

FBI

Law Enforcement

BULLETIN



1961

MARCH

Vol. 30 No. 3

Federal Bureau of Investigation
United States Department of Justice
J. Edgar Hoover, Director

FBI Law Enforcement Bulletin

MARCH 1961

Vol. 30, No. 3

CONTENTS

	Page
<i>Statement of Director J. Edgar Hoover</i>	1
Feature Article:	
Man-Dog Teams Serve St. Louis Most Effectively, by Lt. Walter H. Dorn, Commander, Mobile Reserve Unit, Police Department, St. Louis, Mo.	3
Traffic:	
Traffic Program in Billings, Mont., Shows Good Results, by Capt. Eugene W. Hill, Police Department, Billings, Mont.	7
Law Enforcement Personalities:	
Profile of New Attorney General, Robert F. Kennedy	9
Quinn Tamm, Assistant Director, Retires From FBI	10
Scientific Aids:	
Poisons Detected by Toxicologists in FBI Laboratory	11
FBI Laboratory Points Out Role of Soil Evidence	14
Other Topics:	
Function, Design of License Plates Important Factors, by Dr. John E. Baerwald, Associate Professor of Traffic Engineering, University of Illinois, Urbana, Ill.	16
Police Are Taught Invaluable Lessons by School Bombing, by Sheriff C. V. Kern, Harris County, and Capt. Weldon Waycott, Homicide Division, Police Department, Houston, Tex.	24
Wanted by the FBI	28
Identification:	
Interesting Pattern	Back cover



United States Department of Justice
Federal Bureau of Investigation
Washington 25, D. C.

March 1, 1961

TO ALL LAW ENFORCEMENT OFFICIALS:

There is little chance that the dikes of decency and morality in America can long withstand the surging tidal wave of crime threatening our Nation unless every citizen, just as in flood-menaced communities, is willing to pitch in to help stem the tide.

This issue of the FBI Law Enforcement Bulletin contains on the inside back cover a poster which is available in quantity without cost to law enforcement agencies, civic and service organizations, community associations, and other groups interested in programs of striking back at criminality.

This, of course, is but one method of fighting the evil which hangs ominously over the well-being of all Americans, but it may well be used to strike the spark of resistance in areas where a lethargic public fails to recognize the danger of crime.

Preliminary figures compiled and recently released by the FBI indicate that serious crime reached an alltime high in 1960--12 percent above the 1959 rate!

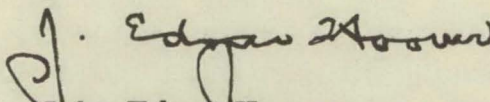
Figures are a cold and impersonal index to any social dilemma, but an awakening to the crisis is imperative. Our countrymen must be convinced of the real and savage nature of everyday crime which lurks just beneath the thin surface of their world of false security.

Of the more than 158,000,000 sets of fingerprints on file in the FBI's Identification Division, there are at any given time almost 90,000 cards which bear small, red tabs. These tabs mean that the owners of these fingerprints are wanted by some law enforcement agency in connection with crimes--90,000 fugitives walking in our midst at all times! Surely, America must be concerned, for this is merely an indication of the actual number of men, women, and youthful criminals who are ready to spring into violence at the slightest provocation.

By tradition, Americans have never left the task of their defense to one small group. Their fellow Americans--the law enforcement officers of this Nation--are embattled, their ranks are thin, and most of them carry on the fight for something more significant to them than the inadequate pay they receive.

A solid front of citizens behind the law enforcement officer who stands face to face with the criminal is the prerequisite for turning back the forces of crime.

Very truly yours,


John Edgar Hoover
Director



FEATURE ARTICLE

Man-Dog Teams

Serve St. Louis

Most Effectively

by *LT. WALTER H. DORN, Commander, Mobile Reserve Unit, Police Department, St. Louis, Mo.*

Among recent moves to streamline the patrol force of the St. Louis Metropolitan Police Department, one that stands out as an unqualified success is the addition of dogs trained to do police jobs.

Since man-dog teams began on-the-street patrol in October 1958, they have more than lived up to department expectations. Dogs have proven especially effective in many areas of patrol, serving as crime deterrents and giving valuable assistance to handlers and other officers.

The use of dogs as a part of the patrol force was first studied seriously in December 1957. Queries were made of the London, England, Metropolitan Police Department, which has used dogs since the end of World War II. Their answer was a highly favorable account of the success they have had with their dog program.

In an effort to get firsthand knowledge of procedures and efficiency of dogs on patrol, former Chief of Police Jeremiah O'Connell; Department Consultant Dr. Victor Brannon, Governmental Research Institute; and Maj. Andrew T. Aylward, commander, Bureau of Services, traveled to London in March 1958.

Following a thorough investigation of the London dog program, they strongly recommended adoption of a similar program in St. Louis.

Canine Program Begun

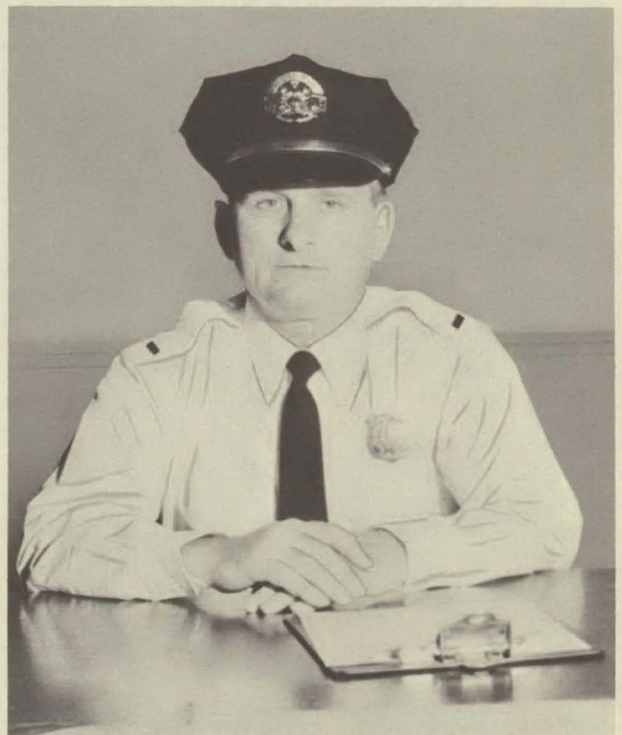
Soon after their return to St. Louis, the department began screening applicants for dog-handler jobs. The initial screening consisted of careful interview of more than 40 police officers.

Qualifications were rigid. Officers had to be less than 40 years old and have a minimum of 5 years' experience before they could be considered for the job. They had to own homes or rent from relatives. The reason for this requirement is that the department builds a wire-enclosed kennel in the yard of each dog handler.

Neighbors of applicants were screened to see if they objected to having a police dog in the area. Since the dogs are housed at the handler's home, his wife had to agree to his joining the canine unit. Naturally, officers had to have spotless records before they were considered.

When the first screening was completed in June 1958, five officers were chosen and sent to London to train with police dogs. After finishing the course, four officers returned to St. Louis to begin on-the-street patrol, and one officer, Sgt. Walter Zweifel, who later became instructor for our department's canine program, remained in London for an additional 21 days' training.

On June 23, 1958, the four officers began the 14-week course in handling dogs trained for police work.



Lt. Walter H. Dorn.

All dogs used by the St. Louis Police Department are German shepherds. Local police profited from the extensive experience of the London Police. Before London officials adopted German shepherds, they tried bloodhounds, Labrador retrievers, and Doberman pinschers.

The shepherd is best suited for all-around police work for a variety of reasons. First, he looks like a police dog, which produces an important psychological effect. He can be trained to work eagerly with the human scent, either tracking or searching. He can be trained to control himself and deal with varying circumstances as they arise. He will bite without fear, and yet is prepared to hold the criminal by barking if that is all that is required. Furthermore, and perhaps most important, the German shepherd seems to enjoy this type of work.

The 14-week course conducted at the Canine Training School of the St. Louis Metropolitan Police Department is modeled after the course taught in London. As soon as a man is accepted for the canine program, a dog is assigned to him. If possible, the man is allowed to select his own dog.

Training is divided into three main parts—obedience, developing the scenting powers, and criminal work. Obedience is probably the most

important phase. During the period basic obedience is taught, both man and dog are learning the fundamentals of their new job. The success or failure of the following phases of training depends on how well they learn basic obedience lessons.

Lessons consist of teaching the dog to do what he is told, when he is told. The dog is taught to walk properly at heel with his handler, on or off the leash. He is taught to "Sit," "Down," and "Stay" on command—to bark on command—to retrieve on command and to jump on command.

Once the handler and dog have gone through the course in basic obedience they can begin the more serious lessons. Obedience serves one important function: The handler and dog become thoroughly acquainted and gain one another's confidence.

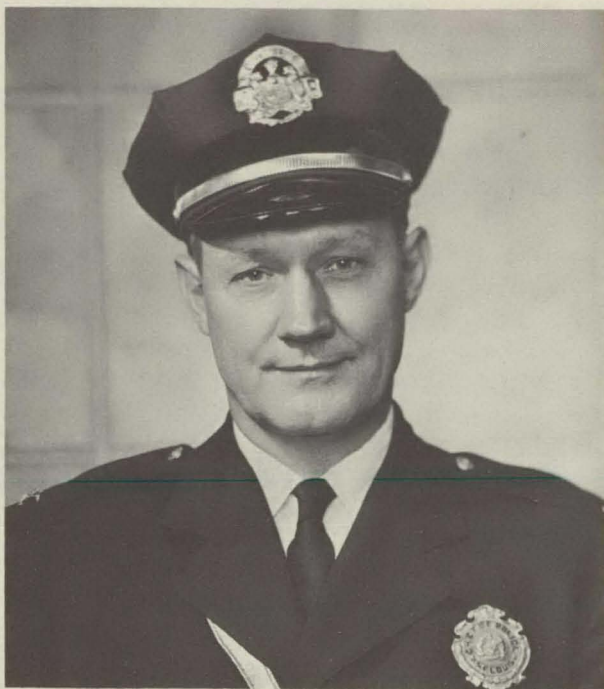
Training in the scenting-power phase consists of teaching the dog how to use his sense of smell to follow human scent or the disturbance of a natural scent, such as crushed grass or insects. In the criminal work phase—tracking by scent—a dog can be trained to search quickly over a wide area and will certainly discover persons hiding in the vicinity even if they are concealed in dense vegetation or up in trees. Equally good results can be obtained in the search of large premises.



Patrolman Robert Busch and Satan, a man-dog team of the Canine Unit, St. Louis Metropolitan Police Department, leave the scout car to go on foot patrol.



Patrolman Robert Busch tells Satan, "Watch him!" The well-trained dog bares his teeth and strains at his leash to get at his quarry.



Col. Curtis Brostron, Chief of Police.

On patrol, the dog is trained to warn his handler of nearby persons whose presence would not otherwise be revealed. With the assistance of his dog, a handler is in a position to investigate and make arrests when a large number of policemen alone might fail.

The ability of trained dogs to use their acute sense of smell has been illustrated over and over again in vastly different types of terrain. To quote one example: In the early morning hours, in a business section of the city, one of our dog handlers was called to the scene of a burglary. The dog was put on the track after picking up the scent at the scene. The dog trailed the scent to the adjoining building, up a flight of wooden stairs, and directly to one apartment out of four located off the hallway. Here a known burglary suspect was arrested and the crime eventually cleared.

