A Simple Method of Dehydration

To those whose researches entail the preparation of much material for embedding in paraffin and sectioning with a microtome any method that will shorten the process, while minimising the risk of injury to delicate objects, is sure to prove acceptable and worthy of a trial. The method of dehydration here described will doubtless be familiar to many experts in microtechnique, but for others to whom it may be unknown a brief restatement of the procedure to be adopted may be of service.

To prepare material for embedding in paraffin after fixation in a non-alcoholic fixative, it is customary to wash the material in running water and dehydrate in absolute alcohol before clearing in xylol or other reagent. A too rapid transition from water to absolute alcohol will cause a shrinkage of the delicate tissues, and, to avoid this happening, the usual procedure is to pass the object through alcohols of gradually increasing strength, ranging from about 20 per cent. to absolute. This involves the preparation of a series of receptacles, taking up the valuable time of the worker, and may result in irreparable injury being done to the material through frequent handling. All this may be obviated by the use of diffusion shells made of semi-permeable parchment.

The object to be dehydrated is placed in a small quantity of 20 per cent. alcohol in the bottom of a diffusion shell, and the latter is then inserted in a wide-mouthed bottle, half-filled with absolute alcohol, being supported in such a way that the open end of the shell will project well above the surface of the spirit in the bottle. Diffusion takes place, and in about forty-eight hours the material will be lying in practically pure alcohol within the shell; the absence of diffusion currents when a little of the liquid contents of the diffusion shell is poured into the alcohol in the jar proving that the two liquids are of equal strength. The transference of the material from approximately pure to absolutely pure alcohol may then be effected without further risk, and the process of dehydrating is thus performed with a minimum of labour and a maximum of safety.

It still remains to evolve a device of a similar nature by which the subsequent replacement of absolute alcohol by xylol could be accomplished with the same certainty and ease.

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