

The Emperor of Russia and the Royal Humane Society

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IN the Royal Society of Medicine, London, there is a large equestrian portrait of Alexander I of Russia which at first sight may not seem to have much relevance there, but, linked up with the present surge of interest in the history of resuscitation, it has a certain romantic charm. The Czar is directing the rescue of a youth of deathly pallor from a little river. In 1806 he was awarded the Gold Medal of the Royal Humane Society for his good deed. James Northcote, R.A. (1746–1831) had read the story in the Annual Report of the Society and painted the scene in 1820 when he was 74-years old. He kept the picture at home until he died and bequeathed it to W. Hillman, F.R.C.S., a naval surgeon, who in turn left it to his two sons. As a token of gratitude, they gave it to Dr Charles Hare, F.R.C.P. and after his death in 1898 Mrs Hare gave it to the Royal Medical and Chirurgical Society in memory of her husband who had been its honorary treasurer for many years. When that society was reconstituted as the Royal Society of Medicine in 1907, it became the property of the new one and was transferred with it to No. 1, Wimpole Street in 1912.

One of the Governors of the Royal Humane Society, a Mr Grange, who had been in Russia early in 1806 had been told of the incident by Dr James Wylie, personal surgeon to the Czar and an eye witness of the resuscitation. Mr Grange sent an account of it to the Society as soon as he returned, and the award was promptly made. The accident had occurred at the River Vilia near the town of Vilna, and Lettsom dated it approximately in 1803. The Emperor had ridden alone upon the scene when the youth was being lifted out of the water apparently lifeless. He started resuscitation at once and when Dr Wylie joined him they tried bleeding, without success. After three hours exertion the doctor pronounced him dead, but the Czar refused to give up and, eventually, there was a faint groan and a little blood dripped from the arm. Alexander had a drawing made by a local Polish artist for the lids of four snuff boxes and Mr Grange brought one of them back with him. The snuff box has disappeared but the drawing was reproduced in the 1807 Annual Report. The affair did not end there for in June 1814, when the allied sovereigns met in London, the drawing was exhibited as a transparency among the new gas illuminations, and on the following Sunday the Czar received 30 members of the Royal Humane Society at Pulteneys Hotel, Piccadilly, and Dr T. Pettigrew presented him with an Address. He became their star medallist and a vice-patron.

The treatment given by the Emperor and Dr Wylie would have been approved, so far as it went, by the Humane Society, though there is no mention of artificial respiration having been carried out. In one respect the Emperor set a good example; he persevered until the patient showed signs of recovery, a matter of more than three hours. Resuscitation for a long time has often been recommended but seldom specified in exact terms, and it is doubtful if in a later era it was ever kept up for so long as that. Originally the Humane Society recommended at least two hours effort and some physicians went so far as four or six hours, but a modern textbook now demands no more than 15 minutes for one of the standard methods of manual treatment of the drowned. The Royal Life Saving Society issues an excellent booklet, but it contains no suggestions on this important question of how long first aid should continue before giving up all hope of recovery.

The Royal Humane Society

The Royal Humane Society has played such a prominent part in the crusade for saving life after accidents of all kinds, that it is worth while recording its early activities and the fluctuations of opinion on therapeutics for the drowned.

It stemmed from a Dutch society of 1676, which advertised its project in *The*



Figure 1

Drawing in Report of Royal Humane Society 1807 taken from the snuff box presented by Dr James Wighe and Mr Grange. (By courtesy of the Royal Humane Society).

Philosopher, Amsterdam, and then re-issued it as a Memoir after its first five years endeavour. This important document received widespread notice. It not only formulated precepts for treatment, it also worked out a scale of rewards for any attempt at rescue and of fines if anyone refused to help. It warned against certain harmful practices which had crept into the folklore of Europe and it allayed the superstitions of the Dutch that it was unlawful to touch a victim at the canal bank.

A plea was made to the magistrates to deal with the accidents as a public duty, and many municipalities organized societies on the lines suggested, especially those with waterways like Venice and Milan (1768), Hamburg (1769), Paris (1771), St Petersburg, and London (1774).

