

Reports of Scientific Meetings

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American Academy of Pediatrics

A two-day session of the Section on Anesthesiology of the American Academy of Pediatrics was held in Washington, D. C., on October 21 and 22, 1967. The growing interest in anesthesiology for infants and children was reflected by the attendance of over 60 participants.

Dr. H. Rackow (Babies Hospital, New York) presented a study on uptake of inhalation anesthetics in infants during surgical procedures and compared the results with data previously obtained in adults. In infants an initial steep increase in expired concentration (F_E) of nitrous oxide was observed so that F_E approached inspired concentration (F_I) within several minutes. In adults F_E gradually approaches but does not reach F_I for a considerably longer period of time. Interestingly enough, there is, in infants, a decrease in expired volume in the first two minutes of anesthesia associated with a low F_E , apparently due to a rapid uptake of nitrous oxide in the lung. This is the reverse of the phenomenon of "diffusion anoxia." The rapid uptake of nitrous oxide in infants can be attributed, at least in part, to relatively high cardiac output and pulmonary perfusion. The uptake of halothane shows a similar difference between infants and adults although, because of its higher lipid solubility, the increase in F_E of halothane, compared with nitrous oxide, is slower.

The clinical impression that infants require a higher concentration of anesthetic in the inspired air than do adults to maintain equal levels of anesthesia was examined by Dr. H. Nicodemus (Children's Hospital, Philadelphia). He measured the minimum anesthetic concentration (MAC) of halothane in infants and children using the presence or absence of patients' response (moving or grimace) to

surgical stimuli as the index of surgical anesthesia. His preliminary results may support the impression that infants do indeed require somewhat higher concentrations of anesthetics, although final proof requires additional critical data.

The problem of maintenance of body temperature in infants during anesthesia and surgery, even when a heating blanket is used, was discussed by Dr. K. Rashad (Johns Hopkins Hospital, Baltimore) who emphasized that one of the main causes of heat loss under these circumstances may be inhalation of gas mixtures which are cold and anhydrous. The latent heat necessary to vaporize water normally is responsible for over 95 per cent of heat loss through the airways. Since ventilation in infants (per unit of body weight or body surface area) is greater in infants than in adults, infants may lose more heat and become hypothermic more readily than adults. Unintentional hypothermia can be prevented and normal body temperature maintained during anesthesia by incorporation of a heated humidifier into anesthesia apparatus (Benson-Emerson respirator). In addition to prevention of respiratory heat loss, surface cooling must also be avoided by proper covering of patients during surgery and by warming of parenteral fluids (especially bank blood).

Dr. M. Klaus (Stanford University), in discussing modern concepts of the etiology and treatment of respiratory distress syndrome of the newborn (RDS), emphasized that although loss or absence of surface active properties of alveolar lining is definitely an important factor, pulmonary vascular components also play a significant role in this disease. He presented evidence that the pulmonary arteriolar constriction could be the cause which initiates the vicious circle of RDS. Furthermore, although there is no single "best" way of treating infants

with RDS, maintenance of a warm environment and the neutral body temperature is essential to minimize oxygen consumption and increase survival rate. Treatment of these infants should be started at birth and should be based upon measurements of blood gases and pH as well as body temperature. Either THAM or bicarbonate should be used to correct metabolic acidosis. Intravenous glucose should be administered also. A well-equipped intensive care unit for the newborn, with 24-hour coverage by medical, nursing and technical staff, is a prerequisite for the respirator treatment of RDS. Physicians, especially pediatric house officers, routinely should be taught the techniques of umbilical catheterization, positive-pressure breathing with a mask and a bag, and endotracheal intubation. This teaching is the responsibility of a pediatric anesthesiologist. Artificial ventilation should be instituted when arterial P_{O_2} falls below 40 mm. Hg when the patient is breathing 100 per cent oxygen spontaneously. The rate and volume (or pressure) of artificial ventilation should be adjusted as indicated by frequent blood gas studies, but relatively slow rates (24 to 33 cycles per minute) often provide better gas exchange, probably due to more effective pulmonary perfusion. During and after prolonged respirator treatment, frequent endobronchial toilet preceded by percussion or vibration of the chest wall is one of the important factors in survival of the infant.

