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MEDICINE

How Medicine Brings the "Dead" to Life

By MARJORIE MACDILL

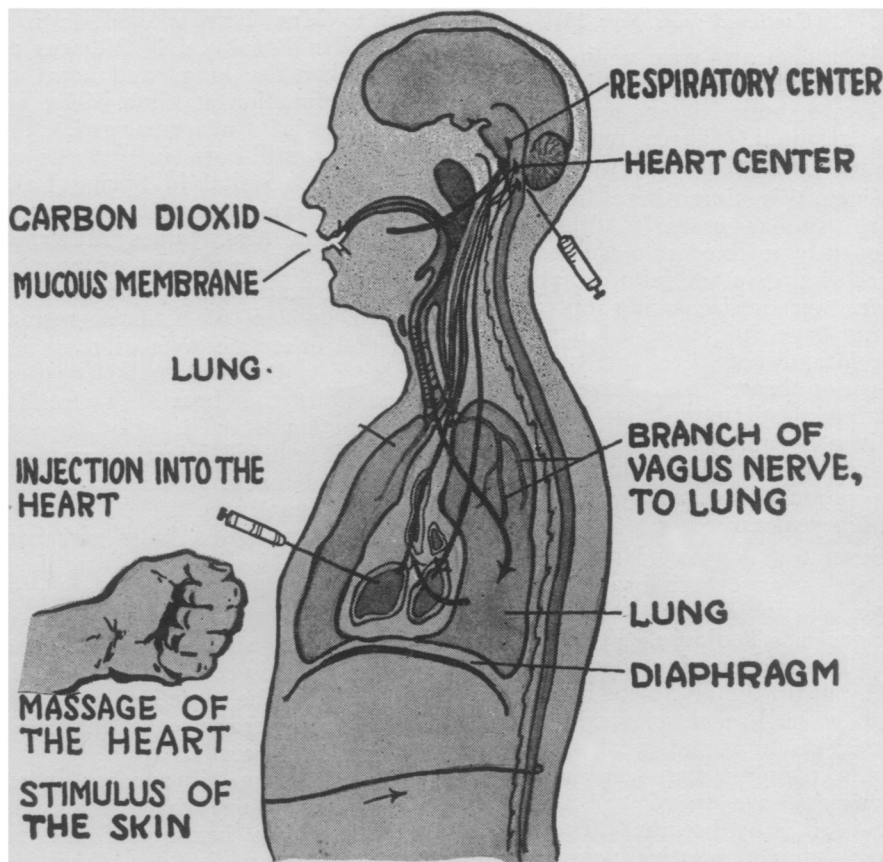
The beneficent grasp of modern science can now, in some cases, reach out and snatch back to life those who have stepped just over the border line of death.

Life in a physical frame exhausted and poisoned by long disease complicated by age can be maintained by the physician's skill and the care of the nurse for a long time.

Where the heart is suddenly overcome by some accidental shock or strain, or where the doctor must usher into a world a new life exhausted in the struggle to be born, there is a chance for rescue.

The star performer in modern medicine, when it comes to the case of a still-born baby or a heart giving out on the operating table, is adrenalin. This drug, when it first came into use several years ago, achieved great publicity for its supposed capacity to "bring the dead back to life." Actually it is a life saver rather than a life restorer. It can stimulate a heart suddenly overcome by some accidental shock or strain. It cannot renew a physical frame exhausted and poisoned by a long drawn-out disease. It is, however, one of the outstanding drugs of modern times and has brought about the survival of patients in many a spectacular case of heart stoppage.

The power of the suprarenal glands, of which adrenalin is the extract, to raise blood pressure by causing powerful contraction of the muscular walls of the blood vessels has been known for many years. The glands are small, two in number, situated just above the kidneys. Their active principle, causing stimulation of the muscles of the heart and blood vessels, was isolated in the period from 1901 to 1903 by several chemists, and is known to trade by the name of adrenalin, though scientists call it epinephrine.



HERE ARE THE CHIEF POINTS of attack in bringing an apparently dead body back to life

Adrenalin was tried out on wounded soldiers by German surgeons during the war without a great deal of success, but by 1919 there were several cases where patients survived several hours after the injection. In 1921 another German doctor reported the revival by means of adrenalin of a woman who had "collapsed" while being operated upon and was so far gone that even direct massage of the heart through the operation wound failed to start it going again.

Six minutes had elapsed when the drug was injected. Improvement in the heart sounds was noticed in ten

seconds, breathing was soon resumed, and four weeks later the woman was discharged as cured.

