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Contributors

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183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
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AN ACCOUNT

OF A

NEW METHOD

OF MAKING

DRIED ANATOMICAL PREPARATIONS.

By JOSEPH SWAN,

SURGEON TO THE LINCOLN COUNTY HOSPITAL.

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INTRODUCTION.

EVERY one who has paid attention to anatomy, whilst he has been convinced of the utility of dried preparations, must have regretted the difficulty of preserving parts, after much time and expense have been employed in developing them. The plan which I have adopted, and which I am about to detail in this pamphlet, will not only prevent many of the usual disappointments of the anatomist in this respect, but add many advantages which dried preparations never before possessed. These advantages are

1st. That the muscles do not shrink so much as they do in the usual method.

2nd. The tendinous parts are preserved distinct from the fleshy, so that the muscles preserve nearly the same appearances as when first dissected.

3d. The disparity in the bulk of the muscles and injected blood-vessels, is so far diminished, that the surgeon may form a better idea of those important parts the arteries.

4th. The nerves are also preserved of their natural size, and in their usual situation. And thus the muscles, arteries, veins, and nerves are exhibited in the places which they naturally occupy.

5th. Preparations thus made will keep in any climate. Heat affects them but little; so that they may be preserved in

the hot climates of our colonies, as in the East or West Indies.

6th. Neither does a damp air destroy them or even scarcely affect their appearance.

7th. They are not offensive to the smell, and may consequently be preserved in situations where other preparations could not be borne.

8th. Insects will not touch them, so that they are not liable to the destruction which the *Dermestes* are sure to produce in preparations made in the ordinary methods.

9th. A putrefactive state of the body, although existing to such a degree as to render it extremely offensive, does not prevent such subjects from forming good pre-

parations; the putrefaction is checked by the substances employed in preparing them, and is not afterwards liable to return.

10th. They dry rapidly, and whilst drying, flies and other insects avoid them.

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In describing the mode of making these preparations, I shall confine myself to the arm only.

A limb should be chosen as free from fat as possible; a solution of two ounces of oxymuriate of mercury in half a pint of rectified spirit of wine is to be injected into the arteries; and the next day as much white spirit varnish, to which one-fifth part of turpentine varnish has been added, and some vermilion; the limb is then to be put into hot water, where it is to remain until properly heated, when the coarse injection is to be thrown into the arteries and veins if required. If the veins are to be injected, it is better to wash the blood out of them with water before the solution of oxymuriate of mercury is thrown into the arteries, as some of it returns by the veins and coagulates any blood which

they may contain preventing the injection from reaching into the smaller branches.

After the limb has been injected, it is to be dissected. Every time it is left, and sometimes during the dissection, it is better to cover those parts which have been exposed with a cloth made damp with water; and I may here observe, a great advantage will be found in dissecting it; for as the limb, when injected with the solution of oxymuriate of mercury, undergoes very little change in many days, when the dissection is recommenced, the parts are all found in the state they were left; whereas, in the usual way, in one or at most two days, every thing is so changed, that there is very little advantage in reviewing what has been done, and if the dissection is tedious, what was first done can hardly be recognized at the finishing of all the parts. Another advantage is, that the dissection may be carried on in almost any place, as every offensive smell is entirely prevented.

After the dissection is finished, viz. by the exposure of all the parts, and by the removal of all the fat and cellular membrane, it must be put into a solution which is made by dissolving two ounces of oxymuriate of mercury in one pint of rectified spirit of wine, and left there completely immersed in it for at least a fortnight; and it cannot remain in the solution too long. The

time it is in the solution must always be reckoned from the finishing of the dissection. An oaken box, varnished and then painted white, is the best for keeping the limb in the solution, and the lid must fit close in order to prevent the evaporation of the spirit. Metallic vessels do not answer.

In order to save the solution, I put the shoulder quite to one end of the box; and, as little is required to cover the hand, so I raised the other end, by which the greatest quantity of the solution was directed to the part that required most to cover it; and as there were great spaces between the arm and side of the box, I put into them bottles half filled with water, which made much less of the solution necessary. The bottles ought not to press on the limb, as the solution ought to get freely to every part of it. The limb should be taken out every two or three days, and any cellular membrane on it should be dissected off; it should then be returned into the box again with that part upwards which before was at the bottom. The best thing to put it on when taken out is a butcher's tray, which should have been previously well oiled, otherwise it soaks in so much of the solution as to cause great waste. Every thing used must be clean and free from dust. As the solution acts

very much on the scissors, they should be occasionally dipped in a little of the white varnish.

When the limb has been long enough in the solution, it is to be taken out in order to be varnished and painted; for the convenience of which, a piece of wood about a foot and a half long and three inches broad should be nailed to each end of a table or board. Near the top of each piece of wood there is to be a hole for a wooden screw, which should be half an inch in diameter, and six inches long. A hole is to be made through the end of each screw to admit strings, by which the scapula may be tied at one end, and the hand at the other. The best way of fixing the hand is by a bit of wood four inches long and half an inch thick, through which eight holes should be made at about a third of an inch from each other; then a piece of string is to be passed through the tip of each finger, and each end of the string through one of the holes, by which means all the fingers will be tied to the wood. Another hole is to be made near the middle of the wood, by which it is to be tied to the screw. When the limb is suspended it is to be wiped with a piece of clean linen, and a small bit of wood should be put between the flexor sublimis and profundus tendons near the

wrist, and then the whole limb must be painted over with the white varnish. On the same day the whole of the nerves, tendons, and tendinous expansions, must be done over with the same varnish, and likewise once on each of the three following days. On the fifth day the tendons must be done over with equal parts of the yellow varnish and the white paint; and the same on the seventh, eighth, and ninth. The nerves must be done as often as appears necessary with equal parts of the white paint and white varnish. As soon as the muscles have become stiff, they may be painted; in doing which, care must be taken that the nerves and tendons are not touched by it; to avoid which, when they are very close to the muscles, a small piece of wood should be interposed.