Though drowning was the principal concern—strangulation, stifling in caves, cisterns or wells, and ‘damp’ in mines, were not neglected. The Queen of Hungary was an early convert and issued orders for the benefit of her subjects in the mining industries.

The first-aid treatment set out in the Dutch Memoir in 1767 was translated into English simultaneously by Dr Alexander Johnson and Dr Cogan in 1773, and served as a preliminary model for the Humane Society in 1774. The Society had been quick to issue instructions, together with a list of prohibitions such as rolling the patient over a barrel or hanging him upside down, which had been the custom and, indeed, advised by Dr John Fothergill in 1744. In addition to inflation of the lungs, the measures recom-

mended consisted of common remedies such as drying and warming the body, gently rubbing the skin, applying stimulating vapours up the nostrils and carefully compressing the upper abdomen. They had doubtless been in operation from time immemorial and there were already a few cases reported, some of them very tall stories.

In England, Dr Rowland Jackson had written in 1746, a little treatise (anonymously), containing similar rules for revival and begging his readers not to be too credulous of extraordinary recoveries, as J. B. Winslow had laid down that no one was indubitably dead until putrefaction had set in. Jackson also pointed out that many of the reports came from reputable sources but it cannot be denied that the same spectacular incidents tend to crop up, with variations, again and again in the literature.

J. W. Pechlin in Sweden and the Rev W. Derham in England are sometimes credited with being among the early exponents of resuscitation, but their writings do not give the impression that this was their primary motive.

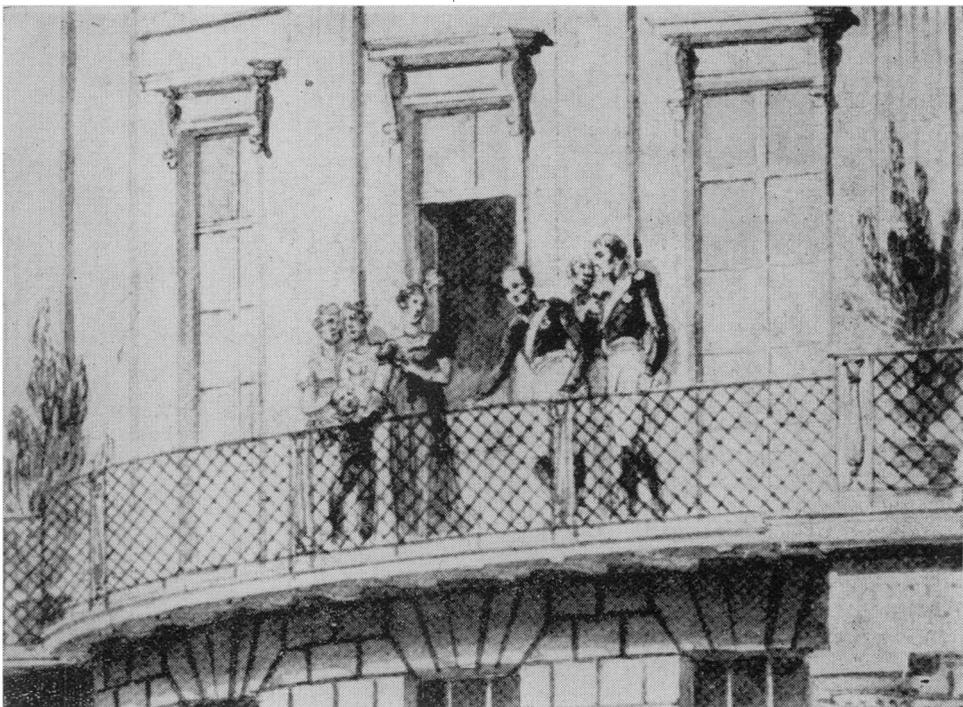


Figure 2

TOPOGRAPHY: Great Britain: London. Pulteney's Hotel. The Czar Alexander of Russia and his sister the Grand Duchess Catherine on the balcony. June, 1814. Neg. WHML 6672. R. Colby, Mayfair. London: Country Life. 1966. f.p. 145. In copyright. Original water and an engraving at the British Museum.

