

Technique of Post-Mortem Examinations

Post-mortem examinations are made for two different purposes, viz.:—For ascertaining facts from a scientific standpoint, and secondly, for discovery from legal reasons. The operations of the examination will vary more or less according to the object in view. Before considering the technique of the operations there are some general points relating to preparation for the work which it will be useful to take up.

EQUIPMENT, INSTRUMENTS, ETC.—Although a very useful post-mortem examination can be made with but few and simple instruments, a good and complete outfit is of course desirable when it can be obtained. The following list contains such an outfit as should be found in hospital mortuaries, where examinations are habitually performed for scientific purposes:

Knives—Scalpels, three sizes; cartilage knife; brain knife.

Scissors—Bowel scissors; straight, probe pointed; curved on flat, blunt point.

Saws—Large amputation; small butcher or finger.

Forceps—Dissecting, several pairs.

Costotome—Rib shears.

Rachitome—Double saw or double curved chisels.

Chisels—Large for opening head; set of smaller ones for bone work; set of gouges.

Probes—Long and short, flexible.

Director—Grooved.

Mallet—Or hammer; rawhide mallet preferable.

Head-rest—Or holder.

Steel Tape—English and French systems.

Calipers.

Glass Graduate—One litre; also one of 250 cc. subdivided.

Catheters—Set, web.

Hook—For raising skull cap.

Brad-awl.

Needles—Large, veterinary.

Copper Wire—Light.

Double Carpet Tacks.

Heavy Linen Thread and narrow tape.

Sponges.

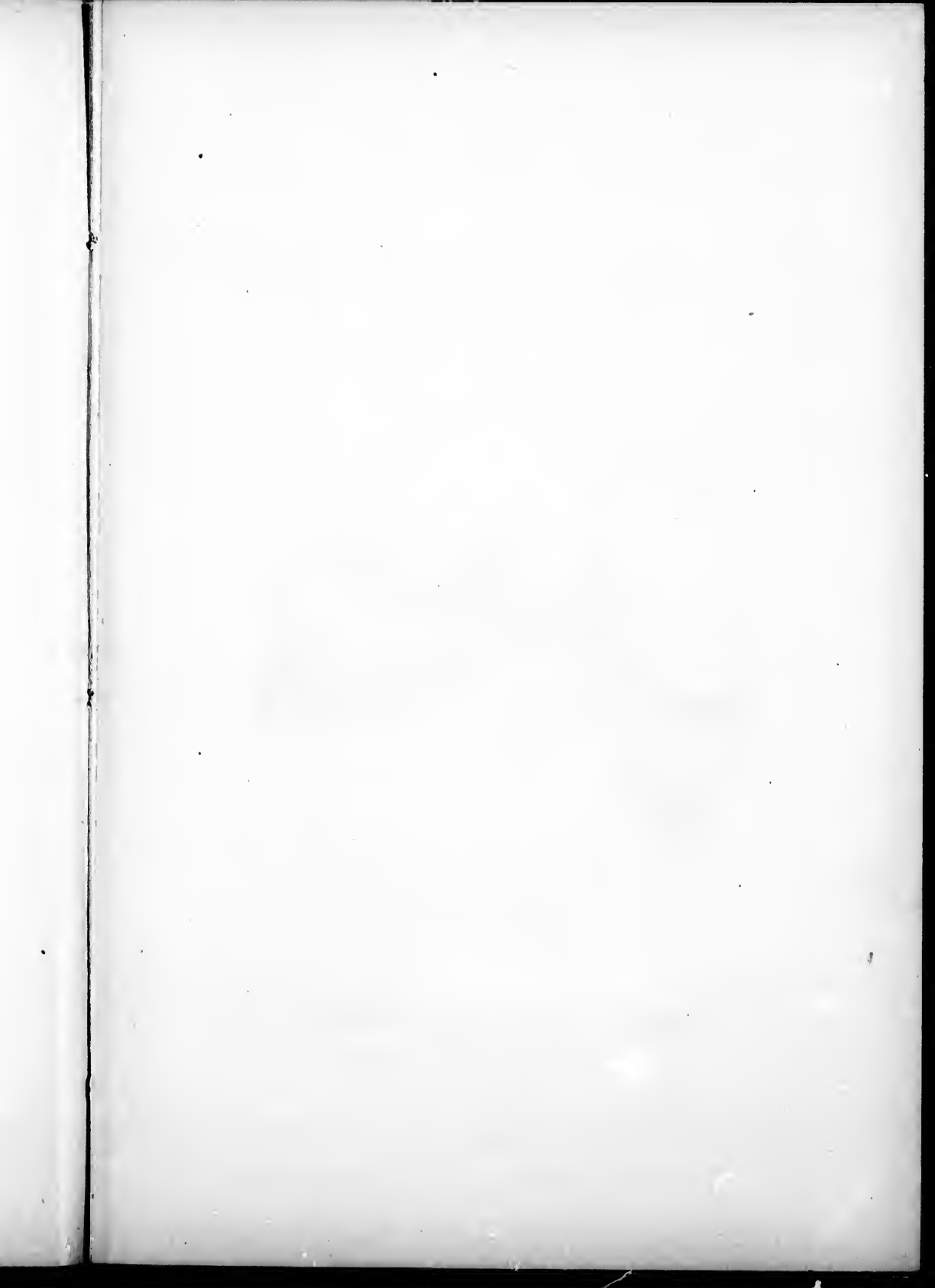
When found possible, apparatus of some kind for weighing organs as taken from the body should be within reach. Fluids, too, ought to be quantitatively estimated as a routine process. A large glass syringe will often be found useful for the removal of fluids from cavities when dipping out by means of a cup or graduate is not feasible. If the syringe be graduated and have a piece of rubber tubing for a tip, so much the better. The use of sponges is not advised. In some cases the measurements of organs must be taken.

