit it, to be on your guard against the danger of fire, in whatever form it may be employed. Much injury has been occasioned by negligence on this point: houses have been set on fire, and burnt down, and sometimes lives have been destroyed, by the carelessness of servants in throwing out cinders before they have been cool; by leaving linen to dry before the fire; by the falling of the red hot poker upon the floor, when it has been incautiously left in the fire; by dropping sparks from a candle; by placing the candle too near the curtains; and by various other means,* of which you have proba-

* Among other less common sources of danger, it may be proper to mention, that some time ago, a gentleman in France, sustained considerable loss from the bursting of a phial by the frost, which set some phosphorus at liberty from the water in which it was kept; thus producing flame, on the accession of air to that combustible substance. The newspapers lately recorded an instance, still more curious, of the window-curtains in a farm house, near Gedney, in Lincolnshire, being set fire to by a pair of spectacles, which were left in the window seat, and which acting as a lens or burning-glass, collected the rays of the sun, and produced an effect which might have been

bly heard at one time or another. Children and young persons have also been the cause of great mischief by the practice, to which they are so much inclined, of playing with lighted straws, paper, &c. not considering the danger to which they are thus exposing themselves and their friends. To read in bed by candle light, ought by no means to be recommended or even allowed, since it would be easy to relate many fatal consequences produced by it. Perhaps some persons, otherwise very careful, may have continued in the use of it with safety; but it is notwithstanding a very unwise plan, and is attended with so much danger, even when most carefully pursued, that it would be better laid aside altogether. In cases of sickness, distressing accidents from fire sometimes occur. "Mr. M. had a sick infant. He and his wife attended the child. A candle was kept burning by the bed side. In the dead of night, the exhausted mother awaked with the shocking spectacle of the curtains, tester and bed in flames. The father rose, and in his attempts to extinguish

highly injurious, if not speedily discovered. The curtains were burnt.

the fire, was dreadfully burned. By great exertions the house and furniture were saved from destruction. The conflagration arose from a too near approach of the candle to the curtains."

You will do well to call these hints occasionally to your remembrance, not to alarm, but to caution you; not to render your lives miserable by continued fear, but to render them safer by prudent attention.

"Great care ought to be taken, in approaching inflammable vapours with a candle. In a house in the city of New-York, a few years since, a terrible fire arose, and destroyed the festivity of a wedding, from the ascension of the vapour of brandy or some other ardent spirits, by the flame of a candle. This accident befel the parties in the cellar of the house, where a cask was broached, for the purpose of procuring liquor to regale the company.

"The following account of a distressing accident, is taken from a newspaper, printed in Effingham county, Georgia, July 24, 1808: On Sunday arrived Mr. John Gromet, and family, with merchandise. On the Monday following they were

employed in opening them. On Tuesday evening, a hogshead of Brandy took fire from a candle, but in what manner it is difficult to say; the fire communicated from that hogshead to others, and in a small time the house was in flames, by which Mr. Gromet was so much burnt, that he died on Wednesday morning, and Mrs. Gromet lies in great agony, and it is feared she cannot survive long.

"It is not a great while since, a very destructive fire proceeded from the bursting of a large bottle of Vitriolic Ether, in the shop of an eminent druggist. The volatile vapour having been too elastic for its confinement, immediately filled the room, and took flame, from the fuel on the hearth and the candle on the counter. The blaze was extensive and vehement: the building and its contents were much damaged. This alarming occurrence teaches us to be cautious about the use of this subtile and combustible agent.

"It may be mentioned to you, that a gentleman of this city, on attempting to syringe his ear with ether, for the purpose of dissolving some hardended wax within it, burned the external ear

and cheek to a blister, and singed the hair from that side of his head, by the too near approach of a candle to the ethereal gas, which filled the air during the operation.

" The city was alarmed with fire, a few years ago, which, on examination, was found to proceed from the slacking of Lime. A quantity of that article, fresh from the Kiln, had been stored in a leaky house; the rain had penetrated the casks; the process of slaking commenced; and the heat evolved was so great as to kindle a fire destructive to the store, and a number of the adjoining buildings. The history of spontaneous combustions, you have doubtless read in the New-York Repository, vol. XVI. p. 217, and sec. 1, where they are examined and explained at large.

" Our country, is a country where newspapers are more extensively circulated than in any portion of the terraqueous globe. From these vehicles of intelligence, are extracted the following facts concerning quicklime, becoming wet, slacking on board vessels, and setting them on fire:

" Port of Boston, Nov. 26th, 1812. After a spell of hard weather, arrived Sch. Coughlin, on Tues-

day; she was originally bound to Richmond, with an assorted cargo, and 95 hds. lime on board. Off Montaug, the lime caught fire, and continued burning five days, when she was scuttled and sunk near Brooklyn Beach.

"New-York ship news, from the Mercantile Advertiser, of Nov. 30, 1812.—The Schr. Sally, of and from Providence, R. I. with a cargo of lime, oil, and cider, bound to Norfolk, was cast away in the gale of last Monday night on Norwalk Island. The vessel caught fire the next day from the lime, and was consumed, vessel and cargo, except about 100 barrels—crew saved.

"Norfolk, Dec. 9, 1812.—The brig Mary Ann, Duncan, from Newburyport, bound to Baltimore, was stranded on Cape Henry on the night of Thursday the 3d inst. and bilged; the water communicated to a quantity of unslacked lime in the hold, set the vessel on fire and she was entirely consumed. The crew took to the boat and were saved.

"There is one calamity against which I ought to guard you; and this is the spontaneous combustion of the human body itself. Various evi-

dence on this head is before you in the respectable work already quoted, Med. Repos. vol. XIV. p. 179, and in several other places. And we have to lament that a perfect preventative against so dreadful an accident, has not yet been discovered. It is in the recollection of many persons, that, some years ago, a notorious woman, called *Man-of-war Nancy*, was destroyed by an internal fire, which broke out within her body, and consumed her to ashes. The older inhabitants of New-York well remember this event, and the story of it."

ADDRESS VI.

ON ACCIDENTS FROM WATER.—DR. FRANKLIN'S ADVICE TO SWIMMERS.—DR. MITCHILL'S EXPERIMENTS ON FLOATING AND SWIMMING.—USEFUL PRECAUTIONS.—MEANS OF RAISING BODIES FROM THE WATER.—DRAGS.

WE often find that things are dangerous, in one point of view, in proportion to their utility in another Nothing is more useful to us than water: a regular and copious supply of it is one of the

greatest of temporal blessings; and yet, on the other hand, nothing, in the way of accident, is more destructive. Nay, it is not too much to assert that more lives are lost by drowning, than by all other casualties put together. If you desired a proof of this, it would only be necessary to remind you of the great number of persons who are drowned in our rivers, ponds, &c. by bathing or by accidentally falling in, and then to mention the far greater multitudes who perish in the mighty ocean, by shipwrecks, founderings, and other causes. If I could present you with a complete list of those, who, in the course of the last ten years only, have found a "watery grave," you would be utterly astonished, and your hearts would beat with anguish at the thought that so many of your fellow creatures, who were once as lively as you are now, and thought themselves as secure, should be thus suddenly overwhelmed by the waves of death!

But not to "moralize" any longer on this awful "spectacle," I will proceed to caution you against the dangers which arise from water, and then in-

form you of the means which are used to recover those who are apparently drowned.

In the first place, *learn to swim*, if you can do it *conveniently* and *safely*, and if you can obtain the *approbation of your friends*. I lay much stress upon these conditions, because, by attending to them, you may not only avoid many evils, and save your friends much anxiety, but you may also gain many advantages from the advice and instruction of those who are older and wiser than yourselves. I would recommend to your notice some very judicious observations made by the celebrated Dr. Franklin, who was an adept in the art of swimming, and who spent more time in the water than perhaps any Englishman ever did.

Dr. FRANKLIN'S *Advice to Swimmers.*

It may be observed, that the natural dread which we have of being drowned, is the only reason man cannot swim. With regard to the real danger, it is but little; and, on most occasions, owing entirely to the sense we have of our situation in the water. The following remarks are sufficient to establish this opinion:

1st. That though the legs, arms, and head of a human body, being solid parts, are specifically somewhat heavier than fresh water, yet the trunk, particularly the upper part, from its hollowness, is so much lighter than water, as that the whole body, taken together, is too light to sink wholly under water, but some part will remain above until the lungs become filled with water, which happens from drawing water into them instead of air, when a person in the fright attempts breathing while the mouth and nostrils are under water.

2dly. That the legs and arms are specifically lighter than salt water, and will be supported by it; so that a human body would not sink in salt water though the lungs were filled as above, but from the greater specific gravity of the head.

3dly. That, therefore, a person throwing himself on his back in salt water, and extending his arms, may easily lie so as to keep his mouth and nostrils free for breathing, and by a small motion of his hands, may prevent turning, if he should perceive any tendency to it.

4thly. That in fresh water, if a man throws himself on his back near the surface, he cannot

long continue in that situation, but by a proper action of his hands on the water. If he uses no such action, the legs and lower parts of the body will gradually sink till he comes into an upright position; in which he will continue suspended, the hollow of the breast keeping the head uppermost.

5thly. But if in this erect position, the head is kept upright above the shoulders, as when we stand on the ground, the immersion will, by the weight of that part of the head that is out of the water, reach above the mouth and nostrils, perhaps a little above the eyes; so that a man cannot long remain suspended in water, with his head in that position.

6thly. The body continued suspended as before, and upright; if the head be leaned quite back, so that the face looks upwards, all the back part of the head being then under water, and its weight consequently in a great measure supported by it, the face will remain above water, quite free for breathing, will rise an inch higher every aspiration, and sink as much every expiration, but

never so low as that the water may come over the mouth.

7thly. If, therefore, a person unacquainted with swimming, and falling accidently into the water, could have presence of mind sufficient to avoid struggling and plunging, and to let the body take this natural position, he might continue long safe from drowning, till perhaps help would come; for as to the clothes, their additional weight while immersed is very inconsiderable, the water supporting it; though, when he comes out of the water, he would find them very heavy indeed.

Method of Learning to Swim.

The method of learning to swim is as follows: The person must walk into the water so deep that it will reach to the breast. He is then to lie down gently on the belly, keeping the head and neck perfectly upright, the breast advancing forward, the thorax inflated, and the neck bent; then withdrawing the legs from the bottom, and stretching them out, strike the arms forward in unison with the legs. Swimming on the back is somewhat similar to that on the belly; but with

this difference, that although the legs are employed to move the body forwards, the arms are generally unemployed, and the progressive motion is derived from the movement of the leg. In diving, a person must close his hands together, and, pressing his chin upon his breast, make an exertion to bend with force forwards. While in that position, he must continue to move with rapidity under the surface; and whenever he chooses to return to his former situation, he has nothing to do but bend his head and back, and he will immediately return to the surface.

It is very common for novices in the art of swimming, to make use of corks or bladders, to assist in keeping the body above water. Some have utterly condemned the use of these: however, they may be of service for supporting the body, while one is learning what is called the stroke, or that manner of drawing in and striking out the hands and feet that is necessray to produce progressive motion. But you will be no swimmer till you can place confidence in the power of the water to support you: I would therefore advise the acquiring that confidence in the

first place, especially as I have known several, who, by a little of the practice necessary for that purpose, have insensibly acquired the stroke, taught, as it were, by nature. The practice I mean is this: Choosing a place where the water deepens gradually, walk cooly into it till it is up to your breast; then turn round your face to the shore, and throw an egg into the water, between you and the shore; it will sink to the bottom, and be easily seen there, if the water is clear. It must lie in the water so deep as that you cannot reach it to take it up but by diving for it. To encourage yourself in order to do this, reflect, that your progress will be from deeper to shallower water; and that at any time you may, by bringing your legs under you, and standing on the bottom, raise your head far above the water: then plunge under it with your eyes open, throwing yourself towards the egg, and endeavouring by the action of your hands and feet against the water, to get forward till within reach of it. In this attempt, you will find, that the water buoys you up against your inclination; that it is not so easy a thing to sink as you imagined; that you cannot

but by active force get down to the egg. Thus you feel the power of the water to support you, and learn to confide in that power, while your endeavours to overcome it, and to reach the egg, teach you the manner of acting on the water with your feet and hands, which action is afterwards used in swimming, to support your head higher above water, or to go forward through it.

I know by experience, that it is a great comfort to a swimmer, who has a considerable distance to go, to turn himself sometimes on his back, and to vary in other respects the means of procuring a progressive motion.

When he is seized with the cramp in the leg, the method of driving it away is to give the part affected, a sudden, vigorous, and violent shock, which he may do in the air as he swims on his back.

During the great heats of summer, there is no danger in bathing, however warm we may be, in rivers which have been thoroughly warmed by the sun. But to throw one's self into cold spring water, when the body has been heated by exercise in the sun, is an imprudence which may prove

fatal. I once knew an instance of four young men, who having worked at harvest in the heat of the day, with a view of refreshing themselves, plunged into a spring of cold water: two died upon the spot, a third the next morning, and the fourth recovered with great difficulty.

The exercise of swimming is one of the most healthy and agreeable in the world. After having swam in the evening, one sleeps cooly the whole night, even during the most ardent heat of summer. Perhaps the pores being cleansed, the insensible perspiration increases and occasions this coolness. It is certain, that much swimming is a means of stopping a diarrhoea, and even of producing a constipation. With respect to those who do not know how to swim, or who are affected with a diarrhoea, at a season which does not permit them to use that exercise, a warm bath, by cleansing and purifying the skin, is found very salutary, and often effects a radical cure. I speak from my own experience, frequently repeated, and that of others to whom I have recommended this.

The following Experiments on Swimming, were made by Dr. MITCHILL, *and have never before been published.*

"In August, 1813, I made experiments on the buoyancy of my body, in ocean water.

"I found, that, if I lay on my back, I floated, without plunging my head so much under, as to admit the fluid into my ears.

"I ascertained, that when I was in a prone position, I floated perfectly; and could at the same time, keep my mouth and nostrils fairly above the surface.

"In both cases, I was sensible of the difference of buoyancy, during the act of respiration; for, when the chest was dilated by the inhaled air, my body rose, and when it was contracted by expiration, my body descended very perceptibly.

"It also required some little exercise of my limbs, to preserve an equipoise. A small and seasonable motion of a hand or a foot, would keep me in either of the requisite postures, by resisting any tendency to turn or roll over.

"The temperature of the water was 74° of Fahrenheit's Thermometer. There was as much evenness as a calm could produce; and the place of experiment was not incommoded by current; it being the open shore of the harbour.

"I satisfied myself also, that when I took the erect attitude, and brought my head perpendicular, or to a right-line above my thorax, my body did not sink deep enough to cover my head, or to impede my respiration. With a motion of my limbs just sufficient to preserve my erect posture, I found the surface of the water, rather below my chin. With the little variation of my specific gravity, as I inspired or excluded air, I enjoyed a perfect ability to breathe; and this was effected without the necessity of keeping myself up by treading water, as it is called.

"This discovery of my own weight in relation to that of water, is susceptible of several useful applications.

"If I should fall overboard, I now know, that as long as my lungs are inflated with air, my body will rise from the plunge, float upon the water,

and be buoyant enough to allow respiration to go on.

"If the water should be smooth and even, I can change my attitude from the prone, to the supine and erect, with very little exertion, and with no considerable exhaustion of my strength.

"Should a boat be sent to my assistance, I can, by discreet management in thus keeping afloat, economize my muscular powers, until relief shall reach me.

"Unless the water should be cold enough to chill me, I could, probably for several hours, save myself from sinking.

"The embarrassment of clothing will render more exertion necessary to keep afloat. While it lessens the wearer's ability, according to its quality, as of leather in boots; of metal in buttons, money or watches; or of wool and linen, in coats and shirts, it may alter the specific gravity of the body: causing a buoyant one, to be kept afloat with more difficulty; and a heavy one, to find the bottom more readily.

"The specific gravity of the human body varies so little from that of water, that a very

few ounces may determine the difference. It is, therefore, to be presumed, that exceedingly small weights, may drown a person, such as a few ounces or even pennyweights, appended to the body.

"I would recommend it to every one of my fellow-citizens, to learn the art of swimming as a part of his education. I likewise propose, that he should ascertain by experiment the specific gravity of his body, and his ability to keep it buoyant and balanced; and, seeing that the specific gravity may vary, in the progress of life, as fat or bone may predominate, I suggest the expediency of renewing such experiments from time to time, that the individual may understand his constitution the better.

"For those whose bodies have a greater specific gravity than mine, or in other words, a greater propensity to sink, it may be necessary to throw the head forward, or backward, that it may not bear directly downward upon the thorax and lungs; and it may further be requisite, to make greater exertions with the arms and legs for the purpose of keeping the body afloat, and of giving it a propulsive motion.

"A person who is buoyant, has the before mentioned advantage, of remaining on the surface, after an accident, until help can be brought to him. There is another advantage; this is in a current, which may, in some cases, convey the person with little expenditure of his powers, almost to the land, or even quite ashore. There is yet a third convenience; that where the water is stagnant, and no succour in view, the swimmer, relying on his own exertions, to get on dry ground, may rest himself from time to time, and be saved from sinking under a violent and unremitted struggle to extricate himself from peril. Great advantage may accrue from laying to and resting, once in a while, between the spells of labour.

"I know that rough water, and a surface foaming with white-caps and breakers, may render it difficult for a person either to float or swim with convenience. But, even in such a situation, when a calculation is made upon the chances of escaping, the odds is much in favour of natural buoyancy, aided by the skill to keep one's self up by a proper equilibrium.

"The great secret in this watery exercise, is to keep afloat. To swim, is to move artfully and methodically through the water: a ship swims by means of sails; a barge swims by aid of oars; a canoe swims by the force of paddles. A fish swims by the exercise of his fins and tail; and a frog by the action of anterior and posterior members. The latter animal is the most neat and elegant swimmer of the whole race of quadrupeds. He affords the best model for man's imitation: and if I should be asked for a practical precept on this subject, I would say to my fellow creature, *Go to the frog, thou who wishest to sustain thyself in the liquid element, imitate his motions, and become a swimmer.*

"There are different pulmonic capacities. Some persons have fuller and larger chests than others. They who have the most ample lungs, will be on that account the most buoyant. And this is an additional reason, for every person to determine experimentally, the physical tendency of his body to sink or swim."

2. *Be very careful where you bathe*, if you can swim ever so well, lest there should be weeds to entangle your feet, or any thing else to endanger your life. It is by the neglect of this very caution, that many good swimmers expose themselves to greater danger than those who cannot swim at all, and their very expertness becomes fatal to them, by tempting them into places where their destruction is inevitable. Such, you may remember, was the conduct, and such was the fate, of the unhappy gentleman who was drowned last summer in the river near Cambridge. He was able to swim very well—and therefore despised the thought of danger. Venturing, however, into a part of the river with which he was unacquainted, his progress was soon arrested by the weeds and rushes which grew plentifully at the bottom,* and which entangled him so completely, that all his efforts to break his hold were unavailing—he sunk, to rise no more alive. Assistance was soon procured by his friend ; but

* I have been since informed that a part of this statement is not quite correct: the weeds were floating on the surface of the water, and the swimmer venturing upon or among them, was soon entangled and drowned.

it was too late. The body, when found, was brought to the shore, and the usual means employed to restore it to life ; but in vain. This is not the only instance which has happened within my knowledge in the same place, and by the same means ; but, as it is the latest, I thought an account of it was likely to impress you more forcibly. Thus, you see, it is not enough to learn the art of swimming ; it is also necessary to be very prudent in the exercise of it.