In 1676 Pechlin published a book on hibernation and animal life under ice or water, and he introduced a few examples of human beings who had survived long immersion. One related to an old gardener in Tronningholm who had once been stuck for 16 hours in a standing position in about 60 feet of icy water and had been brought back to life by ordinary means. The Swedes warmed their patients extremely gradually as was ordinary in cold climates. The Russians sometimes wrapped them up in snow for a time before thawing them out, but this was a treatment given most often to victims of suffocation from the fumes of their domestic stoves; a winter cure for a winter accident.

In 1773 the Rev W. Derham, F.R.S. (Boyle Lecturer), published his sermons delivered at the Church of St Mary le Bow, Cheapside, purporting to reconcile scientific knowledge

with divine creation, according to the terms of the bequest. In a chapter on respiration, he quotes two of Pechlin's wonder tales and adds one of his own about one Ann Green, who was hanged in Oxford in 1650, cut down and brutally handled, but survived to rear a family.

He used the ordeal of the Tronningholm gardener to illustrate the possibility that a patent foramen ovale might keep a person alive without respiration, though, of course, he could not put his point to the test. The patency of the foramen ovale after birth was still a matter for dispute at that time and Dr W. C. Gibson tells us that the relationship of the foramen with the respiratory system of aquatic animals was the subject of a discussion at the Royal Society in 1678 and of great interest to Sir Christopher Wren. Derham remarked "It is generally thought not improbable that the foramen ovale may remain open in man", and during the eighteenth century this developmental defect was taken quite seriously as a possible factor in survival from long immersion in water. Cheseldon did not believe in it though he recognized the occasional patency of the foramen in adults, and knew of the controversy over amphibious animals, having himself made some dissections. As for Ann Green, Derham thought that her hold on life might



Figure 3

DROWNING: A young man being taken out of the water, apparently dead, in the sight of his distressed parents. From an engraving by R. Pollard after R. Smirke. 1787. Neg. WHML 6674. In the Wellcome Institute. By courtesy of "The Wellcome Trustees."

have been due to an ossified or abnormally tough larynx, and it is clear from the text that the brutality was meant kindly, to put her out of her agony; and that her recovery had not been contemplated.

All this was far removed from the philanthropic aims of the Royal Humane Society. These were well illustrated by Pollard engravings after Robert Smirke, R.A. (1758–1815), which were issued in pairs in 1787 to advertise its good works. The first shows a body being dragged out of a river, and the second is a bedroom scene with Dr W. Hawes, co-founder with Dr Cogan of the Society, in attendance on his restored patient and Dr

Lettsom explaining it all to the relatives. John Hunter was consulted and read a paper at the Royal Society in 1776. He described experiments that he had started in 1755 on the effects of immersion and his interpretation of them. He believed that the action of respiration was essential for cardiac action, so its restoration was his first objective. In his experiments on animals he had used bellows of his own design which separated the air blown into the lungs from air sucked out, so that they did not mix, and these bellows could be adapted for real resuscitation. Hunter mentioned the advantage of using oxygen, Priestley's new discovery, which was easily obtainable in bladders or bottles. His other recommendations conformed with the Society's usage except that he condemned tobacco clysters and bleeding and said nothing about inflation of the lungs by human breath.

Dr W. Cullen, who was consulted by Lord Cathcart for advice and action in Scotland sent his famous letter in 1774. It contained nothing original is Cullen was in agreement with the Humane Society's proposals. He refers to inflation of the lungs, either by bellows



Figure 4

DROWNING: The young man restored to life. Includes Dr Lettsom and Dr Hawes. From an engraving by R. Pollard after R. Smirk. 1787. Neg. WHML 6675. In the Wellcome Institute. By courtesy of "The Wellcome Trustees."

or by human agency, through tubes, and passed on Alexander Monro's suggestion of pressing back the cricoid in order to prevent air from going into the stomach, something which Hunter had also thought of.