BACTERIOLOGICAL OUTFIT—All post-mortem examinations should involve more or less bacteriological work. Even in out-of-door work there is but little difficulty in manipulating the necessary apparatus; certainly no post-mortem room should be without it. The following simple equipment will be found ample:

1. *Test Tubes* with media; at least beef broth and agar.
2. *Spirit Lamp* or Bunsen burner.
3. *Platinum Wire Inoculators* mounted in glass rods.
4. *Dressing Forceps.*
5. *Scalpels*—Two.
6. *Scissors.*
7. *Small Copper Plate* on handle (specimen lifter or spatula will do.)
8. *Empty, Plugged and Sterilized Test Tubes.*
9. *Capillary Glass Tubes* three inches long.
10. *Cover Slips.*

The object of the above equipment is, of course, that one should be able to make directly from the body when opened, cultures from such fluids and tissues as may seem necessary.

HANDLING THE KNIFE—In post-mortem examinations the largest knife suitable to the work in hand will be found the best. The tendency amongst beginners is to work with too little freedom, making small, weak cuts, and thus not only wasting time but leaving organs and tissues in poor condition for naked eye examination. Firm, sweeping cuts with a large knife—sharp of course—nearly always give the fairest, smoothest surfaces for inspection. One author says that one clean, sweeping cut in the wrong direction is better than many small, undecided cuts in the right direction. This can be seen to perfection in the case of liver or kidney; in