Another example of the dogs' effectiveness in locating a criminal hiding from the police is the incident in which one of the dogs was turned loose in a warehouse crammed with bales of rags where the suspect was known to be hiding. The dog darted to one large bale and out came the burglar the police had been chasing—only too glad to give himself up. The mere sight of a large, well-trained dog accompanied by a uniformed police officer has a powerful deterring effect on anyone who might wish to resist arrest.

A large dog trained to go in hard when in pursuit of a criminal will almost invariably make a successful "arrest" without injury to the pursued. During the training for such maneuvers, the trainer, in assuming the role of the criminal, does not have his arms heavily padded or protected. The dog is taught to stop the fleeing man by barking until his handler can arrive at the scene. If the criminal refuses to stop, the dog will then restrain him by gripping him by the sleeve whenever possible. This is usually sufficient to discourage any further efforts to flee.

On completion of the three phases of the training course, the man-dog team is assigned to the Canine Section of the department's Mobile Reserve Division. In April 1959, the first three teams finished their training and began patrol duties.

Teams on Patrol Duty

Standard scout cars, modified to contain two kennels instead of a rear seat, are used for transportation. On patrol, one team works on foot, while the other rides, alternating this procedure during the watch, and each spending equal time on foot and in the car. The teams patrol 7 hours a day, with an extra hour set aside for grooming the dog.

Canine teams provide assistance in many criminal cases. They can track at the scene of a burglary, the scene of a street holdup, or a purse snatching if the scent track is not disturbed. They can track a thief or speeder by sniffing the trail from recently stolen automobiles that have been abandoned.

Another facet of their abilities is the search or seek. Using their sense of smell, the dogs search buildings, junkyards, and other such places, frequently finding fugitives who might ordinarily escape detection. Police dogs take a large burden of the risk from men who might otherwise be seriously injured in searches of this nature.

Dogs can be very helpful also in locating persons missing or trapped in wreckage in disaster areas.

In crowd control, their psychological advantage is a great help. Experience has shown that the crowd, which pays little heed to the line of police officers, quickly scatters at the sight of one or more canine teams. On other occasions, the dogs have cleared the way for an officer surrounded by a menacing group of people.

Dogs have proven to be good detectives on several occasions. They can be useful in searching



Satan closely watches three brawny suspects while Patrolman Robert Busch radios for assistance.

crime scenes, as long as the objects which may be found have been handled by a human being and retain his scent.

In one instance in the busy Ninth District, Rebel, a London-trained dog handled by Patrolman Joseph Biel, truly proved his value. An arresting officer had caught a robbery suspect leaving a vacant lot after he heard a report describing the suspect as being armed. Several officers then searched the lot but found nothing. Patrolman Biel turned Rebel loose and, in a matter of minutes, he found the pistol.

Retraining the Dogs

Refresher courses are held for handlers and dogs one day each week. They constantly review the lessons learned in training and on-street patrol.

Dogs are trained to work with one man; however, it is quite likely that a dog would answer commands of his trainers because they worked together at the training school. In the event a handler becomes ill, the dog is trained to take food from the handler's family, or if the handler should leave the department, the dog can be retrained with another handler, providing the dog is young enough to warrant retraining. A dog can perform police work for about 8 years. Prior to a retraining period, the dog has to be left alone long enough to forget his former handler.

Food rations are provided at the approved allocation of 1 pound per dog per day of canned horse-meat and 1½ pounds per day of biscuits or farinaceous food. The handlers obtain the rations at a local feed company and can obtain no more than

one 50-pound bag of dry food and/or one case of canned food at a given food pickup. When he receives the food, the handler signs a bill for the food upon receipt and immediately forwards his copy of the bill to the officer in charge of the Canine Division office.

Recreation days are scheduled to provide the most effective use of man-dog teams.

When a handler spends his annual vacation at home, he will receive his dogfood ration in the usual prescribed manner. A handler who spends his vacation or recreation days away from home may take his dog with him, if visiting a suitable place, and must carry its rabies inoculation certificate. If he does not take his dog with him during annual vacation or recreation days, the dog may be kenneled at the training school.

The cost involving the feeding of dogs, veterinarian care, and equipment such as tracking harness and line, choke chains, and leads will average about \$206 per dog per year. Keeping in mind that the dogs can be relied upon for such details as unruly crowds at the scene of football games, strikes, etc., where a man and a dog can handle a crowd of several hundred in comparison with an untold number of officers for the same crowd, this creates quite a saving in manpower—and manpower is money.

All dogs used locally, except those brought back from London, have been donated to the department by citizens of St. Louis and adjacent areas. The Internal Revenue Department allows the cost of an animal donated to the department for police work as an income tax deduction. At the present time, we have 24 man-dog teams on patrol. Ultimately, the department plans to have 40 to 50 teams in the program.

Canine School in Demand

Recently, the department completed a Canine Training School built on city-owned property in St. Louis County. The school has facilities for training 12 dogs in each class.

The St. Louis Metropolitan Police Department has received numerous requests from other police agencies to train handlers and dogs in the local school. While the training has been provided for several agencies, there is currently a long waiting list for entrance in the classes.

Requests for use of the dogs by any police department or agency outside of the city must be approved by the chief's office.

TRAFFIC

Traffic Program in Billings, Mont., Shows Good Results

by CAPT. EUGENE W. HILL, Police Department,
Billings, Mont.

Billings, Mont., is a city of some 68,000 population located in what is known as Yellowstone Valley in the southeastern section of the State. It is the "Hub" or shopping, industrial, and distribution center of the Midland Empire, an area covering a radius of about 125 miles and having a population of 200,000 people. These people conduct the greatest portion of their business in Billings, and their major means of transportation is the motor vehicle. It can readily be seen how this adds greatly to our parking problem, traffic congestion, and accident rate.

These factors have made it necessary for us to have a good, sound traffic supervision program.

In 1948, the principles and standards for this program were recommended by the Traffic Division of the International Association of Chiefs of Police, and as we were starting from scratch, nearly every recommendation was adopted. These recommendations were not to be considered as the ultimate, and since the science of traffic supervision was and is advancing rapidly, new practices, as they were proven, were incorporated into revisions of the standards first set. We did not expect to achieve a perfect traffic supervisory organization overnight, but this always has been the goal toward which our planning is directed, and we are not satisfied unless definite progress is being made toward this goal.

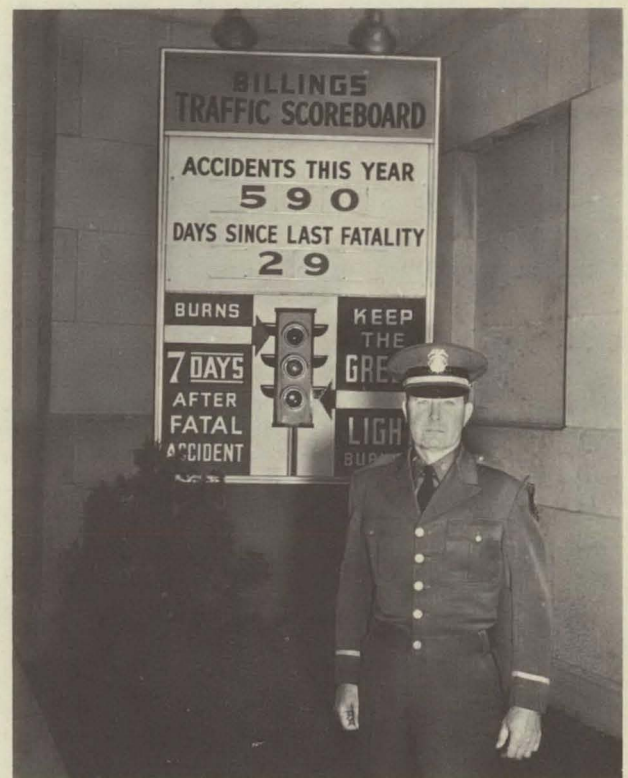
Department Reorganized

The primary item in the supervision plan was the reorganization of the police department. The department is responsible for all police functions but not for other than police activities. Three separate divisions were established: Traffic, uniform, and detective, with an officer of equal rank in charge of each reporting directly to the chief.

After some trial, it was determined that a separate traffic division was not feasible in a department of this size. The division, therefore,

was integrated with the uniform division, and the traffic commander was designated operations officer responsible for overall operations of the department with the primary duty of administering traffic functions. This has worked to great advantage in the development and maintenance of adequate and cooperative performance of traffic functions.

Regular inspections are made, meetings held, and personnel records kept to maintain discipline, morale, and high quality performance. Recognition of good work is extremely important. There is constant checking of police performance and activities to assure maximum effort toward achievement of efficiency objectives in the department. Some of these objectives are: Investiga-



Capt. Eugene W. Hill.

tion at the scene of at least 95 percent of reported accidents by the accident squad; reporting all accidents, regardless of degree of damage or injury; an enforcement index of not under 30 which is determined by dividing the number of moving, hazardous violations with convictions by the number of traffic fatalities and injuries; enforcement effort highly selective in terms of time, place, and violation; reduction of special details until they account for less than 10 percent of total time available; and continual close control of personnel and their activities through strict supervision and comprehensive officer activity reports.

Activity reports are made out by all officers working in the field, including sergeants, and show all work performed and time devoted to each activity. These reports are checked daily by the appropriate superior officer, and the data is compiled into monthly activity reports for each officer.

Definite enforcement policies have been developed governing patrols, tolerances, use of warnings, and interpretation and application of driver and pedestrian regulations.

An adequate records and files system, as recommended by the IACP Traffic Division, was inaugurated and is being used. Integral parts of the system are: **REPORTS**—State accident report form, intoxication influence report form, citation and arrest report, written warning, hit-run report, case envelope, case summary, driver record card, daily activity report, and daily personnel assignments; **FILES**—accident location, hit-run visible index file and ledger, driver record, case envelope, daily personnel assignment, and officer's activity; **SPOT MAPS**—cumulative annual accident spot map showing pedestrian, fatal, personal in-



Chief Randall L. Wilson.



Traffic achievement awards earned by Billings Police Department.

jury, and property damage accidents by use of colored pins; **SUMMARIES**—monthly accident summary, monthly hit-run, daily traffic accident and enforcement summary, monthly consolidated report, personnel assignment sheet, and officer's activity.

The records clerk is trained to handle all such reports and records, to prepare regular and special summaries, and to properly analyze all such data.

There is a daily followup of all basic officer reports by the immediate superior to determine if properly made out and if proper action was taken. Unsatisfactory reports are sent back to officers for correction or further information and action.

Results Attained

Our system of traffic supervision has shown good results in reducing traffic accidents and in moving traffic swiftly, smoothly, and efficiently. We believe we have built up a police organization in which every officer is proud to be a member, and last, but not the least important, all of this adds up to excellent public relations.

The city has enrolled in all appropriate contests, such as the National Traffic Safety Contest, in which we received a certificate of achievement for records in 1955-56, and Outstanding Achievement Awards in traffic supervision for the years 1956, 1957, and 1958; the American Automobile Association Pedestrian Protection Contest for which we received two special citations; and Motor Vehicle Safety Check for which we received two awards.

LAW ENFORCEMENT PERSONALITIES

Profile of New Attorney General, Robert F. Kennedy

The Honorable Robert Francis Kennedy, on January 21, 1961, took office as Attorney General of the United States.

Born on November 20, 1925, in Boston, Mass., Mr. Kennedy was educated at Milton Academy, Milton, Mass., Harvard University, and the University of Virginia Law School where he received his LL.B. degree in 1951. He was admitted to the Massachusetts State Bar in 1951 and to practice before the U.S. Supreme Court in 1955. He has been awarded honorary LL.B. degrees from Assumption College, Worcester, Mass.; Mount St. Mary's College, Emmitsburg, Md.; and Tufts University, Medford, Mass.

