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IDENTIFICATION BY MEANS OF REVOLVER CHAMBER MARKINGS

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The Firearms Identification Unit of the Dade County Public Safety Department Crime Laboratory recently encountered a noteworthy case. Although the problem dealt principally with the routine work of firearms identification, the evidence in question has some aspects that may prove to be of interest to forensic personnel in general and firearms examiners in particular. Since the case being discussed has not as yet been adjudi-

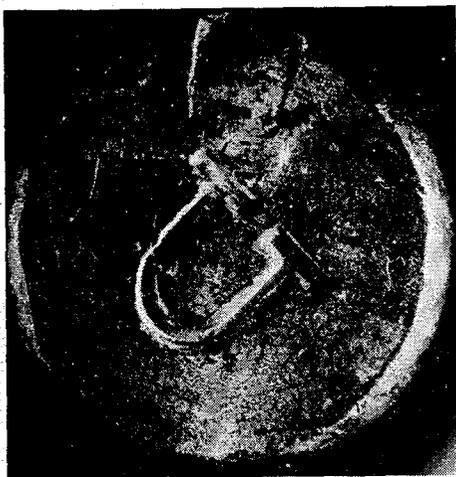


Figure 1

cated, details such as names, places, etc. will not be mentioned.

The routine portion of this investigation arises from the fact that evidence cartridge cases were identified as having been fired in a particular weapon. The interesting aspects of the matter lie in the manner in which the identification was made and in the resultant findings.

At the scene of an aggravated assault four fired .22 caliber cartridge cases were recovered. A .22 caliber Iver Johnson Sealed 8 revolver was ob-

tained from the suspect. Examination of the cylinder of the revolver disclosed the following: five empty chambers followed by three live rounds of .22 long rifle ammunition.

A study of the tests and evidence cartridge cases revealed similar firing pin indentations (see figure 1) which were quite void of individual, identifying markings. Further examination of all the test and evidence cartridge cases disclosed striae existing on the body of the cases immediately adjacent to the rim face. These striae appear directly in line with the firing pin impression (see figure 2). The question then arises: Does each chamber of this eight shot revolver leave its own identifying marks on its cartridge case? Two test shots were fired in each chamber of the submitted weapon. Utilizing the comparison microscope certain information was developed. General class characteristics were apparent on all tests from the eight chambers, but individuality did exist. Each pair of tests from the same chambers were compared, and positive identifications were made of each test from every chamber with its counterpart. Each evidence cartridge case was then in turn positively identified as having been fired, not only in this revolver, but in a particular chamber of this revolver (figure 3).

Since the chambers of this revolver are recessed, when the cylinder is loaded the head of the cartridge case is flush with the cylinder face, and the forward surface of the rim of the case is resting against the recessed surface. Upon firing, the firing pin crushes the rim of the case against the recessed portion of the chamber, and the blow of the firing pin coupled with ignition causes the rim of the case adjacent to the firing pin to be subjected to increased pressure. The additional force exerted was sufficient to cause the cartridge case to receive the impressions from the chamber on this particular surface of the case.

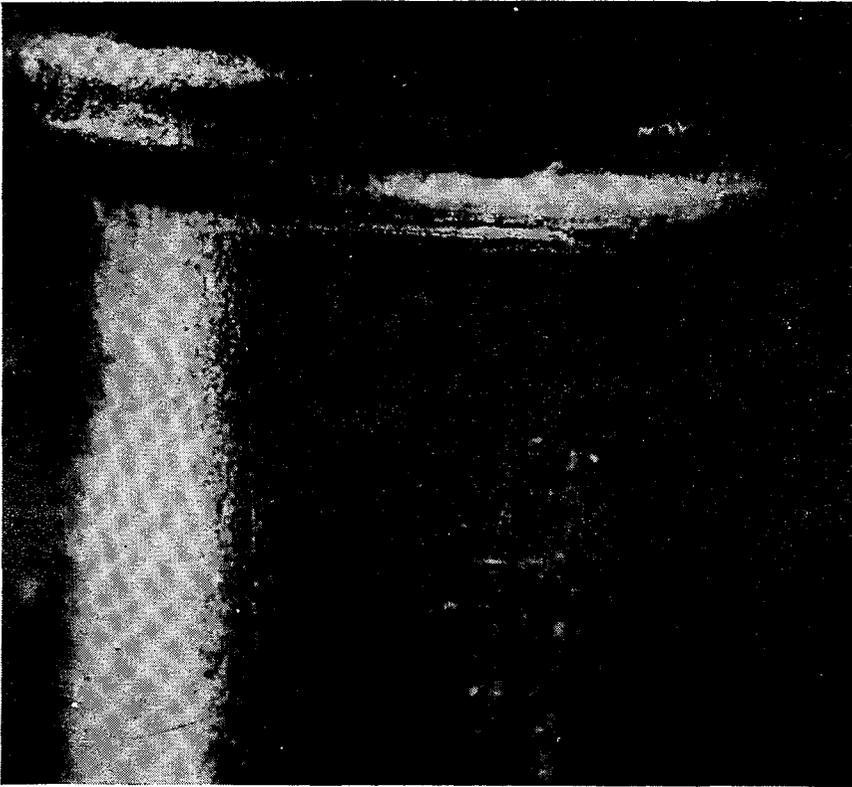


Figure 2

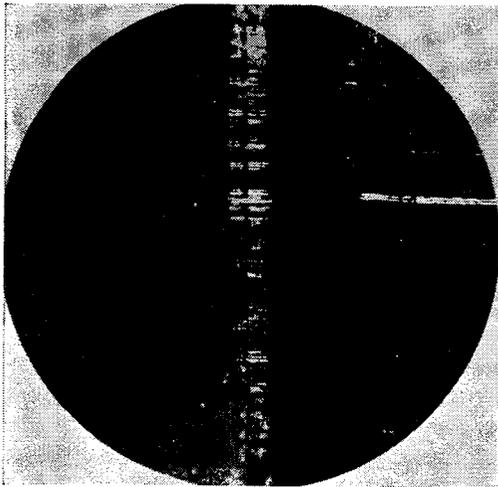


Figure 3

This phenomenon could be of critical importance in a case in which sequence of shots could establish the difference between major circumstances of the crime. For example a victim was killed by either of two shots in the heart, one entering front center, the other back center and each projectile of different manufacture. Crime scene spectators removed the fired cartridge cases and live ammunition from the cylinder. Direction of cylinder rotation could have shown which bullet was fired first, indicating either possible self defense or a murder by shooting in the back. Had it been possible to identify the evidence cartridge cases to their particular chambers a definite sequence of shots could have been established.