Rules for recovering persons recently drowned: in a letter to the Rev. G. Rogers / [Robert Hamilton].

HAMILTON, Robert

RULES

FOR

RECOVERING

PERSONS

RECENTLY DROWNED:

IN A

LETTER

TO THE

Rev. GEORGE ROGERS, A.M.

RECTOR of SPRAUGHTON, in SUFFOLK.

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RULES FOR RECOVERING PERSONS RECENTLY DROWNED:

IN A

LETTER to the Rev. GEORGE ROGERS, A.M.

DEAR SIR,

IN conſequence of the melancholy accident that happened near your houſe, a few days ago, and which was the ſubject of ſome remarks I made when I laſt had the pleaſure of ſeeing you, I ſend you a few cautions, and rules, which ought to be put in practice on ſimilar occaſions, and with all the ſpeed poſſible.

Four lives have now been loſt by drowning, in this neighbourhood, in the ſpace of the laſt five months; (i. e.) three by the over-ſetting of the ferry-boat at Harwich, and the one which occaſions you the preſent communication. They

were all young, and in the bloom of health, and uſeful in their various ſtations to the community.

It is lamentable to add, that none of them could be ſaved; yet it has been affirmed, none of them were long in a ſtate of ſubmerſion; the longeſt, they ſay, not exceeding a quarter of an hour, and ſome of them much ſhorter.

This want of ſucceſs has been conſiderably greater than what has fallen to the lot of practitioners in other parts of England, ſince the time that the exertions of the Humane Society firſt began to extend themſelves. Doubtleſs, thoſe who were preſent uſed their beſt endeavours; nor is it meant by this, in the moſt diſtant degree, to throw reflections on them.

I beg you will diſperſe theſe few obſervations as far as your influence reaches, that the common people at leaſt, may, in ſome meaſure, be prepared to uſe their endeavours in a manner likely to be ſucceſsful, ſhould they hereafter be called on, from like events, to put them into practice; and to this, your known humanity, I am perſuaded, will induce you.

All I think neceſſary to ſay here, ſhall be couched under a very few heads; and on each I ſhall be as ſhort as the nature of the thing will permit, to be explicit, that the cautions conveyed,

and the rules laid down, may be the more readily remembered.

I need not inform you, that people reſiding in ſea-port towns, and thoſe ſituated near rivers, are more liable to accidents from drowning than others. The laudable endeavours of the Humane Society have ſnatched hundreds from the grave; and, by their encouragement and proffered rewards, have been the happy means of provoking to philoſophical inveſtigation ſeveral ingenious men: the labours of ſuch have enriched the medical world; and their experiments and diſcoveries greatly elucidated the ſubject of reſuſcitation.

Medical men are now, I hope, in general, pretty well prepared for applying the doctrines laid down by them, when accidents of the above nature fall in their way. I ſhall ſuppoſe, that, for the moſt part, they are provided with the beſt apparatus neceſſary on ſuch occaſions, and alſo ſufficiently expert in their application. The public ought not, however, to expect ſucceſs on every occaſion, even when the beſt means are uſed.—Caſes will occur where life cannot be recalled, and where want of ſucceſs does by no means prove want of ſkill.—This has, and doubtleſs may again take place, even when the ſubmerſed body has been but a very ſhort time in the water. It is not neceſſary to enter into an explanation of this now, though it

could receive a ſatisfactory elucidation, was this the place for it. For the ſake of thoſe of the profeſſion who may not have the books at hand where the ſubject is treated of at large, as well as for thoſe whoſe walks in life have never permitted them to turn their thoughts this way, I ſhall recapitulate ſome of the chief parts of the practice to be purſued, and followed up with ardour: they will ſerve, as we have already ſaid, as a memorandum for the medical man, while they will give the common reader, unſkilled in phyſic, ſome better idea of what ſhould be attempted by themſelves, ſhould no medical man be near, or at leaſt till he arrives.

Firſt, then,—As ſoon as the body is diſcovered and brought out of the water, it is to be conveyed to the neareſt houſe; and this is to be done by the gentleſt means poſſible. This caution I conſider of high importance. Much toſſing or ſhaking will deſtroy all hope of recovery; and many a perſon has been ſacrificed, by not attending to it, where life would otherwiſe have been reſtored.

