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Identification of Shells

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of preventing crime. One indication of this awakening is to be found in the not infrequent refusals of legislatures to adopt extreme, absurd, and drastic bills. Such a bill, which died a sudden death in committee, was lately introduced in New York. It would have forbidden the very possession of a pistol by a policeman until he was a qualified marksman and would at the same time have made it a crime for him to practice for qualification. Its theory was that one should never go near the water until after one has learned to swim.

Another hopeful indication is to be found in the increasing irritability of "pistol prohibitionists." One constantly hears that the suppression of the pistol evil is prevented by rich and active "lobbies" which haunt the legislative halls. Such statements, of course, are not credited by anyone who has any knowledge of the facts, but they doubtless impress a certain class who are prepared to believe any statement if only it is sensational. One may safely assert that no evidence can be produced by any extensive or organized lobbies in connection with pistol legislation other than those which have been organized by the "pistol prohibitionists" themselves.

Such an incident as the following is encouraging and suggestive. The late Chief Magistrate McAdoo of New York, appearing before the New York State Crime Commission in October, 1926, stated, "We can't make any headway in preventing the use of pistols because of the lobbies in Albany and Washington." He was interrupted by Assemblyman Esmond, the vice chairman, with the remark: "It wasn't entirely because of the lobby that the pistol bill failed to pass. I handled the bill, and if it had passed, I would not have had a chance to be re-elected from my district."

Encouraging, indeed is such evidence of the force of public sentiment aroused to action. Upon such force of public sentiment and good sense must we depend for our protection against the folly of the anti-pistol agitation.

IDENTIFICATION OF SHELLS¹

ROSARIO FONTAINE²

In automatic pistols the energy of recoil serves to eject the fired shell and reload, that is, to place a new cartridge in the chamber

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²Of the Medical Union of Canada.

of the arm. As a result, when a murder has been committed by means of this type of gun, one finds on the scene of the crime one or more empty shells, from which it is possible to obtain precise indications of the weapon employed, even though the fatal bullet is not found in the body of the victim. In fact, it is rare that criminals think to gather up, or take the trouble to search the scene for these tell-tale clues.

The principles which serve to identify shells with the suspected arm are based upon marks left by machining operations on those parts of the weapon with which the shell head comes in contact at the moment of recoil. In automatics these parts consist of the firing pin, the shoulder of the slide or breech, the ejector, and the extractor. In other arms, they comprise the firing pin and breech face.

All parts of a weapon which are formed by machining are finished by hand filing. Upon those which are difficult to reach this is not done according to any set routine, and the markings thus produced vary in each case in intensity and direction, so that the designs imparted to shell heads are all different, and altogether constitute distinctive individual characteristics of an arm.

The markings left by the ejector and extractor, though less interesting than those from the firing pin and breech, must not be neglected, their position with regard to the traces of the latter parts constituting an index point assuring agreement of position, and in certain cases may greatly facilitate the work of comparison.

In a few words, the principles of this method of identification are as follows: When the trigger is pulled, the firing pin strikes the primer of the cartridge in the chamber. The explosion which follows produces a pressure on the shell head sufficient to cause it to recoil against the shoulder of the breech with such force that the designs on the latter are imprinted upon it, and if an automatic arm is involved, the ejector and extractor imprint their traces strongly upon the rim of the shell. In this manner a shell reproduces all the markings of those parts of the arm which are necessary to discharge it.

It is the similarities imprinted upon all shells fired by the same arm which constitute the basis of identification.

The legal problem consists of knowing whether shells found on the scene of a crime were fired by the arm which has been seized. To decide this, we fire through the suspected arm one or more cartridges, of the same origin, if possible, as those collected from the scene, and compare the shells with the fatal ones.

The method for identifying shells heretofore employed by us and the majority of firearm identification experts consisted of making microphotographs of all those to be examined, and then making direct comparisons of all the similarities found upon them, taking into consideration their form, position, and dimensions. This work, which at first appears simple, in reality presents the greatest difficulties. In order to make a satisfactory comparison of all these similarities, it is necessary that the magnification be strictly the same on all photographs, but it is only at the cost of much hard work and after many trials that we can arrive at a conclusion, which even then may not be satisfactory.

It is true that it is possible to obtain on a single photograph the images of all the shells, and we are thus certain of having the same magnification; the focusing and orientation are also greatly facilitated by this procedure, but the question of lighting becomes almost impossible. It is easy to understand, in fact, that in order to put the microscopic characteristics in relief, an oblique lighting is necessary, and consequently, a single source of bright light must be employed. If this be placed to the right of the shell, that side will be too light while the left will not be sufficiently so, and vice versa.

In addition to these inconveniences, it is possible to obtain only a very small magnification by this method, which in many cases will not be sufficient.

In order to overcome these difficulties we sometimes apply the method of Goddard for the identification of bullets and shells. This does not differ in fundamental principles from that of ordinary experts, but on the other hand, it is characterized by an extraordinarily ingenious and satisfactory procedure which has the advantage of permitting the identification of two objects by direct vision.

The apparatus employed by American experts consists of two microscopes equipped with oculars and objectives of the same focal length, joined by a comparison eye-piece.

The instrument which we use at the Medico-Legal Laboratory, which was built for us by the Spencer Lens Company of Buffalo, New York, is fitted with a special mount for each microscope, this being to hold the shell vertically and permit it to be turned around its axis. Each shell is lighted by a small lamp attached to the microscope stage. This latter can be raised or lowered as desired on a micrometric joint. Contrary to ordinary microscopes, the focusing is regulated by elevating or lowering the platform, the objectives and oculars remaining fixed and level with the source of