Handed one copy to Col Bryne

April 11/35 11-30 am

In. Insp McNeills office —

---

he will read it & return it to me

Lecture for today is called off

All men are working

— 6 copies made —

SCIENCE IN ITS RELATION TO CRIME DETECTION.

B Y

JOHN F. C. B. VANCE
City, Provincial & Dominion Analyst.
Inspector in Charge of Police Bureau
of Science.

The unchangeable laws of Nature demand progression or retrogression; a state of inertia or non-progressiveness is impossible.

Science in its relation to crime detection is more than ever being reflected into criminal methods of today. It is necessary, therefore, that the best available scientific methods and assistance be placed at the disposal of the Police Department.

It is also necessary that the Police Officers of today have a general knowledge of the application of science to crime detection in so far at least as the care of exhibits at the scene of crime is concerned and the care and removal of exhibits to the Scientific Laboratory.

In the case of major crime it is desirable that nothing be touched or disturbed until the arrival of a trained criminal technician. In the meantime careful search should be made for foot prints, automobile tire marks, wagon marks, hoof marks, etc. These should be preserved by covering with empty boxes, inverted. Search should also be made for bullets, gun, knife, stick, stone, blood stains, or any other material thing which may have a relationship to the particular investigation. It is well to remember that since we are dealing with tangible objects that all tangible objects are capable of being examined scientifically, and that all material things have special characteristics and that upon the relationship of these characteristics to other factors used to commit any given crime, depends the basis upon which evidence is adduced. In other words, your whole case is mainly built upon the things and matter that can be examined.

Assuming that the case is one of murder on a public highway or other open space, it will be the duty of the officers to immediately restrict the number of persons who will have access to the immediate surroundings, and one of the first actions should be to rope off, if possible, all access to the scene of the crime. Careful examination of the ground should be made for foot prints and these should be preserved in the manner already described, noting carefully the direction

from which they come, weight of impressions, length of stride, whether the impression is the full shoe, with heel, or the ball of the foot. Automobile tire impressions, if any, should be noted and portions of these carefully preserved in the manner already described and the direction of the tracks marked by driving pegs into the ground. A heavier impression in the soil indicates that the vehicle has stopped at that point--the reason for this should also be investigated.

The body should not be moved nor should any rearrangement of clothing be permitted. Care should be taken to prevent the removal by wind or other means, of any loose hair, loose fabric, vegetation, soil or other material lying on the clothing or in the hands or fingernails of the deceased person. If absolutely necessary these exhibits may be removed and placed in clean glass containers or envelopes. The receptacles should be marked by the officer, giving date and time, also describing the location from whence exhibits were obtained.

Examination should be made for blood stains, noting whether the stains are liquid or congealed, bright red or dark in color, size of stains, and location should be noted, also whether blood has spurted from an artery or flowed from a wound. Stains should be traced upon the ground and brush, and preserved in the manner described. Blood stained clothing or other articles should always be wrapped loosely in separate paper containers. Blood stains should not be permitted to touch or contact each other. The identification of various bloods is a delicate undertaking requiring many days of tedious Laboratory work. Stains must first be identified as blood, then classified as human blood, then again defined as belonging to a definite blood group, which in time may eliminate suspects of other blood group classifications. If care is not taken to keep separate the various articles suspected to contain blood, identification and grouping is made mor difficult and sometimes impossible, the Laboratory tests indicating carelessness in handling the exhibits through contamination of the various stains, thereby destroying valuable evidence and causing a considerable loss of time and considerable expense to the Bureau of Science Laboratory.

Revolvers and other weapons found at the scene of crime should not be touched by the hands but should be lifted with special tongs and placed carefully into cardboard boxes provided for this purpose by the Bureau of Science Division. Any unnecessary handling will destroy the material evidence contained thereon, such as finger prints, dust, fabric, powder gasses, stains, etc. Bullets and cartridge cases when found should be immediately placed in special glass containers and must not be handled, marked or mutilated in any manner. This is very important, as the physical examination of these articles depends upon the marks and scratches on the external surfaces of the bullets and cartridge cases. Portions of fabric, blood, or bone contained within the lead bullet should not be interfered with.

Samples of soil, dust and vegetation should be collected at intervals, depending upon the nature of the case in hand. These samples should be placed in glass containers or soil envelopes.

Clothing in cases of sexual offences should never be wrapped up, but should be placed in cardboard boxes in such a manner that the stained portion of the garment will not be disturbed.

Exhibits of glass fragments, wood splinters, plaster, fabric etc. should be placed in separate glass containers or Bureau of Science envelopes properly marked and sealed.

Burnt or partially burnt documents or papers should not be opened, but should be carefully placed in a cardboard box, marked and sealed.

