

of the entire arterial system in two cadavers, and regional injection, such as arms, legs and abdominal circulation, in an additional eleven cadavers.

The only advantage natural latex is found to possess is that of greater elasticity after it has set so that students may dissect with less danger of breaking or severing smaller twigs. However, synthetic latex mass becomes almost as tenuous, firm and flexible and is entirely satisfactory.

Synthetic latex was obtained from the manufacturer and color added before use. Cost of materials total approximately 75 cents per quart. Chemigum latex Type 100⁵ to which has been added a finely divided insoluble water-borne red (A-2989 Toluidine toner)⁶ behaves as natural latex and is used and handled with exactly the same technique.

Another latex used was Experimental Latex X-122⁷ colored either with the water insoluble red as above or with a soluble dye (Chlorantine fast red 8-BLN).⁸ This dye is used in concentrations not to exceed 0.4 per cent. of solids in a given amount of latex, and may be added directly to X-122. X-122 does not behave as natural latex, which coagulates suddenly on coming in contact with weak acid solutions, but may be injected into arteries without previously washing them out with weak ammonia solution.

Injections were made with a glass veterinary syringe, with rubber piston. An air pressure apparatus (5 to 7 pounds per square inch) did not provide sufficient force. Only one specimen had been recently embalmed. The others had been stored in vats for varying periods after embalming and took considerably less injection mass (40-50 per cent.) than can be put into soft pliable material.

Preparations of the cadavers were made through the femoral artery by injections in both directions—other limbs or organs were filled through the main artery normally supplying them. All sized arteries are readily filled. The arteries of the brain were well injected, also vasa vasorum and vasa nervorum as well as arterial anastomoses around joints.

The length of time required for coagulation is variable with the condition of the cadaver. Chemigum type 100 sets at about the same speed as natural latex. Latex X-122 requires a considerable period of time for setting so that preparations should be made several weeks before dissection is to be made.

Each has advantages for special situations. X-122 would be preferable to use in a cadaver that had been stored in a vat for a long period. X-100 is more advantageous to use in an area which has been dissected or in mesenteric circulation, for if there is oozing through a rupture or a nick it can be coagulated by sponging with a weak acid solution and the hydraulic continuity of the vascular tubes restored, an impossibility if ligation is done. Also it is easier to sponge the surface of a vessel than to pick it up and tie it. Injection mass in exposed mesenteric circulation can be coagulated almost instantly by flooding the surface with weak acid and thus a preparation may be used immediately after injection.⁹

JAMES M. SANDERS

SCHOOL OF MEDICINE,
UNIVERSITY OF MISSOURI

A NEW LABORATORY SHELLAC

THE recent scarcity of satisfactory shellac for the fixation and preservation of kymograph tracings made it imperative to look for satisfactory shellacking materials which can readily be made from ingredients commonly found in pharmacological and other biological laboratories.

At first from 10 to 20 per cent. alcoholic solutions of U.S.P. XII resin (colophony, white lump rosin obtained from the Arthur H. Thomas Company, Philadelphia) were used. These resins in such solutions, however, are quickly oxidized and the shellacked tracings become brittle. The best success was achieved by using the following formula: From 200 to 400 grams of rosin were dissolved in 2,000 cc of absolute or 95 per cent. alcohol; 400 cc of propylene glycol (resins are soluble in glycols) were added to the solution with 10-15 cc of castor oil as a plasticizing agent. The smoked tracing once immersed in this shellacking material must be allowed to dry for 12 hours, and then it may be rolled up and stored. The advantages of this new shellac is that records preserved with it do not become brittle, do not stick, and their surface does not become shiny. The tracings are easily photographed because of the lack of halation.

It may be added that ethylene glycol or other glycols may be used instead of propylene glycol to provide "body" and as antioxidants or any plasticizer may be used instead of castor oil. It is not to be assumed that the use of this shellac is limited to fixation of kymograph tracings.

THEODORE KOPPANYI

SCHOOL OF MEDICINE,
GEORGETOWN UNIVERSITY

² O. V. Batson, *SCIENCE*, 90: 518, 1939.

³ D. P. Gamble, *SCIENCE*, 90: 520, 1939.

⁴ E. E. Tobin, *Am. Jour. Roentgenology*, 51: 386-388, 1944.

⁵ Goodyear, Akron 16, Ohio.

⁶ Imperial Paper and Color Corporation, Glens Falls, N. Y.

⁷ Dow Chemical Co., Midland, Mich.

⁸ Ciba Company, New York, N. Y.

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