Mr. Kennedy's first Government job was as an attorney with the Criminal Division of the Department of Justice in 1951. In February 1952, he was designated special assistant to the Attorney General and conducted a grand jury investigation

in New York which resulted in one of the biggest tax prosecution cases ever held.

In 1953, Mr. Kennedy was appointed assistant counsel of the Senate Permanent Subcommittee on Investigations and of the Hoover Commission. He was named chief counsel for the minority of the Senate Permanent Subcommittee on Investigations in 1954, and the following year became chief counsel and staff director of the subcommittee. From 1957 to 1959, he was chief counsel of the Senate Select Committee on Improper Activities in the Labor or Management Field.

Mr. Kennedy managed the political campaigns which carried his brother, John F. Kennedy, first to the Senate and then to the Presidency.

The Attorney General served in the Navy as a seaman during World War II, being assigned for about 2 years on the destroyer, *Joseph P. Kennedy, Jr.*, which was named after his brother who was killed while flying a combat mission over Germany. Returning to Harvard after the war, Mr. Kennedy played varsity football in 1946 and 1947. He received his A.B. degree in 1948. The same year he served as a correspondent for the Boston Post covering the war in Palestine.

Mr. Kennedy is the author of the book "The Enemy Within." Among the outstanding awards he has received are: "One of the Ten Outstanding Young Men in the United States" from the U.S. Junior Chamber of Commerce in 1954; "Outstanding Investigator, 1957" from the Society of Professional Investigators, Inc.; the Patriotism Award from the Senior Class of the University of Notre Dame; and the Lantern Award from the Massachusetts State Council of the Knights of Columbus. He is on the Advisory Council for the Law School of the University of Notre Dame.

Mr. Kennedy and his wife Ethel are the parents of seven children. They reside in McLean, Va.



Robert F. Kennedy.

POLICE SCHOOLS

The FBI conducted 3,250 police schools in 1960 for local enforcement agencies.

Quinn Tamm,

Assistant Director,

Retires From FBI

Assistant Director Quinn Tamm retired from the FBI on January 23, 1961, after 26 years of dedicated service.

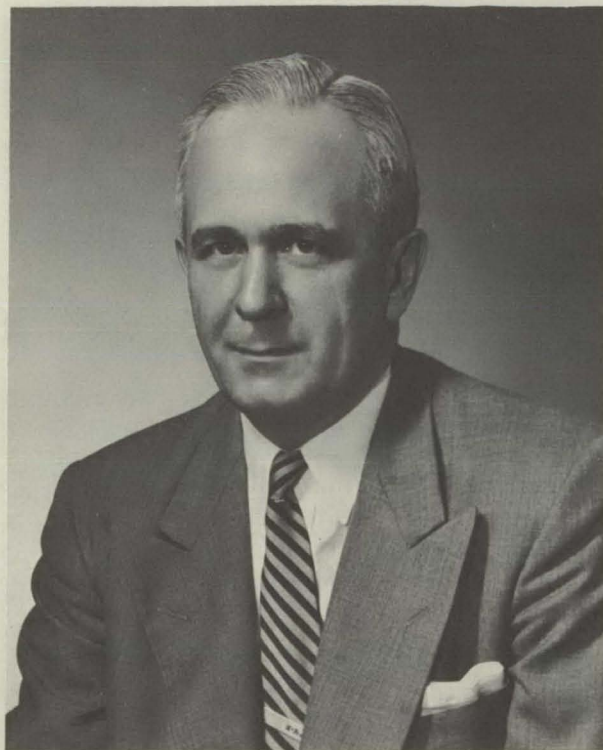
Mr. Tamm was born in Seattle, Wash., August 10, 1910, and received his early education in Butte, Mont. He worked for a short period in the copper mines of that area and developed a keen interest in geology. He received his B.S. degree from the University of Virginia and served there as geology instructor for a short time before coming to Washington.

An older brother, Federal Judge E. A. Tamm, former assistant to Director Hoover, interested him in the FBI, and in December 1934, Mr. Tamm entered the FBI as a messenger. Mr. Tamm was appointed a Special Agent in 1936 and was assigned to the FBI Laboratory. Two years later he was named inspector in charge of the Identification Division and served in that capacity until he was designated assistant director in charge of the Laboratory Division in February 1954. He then, successively, served as assistant director of the Identification Division, of the Training and Inspection Division, and again of the FBI Laboratory where he was assigned at the time of his retirement.

Mr. Tamm is widely known among law enforcement officers throughout the United States, and has addressed numerous meetings of police officers in all parts of the country. He is, in addition, a member of the International Association for Identification.

Mr. Tamm headed the first expedition to the scene of an airplane crash on August 31, 1940, in Lovettsville, Va., to assist in the identification of the victims.

Special Agents of the FBI were assigned to the scene to identify the bodies—and to claim the official and personal effects—of two Bureau employees who were aboard the ill-fated plane. When they arrived, they found local police eager to accept their offer of assistance in fingerprinting the other victims. The passenger list, obtained from the airline company, was immediately sent to Washington. Fingerprint cards were pulled by name from FBI files and taken to the scene by Mr.



Quinn Tamm.

Tamm and several FBI fingerprint experts. Eleven of the 25 passengers listed were positively identified by their fingerprints. This was the beginning of the FBI Disaster Squad.

In Mr. Hoover's letter to Mr. Tamm concerning his retirement, the Director stated: "Your career in the FBI has been a very distinguished one. Very few men have served the Bureau and the overall interests of law enforcement with the devotion and the talent that have characterized your efforts. I am most grateful to you."

Mr. Tamm has accepted the position of director of the Field Services Division of the International Association of Chiefs of Police, a division which he was instrumental in having the IACP establish. Mr. Tamm feels that this particular division can make a major contribution to law enforcement in this country.

★

RECOVERING SPENT BULLETS

Many times a crime bullet is so damaged that a firearms examiner can render no opinion concerning the make or model of the gun. Therefore, as many spent bullets as possible should be recovered in crime scene searches. *"Law & Order"*

12-59

FBI LAW ENFORCEMENT BULLETIN

Poisons Detected by Toxicologists in FBI Laboratory

Toxicology is a science which includes the nature, effects, and methods of detecting poisons which have been introduced into a healthy body. Individuals engaged in law enforcement work, in respect to legal medicine, are usually interested in the examination of organs from deceased persons in suspected poisoning cases. However, the examination of foods, drinks, and the organs of animals is not uncommon to the toxicologist. The purpose of this article is to possibly help the police officer or contributor who submits evidence to the Laboratory for a toxicological examination become more aware of the information which is needed by the toxicologist, the desirable specimens for examination, methods of packing and transmission, and various instruments which are available to the chemist as an aid in conducting a thorough examination.

Source of Specimens

The evidence in a toxicological case is usually obtained from a local doctor or pathologist who performs an autopsy on the deceased body. There is no substitute for a thorough and complete post mortem examination. Good notes during the examination will prevent having to rely on memory at a later date. Photographic records of wounds, scars, deformities, and other visible features are also of value. These records obtained during autopsy are valuable in answering moot questions at a later time. The thorough autopsy may also establish death as having occurred from natural causes or may definitely eliminate this possibility. The doctor may also observe symptoms and characteristics during the autopsy which could be of valuable assistance to the toxicologist. In this connection, the chemist may be able to obtain some idea of the type of poison administered by studying the medical examiner's report before the toxicological examination is undertaken.

Generally, in fatal poisonings, a vital function or organ of the body is affected. Since this is true, the organ or a specimen associated with its function, such as the kidney and urine, is the best specimen for examination. Here again, observa-

tions of the medical examiner and police are invaluable to the chemist. A complete toxicological examination, with no indication as to the possible type of poison administered, takes approximately 2 to 3 weeks. There is a possibility that even after a thorough examination is conducted the poison may not be isolated and identified. The reason for this is that death may occur before the poison is dispersed throughout the body, which makes certain specimens of no value for examination. Therefore, if any inkling as to the poison used can be obtained at the time of autopsy or through investigation by the police officers, the overall picture of the case is considerably brighter.

Generally, the most desirable specimens for examination are portions of the brain, liver, kidneys, and blood. The stomach and stomach contents should be obtained, if possible, along with any urine which is available. At this point, it is suggested that the above specimens are much more desirable if they can be obtained before embalming is performed. Once the body has been embalmed, some poisons such as alcohols are very difficult, if not impossible, to identify as being present in the specimen previous to embalming.

Quantity To Be Submitted

The question often asked by the layman is, "How much of an organ is needed for a toxicological examination?" This is indeed a question which should not be treated lightly, for it is very frustrating for a toxicologist to receive a small section of tissue along with a request for a complete examination for poisons.

A satisfactory sample of tissue for examination is approximately 450 grams or about 1 pound. This quantity is desirable particularly if the brain, kidney, or liver is the organ to be examined. A poison can be dispersed throughout the body with most of it accumulating in a particular organ, depending on the type of poison. Volatile poisons are usually found more readily in the brain, inasmuch as they attack the central nervous system. Alkaloids are found primarily in the liver or stomach contents. Barbiturates may be found in

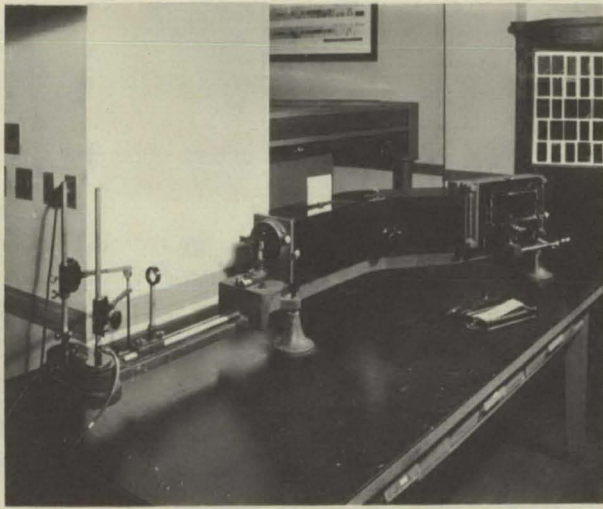


Figure 1.—Spectrograph used for study of metallic elements and other inorganic elements.

any of the vital organs with the brain, liver, urine, and blood usually being the best specimens.

The fatal dose of barbiturates varies. It is reported that a lethal oral dose may vary from 2 to 10 grams. In fatal cases, the concentration of barbiturates in the brain and liver may vary from 2.5 to 8 milligrams per 100 grams of tissue (a gram is equivalent to 1,000 milligrams). It is evident that the possibility of recovering an identifiable quantity of a barbiturate from a small specimen of tissue is limited. Each poison or drug has its own lethal dosage. Thus, if possible,

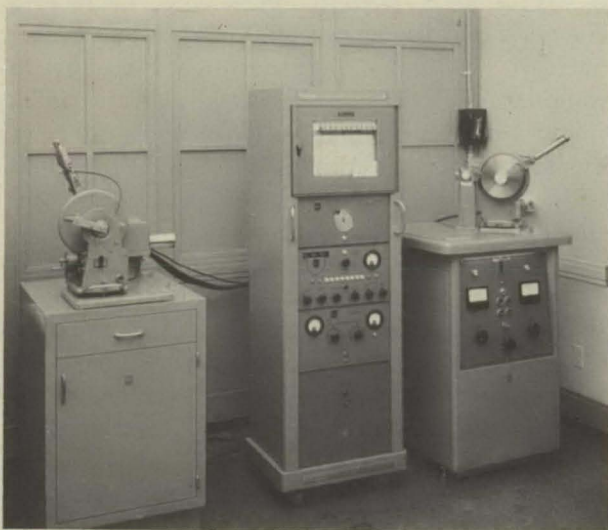


Figure 2.—X-ray diffraction used for identifying crystalline compounds.

a sufficient quantity—approximately 1 pound—of each specimen, possibly involving barbiturates, should be obtained and submitted to the Laboratory for examination.

