the second twenty-four hours. Dehydration was so rapid that subcutaneous and continuous rectal salines were employed to counteract an imminent collapse. Recovery was uneventful.

Postoperative History.—The patient is alive and well two and one-half years after the operation. Repeated examinations of the urine up to the present time have failed to reveal any chemical or morphologic abnormalities.

The condition with which we were dealing was that of an acute edema of the kidney dependent in its ultimate analysis on an unknown cause. The condition is best explained by variation of the affinity of colloids for water. This is dependent on the acidity of the kidney which is increased by lack of oxygen (Fischer). As the kidney swells, circulation is interfered with on account of a relatively tense capsule, the oxygen supply decreased and the acidity correspondingly increased. Thus a vicious circle is established. Decapsulation relieves the intracapsular tension, circulation is restored and oxidation facilitated with resultant diuresis.

The treatment of this condition with hypertonic sodium chlorid and sodium carbonate solution has been subsequently advanced by Fischer. This case was admirably suited for a test of such treatment.

We have here a case in which the much-abused operation of decapsulation was efficacious. The rationale of the procedure is clear and the operation should be reserved for similar crises in which an occasional brilliant result may be expected.

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PECULIAR TWIN ECTOPIC GESTATION

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M. P., aged 34, gave an indefinite history of abdominal and pelvic disturbance with menstrual irregularity for more than three months and had been treated by her local physician for indigestion and a suspected miscarriage.

Three days before operation, she had experienced severe pain in the lower abdomen, nausea and a feeling of prostration. On arriving at the hospital, she showed symptoms of shock—paleness, cold extremities, profuse sweating and a thready pulse. The abdomen was distended, boggy and tender to touch.

The abdomen was found filled with blood, fluid and clotted. A mass filled the lower abdomen and was generally adherent to the intestines and omentum. When this was torn through into the pelvis, a large sac was opened containing clear fluid. Within this lay two fetuses, the cords of which arose close to each other from a large single placenta adherent posteriorly. The fimbriated extremity of the thickened left tube was filled with coagula. These fimbriae bled freely when the adhesions were broken up, but no definite circulatory connection could be demonstrated between them and the sac proper and its contents.

The greater thickening of the left tube, fimbrial blood-clot and bleeding therefrom were suggestive of ampullar origin despite the posterior position of the placenta and the fact that the principal blood-supply appeared to be derived from the rectum and omentum.

There is so much discussion as to the reality of true abdominal gestation that one is forced to conjecture whether most or all cases reported as abdominal gestations do not commence, as I presume this case did, at the mouth of the tube, being ejected therefrom at a very early date to points that may be quite distant, the true origin being undiscovered.

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AN ETHER VALVE FOR USE IN ANIMAL EXPERIMENTATION *

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For many years various forms of ether valves have been in use in experimental laboratories.¹ The arrangement described below has been found, after several weeks' trial, to be more nearly free from objections than any other form of valve which has been in general use.

The valve consists essentially of a brass box, 5.5 cm. long, 3 cm. deep and 3.7 cm. wide. An interior partition divides the box into two compartments. A tube, *a* (and *a'*), 1.1 cm. in diameter and 5 cm. long, enters one end of the box. Air passes in through this tube. At *b'* the entering air comes in contact with a door-shaped valve (*b'*) which can be instantly set at any angle by

Fig. 1.—Ether valve for use in animal experimentation.

means of the small lever *b*, seen in Figure 1. The angle at which this valve is set regulates the relative amounts of air and ether vapor which the animal breathes. When the lever is turned up all entering air passes down through the tube *c'*, in to the ether bottle and thence out through the tube *d'* into the compartment *e'*. From here a tube *f* (and *f'*) exactly similar to tube *a* (and *a'*) passes out. A rubber tube attached to this metal tube connects with the tracheal cannula. Inspired air passes from *e'* into the dog's lungs through tube *f* (*f'*) and expired air returns through the same tube to *e'*. From *e'* the expired air passes upward through a valve into a cylindrical chamber *g* (*g'*). The valve leading into this chamber from *e'*, and the one leading from the tube *d'* into *e'* are essentially similar, and consist of thin round

* From the Pharmacological Laboratory of Washington University Medical School.

1. One of the best of these has recently been described by Professor Guthrie of Pittsburgh, in THE JOURNAL A. M. A., Sept. 9, 1911, p. 887.

disks of metal which lie flatly down on the round openings in the metal below them. Each valve opens in an upward direction. Each of these valves has a screw cap which can be readily turned off in case anything should go wrong with the valves.