A panel discussion of "clinical investigation in infants and children during anesthesia and surgery" by Drs. A. W. Conn (Hospital for Sick Children, Toronto), L. Bachman (Children's Hospital, Philadelphia), H. Rackow (Babies Hospital, New York) and R. Reynolds (Floating Hospital, Boston), included discussion of the recent trend for better protection of patients during clinical investigation. This has included the formation of local committees within individual institutions to review all proposed research projects involving patients or human volunteers. As a principle this trend for better patient protection has been welcomed generally, by all concerned, but at the same time such reviews do constitute a source of increasing difficulty for studies which have the potential of contributing to the progress

of clinical science and patient care. Serious concern was expressed by the panel that some physicians may become so discouraged by restrictions imposed by review boards that they might give up clinical investigation. Other panelists with more optimistic views held that new regulations would result in better research techniques which would not increase risk to patients and which simultaneously would derive more valid and useful information. There was agreement that efforts should be made to explain to the parents of pediatric patients the purpose of a proposed study and the possible risk involved. Since it might be difficult for a layman to appreciate fully an explanation of medical risk, it was suggested that approval might also be obtained from the patient's physician who is not involved in the proposed study. To obtain consent for a clinical study of an infant includes additional difficulties because the parents may not always have, in a strict sense, the legal right to give permission.

A panel discussion of "cardiovascular physiology in the newborn and infant requiring surgery for congenital heart disease" included an excellent paper on neonatal pulmonary circulation by Dr. A. Rudolph (University of California, San Francisco). He showed the importance at birth of a sudden increase in blood P_{O_2} for the reduction of pulmonary vascular resistance (PVR) and closure of the ductus arteriosus. These changes are associated with an increase in granulocytes in the pulmonary vessels and the ductus. A release of bradykinin from these cells at the time of birth appears to be a mechanism for the sudden change in vascular resistance. The change in pH during the perinatal period is another important determinant of PVR. Following an initial sharp decrease at birth, PVR continues to fall gradually as the muscular layer in the pulmonary vessels diminishes, until about the age of five days when PVR approaches adult levels. In an infant with a large patent ductus or a ventricular septal defect, a sudden fall in PVR and the resulting increase in pulmonary blood flow may result in left ventricular failure. Although epinephrine prevents this failure, all anesthetic agents, especially halothane, depress the myo-

cardium and so may contribute to the development of left ventricular failure. Beta-adrenergic blocking agents also have halothane-like actions on left ventricular function.

The anesthetic management of patients with congenital heart disease was discussed by Dr. I. A. Sloan (Hospital for Sick Children, Toronto), who advocated that in cardiac failure infants should be digitalized preoperatively but that general anesthesia usually should not be administered. At the most, only nitrous oxide should be given, and then only if arterial P_{O_2} is satisfactory. Halothane is considered contraindicated. Instead of anesthetizing such patients, Dr. Sloane suggested that they should be paralyzed with either succinylcholine or curare. Epinephrine should be readily available or actually running slowly through a central venous catheter. Calcium chloride should be given when there are signs of circulatory failure. It was emphasized that increased ventilation *per se* does not necessarily increase but may even decrease arterial P_{O_2} when right-to-left shunts exist. A slower rate of ventilation is more effective for a better distribution of pulmonary ventilation and perfusion. Prevention of metabolic acidosis is best achieved by maintenance of adequate tissue perfusion during and after surgery and anesthesia.

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Academy of Anesthesiology

The Academy of Anesthesiology held its 1967 meeting (September 25-28) at Mountain Shadows in Scottsdale, Arizona.