3. *Do not expose yourselves to danger*, in any other way, unnecessarily ; whether it be by walking on the sides of boats ; playing on the banks of rivers, or other deep waters ; sailing in a boat, except in the company of some experienced person, or unless you are well skilled in the management of your vessel ; or venturing upon the ice before it is sufficiently strong to bear you. It would be easy to give you many examples of the fatal consequences of neglecting this caution ; but you can probably recollect some yourselves ; and, as the danger is so evident, I hope nothing more will be needful to fix the rule upon your memory.

4. If, however, after all your care, you should be so unfortunate as to *fall into the water*, or by any other means get *out of your depth*, how ought you to act? If you could swim, you would undoubtedly make for the shore as fast as possible, or, at least, keep yourself from sinking until some one came to your assistance, or perhaps until you reached a boat. One of these you might do, if no impediment from weeds or the cramp prevented you. But what, if you could not swim? Let us hear old Millson* on the subject. "If you wish to drown yourself, I'll tell you," says he, "how to" do it "presently.—Kick and splash about as violently as you can, and you'll presently sink. On the contrary, if, impressed with the idea that you are lighter than the water, you avoid all violent action, and calmly

* I here refer to an excellent little tale, by Mr. Parkinson, entitled, "Dangerous Sports," of which old Millson is the hero, by means of whom, Mr. P. has contrived to communicate, in a very agreeable manner, a variety of good counsel and valuable information, highly worthy the attention of young persons. A few expressions I should like to see altered or omitted.

and steadily strive to refrain from drawing in your breath whilst under the water, and to keep your head raised as much as you can, and gently but constantly move your hands and feet in a proper direction, there may be a great probability of your keeping afloat until some aid arrives." I know it is difficult to have what is called *presence of mind* on such occasions as these, and that it is the want of this very quality which increases the danger tenfold, and often renders escape impossible where, otherwise, it would be easy ; but yet, on the other hand, it is certain, that calmness without knowledge is of no use whatever; and, therefore, a useful hint, if treasured up in the mind, many occur to it at the moment it is wanted, and prove of the most essential benefit.

The following singular instance of a man's life being saved by very simple instructions given him at the moment of danger, is related by Mr. Nicholson, in his Philosophical Journal. " The ship Worcester was moored off Culpee, in the Ganges, in November, 1770. One of the men, who was employed in some occupation forward about the cables, slipped into the water, which

I am sure was running seven or eight knots (or miles) an hour, which is very common in that river. On the alarm being given, most of those who were upon deck ran aft, where we saw the man's head rise above the water, at the same time that he held up both his hands, and after a few seconds splashing, sunk again. Soon afterwards he rose a second time ; and at that instant the commanding officer, who had a hand trumpet in his hand, called out to him—'*Keep your hands down in the water.*' He did so,and remained a considerable time afloat, while one of the boats which were riding astern, was got alongside and manned; and this relief was also retarded by a blunder from too much haste, by which she was cast off without oars on board. His fears must naturally have increased, as his distance from the ship became greater every moment; and I suppose this impression made him forget his newly acquired art ; for he renewed his elevation of hands and dashing of the water, and *again sunk ;* but soon rose again, and for a short time obeyed the incessant and unvaried instruction which was vociferated to him through the trumpet.

Whenever he *deviated* [from this advice] *he sunk ;* and he had disappeared in this manner at least *five* times; and had been carried almost out of hearing before the boat took him up ; which, however, at last happened, without any injury to his health, as he took an oar, and assisted in rowing back to the ship." No. I. 53, or Vol. XIV. p. 330.

5. *Never venture into cold water when your body is much heated by exercise.* This is an imprudence which has often proved fatal. An instance has already been related, in page 88. Nearly allied to this case, is another melancholy one which has been lately reported to us in the newspapers: On Monday evening, the 16th of February, died at her house at Grafton Street, after only two days illness, Lady Catherine Stewart, wife of Major General Stewart, and sister of Earl Darnly. The indiscreet application of water to her head *when she was warm,* is said to have been the cause of the death of this amiable and accomplished woman. Not less dangerous is,

6. The practice of *drinking cold water when you are hot :* many have fallen victims to it ;

and I would therefore, caution you most seriously against it. If you feel thirsty after voilent exercise, and while in a state of perspiration, it is much better to endure the thirst patiently for a while, until you become cooler, than to rush suddenly into so much danger for the purpose of quenching it ; or, if you *must* drink, which I conceive is seldom necessary to be done in such amazing haste, something of a different nature should be taken, as tea or coffee. When cold water is received into the stomach in such circumstances, it seems to abstract suddenly too much heat from it, whilst all the rest of the body is in too high a temperature, and the heat rushing from these parts to supply the deficiency of the other, the whole system is thrown into disorder. Whatever may be the theory to explain its operation, the fatality of the practice is too well known to be denied. The following is an instance of a still more foolish and destructive custom. Miss H— went to a ball in perfect health ; she danced all night, and to cool herself, ate some ICE ; she was seized with a dreadful pain in the stomach, which you may call the cold-ache, and

died within twenty-four hours. Let the body be over-heated, and then keep the foot in ice; you will readily guess the consequence, and you will as readily imagine the injury which the constitution must suffer, when ice is swallowed and retained in the stomach, while the rest of the body is heated much beyond its usual degree. To those who may be inadvertently guilty of either of the preceding acts of imprudence, it may be of use to know, that to swallow immediately a table spoonful of brandy, or a few drops of laudanum, is the best means of counteracting its baneful consequences; though I will by no means undertake to assure you that it will always prove successful. Avoid the danger, and you will have no occasion to trust to the remedy.

The following are the sentiments of Dr. Buchan, on Sea and River Bathing.

"People are apt to imagine, that the simple element water can do no hurt, and that they may plunge into it at any time with impunity; in this, however, they are much mistaken. Apoplexies have been occasioned by going into the Cold

Bath, fevers excited by staying too long in it, and other maladies so much aggravated by its continued use, that they could never be wholly eradicated. Immersion in cold water, is a custom which lays claim to the most remote antiquity: indeed, it must be coeval with man himself. The necessity of water for the purpose of cleanliness, and the pleasure arising from its application to the body in hot countries, must very early recommend it to the human species. Even the example of other animals was sufficient to give the hint to man. By instinct, many of them are led to apply cold water in this manner; and some, when deprived of its use, have been known to languish and even to die.

"The Cold-Bath recommends itself in a variety of cases, and is peculiarly beneficial to the inhabitants of populous cities, who indulge in idleness, and lead sedentary lives. In persons of this description, the action of the solids is always too weak, which induces a languid circulation, a crude indigested mass of humours and obstructions in the capillary vessels, and glandular system. Cold water, from its gravity, as well as

from its tonic power, is well calculated either to obviate or remove these symptoms. It accelerates the motion of the blood, promotes the different secretions, and gives permanent vigour to the solids. But all these important purposes will be more essentially answered by the application of salt water. This ought not only to be preferred on account of its superior gravity, but likewise for its greater power of stimulating the skin, which promotes the perspiration, and prevents the patient from catching cold.

"It is necessary, however, to observe, that cold bathing is more likely to prevent, than to remove obstructions of the glandular or lymphatic system. Indeed, when these have arrived at a certain pitch, they are not to be removed by any means. In this, the cold-bath will only aggravate the symptoms, and hurry the unhappy patient into an untimely grave; it is, therefore, of the utmost importance, previous to the patient's entering upon the use of the cold-bath, to determine whether or not he labours under any obstinate obstructions of the lungs, or other viscera; and where this is the case, cold bathing ought strictly to be prohibited.

"In what is called a plethoric state, or too great fulness of the body, it is likewise dangerous to use the cold-bath, without due preparation. In this case, there is great danger of bursting a blood-vessel, or occasioning an inflammation of the brain, or some of the viscera. This precaution is the more necessary to citizens, as most of them live full, and are of a gross habit. Yet, what is very remarkable, these people resort in crowds every season to the sea-side, and plunge into the water without the least consideration. No doubt they often escape with impunity, but does this give a sanction to the practice? Persons of this description ought by no means to bathe, unless the body has been previously prepared by suitable evacuations.

"Another class of patients, who stand in need of the bracing qualities of cold water, is the nervous. Yet, even those persons ought to be cautious in using the cold-bath. Nervous people have weak bowels, and may, as well as others, be subject to congestions and obstructions of the viscera; and, in this case, they will not be able to bear the effects of cold water. They ought to

begin with the temperate bath, and gradually use it cooler, till at length the coldest proves quite agreeable.

"Wherever cold bathing is practised, there ought likewise to be tepid baths, for the purpose above mentioned.

"The ancient Greeks and Romans, we are told, when covered with sweat and dust, used to plunge into rivers without receiving the smallest injury. Though they might escape danger from this imprudent conduct, yet it was certainly contrary to sound reason. Many robust men have thrown away their lives by such an attempt. We would not, however, advise patients to go into the cold water when the body is chilly; as much exercise, at least, ought to be taken, as may excite a gentle glow all over the body, but by no means so as to over heat it.*

* For further information on this subject, the reader is referred to Dr. Currie's "Medical Reports, on the effects of Water, cold and warm, as a remedy in fevers and other diseases, whether applied to the surface of the body, or used internally; including an inquiry into the circumstances that render cold drink, or the cold bath, dangerous in health."

"To young people, and particularly to children, cold bathing is of the utmost importance. It promotes their growth, increases their strength, and prevents a variety of diseases incident to childhood. Were infants early accustomed to the cold-bath, it would seldom disagree with them, and we should see fewer instances of the scrofula, rickets, &c. which prove fatal to many, and make others miserable for life.

"It is, however, necessary here to caution young men against too frequent bathing; as many fatal consequences have resulted from the daily practice of plunging into rivers, and continuing there too long.

"The most proper time of the day for using the cold-bath is no doubt the morning, or at least before dinner, and the best mode, that of quick immersion. As cold bathing has a constant tendency to propel the blood and other humours towards the head, it ought to be a rule always to wet that part as soon as possible. By due attention to this circumstance, there is reason to believe, that violent head-achs, and other complaints,

which frequently proceed from cold bathing, might often be prevented.

"The cold-bath, when too long continued in, not only occasions an excessive flux of humours towards the head, but chills the blood, cramps the muscles, relaxes the nerves, and wholly defeats the intention of bathing. Hence, by not adverting to this circumstance, expert swimmers are often injured, and sometimes even lose their lives. All the beneficial purposes of cold bathing are answered by one immersion at a time; and the patient ought to be rubbed dry the moment he comes out of the water, and should continue to take exercise for some time after.

"When cold bathing occasions chillness, loss of appetite, listlessness, pain of the bowels, a prostration of strength, or violent head-ach, it ought to be discontinued."

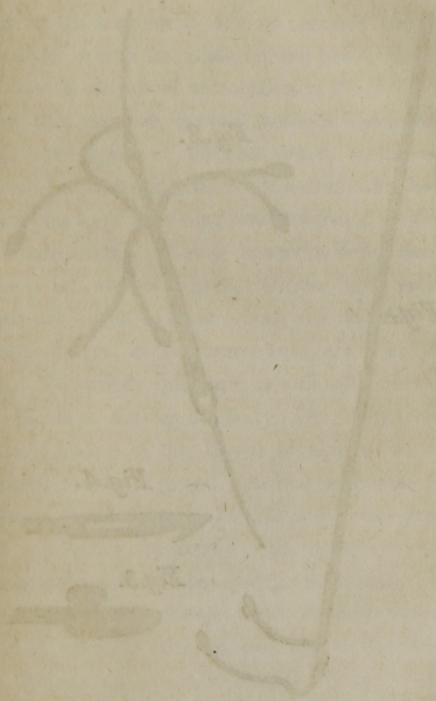
Let us now return to the case of a person in danger of drowning, and inquire, what means should be used to save him. If you are present, and can make him hear you, direct him, as in the case of the seaman of the Worcester, to keep his hands and arms under water until assistance

comes: in the mean time, be as active as possible in throwing towards him a rope, or a pole, or any thing which may help to bring him ashore. "Drowning men," it is said, "catch at straws:" you need not doubt, therefore, that he will eagerly seize whatever you place within his reach to assist him: thus you may succeed, perhaps, in drawing him to shore, and delivering him from his perilous situation. If you can swim, you may, in some situations, be of still more service; but I would not advise you to expose yourselves to the dangers of such a hazardous enterprize, until you are strong enough to bear them; otherwise, you may lose your own life without doing any good to the person you want to assist.* If it be in the winter, and he has fallen through the ice, it will not be wise for you to venture too near the hole for the sake of pulling him out, lest the ice should break again, and you both go down together, to

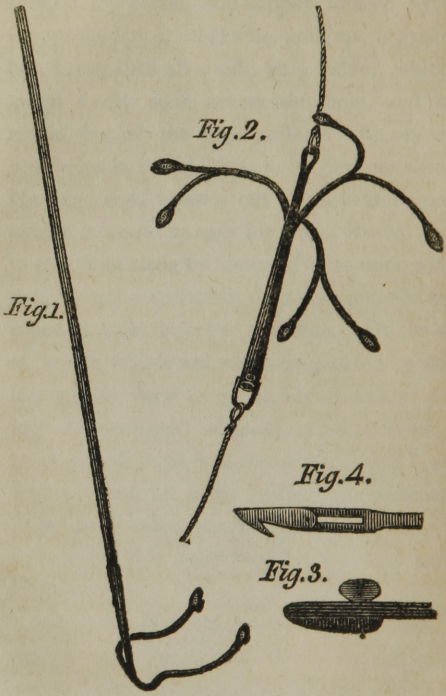
* The best manner of seizing hold of a person whom you wish to save from sinking, is to grasp firmly *his arm* between the shoulder and the elbow: this will prevent him from clasping you in his arms, and thus forcing you under water, and perhaps causing you to sink with him.

the danger of your lives. In this, as in the former case, a rope, or a pole, will be of great service, if the person can support himself by hanging on the ice, or otherwise, until one is procured; but, better than all would be a ladder, which you might easily slide across the hole, and which would furnish the poor sufferer with one of the best helps he could desire in his perilous situation. Having raised himself out of the water upon the ladder, it would be easy for any of the by-standers to drag him along by means of it, as upon a sledge, until he got a sufficient distance from the broken place, to trust the ice to bear him. On the shores of waters which are much frequented by skaters, it might be very useful to have a ladder or two kept in readiness, at some convenient place or places, so as to be had on the least possible notice. These might be made lighter than common ladders, and broader, that is, the rounds, as they are called, might be somewhat longer than those in common use.

After all your care to prevent him from sinking, it may happen to be utterly out of your power: after struggling for a while, and making



DR. COGAN'S DRAGS.



every exertion he is capable of, the unfortunate person may sink at last. What then is to be done? Is he to be left to his fate, and his case given up as hopeless? By no means. Let an immediate search be made for the body, that it may have a chance of restoration to life.

For this purpose, several methods and instruments have been, at different times, contrived. The most common instrument is a drag, like those which you have seen the plasterers use in making their hair-mortar. These, however, being sharp at the points, are not so proper to raise those bodies which are naked as those which are clothed; as there is danger, in the former case, of tearing the flesh. To remedy this fault, as well as to increase the chance of finding the body, Dr. Cogan, one of the founders of the Royal Humane Society, invented two new drags, which I will now describe to you. Fig. 1, Pl. II. is a simple drag, with a pole for its handle; fig. 2, is what the Doctor calls a triangular drag, to be managed by a rope at the upper end, while a cord, with a piece of wood to float, is fastened to the lower end, for the purpose of setting the drag at liber-

ty if it should become entangled, or otherwise regulating its use. Each of these drags is so formed, that instead of having a sharp point at the end to pierce the body, it may either have a sort of knob or rising, as at fig. 3, or a hooked point, as at 4, so that it may be applied equally well either to a naked, or to a clothed body, as occasion may require. The triangular drag is made with a socket at the upper end, that a pole may be put in to work it by, instead of a rope, whenever it is thought preferable; in many cases, the Doctor thinks the union of a pole and a rope at the same time to this drag, will do better than either singly. A boat and two drags, either simple or triangular, or one of each, as the case may require, will in general be sufficient, in ordinary rivers, to bring up any body, which may have sunk to its bottom.

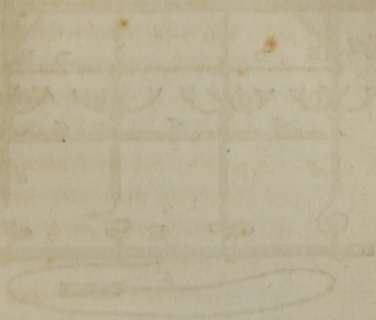
In large and deep rivers, however, especially where there is much tide, as in the Thames, and by which the body is sometimes carried to a considerable distance from the place in which it went down, it is often necessary to have recourse to other means of search. The water may be too

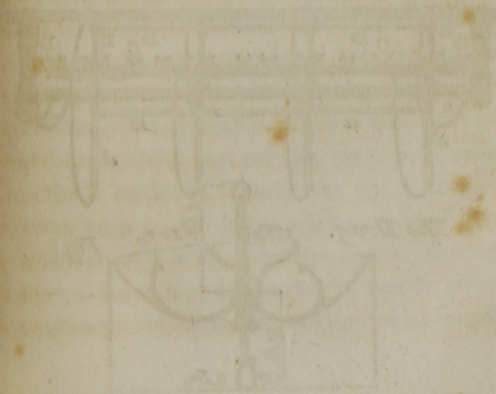
deep for the pole drag to be of any use ; and as in wide rivers the space to be searched is generally considerable, and what is worse, uncertain, the other drag may take up too much time in examining every part of the river where it is likely the body may be found ; and after all may fail of success. To remedy these defects, a drag-net has been contrived, by Mr. W. Phelps, of Fulham ; and an improved apparatus, by John Miller, Esq. of Bedford. Both these inventions appear to be very ingenious, and well calculated for utility.

The *drag-net* is forty yards in length, and about fifteen feet in width ; the meshes are about seven inches from angle to angle. To the bottom are affixed several pieces of lead at equal distances, to sink it; and the top part is kept floating by pieces of cork ; the proportion between the lead and the cork is so well adjusted, that it sweeps the bottom most closely, and preserves, at the same time, its perpendicular direction : thus it must infallibly bring up any body, whether laid or floating, within that space over which it passes ; and this space, from the dimensions of the net, is considerable.

Mr Miller's apparatus is represented in Pl. III. At first sight, I am afraid you will think it a very perplexing affair; but be not too soon alarmed; a little attention will soon remove the difficulty. If you read the following description carefully, and compare it as you go on with the figures in the engraving, taking particular notice of those parts which are pointed out by letters, you will finds it much more easy than you imagine, to understand the whole construction of it, and the manner of applying it to use.

This machine consists of a round piece of deal, A A, fig. 1, ten feet in length, and two inches and a half in diameter; at thirteen inches from each end of it, a square piece of deal, B, twelve inches in length and one inch and a half in diameter, made firm by a bracket, is let in and glued or nailed. To this bar, four six pointed drags, CCCC, are suspended at equal distances. These drags are weighted with two pounds of lead, affixed to run on the lower end of their shafts or stems, to steady them when in action, and to keep their points from running into the ground, which, had they nothing to counteract their weight and





Mr. Miller's apparatus for raising the bodies of persons sunk under water.

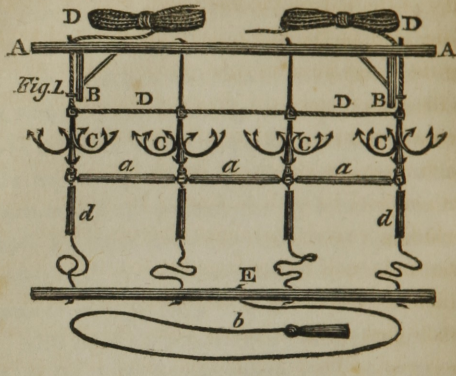
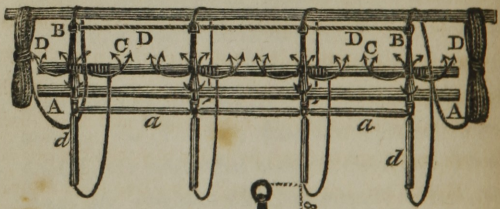


Fig. 1.