The expired air, which passes into g (g') has three ways by which it may pass out, depending on the adjustment of the tube h (h'). The chamber g (g') is made up of two walls 3.4 cm. in diameter and 1.5 cm. high. The inner wall is soldered firmly to the top of the box. The small diagram (Fig. 3) represents a horizontal section of these walls seen from above. The inner wall has three outlet openings and the outer wall has two outlet openings, to one of which the tube h (h') is soldered. This outer wall swivels around so that the outlet openings in it may be turned to correspond with the openings in the inner wall. By this adjustment, which is regulated by a spring ratchet on top of the box, part of the expired air may be used to operate a tambour led off from the tube h (h'), thus recording the respiratory actions of the animal; or all of the air may be directed out through the tube and led off to a spirometer,

Fig. 2.—Diagram of ether valve for use in animal experimentation.

Fig. 3.—Horizontal section of walls of chamber g .

or other collecting apparatus; or all of the expired air may be simply allowed to escape into the room. A safety arrangement is provided for the respiratory tambour in case it should be necessary to suddenly give the animal artificial respiration. This consists in turning the tube h (h') sixty degrees around to the right. The spring ratchet catches the outer cylinder at this point and this shuts off all communication between the tube and the chamber g (g').

If the lever valve b' be set so that the animal breathes in partly air and partly ether (Figs. 1 and 2), then part of the expired air may pass out of tube a (a'). If it is desired to collect all the expired air, then the valve b' is turned upward tightly against the opening in the partition and all entering air passes down through the tube c' into the ether bottle. In case the animal should get too much ether during the experiment, the cork is simply pulled out of the bottle a little and air is inspired directly into the tube d' , without having first passed through the ether bottle.

A friction ratchet inside the box holds the lever valve (b') at any position in which it may be placed. The

valve is purposely made of such a size that it exactly fits into the cork of an ordinary pint milk-bottle which is durable, cheap and easily obtained. I have found that somewhat more than one-half the amount of ether ordinarily used in an operation may be saved by the use of this valve, and the air of the operating room is thereby kept in much better condition. The valve is compact, there are no separate pieces to be misplaced, there are no parts that are at all likely to get out of order, and access is easy to any valve which might not seem to be working correctly. The operator has instant command of the amount of anesthetic administered. The device is readily adapted for either natural or artificial respiration or for insufflation. This valve was made for me by Mr. Paul Bauer, mechanic for the Washington University Medical School.

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CESAREAN SECTION PERFORMED BECAUSE OF DYSTOCIA FROM VENTRAL FIXATION OF THE UTERUS

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Cases of dystocia due to operations for relief of versions of the uterus have increased in number during the last few years. Ventrofixation and suspension are the chief causes, the latter seldom, if ever, leading to serious complications. In rare instances, suspension of the organ has terminated in a fixation due to adhesion of the fundus to the abdominal wall. These adhesions are traced to infections and abrasions of the serous coat during the operation, resulting in a firm adhesion of the uterus to the abdominal wall that prevents the freedom of expansion and mobility necessary in the pregnant uterus. The abdominal fixation of the pregnant uterus often results in uterine inertia, tetanic contractions and obstructive labor. The anterior wall of the uterus below the point of fixation becomes thickened and hypertrophied until it feels like a fibroid growth. This is due to the failure of this portion to expand during gestation. The cervix and lateral walls become greatly thickened and thus cause the uterus to buckle on itself above the point of fixation. The expansive power is weakened, the cervix dilates with difficulty and asymmetrically, and its thickened portion becomes a veritable tumor blocking the superior strait at the pelvic brim. In this condition the uterus cannot sink into the pelvis, and there is sometimes such an unsymmetrical expansion of the uterus that it looks not unlike a transverse presentation. There is marked anteversion, and the cervix is drawn up backward until it points toward the promontory of the sacrum.¹

The early history of these cases includes persistent vomiting, pain and abortion. Some patients are delivered at term of dead or living children by forceps, craniotomy or version.

It is plain that every patient subjected to a suspension or fixation should be carefully examined in the event of pregnancy. From the sixth to the eighth month, repeated examinations should be made in order to antici-

1. Edgar: *The Practice of Obstetrics*, 1904, pp. 657-659.

Dickinson: *Am. Jour. Obst.*, 1901, xlv, 34-46.

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