A frequently used method of preserving tissue specimens is by freezing them with dry ice. Each specimen should be placed separately in a clean glass jar having a glass top. Place the specimens in a box and surround the specimen jars with dry ice which has been wrapped in paper. To prevent breakage, the dry ice should not be sealed in containers such as jars or cans and should not come in direct contact with the specimen containers. Under normal conditions, dry ice evaporates at the approximate rate of 2 pounds per hour. Therefore, the packaged specimens should be forwarded to the Laboratory by air express or some other expedient method.

The autopsy specimens upon receipt in the Laboratory are subjected to various specialized procedures which have been found satisfactory for the separation of the known poisons into roughly three groups: The metallic poisons such as arsenic, mercury, lead, etc.; volatile poisons such as alcohols, cyanide, chloral hydrate, chloroform, etc.; and nonvolatile organic compounds such as the alkaloids, barbiturates, and other drug preparations which are soluble in alcohol. Poisons which do not fall into the above groups such as ergot, fluorides, cantharides, and many others must be separated by specific methods. If any information can be obtained regarding the type of poisons suspected, the methods used for separation can be shortened and the possibility of detection and identification of a poison greatly increased.

The chemist now has several new instruments which make the job of identifying small amounts of drugs and extracted poisons much easier.

The *spectrograph* (shown in fig. 1) is of value in detecting small amounts of metallic elements present in poisons, foods, and pharmaceutical products. As an example, let us say food is suspected of being contaminated with arsenic. A portion of the food may be ashed at a low temperature and this ash examined on the spectrograph. Any metallic element, such as arsenic, when burned between two carbon electrodes radiates a characteristic light which is resolved by the spectrograph and recorded as a series of lines on a photographic plate. These lines represent a fingerprint-like pattern of the elements present in the burned specimen.

The *X-ray diffraction* (fig. 2) is of great assistance in identifying unknown crystalline compounds. All crystalline compounds, because of their different chemical composition and crystal structure, give different X-ray diffraction patterns. The narrow beam of X-rays to which the crystalline compound is exposed is bent or diffracted in a characteristic manner associated with a specific compound. This feature of the instrument also enables the examiner to compare a known crystalline material with an unknown crystalline material. However, the questioned material must be in the same condition in regard to crystalline structure as the known. The instrument requires relatively small specimens which are not consumed or altered during examination.

An instrument which is also useful to the toxicologist is the *visual range spectrophotometer* (fig. 3). This instrument is used primarily to study color and in this respect is helpful in identifying dyes used by the pharmaceutical industry. To analyze a dye in a tablet, the dye is usually extracted from the tablet by means of a liquid solvent. The solvent containing the dye is then placed inside the instrument and wave lengths of the visible spectrum are passed through it. The instrument measures and records the percentage of each color absorbed by the dye solution. A characteristic curve is produced by each dye which is sometimes referred to as a signature of the dye. An illustrative case is one in which a deceased person was suspected of having ingested several sleeping capsules similar to other capsules found near the body. The unconsumed capsules contained a red dye. A red coloring was also noted in the stomach contents. This coloring matter was extracted and compared with the red dye from the known capsules. The dyes were identical.

A relatively new instrument to the FBI Laboratory is the *infrared spectrophotometer* (fig. 4). Its greatest use to the toxicologist is in the examination of small amounts of pharmaceutical preparations, which may be received in cases of suspected poisoning, or minute quantities of material extracted from body tissue. Here, infrared rays are passed through the material under examination and varying amounts of different wave lengths of infrared are absorbed by the questioned sample. The amount of infrared energy transmitted through the specimens is measured and recorded. Each organic compound or group of compounds presents a characteristic curve when recorded on a graph.

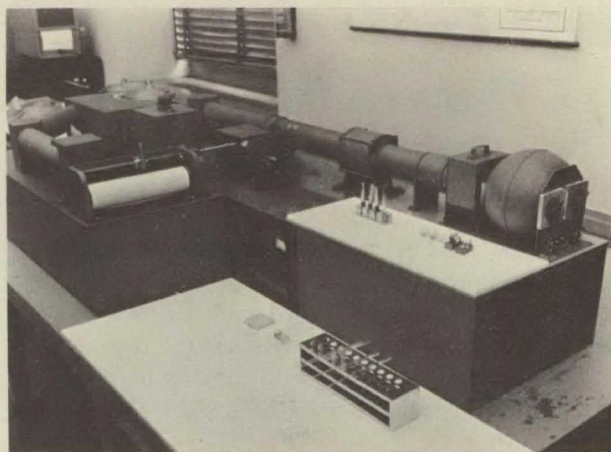


Figure 3.—Visual range spectrophotometer in the FBI Laboratory used for study of dyes and pigments.

This instrument is also very effective when used to compare a known material with an unknown material. An identification is made if the chart produced by the questioned sample compares in all respects with the chart produced by the known sample.

The tremendous increase of pharmaceutical preparations and insecticides placed on the market daily makes the toxicologist's job increasingly more difficult. Therefore, there is a greater need for more help from the pathologist and police. Through their keen observation, thorough investigation, and painstaking collection of evidence, clues may be developed which can help the chemist pinpoint foreign materials used to commit homicide through poisoning.

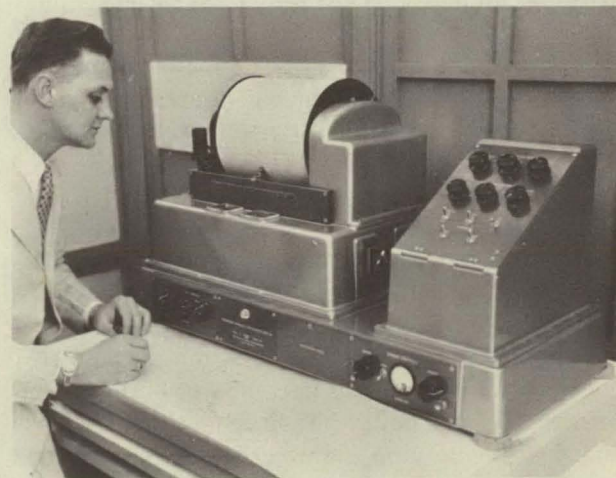


Figure 4.—Infrared spectrophotometer used for study of organic drugs, plastics, etc.

FBI Laboratory Points Out Role of Soil Evidence

The role of soil evidence in the successful investigation and prosecution of crimes is becoming more important each day. In order that this topic can be considered in the light of its value to scientific criminology, a general description of what actually is done with soil evidence in the FBI Laboratory is warranted.

It should be noted here that not only do the character and composition of soils vary laterally along the ground, but also with depth. Unless a crime is committed which involves, for example, the digging of a grave, most soil submissions to the Laboratory will be for comparison with specimens taken along the surface of the ground. An important point to consider in collecting soil evidence specimens is that although the color and texture of soil do not appear to vary along the ground, the composition can change sufficiently in a short distance so that it is significant for purposes of comparison. Perhaps the best way to describe the procedures is to follow a submission of soil evidence as it is processed by the Petrographic Unit of the FBI Laboratory.

A sheriff from a western State submits a request to the Laboratory to compare soil samples taken from the scene of an assault with soil adhering to the shoes of a suspect. The sheriff has submitted soil samples taken in the immediate crime scene area and along the route which the suspect would have had to use to effect his escape. The sheriff has also wisely taken samples in the general area away from the crime scene which may be used for control samples representing the nearby soils.

Color and Texture Noted

In the Laboratory, the soil is removed from the suspect's shoes and dried. The color and texture of the lumps of soil will be noted first, along with any peculiarities such as plant matter, mottled coloring, cinders or slag particles, or building materials. At this point the soil from the shoes lacks sufficient identifying characteristics to be classified as either similar or dissimilar to the soil from the crime scene. If the soil appears to contain sufficient clay, specimens of the known and questioned

soils will be run on the Differential Thermal Analyzer (DTA). Here, by heating the two soils to 1,000 degrees centigrade in a special furnace, the Laboratory examiner can determine what type of clay or clays are present and also the approximate quantities.

Other samples of the soils are "washed" in a special apparatus which utilizes high-frequency sound waves to literally scrub each individual grain. The "washed" soil is separated into several fractions in special liquids based on the specific gravity of the minerals in the soil.

Here we might stop to point out that residual soils (those which have not been transported by wind, water, etc.) basically represent the mineral content of the underlying rocks. A soil formed from an underlying sandstone will be considerably different from a soil formed, say, from rocks of volcanic origin.

Mineral Fractions Studied

To return to the soil examination, the examiner now studies the mineral fractions of both known and questioned soils, identifies the minerals, and estimates the relative amounts of these minerals in each. Even the most modern petrographic microscopes and accessory equipment cannot make this anything but a slow, painstaking procedure which still requires a human examiner rather than an instrument. Occasionally, certain specialized instruments such as the spectrograph, X-ray spectrograph, and spectrophotometer are utilized in analysis of certain soils with unusually high metallic content. However, in the bulk of the soil examinations conducted in the FBI Laboratory, recourse is almost invariably made to standard petrographic procedures of mineral separation and identification. The sheriff would be furnished a report and the evidence would be returned.

In most cases the above procedures will be sufficient for the experienced examiner to be certain as to the similarity or dissimilarity of two soils. But this is not considered as being the "last word" in examination of soil evidence. The FBI Laboratory, as a part of its research program, conducts a continuing search for better procedures and equipment which will possibly supply another point of comparison between soils.

The FBI Laboratory has been following with much interest the developments of the past 15 years in the determination of trace elements in soils. Those elements most often referred to as

trace elements are copper, zinc, lead, nickel, molybdenum, cobalt, boron, and iron. These are present in virtually all soils, their quantities depending mainly on the parent rock composition and the forces of weathering. The reason the term "trace element" is applied is because their presence is measured in quantities less than one-hundredth of 1 percent.

When the various parent rocks are weathered, one or more of the trace elements tend to be concentrated in the soils formed. For example, in areas where the bedrock contains only a few tenths of a percent of copper, the overlying soils may have as much as 1 to 2 percent copper. Proceeding a step further, scientists have shown that not only is there variation in mineral content of soils laterally along the ground and vertically with depth, there are also rapid changes in the trace element content. This principle has been utilized in a relatively new phase of mining exploration called "geochemical prospecting."

Using precise chemical procedures, the amounts of the various metallic elements in the soils can be determined even if only one-hundred thousandth of 1 percent is present. One of the advantages this procedure has is the need for only a few tenths of a gram sample of soil. The sensitivity of the determination of trace element content in itself tends to be a disadvantage due to ease of contamination. However, it can possibly be developed to a point where it will be a valid, important point of comparison between the soil from the crime scene and the soil found, say, on a suspect's shoes.

Identification Factors

The FBI Laboratory seldom considers a single point of similarity as being conclusive for identification. Color alone, or the presence of a few common minerals in two soils, does not warrant a conclusion that they are similar. By the same token, no certain number of points of similarity are required for positive identification because each soil comparison must be made in the light of the environment of the soil and the condition and validity of the sample.