G. *Fig. 2.* G.



The Drag.

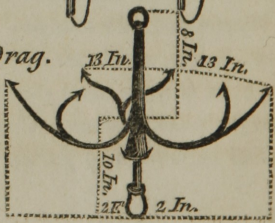


Fig. 3.

preponderancy at top, they would do. The buoyancy of the bar on the one hand, and the weight of the lead on the other, have the effect of keeping the drags in an upright position when at rest in the water, and in a diagonal one when pulled forward, scraping the ground, but not entering it. Each drag, as shewn in fig. 3, has a swivel at both ends of its shaft or stem. Its whole length, including swivels, is about nineteen inches. At nine and a half inches from the top, their hooks, which are three only at their base, but which are subdivided at eight inches from the ends, take their rise. They are curved, and their points, when turned up again, are about four inches below the level of their tops, and thirteen inches asunder; and the out side point of each subdivision is thirteen inches from its adjoining one. The extreme points are split and formed into a double hook, very sharp, and pointing towards the stem.

Holes are bored through the bar A at equal distances, so as the hooks when suspended may approach each other within five inches. Through those at the end, which are larger than the others and made close to the pieces of wood let into the

bar, the principal or drawing ropes DD pass.—This rope is of considerable length and strength, and goes through the top swivels of all the drags. It is then made fast by wooden wedges driven into the holes through which it passes, at such a length as will suspend the two end drags a few inches below the end of the pieces of wood let into the bar. The other three drags are suspended at the same distance from the bar by lines of an equal length coming through the holes in the bar, and tied to their top swivels. These three drags, as well as the two end ones, are made fast to the principal or drawing rope at equal distances, with a piece of tar-line tied to their top swivels; and the two outside drags are kept in their proper situation by the principal ropes going through a staple fixed in the pieces of wood let into the bar; and the two others are kept either from approaching or entangling with one another, or the outside ones, by bored pieces of wood *aa*, of equal lengths, placed between each drag at the bottom, through which and their bottom swivels a rope made fast to the bottom swivels of the two outside drags passes. The drags, however tied or fastened their

swivels may be, always have their own rotary motion free; consequently their points, by their own gravity will always assume and retain their proper position when in action. The bar clears the way for the drags, breaking and removing weeds, or what else might otherwise impede their progress and action. The drags, being suspended to the bar, and separated from each other by nothing but what will give way, are undulatory in their progress as the bottom is, but will yet preserve the full extent of the sweep.

Thus formed, the machine is ready for use, and may be drawn, in this shape, backward and forward at pleasure: but should the water within which it is to be used be thought to contain roots of trees, or any thing likely to occasion the necessity of drawing up or releasing any one of the drags from the obstacle it has met with, then another appendage is advisable. A bar E, less in substance than the leading, but of the same length, and which, for distinction sake, I call the floating-bar. Holes are made through this bar at the same distance from each other as those in the leading-bar; and ropes of equal lengths, (either

ten feet, or any other length which may be chosen) after having been tied to the bottom swivels of all the drags, are to be brought through these holes, and there stopped, either by a knot or pieces of cork at their ends. By this means any particular drag may be got at, without altering the position of the others; for, as far as the flexibility of the rope in the intermediate spaces between the several drags will admit, each is free and independent of the other; and since, by means of these ropes, a parallelism is preserved from the leading bar to the floating one, the floating one of course brings into view the direction the one which is sunk is taking.

Should the current of water be strong, it would carry the floating bar before the leading one, in a drawing-down stream. A rope *b*, therefore, weighted with a stone or piece of lead at its end, is requisite. This will act as a kind of anchor to it; will steady it, and keep it where it ought to be, behind the leading one. If bored pieces of deal *dd*, fifteen inches long, are, after passing the ropes of the floating bar through them, made fast by wooden wedges to those ropes, at three

inches distance from the bottoms of the drags, they will, by their buoyancy and tension, prevent these ropes of the floating bar entangling round the points of the drags.

Fig. 2 shews the state in which the whole should be kept ready for use or removal.

ADDRESS VII.

ACCIDENTS FROM WATER, CONTINUED.—MEANS OF RESTORING TO LIFE PERSONS APPARENTLY DROWNED.—DIRECTIONS OF HUMANE SOCIETY OF NEW-YORK.—RESUSCITATIVE PROCESS IN FAMILIAR VERSE.

HAVING directed you how to raise from the water a body which has sunk under it, I proceed to instruct you in the means to be employed in restoring it to animation. To this point I must request your most serious attention, because the proper method of proceeding in these cases is very little known among the public at large, and because, in so critical an affair, a mistake, which may appear trifling to a person ignorant of the subject, may prove fatal to the individual in dan-

ger. It is possible, too, that one of you may be the only person present, on such an occasion as this, who is acquainted with the methods that ought to be resorted to, and on whom therefore depends, under Providence, he preservation of a fellow-creature's life. Should you, on approaching the spot where a body, just taken from the water, has been brought to shore, and finding every one ignorant of what ought to be done, be yourself also unable to give any direction, or take any step in the business, your attendance and your sympathy will be equally vain, and you may return from the melancholy scene, lamenting that you can do no good. On the contrary, if you have taken care to acquaint yourself with the means which sensible men have contrived, and which have often proved successful, in thes cases, your assistance and advice may be of the most essential service! and if success attend your labours, you may retire with the most pleasing emotions in your breast, and in such a state of mind as a "monarch*

* The mention of this phrase, from one of Ramsay's Tales, brought to the remembrance of one of my hearers a very interesting anecdote of Alexander Em-

might envy." Such actions are not only useful to the individual himself and the community to which he is restored, but they leave "a relish and

peror of Russia, who was the means of restoring to life a peasant of that country.

Riding one day before his attendants, on the bank of the little river Wilna, and not far from the town of that name, in Lithuania, his Majesty perceived several persons dragging something out of the water, which proved to be the body of a man *apparently lifeless*. Having directed the boors around him to convey the body to a bank, he proceeded, with his own hands, to assist in taking the wet clothes from the apparent corpse, and to rub his temples, wrists, &c. for a considerable time, but without any visible effect. While thus occupied, his Majesty was joined by the gentlemen of his suite, among whom was an English surgeon in the Emperor's service, who, proposing to bleed the patient, his Majesty held and rubbed his arm, rendering also every other assistance in his power. This attempt failing, they continued to employ all other means they could devise until *more than three hours* were expired, when the surgeon declared it to be a hopeless case. His Majesty, however, not yet satisfied, desired that the attempt to let blood might be repeated, which was accordingly done, the Emperor and his noble attendants making a last effort in rubbing, &c. when they had at length the satisfaction to behold the blood make its appearance, accom-

and a fragrance upon the mind" of the performer, " and the remembrance of them is sweet."*

Let me advise you to prepare for this utility

panied with a slight groan. His Majesty's emotions were so ardent that, in the plenitude of his joy, he exclaimed "THIS IS THE BRIGHTEST DAY OF MY LIFE," and the tears which instantaneously glistened in his eyes indicated the sincerity of his exclamation.

This favourable appearance occasioned them to redouble their exertions, which were finally crowned with success. When the surgeon was looking about for something to stop the blood and tie up the arm with, the Emperor took out his handkerchief, tore it in pieces, bound up the poor fellow's arm with it, and remained till he saw him quite recovered, and proper care taken of him. His Majesty concluded this act of benevolence, by ordering the restored peasant a sum of money, and otherwise providing for him and his family.

The Royal Humane Society, on hearing of this noble instance of philanthropy, expressed their testimony of the high sense they entertained of it, by voting their gold medal, with an appropriate inscription, to the Emperor, and requesting his Majesty's gracious acceptance of it. See the *Annual Report* of the *Royal Humane Society* for 1807.

* Dr. Horne's beautiful preface to his Commentary on the Psalms.

and these enjoyments, by attending to the rules which I am now going to lay before you, and by every opportunity, in future, of gaining such additional information as may contribute to ends so praiseworthy and so desirable. You will never, I trust, repent the little trouble it will cost you, and I shall most sincerely rejoice if any thing I have said, or may hereafter say, to you, shall tend to this purpose in the smallest degree.

Rules for the Treatment of Drowned Persons, recommended by the Royal Humane Society.

1. In removing the body to a convenient place, care must be taken that it be not bruised, nor shaken violently, nor roughly handled, nor carried over any man's shoulders with the head hanging downward, nor rolled upon the ground, nor over a barrel, nor lifted up by the heels; for experience proves that all these methods may be injurious, and destroy the small remains of life. The unfortunate object should be cautiously conveyed by two or more persons; or in a carriage upon straw, lying as on a bed, with the head a little

raised, and kept in as natural and easy a position as possible.

2. The body, being well dried with a cloth or flannel, should be placed in a moderate degree of heat, but not too near a large fire. The window or the door of the room should be left open, and no more persons be admitted into it than those who are absolutely necessary, as the lives of the patients greatly depend upon their having the benefit of pure air. The warmth most promising of success is that of a blanket well heated. Bottles of hot water should be laid at the bottoms of the feet, to the joints of the knees, and under the arm pits; and a warming-pan, moderately heated, or hot bricks wrapped in cloths, should be passed over the body. The natural and kindly warmth of a healthy person lying by the side of the body has been found in some cases, particularly of children, very efficacious.

3. Should the accident happen in the neighbourhood of a warm bath, a brew-house, bake-house, glass-house, or any fabric where warm lees, ashes, embers, grains, sand, water, &c. are easily procured, it would be of great impor-

tance to place the body in any of these, moderated to a degree of heat little exceeding that of a healthy person; or, in summer, the exposure to sun-shine has proved obviously beneficial. Friction with the hand, or with warm flannel or coarse cloth, so as not to injure the skin, should also be tried with perseverance, for a considerable period of time.

4. The subject being placed in one or other of these advantageous circumstances as speedily as possible, a bellows should be applied to one nostril, whilst the other nostril and the mouth are kept closed, and the lower end of the prominent part of the wind-pipe is pressed backward. The bellows is to be worked in this situation; and when the breast is swelled by it, the bellows should stop, and an assistant should press the belly upward, to force the air out. The bellows should then be applied as before, and the belly again to be pressed; this process should be repeated from twenty to thirty times in a minute, so as to imitate natural breathing as nearly as possible. Some volatile spirits heated, may be held under the valve of the bellows while it

works. If bellows cannot be procured, some person should blow into one of the nostrils, whilst the mouth and the other nostril are closed, as before. The use of the bellows and other parts of the apparatus of the society, are fully explained in the annexed plate. See Pl. IV.

Where bellows, or other apparatus, cannot be had, it will be highly proper to endeavour to excite the natural breathing both of inspiration and expiration, by pressure on the thorax (breast), ribs, and abdominal muscles (lower part of the belly), merely by the hands, so as to press out as large a portion of the internal air as possible; and then *removing* and *applying* the pressure alternately, in order to imitate the natural breathing, and promote the introduction of atmospheric air, in proportion to the quantity pressed out from the air-cells of the lungs. This method of exciting the lungs to action, has been tried with success in the restoration of several persons who in all probability would have perished without it.

5. If there be any signs of returning life, such as sighing, gasping, twitching, or any convulsive motions, beating of the heart, return of the natu-

ral colour and warmth,—opening a vein in the arm, or external jugular of the neck, may prove beneficial; but the quantity of blood taken away should not be large. The throat should be tickled with a feather, in order to excite a propensity to vomit, and the nostrils also with a feather, snuff, or any other stimulant, so as to provoke sneezing. A tea-spoonful of warm water may be administered now and then, in order to learn whether the power of swallowing be returned; and if it be, a table-spoonful of warm wine, or brandy and water, may be given with advantage; and not before, as the liquor might fall into the lungs before the power of swallowing returns. The other methods should be continued with ardour and perseverance for two hours* or upwards, although there should not be the least symptom of life.

6. In the application of stimulants, electricity has been recommended; and when it can be easily

* Dr. Curry is of opinion that no case of a person recently drowned ought to be given up as hopeless till the proper measures have been persisted in, *six* hours at least. See his Observations on Drowning, &c. quoted in Dr. Lettsom's *Hints*, &c. Vol. II.

procured, its exciting effects might be tried in aid of the means already recommended; but the electrical strokes should be given in a low degree, and gradually as well as cautiously increased.—*Reports of R. H. Society* for 1811 and 1812.

Explanation of the Society's Apparatus.

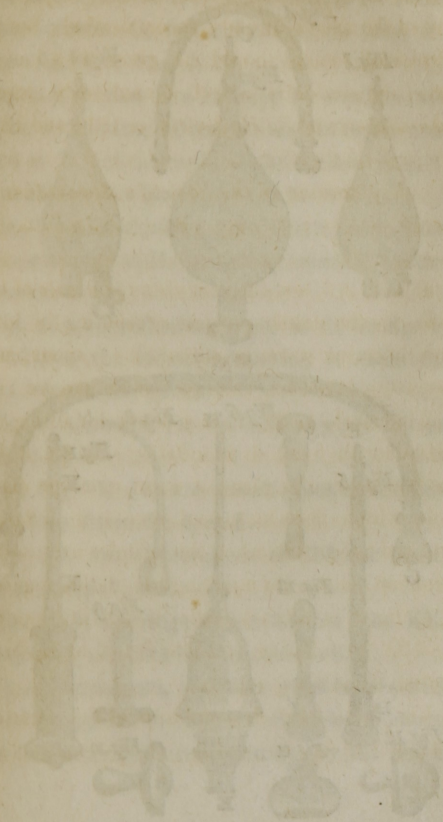
Plate IV.

Fig. 1, 2, 3, are different views of a pair of bellows, for the double purpose of inflating the lungs and injecting warm or stimulating vapour, as of rosemary, lavender, valerain, asafœtida, &c.

The mark A, fig. 2, is a lever for filling the bellows with fresh air in inflating; B, fig. 3, is a moveable circular piece of wood over the clack-hole, which must be turned over it in inflating, and removed aside when the bellows are used as common bellows for injecting stimulating vapours.

C, fig. 2, is a brass nozle, which fits into fig. 5, at D, for inflating, and into fig. 6, at E, for injecting stimulating vapours.

Fig. 4 is a long flexible tube of the same description as fig. 7.



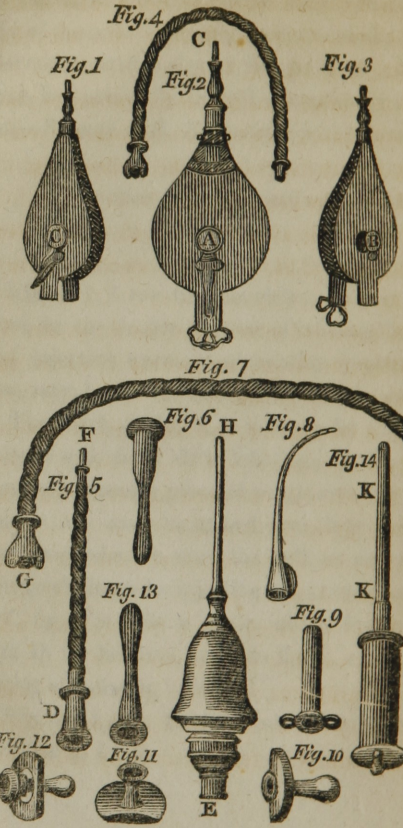


Fig.4
C
Fig.1
Fig2
Fig.3
B
A
B
Fig. 7
Fig.6
H
Fig.8
F
Fig.14
Fig.5
K
G
I
K
Fig. 13
Fig.9
D
Fig.12
Fig.11
Fig.10
E

Fig. 5 is a short flexible tube, fitted to the nozle of the bellows, C, for inflating; its tube, F, fits into fig. 8, 9, 10, 11, 12.

Fig. 6 is a brass box, inclosed in wood, to contain the stimulating substance, and is to be connected at E with the nozle of the bellows, fig. 1, and at H with the long pipe, fig. 7.

Fig. 7, a long flexible tude, which being fitted at G upon fig. 6 at H, is used for injecting vapour or smoke.

Fig. 8, a curved silver pipe, to fit on fig. 5, for inflating the lungs, by passing it down the throat beyond the glottis.

Fig. 9, a canula, for bronchotomy; it fits on fig. 5, at F.

Fig. 10, 11, 12, are nostril-pipes of various sizes; they fit on fig 5, at F.

Fig. 13, are clyster-pipes of different sizes; they fit on fig. 7, at I.

Fig. 14 is a syringe with a flexible tube KK, for injecting cordials into the stomach.

These instruments, and four glass bottles with ground stoppers, to contain remedies, comprehend the instruments recommended by the Royal

Humane Society for the recovery of persons apparently dead. They are contained in a mahogany chest, lined with baize, which has a lift-out for sponge and flannels, and apertures for flint, steal, tinder-box, and matches.

Directions for their use : When intended to inflate, turn the circular piece of wood, B, fig. 3, over the clack-hole; then fix the short flexible tube, fig. 5, to the brass nozle of the bellows, fig. 2, at C. The ivory pipes, fig. 10, 11, 12, for the nostril; the curved silver pipe, fig. 8, for the throat; and the silver canula, fig. 9, for bronchotomy ; each of which, as before described, is adapted to the plug of the short flexible tube. When you wish to inflate, press the brass lever, A, fig. 2, open the bellows ; then let go the lever and, by shutting the bellows, force the air into the lungs.

To extract the air, open the bellows without touching the lever; and to expel the foul air, press the lever (to open it,) and shut the bellows, by which means the extracted foul air will be thrown away; then still keeping the lever open, you are to open the bellows, by which means it will be

again filled with fresh air: let the brass lever down, and proceed to imitate inspiration and expiration. It may be, perhaps, necessary at first, to fill two or three times before you extract once; and for this purpose, you must remember to keep the lever open, whenever the bellows are emptied, in order to take in more fresh air, by the dilation, &c. &c. When the brass lever is shut, and the circular wood is removed from off the clack-hole, it is a common pair of bellows.

The vulgar notion, that a person will recover in a few minutes, or not at all; and the ignorant, foolish practice of ridiculing those who are willing to persevere, as if they were attempting impossibilities, has most certainly caused the death of many who might otherwise have been saved. Most of the above rules are happily of such a nature, that they may be begun immediately, and that by persons who are NOT *acquainted with the medical art*;* yet it is always advisable to seek

* The newspapers of the present month, (June, 1812,) give an account of a young person who was drowned by throwing herself into the Thames, near Milbank, on Saturday the 30th of May. She was

the assistance of some regular practitioner as soon as possible ; not only as bleeding is proper, and sometimes necessary, but as it is to be presumed, that such a one will be more skilful and expert, and better able to vary the methods of procedure as circumstances may require.*

To the above excellent rules, sanctioned by the Royal humane Society, and circulated in their annual reports, it may be proper to add the following :

Directions from the HUMANE SOCIETY, *established some years ago in the city of New-York.*

The following directions are the result of careful attention to the various subjects to which they relate. Particular respect has been paid to the reports of the Humane Societies of America and Europe. The greatest attention was due

immediately observed ; and assistance being afforded by means of boats, the body was brought on shore, after it had been *seven* minutes in the water. There were, at the time, *symptoms of animation, but no medical man could be found before she was entirely dead.*

* See Dr. Lettsom's *Hints designed to promote Beneficence, Temperance, and Medical Science*, Vol. II. p. 290.

to the ingenious and successful experiments, and to the publications of those physicians and philosophers who have made these useful inquiries their favourite study—The Medical Counsellors have duly attended to the latest discoveries and improvements in Medicine, added those observations which they have found most safe and successful in this kind of practice in repeated trials, and avoided Technical terms as much as possible.

