

6. Permeability to water and water vapour.
7. Durability under alternative exposure to dry and moist atmospheres.
8. Durability under normal as well as artificial weathering.

A good plasticiser should prove satisfactory in all these respects. So far, it has been found that among those tested sextol phthalate is the most satisfactory all-round plasticiser for lac.

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It has been found that lac can be dispersed in water by the aid of sulphurous acid and alkaline bisulphites. Sulphurous acid dispersions yield water-proof films in which lac appears to be in the "B" stage of polymerisation, while bisulphite-dispersions may be made water-proof by pigmentation to form distempers. In both cases, a reaction appears to take place between the dispersing agent and the hard lac resin component. Large-scale experiments are in progress to test the utility of distempers thus prepared.

Since no other natural or synthetic resin reacts in this manner with sulphurous acid, it appears that the sulphitation process may be successfully developed as an identification test for lac.

The difficulties of dispersing lac in drying oils have long been known but they have been overcome by an ingenious process developed by Dr. Bhattacharya. Lac, bleached lac and even polymerised lac have been

found to be easily soluble in fatty acids at moderate temperatures. Such solutions esterified with glycerol yield low acid value and normally drying oil-lac varnishes, which may be pigmented and tinted to give normal oil paints. One most important feature of lac-oil varnish is that it can be combined with cellulose lacquers in any proportion. Thus it is possible to combine in one vehicle the properties of cellulose (high gloss, quick drying, etc.) of lac (hardness, good adhesion, etc.), and of oils (flexibility, weathering, etc.). Paints made from such combinations have been found to be highly satisfactory.

The completely esterified product of lac and fatty acids yields a product which, when neutralised with aqueous ammonia, provides a basis for emulsion paints and varnishes. Such emulsions have been used as binding media with various materials to prepare special surfaces.

In conclusion, it may be added that the work of the London Shellac Research Bureau has only just begun and judging from the present state of developments it is not unreasonable to conclude that the future holds unknown and great possibilities. The programme of researches in hand is very comprehensive and with the co-operation of the Indian Lac Research Institute and the United States Shellac Research Bureau, effected through the office of the Special Officer, Lac Inquiry, considerable progress may be expected in the near future.

NEWS

NEW MINERAL DETECTORS

A new method based on laser radiation, developed by scientists of the Moscow Institute of Physical Engineering, will be useful for specifying the exact age of archaeological finds, detecting mineral deposits and resolving some astrophysical problems.

A laser beam helps adjust the sensitivity of dielectric detectors, special devices designed for visual observation over charged atoms emanated by any substance, including deposits. All previous detectors had a serious drawback. The plate of a dielectric material used to accumulate information about all particles let through it. In the new device, a laser beam, depending

on its energy, weakens or erases completely this information. This ensures a long service life of the devices. The list of jobs performed by the new detectors is rather long. They can be used in nuclear physics, radiobiology, radiography, radiation control, isotope analysis and mineral prospecting. The study of tracks in meteorites and moon rock samples helps resolve the problems of astrophysics and physics of space particles. (*Soviet features*, Vol. XXV, No. 92, June 17, 1986 Information Department, USSR Embassy in India, P.B. 241, 25 Barakhamba Road, New Delhi 110 001).