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SOME NOTES ON THE HANDLING OF SUSPECTED BOMBS AND THE INVESTIGATION OF EXPLOSIONS*

James A. Pyke†

Ordinarily when police officers consider the investigation of suspected bombs or explosives they have in mind investigations resulting from the activities of the criminal element which includes those persons who employ these instruments in commission of crimes, such as blackmail, extortion, malicious mischief, murder, and the like. However, today there is another group for which all law-enforcement agencies are constantly on the lookout. This element embraces all the well organized subversive groups, popularly known as the Fifth Column. With the increased activities of this latter group police agencies throughout the country have been making every effort to prepare themselves and their personnel to combat this threat. In an attempt to further this work the author has compiled the following suggestions and notes on the handling and investigation of suspected bombs and explosives drawn from his own experiences and those of his associates on the New York City Police Department.

Handling of Bombs and Suspicious Packages

The procedure for handling bombs and suspicious packages which has been adopted by the New York City Police Department is reproduced below as a guide for other departments on which to base their own procedures. It should be noted that this Department maintains a specialized squad for the

investigation of bombs as well as a technical laboratory to which suspected bombs can be taken for analysis, and, consequently, all procedures are based upon the full utilization of these special units. While smaller departments throughout the country may find it inadvisable or impossible to maintain these specialized units, it is the author's belief that every department should have some member who has made a specialized study of the problems of handling suspected bombs and explosives and that he should be consulted whenever a suspicious packages or bomb is encountered. Consequently, it is felt that the following procedures, modified to fit local conditions, can work satisfactorily in any city throughout the country.

The New York City Police Department's procedure is as follows.

1. Whenever the attention of a member of the Force is called to a bomb, suspected bomb, infernal machine, or other explosive, such member of the Force shall cause the premises or area to be evacuated forthwith of all persons therein and shall notify the Telegraph Bureau of his findings.
2. The Telegraph Bureau will immediately dispatch an Emergency Service Squad and notify the Bomb Squad, the Technical Research Laboratory, and the desk officer of the Precinct concerned, in addition

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- to the notification required to be made by Paragraph 15, Article 35, of the Manual of Procedure.¹
3. The Emergency Service Squad is equipped with a special tank and a No. 10 grade lubricating oil. Upon arrival of the Squad the officer in charge shall cause the tank and the oil to be brought from the Emergency Service truck to the location where the bomb, suspected bomb, infernal machine, or other explosive was found and shall designate one member of the Squad to immerse the bomb in the oil. All others present, except the member so designated, shall be kept at a safe distance.
 4. Any bomb upon explosion will cause damage to property and fatal or serious injury to persons within an area of 300 feet from the point of explosion,² and this is a minimum area.
 5. If there is adjacent an open area of ground in which no persons are present or from which all persons could be immediately evacuated, or a vacant lot, or a highway or roadway that can be closed to traffic, any one of which has a radius of 300 feet from a selected central point, the officer in charge of the Emergency Service Squad will cause the container of lubricating oil in which the bomb has been immersed to be removed thereto.
 6. Under no circumstances will the bomb, suspected bomb, infernal machine, or other explosive be removed from the oil in which it has been immersed by anyone other than a member of the Bomb Squad or of the Technical Research Laboratory.
 7. When lifting the bomb, or suspected bomb, to transport it or to immerse it in the lubricating oil, extreme care must be exercised that it is kept in the identical position in which found and that it is not jarred, tilted, or turned.
 8. Police safety lines shall be established and maintained at proper distances in accordance with the provisions of Paragraph 9, Article 15, of the Manual of Procedure, until the removal of the bomb, suspected bomb, infernal machine, or other explosive by proper authority.³
 9. Upon arrival of members of the Bomb Squad and the Technical Research Laboratory, the Commanding Officer of the Bomb Squad, after investigation and examination of the factors and circumstances involved, shall determine action to be taken. The following is the usual procedure employed.
 - a. The time bomb detector is put into the oil tank in which the bomb or suspected bomb has been placed, and it is ascertained whether or not the tick of a clock is present.