In 1923, Dr. Carl Boden, attending physician at the American legation at Budapest, was called to treat a man 56 years old, apparently dying of a heart attack. While the doctor was applying the usual strong remedies the patient seemed to die, lying relaxed and with even his lips of a death-like pallor, and with his heart action and breathing apparently ended. The drug was immediately injected into the heart. In 45 sec-

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Bringing the "Dead" to Life

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onds the heart was again audible to the stethoscope, breathing began, and two hours later consciousness was restored. Three months later the man seemed entirely well.

Since this time there have been many similar cases. Adrenalin is frequently injected into the heart in cases of circulatory failure that occur under anesthesia during operations. It can have little effect if there is no circulation, but there are authentic cases of hearts that have stopped beating a full minute that have been revived by adrenalin injection. It is interesting to note that artificial respiration is used many times as an auxiliary measure.

Several instances of still-born infants that have been brought to life by adrenalin are on record. Two doctors at Toulouse, France, who have had encouraging success in this field, put up the argument in a recent issue of a French medical journal, that injection in the heart should be employed more often when all other measures have failed to make the new-born baby breathe. They state that it is a comparatively simple procedure because the lungs of an infant who has not yet breathed are less likely to get in the way of the puncture of the needle.

If a baby does not breathe within ten or fifteen minutes after birth its chances of survival are small, so no time is lost in using adrenalin when the usual maneuvers, such as artificial respiration, rhythmic traction of the tongue, and good old-fashioned spanking have failed. The French doctors do not consider that adrenalin supplants the customary procedures to make a baby breathe at birth but they feel that it is a very useful supplement to these methods.

Several American babies who were apparently born dead have been restored to life by injections of adrenalin, according to the physicians

who attended them. In 1923 a boy born to Mrs. Bertha Isaacson in a hospital in Brooklyn, N. Y., was revived when the lungs and heart refused to function at birth. The boy was the twin of a normal girl.

Another still-born infant was revived in a hospital in Spring Lake, N. J., the same year. He was born to Mr. and Mrs. James Miller, of Belmar, N. J., and was pronounced dead by the attending physician. After ten minutes of artificial respiration and other methods of resuscitation had failed, adrenalin was injected into the heart. Twice the heart action started, only to stop again. The third injection was successful and the heart was soon functioning normally.

Two years ago a baby girl born to Mr. and Mrs. C. W. Wright, of Hightstown, N. J., was revived after it had apparently been still-born.

These were among the first cases reported in this country, but not the only ones. The practice is coming into more general use as knowledge of adrenalin spreads.

Heart massage is another means of surgical rescue that comes into play when the beating of the patient's heart on the operating table fades out and ceases.

If the location of the operative field is such that the abdomen is actually opened up when it happens, the surgeon can reach up through the diaphragm and stimulate the contraction and expansion of the heart by periodic squeezing. Sometimes it works and the touch of skilful fingers is just enough to set the body's pump in action again. So another soul is saved from eternity.

A somewhat similar case recently occurred in Stockholm. Two patients, whose respiration had already ceased and who were virtually dead, have been recalled to life in the hospital of Moerby, through unique operations performed on the heart by two young Swedish surgeons, ac-

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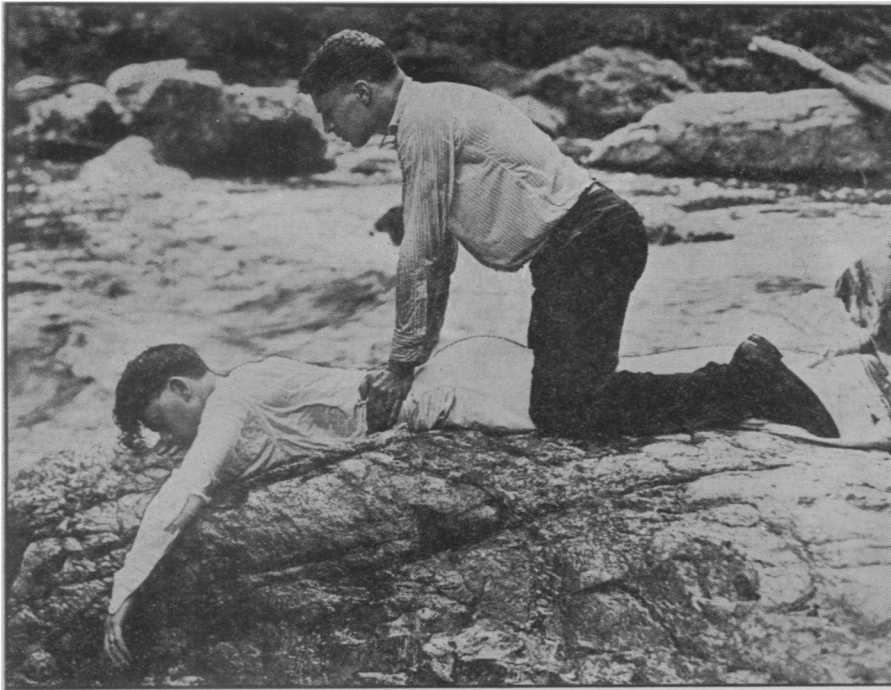
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ARTIFICIAL RESPIRATION when promptly applied has saved many from death by drowning

