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Police Science Notes

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POLICE SCIENCE NOTES

The New Smith & Wesson .357 Magnum Revolver—The new .357 Magnum revolver announced by Smith & Wesson promises to prove the nemesis of police equipment heretofore known as “bullet-proof” or more properly, bullet-resisting. Some of these devices, which would include certain of the “bullet-proof” vests, bullet-resisting glass, steel and wire mesh enclosures have successfully withstood fire from revolvers, automatic pistols and the Thompson sub-machine gun but cannot be depended upon to withstand fire from the new Magnum revolver. For this reason caution should be exercised by those using devices in the classification referred to above. However, bullet-resisting devices capable of withstanding rifle fire (such as the Springfield .30-06) should be adequate protection against an attack made using the new .357 Magnum revolver.

This new arm derives its name from the maximum diameter of the rifled portion of the barrel measured between opposite groove areas, namely, .357 inches. It is constructed using the .38/44 heavy duty frame, familiar Smith & Wesson product. Certain changes have been made in its construction which were necessary because of the high pressures developed by the .357 Magnum cartridge. These cartridges are intended for use in this arm alone and their use in any other arm would be dangerous. For that reason the chamber of the arm and the cartridge are .100 inches longer than the .38 Special chamber and car-

tridge. Obviously the .38 Special cartridges can be fired in the new arm.

The rear portion of the cylinder has been recessed so that the head of the cartridge when placed in the chamber is flush with the rear face of the cylinder. This has reduced the gap between the rear face of the cylinder and the breech face with the result that there is little likelihood of bursting the cartridge case. Alloy steel has been used in constructing the cylinder, thus increasing the safe pressures which may be produced in a cylinder of given dimensions and weight.

The arm is available only upon special order, so far as the Manufacturers' are concerned, and it is thought that this fact may discourage to some extent the use of this arm by the criminal. It is available in various barrel lengths from $3\frac{1}{2}$ inches to $8\frac{3}{4}$ inches. In the case of the $8\frac{3}{4}$ inch barrel length, the distance between front and rear sights is 10 inches, which fact, combined with the flat trajectory of the new ammunition and the small grouping characteristics, makes the arm an ideal one for target use.

The .357 Magnum Cartridge is loaded only by The Winchester Repeating Arms Company and is available with one type of bullet, namely, 158 grain lead, which is a modified Keith-Sharpe type. In the matter of penetration this bullet is highly effective at the velocities to which the cartridge is loaded—1512 feet per second.

As to that elusive term, or yard-

stick, "stopping power" this new arm ranks very high, if not at the top of the list of revolvers and automatic pistols available at the present time. The bullet will "upset" to approximately .44 caliber in penetrating 8 inches of paraffin and will, because of the weight of the bullet and its high initial velocity, have a much greater wounding or killing power at greater distances than other types of revolvers or automatic pistol bullets available at the present time. Therefore, the combination of this arm and ammunition should be an excellent one for police use.

The results of a few preliminary tests made at the Scientific Crime Detection Laboratory indicate that of necessity the established standards for bullet-resisting devices in the revolver and automatic pistol class will have to be revamped so that they will include the fire of this arm. Vests tested (some of which were capable of stopping the 1300 foot second 130 grain .38 super-automatic pistol bullets) were penetrated with sufficient remaining velocity and energy to have caused fatal injury to a wearer. Bullet-resisting glass samples (3 and 5 ply $1\frac{1}{8}$ " thickness) although not completely penetrated were so weakened by one shot that a second shot would have penetrated practically unimpeded. The first shot blew approximately $\frac{3}{4}$ of a pound of glass fragments out of the rear face of the sample; some of which had sufficient velocity and mass to penetrate a corrugated cardboard placed 18 inches to the rear of the sample. A sample of $\frac{1}{8}$ " mild steel plate was penetrated four times out of six.

The calculated muzzle energy is 802 foot-pounds in the case of the .357 Magnum whereas the calculated

.38 super-automatic pistol bullet is 490 foot-pounds. No direct comparisons can be made which involve penetration, shattering effect or stopping power other than to say they are much higher in the case of the Magnum.

C. M. W.

Cadet Police Courses—Beginning next Fall, the University of Wichita (Wichita, Kansas) will offer courses in police science and also part time police work to qualified students, according to "The Sunflower," the University's official student publication, of Monday, June 3, 1935. Following is the complete report, as it appeared in the above mentioned publication:

"Fifteen hours of police science courses have been incorporated into the curricula to meet the growing demands for training in this type of public service. It has become increasingly apparent in recent years that efficient police service requires a technique which necessitates intensive preliminary training.

"In order to cope with the problems of law enforcement, every available source of information and scientific achievement in this field must be utilized. It is essential that the officers be thoroughly trained in the art of handling people in a courteous, dignified, and efficient manner if respect for law and order in the citizens of this country is to be inculcated by the police department.

"The training course is designed to accomplish three primary purposes: to give supervised training and instruction in the general knowledge which is of practical, every day utility in the enforcement of law and the preservation of peace; to provide a foundation for the more

specialized skills used by the different divisions of modern crime fighting units; and to give general basic training for those men who in the future may become police executives.

"Students who complete the prescribed course, including the two years of practical police work, will be given Police Cadet Certificates, and efforts will be made to place them with police departments in the state as regular police officers. Cadet officers are required to carry 12 hours of college work each semester. Those who hold degrees shall elect their college work under the guidance of the head of the department.

"A cadet officer is to be a regularly appointed police officer, working half time, who is taking a course of training at the University to qualify himself for efficient service in the profession. The duties of the cadet are to be to patrol assigned districts in cars. One group will work from 11 p. m. to 3 a. m. Another group will work from 3 a. m. to 7 a. m. Others may be assigned to clerical work in the record division. Cadets assigned to patrol duties will receive \$50 per month; those assigned to the record division will receive \$40 per month. They will have one day off every other week.