Liquor exhibits should be marked and delivered to the Laboratory without unnecessary delay. If this is not convenient, they should be kept at a temperature of 45° F. until such time as delivery is possible.

In accidents or death by automobile, always preserve any glass found on the roadway in the vicinity of the accident and examine the road for tire impressions, skid marks, blood stains, flesh, etc. These should all be preserved in the manner before described and measurements taken. The metal joints on bumpers, headlights, radiator and fenders should be examined for hair, fabric, etc. These should either be carefully removed and placed in proper receptacles or else

the exhibits should be protected until the Bureau of Science Division is called into the case.

Narcotic drugs, such as morphine, cocaine, heroin, are white powders resembling boracic acid and baking powder in appearance. Opium is a brown powder and smoking opium is a dark mass resembling very thick molasses in appearance. When narcotic exhibits are seized, the packages should be marked and delivered to the Laboratory as soon as possible.

The exhibits must never be permitted to leave the possession of the officer collecting or seizing same, and should be delivered by him to the Laboratory at the earliest possible moment.

In presenting his evidence to the Court, the officer should be in a position to immediately identify the exhibits which had been delivered by him to the Bureau of Science Division for examination. His identification mark or initial, together with the date, should be visible on the containers or clothing exhibits. He should also have clearly in his mind the date and time when such exhibits and certificates were returned to him from the Bureau of Science Division.

In describing each article presented to the Court, he should state the stains are red or brown or resemble blood, that the contents of certain packages contain powders of certain described colors, that bottles contain so many inches high of liquid of described color, When the officer attempts to interject into the trial his opinion that certain stains are blood stains, that certain packages contain narcotic drugs, such as cocaine, morphine, heroin, opium, etc., that certain bottles contain liquor, and so on, he then enters the field of a professional chemist or toxicologist and must submit to cross-examination as such.

Each division in the Police organization has its own particular duty to perform and since results from scientific examination depend to a great extent, and sometimes almost entirely, upon the condition and physical properties of the subject matter under examination, the officer should remember that he is the individual who has charge of the most important factors. He will have noted the material evidence which he feels will have a bearing on the case. The preservation of such will provide the basis for scientific examination, which basis, if carelessly or inefficiently handled, may produce negative results.

The factors above outlined cannot be compared or related by the human eye alone. Instruments and apparatus outside of the control of the officer in charge of the case must be used, and it depends upon his intelligence and his care whether the material evidence submitted by him can be constructed by the Police Bureau of Science into tangible evidence either for or against the accused person.

Be very cautious in your manner of handling material exhibits. You are the first official to appear at the scene of a crime. It is entirely within your power to carry the case through to a successful conclusion by the careful and intelligent preservation of material evidence or you may completely ruin the case through lack of knowledge or lack of desire to carry out the instructions given.

I will give two simple illustrations in an attempt to make clear this point.

An unidentified man, suspected of an assault against a young girl, was seen to disappear on a bicycle from the neighborhood in which the assault took place. The child stated that the man concerned with the assault had a bicycle. Later, a suspect, who had a bicycle, was arrested. The officer took the bicycle to the scene of the assault and ran it over the ground in an attempt to compare the tread marks of the tires. They became confused. After many hours, the officers decided to call in technical assistance. In the meantime no guard was placed at the scene of the attack and no attempt was made to preserve the tread marks on the ground. Other bicycles had apparently been over the ground since the assault, the officers had no means of distinguishing between the numerous bicycle tread marks made by themselves and the bicycle tread marks made by the suspected person; hence no evidence could be presented.

One other illustration. Certain painted metal boxes were broken into and the contents removed. Arrests were made. A small iron bar of very common type which could have been used for the purpose of entering the box was found in possession of one of the suspects. The Officer took the iron bar and entered it into the impression in the iron box in an endeavor to see if it would fit the mark made. They then decided to call for technical assistance, and the bar and boxes were submitted for examination. Paint and oxidized metal identical to

that of the metal box was found on the point and shoulder of the bar. Here again no evidence could be produced, as it was impossible to state that the paint and oxidized metal did not attach itself to the iron bar during the period that the officers were attempting to compare the impressions by contact with the material evidence.

The point to remember is not "Could it have been used?" but "Was it used?".

The proper proceedure in this case would have been to immediately place the iron bar in a sealed paper container and submit both iron bar and metal box to the Police Bureau of Science for examination and comparison.

The Golden Rule for Police Officers to follow should be "Never attempt any test or interfere with any material for the purpose of tests when doubtful results are likely to ensue, but rather leave the matter and the inference to be drawn therefrom to the Bureau of Science Division."

Further lectures will deal more intimately with the individual subject matters of this paper, including crime in its various scientific aspects with discussions on counterfeit money and the handling and care of explosives, bombs, etc.

JOHN F.C.B. VANCE