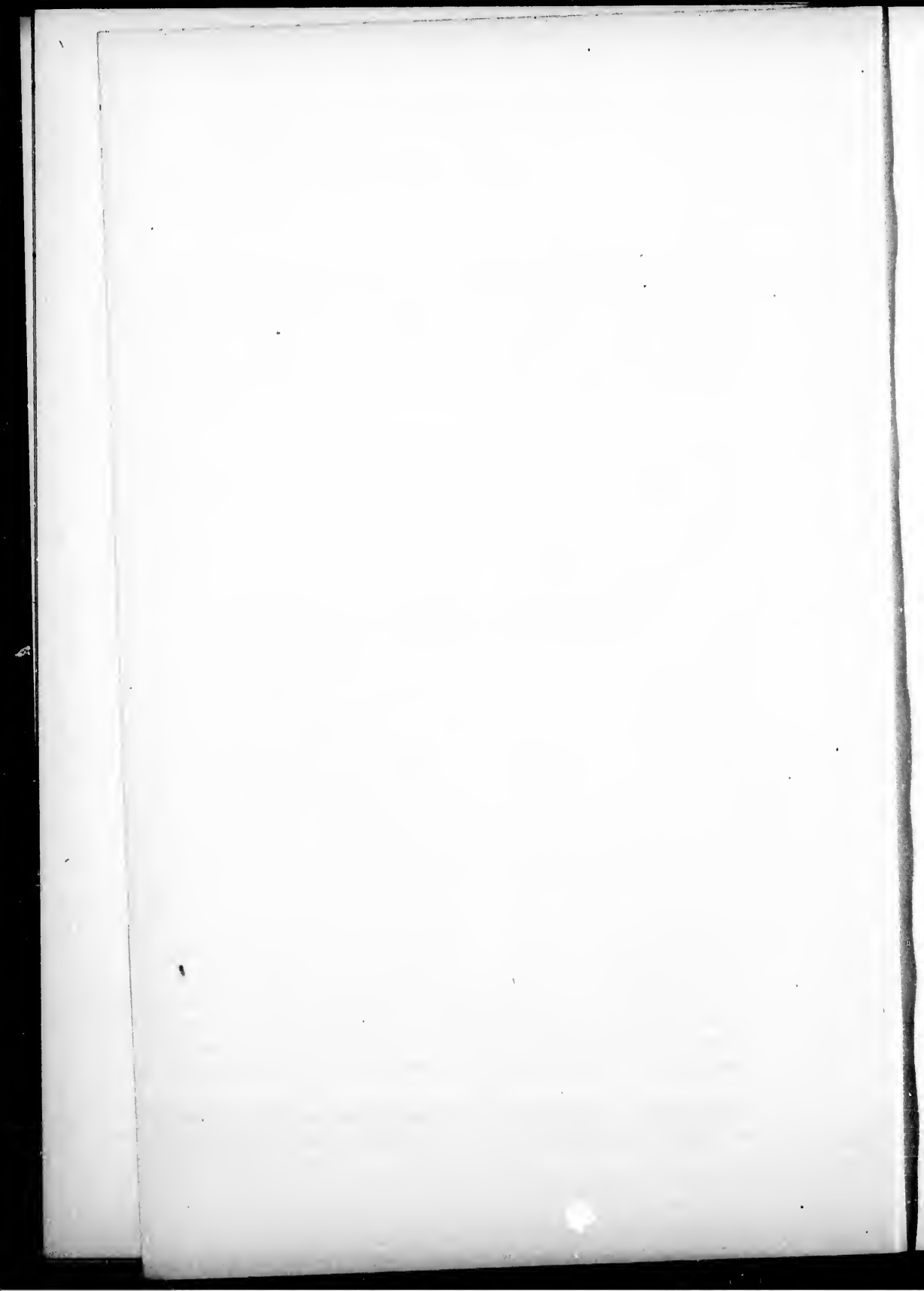
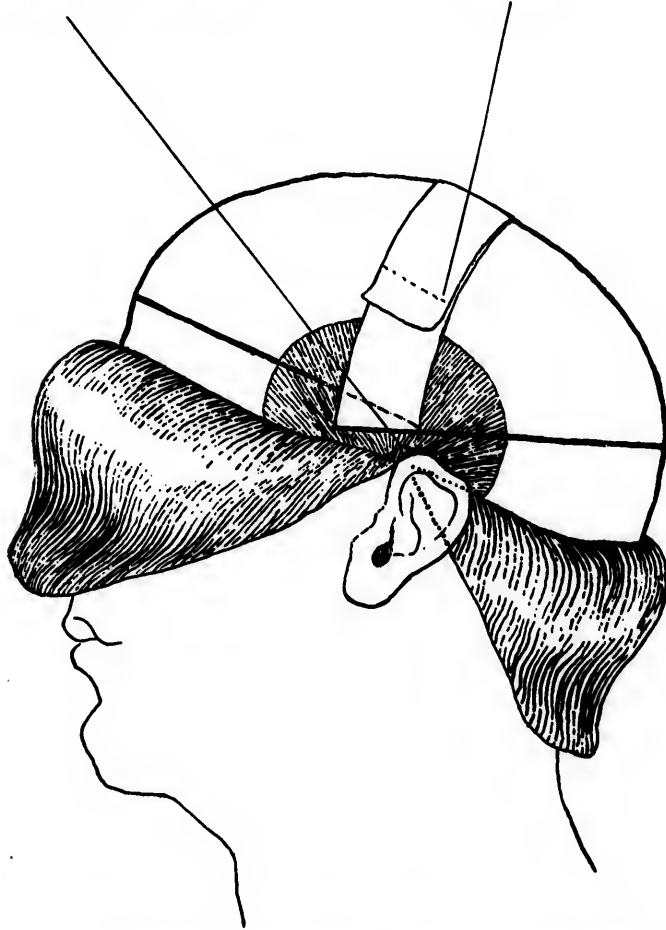


