more than two thousand anorectal operations under 'pentothal,' with an average of 7/8 grams per patient. . . . The duration of the operation in most cases has been less than 30 minutes. All of these patients received a preoperative hypodermic of morphine grains 1/4 (except those known to be allergic to morphine), atropine grains 1/50, one hour before operation. . . . There have been no fatalities in this series of cases. . . . Postoperative nausea and vomiting have occurred in a small per cent. In these cases, the preliminary morphine was proved to be the cause of nausea and vomiting in most cases. When the morphine was left off or 'demerol' substituted, the nausea and vomiting usually ceased. . . . To the group of men to which I belong, who do their anorectal surgery with the patient in the flexed ventral prone posture, breathing in some cases is not so easy as in other postures and airways occasionally have to be passed. . . . In the ventral prone flexed posture, the point of puncture of the veins on the front of the forearm and elbow is best brought into view by extending the arm and forearm upward by the side of the head in line with body and then rotating the arm outwards. This usually brings all the veins on the ventral surface in the region of the forearm and elbow in view and makes them easily accessible to puncture. . . . 'Pentothal' sodium will not produce as complete muscular relaxation in some cases as spinal, but I have found muscular relaxation sufficient for all anorectal operations without adding any other anesthetic agent other than the preoperative hypodermic one hour before operation. . . . Curare has been added in a few cases, but not frequently enough to evaluate it. . . . 'Pentothal' is not suitable for office procedure. . . . In prolonged abdomino-perineal operations, it is most suitable in combination with spinal."

J. C. M. C.


"A survey of New York Lying-In Hospital records of patients that aspirated gastric contents during obstetric anesthesia revealed the following different diagnoses: suffocation, massive atelectasis, partial atelectasis, discatelectasis, pulmonary infarct, aspiration pneumonia, bronchopneumonia, lobar pneumonia, virus pneumonia, atypical pneumonia, tuberculous pneumonia, pulmonary tuberculosis, fungus infection, pulmonary metastasis, drowned lung, cardiac failure, pulmonary edema, and paroxysmal tachycardia. Obviously, a better understanding of this condition is wanting. . . . There
have been sixty-six instances of aspiration of stomach contents into the lungs in 44,016 pregnancies at the Lying-In Hospital from 1932 to 1945. The incidences of this complication is 0.15 per cent. . . . Slightly more than half of the cases had operative intervention requiring relatively longer administration and greater depth of anesthesia than those delivered spontaneously. A mixture of gas, oxygen, and ether was employed in all instances. . . .

"Aspiration was recorded as having definitely occurred in the delivery room in 68 per cent. In 32 per cent this complication went unrecognized until later. The character of the aspirated material in the 45 recorded cases was liquid in 40 and solid in five. Obstructive reactions occurred in the five patients that aspirated solid material. Three of these had complete obstruction; two died of suffocation on the delivery table, whereas the third recovered after coughing up a large piece of meat. Two of the five patients had incomplete obstruction with massive atelectasis, and both recovered after coughing up the obstructing material. These patients exhibited the classical picture of massive collapse with cyanosis, tachycardia, dyspnea, evidence of mediastinal shift, and consolidation. . . . Apparently liquid gastric contents were aspirated into the lungs, while the laryngeal reflexes were abolished during general anesthesia. The actual aspiration often escaped recognition. . . . The right lung was most commonly involved in both types of aspiration. Massive aspiration, however, readily involved both lungs. . . ."

"The morbid group includes any patient with elevation of oral temperature to 38° C. (100.4° F.) during any two twenty-four hour periods postpartum, exclusive of the first twenty-four hours following delivery. Thirty per cent of all cases were morbid, but less than half the morbidity was attributable to chest pathology. Many cases occurred before the use of sulfonamides and penicillin, so that relatively few received this type of chemotherapy, yet only six patients developed pneumonia. Two of the pneumonia cases followed the obstructive type of reaction, and four followed the asthmatic type. One of each of these groups went on to develop a lung abscess. Fortunately all these patients recovered. Infection must be regarded as a relatively infrequent but serious secondary complication. . . ."