The facts are arranged in the most plain and easy manner, so as to be put into practice by all who are able to read, and will pay proper attention to the very useful and highly important objects of the Society.

Sudden apparent death may arise from drowning, hanging, drinking cold liquors, and eating ices in warm weather; the vapours of wells, cellars, fermenting liquors, and from the fumes of burning charcoal, and various metallic substances; from lightning; from exposure to excessive heat or cold; from confined rooms, and various other causes.

To recover those who are apparently dead, by drowning.

1. The body should be taken out of the water with as much care and tenderness as the circumstances will permit; endeavouring always to keep the head raised a little more than the body.

In every case, hanging it by the heels, under the erroneous supposition of discharging water from the lungs; rolling it on a barrel, or putting it across a log; and every kind of jolting and shaking, must be absolutely avoided as extremely injurious.

2. The body should be carried on a wide board, or in some other easy manner to the nearest convenient place, into as large a room as can be had; the clothes must be immediately taken off, the whole skin wiped dry with flannel and examined, so as to determine whether any wounds have happened to it, and the body should then be wrapped up in warm blankets. It should then be laid on a table, if at hand, with the head a little raised; and, if the weather be cold, before a fire. All crowds of people must be kept off; and no more than six persons must ever be admitted, and on many occasions they will be too many.

3. As soon as possible after the foregoing directions have been attended to, a bellows,* which must be clear of all dirt and dust, should be applied to one nostril, while another person should close the other nostril and the mouth, and at the same time press back the lower part of the wind-pipe, where it is largest, or that part sometimes called Adam's apple. The person who holds the bellows, must then blow gently, and repeat the blowing five or six times; when this is done, and the breast is a little swelled, a third person must press the belly up, so as to force the air out; this must be done quick and effectually. The first must then repeat the blowing three or four times, and the third again press up the belly and force out the air.

N. B. This operation must be repeated steadily, five or six times, and occasionally or frequent-

* The bellows most convenient for this operation should have a flexible pipe or tube, one end of which should be made to pass into the nostril close and easy. If bellows, proper for the operation, cannot be procured, a pipe or quill may be used, some person blowing into the nostril through the quill; but this is never to be done when a proper bellows can be had.

ly renewed, at the discretion of the attendants, so as at length to imitate natural breathing as much as possible.

4. After the lungs have been filled with air, a number of times by the means above mentioned, the whole body, but particularly the breast, is to be rubbed with the hand, and, if oil and the spirit of hartshorn can be procured, let them be mixed in equal quantities, and rubbed on the breast and whole body; or, if these cannot be procured, the body may be briskly rubbed with flannels moistened with rum or gin, made a little more than blood warm. During this time, the means recommended in the third article, viz. the use of the bellows is still to be continued.

5. As soon as the patient is able to swallow, and before, if means* can be found to introduce it into the stomach, he should take from twenty to one hundred drops of the essence of peppermint in a glass of water, or a tea-spoonful of Vit-

* This may be best done by means of a flexible tube or syphon, which is to be introduced into the gullet, so as to convey liquors to the stomach. Into the upper end of the tube, a small tunnel should be put, for conveying the liquors more readily.

riolic Æther, mixed with about ten or fifteen teaspoonfuls of pure water; but, if these are not easily procured, let him swallow half a gill of brandy, spirit, or wine, as is most convenient, and the dose should be repeated at the discretion of the persons who may have the care of the patient.

6. The feet and legs should be put into water, about blood-warm, and in the space of five or six minutes after this is done, warmer water should be poured into the vessel so as to raise the temperature to about 98 degrees of Fahrenheit's thermometer, which is two or three degrees above the blood heat in man. The feet should be continued in the warm bath, half, or even a whole hour, during which time, the body should be gently raised a little, and then supported with pillows and bolsters, or in any other convenient way, while brisk friction should be used over the whole body and limbs, especially the feet and legs; at the same time sneezing should be provoked by tickling the nostrils with a feather, or some other irritating substance.

7. If these means appear to give no relief within thirty, or at most forty minutes, after the recov-

ery is attempted; warm water, with as much spirit of hartshorn, rum, or other distilled liquor mixed with it, as will produce a stimulating effect, ought without any further delay, to be used for a clyster; this operation must be frequently repeated; after which the belly should be moved with the hands of one of the assistants, and the liquor be injected as far up the bowels as possible, till a motion ensue, upon producing which much of the success of the revival will depend.

N. B. Bleeding in the arm or jugular veins, cutting open the wind-pipe, vomiting, and the use of tobacco, being remedies of very doubtful and uncertain effect, perhaps always injurious, are absolutely to be avoided, unless by the express direction of a skilful person, who may judge by the symptoms, in what particular cases these remedies ought to be tried.

3. Electricity* being a most powerful agent, is a very proper remedy, when employed by those

* We fully agree with those who observe that electricity, and other remedies of a difficult nature, are not to be proposed to common operators. "They have neither instruments, heads, hands, or time for

physicians, or others, who understand its operation, and know how to use it with safety and with a probability of success. In all cases, the machine should be made to excite powerfully, otherwise the attempt to use it will be a loss of time, and so the precious moments of recovery may be lost forever. When it is practicable to use electricity, the patient may be properly placed on an electrical table, that is, insulated, and then electrified as much as possible; after this is continued four or five minutes, the hand of one of the attendants should be applied close to the body, so as to take strong sparks, which should be drawn from the left side over the heart. If this should produce no appearance of life or motion, light shocks (which should be increased each operation) should be sent from the breast bone through to the back, or from side to side, so as to excite the heart to action, if possible. Rubbing the electrified body with a woolen cloth, will also be very

such experiments—and it is dangerous to lead them from the other parts of the salutary practice, to the exercise of which they are equal." But whenever it is practicable to use electricity, the above directions are found to be the best.

proper, and this should be continued for the space of half an hour.

9. In all cases, one of the principal objects should be to restore a healthful degree of heat to the body, without which animal motion or life cannot be renewed. This is to be done by perseverance in the foregoing directions, and particularly by applying warm clothes to the body, which should be moistened with hot spirits, and by rubbing the body with them, and by applying hot bricks made wet with vinegar to the soles of the feet. If possible, two vigorous and healthful persons should be persuaded to strip themselves naked and lie on each side of the body, embracing it closely and imparting their animal heat to the patient. But a warming pan with burning coals, should never be used, on account of the intemperate heat and the fumes of the coals.

10. In all cases of sudden apparent death, where no organ essential to life appears to be destroyed, the foregoing methods are to be persisted in, at least four hours, with uninterrupted perseverance; and no others are to be used without the express advice of a physician, who should be

called to the patient as soon as possible. Whenever the methods employed are successful, great care ought to be taken to restore the equal action of the system; to relieve the convulsive motions; to make every thing quiet and easy about the patient; to keep the bowels free, to use moderate bleeding when the symptoms in the recovered person require it, and to regulate the diet and exercise.

N. B. All hurry, indiscriminate and violent efforts and operations, are carefully to be avoided, and all injuries to the skin; every thing is to be done with discretion and moderation; no disagreement about the mode of treatment should be suffered to take place at the critical time of attempting recovery, which are too apt to be the case among the confused crowd of advisers, who are generally collected together on the occasion; some from the best motives, to afford assistance, and others from curiosity.

Of Hanging.

As some persons, either through melancholy or distraction, attempt, by means of hanging, to destroy themselves; and as accidents, producing

like effects, sometimes happen, it is thought not improper to publish some directions how to proceed in such cases; and here it is to be remarked, that, as sometimes there may be an advantage in bleeding, it will be particularly necessary to have recourse to medical advice :—The same general methods of cure are to be pursued in this case as in that of drowning.

Of drinking Cold Liquors, and eating Ices in hot weather.

To prevent the bad effects of Cold Liquors.

1. It will be best never to drink while very hot: or,

2. To drink a little at a time, holding it in the mouth some moments before swallowing: or,

3. To hold the vessel some moments with both hands, till the liquor may be supposed to be tempered: or,

4. To wash the hands and face, and rinse the mouth and throat before drinking; and then to drink moderately, and often repeat it.

The eating of Ices, having become a fashionable luxury in hot weather, it is the more necessary to mention the bad effects of this practice :—In

general, they are apt to produce cholic, cholera-morbus, and dysentery, or some other disease of the stomach and bowels; and frequently in women, especially those of a delicate habit, this practice produces a suppression of the menses, and an ensuing loss of health.

In many cases, the taking of ices will be highly salutary. In some diseases, they may be used with great advantage, as in burning, or inflammatory fevers, and for local applications in certain other diseases; but they never can be swallowed with safety, unless the following cautions be attended to: viz.

1. Hold the vessel in the hands a few moments before taking the Ice into the mouth.

2. Let the Ice, particularly Ice-Creams, be completely dissolved in the mouth before it be swallowed. This many are apt to neglect, on account of its producing pain in the teeth; but, if the ice should be conveyed into the stomach, it will produce a much more serious evil than the toothach.

3. All persons in health, who regale themselves with the eating of Ices, as a mere delicacy, in the

warm season, immediately after taking them, should swallow a glass of wine, or some spirituous drink.

To remove the bad effects when they have taken place.

1. Immediately cause the patient to drink a glass of some spirituous liquor.

2. If Laudanum can be had, let him take from 10 to 100 drops, according to his age, habits, and the violence of the pain.

N. B. People habituated to the use of ardent spirits, require much larger doses of Laudanum than others; but in all cases it will be safest to use other stimulants, on account of the bad effects of large doses of opiate medicines.

3. Let the patient be removed to a place where he can have warm applications made to his body, particularly to the pit of the stomach, so as to restore the heat thereof.

4. Continue these means some time, and rub the body with warm flannels; occasionally administering warm spirituous drinks.

5. If the person be apparently dead, proceed as in the case of drowning.

6. Nothing further is to be attempted without medical advice, which will frequently be necessary to prevent diseases from being the consequence of such a practice.

Of the Vapours of Fermenting Liquors, Lime-kilns, foul air of Mines, and the Fumes of Wells, Cisterns, and other close places.

Where there is danger of bad effects from any thing of this kind, there should be previous attempts to procure a free circulation of air, in every possible way.

Fires, the explosion of gunpowder, quicklime, and limewater, will be useful.

When it is necessary to go into wells and cisterns, and other close places containing poisonous vapours, a lighted candle should be first let down into those places; but as experience has proved, that it is not always safe to venture even where a candle will burn; and that some men by custom will live where others cannot; it is important that the greatest precautions be used in entering places where there is reason to fear a danger of this sort.

It will be necessary, therefore, that no person enter without being within the observation of others, and so situated as that they may afford him assistance.

When a person is apparently dead, the same means as are directed for drowned persons, are proper.

But as such accidents sometimes happen where even these are not to be had; it is to be observed, that persons have been recovered by having been stripped, placed in the open air, and having cold water dashed on them for some time.

Warmth and friction have in other instances been attended with the happiest success.

In a particular manner, the face, temples, whole head and breast of the patient should be rubbed with strong vinegar, which should be applied to the nostrils by means of any common cloth.

Of suffocation by burning Charcoal.

In general, the treatment is the same as recommended in the preceding article. But, the par-

ticular directions for avoiding the bad effects of the fumes of these substances, are,

1. Not to remain near them when burning.

2. To burn them in a chimney or the open air.

N. B. The burning of charcoal in pots and close stoves should most carefully be avoided in the cabins of ships and vessels, and in all tight rooms, where chemical or mechanical works are going on, because fatal events have often taken place, where this caution has been neglected.

3. To avoid being so placed as that the current of air will blow the fumes upon you; this is particularly necessary in all operations with copper, mercury, lead, arsenic and cobalt.

4. It will be well to have a tub of water in all rooms where charcoal is burnt, and where metallic processes are carried on.

5. In all cases of sudden faintness, or fits, where works of this sort are carried on, vinegar being one of the most common, has also in repeated trials been found to be one of the best of remedies.

Of Lightning.

To avoid its bad effects.

1. A Conductor.

2. When in a house, the middle of the room is the safest place.

3. When exposed to the storm abroad, the middle of a plain is safer, avoiding single trees, especially chesnut trees.

4. When in a wood or forest, avoid standing under, or near any very tall trees.

5. During the rising or continuance of a thunder storm, avoid touching the conductors of any building, or being very near them, especially at an open window.

6. In the country, shun all trees where scythes and other metallic implements of husbandry are hung up.

In case of the suspension of animal motion, the remedies are the same as for drowning; except that much stronger shocks of electricity should be sent from the breast, through to the back, and from one side of the breast to the other; and this should be done with as little delay as possible, in

order to excite the heart, and the system of blood vessels connected immediately with it, into motion.

Of Still-born Infants.

These are to be treated, when the organization seems to be perfect, and there are no appearances that the child had suffered death many hours before the birth, much in the same manner as persons who suffer by drowning; but more gentle and tender treatment must be observed; the temperate healthful warmth must be kept up; the lungs must be inflated by blowing air into the nostrils, and at the same time keeping the mouth shut; the head is to be kept raised, and gentle friction with warm water to be used all over the body. In numbers of instances, where this plan has been pursued for the space of an hour and an half, or even longer, the animal motion has been restored.

Of the effects of eating the sub-acid fruits to excess; such as currants, cherries, apples, peaches, melons, &c.

The effects are very similar to those that arise from drinking cold liquors and eating Ice-Creams in the hot season; and in general the same method should be observed to effect a cure. But to prevent the injurious effects of taking fruit intemperately in the hot season, it will always be adviseable to take a little good wine, or ardent spirits, immediately after eating the fruit. The eating of a little good old cheese with some bread, immediately after the fruit, is also a very salutary practice.

N. B. There are but few cases that can be relieved by emetics, and whenever these are administered, it should be done by the advice of some judicious person, and with great caution.

Of extreme Cold.

To prevent the effects.

1, As the extremities, and particularly the

feet, are first affected, it will be necessary to guard the parts with woollen cloths, which should be clean and dry, if possible ; the feet should be guarded with socks within the shoes or boots, or which is better, over them ; these may be of woollen yarn, or of furs, or cloth, and should cover the whole foot and leg.

2. Persons always sustain cold best who avoid hunger, take a due proportion of sleep, and are temperate in the use of spirituous liquors.

3. It will be proper to give as much motion to the body and limbs as the situation will admit ; where this cannot be done, and there are two or more together, let them place their feet against each others bodies, or what will be much better, against the breast and belly of a dog, or any other animal covered with hair.

4. Danger first shows itself in numbness and sleepiness.—When a person perceives this, he should force himself to exercise ; and, when several are in company, any one in whom these symptoms are perceived, should be obliged to take all possible motion ; in this situation, it will be of the greatest consequence to inspire resolu-

tion and courage in those who appear to fail first; and it will be adviseable to excite the passions, particularly anger, hope and pleasant emotions of the mind to produce a greater degree of animation.

To Cure.

When the animal motion is stopped, proceed as in the case of drowning; except so far as what relates to the frozen parts of the body. When this is the case, the following directions will be safe and very useful.

1. Place the body in a cool room, without fire.

2. Use the bellows as in drowning, at the same time rubbing the whole body with cloths dipped in cold water; these means must be persisted in for several hours; and all hot applications are to be most carefully avoided at first, and afterwards introduced gradually as in the case of drowning.

3. In case any member should become frozen, let it be immersed in cold water, into which a small quantity of snow or ice has been put; when it has remained in this state twenty or thirty min-

utes, or till the frost appears to be taken out, let the cold water then be used without the ice for the space of an hour at least, so as to keep the part from the air, and restore the warmth and circulation gradually.

4. The patient, during all this time, and for many hours after, should be kept in a room without any fire; a brisk purge should be administered; after the operation of which, the frozen part, having been continued for a proper length of time in the water, should be anointed with a little oil, and the part being wrapped up properly, the patient should go to bed.

All spirituous drinks should be avoided, and the patient should be very abstemious in his diet, to moderate the subsequent inflammation or mortification.

The effects of scalding or burning are to be treated in a similar manner, provided the applications can be made immediately after such accidents.

N. B. All hot poultices should be avoided in the case of frost; but yest will be of great utility, applied all over the diseased part, in a cool state, and renewed once in two or three hours.

Of the heat of the Sun.

The degree of danger when exposed to the sun, may be judged of from the following symptoms, viz.

1. Head-ache, with throbbing and giddiness.
2. Disposition to faint, and stupidity.
3. Heat and dryness of the skin, and redness of the eyes.
4. Difficult breathing, speaking and moving.

To prevent these symptoms.

1. Avoid all considerable motion, exercise or labour, when exposed to the powerful rays of the sun.

2. Avoid spirituous liquors and full meals at such times, especially when there is a necessity for much motion.

3. Wear a white hat, or one covered with white linen or paper, and a white dress in general, will be advantageous.

4. It will be well to seek a shade on the appearance of any of the above mentioned symptoms, and to loosen all tight things about the body, particularly the neck.

To cure these Complaints.

1. The patient should be removed into a cool place, and all ligatures about him should be loosened.

2. Put the feet, and if possible the legs, into warm water, supporting the body at the same time.

3. Cover the head with linen dipped in cool water, or vinegar, which is to be preferred.

4. If the pulse be absent, or very feeble, give the patient spirits and water in small quantities at a time; if, on the contrary, the pulse be remarkably strong, use moderate bleeding, and let him take cooling drinks, such as lemonade, buttermilk, vinegar and water, &c. These should be taken moderately, and often repeated.

Of Intoxication or drunkenness.

The symptoms are too well known to need any description.

The treatment must be varied according to different constitutions and circumstances; and in case of sudden apparent death, the foregoing rules must be observed. In general, it may be recom-

mended to lay the body in an easy posture, and in a cool place, with the head a little raised; to loosen all tight things about the body and limbs, particularly the neck; to suffer the patient to sleep, to make him smell the fumes of strong vinegar, and to rub the body gently with vinegar and water. After the debauch is over, the bowels should be moderately purged, or opened with a clyster, unless the strong liquors have done this before; or produced vomiting, which should never be much urged with medicines. Let him drink freely of cool water at the time of intoxication, and swallow a few spoonfuls of olive oil, or some other mild oil; but afterwards, when he begins to suffer debility and sickness at his stomach, let the stimulus of ardent spirits be changed for something more durable, such as good soup, well seasoned with salt and pepper, occasionally using some cordial drink, which the effect of habit in those who have made too free a use of strong liquors, will often absolutely require; exercise, and even labour in proportion to the strength of the patient, should also be enjoined.

There are but few who have resolution enough to conquer a tippling habit; but this number would be greater, if they knew how to proceed; for their benefit the following advice is offered.

The only effectual method to get rid of habitual intoxication is, to diminish the quantity of strong liquor daily and gradually, which, with inflexible resolution, will destroy the habit; or to change the stimulus of strong liquors for something more durable, and which is not endowed with any stupifying property: for this purpose, proper food should be taken, and an electuary composed of the powder of Peruvian bark, wild valerean, or Columbo root, with the oil of Cloves, or some other essential oil, has, in many cases, been found very useful; a piece as large as a nutmeg, should be taken several times in the day, especially when a sinking faintness is felt at the stomach.

All who have studied the nature and properties of the stomach, know that the tone of that organ is destroyed by the excessive use of strong liquors; the liquor of the stomach becomes vitiated and sour, and the food is consequently not

properly digested and converted into good nourishment, so that the whole body soon becomes injured.