The body is by no means then to be rolled, as many, ignorant of the pathology, and the immediate cauſe of ſuſpended breathing, have injudiciouſly practiſed. They have acted ſo, under the notion that the body muſt be full of water, ſwallowed in the inſtant of drawning. This is

erroneous;

erroneous; for little or none is taken in during ſubmerſion. The chief cauſe of ſuſpended breathing is the perſon's being totally and inſtantaneouſly cut off from a communication with the atmoſpheric air. The parts then are juſt in the ſame condition they were the moment he ſunk in the water. All circulation of the blood is almoſt in a twinkling ſtopped, becauſe no atmoſpheric air can afterwards be admitted.

Diſſections of drowned bodies have proved, that the cavities of the heart are loaded with blood. Should the body be rolled, or toſſed about, this principal part of the human fabric muſt be ruptured, and all be at an end; all hopes of recovery then vaniſh.

Secondly,—On taking up the body, we are not to wait for an increaſe of heat before we begin our operations. We are to commence them by expanding the lungs *immediately*. This is not only the firſt, but the moſt important part of the proceſs. The lungs are not to be ſuffered to remain a moment in a collapſed ſtate. If there be a ſurgeon preſent, and he has the double-ſtopped bellows, and tubes, it is unneceſſary to ſay how this is to be attempted: if not, common bellows muſt ſupply their place, and thoſe means uſed that are then at hand. The action of reſpiration is conſtantly to be imitated: but, let it be remem-

bered, not to throw in the air in a forcible manner; inſtead thereof, it muſt be gently and gradually ſupplied: firſt a little; then gently preſſing the cheſt to force part of it out; and thus continuing about a minute, when the whole air is to be preſſed out with a greater force, and a large inflation made: for in ordinary reſpiration the lungs are paſſive.

One reaſon, and that not the leaſt, is, that the air is the ſource of animal heat, and without it life cannot be continued; it is the principle that irritates muſcles, and cauſes their motion to be renewed; it is Nature's ſtimulus, wiſely appointed by the Creator of our bodies.

In a few practical remarks it would be foreign to enquire more minutely into this ſubject; the advocates for the pneumatic phyſiology, will, doubtleſs, refer it to the blood's being ſupplied by this proceſs with oxygene, of which it was deprived by ſuſpended reſpiration; and which, perhaps not without reaſon, they think is the ſource of irritability; and they will, we may conclude, bring ſome part of their proof from the difference of colour in the blood of the right and of the left ſides of the heart; namely, that in the former it is found of a black, and in the latter of a florid red colour, from its admixture with the air in its paſſage through the lungs. Here the blood, they will

will affirm, imbibes this principle, and becomes now endowed with a power of irritating the heart to contractions, which till this it did not poſſeſs. Thus the heart propells its contents, and is immediately ready to receive a new ſupply from the ſucceeding inſpiration. And they would further ſay, that as this principle is neceſſary to keep alive every fibre of the body, ſo it is thus by the circulation diſtributed to the moſt diſtant and moſt minute parts.

Thirdly. All authors on the ſubject have recommended heat; this is, without doubt, a matter of importance; but its regulation requires great care.

Error is no where oftener committed than in this part of the practice. If the heat be too great it will deſtroy the remains of life, inſtead of contributing to reſuſcitation. It will produce not a healthy, but a diſeaſed change in the arrangement of parts; and, in all probability, act in the ſame manner here, as if applied ſuddenly and largely to a froſt-bitten limb.

A few degrees above the common atmoſphere is the moſt proper ſtandard; ſix or eight may be ſufficient, provided this is between 60 or 70 of Farenheit. I ſhould think it beſt to keep it below the ſtandard of animal heats; this I place at 98 in the human body.

A room heated by a common fire, then, being always ſome degrees above the atmoſphere without doors, may afford a very convenient warmth; and a kitchen, from its having a conſtant fire kept in it, is beſt adapted, provided it be free from the effluvia of meat, and from ſmoak. Both of theſe muſt, in ſome degree, influence the purity of the air in it, and thereby obſtruct our proceſs.

