ing from the pulmonary vessels. The main bronchus was ligated, and a flap formed of pulmonary tissue sewed over its lumen. The portion of lung tissue adherent over the pericardium was now removed. The lowest segment of the rib was excised and a drain of plain and iodoform gauze was introduced into the enormous cavity. During the ninety-five minutes of operation, the breathing was at all times irregular and tumultuous, especially during the separation of the pleural adhesions, and this with the weakening heart action and the fall in blood pressure led to frequent delays.

The portion of lung removed was solid from caseation and weighed 770 grams. On the evening of the operation the temperature reached 105 F., but the following day fell to 99 F. For two days the blood pressure was so low that the radial pulse was imperceptible, after which the pulse gradually improved. The patient's appearance was better than the low blood pressure would indicate. After the fourth day, the patient was kept constantly in the open air. There was little or no cough, and the patient showed rapid improvement. The pulse at times dropped below 100, and the respiration to 28. On the ninth day the patient was permitted to be in a chair.

On the night of the tenth day following the operation there was a severe thunder storm, and apparently, with almost inconceivable oversight, an attendant neglected the patient on the porch; in the morning the day nurse found the bed drenched, and the patient with marked dyspnea, loud râles, and difficult, frequent and ineffective cough. The pulmonary edema progressed, and on the fourteenth day the patient died.

A limited postmortem examination showed that the skin wound had healed firmly, except for a small area in the lower part used for drainage. The rib ends adjacent to the wound were denuded and bathed in pus. The portion of the right lung remaining in the body, although attached to the chest wall by firm adhesions, was atelectatic and congested. It weighed 320 grams. The middle lobe showed miliary tubercles and areas of caseation; the upper right lobe, small miliary tubercles and puckered cicatrices at the apex. It is believed that the process in the upper lobe was easily within the range of spontaneous absorption. The left lung weighed 590 grams, showed congestive edema and mucopurulent bronchitis, but was nearly free from gross evidence of tubercular disease.

The experience in this case suggested the following:

(1) The continuance of life and respiratory action, although all of the right lung was thrown out of function by the operation, indicating the feasibility of removing the entire right lung with a continuance of life, provided the patient could survive the immediate shock. (2) The possible desirability of omitting immediate drainage to avoid early mixed infection and better to maintain a negative pressure within the thorax. (3) The desirability of removing all segments of ribs within the wound area to permit early, partial obliteration of the chest cavity, and to avoid secondary necrosis. (4) In the present operation the flap ran from the fifth to the ninth rib; in the removal of the entire lung the incision should be placed higher, and it might prove desirable to slide the scapula forward and reflect the rhomboid muscles from the scapular attachments, giving a more direct access to the root of the lung. (5) The possible value of a pneumatic shield (Fig. 2) made of glass or of metal, containing a glass window and having an inflated rubber rim capable of close approximation to the chest wall. Such a shield placed over the wound would enable one immediately to overcome sudden catastrophes from pneumothorax or atmospheric pressure operating on the great vessels and heart, and would enable a closure of the wound with the maintenance of a negative pressure within the chest, and permit observations as to the influence of negative pressure on intrathoracic hemorrhage. The shield enables the production of an immediate operative emphysema.

While we have found that a lobe of a lung of the lower

animal may be made to occupy even twice the normal space by the negative pressure produced by the shield, the safety of such an abrupt traumatic emphysema as a means of filling pulmonary cavities in human practice has not been ascertained. Such an emphysematous lung does not completely collapse but remains distended. The gradual production of an emphysema is constantly observed in pulmonary tissue free to expand but yet incapable of filling the normal thoracic cavity.

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A CLINICAL STAIN FOR THE SPIROCHÆTA PALLIDA.*

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The great objections to the staining methods commonly employed in searching for the *Spirochæta pallida* are the large amount of time they require and the uncertainty of the complicated stains. Therefore, a simple staining method that is reliable and short would not only tend to further research on this most important protozoön, but would also make microscopic evidence of the presence of the *Spirochæta pallida* of great diagnostic value clinically. In about twenty-five primary lesions which I have examined for Schaudinn's organism, and in all of which the clinical diagnosis was positive, I have every time demonstrated its presence. Two cases of doubtful nature were also proved positive on microscopic examination, while many other cases were entirely negative. Usually, the spirochete can be found with but a few minutes' search and can be differentiated from other organisms of a like morphology with but little difficulty. In recent cases in which the patients have not yet been treated with mercury, the spirochete can be demonstrated in the circulating blood, but it disappears soon after mercurial treatment has been inaugurated.