From the start the Society was anxious to encourage improvements in rescue methods and awarded prizes and medals for contributions of useful new ideas, which the Medical Society of London adjudicated on. The first had been paid for out of Dr Hawes' own pocket but the Society soon took over the obligation. Doctors C. Kite, E. Coleman, E. Goodwyn, and Anthony Fothergill are some of the early medallists and their essays were published in book form.

Dr Charles Kite, a practitioner in Gravesend, did a good many experiments on small mammals and a few on himself in order to try and establish the exact cause of death in

drowning (1788). He was inclined to attribute it to an apoplexy following on obstruction of the airway by spasm of the muscles round the larynx. He acknowledged that he had never verified this at a post mortem, nor had he read any description of damage to the brain. Necropsy reports on the drowned are very rare; it seems to have been easier to get hanged subjects for examination. Kite was careful to confine himself to material he could check and he relied on the Humane Society's reports for much of his prize essay. In principle he agreed with inflation of the lungs by human donor or by bellows, but he regarded the operation as rather unpractical for general use by the public; even with Hunter's bellows, there was a danger of vitiated air being blown back by mistake. Moreover, the Society's records showed that for the majority of successful revivals there had been no artificial respiration at all, other means having proved sufficient for recovery. Kite's essay was good publicity for the Royal Humane Society and may have contributed to the wave of enthusiasm for saving life all over the country. The dispensary at Newcastle upon Tyne circulated handbills of instructions and established five receiving stations like those in London (1789); Northamptonshire had a Preservation Society which commissioned a book from James Curry on apparent death from drowning and other accidents (1792); Derby Corporation distributed gratis a book by Alexander Johnson designed to save people from being buried alive (1774), and Dr Dickson, Lettsom's friend at the Whitehaven Dispensary, was also inspired to take action about the same time.

Dr Anthony Fothergill, a practitioner in Bath, wrote a comprehensive essay in 1794. In contrast to Kite he attached great importance to artificial respiration, preferably with 'pure air' by bellows as he considered human breath too impure for safe usage.

Although they did not altogether exclude the direct oral inflation of the lungs recommended in the original manifesto of the Society, most of these pioneers were thinking mainly in terms of blowing air into the patients' lungs through tubes in mouth or nose, or by bellows. Some were keen to instruct the public but there was a good deal of uncertainty whether ordinary people would ever be capable of giving such treatment. The instruments required for it were housed in the receiving stations set up near waterways where they could be packed up and transported to the trouble spot. There were at one time 11 stations in London, one being in Hyde Park by the Serpentine, on a plot of ground which had been granted to the Society by the King in 1790. A pretty little house (built in 1834) stood there, with recovery rooms and bed accommodation and a resident superintendent until it was destroyed by a bomb in 1940 and now there is nothing but a tablet in the grass to commemorate the site.

Measures suitable for medical men to administer were detailed in the Annual Reports of the Society and often modified by its advisers as time went on. Tobacco fumes insufflated into the lower bowel was much favoured in the early annals but had been dropped by 1809 and put among the dangerous practices. The French Royal Academy of Sciences had recommended tobacco clysters in 1740 and the Dutch had given them to almost every single one of the 147 restored patients listed in the Memoir, so it was clearly accepted everywhere as a proper and effective treatment until the Royal Humane Society banned it. Lettsom, Hunter and Kite had never approved but Dr Hawes hankered after it until the day he died. When one remembers the deep inspiratory effect of manual dilatation of the anal sphincter on the anaesthetized patient, the manoeuvre is not quite so preposterous as at first it may appear.

Bleeding remained popular until well into the nineteenth century. It was something for the doctor to do and comforted the relatives, but already in 1775 the Humane Society was warning its members that bleeding must be discreet and moderate. If done at all the jugular vein should be chosen, but the more experienced the observer, the less value he put on bleeding. Blood transfusion was never mentioned by the Society; it had been attempted in the past and Dr J. Fuller, of Berwick, reported trials he had made in 1784,

using dogs blood and sometimes bleeding before, or perhaps after, the transfusion. He did not claim any striking success.

Electricity applied in the form of low voltage galvanism to the chest wall appears in the 1789 report and was often discussed. Mild shocks were to be aimed at and they were to serve partly as an indication that the tissues were capable of re-animation and so to prevent the dreaded burial alive.

