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EMBEDDING

Klebs introduced the method of embedding plant and animal tissues in wax for microtomy, in the year 1869.

The tissues (materials) present in the molten wax in the specimen tube are to be embedded in cubical blocks of wax. This is achieved by pouring the molten wax containing the materials from the specimen tube into a reservoir and allowing the wax to solidify.

Make shift reservoirs (tanks) are formed by using,,

1. Metallic L blocks
2. Lids of Coplin jars
3. Using Paper Boats.

1. USE OF 'L' SHAPED METALLIC BLOCKS (OR WOODEN BLOCKS)

By placing 'L' shaped blocks ~~XXXXXXXXXXXX~~ opposite to each other on even surface, a tank can be created. By placing these 'L' blocks unequally, tanks of desired small size can be created.

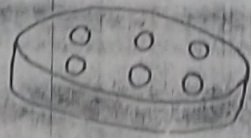
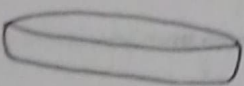
The 'L' blocks are placed on a glass plate smeared with oil. A tank or reservoir of desired size is created. ('L' blocks should be sufficiently be heavy so that they will not move when the molten wax is poured.

The specimen tube containing the materials in molten wax is removed from the thermostat, shaken well and ~~suddenly~~ the wax containing the materials is poured suddenly into the tank. More of molten wax is to be poured into the tank immediately until the materials are covered with wax.

By using heated scalpel or heated needle, the tissues or materials (flower buds, root tips etc.,) are to be arranged in neat horizontal rows with sufficient spaces in between.

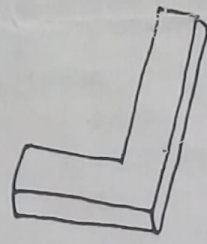
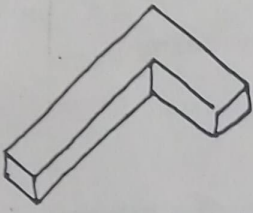
Wax will continue to solidify gradually. So the whole exercise is to be done swiftly. Every now and then the scalpel or the needle is to be heated.

After the materials are arranged neatly, the wax in the tank is to be allowed to solidify without any disturbance. After solidification is over, the 'L' blocks can be separated. A perfect block of wax ~~is~~ with the biological materials embedded in it in neat rows is obtained.



2. USE OF THE LIDS OF COPLIN JARS:

If there is a very small number of tissue bits or plant material (say one or two), there is no need for 'L' blocks nor paper boats. The lids of coplin jars can be used in such cases. Very small blocks are obtained by using them.