A good illustration involves a fatal hit-and-run case which occurred in the Midwest. Samples of soil from the fender of a suspect's car and soil found on the street at the scene of the crime were submitted to the Laboratory for comparison. It was found that the soil from the fender and that

found on the street were similar and could have come from the same source. The unusual aspect is that these two soils contained measurable quantities of zinc ore and silver. These metals did not occur naturally in the crime scene area but did occur in a mining area 125 miles away where the suspect had been just prior to the crime.

From the foregoing, it can be seen that soil evidence properly collected, packed, and submitted to the FBI Laboratory can furnish the law enforcement officer with a valuable aid in the successful solution and prosecution of a crime.

★

DRUGSTORE ALERT SYSTEM HAS CHAIN REACTION

A chain phoning system used by a Kentucky pharmacists' association has been directly responsible for apprehending at least three drug violators in a 6-month period.

By prearrangement, drugstore owners are given a list of names and phone numbers of other drugstores which they are expected to contact when an alert is given. As previously instructed, information is first given to the secretary of the association. After evaluating it, he phones this information to eight drugstores. They in turn call those numbers listed on their cards which, by request, are posted near the telephone for quick reference. Eight stores of this second group have been selected to make the additional calls necessary for complete coverage.

One of the three violators apprehended through use of this alert system was a man who posed as a Catholic priest or a minister to obtain narcotics prescriptions from local physicians. Another was a mother of three children who was caught after she had used her experience as a doctor's assistant to procure drugs by phoning prescriptions supposedly ordered by her physician.

Store personnel all over the area are also alerted by phone to watch for stolen or forged checks, persons attempting to obtain merchandise or money by theft or fraud, and other illegal practices likely to appear in drugstore channels.

This system of chain phoning is also used to advantage in the course of their own business, such as notifying druggists when a product has been found to be unfit for use. The distribution of information in this manner is considered likely to substantially increase drugstore efficiency, as well as to assist law enforcement.

*Letter from
Cincinnati, 10-10-60 captioned
"FBI LEB"*

OTHER TOPICS

Function, Design of License Plates Important Factors

by DR. JOHN E. BAERWALD, Associate Professor of
Traffic Engineering, University of Illinois,
Urbana, Ill.

Why do we have license plates? How can license plates be designed to be most useful?

These and many similar questions have often been raised by motorists, police officers, motor vehicle administrators, and others who casually or professionally observe license plates. Current license plates feature a variety of colors, words, phrases, symbols, numbers, and letters—all items which have been placed on the plates to accomplish various functions.

A comprehensive investigation of motor vehicle license plates was conducted by the Department of Civil Engineering of the University of Illinois at the request of Charles F. Carpentier, secretary of state, State of Illinois. The investigation was initiated in April 1958.

Messrs. Delbert F. Karmeier and C. Gordon Herrington, Jr., former research assistants in traffic engineering at the University of Illinois and later assistant traffic engineer, St. Louis County, Mo., and highway engineer, Bureau of Public Roads, Washington, D.C., respectively, performed the investigations reported herein under the author's direction as part of their graduate studies.

The study of motor vehicle license plates was conducted in two phases. The first phase was directed toward the determination of the functions of license plates and the relative importance of the various functions. The first phase also included investigations to determine what information should be placed on license plates and the relative importance of various types of information. The types of information studied were:

1. Desirable legibility distances for the registration number, State name, and year number.
2. Important characteristics of the registration number.
3. Importance of color in year identification.
4. Value of county or area identification.
5. The value of slogans in State identification.
6. Importance of two license plates.

The second phase of the study was to find the best methods of presenting the most essential data discovered in the first phase. The following plate design items were studied:

1. Number and letter-number combinations.
2. Legibility of letters and numbers.
3. Size of State name and year numbers.
4. Effect of slogans on legibility.
5. Color combinations.
6. Plate size and shape.
7. Miscellaneous factors, such as registration procedures, area identification, motor vehicle laws.

A study of reflectorized plates was also conducted as a part of the second phase. The purposes of this study were to investigate and prescribe design criteria for a reflectorized license plate which would provide optimum legibility, both day and night, under traffic conditions, and to investigate the effect of these plates on nighttime motor vehicle collisions.

License plates, using varied arrangements and methods, now carry many different items of in-



Illinois Secretary of State Charles F. Carpentier (left) compares current State auto license plate (top) with plate (center) recommended by license legibility research. Dr. Baerwald is holding the 14-inch plate size recommended for national adoption.

formation. Therefore, the initial phase of the license plate study was directed toward the determination of the functions or purposes of license plates, the relative importance of the various functions, and the information required to accomplish these functions in accordance with their relative importance.

A questionnaire relating to the many items of license plate information was prepared and sent to 475 American and Canadian law enforcement officers, motor vehicle administrators, and other persons who frequently use the information presented on license plates. Questions about plate design items in the questionnaire concerned the number and placement of plates, desirable legibility distance, the vehicle identification number, year identification, county or area identification, and slogans or emblems.

Sixty-two percent of the questionnaires were completed and returned. On the basis of the replies and comments received from the questionnaire, and from discussions with interested persons considering the many facets of license plate design, the following conclusions concerning the functions of license plates were compiled:

1. The primary function of motor vehicle license plates is to display the information necessary for fast and accurate identification of a motor vehicle under actual traffic conditions. This function is accomplished by the individual registration number and the State name on the license plate.

2. The second function of license plates is to display the information necessary to show the compliance of the vehicle owner with the motor vehicle registration laws. This is accomplished by the year number on the plate, by the color of the plate, and by special designations for different types and weights of vehicles.

3. The designation of the vehicle owner's county or area of residence is not a true function of license plates (see fig. 1). However, in cases where distribution is on a county or local level, county or area designations may help in the enforcement of registration laws. In cases where identification is difficult due to the type of numbering system in use, the number of vehicle registrations, and other design considerations, county or area designations may facilitate the accomplishment of the function of identifying the vehicle quickly and accurately under actual traffic conditions. County or area designations usually require more complex and costly administrative procedures, especially in States where distribution is from a central office.

4. The advertising and publicizing of the State is not a true function of license plates. Although such advertising may be of intangible value to the State, the placement of slogans and emblems on license plates tends to reduce the effective accomplishment of the important functions of the plates.

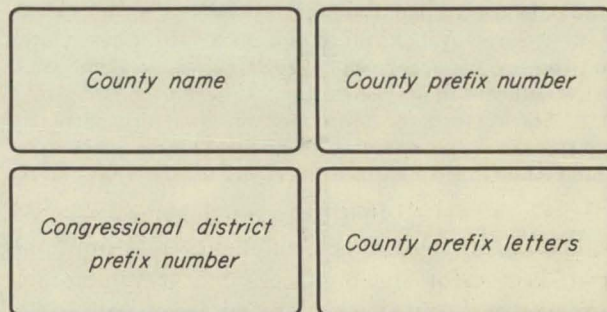
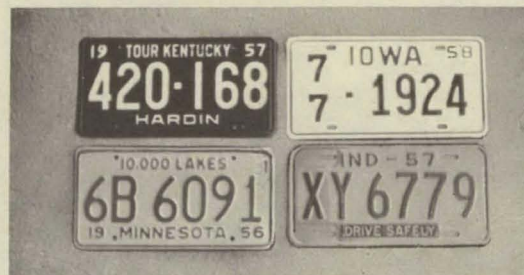


Figure 1.—Methods of designating county or area on license plates.

The answers and comments received from the questionnaire, together with the considerations of plate size and methods of manufacturing, formed the basis for the following conclusions regarding the information required on license plates to accomplish the functions of plates in accordance with their relative importance and by the most efficient methods:

1. For effective identification of motor vehicles under actual traffic conditions, each vehicle should be issued two plates, one to be displayed on the front of the vehicle and the other on the rear.

2. The vehicle registration number should be the most legible item of information on the plate and should have the greatest possible legibility distance in relation to plate size and design (100 to 150 feet).

3. Research on license plate identification systems must continue to be directed toward the development of a system which possesses maximum legibility under actual traffic conditions. The system must also possess the characteristic of being easy to remember, but legibility is more important.

4. The year number should be legible at a distance approximately one-half that of the registration number (50 to 75 feet).

5. The State name should be legible at a distance slightly greater than that required for reading the year number.

6. The year number is more important than the color combination in identifying the year of issuance of out-of-State plates. Cooperation and coordination among the States are necessary for color combinations to be of help in identifying the year on out-of-State plates.

7. County or area designations, in the opinion of law enforcement officers, aid in fast and accurate identification of vehicles.

8. The county name is the least popular method of effecting a county designation.

9. The effect of address changes on the value of county and area designations is slight in States where new plates are issued annually. Where plates are renewed for one or more years, the harmful effect of address changes is greater.

10. County and area designations are of little value to persons outside the State of registration.

11. State slogans and emblems may have some value in the identification of the State.

12. The removal of State slogans from license plates and the use of larger vehicle registration numbers could be a significant improvement in plate design.

13. The removal of State slogans from license plates and the use of the increased space for a larger State name would make State identification easier.

It is emphasized that these conclusions are based primarily on the replies, comments, and opinions from law enforcement officers, motor vehicle administrators, and other persons interested in license plate information throughout the United States and Canada and are not the result of specific testing and investigative procedures. Therefore, although the conclusions are considered to be valid, it is important to investigate the effect of varying circumstances in applying them to the licensing procedures of a particular State. They served as important guides for license plate research directed toward the design of more effective and efficient license plates.

Design Must Accomplish Function

License plates must be designed so that they will accomplish their functions efficiently and economically. The information that must be presented on license plates consists of the vehicle registration number, the State name, and the year of issuance. The individual vehicle registration number, together with the State name, provides the information needed for rapid and correct identification of the vehicle and its owner. Plate design must enable this information to be quickly and accurately perceived at a desirable distance.

Plate design items which were studied are: (1) composition and size of the vehicle identification number; (2) size of State name and year number; (3) the effect of slogans and emblems; and (4) color combinations. The plate size and shape, which would logically be determined on the basis of the decisions made with regard to the design items mentioned, have instead been standardized.

Plate size and shape, therefore, become the controlling design factors.

Some miscellaneous factors that affect plate design are materials and paints, distribution methods, registration procedures, and various motor vehicle laws.

A review of the registration numbering systems used on license plates in the United States shows that there are many systems in use. Some States have adopted complex systems which cause letters and numbers to appear in various combinations and groupings without tests to determine if simpler, more uniform combinations would be more easily perceived.

Perception Tests Conducted

Extensive tests were conducted in order to determine the ease of perception of various combinations of letters and numbers. The test procedure consisted of showing a series of slides illustrating various number and letter-number combinations to a small group of observers. The slides were exposed for one-half second, and the observers immediately recorded what they had read before viewing the next slide. The exposure time was chosen after preliminary tests indicated that observers could read and record correctly slightly more than 50 percent of the slides if they were exposed for one-half second.

These tests were conducted with the assumption that those number and letter-number combinations which are easiest to perceive quickly and accurately when exposed for a short interval of time in an indoor test would also be easiest to perceive quickly and accurately when displayed on license plates and read under actual traffic conditions. It was also assumed that those combinations which are most difficult to perceive quickly and accurately in an indoor test would have these same characteristics when viewed under actual traffic conditions.

A total of 128 test slides illustrating 16 combinations of 5 to 7 numbers, or 1 to 3 letters and 3 to 5 numbers, was prepared (see fig. 2). The letters and numbers for each slide were chosen by a random procedure. The slides were prepared so that the only variables were the number of letters, numbers, or both, and the grouping of the characters. These slides were shown to a selected group of observers including a limited number of officers from the Illinois State Police and from local law enforcement agencies.