Three different solutions are used in this stain and they must be kept separate as when mixed they tend to decompose in about sixty hours.

Solution 1:

Rectified Grübler methylene blue.....	0.5
Potassium carbonate	0.5
Water	50.0

Solution 2:

Potassium cyanid	1.0
Water	50.0

Solution 3:

Potassium iodid, 1 per cent. solution.

Equal quantities of these solutions should be used and mixed intimately. If used as a rapid clinical stain, a small drop of the mixture should be put on a clean slide that is free from fat. A small platinum loopful of the material to be examined—best, serum or pus from a primary lesion—should be intimately mixed with the stain, preserving, however, the drop form as much as possible. Allow the staining to proceed for one minute. Then drop on a clean cover-slip, thus spreading the fluid equally and examine at once with an oil-immersion lens. Everything here stains blue, but the *Spirochæta pallida* stains slightly lighter and can be easily seen.

The stain may be employed, however, with smears made in the regular manner. The smear should be

* From the Pathologic Laboratory of Rush Medical College.

made as thin and as evenly as possible and should be allowed to dry in air for at least ten or fifteen minutes. The mixed stain should be put on the slide and allowed to act for one minute without heat. Excess of stain is washed off in water and dried between filter papers. The *Spirochæta pallida* here is also stained blue along with the other substances present.

A NEW EFFICIENT AND INEXPENSIVE FREEZING ATTACHMENT FOR THE SLIDING MICROTOME.*

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Any process of hardening tissues rapidly at once attracts attention. Within recent years the freezing methods have been very much in use. Their rapidity and ease of application recommend them to the physician and pathologist alike, and the slight distortion occasioned by their use is more than compensated by constant results when properly employed. The fact that no prolonged fixing, dehydrating or constant changing of solutions is necessary, has long been the most potent argument for their use. Frequently, the chemical agent selected for hardening penetrates only the periphery, while this method insures a thorough and uniform hardening of the specimen. Large pieces are no bar to its use—they merely take more time to harden thoroughly

Fig. 1.—The general construction plan and dimensions of the box.

while small pieces are more easily manipulated and less liable to tear.

There are many who use the sliding type of microtome exclusively, and must rely entirely on the ether method for their frozen sections. Any simple, clean and inexpensive apparatus which might accomplish this task, and which could readily be applied to their microtomes would be appreciated.

Any one who has had any experience with the ether method knows the inconstancy of results. Often wishing sections early, I have used the ether method, but was discouraged by the amount of labor and assistance necessary; therefore, I was compelled to seek some other means of accomplishing the same purpose. Remembering the employment of the freezing mixture, it occurred to me that I might devise some apparatus of a similar nature which would serve the purpose. One thing, however, prejudiced me against freezing mixtures, the constant drainage of brine, which is the source of considerable splashing as well as uncleanness. Why not utilize the brine? It is the source of contact and the medium for the transmission of the cold. Investigation proved that such a procedure is entirely rational, and on that basis the following piece of apparatus was made:

It consists of a metal box (Fig. 1) (in this instance phosphor bronze), toward one end of which is attached

a plug (c, Fig. 2), which can be inserted in the same slot as the universal clamp. Its dimensions are 4 x 5 x 1 inches, although it can be modified to suit the microtome. In the same axis with the plug is the corrugated object carrier (a, Fig. 2) attached to the box by a screw thread (b, Fig. 2). The carrier of the same metal is hollow, its upper and lower discs being connected by two small upright arms, thus allowing the brine to circulate through the carrier. The surface of the upper disc is corrugated by a series of concentric grooves. Its surface projects above the edges of the box so that the free passage of the knife can occur.

The box is not perforated. In this it is radically different from other freezing apparatus. The brine is not

Fig. 2.—a. The corrugated upper plate which is the object carrier; b, the projecting screw by which the carrier may be attached to the box; c, the plug by which the box is fastened to the microtome.

Fig. 3.—The box attached to the microtome.

interfered with, being allowed to circulate through the mixture. My method of using the box is to place it on a table and then transfer a mixture of ice and salt to the box. It is especially desirable to have the ice finely ground to facilitate freezing. It can very readily be transferred by means of a spoon, alternating the ice with the salt. Then place the object, which has preferably been immersed, in a strong gum solution (gum acacia in aqueous solution), or through any media which may be preferred by the operator, fixing, etc. In about one to three minutes the tissue is frozen, the gum turns

* From the Pathologic Laboratory of the University of Pennsylvania.