Bronchostomy or tracheostomy received scant attention from the Humane Society at first, though Rowland Jackson had laid stress on it in 1746, and some young surgeons in Utrecht had persuaded the Dutch to consider it. It has a long history and L. H. Hawkins has recently given a good brief account of it. Spasm of the glottis as a factor in death from drowning is a well established theme but the circumstances of the accidents

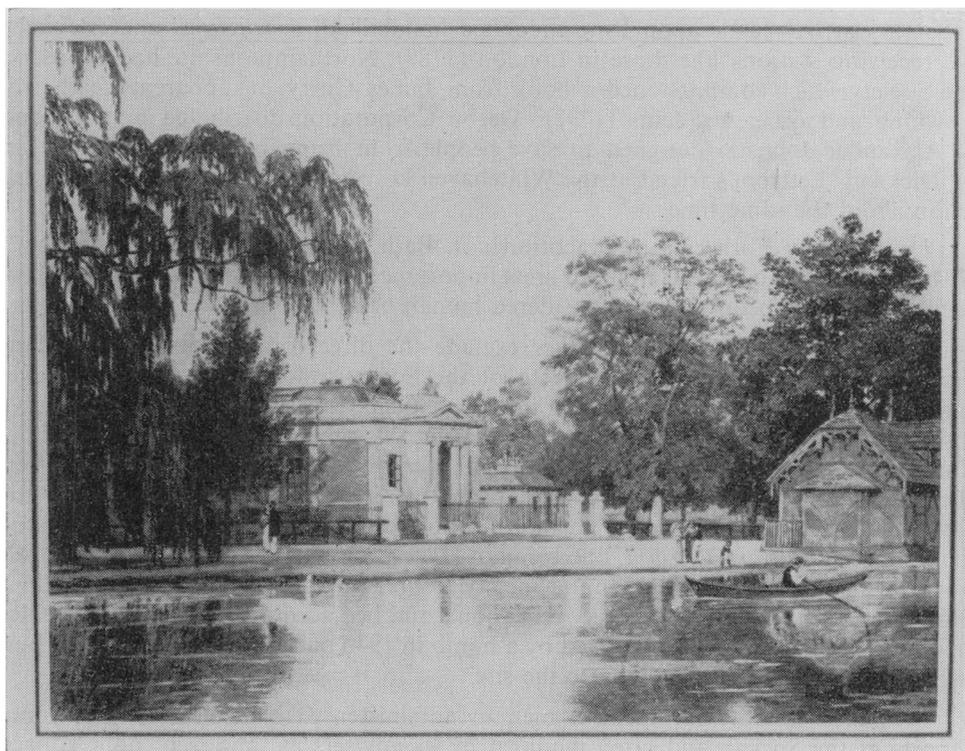


Figure 5

Receiving Station. Royal Humane Society at Hyde Park. Built in 1834. By courtesy of the Royal Humane Society.

would usually make the operation difficult to decide upon and carry out and in the eighteenth century it was only recommended as a last resort. Intubation in skilled hands was sometimes suggested but not often performed.

On the Continent in the period corresponding with the foundation of the Humane Society there were many publications from distinguished physicians in all countries and they indicate the great interest taken in the problems of death and resuscitation during the whole of the eighteenth century. Some of the authors had never quite got over the shock of the fate of Vesalius (1514–1563) through his error in opening up a body found to be still alive.

In the Humane Society's Annual Report for 1793 there is a statement which often recurs in the general literature, that Réaumur had made a communication to the French

Royal Academy of Sciences in 1767 concerning some successful resuscitations after drowning in Switzerland, and factual support from a scientist of such reputation had evidently encouraged the Society in its early days when it was suffering from public abuse and ridicule. But, in 1767, Réaumur had been dead for 10 years and there is no communication of his on that subject in the Transactions of the French Academy at any date. Fortunately Mr L. M. Payne, Librarian to the Royal College of Physicians has cleared up the discrepancy by finding all the relevant information in a book at the College. It is J. B. Winslow's "Dissertation sur l'Incertitude des Signes de la Mort et l'abus des Interremens", translated with a Commentary by J. J. Bruhier (1742). The original had been in Latin.