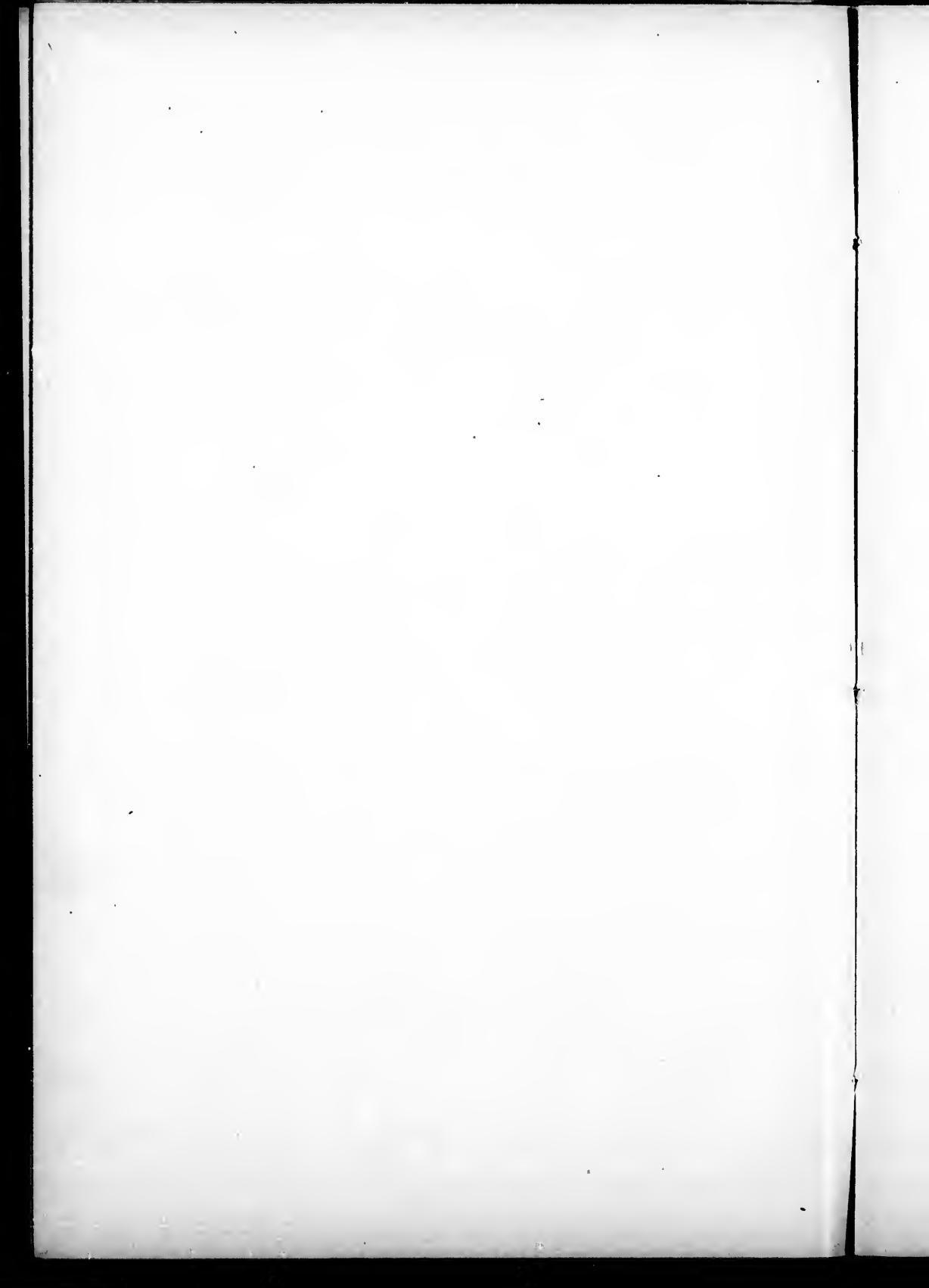
PLATE I.