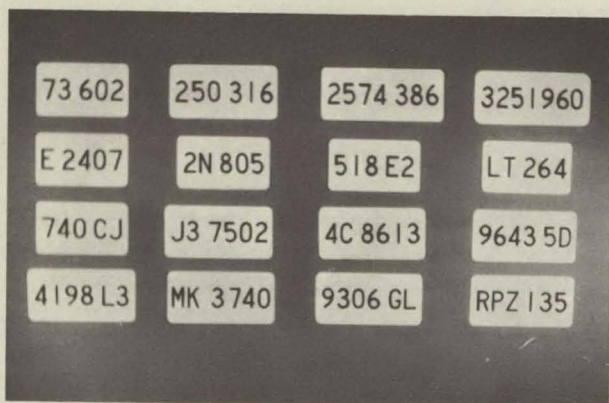


Figure 2.—Examples of character combinations used in the perception study.

The combinations of characters used to make up the vehicle registration number should possess characteristics which make them legible at a desirable distance. Therefore, additional tests were conducted to measure those characteristics which affect legibility, including the height and width of characters, stroke width of characters, letter and number style, character spacing, legend and background colors, and the effect of slogans and emblems.

Conclusions Reached

The results of the perception and legibility studies conducted during this research project, together with the results of previous studies, form the basis for the following conclusions regarding identification numbering systems for license plates:

1. A license plate registration numbering system must be composed of combinations of characters which: (a) can be perceived quickly and accurately; (b) are legible at a distance of approximately 125 feet under daylight conditions; and (c) are readily adapted to filing and administrative procedures.

2. For fast and accurate perception, the total number of characters in a registration numbering system should not exceed six.

3. Combinations of letters and numbers used in a registration numbering system should have the letters grouped and separated from the numbers by a space and have characteristics of uniformity in that the letters should always appear at the beginning (preferably) or at the end of the combination.

4. The total number of letters in any registration system using a combination of letters and numbers should not exceed two, unless the vehicle registration of the State exceeds the capacity of a two-letter, four-digit system.

5. Assuming that a registration system using uniform positioning of letters and numbers is to be chosen and that all digits and letters are used (except zero), the

results of perception and legibility tests suggest the following rankings of suitable identification systems for States (or provinces) of indicated passenger car registrations:

- A. Less than 250,000
 - (1) Straight numerical (1 to 250,000)
 - (2) One letter, one to four digits (A 1 to Z 9999)
 - (3) Two letters, one to three digits (AA 1 to ZZ 999)
 - (4) One to three digits, two letters (1 AA to 999 ZZ)
- B. 250,000 to 500,000
 - (1) Straight numerical (1 to 500,000)
 - (2) Two letters, one to three digits (AA 1 to ZZ 999)
 - (3) One to three digits, two letters (1 AA to 999 ZZ)
- C. 500,000 to 1,000,000
 - (1) Straight numerical (1 to 999,999)
 - (2) Two letters, one to four digits (AA 1 to ZZ 9999)
- D. 1,000,000 to 6,000,000
 - (1) Two letters, one to four digits (AA 1 to ZZ 9999)
- E. Above 6,000,000
 - (1) Three letters, one to three digits (AAA 1 to ZZZ 999)

6. Additional studies should be conducted to determine those registration systems which best lend themselves to accurate transmission over voice communication systems.

7. The numbers used in the vehicle identification number should be round or open in style, $2\frac{1}{2}$ to 3 inches high, $1\frac{1}{4}$ to $1\frac{3}{4}$ inches wide, and should have a stroke width of five-sixteenths to three-eighths of an inch.

8. The letters used in the vehicle identification number should be round or open in style, $2\frac{3}{4}$ to $3\frac{1}{2}$ inches high, $1\frac{3}{8}$ to 2 inches wide, and should have a stroke width of five-sixteenths to seven-sixteenths of an inch.

9. For balanced legibility, the letters in a letter-number combination should be 5 to 10 percent larger than the numbers when one or two letters are used. When three letters must be used, the letters should be 20 to 25 percent larger than the numbers.

10. Registration systems for trucks and other special vehicle classes should be chosen from one of the systems listed in conclusion five, or from one of the following systems:

- A. One to four digits, one letter (1 A to 9999 Z)
- B. One digit, one letter, one to three digits (1A 1 to 9Z 999)

With the increased use of State slogans on license plates, the space available for important information such as the State name and the year of issuance has been reduced considerably on the plates of many States. In a preliminary report of the research project entitled "An Evaluation of the Purposes of Motor Vehicle License Plates," it was stated that police officers, motor vehicle administrators, and other persons interested in license plate information feel that the State name

and year number should be legible at one-half the distance that the vehicle registration number is legible. It was also stated that "72 percent of the law enforcement officers felt that it would be easier to identify the State if State slogans were removed and the size of the State name was increased." In recent years, the sizes of the State names have ranged from $\frac{1}{2}$ to $1\frac{1}{8}$ inches, as shown in figure 3.

Legibility Distance Studied

Studies of the legibility distance of State names and year numbers of various sizes were conducted to determine the effect of character size, abbreviations, and slogans on the legibility distance of the State name and year number. The results of these State and year legibility distance tests form the basis for the following conclusions:

1. The height of characters in the State name and year number should be approximately 1 inch, if those two items are to be legible at the required distance of one-half the legibility distance of the identification legend.
2. State names and year numbers on most current plate designs are too small.
3. The effect of abbreviations on the legibility of the State name varies with different States.
4. Omitting the prefix "19" before the year does not affect the distance at which the year number is legible, but will relieve the crowded appearance of many plates.
5. The removal of slogans and emblems from license plates will permit the use of State names and year number large enough to be legible at the distance required for fast and accurate identification.
6. The publicizing of a State by means of a slogan or emblem may have intangible value to the State, but should be effected by means other than license plates.



Figure 3.—Variations in height of characters used in State names.

The color of license plates has become an important factor in plate identification. Color aids in identifying the State or province in which a vehicle is registered and, in most States, is the primary method of identifying the year of issuance. In general, color combinations are chosen so that there is high contrast between legend and background. Some States, however, use a combination such as pink and white, or light blue and white, which reduces the contrast between legend and background and also reduces legibility.

Seventeen States have adopted color combinations which they use every year, generally reversing the colors of the legend and background from year to year. This plan has two advantages: (1) after a good combination has been selected, there is assurance that plates will always have a color combination which provides good legibility, and (2) color becomes more important in State identification as police officers and the general public become familiar with the State colors.

States which adopt permanent color combinations must cooperate with nearby States to eliminate the confusion which might result from the issuance of plates with the same legend and background colors. Vermont and New Hampshire, for example, both use green and white, but, in years when Vermont uses a green background, New Hampshire uses white.

Legibility studies, reflectance values, and experience with colors provide information for the following conclusions concerning color combinations for license plates:

1. Color combinations used on license plates must have a high degree of contrast between legend and background. This contrast must be maintained under both natural and artificial lighting.
2. The relative effectiveness of dark backgrounds as compared to light backgrounds is dependent upon conditions such as illumination, spacing, stroke width, and color. It is not possible to conclude that either light or dark backgrounds are preferable under all conditions.
3. Dark colors used on license plates should either be black or the darker shades of blue, green, brown, and red.
4. Light colors used should be white, ivory, yellow, or light orange.
5. Grey, pink, light blue or green, and other neutral shades should not be used on license plates.
6. It would appear advantageous for States to adopt permanent color combinations, reversing the color of legend and background with each issue of plates.

Plate Size Standardized

The size and shape of license plates have undergone many changes in the half century since

plates first appeared on motor vehicles. Basically, the only requirement is that a plate have dimensions which permit the placement of all important information in letters, numbers, or symbols large enough to be read at a desirable distance. The distance at which the plate should be legible is an arbitrary decision and so the size of license plates has always been chosen on an arbitrary basis.

After more than 20 years of thought, discussion, and recommendations, the American Association of Motor Vehicle Administrators adopted a "standard" plate size of 6 by 12 inches in 1953. The standard plate was favored by automobile manufacturers because it would enable them to provide simpler, stronger, less expensive mountings, provide recesses in the automobile which would protect the plate from damage, and provide better illumination for the rear plate. The uniform size was also expected to be advantageous in the manufacture, storage, and distribution of plates. The plates in figure 4 illustrate the variety of sizes and shapes used prior to adoption of the standard size. The plate bearing the legend "NWB 872" has the standard dimensions 6 by 12 inches.

The most important effect of the standard plate is its effect on legibility. Prior to the adoption of the 6- by 12-inch plate, 17 States (with more than 40 percent of the total automobile registration in the U.S.) used plates which were 12½ inches or more in length. These States were required to change their identification system, rearrange their plate content, or crowd the characters. In some cases, these forced changes were beneficial, but many States now have plates which are crowded in appearance with characters spaced too closely for good legibility.

When the results of the previously described tests were combined, it became apparent that the present standard size of 6 by 12 inches does not permit sufficient character size and spacing to meet desired plate legibility. It was therefore concluded that the standard plate size should be increased to 6 by 14 inches.

Although a 14-inch plate is desirable, it does not appear likely that any changes will be made soon in the standard 6- by 12-inch plate. Now that a standard size has been adopted in the United States and Canada, it would be exceedingly difficult to make a change. If and when a change is made, it should be based on the legibility requirements of the items of information to be

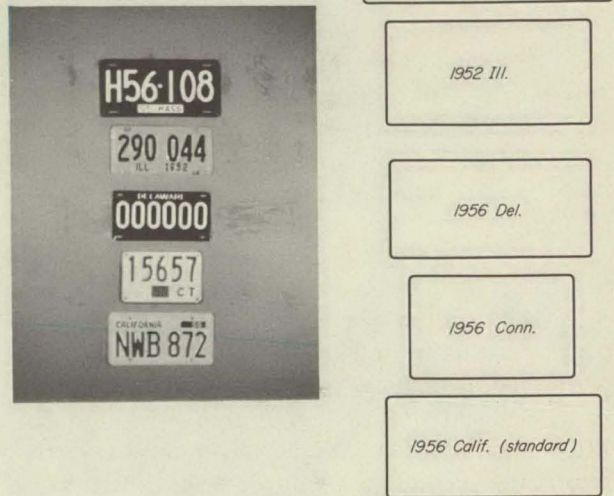


Figure 4.—License plate sizes and shapes before the "standard plate."

placed on the plate. Increasing the plate size to 6 by 14 inches would permit the use of characters with greater width and more favorable height-to-width ratio, permit larger spaces between characters, and improve the general appearance of many plates. These improvements would make plates legible at distances generally considered desirable.

Reflectorization Evaluated

During the past few years, several States have adopted reflectorized motor vehicle license plates or reflectorized revalidation stickers, primarily as an additional safety device in an effort to reduce nighttime traffic accidents. Unfortunately, the effect of reflectorization on the nighttime legibility of the registration number was evidently of lesser concern.

As previously concluded, the principal function of a motor vehicle license plate is to display the information necessary for fast and accurate identification of a vehicle under actual traffic conditions. The legibility of the information of the plate should be the primary concern of plate designers. The added safety aspect of a reflectorized plate should be considered if it does not impair the readability of the license plate.

A program of experimentation was conducted to reveal the basic factors concerning the legibility

of reflectorized license plates and to make accurate evaluations of these components for an optimum plate design. The variables which were studied included types of reflectorized materials, systems of reflectorization, stroke width of characters, contrast direction (light legend on dark background and dark legend on light background), spacing of characters, reflectorized borders, and color combinations (see fig. 5). The possible effects of reflectorized license plates on accident reduction in Minnesota were also studied.

