

AN ANTISEPTIC SURGICAL CABINET.

Read in the Section on Surgery at the Thirty-ninth Annual Meeting of the American Medical Association, May, 1887.

BY H. LANDIS GETZ, M.D.,

MARSHALLTOWN, IA.

It is not my purpose to discuss in detail the merits of antiseptic surgery, when and why to be practiced, although for fourteen years practicing and believing in the utmost cleanliness in the treatment of all wounds, especially where healing without suppuration should be anticipated, avoiding so far as possible the use of chemical agents in the cleansing of fresh wounds, because I believed, as I now do, that the chemical agents, if brought in contact with the surface of the fresh wound, when of sufficient strength to destroy germ life, would also retard or prevent union by first intention. Few, if any, ovariologists longer use the once highly recommended carbolic acid spray immediately over the open abdominal cavity, because believed, or found to be, deleterious to the patient, as well as inconvenient and annoying to the operator and his assistants. In looking over and comparing the instructions of various authors (surgical and gynecological) in reference to the preparation of the apartment in which is to be performed a laparotomy, the instructions, as you well know, are substantially found to be uniform.

Having had occasion in several instances to prepare apartments for ovarian or similar operations, it occurred to me that where laparotomies were indicated, as in rupture of the uterus during labor, in case of gunshot wound of the abdomen, or other injury or condition, requiring the opening or exploration of the abdominal cavity, the recommended removal of all paper from side walls, of whitewashing, and all other disinfecting processes to be carried out, would require much more time than the average patient, under circumstances as just described, could possibly spare. Reasoning thus and remembering that I had read in a comparatively recent publication on gynecology as follows: "It is evident that ovariologists must devise some means by which the air is or can be purified without being innocuous to the wound surface." This led me to further look up the literature upon this subject, in issues to date. Not finding anything that was calculated to fill the above suggested need, I designed the appliance, the construction of which will be now described to you, and also its advantages, conveniences, etc., as they pertain to major surgical operations, more especially in laparotomy, where I believe the most scrupulous antiseptic environment should be instituted.

Description and Construction.—The skeleton or frame of cabinet consists of six poles, six feet long, one inch in diameter and round, and one pole of same thickness seven feet long. These are set up about the window which has been selected

to furnish light. They are held together by a few nails and a few hooks made out of screw eyes, in the manner you here see. One rod is fastened horizontally across the top of window, not less than seven feet from the floor. Into this rod or fastening are placed two screw eyes closed six feet apart, to come at equal distance from the sides of window frame; into each end of two other six foot rods is fastened a screw eye, opened so as to

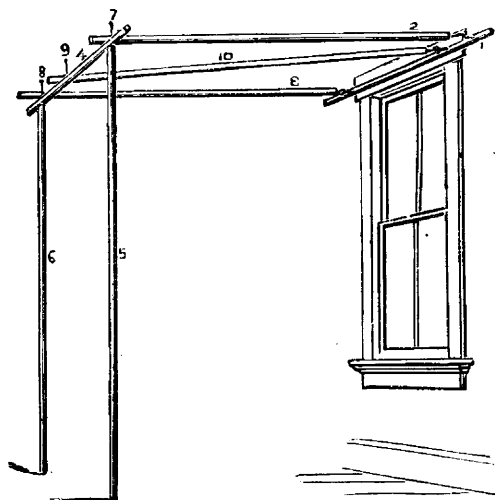


FIGURE 1.

1. Rod with three screw-eyes secured with common screw to top of window frame.

2 and 3. Outside rods for top of cabinet, with small hooks in one end, screw-eyes opened will answer; these hook in screw-eyes in rod 1; the other ends of rods Nos. 2 and 3 rest on rod No. 4, which rests immediately over rods 5 and 6. A hole is bored with a common gimlet through the lower ends of rods Nos. 2 and 3, thence through the outer ends of rod No. 4, and then vertically into the upper ends of rods Nos. 5 and 6; about an 8- or 10-penny wire nail is then placed into the bore to hold the rods in position; nails are shown by figs. 7, 8 and 9 before being sunken into bore; rod 10 is placed diagonally across top of frame and fastened as other rods; this braces firmly the entire frame.