Posterior saw-cut continued forward.

Bandages.



FASTENING ON OF SKULL-CAP BY MEANS OF A BANDAGE



both a smooth surface is necessary, not the "staircase" appearance resulting from timorous cutting. In order to work well with the knife the handle should be taken freely into the palm of the hand, as one would grasp a sword hilt, not as a pen holder would be used, and the belly of the knife should be made to do the cutting, not the point. In fact, in selecting knives one should see to it that the blades of the larger ones are made with a prominent, curving belly, the cutting edge ending somewhat abruptly in a point which is in a straight line with the back. The larger the knife, up to certain limits, the more easily can it be handled. Work requiring fine dissection should not be undertaken at the post-mortem, but set aside for leisure.

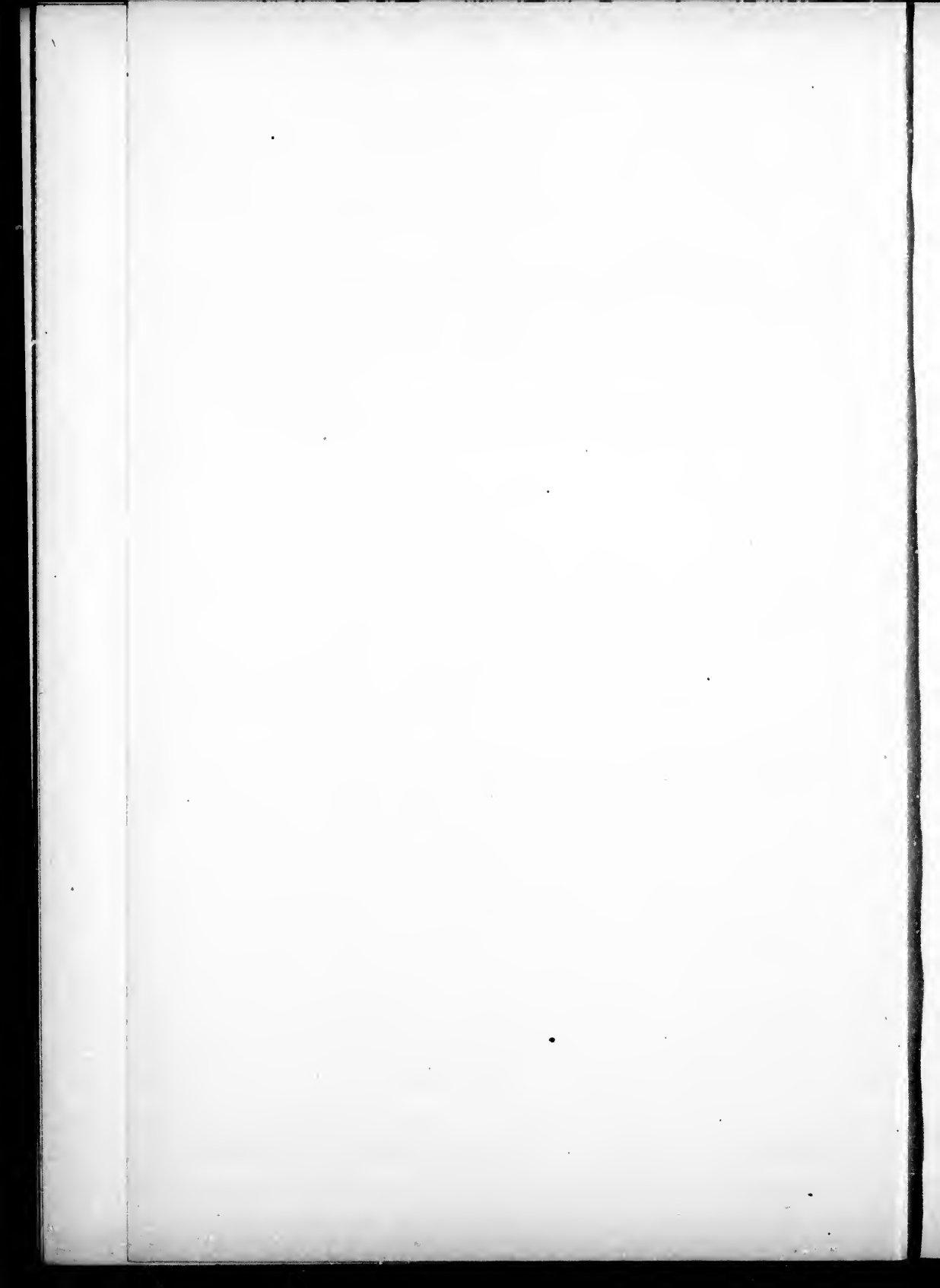
HANDS AND WOUNDS—When possible the operator at a post-mortem examination should wear rubber gloves. The best kind of glove is that known as the "Veterinary," which is made very thin and of pure rubber, fitting closely to the hand and not interfering a great deal with the sense of touch. A thicker glove is more commonly chosen on account of its cheapness, but with it almost nothing can be ascertained by touch. Any difficulty in drawing on of the gloves may be overcome by dusting the hand with some dry powder, e.g., violet powder. An objection to any form of glove lies in the fact of its becoming very slippery when soiled with blood. Rubber gloves may be worn for a long time if washed free of oil or grease after using. If any fat be left on them they rot quickly: soap and warm water will readily free them of grease. When gloves are not available, some operators protect the hands by coating them with vaseline or oil of some kind. It