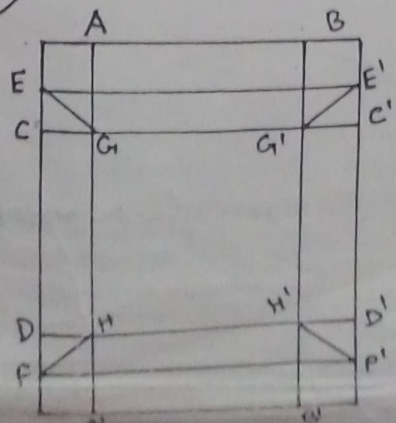
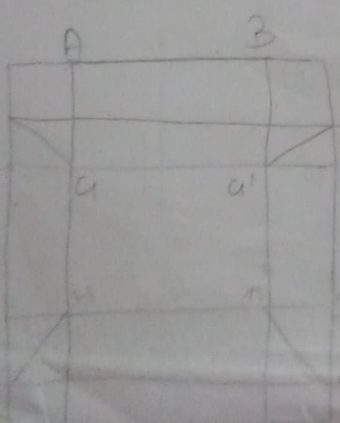
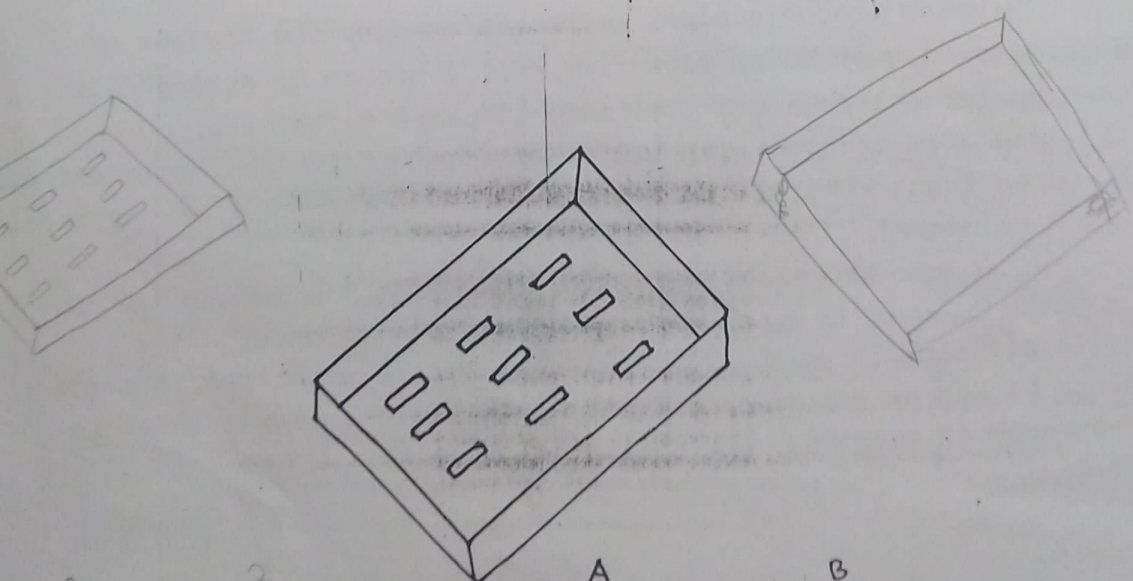
3. USE OF PAPER BOAT TO EMBED MATERIALS:

If there are large number of tissue bits or materials in the specimen tube or if ~~one~~ a large number of blocks are to be made, make shift tanks can be made using thick sheets of paper such as invitation cards or herbarium sheet etc., Such tanks are called paper boats.

Lines are to be drawn in the card as shown in the figure. The card is to be folded neatly along the lines drawn in the sequence AA', BB', CC', DD', EE' and FF'.

The diagonal lines ~~are~~ GE, G'E', HF, H'F' are to be folded outwards while all the other foldings are done inwards.

As a result a neat paper boat is obtained. Oil or vaseline is to be smeared on the inner surface of the paper boat. The boat is to be kept on a plane surface.



The specimen tube containing the materials in the molten wax should be retrieved from the thermostat, shaken well and the contents be poured swiftly into the paper boat. More of molten wax is to be poured immediately until the materials in the paper boat are immersed.

Before the wax solidifies, the materials are to be arranged in neat horizontal rows with sufficient spaces between them and between the materials. This is done using heater scalpel or heated needle.

Solidification of the wax in the paper boat can be delayed by doing this exercise by keeping the paper boat on a copper table which is heated by a spirit lamp kept underneath.

After arranging the materials in neat rows the boat is left undisturbed until the wax solidifies. Solidification can be hastened by floating the boat with the wax in cool water contained in a tray. Care should be taken to avoid flooding the surface of the solidifying wax with water. This will cause undulations in the block.

After solidification is complete, the paper boat can be straightened out and the wax block be separated.

PRECAUTIONS TO BE FOLLOWED WHILE EMBEDDING THE MATERIALS IN WAX:

1. While pouring additional molten wax, it should be done very swiftly. Wax in a completely molten state is to be poured. Only when, will the wax block obtained be homogenous. Otherwise, the wax poured from the specimen tube will form a layer and the wax poured later will form another layer. This will lead to cracking of the blocks while cutting it into small pieces containing single material.
2. The materials (specimens) should be arranged in neat horizontal rows. Only then, each individual material will be surrounded by sufficient wax on all sides while cutting the larger block into small blocks.