The scientific program of the Academy this year comprised 16 presentations which ranged in subject matter from the purely experimental, through the clinically practical, to the esoteric and philosophical. As at all Academy meetings, informality and discussion were the rule, and some of the most pertinent observations and the most provocative statements were contained in the comments from the audience following the set papers.

One session was devoted to a virtual symposium on pediatric anesthesia and the

problems peculiar to it by five anesthesiologists who are subspecialists in the field of pediatric anesthesia (Dr. Alan W. Conn, Dr. Edward B. Scott, Dr. I. A. Sloan, Dr. Robert M. Smith, and Dr. C. R. Stephen) and a pediatric surgeon (Dr. Daniel T. Cloud).

The phencyclidine derivative, CI-581, has proven extremely useful in infants (as small as four pounds) and children for such procedures as arteriograms, cardiac catheterizations, suture of lacerations, and skin grafts. Two children received multiple administrations for deep X-ray therapy, one daily for 35 days and the other daily for 30 days, without evidence of increased tolerance to the drug and with no impairment of hepatic function, despite the fact that the substance apparently is metabolized by the microsomes of the liver to two non-anesthetic byproducts which are then excreted in the urine. There is a very rapid onset (30-40 seconds) of profound analgesia when the drug is given intravenously (1 mg./pound), and an equally abrupt termination of the analgesic effect (5-8 minutes), although a much longer time is required for complete reorientation of the patient (30-40 minutes). The drug produces little respiratory depression and is actually stimulatory to some cardiovascular parameters, with modest increases in both pulse rate and the blood pressure. The agent does, however, produce profuse salivation, and must be preceded by the administration of an anticholinergic drug. No ill effects were noted during or after its use in some 250 pediatric patients, and it was concluded that it could be very useful in specialized pediatric situations. It was apparent during the discussion, however, that CI-581 is not a panacea, since no analgesia is produced in some children, whereas others sleep an inordinately long time following its use.

The difficulties associated with the administration of anesthesia for the correction of such congenital anomalies as omphalocele, diaphragmatic hernia and tracheoesophageal fistula were reviewed at length. The problem in anesthesia for omphalocele has always been providing sufficient relaxation for closure after the liver, stomach and intestines have been replaced in the abdomen: when an anesthetic technique is employed which maintains spon-

taneous respirations, the operating conditions for the surgeon are apt to be inferior; on the other hand, if muscle relaxant drugs and an apneic technique are used to permit adequate closure, postoperative respiratory restriction is the rule. One solution is the use of a "sterile mesh" closure in several stages over a period of time; anesthesia is then necessary only for the first and last stages, and the anesthesiologist can use whatever technique he desires without fear of compromising either venous return or respirations.

The problems associated with the repair of congenital diaphragmatic hernia appear to be increasing, since during the past decade or so the mortality associated with this operation has been climbing. Surgeons have begun blaming the more recent anesthetic techniques (which of course include endotracheal intubation) as compared with earlier techniques based on open-drop ether. In point of fact, the anesthetic technique *per se* probably has nothing to do with the changing mortality rate but simply reflects the fact that operation is being performed earlier on sicker infants: before 1950 91 per cent of the operations were performed more than 24 hours after birth, whereas since 1951 only 48 per cent of the operations have been undertaken as late as 24 or more hours after birth. In short, the most desperately ill die within the first 24 hours; if they are operated upon during this period (as they now are) the mortality figures will rise.

The discussion of tracheoesophageal fistula produced general agreement that the present salvage rate of 60-70 per cent is close to the optimum since there is a 20-30 per cent mortality due to associated cardiovascular and gastrointestinal anomalies. There were, however, diverse opinions as to pre- and post-operative treatment and the timing of operation. The particular point of disagreement centered around whether gastrostomy was mandatory, and whether oxygen and high humidity alone in the postoperative period were preferable to intubation and frequent suction.

