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Police Science Technical Abstracts and Notes

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POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Aids in the Examination of Clockwork Bombs

The safest method of examining packages suspected of containing a bomb or infernal machine which may be actuated by clock mechanisms is by use of portable x-ray equipment, fluoroscoping the suspected package before it is moved or disturbed. It has also been considered advisable to use a physician's stethoscope to aid in hearing the "tick" or "click" of the movement of the clock escape mechanism, while an improved method of listening for such sounds is to use an amplifier and a contact microphone.

An article in *Radio* (July, 1942) contains a description, including a circuit diagram, of a battery operated, portable amplifier and microphone intended for the examination of packages suspected of containing infernal machines actuated by a clock mechanism.[1]

The outfit as described can be constructed using available radio parts and is contained in a small lady's overnight case. The batteries (90 volt plate and screen supply and 1.15 volt filament supply) are placed in a compartment of the container. The amplifier is a 3-tube, high-gain resistance capacitance coupled amplifier and includes the following tubes: Input tube 1N5GT, 2nd stage 1H5GT, and output stage 1Q5GT. Compartments are provided for a pair of headphones equipped with "ear muffs" as the listening device, and Shure "Stethophone" (No. 66D) or Piezo-electric contact microphone with cable are included.

A jointed boom is also described which can be taken down into 3-foot lengths or assembled so that the contact microphone can be placed against a suspected package from behind a sand bag barrier. The boom described was assembled from telescoping sections of tubing, the largest having an outside diameter of three-quarters of an inch, the smallest having a diameter of five-eighths of an inch.

In use, the amplifier is turned on by opening the lid of the carrying case. The microphone is placed in contact with the suspected package at various points around the sides and on the top. Before the package is moved, it should be examined by means of x-ray equipment as previously suggested.

Some time-bombs do not depend upon clock-work to delay the explosion of substances contained in the package. It is possible by chemical and other means to delay the explosion for hours, days, or even weeks. Obviously, with a time-delay initiating device of this type, the accoustical method of examination would be of no value.

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Bomb Damage to Industrial Plants

An article under the above title, appearing in the July 25, 1942 issue of the *Chemical and Engineering News,* contains a number of ideas which may be of interest to investigators of plant damage due to enemy bombs.[2] The author, C. H. S. Tupholme of Surrey, England, deals with the main causes of damage to factory property in an air attack, such as direct hit by high explosives, flying debris and blast pressure, fire, flood, etc. He also suggests a rating scale of the damage proneness number (d.p.n.), rating

[1] "Portable Bomb Detector" Radio (270): 17 (July, 1942).

[2] Tupholme, C. H. S., "Bomb Damage to Industrial Plants." Chem. and Eng News *20* (14): 896-898. (July 25, 1942).

light and heavy machinery according to the possible extent of damage and the time and effort necessary to replace it. This would be helpful in determining the total estimate of damage. Suggestions are made concerning the replacement and rebuilding procedure.

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Wax-Resin Compositions for Moulage Making

Formulas for wax-resin casting materials used in making moulage positives are given in an article by C. D. Clarke, published in the May, 1942 issue of the *Journal of Laboratory and Clinical Medicine*.[3] The formula for a composition which is applied to the mold by *brushing* is as follows (in parts by weight): Paraffin (about 55° C) 8, Carnauba wax 1, Rosin 8, and red oil-soluble dye q.s. (to make a flesh tint). A composition which is to be *poured* into the mold should contain less resin to permit easier flowing, and the author recommends the following formula: Paraffin 8, Carnauba wax 1, and rosin 2.

To prepare the mixture the waxes are melted in the top of a double boiler over slowly boiling water, and then the rosin is added and stirred until thoroughly mixed with the wax.

The author states that other waxes and resins can be used in the formula but that the ones mentioned give satisfactory results and are much less expensive.