form a hook; these are now hooked into the screw eyes in rods fastened over window, as already described, about six feet from window and just opposite the screw eyes in rod fastened transversely over window are set in a vertical position two rods six feet high; into the upper end of each of these a hole is bored with a gimlet, admitting a common tenpenny wire nail. Upon the top of these upright rods are now placed the rods which have been hooked to the rod over window. A rod is now laid across the top of the two upright rods and a hole bored, of size as just described, through the transverse rod and through the rods sloping from window to uprights, to correspond with the hole in top of upright rods. A rod is now fastened by screw eyes (used in manner as already indicated) diagonally from the transverse rod over window to the transverse rod over uprights, and this secures the frame firmly. We are now prepared to cover the frame, or, rather, supply the antiseptic side walls, top and floor. This is best made from bleached dairy cloth about forty inches wide. Of this, two

widths are necessary to cover the top, floor and each side, except the window. The two widths forming the top covering are sewed together for a distance, reaching from the rod fastened over the window transversely and over the horizontal rod placed over the two upright rods, thence downward to a point about the height of an operating table. This forms the roof or top and the side wall opposite the window. The two lateral side walls are cut of length to reach, and are suspended from the *slanting* rods, attached to upper and lower transverse rods. The floor is covered by same material, especially if there has not been ample time to thoroughly cleanse and disinfect the same or take up carpet.

Prior to suspending the cloth over frame and just before the patient is brought to the operating table, the cloth is dipped in a solution of corrosive

of operating table to floor, an extra piece of the antiseptic cloth. All sides are firmly drawn and secured upon the rods by small hooks fastened into the latter, and upon the floor and side walls by tacks, and at the corners or junctions by pins, except one side wall, where the two widths of cloth are allowed to overlap, and from which the operator and assistants enter and exit. The arrangement upon the interior of the cabinet and about the patient is precisely as when operating without the device. A valvular opening may be made into the side wall of the cabinet, through which may be conveniently passed instruments, etc., by an assistant.

NOTE: To be prepared for all emergencies, there should be six assistants, three of whom must be within the cabinet and three without, one of the latter to administer the anæsthetics,

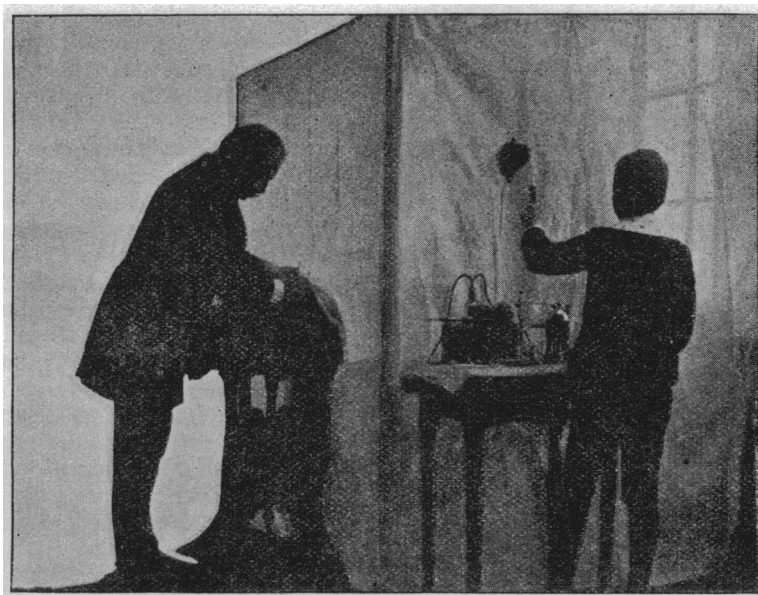


FIGURE 2.

sublimate, 1 to 500, or 1 to 1,000; the operating table is so placed under the canopy that the patient's feet shall be toward the window; the patient's head, neck and upper part of thorax shall be outside of canopy opposite window; the side of canopy opposite window, which has been sewed together, and which reaches well to the floor, is now drawn closely down to the patient's chest to the end of the seam, which should now be open sufficiently high to admit of the cloth being firmly drawn over the frame to avoid folds, which would in a large degree deflect the light from the open abdominal cavity, instead of into it, as is the case when the cloth is firmly drawn and somewhat arched, and each width is then continued to the floor about each side of the table. There is now drawn from one vertical rod to the other, extending in width from under side

and the other two to make themselves generally useful, by handing to operator or his assistants, through the valvular opening in the side wall of the cabinet, such special instruments, water, etc., as may be needed; or if the operation is prolonged and the antiseptic cloth becomes dry, to maintain its moisture by spraying the selected antiseptic fluid by steam atomizer, or other suitable appliance, from within outward against the cloth, or it may be sprayed from without inward against the cloth, *being careful* not to carry the spray through the cloth into the open abdominal cavity.