One feature of the meeting was a tour through the Barrow Neurological Institute, part of St. Joseph's Hospital in Phoenix, which

was established in 1962 for the training of scientists, clinicians and nurses in the areas of nervous and mental diseases. The Institute includes six distinct divisions, each with its own chairman and staff, in the fields of neurology, neurological surgery, neuroanesthesiology, neuroradiology, neuropathology (including an electron microscopy laboratory) and neurobiology (which includes neurophysiology, neurochemistry and neurophysiological psychology). It is rapidly attaining a rank comparable to the National Hospital, Queen Square, in London (the first institute to be devoted entirely to nervous and mental diseases) and the Montreal Neurological Institute at McGill, the Illinois Neuropsychiatric Institute at the University of Illinois in Chicago, the National Institute of Neurological Diseases and Blindness at Bethesda, the Psychoneurological Institute (Bechterew Institute) in Leningrad, and the Institut Bunge in Antwerp.

A major research objective at the Barrow Neurological Institute is the nature of the blood-brain barrier. This does not seem related to molecular size, lipid solubility or the charges on the molecule which passes the barrier, but there is evidence to indicate that some molecules which pass the barrier readily have isomers which either will not pass the barrier or else pass much less readily. Dr. Eduardo Eidelberg and his colleagues have challenged the barrier in the cat with arabinose, an isomer of pentose which was chosen because it is cheap, soluble and avoids the dangers to laboratory personnel associated with the use of radioactive substances. The measured concentration of arabinose in the brain following its administration revealed that the l-isomer was taken up at a consistently higher rate than the d-isomer, and that this was not a purely physical process of simple passive diffusion since there is a considerable temperature dependence. Furthermore, since inhibitors (*i.e.*, ouabain) interfere with the process, the latter depends upon energy consumption and hence represents active transport across the barrier. They have concluded that the l-isomer of arabinose is capable of "locking in" with a carrier molecule to cross the blood-brain barrier, although there is no clue at

present as to the nature of the carrier molecule, and that the process represents active transport. They have postulated that the barrier is at the membrane of astrocyte cells, which contain the enzyme(s) of the carrier mechanism, rather than in the vessel walls as has been suggested in the past.

A beautiful series of transmucocardial studies of substances vital to myocardial function (oxygen, carbon dioxide, sodium, phosphate, potassium, calcium, chloride, nonesterified fatty acids, ketones, pyruvate, lactate and inorganic phosphorus) during open-heart surgery were reported by Dr. Emerson Moffitt from the Mayo Clinic. These investigations showed that the myocardium extracted potassium and chloride, but lost sodium and calcium, during the perfusion. The high arterial levels of nonesterified fatty acids and ketones which were found indicated a less-than-perfect tissue perfusion during the time on the pump-oxygenator, but the production of lactate by the heart (in spite of the high concentrations of oxygen supplied to it) may mean that the myocardial cell is unable to utilize oxygen properly under these conditions. The degree of illness or the length of perfusion did not seem to be important considerations in the variables studied.

A new and interesting type of delayed systemic toxic reaction following repeated doses of mepivacaine (Carbocaine) was reported by Dr. Daniel C. Moore of the Virginia Mason Clinic in Seattle. He has observed that on the third or fourth refill dose during epidural block in the pregnant woman, a reaction consisting of agitation, disorientation, excitement and hysteria may occur, and on three occasions this has progressed to convulsions. This is apparently quite different from the usual type of CNS stimulation seen prior to convulsions in toxic reactions to other local anesthetic drugs, and even the physician's approaching the bed may set off the maniacal behavior. In his experience, no such reactions have been encountered when other local anesthetic drugs have been employed for continuous epidural or continuous caudal block during labor, nor when doses of Carbocaine less than 600 mg. have been employed. Blood samples analyzed for analid derivatives by gas chromatography

revealed definite accumulation following the third, fourth and fifth refill doses. It is apparent, therefore, that caution must be exercised in the use of Carbocaine for prolonged, continuous epidural blocks, and that a total dose of 1500 mg.—even spread out over a number of hours—should be avoided.