In this situation, one of the best things that can be done, is to abstain entirely from all spirituous liquors; such as rum, gin, brandy, whiskey, Roman and hot purl, mint juleps, and all other mixtures of spirituous drinks, many of which are rendered still more pernicious by being mixed with metallic and other poisonous substances.

To relieve the patient from some of these evils, the newly expressed juice of lemons or limes has been found serviceable; but what is much better, let him take from twenty to one hundred drops of the spirit of hartshorn, in a small cup of water, several times in the day; this will tend to destroy the morbid acid in the stomach, and to keep out the wind, as dram-drinkers express it, much more effectually than drams themselves, and by being a substitute for the stimulus of the stupifying liquors, it will prevent languor, faintness and that dejection of mind, which too frequently drive the restless victim to the delusive relief of the bowl and the glass.

Temperance in eating should also be strictly observed, the want of which is often productive of as bad effects as intemperance in drinking, and even worse.

Persons who fall sacrifices to these habits generally imagine they are troubled with bilious disorders; and of their own choice, or by the foolish advice of others, as ignorant as themselves, they fly, for every little uneasiness arising from the derangement of the digestive organs, to the use of emetics, by which they are but too often hurried out of existence, especially when this is accompanied with a liberal use of the lancet.

Of Convulsions, Swoons, Fits and Trances.

These sometimes produce the common appearances of death, while the patient is in a recoverable condition. As these events arise from some peculiar state of the imagination, violent operations of the passions, or from some disease of an earlier date, as epilepsy, catalepsy, hysterics, &c. no very particular directions can be given in this

place, except calling for proper help and advice in dangerous cases, as soon as may be.

And it is always to be remembered, that persons have sometimes been recovered from apparent death, after sudden and violent sickness, as in the case of jail and other malignant fevers. After the proper methods of recovery have been tried for a sufficient length of time, and without success, the interment of the body ought to be delayed in all instances, till evident appearances of a beginning putrefaction have taken place, for in almost all cases where the body remains apparently whole, putrefaction is found to be the only certain evidence of the absolute extinction of life, or suspension of animal motion. If this caution be not properly observed, after all the usual methods of recovery have been tried in vain, the person may suffer the indescribable horrors of those, who, we have reason to believe, have, in some instances, while the spark of life remained in a latent state, been prematurely committed to the grave. By these cautions, the " terror of premature interment," and the anxious fears in the minds of the surviving relatives, that

such an event may have taken place will at all times be prevented.

The Resuscitative process has been thrown into familiar verse by Mr. George Dyer.

Philanthropy.

Whoe'er would know, how great the joy, to save
Friend, child, or parent, from the untimely grave,
And snatch from death the victim of despair,
Or gain the generous lover's grateful prayer,
Studious attend ; while we with care explain
How you the heartfelt pleasure may attain.

Great Caution, and Receiving Houses.

When in the stream, by accident, is found
A pallid body of the recent drown'd,
Though every sign of life is wholly fled,
And all are ready to pronounce it dead,
With tender care the clay-cold body lay
In flannel warm, and to some house convey :
The nearest cot (whose doors still open lie
When mis'ry calls) will every want supply.

Infants.

Is it a child, yet weak in strength and age ?
Then let thy thoughts the gentlest means engage ;
In some warm bed between two persons laid,
Infant or child may claim no further aid.

Adults.

If woman, man, or youth, attendance claims,
Then mark the rules that sage experience frames;
First lay the body on a couch or bed,
With gentle slope, and slightly raise the head.

The Sun, &c.

Do Winter's cold, or damps, extend their gloom?
Let moderate fires attemper soft the room;
Or, does the sun in summer splendour stream,
Expose the body to its cheering beam.

Friction.

And, when with tepid cloths it well is tried,
Let friction soft with flannels be applied.
These lightly sprinkle first, ere you begin,
With rum or brandy, mustard or with gin.

Communication of Heat.

Bottles, or bladders, fill'd with water hot,
And heated tiles, and bricks, should next be got;
These wrap in flannel, with precaution meet,
And then apply them to the hands and feet;
Nor with the heated warming-pan be slack,
But move it gently o'er the spine and back.

Inflation.

Let one the mouth, and one the nostril close,
While through the other the bellows gently blows:
Thus the pure air with steady force convey,
To put the flaccid lungs again in play.
Should bellows not be found, or found too late,
Let some kind soul with willing mouth inflate;

Then downward, though but lightly, press the chest,
And let th' inflated air be upward prest.

Tobacco Fumes.

But should not these succeed, with all your care,
With vigour then to different means repair ;
Tobacco smoke has often prov'd of use :
Nor proudly thou the potent herb refuse.
Th' enliv'ning fumes with watchful patience pour
Into the bowels thrice within the hour ;
If this should fail, tobacco clysters ply,
Or other juice of equal energy.

Agitation.

Mere agitation oft assistance gives,
And slumb'rous life awakening, oft relieves
Let some assistant hands, with sinews strong,
The undulating force awhile prolong.

Fortitude.

Nor yet the important doubtful task forego,
Nor quit too hastily the scene of wo ;
Try other means, nor quit the glorious strife,
Till gain'd the prize of slow-returning life.

Additional Means of Heat.

Shouldst thou these means a tedious hour pursue,
Yet not one gleam of life returning view,
Despair not ;—still for kind assistance fly
To brewhouse, bakehouse, or to glasshouse nigh :
Haste, haste, with speed the remedy embrace :
In ashes, grains, or lees, the body place ;
There let it covered rest ; there gently meet

The latent blessing of attempered heat.
On health's true standard all are well agreed,
The heat should not that measure much exceed:
Great good from hot-baths, if with ease obtain'd,
With early care applied, is often gain'd.

Electricity.

Sometimes, though life is cold in every vein,
And Death o'er all the powers may seem to reign,
Th' electric fluid, nature's purest fire,
The soul reviving vigour can inspire;
Breathe through the frame a vivifying strife,
And wake the torpid powers to sudden life:
Yet more—this shock of life is oft the test,
Though all who look may be of doubt possest;
Let fly the sudden shock, if life remain;
Spasms and contractions instantly are plain.
No longer doubt, no more the case debate,
You see the body in a living state.

Resuscitation.

When these, or other pleasing signs appear,
Oh! then rejoice; returning life is near:
Proceed, proceed,—if he can swallow aught;
Pour lukewarm water careful down the throat;
Give brandy, rum, or wine, a small supply,
Whatever he can bear, or may be nigh.

Prudence.

Now see your patient snatch'd from instant death,
Restor'd to draw once more, the vital breath:

Go then—convey him with a friendly arm,
And let him feel, in bed, the comforts warm.
Ah! cease from noise: his half-shut eye-lid shows
He wants the soothing of a sweet repose.

Gratitude.

Soon, soon again from slumber shall he wake;
Soon, soon again of cheering health partake:
And now, restor'd to partner, child, or friend,
Shall bless your name to life's remotest end.

Perseverance.

But, ah! a fatal error oft has been,
When life, though latent, was not quickly seen,
Then thinking that the conflict all was o'er,
That life was fled, and could return no more;
Who much have wish'd, and yet despair'd to save,
Too rashly doom'd the body to the grave.
More patient thou, with ardour persevere
Four hours at least: the gen'rous heart will fear
To quit its charge, too soon, in dark despair;
Will ply each mean, and watch th' effect with care:
For should the smallest spark of life remain,
Life's genial heat may kindle bright again.

ADDRESS VIII.

DANGERS OF THE SEAS.—SHIPWRECKS; AND MEANS OF DELIVERANCE.—LIFE-BOATS.—LIEUT. BELL'S AND CAPT. MANBY'S METHODS. MAN-SAVER, CORK-JACKET, MARINE SPENCER, LIFE-PRESERVER.—ARABIAN AND CHINESE METHODS.

We will now direct our attention to accidents from water on a larger scale. How fatal soever our ponds and rivers often prove, the ocean is much more destructive to the life of human beings. It is not here, in solitary instances alone, that we must contemplate the work of death: not scores only, but hundreds, are sometimes swallowed up at once; and thousands are every year thus suddenly plunged into eternity. We, who live at a distance from the shore, and have never, perhaps, seen a shipwreck, or heard the piercing cries of the sinking sailors mingled with the roaring of the winds and waves, can form no adequate conception of the horrors of such a scene. As the old ballad says,

" You gentlemen of England,
That live at home at ease,
Ah ! little do you think upon
The dangers of the seas."

Indeed, if we were to think about them ever so much, we should have a much weaker impression of them, than a single opportunity of witnessing them would give us. In either case, I hope, we should learn to feel for the sufferers, and if we should happen to be present on any such occasion, I trust we should be glad to render them any assistance in our power.

The greatest dangers to which ships are exposed, are for the most part within sight of shore, or even within a short distance of it, where rocks, and sand-banks are ready to receive the vessels, and upon which they are sometimes dashed to pieces by the tempest, or run aground so as not to be got off again in such a state as to be fit for sailing. In such a case, it is evident the crew must perish, unless there be some means of conveying them to shore; and this is very difficult, if not impossible. Common boats are often of no use, being either unable, on account of the roughness of the sea, to reach the vessel, or in danger

of being overset by the waves. For the same reason many have perished in their own boats, when, having loosened them from their vessel, they have attempted to reach the shore in them.

Such dangers as these gave rise to the invention of the life-boat, which was first constructed at South Shields, in the year 1789. Some gentlemen of that place, lamenting the frequent recurrence of shipwreck and its dangers, offered a premium of two guineas to the person who should produce the best model of a life-boat. The premium was awarded to Mr. Greathead, a shipbuilder of Shields; and several boats have since been built upon his plan, not only there, but on many other parts of our coast.

The boat is about 30 feet long over all, and 10 feet broad, built in the flaunching manner, as represented in the cut, and decked at the floor heads, rows twelve oars, fixed with Grummets on iron pins, is steered by one, and covered with cork on the outside two or three strokes down the gunwale, will carry thirty people well, and live in a most tremendous broken-head sea.

In the month of September, 1789, the ship

Adventure, of Newcastle, was stranded on the Herd sand, on the south side of Tynemouth haven, in the midst of tremendous breakers, as the waves that are furiously broken by rocks or sand-banks are called. All the crew dropped from the rigging one by one, in the presence of thousands of spectators, not one of whom could be prevailed upon, by any reward, to venture out to her assistance, in any boat or cobble of the common construction. Had you been there, you would, no doubt, have wished for a safer boat, in which persons might have ventured to the assistance of the drowning crew. To the honour of the gentlemen who resided at Shields, they did not content themselves with wishing, but immediately called a general meeting of the inhabitants, when a committee was appointed who offered a premium for the model of a boat which should appear best calculated to brave the dangers of the sea, especially of broken water.—Many proposals were offered; but preference was given to that of Mr. Greathead, a ship-builder of Shields, who was immediately ordered by the committee to build a boat, partly on his own

plan, and partly on that of Mr. Wouldhave, another candidate for the premium. The boat was launched on the 30th of January, 1790, and so well has it answered, even beyond expectation, in the most tremendous broken sea, that since that time, not fewer than two hundred lives have been saved, at the entrance of the river Tyne alone. Many boats have since been constructed upon this plan, and are kept at different parts of our coasts where shipwrecks most frequently happen. Great success has every where attended them. Foreign nations have also availed themselves of the invention: Mr. Greathead, about the year 1803, was honoured with an order for one of his boats, from Alexander, emperor of Russia.

I ought, in justice, to inform you, that though Mr. Greathead had been the most noted and most successful builder of life-boats, the Shields boat is not the first of the kind that was constructed; for Mr. Lukin, a coach maker of London, had taken out a patent for a life-boat several years before. And it appears, from a passage in Gillingwater's History af Lowestoft, that so early as the year 1771, a similar boat was built and tried in France.

This boat was invented by M. Bernieres, director of the bridges and causeways, and was exhibited at Choisy, before Louis XV. and the Dauphin. Though eight men were in the boat, and it was completely filled with water, it was so far from sinking, that the men rowed it about the river, without any danger whatever. Afterwards a mast was erected in the boat when filled with water, and to the top of the mast a rope was fastened, and drawn till the end of the mast touched the water; yet, as soon as the men who hauled her into this situation let go the rope, the boat and mast recovered themselves in less than a second; "a convincing proof that the boat could neither be sunk nor overset, and that it afforded the greatest possible security in every way."*— It does not appear, however, that this invention

* Gillingwater's history of Lowestoft, 4to. p. 69.— Since this address was written, the invention of a metallic life-boat, by Mr. Dodd, has been announced. It is said to be formed upon pneumatic and hydrostatic principles; that is, the properties both of air and of water were considered in its construction. It is made of malleable iron, lead and tin, twenty feet long and six feet wide, and draws only ten inches of water with twenty-five persons. These boats possess valves which not only

has been applied to any great extent in France; nor indeed is it certain whether it was ever carried farther than these experiments.

In comparing our own ingenuity with that of our neighbours, it is commonly said the French invent, but the English improve. Though I have long doubted the truth of this, as a characteristic distinction of the two nations, since there is much more invention in the one and improvement in the other that this comparison would seem to imply, yet that we stand high in the estimation of the world as a nation of improvers, is too well known to be denied. I hope we deserve the character, and I wish we may long retain it.

This thirst for improving is very general in its operation among us; and, accordingly, we find

discharge all the water from them, without personal aid, but act occasionally as air valves: they are ballasted with confined water taken in and put out at pleasure; are remarkably buoyant and lively in agitated water, will neither sink nor overset, and will yet serve all the ordinary purposes of ships' boats, either for rowing or sailing. Such are the properties ascribed to this boat: part of them have been proved, by trial, to belong to it; and if it shall be found to possess them all, its inventor will have deserved well of his country.

that life-boats have not been neglected. The meritorious exertions of Mr. Greathead, and the success which has followed them, have induced several other persons to turn their attention to the subject, and to attempt improvements in his plan. Among others, Mr. Christopher Wilson, of London, has constructed a boat, which he calls the neutral-built self-balanced boat, which from the trials that have been made with it, appears likely to answer in many respects as well as Mr. Greathead's, and in others better ; for it has the advantage of being more readily put to sea, and more easily pulled through the broken water. Sir Thomas Clarges, of Sutton upon Derwent, has contrived a life-boat which shews considerable ingenuity. The leading advantages of it are, that it is not only incapable of sinking, but that it cannot even fill, or be water-logged ; that there is much cabin room ; that it is well built for rowing, the oars not being on a curve, but nearly in a right line, and low to the water ; and that it is furnished with a very powerful rudder which reaches some inches below the keel, but will haul up level with it when go-

ing into very shallow water, and then let down again. I should like to give you a description of this boat, but have not room for it: you may read it at your leisure in a very useful monthly publication, called Nicholson's Journal, No. 96. Mr. Wilson's boat is described in the 92d number of the same work.

There have been several experiments on life-boats, at New-York. It was about the year 1803, that a very benevolent and ingenious gentleman, Mr. Du Buc Marentille, exhibited in the East River, near Corlaers hook, a boat which would not sink, though filled with water; and which though laid on her side, with her sails flat on the water, would spontaneously right herself again.

And during the last and present year (1813) the Rev. Wm. Phœbus, has repeatedly called the attention of the citizens to his boat, which is so constructed as neither to sink nor overset. Yet she has all the conveniences of a ship's yawl.—The trials made with her, between New-York and Long-Island, sufficiently evince her cheapness, buoyancy, and fitness for business.

That these excellent inventions have not come into more general use, must be owing to some other cause than a want of knowledge.

But it may happen that a ship may be stranded near a part of the coast where there is no life-boat, or if there be one, it may be impossible, from want of hands, or other causes, to get it off to the assistance of the crew. Here it is evident, that if they cannot come off in their own boats, they are in a very distressing state; and they may fire their signal guns in vain. In such a situation, the method invented by Lieut. Bell, about the year 1791, of throwing a line on shore, by means of a shell, from a mortar on board, might be resorted to. The general principles of this method will be made plain to you, by the following account of an experiment made at Woolwich, on the 29th of August in that year. From a boat moored about 250 yards from the shore, the shell was thrown 150 yards on shore with the rope attached to it. The shell was of cast iron, filled with lead; its diameter was 8 inches, and its weight 75 pounds. The rope in the trial was a deep sea line, of which 160 yards

weighed 18 lbs. By means of the line, kept fast on shore by the ball, Mr. Bell and another man worked themselves on shore upon his raft of casks, which is formed by lashing five empty casks together, one in the centre, one at each end, and one at each side, of the central cask. He varied the experiment several times, with different sizes of rope and of ball; and sometimes used a grapnel instead of the latter, but it did not retain its hold in the ground so well, though among rocks, or on a rough shore, it may be useful.—To make the raft more complete, he directs that a seaman's chest be fixed upon the top of the casks, having parts of its ends or sides cut out, in order to let out such water as may be thrown into it by the surf. He declares himself ready to undertake to land with such a float upon a lee shore any where upon the coast, when it might be deemed unsafe for a boat to land. The peculiar construction of the piece of ordnance which he recommends for this purpose to be used on board of ships, is such that the chamber is to contain one pound of powder, and the bore to admit a leaden ball of sixty pounds

or upwards, which he supposes will carry a deep sea line between three and four hundred yards distance. Such a piece of ordnance with suitable apparatus, he thinks should be kept on board every ship; and he advises that it be always brought upon deck, and there kept ready for use, when within sight of land, and particularly in stormy weather.

Another method, directly the reverse of this, was contrived by Captain Manby about five years ago, and has since been adopted by him on various occasions, and with the most gratifying success. It consists in throwing a rope from the shore to the vessel in distress, by means of which the crew may be drawn to the shore, even when the broken water prevents a boat from pulling up to the ship's aid, though within ten or twenty yards. The circumstance which gave rise to this method, and the happy result of it, are so well related by the benevolent captain himself, in the preface to a book he has just now published on the subject, that I shall copy the passage for your information.

"The dreadful events," he observes, "of the

18th of February, 1807, when his Majesty's gun-brig Snipe was driven on shore near the haven's mouth at Yarmouth, first made an impression on my mind, which has never been effaced. At the close of that melancholy scene, after several hours of fruitless attempt to save the crew, upwards of sixty persons were lost, though not more than fifty yards from the shore, and this wholly owing to the impossibility of conveying a rope to their assistance. At that crisis a ray of hope beamed upon me, and I resolved immediately to devote my mind to the discovery of some means for affording relief in cases of similar distress and difficulty. It is a matter of no small consolation, when I reflect that my efforts were crowned with the happiest success, and have been already instrumental in the preservation of *ninety* souls from a watery grave, of which seventy-seven were my countrymen, and thirteen unfortunate Hollanders." In another place he observes that only *three*, out of the number of lives he has attempted to save, have been lost; and of these, two were incapable of exertion from insen-

sibility, and the third unhappy man lost his life by his own temerity.

Captain Manby has paid great attention to the manner of firing the shot from the mortar, as well as to the shape and fixing of the balls themselves, and has made many useful improvements in both these respects. The object in firing is to throw the shot beyond the vessel, so that the rope may lie across it, and give the poor mariners that assistance they so much need. The captain has contrived a barbed shot for the purpose of catching the rigging and securing the rope: he has also invented a cot to slide on a rope, to convey females and infirm persons from the wreck to the shore: and he has, moreover, suggested a plan for discharging guns without the aid of fire, by a chemical composition.