ADVANTAGES OF THE CABINET.

1. The air is purified by process proving innocuous to the wound surface.

2. It can be always easily and quickly constructed.

3. It is cheap, simple and withal efficient.

4. It admits of a moderate circulation of air, and yet prevents decided currents of air.

5. By it may be used corrosive sublimate, or other germicide, of sufficient strength to be certainly fatal to all germ life, without in the least degree endangering the patient, or being inconvenient or unpleasant to the operator or his assistants.

6. By it is utilized, condensed and reflected all the light to be obtained from window, the abdominal cavity being nicely lighted in all parts, so that the reflecting mirror is not a necessity, even when there is a poor supply of light, on account of a small window or a cloudy day.

7. Operator cannot by accident or intent witness patient's face, so that he is not in any manner disconcerted by the appearance of the patient.

[The cloth should be doubled between the operator and the patient's face.]

8. The assistant who administers the anæsthetics cannot witness the operation, and consequently will be less likely to forget his duty, namely, that of keeping steadily eye and mind upon the patient and effects of the anæsthetics.

9. By its use is prevented largely the circulation of the chloroform or ether-laden atmosphere over the open abdominal cavity. Both agents being highly volatile are cooling and drying in their effects upon the surface with which they come in contact, and both of these conditions are undesirable in laparotomy, the maintenance of warmth and moisture being essential to successful results.

10. It is light and compact, may be easily transported, and can be kept in readiness for use at all times.

11. It may be used to advantage conjointly when all other known antiseptic measures are applied.

12. By its proper application a good antiseptic compartment is furnished, even in a room where carpets, wall paper, etc., etc., are undisturbed, and in this particular especially recommends itself, its moist walls catching particles of dust and germ element which may be in the atmosphere, and the strong solution of corrosive sublimate which is used in moistening the cloth walls of the cabinet must be certainly fatal to germ life when coming in contact.

To further perfect this device, I propose supplying air to the patient, operator and assistants from (as a matter of convenience) the same window from whence is derived the light for operation, without opening the window and without changing in a noticeable degree the temperature of the room, although the outside temperature may be at zero or lower. The objects of the device are :

1. To furnish the patient (in the event of evidences of collapse from the effects of the anæsthet-

ics, or other cause) promptly an abundant supply of pure air, without changing the temperature of room, and thus proving detrimental to the patient by affecting the open abdomen and the exposed viscera.

The *second* object is to furnish to operator and assistants an abundance of pure air to breathe while they are working in an atmosphere with temperature of high degree, and which is trying and exhausting to operator and assistants, the latter sometimes failing you in the rendering of efficient service at a moment when you most need them. The patient, is supplied, by boring a hole into the lower lateral or lower transverse wide window sash, say three-fourths of an inch in diameter. Into this opening is placed a piece of metal pipe, and to this attached a piece of rubber tubing, which is carried along the floor to a point opposite the patient's head, when it is brought up and secured conveniently near the patient's head. This tube should have a shut-off valve near its end and to the end of tube should be attached a mouth-piece made of hard and soft rubber. This mouth-piece should have a set of valves inlet and outlet, to the outlet valve to be attached another tube identical with that attached to inlet valve. This main inlet and outlet tube can be made to supply and carry off the air for patient and the three assistants outside of the cabinet, and the three assistants and operator within cabinet are provided for in the same manner by a separate set of tubes. From the main tubes, inlet and outlet, are taken smaller tubes, and these of sufficient length to allow operator and assistants to move about with ease; to these small tubes are attached the mouth-pieces, with entrance and exit valves, and the mouthpieces held in place by rubber bands, or other suitable contrivance. The individual supply and exit tubes, are secured one upon either side of the head, in such a manner that they will not in any degree inconvenience the operator or assistants. The main inlet and exit tubes for operator and assistants must always enter from the top of cabinet. In cold weather the iron tube, which is secured in the window sash, and to which at its opposite end is attached the rubber tubing, should be at least eighteen inches in length, and a lamp placed under same to heat the metal tube, and thus warm the air; or a better, although more complicated, device may be used by having a small coil of pipe surrounded by hot water, and a thermometer kept in same, to indicate the temperature of air inhaled. The main exhaling tube is attached to the window sash in any manner most convenient. A convenient mode of attaching these tubes to the window will be found in taking a strip of wood, say four or six inches wide, made to slide one part into the other, similar to the patent window screens, so that it can be readily made to fit a wide or narrow window; this appliance to have the necessary attachments for all en-

trance or exit tubes. The same may be placed into the window, as is most convenient, by raising lower sash or dropping upper one.