¹ This Paragraph directs that the Telegraph Bureau notify the person, office, bureau, or department concerned.

² The designation 300 feet is made, having in mind the usual type of infernal machine with which the police come in contact.

³ Paragraph 9 directs that the Sergeant in charge of the Emergency Service Squad shall

immediately take charge, establish police lines and be responsible for the distribution of all members of the Force who respond to the emergency until the arrival of an officer of higher rank. Sergeant shall notify Telegraph Bureau, also desk officer in office of Emergency Service Division.

- b. If the immersion of the bomb in the oil has stopped the clock, this fact can readily be determined by the application of the detector.
- c. In the event that the clock is still going, an extension cord, 200 feet long with head phones attached, is then plugged into the detector. The men then retire to a safe distance and remain there until such time as the clock is stopped by the action of the oil on the balance wheel. The stopping of the clock keeps the circuit open thereby rendering the bomb ineffective.
- d. The technicians from the laboratory, meanwhile, set up the fluoroscope and the X-ray machine, having it in readiness for immediate use. When the detector indicates that the clock has stopped, the bomb is then lifted from the tank and placed on a couple of supports which are carried for the purpose.
- e. The detector is kept in constant contact with the bomb after it has been removed from the oil, and by the use of the head phones the detectives are immediately warned should the clock start up again.
- f. Experiments have shown that the clock will sometimes start going after the bomb has been removed from the oil. This is caused by the oil being drained from the clock mechanism allowing the balance wheel to operate. In this event, the bomb is placed back into the tank.
- g. When the clock is again stopped it is removed from the tank, and the fluoroscope is applied. If the contents are not made clear by the application of the fluoroscope, the bomb is then radiographed, and the film is developed on the scene. The next step to be taken by the investigators depends on what the radiograph reveals about the contents of the suspected package with regard, for example, to the location of the blasting cap, electric contacts, circuits, batteries, and so forth.
- h. While the radiograph is being developed, the bomb is put back into the tank, and the detectives of the Bomb Squad make ready two sets of tritongs and two 200-foot lengths of $\frac{3}{8}$ -inch rope. If the radiograph shows the suspected package to be a bomb, the tongs are then applied, and the bomb is torn apart. This is done by affixing one pair of the tongs to the bomb and attaching one of the 200-foot lengths of rope by means of a snap-on. The rope attached to this pair of tongs is then anchored. The second pair of tongs is likewise attached, and the rope is pulled in the opposite direction from the anchored rope. By this method, equal pressure is brought into play on both sets of tongs, by which means the bomb is pulled apart. This practice keeps the detectives at a safe distance.
- i. The further disposition of the contents of the suspected bomb depends upon the circumstances and facts which are developed by the investigators.

The "Don'ts" of Handling Suspected Bombs

From the preceding paragraphs the reader can learn a great deal about the safe way to handle suspected bombs, but among the most important rules to be mastered by anyone who may be called upon to investigate suspicious packages or bombs is a long series of "Don'ts." The criminal who prepares the bombs often designs his contrivance so that it will be exploded by the tampering of some unsuspecting person. It seems unnecessary to point out that police officers investigating a suspected bomb can only make one mistake. The following "Don'ts" are based on the writer's experiences and his knowledge of the various types of bombs which have been or might be prepared.

A. WITH SUSPECTED BOMBS, USE ALL REASONABLE PRECAUTIONS: ALL BOMBS ARE DANGEROUS.

Don't be curious. No officer whose duty does not demand that he personally investigate a suspected bomb should be curious and crowd around a suspicious package or bomb which is the subject of an investigation. If there should be a premature explosion, he may be seriously injured or perhaps killed. Give the bomb plenty of room.

Don't touch or attempt to open the package unless it is your business to do so. Unless you are certain of the contents of a suspicious package, always remember that you are dealing with an unknown quantity. Some bombs are so constructed that they are exploded by tilting the package. With other types of bombs a spring or plunger is released

when the bomb is lifted up thus setting off the explosive.