But tempests and shipwrecks often happen in the night, when darkness may prevent the vessel from being seen on shore, and the crew may not have it in their power to point out their exact position by the flash of their signal guns, or to discern the rope if it should be thrown across the ship: circumstances which must heighten the dan-

ger and the horror of a situation exceedingly awful at the best. Against these difficulties, Captain Manby has provided, by a contrivance as ingenious in itself, as it is likely to be effectual in its consequences. He first employs a hollow ball made to the size of the piece, and composed of layers of pasted cartridge paper to the thickness of half an inch: this ball, being filled with about fifty luminous balls of star composition, and a sufficient quantity of gunpowder to burst the ball and inflame the stars, is then projected into the air towards the supposed place of the wrecked or stranded vessel. The stars, as they fall, illuminate the sea to a great distance round, and continue their splendour a sufficient length of time to allow the vessel to be seen. Its direction is determined in an instant by means of two upright sticks painted white and fixed in a plank, by the side of which the mortar is to be placed, and will thus be pointed exactly toward the vessel. The shell affixed to the rope differs from that used in the day time by having four holes in it to receive a like number of fuses, and by being filled with the fiercest and most glaring

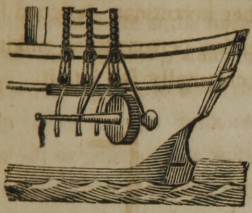
composition, which, when inflamed by the discharge of the piece, forms a brilliant tract for the rope, which is thus rendered visible, to the joy and advantage of those who so greatly need its aid.

There are many other excellent instructions and remarks in Captain Manby's book ;* but I have not room to notice them.

* Its title is, " *An Essay on the Preservation of Shipwrecked persons* : with a descripitve account of the apparatus, and the manner of applying it, as adopted successfully by G. W. Manby, Esq." &c. Sold by Longman, &c. It appears right to mention, what I observed since the above was written, that Mr. C. Humphries, of Morton Hampstead, near Exeter, has laid claim to the honour of several of the inventions practised by Capt. Manby, especially the method of throwing a line with a grapple from the shore to a ship in distress, and that of expeditiously landing shipwrecked seamen ; an account of which he affirms was communicated by him to the Trinity House, London, in December, 1799. See Mr. H's letter in the Monthly Magazine, No. 230, p. 5. At all events, whatever quantity of invention may be fairly adjudged to the respective claimants, much praise is due to Captain Manby for his exertions, and every friend to humanity will rejoice in their success.

Before I close this address, I must describe to you a few other inventions designed for the purpose of preventing persons from sinking in water, when they accidentally fall into it.

The *Man Saver* is something like a Teetotum: it is designed to save a person who has fallen overboard; the floating part is like a drum-head of a capstan, either of cork, or hooped like a cask; the pole run through it serves for a man to hold by, as well as, with the flag on top, a guide for the ship's boat to find it; and the bottom to act as a counterpoise to keep the pole upright. They are no trouble, as they are made fast to the mizzen chains, and let go by cutting the lashing, in one minute, into the sea.



I would only add one remark. If a little bell was fixed in a light iron crutch, upon the top of the pole, instead of the flag, the motion of the waves would keep it constantly ringing; and, on a dark night, be the best direction, to either the sailor in the water, or the boat to fetch him.

The *Cork Jacket* is formed by sewing thin flat pieces, or shavings of cork in a waistcoat or jacket to fit close to the body, to which it is secured by buttons or strings.

The *Marine Spencer*, invented by a gentleman whose name is Spencer, is made in the form of a girdle, of a proper diameter to fit the body, and six inches broad, composed of about 500 old tavern corks strung upon a strong twine, well lashed

together with lay-cord, covered with canvass, and painted in oil so as to make it water-proof.— Two tapes or cords, about two feet long, are fastened to the back of the girdle, with loops at the ends. Another tape or cord of the same length has a few corks strung to the middle of it, is covered with canvass, and painted. A pin of hard wood, three inches long, and half an inch in diameter, is fastened to the front of the girdle by a tape or cord about three inches long. To use the spencer, it should be slidden from the feet close up under the arms, the tapes or cords are to be brought one over each shoulder, and fastened by the loops to the pin : the tape or cord between the legs is to be fastened to the other pin. A person thus equipped, though unacquainted with swimming, may safely trust himself to the waves ; for he will float head and shoulders above water in any storm, and, by paddling with his hands, may easily gain the shore. Such a spencer may also be made of cork-shavings at a very trivial expense.*

* Report of R. H. Society.

A canvass bag would serve very well to hold the corks, or cork-shavings, and, if of greater breadth than the above, might answer many good purposes, if kept on ship-board, although it be not water-proof. It has been suggested, that pieces of cork might be worked into the ordinary dress of sailors, especially about the shoulders and neck; which, as it would give them an opportunity of recovering themselves, and using their own powers, when they happened to fall into the water, might be the means of saving many valuable lives.*

The *Life-Preserver* is a most admirable invention, by Dr. Daniel, a surgeon of Wapping, near London. The body of the machine, which is double throughout, is made of pliable water-proof leather; the head of the wearer is to pass between two straps which rest upon the shoulders, and his arms are to pass through the spaces on the outside of the straps, so as to allow the machine under them to encircle the body, like a large hollow belt; on the lower part of the

* See Monthly Mag. for July, 1812.

back of it is a strap which is to pass between the the thighs of the wearer, and buckle in front. The machine, thus fixed, is to be filled with air by the mouth of the wearer, who is to continue blowing through a stop-cock in the front of the machine till it is fully inflated; the air is then confined by turning the cock.

Soon after Mr. Daniel had completed his invention, he made a public exhibition of it in the river Thames. On the 27th of July, 1806, he went with several of his friends, in a barge and other boats, accompanied with a band of music, to conduct and witness a very gratifying spectacle: several men clad in linen dresses and red leather helmet caps, and wearing the preservers, appeared in the river, moving about at pleasure; they appeared to float freely, and to rest breast-high in the water with perfect ease and freedom. Multitudes of spectators crowded the three bridges and both sides of the river, to witness this curious and pleasing exhibition.*

With this or a similar apparatus it was, that a

* See the Reports for 1807 and 1812.

very amusing experiment was made, not a great while since, in New-York. Several men thus equipped, leaped off a wharf, near Peck's Slip, and immediately recovered the erect attitude, standing as it were in the water. Violins were then handed to them, and they amused themselves, and the numerous attendance of citizens, with playing a number of airs and tunes, with as little concern as if they had stood on the floor of the best orchestra in the city.

The machine, when properly made and well varnished, resembles a broad belt or circular girdle, composed of two folds of pliable leather attached together, and perfectly impervious to water. When it is well filled with air from the lungs, it is capable of preventing *four persons* from sinking under water, as the following extract will testify : it is from a letter addressed to Mr. Daniel, by John Dickenson, Esq. of Norwich. He was sailing towards Norwich in a pleasure-boat, with two ladies and another gentleman. They had taken the precaution of procuring one of the life-preservers, which was on board. " On tacking," says Mr. D. " to en-

ter Norwich river, at the extremity of a broad water, two miles over, known by the name of Braydon, a sudden gust overset the boat, precipitating myself, companion, and two ladies, into as agitated a water as I have ever seen at sea (except in hard blowing weather.) You may judge my situation at such a juncture. Your machine was jokingly filled as we came along, to which I ascribe (though very unexpected by us) our preservation. The gentleman, whose name is Goring, was inexpert at swimming, and with difficulty kept himself up, till I reached him ; and then directing him to lay hold of the collar of my coat, over which the machine was fixed, I proceeded towards the ladies, whose clothes kept them buoyant, but in a state of fainting when I reached them : then taking one of the ladies under each arm, with Mr. Goring hanging from the collar of the coat, the violence of the wind drifted us on shore upon Burgh Marshes, where the boat had already been thrown, with what belonged to her. We got the assistance of some countrymen directly, (after taking refreshment at a marsh-farmer's house, where we procured some

dry clothing for the ladies, who were now pretty well recovered) and by their endeavours put the boat in sailing trim, and prosecuted our voyage to Norwich, which we effected by eleven o'clock that night."* From this remarkable instance, and several others which have been recorded, we have reason to assert, that Mr. Daniel's life-preserver is well entitled to the name it has received. In the frontispiece I have given you a representation of the interesting scene, and a separate view of the preserver itself.

It is worthy of notice, that a contrivance, on a similar principle, has been in use among the Arabs from the earliest ages. Taking the skin of a goat, they sew up very completely its different openings, except the skin of one of the legs, which they use as a pipe or tube to blow up the rest of the skin, and then twist and hold it very tight to prevent the escape of the air. By means of this inflated skin, they can keep themselves floating in the water as long as they please;

*Transactions of the Society of Arts for 1807. Nicholson's Journal, Vol. XX. p. 283.

and, by paddling with their hands and feet, can transport themselves to considerable distances.*

In China, where millions of persons live almost wholly on board vessels on the canals, the children are preserved from drowning by a very droll method. An empty gourd, or calabash, well corked, is tied upon the back of each child, who thus paces the decks of the vessels in security, knowing that, if he should happen to fall overboard, he would be prevented from sinking, or that, if he should be under water for a moment, the shell at his back would soon buoy him up again. Would it not amuse you to see the little fellows running about the vessels, with those artificial humps upon their backs?

* Report of R. H. Society for 1812, p. 107. Also several of the preceding Reports.

ADDRESS IX.

ACCIDENTS AT PLAY.—"DANGEROUS SPORTS." FALLS.—COL. CRICHTON'S BED AND FRAME FOR REMOVING WOUNDED PERSONS.—DOGS.—WOUNDS.—BURNS AND SCALDS.—GUNPOWDER AND FIRE-ARMS.—SWALLOWING BONES, &C. NEVER CONCEAL AN ACCIDENT.

As we have been so long upon the water, I suppose you will be glad to get fairly and safely upon land again. I shall be happy to attend and remain with you there; for it is an element much more to my liking, as a place to live upon, than the boisterous and deceitful ocean. You must not imagine, however, that when you are safely landed, you are totally exempt from danger. You are not so weak as to think so, are you? Very well. I am glad of it; and hope you will excuse me for giving you an unnecessary caution: it is an error into which I am not often very likely to fall.

Let us proceed to the principal accidents

which yet remain to be noticed. Some of these may happen to us so suddenly and unexpectedly, that we cannot by any means provide against them; while there are others which we may avoid if we will. Between these you will easily distinguish, as we go on; and I hope you will derive this advantage from your present attention to them, that in future life you will be as careful to abstain from dangerous practices, when they are improper and unnecessary, as you would be anxious to obtain help, should any injury befal you.

Among the sports and exercises which daily yield you so much delight, there are some which are so obviously dangerous, and are so often attended with fatal effects, that to engage in them is to expose yourselves willingly to danger.—These had better be given up entirely: there will be plenty remaining to afford you abundance of amusement without endangering your safety or your health. Old Millson* has very well taught you to distinguish between the safe

* See note on p. 97.

and the dangerous sports. He has cautioned you against the practice of jumping from high places; which, though often done without any idea of danger, is sometimes attended with the breaking of a leg; and even when no immediate injury is perceived, it often lays the foundation of dreadful pains and diseases in future life. He cautions you also against

Weighing cheese and butter, as it is called, which is done by two boys entwisting the arms together back to back, and thus swaying each other: this he calls a highly dangerous practice; and states an instance in which, in consequence of this sport, the back-bone was actually broken, and the poor boy made a cripple for life.

There is nothing in the whole catalogue of sports, which I look upon with more dislike than the "ruffian-like practice," as old Millson calls it, adopted by some boys, of throwing stones at each other. You have frequently heard me express this dislike, and I have also stated to you various instances in which it has been attended with very serious consequences. To your credit, I am happy to add, that my remonstrances on this

head have not been made in vain; and I hope a practice so disgraceful will never be resumed amongst you.

Birds'-nesting is often as dangerous as it is cruel. I should be happy to dissuade you from it on both these accounts. Of its danger, old Millson will furnish us with a striking example. Let it not be recommended to you in vain.

"Sometimes," he says, "I received from my misconduct that punismnent which I merited. Thus, one evening, just before dark, I had climbed up a very high tree to take a bird's nest, and was trying to get from the branch I was on, to the one on which the nest was built, when my foot slipped, and I fell, but not far; for my coat skirts entangling in the boughs, my fall was broken, and I, at the same time catching hold of another bough with my hands, hung in this manner, fearing that my clothes would give way, and that not having power enough to support myself with my hands, I must fall and break my neck.

"At length I was fortunate enough to get my leg across another bough, but could not disentangle my clothes; I now called aloud, but could make

no one hear, and was therefore obliged to pass the whole night in this dreadful state ; oftentimes feeling such pain from being so long in one posture, as to be ready almost to lose my hold, and trust to the consequences : and I should certainly have fallen through fatigue, if I had not, about the middle of the night, got my back also to bear a little on another branch.

" Think what a situation I had put myself in by indulging my cruel disposition ; think how dreadful a night I passed, fearing every moment that my clothes would give way, or the branch break, and that I should fall to the ground, and be bruised to atoms.

" At last, morning came, and some labouring men passing near the tree, I cried aloud : they looked about, but not seeing me, they walked on. I had now given myself up for lost, but in about half an hour, some more persons passing by, I repeated my cries ; and was fortunately discovered by them, and released from my shocking situation.

" But think of the perverseness and thoughtlessness which so ruinously influenced all my ac-

tions. Within a week, I climbed a tree again, and enticed my brother to follow me. We had nearly gotten to the top of the tree, and my brother was on a branch on which I was going to step, when he prayed me to desist; but such was my wicked obstinacy, that to ask me not to do a thing was sure to inspire me with an inclination to do it directly. So it was in this case, I stepped on the branch, which broke directly, and we both fell.

"Oh! what did I feel at the moment of falling: buffeted about from one branch to another, I at last reached the ground with such violence that I lost my senses. When I recovered, I found myself surrounded by people, who had been rendering me assistance: but to my poor brother their kindness was fruitless—he was killed outright.

"I was now carried home; one of my arms and one of my legs were broken; and I had the dreadful reflection fixed in my mind, that by my obstinacy I had occasioned the death of my brother."*

* Parkinson's Dangerous Sports, p. 121—5.

Now these are dangers and troubles which you may avoid if you please. It is no more necessary for you to climb up lofty trees, or to throw stones at each other, or to jump from high places, or to run the risk of having your back broken, than it is to thrust your fingers into the fire, or to knock your head against a wall; and if you do either of these things by choice when you have no occasion for it, and after you have received such a warning as this, you will in great measure deserve all the evil consequences which it may bring upon you. May this example effectually deter you from an imitation of it.

After all our care, however, and it is our duty to be careful, we may be overtaken by some calamity or another. Amongst the accidents to which we may be exposed, none are more common, and frequently none more serious in their consequences, than those occasioned by falls.—But these are often much aggravated by the first attempts to correct them; thus, a fall which has only broken a man's leg, may be followed by a very bad wound in the flesh, through the awkwardness of the attendants in carrying him home.

Of this the following case presents a remarkable instance : A. B. fell from a scaffold, and broke his right leg, without any wound in the flesh or the skin ; his companions were carrying him home in a chair, which gave him great pain ; a a gentleman passing by, observed to them that the pain arose from the unsteady position of the leg, which kept dangling about. As the men grew tired, they stopped to rest themselves, and fortunately opposite to a house where some women were ironing ; the gentleman immediately begged the use of their ironing-board and a mattress, on which the poor fellow was conveyed, in comparative ease, to his home. The stairs to his bedroom were too small to admit this conveyance ; he was therefore carried by two men, and immediately his pains returned most dreadfully.— When the surgeon saw him, instead of the simple fracture, he found one end of the broken bone had been forced through the flesh and skin by the mode adopted in carrying him up stairs. In the first instance, a few weeks would have cured him ; but in the latter case it required as many months, besides much impairing his health, and

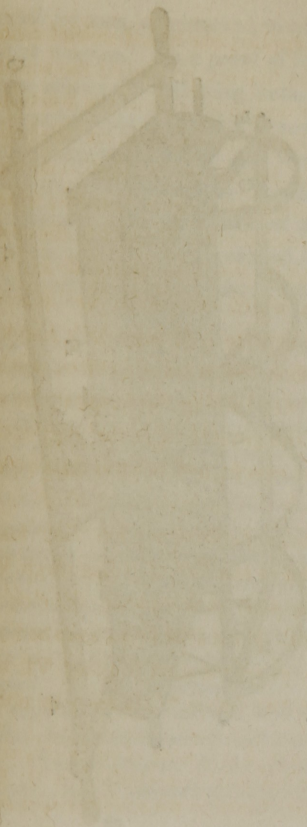
rendering his leg crooked after all. Had his friends brought his bed down stairs, all this would have been prevented; and perhaps the most proper place for a poor man to be kept in, who is to be a prisoner for some weeks, is the ground floor, as here his friends can more easily visit and assist him.

If accidents happen in places remote from a village or a house, it may be thought means cannot be found to render assistance, even though some persons may be by to apply them: those cases are very few, if the eye-witnesses will be cool and collected, as the following case may help to shew. C. D. was riding in the open fields in Teversham parish; the report of a gun frightened his horse; he was thrown, and had his thigh broken. A surgeon was sent for, who was met providentially in Barnwell. In such a situation, you would not expect the bandages and splints necessary to bind up the thigh. Some stonepickers were standing round the poor fellow; and the surgeon ordered them to look among the heaps they had collected for two of the blade-bones of a sheep, which they readily found. Having

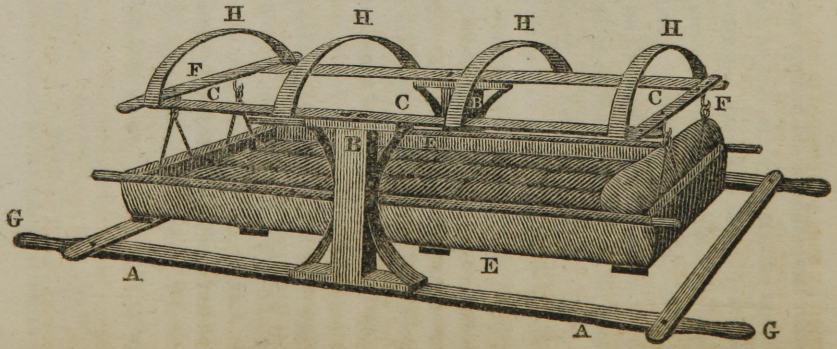
wiped them, and applied his handkerchief round the thigh which he had set, he placed the smooth sides on the outer and inner side of the fractured bone, and by means of his neckcloth and the boy's garter, he firmly bound up the limb. A cart was going by on the road at some distance, which was hailed, and immediately brought to the spot; some haum found in the field was put in, by way of a bed, on which the person was placed, and was thus brought to Addenbrooke's hospital in Cambridge, where he remained three weeks, and was cured. On leaving the hospital, he returned thanks to the governors, in the very neckcloth and blade-bones he had been at first bound up with.