Bringing the "Dead" to Life

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According to a statement by the head physician of the hospital just published there. The patients suffered from thrombosis, a condition whereby blood clots are formed in the blood vessels. The thrombi, or clots, had entered the heart, stopping up the artery of the lungs so that the blood could not be emptied from the left half of the heart. The young physician, Dr. Blarence Crafoord, assisted by Dr. J. P. Stroembaeck, at once decided to attempt operations, quickly made incisions in the heart, removed the thrombi, thus restoring the circulation and brought the patients back to life.

Both patients recovered and now seem to be out of danger. This operation was first made by a German surgeon, Dr. Trendelenburg, and only two or three successful cases are so far recorded in the history of medicine. It requires a minute observation of the patient by the physician who must undertake the operation at what might be called "the moment of death," and the surgeon has a very short space of time, only about fifteen minutes, at his disposal if he is to have a chance of success. The head physician of the hospital, Dr. K. H. Giertz, is preparing to lay these remarkable cases before his colleagues at a meeting of the society of Stockholm physicians.

It is a remarkable thing that the simplest means that man has devised

to push back the hand of death when it reaches out to snatch at the living, are as effective in their different fields of application as those of the most delicate technique. A boy who rescues his comrade from drowning by the resuscitation methods he has learned in a boy scout camp has achieved as great success as the skilled surgeon who coaxes a refractory heart to beat again, that of saving a human life.

The method that has probably brought back into existence the greatest number of victims of drowning, electric shock and asphyxiation is artificial respiration, a procedure that has been practiced in one form or another for over a hundred and fifty years.

By this is meant the artificial expansion and contraction of the lungs by the hands, carried on until enough life-bearing oxygen from the air can be forced into the lungs and so into contact with the blood, to keep things going until the inert body picks up again of its own accord the natural, regular rhythm of the respiratory process.

Two hours has in the past been considered the limit for which this time-honored method for salvaging for human life will work. In a new set of regulations, however, governing the administration of artificial respiration by the prone pressure method that will soon go into effect not only in the army and navy but also in every factory and mine in the land,

where there is great industrial hazard, this period has been considerably prolonged.

Dr. L. R. Thompson, chief of the section of industrial hygiene and sanitation at the U. S. Public Health Service, under whose direction the regulations have been compiled, urges that everybody administering this form of first aid keep it up for at least four hours, because there are cases where men have actually recovered who have been "out" this length of time.

New regulations for restoring life have come about as the result of a recent conference of representatives from the U. S. Army, the U. S. Navy, the U. S. Bureau of Standards, the U. S. Bureau of Mines, the American Telephone and Telegraph Company, the American Gas Association,

(Just turn the page)

PSYCHOLOGY

Cause of Stammering Traced

When a little boy says, "I-I-I-I can't f-f-find my book," his badly jointed speech is the result of a sudden abnormal rush of blood to his brain, according to Samuel D. Robbins, director of the Boston Stammerer's Institute.

Back of the brain condition is a still more fundamental psychological cause, he stated in reporting the results of the investigation. Such emotions and states of mind as embarrassment, over-anxiety, over-eagerness, timidity, self-consciousness, tension, and fear of stammering all send surplus blood to the brain and aggravate stammering.

"To overcome stammering, the individual's entire emotional life must be reorganized," he said.

"Once stammering has commenced never call a young child's attention to the fact that his speech is abnormal. Always speak slowly and calmly in a low pitched voice when the stammerer is within hearing. If a child repeats a letter or word or unduly prolongs a consonant, do not ask him to repeat the word or show that you have noticed his difficulty. Answer his question in as nearly as possible the same words he used, beginning with the first word on which he stammered and prolonging its first vowel two seconds.

