advocate this method for the convenience of the surgeon and, more important to the patient, minimizing or abolishing fear and psychic trauma."

A. A.


"Sudden stoppage of the heart during an operation is always terrifying. Until recently it was believed that unless circulation could be almost instantly restored, and with it the supply of blood to the brain, irreversible damage to the higher cerebral centers was inevitable, and that, even supposing the patient does survive, the inescapable end result is blindness, paralysis or dementia. The chief purpose of this presentation is to demonstrate that these consequences are not inevitable; that they do not necessarily follow cardiac arrest of much longer duration than the three or four minutes formerly considered the maximum for survival, and that even serious changes may prove reversible. . . . A busy surgical clinic may expect an average of 1 or 2 of these tragic cases per year.

"The principal signs and symptoms of cardiac arrest are (1) stoppage of breathing; (2) disappearance of pulse beat, blood pressure and cardiac sounds; (3) absence of bleeding in the surgical wound, and (4) pallor or cyanosis. If anoxia is far enough advanced the pupils may be dilated. The first symptom noted is usually cessation of breathing. . . . The first step is to answer the all-important question: Has the heart actually ceased to beat? Immediately on stoppage of breathing the anesthetist should feel the pulse to test the circulation. If the surgeon has access to one of the larger arteries, he should test it by palpation. If the abdominal or the thoracic cavity has been opened he should palpate the heart from below or from above, as the case may be. If neither of the great cavities is open, the heroic measure of opening the chest is justified. Sudden cessation of pulse and blood pressure make it immediately mandatory. If the heart has actually stopped beating or is fibrillating, the surgeon will then be ready to begin cardiac massage instantly; if the pulse is only extremely weak, little harm has been done. . . .

"To prevent overstimulation of the vagus nerves, atropinization or blocking of afferent stimuli with a local infiltration anesthetic has been recommended. For arrhythmia caused by trauma near the pulmonary hilus, 10 cc. of 1 per cent procaine hydrochloride solution may be given intravenously. There is some doubt as to the advisability of applying procaine direct to the heart. It is important to remember that a patient who stops breathing is not necessarily suffering from cardiac arrest. . . . Here the trouble is chiefly respiratory, and treatment consists of clearing the airway, pulling the tongue forward, administering oxygen, and removing with the finger any impaction of the epiglottic, together with some form of artificial respiration. . . . If a diagnosis of cardiac arrest has been made without visualization of the heart itself, the heart may be goaded into action by pricking the auricle with a needle thrust into the third right costal interspace at the upper rim of the fourth rib, close to the sternal border, the needle being directed upward. If this fails, institute cardiac massage at once. The absolute necessity of immediate decision is obvious. Delay in diagnosis is the chief cause of failure. . . .

"The heart may be reached by three routes: (1) transperitoneal subdiaphragmatic; (2) transperitoneal transdiaphragmatic, and (3) transthoracic. . . . I prefer the standard method of
cardiac massage, which is as follows: make an abdominal opening in the midline from the xiphisternum, large enough to admit the right hand. With the heel of the left hand pressing downward from the outside, the balls of the fingers of the right hand can exert effective pressure on the ventricles through the diaphragm. For about thirty seconds these intermittent movements should be quick and strong. A single contraction of the heart should never be mistaken for victory; all too often it is not repeated unless the surgeon continues his efforts without pausing. Where success is not prompt, enter the pericardial sac through the diaphragm. Surgeons differ as to the rate at which the heart should be compressed. The majority recommend 20 to 60 compressions per minute.

"Second in importance to cardiac massage is artificial respiration, which implies 'rhythmic insufflation of the lungs, preferably through an endotracheal tube, at the rate of 24 per minute and at a pressure not exceeding 15 mm. of mercury'. Spinal anesthesia, though extremely valuable for the excellent relaxation it affords, always involves some risk of cardiac arrest. Death occurs most frequently in aged persons, poor operative risks and Negroes. "Ether convulsions' . . . may be due to (1) overheating, (2) overoxygennation and cerebral congestion, or (3) the action of certain streptococci. . . . Collapse of the patient under intravenous anesthesia . . . requires an antidote. Order an intravenous injection of picortoxin 1/1000 (1 mg. acts as an antidote for 30 to 40 mg. of pentothal). . . . Aspiration of vomited material . . . is serious if not attended to at once. Employ the force of gravity by tilting the whole table; aspirate fluid laryngoscopically from the pharynx, and, when urgently indicated, by means of a laryngotomy or a tracheotomy. . . . The cause of asystole has much to do with the prognosis. For a normal heart which has received an overdose of anesthetic the outlook is good. For sudden arrest in a normal heart due to reflex phenomena (vago-vagal reflex) the prognosis is favorable if the duration of arrest is not over three minutes. Arrest due to asystole or ventricular fibrillation caused by anoxia is a graver matter, since the brain may have suffered damage before the heart stopped beating. . . .