Figures 6 and 7 illustrate the apparatus used in the study to determine the legibility distance of reflectorized license plates. Essentially, the apparatus consisted of a special adjustable rack with two sealed-beam headlamp assemblies which simulated the headlamp system of an average automobile. The observer and the recorder were seated behind the headlamps as shown in the illustrations.

Specimen license plates were brought toward the observer and returned to the initial position by an "endless chain" attached to a three-wheeled cart. The cart was powered by a gear-reduction motor controlled by the observer. The first 200 feet of the "endless chain" was a surveying tape graduated in feet and tenths of a foot. As the tape ran over the motor pulley, the recorder could read directly the distance from the observer to the specimen plate.

The conduct of the test was very closely controlled. The observer was seated near the test apparatus for a period of about 10 to 20 minutes, a time which allowed his eyes to become adapted to the darkened conditions and also gave him a chance to relax and ask questions before the test. Once seated in the chair, he was given the instructions concerning the conduct of the test. He was told how to operate the motor, to be sure to rest his eyes between observations, that he was to read each individual number on the plate as soon as he was sure what it was, and that there were always four numbers on the plates, no letters, and that the number "1" would never appear on a plate.

After these detailed instructions were given to the observer, a specimen plate was snapped into the holder at the end of the test lane. The first plate was always started at the maximum distance of the apparatus and the remaining plates were started at a distance just beyond the observer's threshold of legibility. Ample time was allotted for all observations, the average being 1¼ minutes per plate per observer.

The following conclusions were reached during the study of reflectorized license plates:

1. Reflectorized license plates, on the average, increased the legibility distance over nonreflectorized plates by 28 percent.
2. There appears to be no appreciable difference in legibility of the various types of materials used to reflectorize.

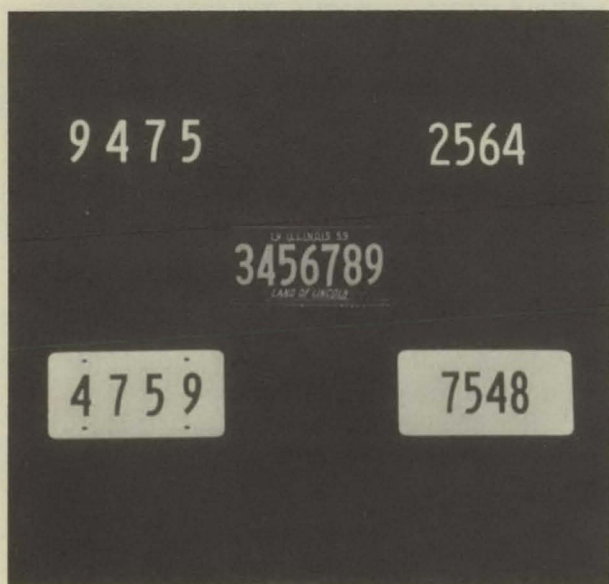


Figure 5.—Some reflectorized license plates from this study compared to the present Illinois nonreflectorized license plate. The reflectorized plates are shown with two contrast directions and at two different spacings of the digits.

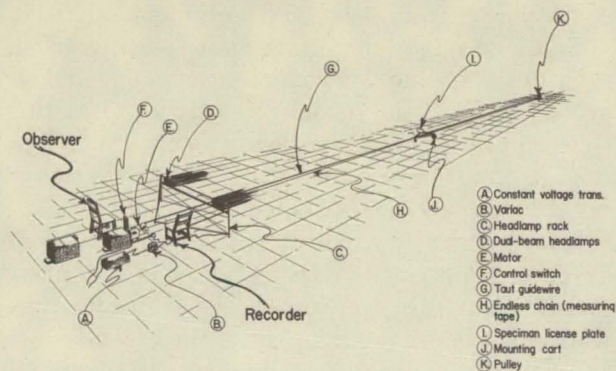


Figure 6.—Sketch of the test apparatus.



Figure 7.—The specimen plate as seen by the observer.

torize license plates. Considerations other than legibility have an important bearing on the choice of reflectorizing material.

3. The stroke width of characters is an important determinant of the legibility distance of a reflectorized license plate.

4. Regardless of the type of material, character spacing, or the system of reflectorization, a wide stroke (seven-sixteenths of an inch) is required for maximum legibility distance when dark copy is used on a light background. In these experiments, a thinner stroke reduced legibility distance 10 percent.

5. With a light legend on a dark background, a thin stroke (a quarter of an inch) is required for optimum legibility distance. When a thick stroke width was used in these tests, the average legibility distance was reduced by 5 percent.

6. There is a relationship between the stroke width of characters and their horizontal spacing. As the horizontal spacing is decreased, the use of an inappropriate stroke width causes a greater decrease in legibility distance than it would if the spacing were large.

7. The stroke width of characters should vary according to the color combinations used. If a color combination of moderate contrast is used, stroke widths in the middle range (five-sixteenths to three-eighths of an inch) should be used.

8. Plates with white reflectorized legends on dark reflectorized backgrounds were 3 percent more legible than the reversed situation.

9. There is a correlation between the legibility distance of a reflectorized plate and the brightness contrast of the colors used. The legibility distance increases as the brightness contrast increases.

10. Borders which were tested (three-sixteenths of an inch opaque and one-eighth of an inch reflectorized) had no significant effects on legibility distance.

11. Important factors other than legibility or safety which must be considered in designing a reflectorized license plate are:

- A. Visibility characteristics of the material.
- B. Durability of the materials.
- C. Ease of cleaning.

- D. All-weather performance.
- E. Manufacturing requirements.
- F. Cost.

12. Reflectorized license plates may have contributed to a slight reduction in the total number of night rural non-intersection motor vehicle collisions in Minnesota between 1955 and 1957.

13. Reflectorized plates may have contributed to a slight reduction in night rural intersection motor vehicle collisions between 1955 and 1957 in Minnesota.

14. Additional accident data is needed to determine more exactly the effects of reflectorized license plates on motor vehicle collisions.

A complete report of this license plate investigation is available as a University of Illinois Engineering Experiment Station Bulletin, "The Functions and Design of Motor Vehicle License Plates," at a cost of \$1.25.

★

THE WINNER LOSES

During a recent FBI investigation of a fugitive deserter case, the subject appeared on a nationally televised program as a contestant. During his interview on the program, he advised he was a Marine Corps sergeant presently on leave and it was his first trip to the east coast. Actually, the subject is a native of Massachusetts.

The subject won an automobile, a breakfront, and \$2,700 in cash. At the completion of the program, an alert citizen, who had been previously contacted, got in touch with Agents of the FBI and advised he had just seen the fugitive on the televised program.

The following morning the Marine deserter was arrested when he returned to pick up the prizes he had won the night before. *Buf file 42-153418*
Subj. - Walter Edward Johnson
Credul from Boston - 10-31-60

Police Are Taught Invaluable Lessons by School Bombing

by SHERIFF C. V. KERN, *Harris County*, and CAPT. WELDON WAYCOTT, *Homicide Division, Police Department, Houston, Tex.*

Midmorning of September 15, 1959, in Houston, Tex., will always be an unforgettable memory in the minds of the law enforcement officers who were subjected to one of the most hideous and unprecedented crimes that has ever occurred in this city.

It was on this date that Paul Harold Orgeron, accompanied by his 7-year-old son, appeared on the playground of the Edgar Allen Poe Elementary School, Houston. Paul Orgeron went to the school for the purpose of registering his son, who was not permitted to remain at school that particular day; however, he was to return the following day to commence attending classes. Orgeron, subsequent to enrolling his son in the school, inquired as to which room his son would be in and also inquired as to where he would have to pick

him up at the end of each schoolday. After obtaining this data from school officials, father and son departed from the school building.

From accounts that have been reconstructed, both Orgeron and his son returned to the playground area of the school. It was noted at this time that Orgeron was carrying a suitcase and an item wrapped in newspapers. The boy was carrying a lunch box or a schoolbook satchel.

During these few moments, more than 50 children were playing on the school's paved playground area. Orgeron approached a schoolteacher who was supervising the play of these youngsters and handed her a note which in substance advised that the suitcase in his possession contained high explosives.

He pointed out to the schoolteacher a button on the bottom of the suitcase which was similar to a doorbell-type button. Orgeron also mentioned to the schoolteacher that the suitcase in his possession contained dynamite and instructed that she summon all of the children to him.

The first thought that entered the alert mind of the schoolteacher was that Orgeron, because of his actions, might possibly be a mental case. She also entertained the thought that the suitcase in his possession might contain obscene literature and that he was attempting to expose this literature—as well as himself—to these youngsters. We all are most thankful that this quick-thinking schoolteacher issued instructions contrary to the desires of Orgeron and told the children to immediately leave the playground area and to summon the principal and the school custodian to assist her in her attempt to remove Orgeron from the area. At this time, the teacher herself left the immediate locale of her unwanted visitor in an effort to summon aid as soon as possible.

Crime Scene Area

At this never-to-be-forgotten moment, upon the arrival of the principal, the custodian, and an older schoolteacher, the Poe Elementary School became a scene of chaos and utter confusion. An explosion occurred which had been triggered by Orgeron. In minutes, law enforcement officers, emergency workers, frantic parents, morbidly curious spectators, reporters, and cameramen flooded the area.

The playground on which some 50 children had been playing but a few moments before was now marred by one of the most devastating and heart-



Capt. Weldon Waycott.

breaking sights that we as law enforcement officers have ever had the misfortune of observing.

An elderly teacher, the school custodian, two 7-year-old schoolchildren, the demented Orgeron and his 7-year-old son were dead. The principal of the school and 13 other children were injured but eventually recovered. It is not fair to use the terminology "recover," because two of the injured children lost limbs by amputation.

The bombed area was a scene of complete devastation. Parts of bodies, clothing of the victims, and personal papers—later identified to be Orgeron's—were scattered throughout the area.

The body of the elderly schoolteacher was located and identified by one of the emergency physicians who arrived on the scene—as that of his own mother. He pronounced her dead.

The bodies of the school custodian and Orgeron's son, as well as that of another child, were found in the area surrounding the scene of the explosion. Debris was subsequently recovered from the rooftops of houses located in an area a great distance from the explosion.

The picture that had been painted as the result of this unexplainable and horrible crime included also a scene of broken windowpanes in the school building and completely denuded trees in the area.

Mechanism Described

An explosives expert assigned to the office of Civil Defense in Houston determined that the explosion was the result of the detonation of approximately 3 to 4 pounds of Gelex-60 or a similar type of explosive.

Investigation resulted in the location of numerous portions of electric blasting cap wire, one wire being covered in yellow plastic insulation and the other wire covered in dark red plastic insulation. This material was located in immediate proximity to the suitcase carried by Orgeron, which had been demolished as a result of the explosion.

It was the opinion of the explosives expert that the explosion was triggered by the use of a size D flashlight cell, since a flattened flashlight battery of this description was found at the scene of the bombing. Several similar batteries were also located in Orgeron's station wagon which had been parked across the street from the school. The expert also related that he felt the blasting cap used to detonate the explosion had been embedded

in a bar of yellow soap, as several pieces of the soap were found at the scene. The bulk explosive which had been apparently taken out of the wrappers was probably carried loosely in some type of satchel case. In addition, the expert believed that the explosive was not in stick form as no evidence of wrappers was located at the scene, and he was certain some wrapper material would have been found at the site of the blast if stick dynamite had been used.

The explosive charge was detonated on the asphalt play slab located in the play yard of the school. This surface area in the vicinity of the blast was pitted and blackened through heat. The expert explained that dynamite would not have damaged the surface to this extent and would not have changed the color of the surface.