Figure 6

RESUSCITATION: Pit Fire. Engraving of patient. Mouth to mouth method. "I applied my mouth close to his, and blew my breath as strong as I could, but having neglected to stop his nostrils, all the air came out of them; wherefore, taking hold of them with one hand, and laying my other on his breast at the left Pap, I blew again my breath as strong as I could, raising his chest fully with it, and immediately I felt six or seven very quick beats of the heart; his thorax continued to play, and the pulse was soon after in the arteries." The engraving is taken from Winslow, his extract was taken from the original article by William Tossach, Surgeon in Alloa. A man dead in appearance, recovered by distending the lungs with air. (11 Nov. 1732). *Medical Essays* 1744, 5 pt ii 605. Neg. WHML 7328. J. B. Winslow, The uncertainty of the signs of death. London: M. Cooper, 1746. f.p. 81. Wellcome Institute copy. By courtesy of "The Wellcome Trustees."

Bruhier wrote that he had found an article 'edited' by Réaumur which had been printed and circulated by the French Academy in 1740. It was entitled "Avis pour donner du secours que l'on croit noyés" and Bruhier inserted it in full at the end of his translation of Winslow's Dissertation.

According to the bibliography of Réaumur's works, it was a single page, in the nature of a broadsheet, and it had been distributed throughout France by the Ministers of the Interior, the police and the maritime offices. In some degree it forestalled the Dutch Memoir and in particular there was reference to a series of successful cases reported in the "Mercure Suisse". Thus, Réaumur seems to have drawn attention to the Swiss results as early as 1740 and the French Academy had sponsored his crusade. The date 1767 in the Humane Society's Report must refer to a later printing of the leaflet.

Mouth-to-mouth inflation of the lungs, otherwise expired air ventilation, or, in

modern parlance, the "kiss of life", became an important life saving measure as soon as the Humane Society had captured public sympathy for people drowned or suffocated. It had doubtless been performed here and there often enough before then, though there is no reason to suppose that the prophet Elisha was an ancient practitioner of the art as has so often been claimed in recent years. It was not always so, for when the legend was discussed by members of the Humane Society in 1803, there was no talk of Elisha having blown air into the child, although lung inflation was a familiar procedure at that time; the emphasis was on other aspects of his treatment. In the Judaic story there is not a word about blowing, or even breathing, air into the lungs. To anyone miracle-minded, recovery might just as well have resulted from Elisha putting his eyes or his hands upon the child's respectively. By the more prosaic it might be attributed to the body warmth imparted by the prophet (as described), something well within personal experience. The little boy had complained of his head while in a field at the reaping, and had 'died' almost immediately. Then, on recovery he had a fit of sneezing. Without speculating on the diagnostic niceties, it sounds just the sort of seizure likely to stand a good chance of recovery in the hands of a vigorous personality like Elisha. The story is positive and to the point, like so much of the Holy Writ, and Elisha's several actions are given equal value. There is no mention of air being blown into the lungs, a feat which requires considerable force being and must be accompanied by closure of the nostrils as is emphasized in all the early literature. If the term 'kiss of life' ever could be appropriate, it would be so for that occasion, for Elisha just put his mouth upon the child's—a kiss—and it came to life. To read more into the story would be more guesswork.

In 1660 Julius Sperber published a work entitled *Mysterium Magnum*. Suspended animation comes within the orbit of his reflections in a paragraph arguing the truth of re-animation of persons who have died from drowning, freezing, hanging or apoplexy. The spark of life in their astral bodies could be, as it were, rekindled by someone breathing very hard into their lungs. Sperber claimed to have seen many examples of such re-animation at all ages, not only in infants.

Blowing air into the newly born may well have been a popular practice for a long time and Rowland Jackson (1746) tells of the maid of an old lady who revived her mistress, after the doctor had declared her dead, by breathing into her mouth because she had seen stillborn infants so treated by midwives. L. H. Hawkins found an entry in the Humane Society's records for 1802, that the Matron of the City of London Lying-In Hospital had been awarded one of its medallions for reviving more than 500 newly-born babies by her 'judicious exertions' during the course of her 30 years duty there. Her method is not given.

