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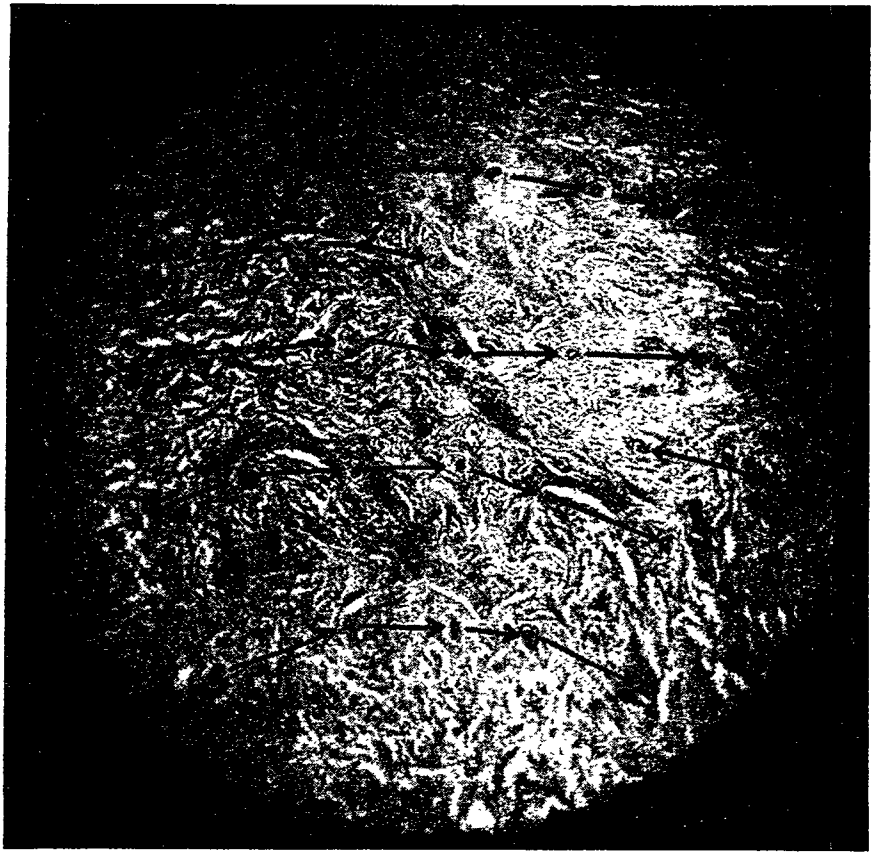

Figure 3

A photomicrograph showing disposition of ducts deep into reticular layer of dermis; 16mm. objective and 5X ocular.

of the first cut. The skin was cut from the finger by lifting one corner of the cut area with forceps and slicing the skin free from the finger. A thickness of about 3 or 4 mm. was maintained on the skin removed.

The skin was placed surface down on a cork board ¼ inch thick and stretched flat by pegging it down with pins. The cork with the skin affixed was placed in 10% formalin for fixation. During fixation (48 hrs.), when convenient, the container was agitated gently to facilitate fixation. The skin was left pegged out on the cork during the dehydration process through the alcohols and then was removed. The tissue was cleared in toluene and cedar oil. After infiltration with paraffin, the skin was trimmed inside of the holes made by the pins. The surface of the skin was placed down in the paraffin block when it was embedded.

Sections were cut on a rotary microtome at 6 micra and mounted on glass microscope slides. The first section was cut from the surface side of the tissue and parallel to the surface. The tissue was not perfectly flat so serial sections were made in order to be able to refer to various levels in the tissue. One section was put on a slide and each slide was numbered for reference.

The slides were stained with hematoxylin-eosin. The fingerprint pattern was visible grossly before staining and the staining increased the differentiation of the tissue at the stratum granulosum down to the stratum germinativum because of the basophilic elements in the cells.[2]

When viewed with transmitted light the "ridges" of the pattern became much more apparent with a polarizing filter in front of the light source and another polarizing filter, with the axis crossed, between the slide and viewer (figures 1 and 2). The individual characteristics used for identification, e.g. ending ridges, bifurcations, short ridges, etc., were prominent and easily recognized. Photographic prints of the stained slides were made with polarized light, and our fingerprint men readily identified the photographs as identical with inked images of the finger.

Deep into the reticular layer of the dermis the ducts connecting the pores at the surface of the skin with glands reproduce the pattern of the fingerprint. The individual characteristics are obscure or lost but the disposition of the friction ridges is apparent when imaginary lines connect the ducts (figure 3). The print could be classified into the general type of pattern, e.g. ulnar loop, radial loop, whorl, etc. Higher magnification is necessary for examination at this level and enlarged photomicrographs of the whole pattern area are needed for interpretation.

The technique has been used on several cases in which the bodies were in advanced stages of decomposition. Little if any information was gained other than that obtained by conventional methods; in most cases the conventional techniques were superior to the sectioning technique.

Summary

A method is described for obtaining fingerprints from corpses with abraded fingers caused by occupation, by accident incidental with death, or by deliberate mutilation. The technique can be used for classification and identification. Minute detail is present as deep as the 100th section when sections are cut at 6 micra.

Acknowledgement

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[2] Ham, Arthur W.: Histology, Part Four, No. 22; J. B. Lippincott Co., Philadelphia, Pa.