"Innervation of the heart and pericardium is of utmost importance in this connection. Nerves of the pericardium include fibers from the phrenic nerve, especially the left one, also probably from the cardiac plexus. The return of regular sinus rhythm in a case described by Touff and Adelman occurred suddenly on clamping and traction of the pericardium. This, in their opinion, was not coincidental or fortuitous, but indicative of a possibility that these procedures provided some potent stimulating reflex that induced prompt cardiac action. The nature and pathway of this reflex merely can be assumed. Coffey and his co-workers have described a pathway from the pericardium via the phrenic nerve to the superior sympathetic cervical ganglion, and it is possible that a powerful stimulus, transversing this pathway, served to initiate cardiac action. It is not at all unlikely that the opening of the pericardium in my case similarly initiated cardiac function through reflex stimulation. . . .

"A case is reported of a young woman under spinal anesthesia for an appendectomy in whom, before the operation was begun, there occurred cardiac and respiratory arrest. The diaphragm and pericardium were opened and cardiac massage was instituted, together with intracardiac injections of epinephrine and the use of artificial respiration. The total period
of arrest was nineteen minutes. Satisfactory activity of the heart having been resumed, appendectomy was performed. The patient remained in deep coma for four days and had a stormy postoperative course, but recovered completely and recently gave birth to a healthy child."

A. A.


"This report deals only with the cardiotoxic action of intravenous procaine. . . . We have studied forty-two cases by means of electrocardiograms before and immediately after procaine infusion. Two hundred and sixty-three procaine infusions were given and two hundred and fifty-seven electrocardiograms were made. The tracing made prior to the first infusion was considered the control. Tracings were made before and after each infusion in cases showing changes, and only after the infusion in others. The patients used were those receiving procaine therapy for various diseases. . . . Two dosage schedules were used. Thirteen cases received 4 mgm. of procaine per kilogram in 20 minutes and twenty-nine received one gram of 0.1 per cent procaine in one hour. The incidence of ECG changes was slightly higher in the group receiving 4 mgm. per kilogram. . . . The duration of the changes produced by intravenous procaine was variable and could not be correlated with the extent of the changes. In general the changes were gone in twenty-four hours, but several cases had changes persisting longer than three days. . . .

"Intravenously administered procaine is a powerful depressant of the heart. It appears to have a depressant action on both the myocardium and the conduction system. This depressant action is beneficial in ventricular arrhythmias but is not evident in auricular arrhythmias. Procaine intravenously should be administered with caution in persons having heart disease; electrocardiograms should be made before and during treatment." 

A. A.


"Logically, an analgesic should effect mental, as well as physical, wellbeing. It is well known that the amphetamines have a marked anti-depressant effect. One of these drugs, Benzedrine (d,1,amphetamine), is combined with aspirin and phenacetin in the analgesic known as Edrisal; we have found it suitable and helpful in treating moderate postpartum and postoperative pain . . . In the past two years Edrisal has been administered to 350 patients, of whom 320 were postpartum and 30 postoperative. These cases were unselected and consecutive, and included various obstetrical and gynecological procedures. . . . Results were uniformly good. The analgesic effect of two tablets of this combination compares favorably with that of 1/2 grain of codeine plus 10 grains aspirin. In addition, it brightens the patient’s mood, making them more alert, active and cooperative. None of the patients showed serious side reactions to Edrisal. In six the drug was discontinued because of ‘heartburn’ (3 cases), overstimulation (2 hyperthyroid cases) or ‘sleepiness’ (1 case). The remaining 344 had no ill effects. Since the mental and physical stimulation provided by Edrisal encourages early ambulation, it is considered more appropriate for postpartum and postoperative use than the depressant analgesics." 

A. A.