"The police science courses are under the general direction of the political science department and under the immediate supervision of Chief O. W. Wilson and Officer E. J. Hanson of the Wichita Police Department. Specialized instruction and lectures will be given by competent officers and instructors. The training will cover a two year period. It is to be taken only in the junior-senior division except by special permission. When such permis-

sion is granted, the student receives auditor's privileges only.

"Individuals taking this police course will be required to major in political science with their minors being selective. Those interested in ballistics will minor in mathematics and physics; those interested in investigations will take a microscopic course and chemistry; while those interested in the service angle will minor in social sciences.

"Applicants must have completed the sophomore year, be 21 years of age, and must pass all examinations given by the Police Department. Exception to the rule of scholastic standing will be made only when the applicant is of superior calibre by virtue of experience or other assets.

"Police science subjects which are to be offered are Police Practices, Criminal Law and Procedure, Traffic regulation, Identification procedure, Criminal investigation and laboratory technique and police organization and administration.

"Graduation requirements of the College of Liberal Arts and Sciences must be satisfied. All students taking the entire course will be required to complete work in the following subjects: Speech, Zoology, Philosophy, Economics, Political Science, Sociology, Psychology, and two years of military science."

Reproduction of Impressions—Dr. Wilson R. Harrison, Consultant in Chemistry to the Cardiff City Police, in a paper published in the May 24, 1935, issue of *The Police Review* (England) describes a number of new and interesting methods for the reproduction of impressions and marks on surfaces which cannot be conveniently photographed. For the preservation of marks on such sur-

faces as wood or oilcloth, or for the removal of fingerprints in dust or on curved surfaces, the following procedure is recommended: "If the substance composing the footprint or other impression is light in color, then a sheet of ordinary bromide paper is brought out into the light and developed in any photographic developer until it is completely black. It is then fixed in hypo and well washed. When it is dry it is ready for use at any future time. If the impression is dark in color, then the paper is fixed without being developed. The first treatment gives a black gelatine coated paper on which a light colored impression will show distinctly, while the second gives a white gelatine coated paper on which dark markings are seen to advantage."

"To reproduce the impression, a piece of paper of suitable size and color, prepared in the manner described above, is soaked for a few minutes in water to which has been added sufficient ammonia to give a distinct odor to the water. This renders the gelatine film, with which the paper is coated, very soft and absorbent. The paper is thoroughly blotted to remove surface moisture before being placed with the gelatine surface downward on the impression to be removed. The back of the paper is firmly stroked or squeezed into contact with the underlying material. When the paper is peeled off it will bear the impression on its surface. The sheet is then left suspended and when it is dry it furnishes a permanent record with the markings embedded in hard, dry gelatine, but easily visible against the contrasted background."

The author outlines a method for reproducing marks of an oily nature, in which a solution of cellu-

lose acetate in acetone is utilized in preparing the stripping film, and also presents a modified technique for reproduction in plaster when the impression is in sand or a sandy soil.

M. E. O.

Friction Ridge Patterns Altered by Leprosy—In a paper presented before the Academy of Medicine of Brazil at its session of September 6, 1934, Professor Leonidio Ribeiro, Director of the Institute of Identification of Rio de Janeiro, described his observations in a number of cases of leprosy in which marked alterations of the papillary designs had resulted. In some instances the alterations were so profound as to prevent classification or establish identity by means of dactyloscopic comparisons. Destruction of friction ridges were due to "an active lepromatic infiltration," and were not the result of secondary atrophic lesions, according to the author.

It has been generally assumed by dactyloscopists that friction ridges are never modified by pathological conditions, but the studies made by Professor Ribeiro seems to indicate that an exception must be made in the case of certain leprotic disorders.

M. E. O.

Dust Analysis—In an article which recently appeared in the "Police Chronicle" (April 5, 1935) entitled "The Analysis of Dust: Its Value as Evidence," the author, Dr. Edmond Locard, points out the immense possibilities of this form of investigation. He emphasizes the importance of microanalysis in checking the alibis of suspects, and in determining a person's professional and occasional occupations.

The author writes as follows: "On the one hand we are, as a matter of fact, covered with dust which represents the clue to our habitual and daily contacts: a librarian's clothes do not bear the same stains as those of a chemist, nor those of a plasterer the same as those of a coal-heaver. On the other hand, the fact of having followed a sandy path does not leave the same traces on the shoes as a walk along a chalky road; to have taken part in a tavern brawl would not mark the hands with the same particles as sleeping in a hay-loft."

Dr. Locard has employed micro-analytical techniques in a great number of the cases investigated by the Technical Police Laboratory at Lyon, and he describes in this article a few of the cases which were solved by this means.—M. E. O.

Course in Laboratory Methods of Scientific Proof—At the current summer session of Northwestern University's School of Law a course is being offered in "Laboratory Methods of Scientific Proof." It

consists of a series of lectures and demonstrations on the various methods of scientific crime detection, such as firearms identification, document examination, micro-analysis, chemical and toxicological examinations, detection of deception, photography, etc.

The primary purpose of this course is to familiarize the student with the major problems involved in these laboratory methods, in order that he may become better qualified as a practicing attorney to handle cases involving evidence of a scientific nature.

In addition to the general technical training, members of this class (numbering twenty-three) are required to investigate thoroughly the legal decisions pertaining to each of these subjects.

The following members of the Staff of the Scientific Crime Detection Laboratory are conducting the course, in cooperation with Professor John H. Wigmore: Leonarde Keeler, Clarence W. Muehlberger, Charles M. Wilson, Katherine Keeler, M. Edwin O'Neill, and Fred E. Inbau.