"A series of animal experiments were undertaken to determine the pathology of these two different aspiration syndromes. Anyone who has aspirated the slightest amount of fluid during a vomiting seizure will remember the intense irritation produced. It was thought pertinent to evaluate the role of hydrochloric acid. Various materials were introduced into the lungs of adult rabbits. . . . The following substances were used: distilled water, normal saline, tenth normal hydrochloric acid, liquid vomitus, neutralized liquid vomitus, vomitus containing solid undigested food, and neutralized vomitus containing solid undigested food. All vomitus was obtained from parturient patients, none of whom suffered from alechlorhydrria. . . . After aspiration of solid undigested food the picture is invariably that of obstruction as observed in the human. This is true regardless of whether acid or neutral material is used. . . . Animals relieved of obstruction recover completely. The collapsed lung shows the typical appearance of massive atelectasis. Practically all crepitation is gone, but otherwise the gross picture is not remarkable. There is no free fluid in the pleural or pericardial cavities. The heart and abdominal viscera are normal. . . ."

"Following aspiration of liquid con-
taining hydrochloric acid (tenth nor-
mal hydrochloric acid or unneutralized
liquid vomitus) the animals develop a
syndrome similar in many respects to
that observed in the human following
liquid aspiration. Cyanosis and lab-
bored respirations develop immedi-
ately, but death often ensues within
minutes to hours, with a pink froth
exuding from the respiratory passages
in the terminal stages. X-rays reveal
irregular, soft, mottled shadows with-
out mediastinal shift. . . . The gross
pathologic picture may be described
as follows: The trachea is injected and
filled with pink frothy material. The
pleural cavities contain a serosanguin-
eous fluid. The visceral pleura is
smooth with large subpleural hemor-
rhages, imparting a variegated color to
the lungs, ranging from normal pink
through all the shades of red to a rich
dark purple. The darker areas are
doughy in contrast to the pink areas
which retain normal crepitation. The
lungs are heavier than normal. Scat-
ter emphysematous blebs are present.
. . . On cut section the lungs exude a
pink gelatinous material. The heart
is dilated and shows small subperi-
cardial hemorrhages. There is congestion
of all the abdominal viscera.

"The microscopic picture is also the
same after aspiration of equal amounts
of tenth normal hydrochloric acid or
unneutralized liquid vomitus. The
trachea and larger bronchi are con-
gested, but the epithelium is intact.
A wavy bronchiolar pattern is noted,
indicative of muscular spasm. There
is peribronchiolar hemorrhage and
exudate with areas of surrounding
emphysema. In places the bronchiolar
epithelium is necrotic and sloughed
into the lumen. The alveolar walls are
hyaline with absent or pyknotic nuclei.
Perivascular edema is marked. There
is congestion and edema throughout.
. . . Following aspiration of neutral
liquid (distilled water, normal saline,
or neutralized liquid vomitus) in
equal quantities to the preceding series
of acid experiments, the animals go
through a brief phase of labored respi-
rations and cyanosis, but within a few
hours they are apparently back to
normal, able to carry on rabbit activi-
ties uninhibited. . . . The gross path-
ologic changes are minimal. . . . The
microscopic picture is not remarkable
except for small patches of atelectasis
and emphysema.

"Aspiration of stomach contents
into the lungs is preventable. The
dangers of this complication as an ob-
stetric hazard may be avoided by: (a)
withholding oral feeding during labor
and substituting parenteral adminis-
tration where necessary; (b) wider use
of local anesthesia where indicated and
feasible; (c) alkalization of, and
emptying the stomach contents prior
to the administration of a general an-
esthetic; (d) competent administration
of general anesthesia with full appreci-
cation of the dangers of aspiration
during induction and recovery; (e)
adequate delivery-room equipment, in-
cluding transparent anesthetic masks,
tilttable delivery table, suction, laryn-
goscope, and bronchoscope; and (f)
differential diagnosis between the two
syndromes described, and prompt in-
titution of suitable therapy." 3 re-
ferences.

J. C. M. C.