There was an interesting description of the "Pima Plan," so named because of its origin in Pima County, Arizona, by Dr. Ian M. Cheaser. This plan was organized as a method of screening the merits of malpractice suits by a panel consisting of five physicians representing the county medical society and five attorneys representing the bar association. The plan is credited with greatly reducing the number of such suits which actually come to trial. Some 52 cases have been so screened in a ten-year period, and the courts have not disagreed with the findings of the panel in the three cases which did come to trial. However, in a vigorous rebuttal of the merits of the plan, it was pointed out that there are many facets of the law involved in a malpractice trial which do not necessarily bear upon the merits of the case, and that screening by such a panel may in effect amount to prejudging and cost the physician a decision which might not otherwise derive from an actual jury trial.

The final presentation of the meeting was of singular historical interest. It consisted of video-taped interviews with several Past Presidents of the American Society of Anesthesiologists, produced by Dr. John J. Leahy of Washington, D. C., and introduced by Dr. John W. Pender of the Palo Alto Clinic in California. These interviews captured in full the appearance, voice, mannerisms and personalities of these former presidents and reconstructed, by their answers to the questions put to them by the interviewer, the state of anesthesiology as a specialty and the progress and problems of the A.S.A. at the times of their terms in office.

All of the other fine presentations also merit inclusion in this report, but of course space prohibits abstracting the entirety. The Program Committee of Dr. Carl E. Wasmuth, Dr. Alan W. Conn, and Dr. Robert L. Patterson received deserved credit for a fine meet-

ing; and Dr. Wallace A. Reed, the local host, a vote of thanks for his well-conducted arrangements.

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American Society of Clinical Hypnosis

Increasing maturity in the field of hypnosis was evident in the improved scientific quality of the papers presented at the tenth annual meeting of The American Society of Clinical Hypnosis in New York City, October 18-22, 1967. It was attended by more than 650 physicians from all fields of medicine, as well as by dentists and by psychologists.

Dr. Hans Selye pointed out that the most disturbing, as well as the most common, factors setting off the Alarm Reaction and the General-Adaptation-Syndrome are psychological. If one can remove any of the building blocks, be they conditioning factors (*e.g.*, heredity, environment, attitudes) or challengers (*e.g.*, heat, cold, anesthesia, fear, pain), then resulting disease syndromes cannot develop. Dr. Selye likened stress to a force and disease to the result of the application of stress in a specific manner according to the bodily apparatus and its circumstances. Electricity is a force in the same way. The results of the use of electricity vary according to whether the machine plugged in is a lamp, a washing machine, a heater, or a radio. All symptoms are manifestations of the liberation of energy which is used in different ways. Dr. Selye showed data obtained from rats which were conditioned for responses such as thrombotic and hemorrhagic phenomena, necrosis or calcification. The conditioned lesion in each instance was produced at the anoxic site as the result of stress. Blocking one element in the conditioned response could also prevent the disease.

Understanding of hypnosis as a natural, in-born phenomenon was increased by Dr. Esther Bartlett, anesthesiologist, in her definition of it as "control of a control." Hypnosis is the regulation of input for the purpose of controlling output (behavior). In everyday life we accept some of the signals entering on

effluent pathways. We ignore others ("turning a deaf ear") and distort still others in accord with previous experience and understanding—or lack of it. As Dr. Kenneth Bartlett, dentist, phrased it, we have "filters and amplifiers" which modify incoming signals. Although these operate spontaneously they can also be used deliberately. In what he terms "Need Hypnosis" the operator directs interpretation and response to accomplish such phenomena as pain relief and cessation of bleeding, or increase of bleeding to relieve a "dry socket." Trance induction is unnecessary for this. Dr. Kay Thompson, dentist, bore this out in her presentations and demonstrations using suggestion, redirection of attention and various hypnotic techniques to provide relief of pain and of anxiety in her patients.

