short and leave it. I have never seen any ill results follow.

It is universally accepted that, when adhesions exist, the shortening of the round ligaments extra-abdominally is not an operation to be considered. I personally do not admit this, having from a somewhat extended experience found that, although anatomically a failure, clinically I have in a not inconsiderable number of cases obtained success. The whole question depends, not upon the presence of adhesions, but their location. If so high up on the rectum as to allow it to to be easily dislocated upwards, if involving only other portions of the intestines than its rectum, and if the broad ligaments are not so shortened as to induce much tension, excellent clinical results may be reached. I have performed the operation many times. I regard it as a routine operation, and no longer entitled to a distinct classification.

The next operation which may be considered is the one in which we do a cœliotomy for the sole purpose of curing a backward displacement of the uterus. Associated with this condition almost invariable are strong adhesions; aud with these adhesions we find the tubes and ovaries often blended in one mass by bands of organized lymph with the intestines. That reduces the operation from being one simply for replacement of the uterus to one possibly involving the removal of the tubes and ovaries. Where I have this to do, I think it is well if the tubes and ovaries can be saved, to do so, but then to adopt the plan also of shortening the round ligament by stitching it on to the front of the uterus, which pulls the ovaries and tubes well forward and prevents their sagging backward and behind the uterus, and tending to make the displacement recur. Then I stitch the uterus to the abdominal wall by silkworm-gut sutures. Four years ago I had the pleasure of reading a paper before the Massachusetts Medical Society on this subject. I had then done three cases; and they were perhaps among the very first, if not the first, done in the city for the sole purpose of replacing the uterus by this method of stitching to the anterior wall. My results were very unsatisfactory. One staid up a year but has since gone backward. Since then my success in keeping the uterus up has been better; but I do not think that is at all an ideal surgical operation, for two reasons. If you keep the uterus up against the anterior abdominal wall firmly united, you keep the uterus dis placed. It is a question of displacement anteriorly instead of posteriorly; and I think it leads to the same condition (hyperæmia), though in less degree than the backward displacement. It relieves pressure on the rectum and kindred symptoms only. If the uterus stays up there, you have formed a place for the intestines to get in and become strangulated. Now, in this method of treatment, there are two ways of doing: one is to lift the uterus by stitches, which you leave; and the other is to remove the stitches and trust to adhesions which have formed to keep the uterus up. I usually leave in my stitches for about two weeks, possibly longer if there is no suppuration about them, and then remove them and trust to the adhesions which have formed being sufficiently strong to hold the uterus in place until the intestines have assumed their position behind the uterus normally to support it, and until the habit of the uterus towards flexion has been overcome. Also, in these cases I now shorten the round ligament at the same time intra-abdominally to serve additionally as support. I think this combined method of operating is the best we have.

These represent to my mind the principal operations for replacement surgically of the retrodisplaced uterus. There are others. The one in which the sutures are passed through the uterus, and then brought out through the vagina and tied, strikes me as being a very unscientific operation indeed. It requires a very peculiar-shaped needle; not that that is an objection, but the manipulation must be extremely difficult, and the results cannot in the hands of ordinary operators be successful. The bladder has been perforated a good many times in this operation, although no harm has resulted from it; still I think it adds an element of a great deal of danger.

To summarize, for purposes of discussion, there are at present the following recognized surgical procedures for replacement of the backward displaced uterus:

(1) Forcible rupture of adhesions during anæsthesia.

(2) Shortening of the round ligament extra- and intra-abdominally.

(3) Cœliotomy, with fixation of the uterus to the abdominal wall by permanent stitches, and by temporary stitches.

(4) Cœliotomy, with fixation of the uterus to the abdominal wall by temporary stitches, and intra-abdominal shortening of the round ligament.

THE USE OF COMPRESSED CARBONIC ACID GAS FOR THE FREEZING MICROTOME.

BY FRANK B. MALLORY, M.D.,
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THE following method of making use of compressed carbonic acid gas, or carbon dioxide, was suggested and introduced into the Sears Pathological Laboratory about two years ago by Dr. S. J. Mixter, after observing the difficulties, especially in warm weather, connected with the use of ether and of rhigoline for freezing. Owing to the frequent requests received for a description of the process, it has been thought best to publish a brief account of it.

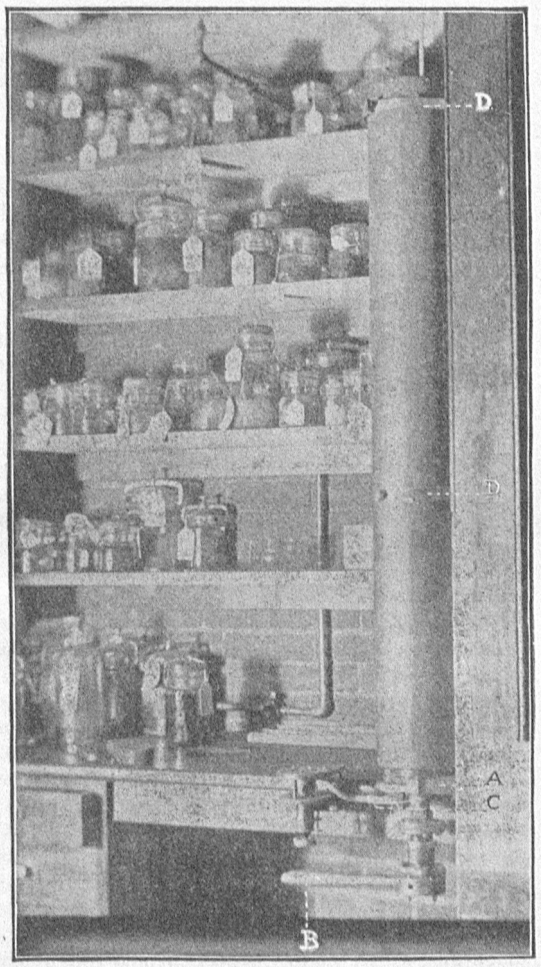
Compresed carbonic acid gas, or liquid carbonate as it is commercially called, is obtained in cylinders holding ten and twenty pounds.[1] The larger size has been found the cheaper and more convenient for laboratory and hospital use. The cylinders must be bought in order to keep them for any length of time; and it is best to own two, so that one can be used while the other is being refilled.