A most ingenious contrivance has been made by Col. Crichton, of the Royal Edingburgh Volunteers, for the easy conveyance of sick or wounded persons. It consists of a cheap bed and an elastic frame, as represented in plate VI. and described in the note below.* It may be either

* "The lower frame A A is made of ash or elm, seven feet long, and five feet four inches broad. B B, Two strong wooden pillars, bound on the sides by two circular



Lieut. Col. Chrichton's Bed, for the easy Conveyance of Sick or Wounded Persons.



carried by men, or removed to any distance on a cart or waggon. As a proof of its utility, the inventor relates the following instances. "A person was brought in it, with a compound fracture in the thigh-bone, from the West Highlands to Edingburgh, a distance of 74 miles, in two days. A gentleman, with an attack of the gout both in his hands and feet, was removed from Edinburgh to the north of England, above 140 miles, in three

pieces of iron, for supporting the elastic frame. C C C, The elastic frame, made of the best ash, supported by the wooden pillars, and semicircular pieces of iron. E E E, The frame or cot, containing a matttress or daliasse, stuffed with straw.—Two or three hammocks may be suspended, and will answer as well as the cot. F F, Rings and iron hooks by which the cot, bed, and mattress are supported. G G G G, Four handles projecting from the under frame, one foot three inches long each, by which the whole may be carried by four men. H H H H, Four semicircular hoops, over which a cover can be thrown, to protect the patient from the weather. The under frame and pillars should be made of ash or elm, well seasoned. The elastic, or upper frame, should be made of ash, remarkably clean and well seasoned, thick in the middle, where it is supported, and tapering towards the ends. The total expense of the whole, including the iron-work, should not exceed four pounds ten shillings."

days. In both these instances, and a great many more, the bed and frame were suspended to the carriage of a post-chaise, and with a servant sitting in front, travelled post. Some hundreds of examples can be adduced of the removal of patients by its means, when fixed on a cart or waggon, and in many of these, the patients were in a state of the most severe bodily distress and debility. In all these removals, the patients have borne testimony to their enduring no additional pain or inconvenience from the motion of the machine; all of them, even in the most severe cases, declaring that they were alike insensible of bodily fatigue, or of the least increase of pain from the mode of conveyance." You may find the whole account in Tilloch's Philosophical magazine, No. 116, p. 289, &c. It appears that the faculty at Edinburgh have most highly approved of this machine. It might be exceedingly useful in the army; and if one were kept at every hospital, many an hour's pain might be saved to poor creatures who are now removed in uneasy vehicles to these benevolent asylums.

Dogs.—Dogs are sometimes very snappish

and ill-natured, growling at every one who passes, and ready to bite all they can reach; but this is no reason why you should do every thing in your power to provoke them: one would think your ears were formed to relish a very peculiar kind of music, if you can be so delighted with the horrid snarlings of an angry dog—inferior only, if inferior, to the braying of an ass. It is a very foolish practice, to say the least of it; and is sometimes productive of very dreadful effects. The following instance occurred, not many years since, in St. James's Park. A young gentleman passing a dog, slightly touched it with a switch he carried in his hand, upon which the ferocious animal turned, and seized him by the belly; and, in spite of the exertions of those around him, he continued his hold until the bowels of the youth appeared at the wound. I need scarcely say, the poor youth died within a few hours.*

* Dangerous Sports, p. 20. I do not quote so often from Mr. Parkinson's book for the sake of preventing, but of increasing, its circulation. If any of my readers should be induced to peruse it, they will wonder, with

If a dog should threaten to attack you without provocation, it will not be wise for you to run hastily away from him, lest he should be upon your heels without ceremony; you should rather face him in a firm manner, looking earnestly at him, and with an undaunted voice bidding him be quiet or lie down. This will be the most likely way of cooling his courage, and preventing him from doing you any harm.

"Always," says old Millson, "be careful to avoid any dog which you see running along, looking heavy and lowering, seemingly inattentive to every thing, his eyes looking red and watery, and his tail hanging between his legs, lest he should be mad. If at any time you should be bitten by a dog, though ever so slightly, endeavour to ascertain whose dog it is, and immediately apprize your parents of the circumstance, since they will be the fittest to carry on the inquiry further; and, even if the dog should

me, that a book so well calculated to instruct the rising generation in many important particulars respecting their health and amusements, should have been *eight years* in passing to a second edition.

have been mad," if the matter be taken in time, can prevent those fatal consequences which will probably follow the neglect of it.

But dogs as well as men, have sometimes false characters given them, which not only occasion unnecessary alarm, but expose the poor creatures to the certainty of death, when they do not deserve it. No proverb is more common and more just than, " give a dog an ill name, and then hang him." Indeed, you may as well do the one as the other ; for if once his ill name get abroad with him, his doom is fixed, and death must follow. It is not, however, every dog that is called mad, that is so in reality. Perhaps there are but few cases, in comparison, in which the animal is really mad. It must be remembered, that dogs always have a dispositon to bite when labouring under certain disorders ; yet *this* bite has no other evil effects than the wound the dog makes, which is not poisonous. If the wound is made by a rabid animal, the part must immediately be burnt and destroyed : a hot iron is as good an application as can be devised. Though we have no internal remedy, of which we can cer-

tainly say it is of any real use, yet the taking of some medicine of reputed character will amuse the patient's mind, and prevent the evil consequences of mental anxiety and alarm. Even when there is no real danger in the bite, an application of this kind is sometimes necessary for the same purpose, and may be made use of with equal advantage. A poor deaf and dumb boy at Duxford, in this county, met a dog that had bitten a number of cattle which had died; the dog bit him through both arms, so that his teeth met. Mr. T———, a surgeon, was passing about the time, and was consulted. He gave the boy some pills, which he directed him to take regularly night and morning. He did so; is now very well; and ascribes his cure to the pills he had taken, though they were made of nothing in the world but crumbs of bread worked up with a little pepper sprinkled upon them, to disguise and alter the taste. As the dog was supposed, both by himself and his neighbours, to be mad, there is no doubt he would have suffered very much in his mind, but for this expedient: that the dog was not really mad, it is scarcely neces-

sary to inform you, for if it had been so, it is not likely that the bread pills would have cured the poor fellow that had been bitten. A great amount of information concerning mad dogs and the disease consequent upon their bites, is contained in the several volumes of that national work, Mitchill and Miller's Medical Repository.

Wounds.—Wounds are so common, from the simple scratch that only gives pain, to the serious cut which bleeds considerably, that I must say something about them. I must first impress it upon your minds, as a very important fact, that the great Being who formed that wonderful machine, the human body, has given to it the power, in certain circumstances, of restoring itself when under disease. This we see every day, especially in broken limbs, where the surgeon only places the bones in their natural order, and keeps them there by his splints and bandages; these in themselves, have no healing quality; and even ointments in general have little use, except to keep the cloths, &c. from sticking to a wound. In the cure of a wound, however large, the sole object is to stop the bleeding, and remove any dirt or extraneous matter, and then to

bring the sides of the wounds as much in contact as possible, by sticking-plaster, or a bandage, or a needle. If, after this, the wounded part be laid in an easy posture, it may be fairly left with every probability of success. How often do you cut your finger: you tie your handkerchief around it, and find it is healed when you take off the bandage to wash your hand. This is called *healing by the first intention.* The same principle operates in larger wounds, only it takes more time to produce the desired effect.

In the case of wounds attended with large bleedings, the knowledge of the use of the *Tourniquet** is highly beneficial. It is not necessary to carry one of these instruments in one's pocket, since a substitute for it may be found in almost every situation, as the following case will shew. C. D. was cut in the arm, by one of his angry companions who was reaping with him, and it

* A surgical instrument, used to stop bleeding in large wounds, by means of pressure on the artery. Those who heard his address, it is hoped will not soon forget the explanation which Mr. Thackeray gave them, of the construction and use of this instrument, as well as of the contrivance which proved so useful in the case of C. D.

was thought he would have bled to death. A surgeon was sent for; and, finding what had happened, posted home for a tourniquet. Another surgeon accidentally going by, and seeing him still bleeding, took the poor fellow's garter, and applied it just above the wound; and, in the direction of the artery, he applied to it a piece of paper several times doubled, which he fastened on with the garter; finding he had not, by this means, compressed the artery enough, he took a piece of stick, and inserting it under the garter at some distance from the doubled paper, he twisted the garter till he obtained the requisite tightness, when the pressure of the paper upon the artery caused the bleeding to cease. Half an hour after this, the first surgeon returned, and wondered the thought had not struck *him!* In ten minutes, the poor fellow would have expired from loss of blood, and the surgeon would have seen that his ignorance was the cause of it.

By way of caution, let me advise you never to leave your knives open with their edges upwards, lest you or your schoolfellows should sit upon them, or lay your hands upon the blade,

and cut yourselves severely. It is also a dangerous practice to shut your penknives by pressing the blade against the thigh: many persons have cut themselves in this manner. The danger is greatest upon the inside of the thigh; for *there* runs a great artery which, if pierced, would let out such a flow of blood, as would occasion death if not speedily stopped.

Burns and Scalds.—These, you know, are of very frequent occurrence; and when they happen, the application of cold in any shape is proper. Cold water, as always at hand, may be immediately applied; but cold vinegar is better, and has on many occasions been found so very useful, that it is adopted in most of the great breweries, where these accidents are very frequent. The blister is then to be opened, and its contents let out; but the skin is to be left on, as the best defence of the sore beneath. In the glass manufactories at Edinburgh, a mixture of lime-water and linseed oil, in equal quantities, is kept constantly on hand to be ready in case of accidents. The part burnt is covered with rags kept continually moistened with the mixture. To

plunge the part into water containing ice is good. The application of spirits of turpentine is highly recommended. But perhaps the best of all remedies, is dry and soft cotton-wool, applied immediately to the part burnt.

Gunpowder.—Boys should never play with gunpowder, for it is a most dangerous article in the hands of those who are ignorant of its qualities, or too careless to attend to them. Many very serious accidents have been occasioned by it: eyes have been injured, and sometimes persons have been rendered blind by it; houses have been set on fire, and even life has been destroyed, by the careless or wanton employment of this destructive substance. When you see it has done mischief to any one, you should have the part well washed with warm water: this will prevent further injury, by decomposing the gunpowder, which is only active in its combined form. Perhaps you do not quite understand this: I will explain it. To *decompose* is to *take to pieces; to dissolve;* and is employed by chemists when they separate any compound substance, into the particular substances of which it

is formed. Now, gunpowder is a substance of this kind; you know, perhaps, that it is composed of three principal ingredients, nitre, sulphur, and charcoal. When warm water, then, is applied to the wounded part in the manner above directed, it destroys the composition of the gunpowder, which has forced itself into the flesh; and by separating its ingredients, takes away its power of doing any further mischief in the wounded part.

Fire-Arms.—Now I have mentioned gunpowder, it may be highly useful to caution you against the improper use of fire-arms. These, in the hands of persons who have not known how to manage them, or have not been aware of their danger, have been productive of the most dreadful effects. Children and young persons have taken up fire-arms to play with; and not knowing that they were loaded, or not supposing they would go off, have presented them jokingly to their brothers or sisters or other friends, and on pulling the trigger, or perhaps knocking something against it accidentally, have shot them dead in a moment! Many instances of this kind

are upon record: I have seen accounts of of several, and you have no doubt been told of such cases yourselves. What an awful lesson do these facts hold out, to those who are in the habit of using such instruments of death! and how cautious ought it to render them, either in unloading their pieces when they return home, or in placing them out of the reach of children and others who may do so much mischief with them! neither are those who are well skilled in the use of these deadly weapons, altogether exempt from the danger attending them. We often hear of sportsmen in the field very seriously injuring themselves, or their companions, and sometimes even causing their death, by the accidental discharge of their guns. I remember having read various accounts of such calamitous events; but having laid aside the newspapers in which they were recorded, not then thinking of writing such a book as this, I do not know where to refer to them. The following account I have met with, however, since I began to write; and as the unfortunate subject of it wished it to be made as public as possible, for the benefit of others, I shall lay it before you with the hope that it will not

be preserved in vain. In the Monthly Magazine for August, 1810, is mentioned the death of Mr. Robert Foot, Jun. at Ludwell, in Wiltshire, aged 19. Four days before his death, it is said, he was going out with his loaded gun ; but stopping to converse with a friend, he incautiously rested on the muzzle of the gun, which went off at half-cock, and nearly the whole charge of shot passed though his left hand, grazed his side, and lodged in his shoulder. He had just quitted an affectionate mother, in the full glow of health and youthful spirits; he returned to her maimed and streaming with blood. Having received his death-wound, he bore his sufferings with great fortitude, and hoped others would receive warning from his example.

Some of you, no doubt recollect that most affecting tale which is related by Sir Richard Steele, in the Tattler, No. 82. A gentleman on his wedding-day was joking with his bride ; and taking up one of his pistols which lay upon the table, and which he knew he had unloaded the night before, he presented it to her, threatening, in a strain of fond raillery, to be revenged upon

her for all the trouble she had occasioned him during his courtship. "Give fire," said she, laughing. He did so, and shot her dead. The pistols had been charged by the servant, unknown to his master; who, calling him, and inquiring into the fact, immediately shot him with the other; and then put an end to his own life by falling upon his sword. Thus perished three persons, through a single mistake, more fatal indeed in its effects, but not more extraordinary in its own nature, than many which take place every day. If caution is needful to us in the common concerns of life, it is doubly so when we have any thing to do with gunpowder and fire-arms.

In the United States, where the citizens are taught the use of fire-arms as a part of their social duty; and where boys learn the art of shooting, almost as soon as they can point a gun, disagreeable accidents are unusually frequent. The newspapers abound with disastrous and fatal occurrences, from the unintentional discharges of fowling-pieces and muskets. To prevent these melancholy events, guns ought to be discharged before they are brought into the dwelling house.

Or if kept loaded, they ought to be placed in the owner's private room, or secured with guards on their triggers.

Swallowing bones, &c.—Persons who eat without chewing their food, as many boys are apt to do, sometimes have bones or meat stick in their throat. If within sight, they should be removed; otherwise they may be left alone,—that is, if they do not stop up the throat so as to prevent breathing, for the saliva or spittle has a solvent power, by which in time they will be softened, and will then pass into the stomach. Some women have a foolish custom of putting pins in their mouths, which are often swallowed. If they pass the throat without injury, they may be left alone; for in a little time nature will cover them with a thick mucus or slime, and they will generally pass away without any injury to the bowels.—The same may be said of coins, nails, marbles, and other substances that are occasionally swallowed by children, unless they be of a poisonous nature: and then the most earnest attention must be given to them immediately, and a medical man called in without delay. I would not, however,

recommend to you the practice or habit of swallowing even plum-stones or cherry-stones, since, though in general they may pass through the body, yet they may happen to be detained there, and produce much injury. You will, I trust, be the more cautious on this head, when you are informed, that the swallowing of a plum-stone has been known to occasion death.

In concluding this address, I would impress upon your minds one most important maxim, and that is—*whenever you meet with an accident, be sure you do not conceal it from your friends;* but inform them of it, without disguise, as soon as possible. I have been told of cases in which accidents, from being kept secret, have been followed by the most serious consequences, when, by a timely disclosure, and proper attention, these evils might have been in great measure, if not entirely, prevented.

ADDRESS X.

ACCIDENTS IN TRAVELLING, AND CAUTIONS.—INTENSE COLD.—SUDDEN CHANGES FROM COLD TO HOT, AND THE CONTRARY.—"CATCHING COLD."—DR. MITCHILL'S OBSERVATIONS ON COLDS.—THUNDER STORMS.—FAINTING. CAUTION AGAINST INDULGING EXTREME SENSIBILITY.—CONCLUSION.

In our progress through the "chapter of accidents," it would be improper to omit noting those which happen in travelling—upon land, I mean: for the principal dangers of voyages by sea have been attended to in a former address. We are so fond of moving from place to place, and have indeed so many occasions to do so, that it is worth while to consider how we may best provide for the accommodation and safety of our journey.

When you are going to ride on horseback, it will be right, before you mount, to examine carefully the trappings of your horse, to see whether the bridle, girths, and stirrups, be safe and well

fixed, and the animal be properly shod. So also, when you are going to drive in a gig or chaise, it will be proper, not only to *inquire* whether the harness, wheels, and other things be well adjusted, but to cast an eye over these matters yourself, before you set off. There is no doubt that many very serious accidents have arisen from neglecting these particulars; indeed, it is very likely, that more injuries have been occasioned by negligence beforehand, and inattention during the journey, than by any other cause whatever. It is not many months since a friend of yours was tavelling with a lady and a child in a gig, when, having gone several miles on the road, he saw one of the traces loose and dragging after the horse; being a careful driver, he pulled up his horse gently, that the animal might not be frightened, replaced the loosened trace, fastened it well, and proceeded on his journey in safety. He had examined the harness before he set out, and while he was looking at the trace on one side, to see that it was fixed properly to the bar of the gig, he was assured by the person who put it on, that all was safe: supposing he might place

confidence in his declaration, he believed him. It happened, however, that the other side was put on by another person who was standing by, and who had not secured it properly. Now, if the horse had been restive or frightened, or the falling of the trace had not been noticed just as it was, the lives of three persons might have been endangered by so trivial an oversight.—"Safe bind, safe find," is a good maxim at any time; but, perhaps, is at no time of greater service than in preparing for a journey.

In the next place, never ride or drive with too slack a rein. This is a rule which ought not to be despised, since, from neglect of it, horses which are apt to stumble, sometimes fall down, to the great danger, if not the injury, of the persons who are riding or driving them. Besides, in the case of fright, or running away, the command of the reins is gone; and the hapless rider or charioteer is hurled into danger before he is aware, and perhaps beyond recovery. Now, suppose you should find it necessary, in consequence of the horse's running away, or any other cause, to quit your gig hastily, while it is going

on, which do you think would be the best way of jumping out? This is a question of some importance, as your safety may depend upon the manner in which you would practically answer it. Do not, then, leap forward from the front of your carriage, for in that case, you would come to the ground with more than double force, and would probably fall upon your head, by which your life might be taken away, even if you escaped the wheels. Secondly, do not jump out by the side of the gig; for in so doing you would probably be thrown with great violence on one side, and a leg or other limb might be broken in a moment. But, thirdly, if it be possible, leap out behind, taking care not to lean too much forward, which is by far the safest method; for the motion of the carriage being opposite to the direction of your leap, you will come to the ground with the least possible force. Patent preservers for letting loose the horses from carriages on any appearance of danger, have been lately advertised in the newspapers. Of their value I know nothing.

With respect to providing great coats, umbrel-

las, &c. when you are going a long journey, and are to be exposed to the weather, there has long been in use a very quaint maxim, which is this; "if it does *not* rain, take such things with you; and if it *does*, do as you please"—implying, that if the weather be now ever so fine, it is not long to be trusted; and, if it be foul, you will need no further motive to induce you to guard against it. A great coat is sometimes lost on a journey, or, having been lent, is not returned time enough for you to take it with you: in this case, a second shirt well supplies its place. The following is not a bad expedient in the case of a similar extremity: Mr. S——— was going, last winter, to join his regiment in Ireland; and, as it was likely he would be obliged to ride without side the coach, he bought himself a very large blanket. In this he inveloped himself as a silk-worm would do in its case. He reached Holyhead without experiencing much cold, and with a great saving to his purse: he had moreover the satisfaction of lending his friend, the blanket, to a poor woman at Holyhead till he came back.—He only *lent* it to her, that she might not be

tempted to sell or pawn it for spirituous liquors, or any other indulgence that would really be less useful to her than the blanket.

As for travelling on foot, you think, perhaps, no caution is necessary on that head. To be sure, you need not much instruction to know how to take an ordinary walk, or an afternoon's ramble; but even on this subject, a celebrated poet and physician has thought it not unworthy of him to bestow the following hints.