POLICE SCIENCE TECHNICAL ABSTRACTS AND NOTES

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Abstractors

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A Correlation Study of Blood Alcohol Levels as Determined by Alcometer, Breathalyzer and Direct Blood Analysis—J. D. Chastain, H. J. Strauss, C. W. Maupin, Texas Department of Public Safety, Bureau of Identification and Records, Austin, Texas. This study shows that when the machines, the Alcometer and Breathalyzer, are used according to the recommended procedure the results can be expected to be within ±.015% of direct analysis of the blood. (JDN)

Handwriting Examinations—P. F. Clark, *The Australian Police Journal, 11* (3): 215–21 (July, 1957). A general discussion of handwriting identification problems with reference to similar style, format and habits as well as formation of characters. Various types of forgeries and anonymous letters are treated. Suggestions for taking specimens contain the usual precautions of duplicate media. It is suggested that inconsequential biographical data be used as a prelude to the actual dictation of the subject matter of the questioned writing. It is a practice of New South Wales to require certain classes of criminals to complete a form in their own handwriting on arrest. This provides specimen writing more complete than a signature on a fingerprint card. (JDN)

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Murder in New South Wales—R. W. Mackenzie, *The Australian Police Journal, 11* (3): 225–9 (July, 1957). The sex distribution of victim and murderer, environment and range of method are discussed. (JDN)

Southern Police Institute—1958 Seminars, Delinquent Youth and Society, January 6–17; Police Administration, January 27–February 7; Scientific Crime Investigation March 3–14. (JDN)

J. C. Higgins Firearms—Anonymous, *Bulletin of the Bureau of Criminal Investigation,* New York State Police, *22* (4): 8–11 (1957). The presence of Sears Roebuck & Company catalog numbers on their J. C. Higgins weapons results in these numbers being recorded as serial numbers. On the Model 88 revolver, the serial number is found on the right side of the frame. On the Model 80 semi-automatic pistol, the serial number is found on the right top side of the slide receiver and on the right rear side of the frame. (JDN)

Erroneous Blood Alcohol Findings at Autopsy—Henry W. Turkel, and Houghton Gifford, *Journal of the American Medical Association, 164* (10): (July 6, 1957). In a series of medicolegal cases requiring determination of blood alcohol levels at time of autopsy, in each case blood samples were taken from that blood pooled in the pericardial sac, as has been customary, and also from the femoral vein. Out of 51 cases in which alcohol was present in the body, the level of alcohol in blood pooled in the pericardial sac was falsely and significantly

elevated in 8 cases. The alcohol level in blood from the femoral vein was not in any case significantly elevated. The elevation is believed to result from alcohol which was ingested before death diffusing out of the stomach after death. Because of the gravity of decisions attaching to blood alcohol determinations, it is recommended that post-mortem blood alcohol samples be routinely taken from the femoral veins. (WEK)

Tool Mark Examination Techniques—David Q. Burd and Roger S. Greene, *Journal of Forensic Sciences*, *2* (3): 297 (July, 1957). For many years criminalists have been conducting examinations of tool impressions and abrasions in order to identify the particular tools which produced the marks. In this report are presented the basic techniques and procedures commonly followed in conducting tool mark examinations. In addition to the standard methods employed in many criminalistic laboratories, a description is given of the magnesium smoke treatment of tool marks which has been found to be of considerable aid in making many such comparisons. (WEK)

Fatal Air Embolism Following Intrascrotal Injection in a Transvestite—Lester Adelson, *Journal of Forensic Sciences*, *2* (3): 291 (July, 1957). Air embolism as a cause of sudden and unexpected death is seen occasionally in medicolegal practice. A case of fatal air embolism is reported in a transvestite who injected air into his scrotum with a bicycle pump. (WEK)

Accidental, Fatal Poisoning with Diphenylhydantoin (Dilantin)—Charles S. Petty, Rudolph J. Muelling, Jr., and Harlan W. Sindell, *Journal of Forensic Sciences*, *2* (3): 279 (July, 1957). It is a rare occurrence when a case of accidental poisoning can be exactly characterized by the amount of toxic substance taken, time of ingestion, clinical course, and finally, the demonstration of the toxic agent in the body after death. This is the report of such a case. It is presented with several objectives in mind. First, to record accidental, fatal poisoning with a drug commonly employed in therapeutics; second, because this drug has only rarely been incriminated as a cause of lethal intoxication; third, to indicate how one of the newly developed "electronic" laboratory instruments may be of value in the post-mortem identification of a toxic substance. A case of fatal, accidental poisoning with a single ingestion of 3.2 grams of diphenylhydantoin (Dilantin) by a 3-4/12-year old boy is reported. The clinical course and the autopsy findings of encephalitis periaxialis diffusa (Schilder's Disease) is detailed. A method, employing a recording spectrophotometer, for the identification of diphenylhydantoin is described. (WEK)

Lie-Detector Test Limitations—Fred E. Inbau, *Journal of Forensic Sciences*, *2* (3): 255 (July 1957). The lie-detector technique for the detection of deception, when properly used, is a valuable investigative aid in criminal investigations. There are, however, many limitations and misconceptions concerning its use.

1. The Instrument. This task of the instrumental detection of deception is a difficult one, even under the best of conditions, and the instrument employed should furnish the maximum available aid. The Polygraph is suggested.

2. The Examiner. The task of the polygraph examiner is not simply the mechanical manipulation of an instrument, but rather the much more difficult and exacting function of diagnosing deception from instrument recordings obtained by means of a skillfully conducted test.

3. Anybody and Anytime. The lie-detector technique is not something to be used only after all other efforts have failed. To do so is unfair to the technique, to the examiner, and to the subject as well.

4. Lie-Detector Technique No Substitute for Police Investigative Efforts. In attempting to solve an important crime—in fact almost any crime—there is tendency at times, however, to turn all possible suspects over to the polygraph examiner and expect him to "pull the rabbit out of the hat".

5. Unlimited Details of the Crime. Another misconception is the one which makes police investigators believe that once the polygraph examiner has ascertained the guilt of a subject