To adapt the cylinder for laboratory use, the following changes were found necessary: A circular block of iron an inch in thickness and of the diameter of the handle of the valve was fastened to the latter by two screws with nuts. Into this block were bored four holes ninety degrees apart and of a size sufficient to admit the end of an eight-inch handle, *B*. This greater leverage affords much better and more even control over the escape of the gas.

The cap covering the escape-pipe was unscrewed, and a hole bored through it large enough to admit of a small brass tube with a fine bore being driven tightly into it. The cap thus prepared can be kept and used on any other cylinder received. One end of a small but thick rubber tube, *C*, was then slipped over the

[1] A circular giving prices, etc., can be obtained from the American Carbonate Co., 424-434 East 19th Street, New York.

brass tube and tied firmly on; the other end was fitted over the tube leading into the freezing chamber of the microtome, but was not tied on, so that it might act as a safety valve and slip off if the pressure became too great; otherwise the tube is likely to inflate and explode.



In connecting the cylinder with the freezing microtome, it must be inverted, so that the valve handle is below, and raised enough above the table to bring the escape-pipe on a level with the freezing-chamber. A projecting support at *A*, and two bands at *D*, sufficiently snug to keep the cylinder from turning, were found necessary. The freezing-chamber of the microtome should be shallow (about three-sixteenths of an inch) so that the gas, which by its own evaporation becomes frozen solid in it, may continue to free the specimen above it. The brass plate above the chamber should be thin, but still strong enough to stand considerable pressure, and the floor of the chamber ought to be made of a block of solid, hard rubber in order to render the loss of cold as small as possible.

This method of employing compressed carbonic acid gas for the freezing microtome has been in constant use in the Sears Pathological Laboratory for over two years, and at the Massachusetts General Hospital for over a year. It combines simplicity with remarkable cheapness, costing much less per freezing than ether or rhigoline. If a specimen be frozen too hard so that the section chips, it is simply necessary to pass the finger wet with water or salt solution, over its surface just before cutting in order to soften it.

The chief advantage, at least in a busy laboratory, of this ready and easy method of making sections, is that it enables one with the least expenditure of time to examine all the organs from an autopsy, and to complete the diagnosis and report while the case is fresh in mind and still interesting. Sections of tumors can readily be made in the same way and reports kept up to date, while those specimens which are worth keeping as well as those which require further investigation can then be preserved in the ordinary reagents.

A carpenter's plane mounted between two properly fitted pieces of thin board makes the best knife for cutting.

Clinical Department.

CASES OF EXTRA-UTERINE PREGNANCY.[1]

BY A. WORCESTER, M.D., WALTHAM, MASS.

CASE I. *Supposed Tubal Pregnancy. Rupture of sac, death from hæmorrhage, no operation.*

Mrs. J. A. K., a large, stout woman, thirty-four years old, during the nine years of her married life had borne two children, one seven years, one three years before. For a year after her first confinement she had trouble in the right inguinal region; her right leg was numb and lame. This trouble was aggravated during her second pregnancy.

On September 3, 1889, she consulted Dr. C. M. Hutchinson (to whom I am indebted for this history). She then complained of the same old pain in the right inguinal region, which she had suffered for three weeks, and of great weakness. Her menstruation hitherto regular, was then two weeks overdue. Physical examination showed the cervix uteri to be large and soft, the fundus in good position. There was tenderness on both sides of the uterus, but more on the right.

September 17th. Though in better condition, she still complained of the discomfort in the right inguinal region. She was then flowing, but scantily.

September 26th. Dr. Hutchinson was summoned, and found that the patient, two hours before, had fallen to the floor unconscious. She was vomiting, and suffering some abdominal pain; her pulse was 65, temperature 98°, respiration 30 and sighing. The next morning, after a restless night, her face was pale and pinched; the pain had increased; the abdomen was somewhat distended and tender; pulse 60, respiration 28, temperature 97.8°.

I saw her, in consultation with Dr. Hutchinson, that afternoon. Her condition then was even worse. She was tossing her head from side to side; her respiration was sighing and shallow; her pulse not countable at the wrist. The distended abdomen was dull to percussion at the sides.

Immediate operation was urged, and declined in view of her evident approaching death, which occurred a few hours afterwards. No autopsy was allowed.

CASE II. *Tubal Pregnancy. Operation twelve hours after rupture, recovery.*

I saw this case in consultation with Dr. E. R. Cutler, and as his assistant. I am indebted to him for the history and for his kindly allowing me to report the case.

[1] Read before the Obstetrical Society of Boston, June 11, 1892, and November 12, 1892.