Suppoſe our patient now (or the body, if you pleaſe) to be removed into the kitchen of the neareſt cottage, the wet cloaths all taken off, and the body itſelf well dried with a towel; let a matraſs next be laid on a table of a proper height and length; on this the body is to be placed in ſuch a way as to allow the aſſiſtants moſt conveniently to ſtand round it, in order to commence their operations: care muſt always be taken to lay the head conſiderably higher than the extremities. The body ſhould not be laid on its back, but on its right ſide, that the circulation may be favoured by the deſcent, when the heart is ſet in motion.

With reſpect to heat, conſidered in itſelf, it has no other uſe than merely as a corroborating ſtimulus, the application of which requires much nice regulation. It cannot ſupply the principle of life; this muſt be ſought for from the common atmoſphere. Nay, in proportion as the air becomes

comes contaminated by exhalations from fuel, and other impurities, in the ſame proportion this ſalutary food of life is exhauſted.

This leads me to notice the neceſſity not only of excluding all ſupernumerary perſons, I mean thoſe not needed in the proceſs going forward, and remaining merely from idle curioſity, or uſeleſs ſympathy, but argues ſtrongly for the free admiſſion of atmoſpheric air.

Fourthly. Frictions have at all times been recommended, and much ſtreſs has been laid on them; but abuſe in this part may alſo be committed; for inſtance, ſhould they be had recourſe to before the lungs have been expanded, they muſt do hurt: after, however, the lungs have been ſeveral times expanded, and allowed to collapſe, as already directed, in imitation of the natural reſpiration, their uſe becomes neceſſary. Along with theſe, it has been common to recommend ſpirits externally applied, as an aſſiſtant to the friction; but this is not neceſſary. Nothing need be added, unleſs a little common oil on the fingers, or palms of the hands. The region of the heart is the part where frictions ſhould be more eſpecially made on.

The reaſon why the lungs ſhould be expanded before friction be had recourſe to, is, that its action

tion being only ſimply mechanical, it may aſſiſt in propelling the blood through the circulation.

Among the various things recommended, tobacco ſmoak has held a chief place; but why it has done ſo is to me ſtrange, when the deleterious qualities of this plant are conſidered, and when its known effects of producing ſickneſs and debility render it a ſubſtance ſo unfit to reſtore life and vigor. I would reprobate its uſe altogether. Heat it ſupplies very ſcantily; for this will be in proportion to the denſity of the medium through which it is conveyed. Smoak is a thin medium and can convey little. But granted that it has no deleterious effects, it has already been laid down as a rule, that a ſmall quantity of heat only is enough, and its ſmoak is not needed for this end. And who, with the leaſt propriety could adviſe a ſtrongly debilitating power, when we wiſh to rouſe the ſyſtem from a high degree of torpor?

Sixthly. Emetics. Theſe are likewiſe improper before the circulation is reſtored, nor ought they at all to be exhibited, unleſs when it was previouſly known that the ſtomach was loaded when the accident took place: nay, I have my doubts how far even then they may be uſeful; and this on the ſame grounds, that tobacco ſmoak was reprobated. An emetic cannot act till circulation

has

has in ſome degree been reſtored. It almoſt never acts unleſs by producing ſome degree of ſickneſs and debility. The laſt is what we wiſh to obviate.

Seventh. Venæ-Section. This has been uſed, and, I believe, in moſt caſes is among the firſt things attempted to be done; but I think it would be better omitted, for the grounds on which it has been proſecuted appear to me not well founded. The foundation on which it has been inſtituted and recommended, is by ſuppoſing that apoplexy took place from ſubmerſion. This is not the caſe, as can ſatisfactorily, we apprehend, be proved, did this ſhort eſſay permit the inveſtigation. No injury is done to the brain in this complaint, becauſe no blood can enter after the perſon ſinks in the water, neither can any be returned from the head. Things then muſt remain juſt in the ſtate they were at the inſtant of going down, circulation being entirely and completely ſtopped. Inſtead of being uſeful, I am not without fears that it would prove detrimental, becauſe it is a debilitating power, the very thing to be avoided: at any rate it is an equivocal remedy, and may be omitted without prejudice.