"In a month or two the child should unconsciously adopt this rhythm of speech and suddenly stop stammering. If he adopts the prolonged first syllable it will unconsciously shorten down to normal."

Bringing the "Dead" to Life

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the American Red Cross, the National Electric Light Association, the Industrial Association of Physicians, and the National Safety Council. At this meeting experts undertook to sift out the best and most efficient measures of artificial respiration and set them down in a set of directions that will be taught workmen engaged in wiring, electrical work and other especially hazardous occupations.

While the aim of any method employed in reviving the victim of electric shock or resuscitating a man from drowning or gas asphyxiation is the same, the difficulty lies in the fact that there are different kinds of technique. It must be remembered that the men who do most of the

It is now possible to remove all but one-billionth of the original air from a vacuum tube.

More than 400 species of fleas are known, but less than a dozen are troublesome to man.

After digging down 600 feet, a Canadian mining company found salt seams about 130 feet thick.

life saving are not qualified physicians but such members of the factory force as happen to be on the spot when the accident occurs. They have been trained in one or another of the current artificial respiration methods by the first aid instructors of the company by which they are employed. Men in one plant are given the same training but there may be included here and there in the personnel a man from another concern who has been trained a little differently in life-saving methods.

An accident happens. If it is in a mine, the victim may have been overcome with carbon monoxide gas, that odorless, colorless carrier of death that results from incomplete combustion.

The first job is to get him out into uncontaminated atmosphere. The next is to adjust over his face an oxygen inhaler, usually kept on hand in mines, much as fire extinguishers are in apartment houses. These inhalators will supply pure oxygen to counteract the poisonous effects of the gas. The next thing is to get the victim's breathing started by the use of artificial respiration.

Now one rescuer may have learned that the victim should lie on his back. His fellow good Samaritan may have been taught the prone pressure method, whereby the victim is stretched out face down. Argument ensues and valuable time is lost.

The nerve cells in medulla oblongata, at the base of the skull, control breathing and are extremely sensitive to an interruption of the blood supply. About twelve minutes is the longest period of suspended animation that they can stand. The whole bodily mechanism must be started in motion before this time is up. At a time when every second counts it is important that everybody should be trained to follow the right procedure.

An outstanding case that has been recorded on the honor roll of artificial respiration by the National Safety Council is that of the rescue of a patrolman of an electric power company in Dallas, Texas, by his wife. The patrolman, whose name was Stanley, threw a supposedly linen tape over a 60,000-volt conductor to measure the distance from the highway. The tape proved to be what is called metallic tape, that is, every third thread had a small wire woven into it. Mr. Stanley was knocked out completely by the discharge and both feet and his left arm were badly burned.

The accident occurred on a lonely

road about 15 miles from Dallas but, although alone in the emergency, Mrs. Stanley's presence of mind did not desert her. She at once applied the prone pressure method and in about 15 minutes her husband began to breathe again. Mrs. Stanley then assisted him to an automobile, and, although she had never driven before, with his directions she managed to reach the nearest town, two miles away, where Mr. Stanley was transferred to an ambulance. His life was saved.

A very interesting experiment is now being conducted by Prof. C. J. Wiggers, head of the department of physiology at Western Reserve University, Cleveland, Ohio. Apparatus is being set up with which motion pictures of living heart beats can be made.

This is the first step in the scientist's attempt to find a method by which life can be restored to persons whose hearts have stopped beating as the result of electric shock.

"Death from electric shock may come in two ways," Prof. Wiggers explains. "When the shock has stopped respiration by paralyzing that part of the brain known as the medulla oblongata, and when it has actually stopped the pumping action of the heart.

"When the case is merely one of shut-off breathing, life can often be restored by applying artificial respiration either with the hands or with the pulmotor, but when unconsciousness is the result of heart stoppage, then an attempt to bring back life with a pulmotor or by the prone pressure method of artificial respiration is useless. The victim can only be restored to life by causing his heart to start beating again.

"Science already knows exactly what happens to a human heart when a charge of electricity hits it. The technical name for it is 'ventricular fibrillation.' In plain language this means that the blood has been forced from the ventricles—the chambers of the heart—into the arteries by the contraction of these chambers.

"This action is possible because all the tiny fibers that make up the ventricles work in unison. Fibrillation is the term applied when there is a sort of uncoordinated fluttering of these fibers.

"What we hope to find out is just why these fibers act as they do in the case of electric shock and how they can be quickly restored to normal, life-saving action."

Science News-Letter, January 21, 1928

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SCIENCE NEWS-LETTER

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