204 East Main Street, Marshalltown, Ia.

DR. WELLER VAN HOOK, of Chicago: I would like to inform the gentleman that Dr. Prince, of Illinois, is now using in his daily clinics an apparatus by which he sterilizes all the air used in his operating room. Everything in the room is kept in a constant state of asepsis. The effectiveness of the process has been tested a number of times, he tells me, by introducing into the room slips of sterilized gelatine, and seeing whether colonies of germs would grow upon them or not.

I would suggest that a single layer of gauze, like that used in Dr. Getz' cabinet, is not sufficient in thickness to prevent the passage of micro-organisms through it. This might be attained by means of a spray kept playing on the gauze all the time.

No operating room will ever be made aseptic, however, for the reason that every operator carries with him, either in his nostrils or in his mouth, enough germs to poison the entire mass of humanity. The only reason that our patients are protected is because the germs are enclosed in masses of decaying food, and thus prevented from being carried into the wound. The atmosphere which is carried from the lungs in expiration is in a comparatively aseptic condition. This is due to the fact that the air has been made sterile by means of contact with the moist mucous membrane of the respiratory passages.

DR. GETZ remarked that he made provision for the sterilizing of air in his cabinet by means of tubes carrying air into the room from without. "I do not claim for it a perfectly sterilized condition, such as could be attained if the cabinet were stationary; but it must be remembered that this is intended to be carried around from place to place, and it is so constructed that it can be put up or removed within the space of a very few minutes. It is thus available for all manner of operations."

ALCOHOLIC INEBRIETY, AS RELATED TO RESPONSIBILITY, AND CRIMINAL JURISPRUDENCE.

Read in the Section on Medical Jurisprudence at the Thirty-ninth Annual Meeting of the American Medical Association, Cincinnati, May, 1888.

BY T. L. WRIGHT, M.D.,
OF BELLEFONTAINE, OHIO.

Researches relating to the effects of habitual drunkenness on the structure of the heart and blood-vessels;¹ and the known connection which often exists between heart disease and insanity—

especially described by Dr. Wm. Julius Mickle in his recent Goulstonian lectures—open a door for investigating the influence of inebriety upon the mental and moral movements. That the heart is very likely to become dilated in the habitual drunkard, when its pulsations increase in frequency from seventy beats per minute, to at least eighty-five per minute as a stated thing, is apparent. For the latter figures represent an extra and unnatural labor imposed upon the heart of nearly eight millions of beats per year—a change of heart beat from thirty-six millions to forty-four millions, in round numbers per annum. And that the large arteries also must sympathize and suffer with the heart is evident, for they necessarily become enlarged, lax, and bagging, as their tonicity and elasticity are gradually weakened or destroyed by constant and violent stretching. Of course such a state of the circulation, at one time strained and over-wrought, at another powerless and creeping, but with a heart beat always rapid, favors the advent of melancholy moods, leading to despondency and suicidal insanity.

It is obviously impossible, in a brief paper, to go over the whole field of the mental and moral disabilities imposed by alcoholic indulgence. I will therefore omit further reference to the changes and diseases of the circulation as factors in the disturbance, or the destruction of the reasoning faculties, and confine myself to the moral and intellectual incapacities directly traceable to the toxic impression of alcohol upon the nervous system.

The anæsthetic, the benumbing, the paralyzing influence of alcohol upon the nervous system, and especially upon common sensation, always darkens knowledge and misleads the judgment. This follows from the fact that accurate perceptions are wholly dependent upon definite and normal sensations. When the senses are disturbed and impaired, perceptions are correspondingly disturbed and impaired; and they are unable to present to the mind facts as they truly are, as they really exist in the surroundings. The fine shadows, and uncertainties and doubts, which invariably attend all human transactions, escape the notice of a man who is intoxicated; and being unperceived by him, he imagines they do not exist. Every thing has, to his mind, the quality and energy of absolute demonstration. He never hesitates, never doubts. He is therefore a bad, as well as a dangerous witness in a court of justice, and particularly in criminal proceedings, where he is very likely to appear: bad from defective knowledge, and dangerous from a morbid positiveness in conviction and assertion. It seems probable, indeed, that a drunken witness testifying as to events observed while sober, is more trustworthy than a sober witness testifying as to events observed while intoxicated.

¹ See Address "On the Heart and Circulation of the Inebriate Classes," by Dr. B. W. Richardson, in *Proceedings of the International Congress on Inebriety*, p. 32. London, 1887.