The heart is the part that is now too much diſtended with blood; but we cannot take it immediately from thence. Could this, indeed, be done,

done, no ſhadow of doubt could remain of its utility; for experiments made on this ſubject, and to determine this very point, have clearly ſhown it.

But the taking blood from other and diſtant parts, has not been attended with ſucceſs in ſetting the heart in motion, and has, as already ſaid, a debilitating effect.

Had the accident happened from hanging, inſtead of ſubmerſion, bleeding then would have been expedient, ſince it is found, that blood *does* paſs into the brain after ſuſpenſion, and a plethora thereby produced in the brain, which, as has been already ſaid, cannot happen after the body is immerſed. The cord does not ſo completely compreſs the wind-pipe, but that a ſmall quantity of atmoſpheric air enters, by which means a partial circulation is carried on through the carotids; but as the jugular veins, by which, as the anatomiſt knows, the blood is returned from the head, lie more ſuperficial, and in the way of the cord, the compreſſion prevents theſe veſſels from emptying themſelves into the heart; hence comes the plethora, and the indication of bleeding, which may be conveniently done from the very veſſels where it can be moſt effectual, the jugulars themſelves. Or, if the operator fails in them, from other veſſels of the head; the temporal arteries, &c.

In

In recovering a perſon from the effects of noxious vapours, the ſame may be ſaid as of drowning; no plethora takes place, therefore venæ-ſection is unneceſſary, if not improper.

Eighthly. Electricity. If this be judiciouſly applied in ſmall and gentle ſhocks, it may be productive of good effects; but we ſhould keep in mind, that it is one of thoſe remedies, which from its great ſtimulant power, may do much good, or much harm. The perſon who applies this means, ſhould well weigh the buſineſs in which he is engaged, if he wiſhes to apply it with probable hopes of ſucceſs.

Let it be done in the following manner: let one of the aſſiſtants expand the lungs, and let the medical man that inſtant have himſelf prepared to communicate the ſhock: for it is at the moment the lungs are expanded that a free paſſage to the blood is opened; and, therefore, at no other moment could the electricity aſſiſt in propelling it forwards from the heart; nay, at any other moment it will do hurt. Should it be given in the collapſed ſtate of the lungs, it is a thouſand to one but the irritability of the heart is deſtroyed, or a rupture produced by the forcible contraction that would take place in the heart. In this caſe it is eaſy to ſee that it muſt react on itſelf,

ſelf, like a ſolid body, in proportion to the action given.

Ninthly. With one caution more I ſhall finiſh theſe few obſervations, and I conſider this caution as none of the leaſt in magnitude: it is this, to adviſe the aſſiſtants not to diſcontinue their endeavours to reſtore the patient too haſtily. Many lives, we fear, have been loſt through want of attention to this rule; perhaps for the firſt hour, nay, for two, or three, there may be no appearances of returning life; this, it is confeſſed, is diſheartening, but they muſt not yield; four, or even more hours, are the leaſt they ſhould apply, for it is impoſſible to ſay, *a priore*, how long the body may continue in a ſtate of ſuſpended reſpiration, before all irritability be deſtroyed; this will be longer or ſhorter in different perſons.

When the heart has begun to play, ſhould its action be weak, and the powers of life ſeem unequal to their functions, let the ſame means be continued a little longer, leſt by deſiſting too ſoon, reſpiration may be again interrupted.

A complete treatiſe on this ſubject was not propoſed here, yet I believe little of the practical part neceſſary to be done is omitted; for I am led to think few caſes will ſucceed by bronchotomy, which is here unnoticed, that will not

ſucceed

ſucceed without it; when all things fail, authors have propoſed it; but much may be ſaid againſt the operation, and I think little in its favour.

Whoever wiſhes to ſee the ſubject of ſubmerſion proſecuted in a more complete and extenſive manner, muſt have recourſe to the books expreſsly written for the purpoſe. In the voluminous reports of the Humane Society will be found much uſeful and curious matter. Goodwyn, Coleman, and Kite, have each of them given us uſeful treatiſes on this branch of medical philoſophy.

RECAPITULATION.

1. The body to be undreſſed after being taken to the neareſt houſe, and wiped dry; then placed on a table, covered with a matraſs, and let it be laid on the right ſide, in preference to the left, that the paſſage of the blood from the heart may be favoured by this poſition.

