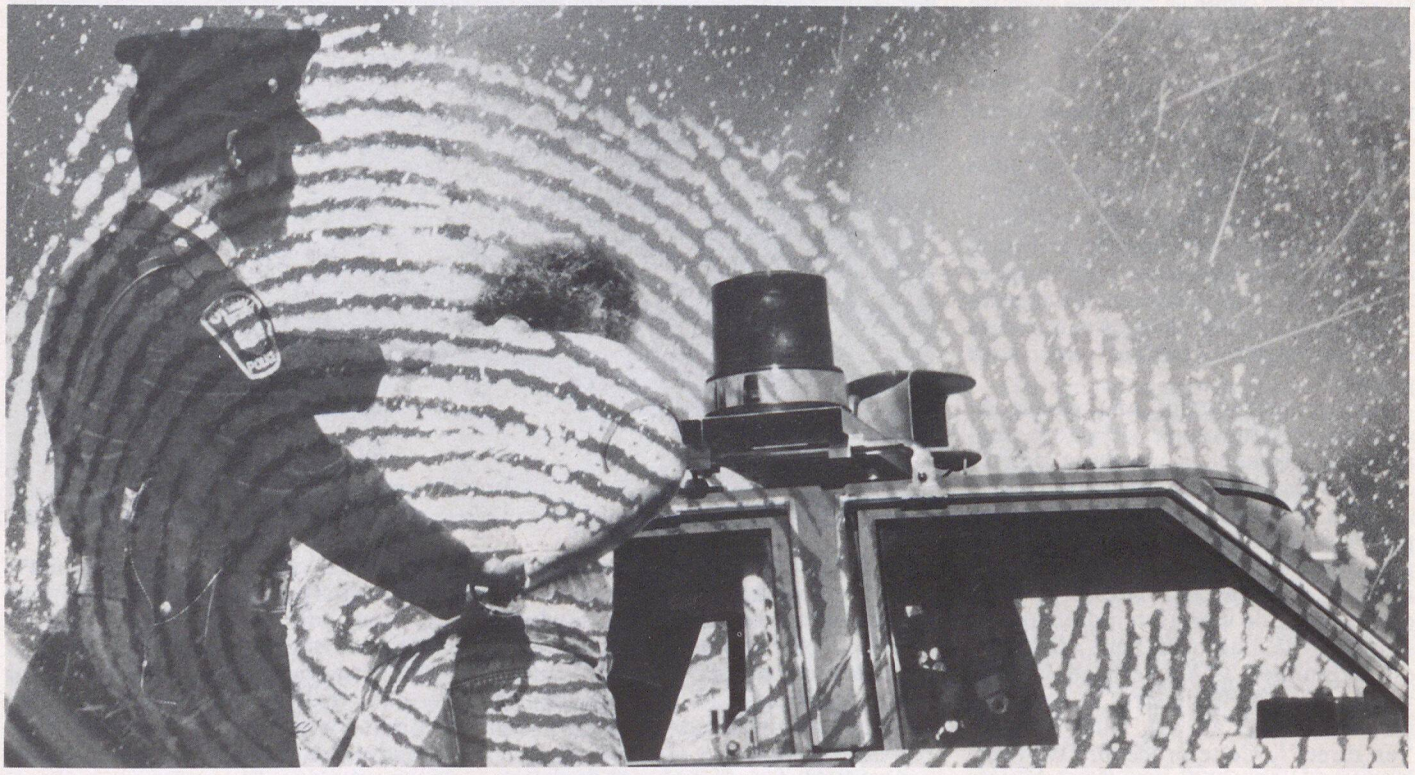
Plastic prints



While an agitated store owner berates the investigating officer for "not doing his job and stopping these break-ins," his colleague, a quiet man in civilian clothes, wanders about the store, apparently without purpose. A discarded cigarette wrapper catches his eye. Carefully retrieving it, the glistening plastic joins the few other objects he considers evidence. His quest completed, he leaves his uniformed colleague to the proprietor's wrath. An hour's laboratory work causes the cellophane to give up its secret — a set of vivid whitish loops and whorls. Production of fingerprints on plastics, difficult by conventional methods, will soon be standard procedure because of the perseverance of a North Bay Identifications officer, Constable Paul Bourdon.

A policeman's job is often a thankless one, and in spite of television's efforts to improve the image, the "back room" role of laboratory investigation remains even more obscure and unrewarded. Says Bourdon: " 'ID' men sift through evidence seeking that touchstone of mystery novels, the fingerprint." Certain surfaces, such as plastic, fail to relinquish their evidence, while others, at best, require finesse. The Federal Bureau of Investigation in the United States concedes that even "good" surfaces known to bear prints give up their secrets only 5 per cent of the time.

"Much of the problem," says Bourdon, "is in the techniques we have available. The most common is dusting with one of several available powders. Fine powders are delicately brushed over the likely print area and adhere to the soft, thin layers of skin oil deposited. The print is then developed by separating ridges and depressions. Too heavy a hand and the gentle brush becomes a broom, sweeping away the evidence."

If the detecting material is a vapor, then this kind of danger can be avoided, but the technique, which utilizes iodine fumes, is insensitive and doesn't work on older prints. It was this fuming approach that Bourdon found attractive when he began his search for a better approach to obtaining fingerprint evidence. "My research procedure was pretty simple," he says. "Try everything and see what works." He spent more than five years evaporating solvents, paints, model airplane dope, and other chemicals in closed containers with samples of plastic film bearing his own prints. His son Joe, meanwhile, moved from secondary school to university studies in chemistry and contributed to the search.

Like Goodyear's accidental discovery of vulcanizing rubber, Bourdon unexpectedly found that cyanoacrylate esters, slightly volatile chemicals used to make today's super glues, developed the prints in the container. Once it was identified, Paul and Joe set about testing the full potential of their discovery.

"Although chemical testing to elucidate the mechanics of the method took place at NRC under the direction of Dr. J. Watkin," he notes, "the field tests, most important to us, took place in Victoria, B.C. The system not only produced excellent results on plastic, but raised them on a weapon that had been dusted without success — and after it had rested five years on a shelf!"

NRC's analysis demonstrated that the chemical evaporates to the surface of the prints, where unknown compounds in the print start polymerization going. In a word, the prints become a hard plastic that adheres to the surface, permitting a photographic record to be made and firmly resisting any attempt to sweep them away.

Bourdon's efforts have produced a transportable finger printing kit called Visuprint. The unit allows an investigating officer to test objects for prints at the scene of a crime. They are placed in the chamber and the circulating fumes reveal visible prints in less than 30 min. The patented system is now being marketed in North America, and Bourdon has already received European inquiries. □

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