is a good plan to examine the hands carefully before entering on an autopsy in order to determine whether any cuts or abrasions exist. These may be present but not visible, but if the hands be exposed to the fumes of ammonia for a few seconds, the resulting nipping will locate them. In septic cases some such precaution is always advisable. When breaks in the skin are discovered, they should be disinfected with strong tincture of iodine or carbolic acid, and then covered up with collodion or rubber plaster, even though gloves are to be used.

Of all forms of post-mortem wounds a puncture with needle or knife point is the most dangerous; in many instances it is practically a stab inoculation into a good medium. In order to treat such a wound properly, it should at once be enlarged by a clean knife point until there is no difficulty in reaching the very bottom of it by disinfectants. Throwing a ligature of some kind around the finger above the wound and causing free bleeding in this way

is a useful measure. Sucking the wound—often resorted to—may be useful so far as the wounded member is concerned, but may lead to infection of the lips or tongue. Inoculation not seldom takes place through hair follicles, and although the results commonly remain localized, in the form of large pimples or boils, they may be sufficiently painful and disabling. It is chiefly in cases of peritonitis with large, purulent exudations, that this form of infection is seen. It is best avoided by washing the hands and arms, from time to time, in running water. *It is a good rule to wash the hands frequently in making examinations, no matter what the disease under investigation may be.*

If infection does occur, as proven by appearances some hours after exposure, the best immediate treatment is excision of the inoculated area.