2. Expand the lungs as ſoon as poſſible; much depends on this; for this purpoſe let a pair of bellows be preferred to the blowing in air with

a per-

a perſon's mouth; the air thus thrown in is vitiated by paſſing from the lungs of the perſon employed in the operation.

3. Do not be anxious to place the body in a high degree of heat, though this has been adviſed and practiſed, it is wrong, a ſmall degree is ſufficient.

4. Let no more perſons be preſent than are abſolutely neceſſary in the operation; let all the doors and windows be open in the apartment, that the atmoſphere may be freely admitted.

5. Apply friction *only* after the lungs have been expanded, and allowed to collapſe again for ſome time, as already directed; neither ſpirits, nor any other thing need be applied with friction, unleſs a little oil on the fingers.

6. No injections ſeem to be neceſſary; avoid thoſe of *tobacco* ſmoak at leaſt, as *certainly* hurtful.

7. Emetics may alſo be diſpenſed with, unleſs where we knew before-hand that the ſtomach was loaded with food, or other matter.

8. Blood-letting ſeems unneceſſary; it is at beſt a doubtful remedy.

9. Electricity may prove highly beneficial in judicious hands, but hurtful in the hands of ſuch as have not properly conſidered the ſubject of ſubmerſion.

10. Let

10. Let long and diligent application be made of the means recommended. Do not yield the caſe up as *irretrievably loſt* ſooner than after four or five hours application of the above means.

11. As the following rule is often, and *almoſt* always trangreſſed, I ſhall again repeat it: let the body be taken up with as little toſſing and agitation as poſſible; let no jolting or rolling be uſed with a view of emptying it of water. There is no water preſent, or next to none; and the heart, which is the part chiefly loaded with blood, may be burſt by this injudicious proceeding; perhaps more miſchief has been done by toſſing and rolling than by any other part of injudicious treatment made uſe of.

POSTSCRIPT.

It ſhould have been mentioned, in its place, that, though four lives have been loſt, within theſe few months, in this neighbourhood, two of them only were found, on whom the means of recovery could be tried; yet one of theſe, it was ſaid, ſhewed ſymptoms of life after he was brought on ſhore.

The people who flocked round, toſſed, rolled, and otherwiſe agitated the body, with great violence,

lence, before medical aid came, though at no great diſtance; and much of their failure in reſtoring reſpiration, may be attributed to it.

In the ſecond caſe on which the attempt was made, agitation was likewiſe had recourſe to.

I have dwelt the more on this, becauſe I find the practice comes recommended by ſo great an authority as the HUMANE SOCIETY, vid. *Directions for the Recovery of the apparently dead, &c.* printed on a card, for the conveniency of carrying in the pocket. Doubtleſs this reſpectable body publiſhed the rule (for there is no date to it) prior to the more perfect inveſtigation of the ſubject by late authors, invited to the reſearch by their own premiums, laudably offered for this purpoſe. This Society, however, deſerves our warmeſt acknowledgments for their great and unwearied exertions; and it cannot be doubted, but poſterity will revere them, as they eminently deſerve.

The application of bottles of hot water to the feet, ancles and knees, I think of ſome importance; and, as ſoon as reſpiration begins, theſe may be uſed as conſiderable auxiliaries. When the blood begins to circulate, heat may be then gradually increaſed: by and by, as reſpiration proceeds, a warm bed ſhould be prepared, and the patient now placed in it; but he ſhould not be left to himſelf till the functions ſtrengthen, and the heart

be

be able more completely to continue its wonted motions. Sleep will now come to his relief, and its reſtorative influence finiſh the happy cure.

STATE OF THE SUBJECT, IN THIS NEIGHBOURHOOD, IN THE LAST TWELVE MONTHS.

FIVE ſuffered ſubmerſion; the bodies of TWO of theſe never found.

TWO ſpeedily taken up, and means of recovery uſed, but without ſucceſs.

ONE, near *Stow-market*; the means of recovery uſed, and happily with ſucceſs.

I remain,

Dear SIR,

With much reſpect for your virtues,

Your moſt obedient,

And very humble ſervant,

R. HAMILTON.

Ipſwich, June 6, 1794.

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