About a month after it has been taken out of the solution, those nerves and tendons that are not sufficiently painted should be covered with the paint and varnish as before as many times as are thought necessary; but one day should intervene between each time of doing them; at the same time parts of the muscles will appear that have not been painted, which may now be done. But it is better to wait some time longer, and then to paint any parts of the muscles that may require it.

After this, the tendons and nerves should be washed with boiled linseed oil. In using it as little oil as possible should be in the brush, which should be drawn gently over them once. This is material to be attended to, as the oil is apt to make some impression on the paint; and if it is drawn over a second time, the paint may be disturbed, which will spoil the appearance of the part. In two days, if the oil is perfectly dry, the whole limb must be again covered with the oil; and when this last is also perfectly dry, the whole must be painted with the best copal varnish, and when dry, it will be necessary to repeat it a second time, and even a third, if required. In varnishing, camel's hair brushes must be employed.

After the tendons have been painted, on the ninth day the limb may be hung in a paper bag and left for any time, and the nerves and muscles may be painted when convenient; and it will be a great saving of time to those who are studying anatomy to proceed thus far in the winter, and finish the preparations in the summer when they have leisure, as it may be done in any place on account of there being no smell.

The arteries and veins must be covered with copal varnish, to which a little vermilion has been added for the arteries, and Prussian blue

for the veins; and this should be done before the copal varnish is applied to the limb.

To preserve the liver, white spirit varnish, to which one fifth part of turpentine varnish has been added, and some colouring matter, as red lead, must be thrown into the vena portæ and excretory ducts first, and then coarse injection; after which it should be kept in the solution for a fortnight at least. It is not necessary to heat it before it is injected.

The ligaments must be prepared in the same way as the tendons.

In making preparations of animals the same method must be used, except that the paint for the muscles, tendons, &c. must be lighter or darker according to their usual appearance in the animal.

If the place where the preparation is varnished and painted should be dusty, some contrivance must be used to keep the dust from it, or it will be entirely spoiled.

The solution may be used many different times, but a fresh quantity of oxymuriate of mercury must be added for every fresh preparation.

I shall now give the receipts for the paints and varnishes, which are made by the weights and measures of apothecaries. The copal varnish, mastich varnish, white spirit varnish, and turpentine varnish, may be bought at the colour shops.

The White Varnish.

Canada balsam,
Spirit of turpentine, of each three ounces,
Mastich varnish, two ounces;
put them into a bottle, and shake them together until they are properly mixed. That Canada balsam answers best which is white and rather opaque.

Mastich Varnish

may be made by putting four ounces of powdered mastich and one pint of spirit of turpentine into a bottle, which should be well shaken every day until the greatest part of the mastich is dissolved.

Yellow Varnish.

Infuse one ounce of powdered gamboge in eight ounces of spirit of turpentine for fifteen days; after which equal parts of the clear liquor, Canada balsam and mastich varnish, are to be mixed together.

White Paint.

Three ounces of the best white paint and one ounce of spirit of turpentine, are to be put into a bottle and shaken together. When it is used with the varnish, a little of each should be mixed at once.

Paint for the Muscles

is made by grinding on a slab lake and a very little Prussian blue with the white varnish, to which one fourth part of turpentine varnish has been added. That for the liver requires lake, Prussian blue, and vermilion, mixed in the same way. Prussian blue may be mixed by itself in this way, and a little of it added to copal varnish for the veins.

For convenience, small vials containing these different paints should be kept, and a little should be poured out as it is wanted.

As in warm weather the coarse injection now in use is apt to escape from any wounds that may have been made in the vessels, I have made use of the following.

Red Injection.

Wax, four ounces,
Common copal varnish, half an ounce,
Red lead, half an ounce,
Vermilion, two drachms;

these are to be melted together in the ordinary way.

Green Injection.

Wax, four ounces,
Blue verditer, half an ounce,
Common copal varnish, half an ounce.

Blue Injection.

The same as for the green, with the addition of half a drachm of powdered Prussian blue.

With the solution all kinds of animals may be preserved; but as the greater part of them, except fishes, can be well preserved by other means, I shall only give directions for preserving fishes, so that they may have nearly the same appearance as when taken out of the water.

All the mucus must be well washed off with soap and water; the abdomen must then be cut open, and its contents removed; the eyes must be cut out; the back-bone and the greatest part of the flesh must be taken out, and then the fish must be put into the solution of oxymuriate of mercury used for the anatomical preparations, where it must remain for some time. When it is taken out, it must be filled with tow and plaster of Paris, or with tow and white paint, mixed with the following varnish: five pounds of yellow resin dissolved in three quarts of spirit of turpentine. The abdomen must be sewed up. It must be then hung up to dry. The gills must be painted red. When it is dry it must be varnished.

THE END.

G. WOODFALL, PRINTER,
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