Don't open a suspicious trunk, valise, or package in the usual way. The maker of a bomb often designs his device so that electrical contacts are made when an innocent looking trunk, etc., is opened in the normal manner.

Don't handle the package unnecessarily. Unnecessary handling is inviting the chance of causing an electric contact to be made which will cause the package to explode. Note: *Keep the package in the same position as it was found.*

Don't bring suspected bomb into station house or other place where many people congregate, or where it may do serious property damage. If a premature explosion should occur you may be responsible for the death of several patrolmen, as well as your own. In 1917, in Milwaukee, Wisconsin, a bomb was carried into the station house, and as the police officers were about to examine it, the bomb exploded, killing nine policemen and two civilians. Likewise, placing it near gas mains, electric conduits, water mains, telephone or telegraph lines, or subway or elevated structures can cause serious damage.

Don't place suspected bomb near other explosives or inflammables. In event of a premature explosion either material will intensify the damage. If inflammable products are in the vicinity of a suspected bomb they should be immediately removed.

Don't smoke when near a suspected bomb, nor place near a fire, nor expose to direct sunlight. Bombs may be ignited by violation of any of these rules.

B. DON'T OPEN THE PACKAGE IN THE WAY OBVIOUSLY INTENDED.

Don't move a hook on the box. Contacts are often arranged so that the circuit is broken at the hook which holds the lid of the box closed. Movement of this hook to open the box completes the circuit and explodes the bomb. When a bomb is made up in this manner, the hooks are placed in a closed position holding the lid down, and the box is assembled by putting the bottom on last.

Don't lift the cover of a box. The lifting of the cover may bring a wire, which has been affixed for the purpose, into contact with the post of a battery, thus completing the circuit and exploding the bomb.

Don't cut a string around the package. The string may release a trigger mechanism and explode a primer, thus setting off the bomb, or it may release the cover which in turn will release the contact spring and fire an electric device causing the package to explode.

Don't tear or break open the glued wrapper. If you tear or break the paper wrapper of the package, you may release the cover on the box and thereby set in motion the electric current igniting the explosive charge.

Don't unscrew a cover or cap. Some of the explosive mixture may have adhered to the threaded parts of the container, and in such cases unscrewing the cap can cause the mixture to explode.

Don't turn a cylindrical object on a suspected bomb. By turning a cylindrical object you may twist a glass vial which will break, thereby spilling sulphuric acid or some other acid onto

a chemical mixture causing ignition and exploding the contrivance in your hands.

C. DON'T SHAKE, JAR, OR CHANGE THE POSITION OF A SUSPECTED BOMB.

Don't shake, shock, or jar a bomb. With many common types of bombs shaking is almost certain to cause ignition and to set it off. Some bombs contain contacts consisting of mercury switches, and even slight movement will complete the circuit and set off the bomb. Other contacts are made with a very fine space separating them and shaking may cause the bomb to ignite. If a bomb is given a sharp knock or blow it may explode as some explosives are extremely sensitive to shock. This is particularly true of nitroglycerine which contains an excess of acid and which is sometimes employed by criminals in preparing bombs.

Don't turn a bomb upside down. Some bombs are constructed with acids so that ignition will occur when the package is inverted.

Don't lay a bottle over on its side. This may cause the liquids to come in contact with zinc inserts in the cork thereby generating a gas which will break the bottle and allow the gaseous fumes to escape. NOTE: If it is a bottle, keep it upright in the position in which it was found.

D. DON'T PUT A BOMB INTO WATER.

Water is a conductor of electricity, and if there happens to be some salt or acid in the bomb, the electrical conductivity of water is increased. Thus, the bomb may be exploded. Again if the bomb happens to contain chemicals, such as metallic sodium, metallic po-

tassium, calcium phosphide, sodium peroxide, or sulphuric acid the water may cause ignition. (It should be noted that if the bomb was made of black powder which is a common type of explosive used in bombs, placing the bomb in water would be the proper procedure because it would render the powder harmless, but it cannot be assumed that all bombs are made of black powder.)