THE BODY.

CARE OF BODY—In making post-mortem examinations the greatest possible care ought to be taken not to disfigure the body, but to leave it in such condition that friends may not be shocked by its appearance. In private work this is of very special importance. Naturally many people are greatly adverse to such procedure and ordinary decency should lead investigators to do everything possible to avoid giving pain; moreover, one slip in this respect will almost certainly prevent future opportunities of examination for the individual who makes it. A reputation for carelessness in such matters travels. Occasionally it is necessary to examine a body under trying conditions; for example, it may be prepared for burial and confined, or the room in which it lies may not be a fit one. In such cases every precaution possible must be taken to prevent soiling of clothing, coffin trimmings, carpets, etc. A good supply of old newspapers will be found very useful. They may be tucked in so as to protect the trimmings if the examination be made in the coffin, or they may be placed upon the floor. Dispose of them by rolling up and burning. Remember always to work with windows open when possible and always to leave them open after the examination. The odor of a dead body which has been opened will rapidly permeate a whole house, therefore isolate the room by closing doors of communication. If an examination is to be made in a private dwelling everything necessary to be used should, if possible, be taken in his kit by the examiner. This is to save the friends. In this connection remember that the less noise made the better; especially subdue the noise of hammer, chisel and saw, if so situated that friends may hear and be distressed. A chisel may be protected by a folded towel. Water or oil may be poured on the blade of a saw. Cleaning up after a post-mortem ought not to be left to the friends. Any debris that cannot be disposed of within the body or thrown into a closet should be taken away from the house and everything around the body left as found.

OPENING THE BODY—To open the thorax and abdomen stand on the right side of the body, and with a large knife make an incision from the supra-sternal notch to the symphysis pubis, in the midline, passing to the left of the umbilicus. This incision should go down to the sternum in the thorax and to the muscle in the abdomen. Commonly, one is not allowed to open higher than the

top of the sternum, but when possible should begin just below the symphysis of the lower maxilla. It is difficult, though possible, to remove the organs of the neck and mouth without opening it in front.

Opening Abdomen—Next make a small opening completely through the belly wall just over the pit of the stomach; insert the first two fingers of the left hand into the opening, pull well forward and place blade of knife between fingers; open the belly down to the pubis. Cut across the recti abdominis muscles about the middle, not damaging the skin; reflect the skin and muscles from the thoracic wall, exposing the inner third of the clavicles above and carrying the reflection well down to the axillary line below. The reflection of the skin must be so done as that all costo-chondral junctions are well exposed. Some operators make a cross cut in the skin of the abdomen in order that everything may be well exposed; this is quite unnecessary except in special instances, and merely gives extra work in sewing up. To free the recti muscles from their attachments to the pubic bones may be of use at times.

CLOSING BODY—When a body is about to be sewn up after examination all fluids should be removed from the cavities. Decomposition is accelerated by the escape of fluids into the cavities and tissues. If the sewing be properly done there should be no leakage even though fluids be left. Commence sewing from the lower end of the abdominal incision by passing a thread through from side to side at the very extremity of the cut and tying it firmly. Then sew upwards, thrusting the needle through the skin only—not including fat—taking in about one-quarter of an inch from the cut edge, first one side then on the other, at intervals of about three-quarters of an inch. If the needle be held in the right hand and the thread drawn tight with the left a perfectly watertight seam will be made. The stitch is the same used as in sewing the covers on a baseball or lawn-tennis ball. When the sternum has been completely removed it should be fixed in position by a couple of stitches through intercostal muscles or costal cartilages. In some cases it may be desirable to cover up the skin-stitching; this is best done by means of a strip of rubber plaster heated before application. When organs have been removed from a body it may be thought better to introduce something to take their place in order to preserve its shape; sawdust answers well when it can be used; cotton wadding, newspapers, old rags, etc., will all answer a good purpose.

REPLACING SKULL CAP—The skull cap should be replaced with the greatest possible precision, otherwise signs of the examination will be visible in the shape of more or less deformity of the