The Identification of Cattle Brands

A brief article on "Cattle Brands" by Corporal L. S. Hester of the Royal Canadian Mounted Police, published in the August 19, 1942 issue of the *R. C. M. P. Gazette*, contains several interesting points concerning the identification and decipherment of altered or "worked over" brands in cattle stealing and cattle-killing cases.[4] The decipherment of altered brands is described as follows: "To read the original in a worked-over brand, it must be borne in mind that a burned brand on an animal is nothing more than a grisly hard formation somewhat higher than the adjacent skin; a branding-iron, no matter how hot, when applied to this grisly formation will slip to one side. The original brand lines are thus increased according to the width of the iron. By ignoring the thin lines (on the worked-over brand) and closely examining the wide lines, the original brand can be read." Several cases involving the study of brand marks are described.

Detection of War Gases

The July 25, 1942 issue of *Chemical and Engineering News* contains an article by Theodore F. Bradley, entitled "Chemical Detection of War Gases For Civilian Defense" in which is described the methods for detection and identification of war gases as performed by gas sentries in the field.[5] The article covers the setting up of a "Gas Identification Service," the construction and use of a portable aspirator for obtaining gas samples, and gives formulas for test solutions and test papers to be used for the field identification of various gases. Emphasis is placed upon laboratory accuracy in portable field equipment.

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[3] Clarke, Carl D., "Wax-Resin Compositions for Moulage Making." Jour. Lab. and Clin. Med. *27* (8): 1098-1103. (May, 1942).

[4] Hester, L. S., "Cattle Brands." Royal Canadian Mounted Police Gazette *4* (33): 1-4. (August 19, 1942).

[5] Bradley, T. F., "Chemical Detection of War Gases for Civilian Defense." Chem. and Eng. News *20* (14): 893-896. (July 25, 1942).

Registry for Rare Chemicals Established

The Armour Research Foundation of Chicago has appointed Dr. Martin H. Heeren as director of a registry of chemicals too rare to be listed in the catalogs of chemical supply houses. The need for a central registry of such rare substances has long been recognized. In many instances rare chemicals have been prepared for some highly specialized purpose, and their existance is not generally known.

The registry will not store, buy, or sell the actual chemicals but will maintain a file indexed according to name, location, and quantity available. Chemicals listed in the catalogs of chemical supply houses will not be included. The file will be considered as confidential and will not be open to inspection, but inquiries on specific chemicals will be answered by the registry.

Requests for data have been made of approximately 2000 industrial and educational laboratories. It is suggested by the director that persons or laboratories voluntarily submitting information concerning rare chemicals known to exist or on hand, will increase and extend information available to research and industrial organizations.

It is expected the establishment of the registry will have beneficial results in promoting the progress of chemical research.

Inquiries and contributions should be addressed to "National Registry of Rare Chemicals, Dr. Martin H. Heeren, Director, Armour Research Foundation, Chicago, Illinois."

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Forensic Coprology

The examination of feces in relation to criminal investigation has received but little attention by police scientists in this country, especially with reference to the identification of food remnants for ascertaining the composition of recently eaten meals, and thus affording a means of breaking down a false alibi or placing the victim or suspect in a particular locality. This subject has been investigated much more thoroughly by police scientists of Europe, and several cases in which such examinations proved helpful are reported in the literature.

The principal difficulty encountered in the microscopic examination of feces is in the exact identification of the original food from an examination of the undigested but somewhat altered cell elements and tissue fragments, and much research is needed along this line if significant results are to be obtained from the examination of feces in criminal investigation. A contribution to this field is a paper entitled "Food Remnants as a Cause of Confusion in the Diagnosis of Intestinal Parasites," published in the May, 1942 issue of the *Journal of Laboratory and Clinical Medicine*.[6] Although the study reported is concerned with the appplications to clinical parasitology, the results are of practical utility in the field of forensic coprology.

A basic non-residue diet, to which various foods were added one at a time, was fed to hospital patients, and the stools examined microscopically for muscle fibers and various plant structures. Samples of each food as served were also examined microscopically and their structures compared with that of the food remnants.

Twenty-seven paired drawings are included which illustrate the characteristic structures of each prepared food and their remnants commonly found in feces.

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[6] Denison, Nadene, "Food Remnants as a Cause of Confusion in the Diagnosis of Intestinal Parasites." Jour. Lab. and Clin. Med. *27* (8): 1036-1042. (May, 1942).