A search of Orgeron's station wagon resulted in the location of an additional 5 pounds of presumably explosive type material resembling Gelex-60. This material was found in a clear plastic bag in the engine compartment of the car.

The station wagon also contained, together with the previously mentioned flashlight batteries, an old Ford coil, a doorbell button, and one electric blasting cap having wires insulated with material appearing identical with the bits of wire found at



Sheriff C. V. Kern.

the crime scene. In addition, six electric blasting caps which had previously been "popped" were found in the station wagon.

School Personnel Praised

We think it is appropriate at this time to give special tribute and thanks for a job well done to all schoolteachers and officials of the Edgar Allen Poe Elementary School.

We will never forget the sight of these teachers scurrying about this most tragic area, as—masters of their flock—they attempted to locate and account for the youngsters assigned to their classes. These teachers and officials performed in a most efficient, alert, and courageous manner and certainly were an invaluable asset in our investigation. These "leaders" went to the extent of contacting the parents of the youngsters and apprising them of the safety and well-being of those who were so fortunate.

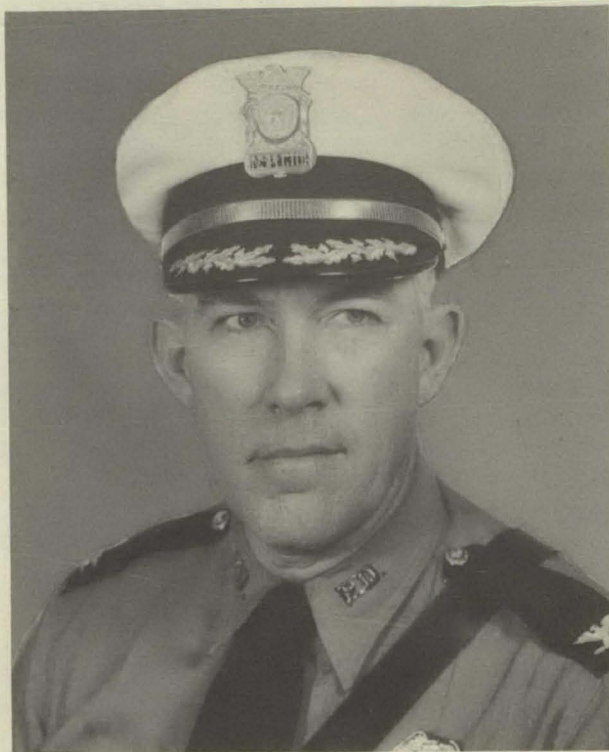
The older schoolteacher who lost her life as a result of this attack very definitely gave her life in order that the children of this school could live.

School authorities in Houston have recognized this lady's devotion to her profession, as well as to God, by perfecting procedures for dedicating and naming a new school in her honor—The Jennie Katherine Kolter School.

Identification Matters

Upon arriving at the scene of the bombing and noting the decapitated torso of a male individual, we were all certain it was that of the individual who had triggered this explosion. We labored under this impression until our crime scene search resulted in locating a small metal tab which had affixed thereto several keys containing the name Poe School. We then ascertained that the torso on the scene was that of the school custodian.

The search subsequently brought to light papers containing Orgeron's name. Immediately upon locating these bits of evidence, FBI Headquarters in Washington, D.C., was telephonically contacted, and the Bureau's Identification Division was placed on an alert relative to any fingerprints in the Identification Division concerning Orgeron. The FBI Identification Division did locate a set of fingerprints on Orgeron, an ex-convict, and was standing by in readiness to respond to the Houston Police Department should the necessity arise to



Chief Carl Shuptrine.

transmit the fingerprints of Orgeron to Washington, D.C., by Speedphoto.

A severed hand found in a hedge 136 feet from the spot of the explosion was identified on the spot as being Orgeron's left hand, by comparing the fingerprints with a set of his fingerprints located in the Harris County Sheriff's Office.

The item he had carried wrapped in newspapers was subsequently identified as a rifle. This rifle was located embedded in the ground 191 feet from the bombed area.

The identification of the remaining victims was effected by parents and relatives.

Investigation Hampered

Control of the area and the huge crowds that gathered within minutes left much to be desired. Curious onlookers certainly hampered investigative procedures in this matter.

We must not forget, however, that many of the distraught individuals, screaming helplessly and peering into ambulances as well as under sheets covering the deceased, were the mothers, fathers, and loved ones of the youngsters attending the school. They were there for the sole purpose of seeking their children.

We very definitely feel that as we look back over this tragedy and place ourselves in the shoes of these parents, there would not have been any rope that could have held any of us back, and it is very possible that we would have scaled a brick wall, if necessary, to ascertain the well-being of our children.

Safety Precautions Taken

Uppermost in our minds from the standpoint of safety precautions was the fact that Orgeron told the schoolteacher he first approached that he had planted elsewhere in Houston several bombs that were timed to go off. He predicated this remark on the fact that it would not do school authorities any good to contact the police.

All the schools in the city of Houston and the suburban area were immediately searched. As we now evaluate the situation, we think this was definitely a step forward even had Orgeron not mentioned that bombs were planted elsewhere. The safety and well-being of the children and all citizens are of prime importance.

An additional measure taken under this safety precaution was the thorough and exhaustive search of the entire premises of the Edgar Allen Poe Elementary School, for it was known that Orgeron had entered the school, left and returned to the premises at which time he had the satchel. We did not know whether or not Orgeron had planted a bomb inside the school.

Other Agencies Cooperate

The city of Houston's Medical Disaster Plan was put into motion, and a number of doctors were dispatched to the scene. Other hospitals in the area were alerted and placed on standby for the expected flood of emergency patients.

Within minutes after the explosion, representatives from all nearby law enforcement agencies appeared at the scene and a most cooperative and cordial relationship existed throughout the entire investigation among members of the Texas Department of Public Safety, the Texas Rangers, Harris County Sheriff's Office, Houston Police Department, FBI, school officials, doctors, nurses, hospitals, auxiliary police, and members of the Civil Defense Corps.

Also most worthy of mentioning in this respect was the excellent service performed by the newspapers, television, and radio. They definitely as-

sisted us with their vigorous attempt to discourage idle spectators from congesting the area more than it was already by both people and traffic. They also were responsible for apprising loved ones of the safety of those who were not the unfortunate victims of this vicious attack.

Things To Think About

We sincerely feel that all law enforcement agencies everywhere should have prepared and coordinated plans for a situation such as the major catastrophe of the Houston bombing. Many valuable lessons were learned by those of us in law enforcement as a result of this crime, and plans are now under way to eradicate many of the obstacles that were present.

One forward step taken is the securing of a portable trailer containing floodlights, a public address system, a control center, and other facilities necessary to conduct an intelligent crime scene search.

The following points are just a few pertinent items that must be covered at such a time and are items wherein responsibility should be fixed prior to the occurrence of any such crime.

Ask yourself questions concerning the responsibility for the following at the scene of the crime: Interview of witnesses, interview of victims, interview of suspects, neighborhood investigation, possible getaway routes, and identification matters.

The above-mentioned investigative procedures are avenues which must be traveled at the very onset of such major catastrophes or crimes—but they are only a few. We in the Houston area are in the process of fixing absolute responsibility relative to the above so that each investigative agency will know its duties at the scene and so each officer will know his specific duty. This would encompass all investigative agencies in a particular locale.

The tragic incident that occurred in the city of Houston could happen in the largest city or in the smallest rural area of any community in the world—we pray that it does not.

★

FALSELY CLAIMING CITIZENSHIP

The false representation by an individual that he is an American citizen is a violation of a Federal statute coming under the investigative jurisdiction of the FBI.

WANTED BY THE FBI

ANTHONY SEARS, also known as Louis Poplo and "Blackie"

Unlawful Flight To Avoid Prosecution (Murder)

The Crime

On March 19, 1957, Mrs. Adelaide Sears, 48-year-old estranged wife of Anthony Sears, and her 72-year-old mother, Mrs. Anna Meeker, were found dead at their residence in North Middleboro, Mass. It was determined, after an investigation, that they had been murdered, apparently on the night of March 18, 1957, and that their deaths were the results of skull fractures. Both of the women had their heads beaten in by a blunt instrument. Further investigation turned up an iron pipe, which bore bloodstains and hair similar to that of the victims. It is believed to be the murder weapon.

On June 11, 1957, a Plymouth County, Mass., grand jury indicted Anthony Sears for murder.

A complaint was filed before a U.S. commissioner at Boston, Mass., on March 28, 1957, charging Sears with unlawful flight from the State of Massachusetts to avoid prosecution for the crime of murder.

Sears has in the past considered himself a "ladies' man" and has reportedly made a practice of becoming very friendly with older women, gaining their confidence, and living off them as long as they had any money. He is described as keeping himself neat and clean, although he generally wears sports shirts and casual clothing rather than dress clothes. The subject likes to drive automobiles. He is the type who can live for a long



Anthony Sears.

period of time in a shack or a cave and is described as a "loner." He is an avid horse and dog track fan.

Caution

Subject reportedly carries a knife and should be considered armed and dangerous.

Anthony Sears is described as follows:

Age	55, born January 21, 1906, Provincetown, Mass.
Height	5 feet 10 inches.
Weight	185 pounds.
Build	Medium.
Eyes	Brown.
Hair	Black, turning grey.
Complexion	Medium.
Race	White.
Nationality	American.
Occupations	House painter, laborer, merchant seaman.
Scars and marks	Small scar bridge of nose.
FBI Number	516,981 C.
Fingerprint classification	6 1 aU III 7 1 tU III

Any person having information which might assist in locating this fugitive is requested to immediately notify the Director of the Federal Bureau of Investigation, United States Department of Justice, Washington 25, D.C., or the Special Agent in Charge of the nearest FBI field office, the telephone number of which appears on the first page of local telephone directories.

★

FBI OFFERS CRIME POSTER

In the never-ending fight against crime and all of its insidious ramifications, it is necessary that the law enforcement profession have the whole-hearted cooperation of the American public. In line with this, the FBI has prepared for dissemination in large quantities a poster calling upon American citizens to lend their support in the constant war against crime.

Copies of this black-and-white poster in an 8- by 10½-inch size may be obtained by writing to Director J. Edgar Hoover, Federal Bureau of Investigation, U.S. Department of Justice, Washington 25, D.C. Readers of the FBI Law Enforcement Bulletin are encouraged to use this instrument as a means of curtailing crime.

(See Introduction on page 1.)



What you can do to fight...



C
R
I
M
E

CONSTANTLY OBEY ALL LAWS

REPORT TO PROPER AUTHORITIES INFORMATION YOU HAVE ABOUT ANY CRIMINAL ACTIVITY

INSIST ON GOOD GOVERNMENT AT ALL LEVELS

MAKE YOUR INFLUENCE FELT IN SUPPORT OF ADEQUATE PAY, TRAINING AND FACILITIES FOR LAW ENFORCEMENT OFFICERS

EDUCATE YOUR CHILDREN TO RESPECT LAW AND ORDER



J. Edgar Hoover

J. Edgar Hoover, Director
FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

**LAWS PROTECT YOU...
HELP ENFORCE THEM!**

UNITED STATES DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON 25, D. C.

OFFICIAL BUSINESS

RETURN AFTER 5 DAYS

POSTAGE AND FEES PAID
FEDERAL BUREAU OF INVESTIGATION

Interesting Pattern



The pattern presented here consists of three separate loop formations with three deltas. Accordingly, the impression is classified as an accidental whorl with inner tracing.