Another shibboleth concerning hypnosis, besides the idea that trance induction is needed, was attacked by Dr. Herbert Spiegel, psychiatrist. This was the concept of hypnosis as "sleep." He pointed out that we should shift to the idea that hypnosis is an *alerting* process. We should be saying, "Wake up!" "Pay attention!" "Let's see what capabilities you can apply in this situation!" Wrongly following the notion of sleep, we bore ourselves and our patients with long induction procedures, and then complain because it takes too long and give up a good tool. Or we fall into the trap of becoming upset when the patient declares, "But I wasn't asleep!" and reject a perfectly good means of therapy. Or a colleague who misunderstands hypnosis prevents its use, even in the face of well-designed research showing its proved value, on the basis that "For this we need the patient's cooperation. We can't have him asleep!" Dr. Spiegel emphasized that hypnosizability ought to be evaluated routinely, just as we test the patient's other capacities, his Babinski reflex, knee jerks, etc. We then know at once to what extent hypnosis can be used in each patient. Properly done, hypnosis should take no more than ten minutes in a nonthreatening situation. We are incompetent professionally if we do not learn enough about hypnosis to apply it within our own fields or to make referrals just as we do in other situations.

Dr. Margaret Mead, anthropologist, also brought up the problem of misunderstandings which reflect on all of us in her discussion of the relationship between belief and research. If we say "I believe (or don't believe) in hypnosis," it puts hypnosis at once in a situation where research is impossible. Saying instead "I believe that hypnosis is helpful in dentistry (anesthesiology)" allows one to set about examining the evidence and finding out the circumstances under which it applies. We must scrutinize carefully orders of belief/disbelief to avoid this type of confusion, a confusion common to all researchers and scientists. (Where would anesthesiology be if left to those who only said "I don't believe in ether?")

Having noticed the frequency with which patients reported verbatim on conversations overheard in operating or recovery rooms, Dr. Kirk Klopp, oral surgeon, investigated the possibilities of giving constructive suggestions to patients in the early period of awakening from anesthesia. Getting a response to instructions such as "Nod your head when you understand what I am saying to you," he then tells the patient: "You will be surprised at how comfortable you are on awakening. It will probably not be anything like you thought it would," "You will have some bleeding but no excess, not enough to spill over into your mouth," or "You need some swelling as material for repair is brought to the operative area, but there's no need for it to be excessive." Swelling, bleeding and the use of sedatives postoperatively were remarkably decreased by these suggestions. In 78 per cent of the cases no narcotics were administered. Most patients had amnesia for receiving the suggestions but still responded well to them.

Dr. Fred Kolouch, previously a surgeon but now training in psychiatry, discussed doctor-patient relationships and the transactional factors therein. Illness is always accompanied by a perplexity in the patient which needs to be resolved for successful treatment. When this is done through a holistic approach, the result is a cure. When it is not, new conflicts and symptoms arise, treatment is partial and, in effect, a new illness is created. Dr. Kolouch illustrated this with several cases. Shunted from clinic to clinic, with outstanding cues

ignored, patients experience mounting anxiety and fright and a vicious circle develops. He contrasted these patients with cases where the use of hypnosis had broken such a vicious circle and where the allaying of anxiety prevented adverse psychological response and led to smooth recovery. Teaching the patient to respond with relaxation instead of mounting tension offers a means of breaking such a vicious circle. This is done with a minimum of time involvement during the course of pre- and postoperative visits.

Dr. Ernest Werbel, surgeon, dealt with the use of hypnosis in the effective prevention of emergence delirium through preoperative suggestions reinforced in the recovery room and, in the discussion following, with its use in alleviation of pain and spasm and in the prevention of postoperative complications.

