A Spray Mixture Useful for Thinning Apples After Bloom[1]

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A spray mixture consisting of polyethylene polysulfide (Goodrite p.e.p.s.) and a complex product formed by the reaction of zinc dimethyl dithiocarbamate ("Zimate") with cyclohexylamine has been under observation for the past two seasons. The use of this spray mixture has resulted in a 50–60 per cent reduction in fruit set on Delicious and Blaxtayman when applied 10–14 days after full bloom. The proper concentration for apples appears to be 2 pounds of polyethylene polysulfide and ¼ pound of the zinc dimethyl dithiocarbamate-cyclohexylamine complex. Preliminary observations in 1945 and 1946 indicate that the spray mixture will also thin peaches when applied near the shuck-fall period. The results to date are very limited but are sufficiently indicative to warrant more extensive field trials to determine the effect of time of application, concentrations, and repeat applications.

Advantages of this spray mixture over other fruit-thinning sprays are its ease of mixing, noncaustic action, and lack of phytotoxicity. When the mixture is used throughout the scab season for scab control, the control is comparable to that obtained from the use of wettable sulfurs. There are indications that it will also aid in the control of cedar apple rust. In addition, the polyethylene polysulfide is an excellent sticker.

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Cross-Sections of Undistorted Human Hair

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Since 1880, anthropologists have been making hair cross-sections in an effort to solve the mechanism of curling and waving, and for racial analysis and classification. Early cross-sections were made using the pith-block technique of the botanist or the embedding techniques of the histologist. The development of cellulose embedding led to a simplified rapid sectioning technique, described by Fiala (*1*) in 1930, and the rapid and useful industrial tool reported by Hardy (*2*) in 1935. The Hardy technique was modified for the anthropologist by Steggerda (*4*) in 1940. Extensive work has also been done with the cardboard support described by Kneberg (*3*) in 1935.

However, all of these techniques required both distortion of the hair form and considerable stretching. The author's study required sections from undistorted hair and serial sections with each hair identifiable in each successive section. These dual requirements led to the development of two techniques: the first, suitable for paraffin embedding; the second, a rapid method for producing thicker sections.

The first method borrows and modifies Kneberg's cardboard support and employs paraffin melting at 62° C. to hold the hair securely. After the hairs have been selected from a single lock, washed in solvent, and the dirt removed, they are affixed to the support with globules of cement. It is important to fix them in place without distorting the wave form and also to space them properly. "Indexing" hairs of larger diameter and bent parallel to the human hairs are set at either side, as shown in Fig. 1. After soaking the finished support in xylol, embedding

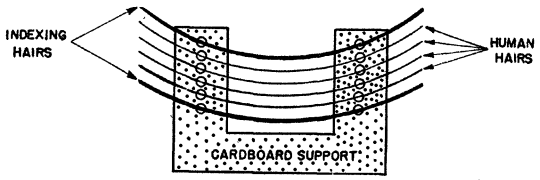

FIG. 1. Embedding support.

is completed without dehydration. The paraffin block is cut from the hardened paraffin in the usual manner, the curvature of the enclosed hairs marked on the outside, and the sections made. During sectioning the object carrier of the microtome is readjusted every few rotations so that the sections are perpendicular to the hairs. Sections 15–20 μ, thick cut well. The paraffin sections are floated on albumen-coated slides, dried, and deparaffined. The large fibers at the ends of each section aid in location under the microscope and serve to indicate sections that have been inverted or reverted during handling.

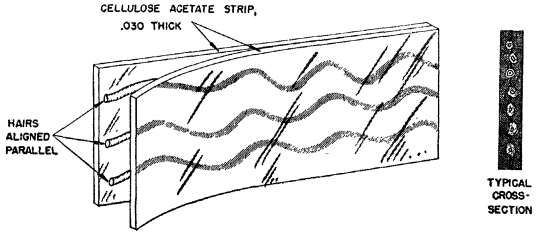

FIG. 2. Lamination technique.

By its constant relative position each hair can be identified in successive sections. The optical activity of the hairs, if any, can be studied in sections so made.

The second method is a rapid but less perfect lamination technique. As shown in Fig. 2, the hairs are oriented on a cellulose acetate strip, tacked down with acetone, and covered with a second acetate sheet. Acetone or a suitable cement may be used for laminating, and moderate heat and a few pounds pressure help the contact. Within 10 or 15 minutes sections can be made either freehand or with the aid of a jig. Again, the sections must be perpendicular to the hairs rather than to the lamination. This technique facilitates rapid study of cross-section form, area, and rotation about the longitudinal axis. Sections should be made within a few days after laminating.

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