E. DON'T USE UNNECESSARY VIOLENCE OR METALLIC TOOLS IN OPENING A SUSPECTED BOMB.

If you intend to open a package, use a glass knife where practical. This may prevent your tool from completing a contact and exploding the bomb. The use of wooden wedges and fiber or rubber mallets is also advisable. Iron and steel tools not only may close a circuit and explode the bomb, but they may strike against metal parts and cause a small spark, thus igniting the explosive.

F. DON'T TAKE LABELS, MARKINGS, OR APPARENT STRUCTURE AT FACE VALUE.

These may have been forged. Keep in mind that bombs are usually camouflaged in order to throw the recipient off his guard. Don't take it for granted that the package is a bona fide one because it has been sent through the mail. Many bombs are forwarded in this manner, via parcel post, while others are sent through express agencies or delivered by individual messenger.

In addition to the above "Don'ts" the reader should bear in mind that a bomb

need not explode to cause property damage or to slow production in a vital industry. Consequently, investigators should not take it for granted that the suspicious package is an explosive bomb but should be prepared for the event that it is of the *incendiary type*. To most effectively combat damage from these, a copious supply of sand and extinguishers should be kept on hand.

Investigation of a Bomb Explosion

Regardless of how alert police units are some explosions will occur. In order that the responsible persons be prevented from continuing to carry out property damage in other instances the police must make the most exhaustive investigations possible, bearing in mind that discovery and conviction of the responsible criminals must be based upon small pieces of evidence carefully pieced together. With the development of scientific laboratory techniques the investigator has obtained a helpful supplement to his own investigation. However, no single factor is going to solve the case alone, and it is with the idea of combining all the aids available together with a thorough investigation that the following suggestions are presented.

1. The detective should examine the scene as soon as possible and make an estimate as to the manner in which the explosion occurred and the extent of the damage that has been done.
2. Photographs should be taken immediately to show the relative effect of personal and property damage.

3. A sketch should be made of the scene of the crime. Then accurate measurements should be taken which will furnish the necessary information about distances and details represented by the photographs. Whenever possible, this sketch should be made preferably by a qualified engineer and always drawn to scale.
4. The examination of the scene of the explosion will often enable one to draw quite a reliable conclusion as to the nature of the explosive causing the damage, that is, whether or not the material was of the high or low explosive type.
5. Interrogation of witnesses as to the sound of the explosion, the amount and color of the smoke, and the violence of concussion, as evidenced by ringing of the ears, may be of value in corroborating the results of physical examination.
6. The "seat" of the explosion should be carefully examined. By the "seat" is meant the place where the explosive had been fired or set-off. This can readily be determined by the fact that the greatest amount of damage will have occurred at this point. Usually, it is the central point of the greatest damage and is marked by a large hole or shattering effect, depending on the nature of the place.
7. Some fragments or traces of the unexploded substance may be found in the seat of the explosion. This may include dynamite which was damp, discoloration caused by acid, the residue from the burned explosive, etc.
8. The debris in the crater or in the immediate vicinity should be carefully searched for pieces of the bomb or other physical evidence which may give clues as to the type of container or exploding mechanism. It should also establish if possible the type of electric current, i.e., whether battery or house current. The evidence may consist of exploded pieces of pipe, can or other container, wrappings of cloth, electricians' tape, rope, wire, fragments of burned fuse, fragments of blasting caps, batteries, clocks, watches, and so on.
9. Anything which is foreign to the immediate surroundings should be carefully marked, wrapped, or tagged, with the name of the person who found it, the time, date, place, case number, and any other pertinent facts. Evidence obtained and preserved in this manner may be of great value in determining the origin of the bomb and may thereby aid in bringing about the arrest of the perpetrators.
10. In all such investigations it is the duty of the Bomb Squad or special explosion expert to cooperate with the Detective Squad concerned, to collect and safeguard the evidence, and to turn it over to the Technical Research Laboratory for further investigation.