> Begin with gentle toils; and, as your nerves
> Grow firm, to hardier by just steps aspire.
> The prudent, even in ev'ry moderate walk,
> At first but saunter, and by slow degrees
> Increase their pace.*

In long journeys on foot, however, much more caution is needful, on account of the fatigue they occasion, and the heat they produce in the body, thus tending to bring on fevers, which are often hastened by the improper management of the travellers themselves. As it is not likely that

* Armstrong's Art of Preserving Health, Book III. The whole passage, which is too long to insert here, consisting of 23 lines, is well worth the attention of those readers who can refer to the poem.

any of you will have to travel any very great distance on foot, I shall not trouble you with any long directions on the subject; but only quote a few words of advice from an experienced traveller, and a most benevolent man, the late Count Brechtold, an Austrian nobleman. "Those who travel on foot, especially in hot climates, should never sleep under the shadow of a tree, or near a hemp-field. Thirst is more effectually quenched by eating fresh fruit, and a morsel of bread, than by drinking water: lemon juice, or a little vinegar mixed with water, is better than water alone. After a long journey on foot, it is unwholesome to take a plentiful meal, or to sit near a great fire. Travellers on foot should wear a flannel waist-coat next the skin; and all travellers should carefully avoid damp beds, and the falling of the evening dew after a free perspiration."*

Those who walk long distances, especially before their feet are well seasoned by the practice, are very liable to have blisters formed at the

* Brechtold's Essay to direct and extend the Inquiries of Patriotic Travellers, Vol. I. p. 58—63.

bottom of them ; and very disagreeable, painful things they are, I assure you. If you should ever be troubled by them after a long journey on foot, you will be glad to employ so simple a remedy as that which I am going to recommend to you. Take a large needle-full of worsted doubled; pass the needle through the blister from side to side, but leave the ends of the worsted in it, and clip off the remainder. The opening will cause the blister to discharge, and the worsted will keep it open, at the same time that it will prevent the outer skin from sticking to the inner. If you follow this plan at night, after your day's walk is over, you will find yourself the next morning as easy, and as able to walk again, as though nothing had happened. If the feet are merely inflamed without having any blister raised upon them, it is a good plan to wash them with milk-warm water on going to bed. This information I had from an experienced walker; and I have no doubt, you will find reason to be thankful for the advice, should you ever be under the necessity of adopting it.

Effects of intense cold.—Although our cli-

mate is mild, compared with that of many other countries, very few winters pass without some melancholy instances of benighted travellers perishing in the snow, or falling victims to the inclemency of the weather. Often, indeed, it is to be lamented, the fatal effect is brought about in a great measure by intoxication : the thoughtless man, carousing with his fellows till his reason is drowned in liquor, sets out, amidst the frost and snow of a winter's night, upon his fatal journey homewards ; but soon missing his way, and unable to recover it, he wanders in confusion till fatigue and sleep overtake him, and then he sinks in death ! Had he remained sober, and set out earlier, he might have reached his home in safety. There are seasons, however, in which it is almost impossible for the most sober traveller, without the greatest care and exertion, to escape with his life. Those of you who have read Thomson's Seasons, cannot have forgotten the very touching description which that excellent poet has given of a shepherd lost in the snow.

. . . . . Down he sinks
Beneath the shelter of the shapeless drift—
. . . . . .
In vain for him th' officious wife prepares
The fire fair-blazing, and the vestment warm :
In vain his little children, peeping out
Into the mingling storm, demand their sire
With tears of artless innocence. Alas !
Nor wife, nor children, more shall he behold,
Nor friends, nor sacred home. On every nerve
The deadly winter seizes ; shuts up sense ;
And, o'er his inmost vitals creeping cold,
Lays him along the snow, a stiffened corse,
Stretch'd out and bleaching in the northern blast.
Winter, 305, 6. 311—321.

It is very necessary, while riding in extremely cold weather, to use every effort to keep the extremities warm, especially the feet, not only by means of clothing, and avoiding tight boots and shoes, but also by keeping them as much as possible in motion, which will help very much to keep up a brisk circulation of the blood, and may prevent the fatal effects which would otherwise follow. It has been recommended, when the situation is too confined to allow the feet to be moved freely, and two or more persons are exposed

together, as in a coach, that they place their feet, without shoes, against each other's breasts. It is of the highest consequence while abroad, to guard against drowsiness in very cold weather—which may be followed by the sleep of death, if you so far yield to it, as to lie down exposed to the piercing air. If your strength should fail you in such a situation, exert yet one effort to preserve life, by making a cavity in the snow and covering yourself with it, leaving only a small opening for fresh air. This advice is founded on the experience of Mrs. Woodcock, late of Imington, near this place, who existed for more than a week in such a situation; and upon the well known facts that sheep have been preserved many weeks under the snow, and that tender plants are protected by it, as by a warm covering. At all events, it is much better than being exposed in the open air. Strong liquors or spirits are highly dangerous, after a journey of this kind: a moderate draught of cold water will be much preferable. If any parts of the body be benumbed with cold, they should be rubbed with such water, or with snow, and brought to their

usual heat, not suddenly, but by degrees. A brisk walk, if the person is capable of it, would soon produce a most beneficial effect.

When cold has occasioned apparent death in any one, the body should be placed in a room without fire, and rubbed steadily with snow, or cloths wet with cold water; at the same time, the bellows should be applied to the nostril, and used as is directed for persons who have been drowned.

Nearly connected with this subject, is that of

Catching cold, as it is termed, which, though generally esteemed a trifling matter, is often, when neglected or improperly treated, the forerunner and cause of the most terrible disorders that afflict mankind. It is, in fact, an inflammation of the parts that are affected by it; and though it most frequently appears in cold weather, it is occasioned, for the most part, by a too sudden change of the body from cold to heat, instead of raising it gradually, when cooled, to its proper degree of warmth. As this is a medical subject, it would be improper in me to say much about it: I have, however, given you the opin-

ion of a very eminent physician,* confirmed, as I believe it now is, by the authority of the faculty in general. Though we are exposed to the danger of taking cold in almost every situation, yet, as we are especially liable to it when travelling in unfriendly weather, and as it is of some consequence to know how to treat it ourselves, when we cannot have the benefit of medical advice, I shall extract for your use two or three observations from an eminent writer, not long since deceased. They are so reasonable in themselves, and so applicable to the case before us, that they are well worth your attention and remembrance.

"When a cold, attended with a cough, is fast-

* Dr. Darwin, who says, "a sudden change from cold external air to that in a heated room, is certainly a much more frequent cause of inflammatory affections of the lungs, than has hitherto been generally supposed. It is, I believe, by far the most frequent cause of taking cold." Quoted by Dr. Beddoes in his "Instructions" with regard to health, &c. for "persons of all capacities," p. 157. In the next page, is given an account from Dr. Cortum, a foreign physician, of two men who contracted a most violent pleurisy, "in consequence of being out many hours in the cold, and immediately going into an extremely hot room, and there solacing themselves with spirituous liquors."

ening upon a person, what is proper to be done? This ought generally to be known, as the poor cannot afford, and others, at first, will seldom take the pains to seek advice. It is not right, then, in the beginning of a cold, to make the room where you sit warmer than usual, to increase the quantity of bed-clothes, to wrap yourself in flannel, or to drink large draughts of piping hot barley water, boiled up with raisins, figs, liquorice root and the like. This is the right way to make the disorder worse. Perhaps, there would be hardly such a thing as a bad cold, if people, when they find it coming on, were to keep cool, to avoid wine and strong drinks, and to confine themselves for a short time to a simple diet, as potatoes or other vegetables, with toast and water. I have known instances of heat in the nostrils, difficulty of breathing, with a short tickling cough, and other symptoms threatening a violent cold, go off entirely in conequence of this plan being pursued. I have found the pulse beat from 12 to 20 strokes in a minute less, after a person at the onset of a cold had continued quiet three quarters of an hour in a cool room. It is

not only warmth suddenly applied, that will throw any part of the body, after it has been starved or benumbed, into violent action, and bring on inflammation ; strong liquors will do the same." These are the remarks of the late Dr. Beddoes, in a very useful little book which he published some years ago at Bristol, under the title which you will find at the bottom of this page.*

A sudden change from hot to cold will also be productive of injurious effects : of this you have already had a striking proof in the melancholy fate of the young men alluded to by Dr. Fanklin. (see p. 88.) The change from heated to cold air, though not so violent as to plunge into the water, is often productive of rheumatic and feverish complaints; especially when persons who are in a high state of perspiration, or just beginning to cool, expose themselves to a draught of air for any considerable time.

* ' Instructions, from which persons of all capacities may learn when their own health, or that of their children is about to decline dangerously ; as also how to act in threatening emergencies. By Thomas Beddoes, M. D.'

On the subject of catching colds, are here for the first time annexed Dr. MITCHILL's observations, written some years ago, for the information of one of his inquiring friends.

" This frequent and troublesome ailment, seems to be much misunderstood by people in general, even of the more intelligent and enlightened classes, not excepting physicians themselves. The name of the malady, ' a cold' in our language, is ill chosen ; and tends to mislead folks in their thoughts concerning it. Whence, when we advert to the influence that words have upon ideas, a tolerable reason can be rendered, why the misconception is so extensive.

" It is generally thought, that the complaint is catched by exposure to cold, especially after the body has been heated and brought into a state of perspiration, by exercise, clothes, or culinary warmth. I shall not enter into the detail of various hypotheses about its causes, as you have done, nor discuss whether it is owing to a reception of frigorific particles, or suppression of perspirable matter ; whether it arises from repletion or inanition ; because, it appears to me, all these

suppositions are very far from the truth. But I shall endeavour to state to you some facts and considerations, tending to a conviction that *heat* is the exciting cause of this rheum or catarrh, by which I mean, that combination of sneezing, coughing, inflammation of the throat and nostrils, heaviness of the head, suffusion of the eyes and countenance, &c. which together, constitute what is is called '*a cold.*'

" And here it will be enough for the present purpose, to use the terms *heat* and *cold* in their vulgar and ordinary signification, without calling in the aid of instruments to ascertain the several degrees of warmth with philosophical accuracy.

" After long search and inquiry, for an instance of this disease coming on during the prevalence and under the actual operation of cold, I have been hitherto entirely disappointed. Not a single, unequivocal and well-authenticated fact, has ever yet been produced to me, of the commencement or increase of the enumerated phlogistic symptoms, while the body of the person was continually under the action of the refrigerating cause. The

observations of others may possibly be different from mine, but certain I am, that neither in myself nor in others, have I ever been able to remark the before-mentioned inconveniences, until the body of the patient had somehow been exposed to the agency of increased heat or stimulus.

"So far is *mere cold* from being the cause of catarrh, that many instances have happened of persons being almost chilled to death by wintry exposure, and recovered to good health, without experiencing a symptom of that affection. And this is commonly the case where prudent measures are adopted, of applying heat to the torpid body, not suddenly nor violently, but by slow, gradual and almost imperceptible degrees. In all the cases noted by myself, the beginning of the malady is to be dated from the excessive and inordinate effect of an exciting or inflammatory power upon the body, for the most part predisposed by antecedent cold, to receive more easily and readily the morbid impression.

"Let us, however, attend to the evidence of facts, and try whether this doctrine is well supported.

"I remember, when I was in Edinburgh, I had occasion to consult a number of authors upon a certain subject which I was then anxious to investigate. In order to do this more conveniently, I went to the University library and requested the keeper to hand me the several volumes that I wanted to inspect. The room in which I sat down was airy and spacious, the weather raw and damp, the fire small and remote. I continued intent upon the objects of my search, until I shivered with cold, and my fingers were almost too much benumbed to pen the extracts I was making. In this condition, I departed from the library, and that I might warm myself, ran briskly along the street to my lodgings. To make myself comfortable the sooner, I took a small cordial, and placed myself near a hot coal-fire. After a short time, the symptoms of catarrh manifested themselves. They went on to increase until dinner time. During and after dinner, they were considerably heightened. As I was under an engagement to spend the remainder of the day abroad with some agreeable company, I went, indisposed as I was, to join the party. And here

in addition to the stimuli of the exercise, the fire, the cordial and the dinner, the operation of a heated chamber, good punch, warm tea, sprightly conversation, vocal and instrumental music, was so powerful and efficacious, that my catarrh became too troublesome to permit me to tarry until the departure of the other guests. I went home, and again placed myself very near a large fire, to expel (as I thought) the cold which I had taken, but I quickly found all the symptoms intolerably aggravated thereby. The fire was then damped, I moved to the middle of the room, stripped off my coat, sat alone in my shirt, and swallowed now and then some cold water. In a very short time, I felt the tightness across the breast, swelling of the throat, dry, tickling cough, stoppage of the nostrils, difficulty of breathing, and stuffing of the head, all greatly mitigated : insomuch, that emboldened by this success, I, by pushing up the window-sash to admit the cold air during the night, drinking more cold water, and taking one blanket off my bed, rested pretty comfortably, was much better in the morning, and by

a continuance of the like regimen, soon got completely well.

"I recollect also, once when I was in New York, a few years ago, I was troubled with a catarrh for some short time; and as it was not violent, I paid very little attention to it. One evening, it happened, that I had business at five or six different houses. While I was walking in the open air, and kept cool in my passage from place to place, I felt very little of the complaint; but no sooner had I seated myself ten minutes, and partook of the glow of the room, and the spirit of discourse, than a running of the eyes and nose, increasing hoarseness, and frequent sneezing, indicated the unfriendly action of the parlour fire. In the course of my walk, the catarrh was regularly increased by going within doors, and as constantly relieved by coming out: so that five or six vicissitudes were experienced in the course of one evening.

"It occurs to me likewise, that as I lately made an extensive excurson through the state of New-York, about midwinter, in a sleigh, in compliance with the humour of the company, and the fashion of the season, I drank several times

of cherry-brandy, gin, &c. the morning on which I set out. After considerable exposure in this way, I stopped at a tavern for refreshment.—Here, soon after I had swallowed some spirits and water, and enjoyed the fire, I was seized suddenly with catarrh; and as I was afterwards induced like the rest, to continue taking whets, while on the journey, the consequence was, that the malady did not leave me until after my return, and the discontinuance of that fashionable, but unhealthy practice.

"Here, I believe, are some of the common methods of bringing on catarrh; and the circumstances of each experiment have been thus related in detail, that a fair inference may be drawn from them, of the mighty influence of "*heat and other stimulants*," in exciting and continuing the disorder.

"If from these instances, and thousands of others, which might be adduced in favour of the same opinion, it can be firmly established, that cold is not the cause of catarrh, *but that heat is the principal, though not in all cases the sole agent in forming the complaint; it may be easily understood, how it might be prevented and cured.*"

Thunder-storms.—Thunder, you know, is harmless: it is only the lightning which does mischief. The safest places in thunder-storms are beds, the middle of rooms, and cellars under ground. While sitting or lying in a room, the windows and doors should be closed, and care should be taken not to be near any large pieces of metal, which, by attracting the lightning, might injure the eyes, if no other injury should ensue. If you are overtaken by a thunder-storm, while on a journey, be sure never to take refuge under trees, for these may prove treacherous friends, and draw down upon you that lightning which you are desirous of avoiding.

Fainting.—Nothing alarms by-standers so much as seeing a person faint away, as it is called. This fainting arises from fright, loss of blood, or pain; and, however unpleasant it is, is rather an antidote or a cure, than a disease; for, under fainting, there is a suspension of every faculty:—during it, the bleeding ceases,—the pain is not felt,—or the object that caused the fright is forgotten or removed. It is very seldom dangerous; and more harm has arisen from

the improper modes adopted to remove it, than from the fainting itself. Let the person be laid in the horizontal position, and pressure of every sort removed, as neckcloth, stays, &c.; if a man, let the shirt collar be unbuttoned, and nothing tight remain about the knees or arms. Stimulants are generally applied to the nose; and fortunately do no harm, because the person is insensible to their influence. If in a room, let the window be opened to cool the surrounding air, for if it be heated, even that stimulus is too great; for the same reason, it is improper for persons to stand in a crowd around one who has fainted, and who wants all the fresh and cool air that can be admitted to him. Never shake the body with a view to rouse the vital spark, lest you darken it for ever.

Many persons, from extreme sensibility, are apt to faint when they see any one in distress, or witness any alarming accidents: and hence, instead of being of any use, they add to the general confusion. This state of mind, as it is much to be lamented, so it ought to be guarded against with the utmost care. It depends, in some mea-

sure, no doubt, upon bodily constitution: but since we know it may be increased by indulgence, why should it not be checked, or perhaps cured, by good sense and resolution? it will be worth your while to try; and for your encouragement, I can assure you, that many persons, who were formerly so timid as to run away from the sight of a little blood, and to be amazingly alarmed at a shriek, have so far overcome this weakness, as to render themselves highly useful on many similar occasions. It is certainly right to sympathize with our fellow-creatures in their distress; but that degree of sympathy is best, which, while it teaches us to pity, prompts us to relieve and assist them.

CONCLUSION.

Having thus collected for your instruction a variety of important directions, from different sources, it now only remains for me to request that you will endeavour to remember them, so that when opportunities occur, you may apply them to practice. It is one use of books, espe-

cially of those which record discoveries, that they enable us to grow wise by the experience of others. Much, no doubt, may be learned by observation; and if you can acquire the habit of carefully observing things as they happen to yourselves or to others, you will find such a habit very useful to you. But, if you attend also to what you read, as well as to what you see, you will profit as much from the observations of those who write, as you do from your own; and perhaps in many cases more so, for no one person can be supposed to have experienced so much himself as he can find related of the experience of others. Even in a book so small as this, you will find the observations and discoveries of many observing and intelligent men, related sometimes in their own language, and sometimes in mine, as the one or other seemed most likely to fix and inform your minds. It is not to be supposed that any one man could have passed through all the circumstances I have described, or, if he had, that he could have invented all the ingenious methods of preventing and removing dangers, the account of which, has so much interested you.—

Let it be your constant care, then, to add to your own observation whatever you can collect from the labours and inventions of others. So shall you daily become more wise, more happy, and more useful.

Between man and other animals, there are many points of difference ; but none more striking, as has been often noticed, than that which relates to the power of profiting by experience and making continual improvements. Here, we have an amazing superiority over the rest of the animal creation. The bees in Virgil's time, no doubt, made their honey and wax exactly in the same manner as they do now : the frogs and the mice of which Homer sang, were as well acquainted with the nature of boys and mouse-traps as any of their race at the present day : and the sparrows which lived a thousand years ago, built their nests of the same form, and of the same sort of materials, as their descendants do now. With respect to the same individuals too, it is remarkable, how soon they acquire all the knowledge of which they are capable, and reach the limit which they cannot pass. They continue all their

lives to perform the same round of actions, and in the same manner; impelled and directed by a principle which, for want of a better name, we call instinct. But human beings have the faculty, if they will but exercise it, of deriving advantage from every thing they see. They are so constituted as to be able, if they please, to make continual progress in useful knowledge; and, as the poet says, to

Grow wiser and better as life wears away.*

But it is to be lamented, that all human beings are very far from being alike desirous of profiting by their advantages. It is true, as you have learned from the Evenings at home, that "one man walks through the world with his eyes *open*, and another with them *shut*." The difference between these two is very great indeed. While the one, like the sluggard, whose soul "desireth and hath nothing," spends his time in indolence, loitering about till life itself is a burden to him, and thus becoming the sport of accidents, the tool of knaves, or the very slave of circumstances,—

* Dr. Walter Pope, in "the Old man's wish."

the other is making his observations upon every thing that passes around him, and learning from all, some useful lessons of instruction. Which of these examples you will follow, depends upon yourselves: which of the two I *wish* you to follow, your own good sense will easily determine.

In concluding these addresses, I would take occasion to remind you of your obligations to Him who hath hitherto preserved you. When you consider, as far as you *can* consider, *how many* have been compelled to

> ——————drink the cup
> Of baleful grief, or eat the bitter bread
> Of misery,

while you have been continued in the free use of your limbs and faculties, and the enjoyment of your health,—what ought you not to render to that kind and gracious Benefactor, who hath watched over you continually, and "in whose hands are all your ways?" Cherish towards him the most lively gratitude; endeavour to please him throughout your lives; seek him with the utmost dilligence; embrace, with all your hearts, the Gospel of his Son; and then you need not

doubt that he will not only be your God and your guide even unto death, but will also at length raise you to the happy place where you shall be out of the reach of accident and calamity in every form; where "there shall be no more pain," neither sickness or death; and whence "sorrow and sighing shall flee away," to return no more for ever.

FINIS.