The first reliable record in Great Britain of resuscitation of an adult by blowing air into the lungs appeared in the 1744 issue of "Essays and Observations" published by an Edinburgh Society, though the incident had occurred 12 years before that. It was not a case of drowning.

In 1732 Dr William Tossach of Alloa (Scotland) had revived a collier named James Blair who had been left for dead from the fumes of an underground fire in a coal pit. After some delay his body had been brought to the surface, apparently lifeless. Dr Tossach laid him out and breathed as hard as he could into the man's mouth; it was not until he closed the nostrils that he got his effect. He wrote modestly of his so-called experiment as a novel treatment which would be simple and safe so there could be no harm in informing the public of it. When Dr John Fothergill read the article he was so impressed that he wrote about it at once and then, in 1745, presented a paper at the Royal Society in order to spread the message. His comment was that though inflation of the lungs of animals had been known to anatomists for a long time, he had never heard of the application of this knowledge for the purpose of restoring human life. He felt sure that it would be useful for all forms of suffocation. Nobody took the slightest notice.

But, somehow, the message did eventually get through and 23 years later, the blowing of air into the lungs appeared in the Dutch Memoir as a promising method of resuscitation of the drowned, and Dr Vincentini gave it prominence in his Memorandum to the Magistrates of Venice in the following year (1768). In 1744, when the Humane Society in London was putting out its first Directions, mouth-to-mouth ventilation (with the nostrils closed) was given pride of place, with a qualifying note, the "handkerchief may be used to render the operation more delicate". Air could also be blown up the nostrils (with the mouth closed), by a donor. By 1785 oral ventilation had got into a textbook. In the chapter on bronchotomy in his "System of Surgery", Benjamin Bell refers to it as a legitimate way of trying to restore people who have suffered immersion in water, but in his own experience it was seldom successful and bronchotomy had to be done after all. Breathing air into the lungs, was, therefore, an accepted procedure at the turn of the eighteenth century and it was a matter of personal choice whether it was blown in by mouth on mouth or through tubes. But in spite of the Dutch Memoir and the Humane Society, in spite of Dr Tossach and Dr Fothergill, mouth-to-mouth inflation did not catch on in a big way and some authorities opposed it. In 1813 the Royal Humane Society eliminated all forms of air ventilation by human donors because the breath was considered injurious on account of the carbonic acid gas content in expired air. It is known now that this gas content does not rise above 4 per cent and there is still 17 per cent of oxygen in expired air which is quite sufficient for a recipient. Atmospheric air from bellows was still allowed for a time but as the apparatus was often unobtainable in an emergency, inflation of the lungs by any method fell into disuse for about 150 years, except occasionally in infants.

Manual manipulation for restoring respiration came into fashion and various methods competed for popularity. The Royal Medical and Chirurgical Society took an active interest and organized major enquiries in 1862 and 1903. Committees were continually meeting to decide on the best technique and finding it difficult to make up their minds.

The Royal Humane Society gradually ceased publishing instructions towards the end of the nineteenth century and other life saving societies took over the task. At first there were four principal methods to choose from associated with the names of Marshall Hall (1856), H. R. Silvester (1858), B. Howard (1871) and E. A. Schaefer (1903). Then it narrowed down to a choice between the Silvester and Schaefer methods and in 1907 the Royal Life Saving Society adopted the Schaefer proposals until 1952, when it took up the Holger Nielsen modification. In 1966 an international symposium gave total support to 'expired air ventilation', the mouth-to-mouth inflation of the lungs which Safar had advocated in 1958. The Royal Humane Society gave its active approval and the Red Cross Society now teach no other method of revival in their ordinary classes for the public. It remains to be seen whether this disagreeable, rather difficult operation requiring a certain skill, great blowing power by the donor, and almost two pairs of hands to get adequate ventilation, can continue to be universal to the exclusion of all other forms of first aid for the drowned.

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