Dr. George Hoffman, obstetrician, compared psychophysiological methods used in obstetrics. All of them proceed on the premise that relaxing to a state of normality obviates pain. Becoming calm, confident and released from excess tensions gives relief of pain and the spasms of dyskinetic contractions which hurt but are ineffective.

Dr. Stanley Rose, psychiatrist (Birmingham, England), reported on his use of hypnosis with asthmatics. Even in an acute attack they can respond dramatically to suggestion, especially as it is given indirectly and attention is turned away from the self. When the patient thinks differently, freed from the fear of the attack, he feels better.

An eye surgeon, Dr. Graham Clark, had a unique opportunity to study the speed of wound healing. In his ten-year study Dr. Clark found a 400 per cent differential between slow and fast healers. There were no physical nor physiological patterns which accounted for it. Psychological profiles showed the slow healers to be the dissatisfied, the complainers with low pain threshold, needing large amounts of sedation. The fast healers were characterized by few complaints, little need for sedation and were "the people whose rooms you enjoyed entering." Coding it still further, fear was rejected as being a necessary protection against danger. Anxiety was cast out for lack of agreement as to definition. The

key was found through the work of Viktor Frankl in *meaning*. The fast healers were able to accept life as it is, good and bad together, and to participate in treatment. One implication whose connections were made by various participants in other presentations was that the anesthesiologist or the surgeon had an opportunity of awakening the patient to his own potential through the judicious use of creative suggestions made during the time he normally spends with the patient. Dr. Clark reported one case which dramatically demonstrated the before-and-after effects of reorienting attitudes. Born with congenital cataracts, rejected by her mother who felt put-

upon by the resulting problems, the patient showed no healing at all when an attempt was made to replace a detached retina. Before attempting repair of a detached retina in the other eye at a later date, a team of the patient's own physician, her pastor and a psychiatrist worked to help her. This time she was in the category of the most rapid healers.

Excellent material was presented by other speakers also. It is hoped that many of the papers will be published. Certainly some will appear in *The American Journal of Clinical Hypnosis*.

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Surgery

MYASTHENIA GRAVIS Following thymectomy for myasthenia, all patients are placed immediately on assisted mechanical ventilation, if respirations are spontaneous, or on controlled mechanical ventilation if they are apneic. In the immediate postoperative period no drugs are given for control of the myasthenia. With assisted or controlled mechanical breathing for the first few postoperative days, cholinergic crisis is avoided completely by eliminating the need for anticholinesterase drugs. Arterial blood gases are monitored at periodic intervals to insure adequate oxygenation as well as elimination of carbon dioxide. Ventilation is carried out with air if arterial oxygen tension can be kept at approximately 100 mm. Hg. Gram stains and cultures of tracheobronchial secretions are obtained daily. About the fourth or fifth postoperative day, anticholinesterase drug therapy is reinstituted by adding pyridostigmine syrup at a reduced dosage level to the formula being given through a feeding tube. (Cohn, H. E., and Schleizinger, N.: *Thymectomy in Myasthenia Gravis*, *Surg. Clin. N. Amer.* 47: 1265 (Oct.) 1967.)

KETOSIS A series of experiments was performed during the induction of starvation ketosis and in the acute reversal of the ketotic state. In contrast to the predictions of two widely-held theories of ketogenesis, control of acetoacetate production by the liver appeared to be unrelated to the changes in fatty-acid mobilization from the periphery, fatty-acid oxidation, fatty-acid synthesis, or acetyl coenzyme A concentration in the liver. Ketosis of fasting was shown to be reversible within five minutes by the injection of glucose or insulin. This effect was due to a prompt cessation of acetoacetate production by the liver. The possibility is raised that the ketosis of fasting is due to a direct activation of acetoacetate-synthesizing enzymes secondary to a starvation-induced depression of insulin secretion by the pancreas. (Foster, D. W.: *Studies in the Ketosis of Fasting*, *J. Clin. Invest.* 46: 1283 (Aug.) 1967.)