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MODERN METHODS OF SCIENTIFIC CRIMINOLOGY IN THE DETEC- TION OF CRIME¹

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YOUR HONOR:

Before presenting this subject, which is so close to my heart, let me first express my most sincere thanks for the high honor and privilege to appear before your distinguished body.

Crime is an ever interesting, most important social problem, which not only uninterruptedly occupies the mind of all the students of criminology, but which continuously alarms our courts and horrifies our peaceful and unsuspecting people.

I dedicated nearly two decades of my life to the study not only of the scientific methods employed in the detection of crime, especially in the field of criminal pathology, but also to the most careful and objective analysis of the real, underlying reasons, the last motives for crime (criminal biology and anthropology).

Criminology, as the word indicates, is a science dealing with crime in general. The success in the practice of this science depends not only upon a sound theoretical foundation, its correct practical application and increasing empirical knowledge, but also upon the individual himself.

PSYCHOLOGICAL ANALYSIS OF HUMANS

It makes no difference in what line of endeavor one believes or claims to be a learned worker or a capable specialist, his mode of procedure will clearly manifest the exact state of his mind, his mental make-up. Your instinctive acts or movements, as well as your attempted or accom-

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plished actions or work, based upon acquired knowledge, prove your practical value as an individual.

The apparent success in our pursued work is, therefore, the result of two intrinsic and indispensable components: the correctly trained brain and the normal, well developed and guided instincts. The harmonious combination and synchronous function of these two factors are the fundamental biological reasons for success.

In studying a personality both factors must, therefore, be fully considered. Lack of desired or expected success is often mainly due to inhibition, under-development, or misdirection of the instinctive powers of an individual.

I tried to emphasize in these few words the two essential points in the analysis of a human, in general.

The practical achievements of a criminologist and the successful career of a criminal are thus explained.

The born criminologist, as it were, instinctively detects and follows the right track of a delinquent; the born criminal instinctively covers and obliterates his tracks. Acquired knowledge will make the work of each a perfect one.

CLASSIFICATION OF CRIMINOLOGISTS

Detection of crime requires an exact knowledge of many practical and theoretical scientific subjects which cannot be mastered by one single individual. Specialization in various branches of criminological science is of primary importance and must be vigorously insisted upon in order to prevent any amateur work.

I should like to classify the practical criminologists into three categories: (1) The field criminologist, (2) the laboratory criminologist, and (3) the office criminologist.

The latter is mainly concerned with the descriptive identification of delinquents, signalment (Bertillon's spoken portrait), dactyloscopic records and classifications, crimino-photographic archive, etc.

The field criminologist, the criminologist investigating the premises of crime, or any trained worker in a special practical branch of criminology must observe one supreme rule when entering upon and studying the scene of crime, namely, not to destroy any evidence, to preserve everything, and not to complicate by his presence the detection of important traces.

Finding of fingerprints of the investigating criminologist on the scene of crime should prove his inability and should warrant his discharge from this highly qualified service.

Constant training, theoretical as well as practical, is of paramount importance in learning how to find a criminal mark or trace. One

can only then successfully detect a fact, if one is fully conscious that it exists or that it might be present. Dominated by this thought, the experienced field criminologist systematically proceeds in his work and in his search.

In his endeavor to detect and solve a crime, a field criminologist must unconsciously be guided by the *impulse to observe and to preserve all the traces* which will lead to an ultimate solution of the problem encountered. The finding of a trace is no less dependent upon the method, technic, and inherent gift of observation.

Many a detective can be trained to observe, mainly by inculcating in his mind the average essential facts to be found in various criminal affairs. He is thus able to produce good results occasionally. But the successful criminologist with his, may I say, inborn instinct of observation—unconscious observation—locates and picks up *the* striking detail with utmost precision. His faculty of observation coupled with his practical experience and profound theoretical knowledge of criminals makes his work superb, yes, even invaluable.

CRIMINOLOGIST AT THE SCENE OF CRIME

The rapid finding and exact locating of an important mark or track of a delinquent depends upon a correct and rapid orientation and accurate consideration of the following main, vital points: (1) What criminal action occurred (analysis of the act)? (2) In what kind of place or environment was the crime perpetrated (analysis of the premises)? (3) What type of delinquent would commit such an act (analysis of the criminal)?

Now, how can a police official grasp a crime situation intelligently, how can he proceed precisely, if he lacks the indispensable theoretical backgrounds upon which he must base every step, thought, and action? How can a physician diagnose a disease without first knowing the structure and function of an organ?

TRAINED PERSONNEL

The aim of modern scientific criminology is, therefore, to select for and educate in every detailed branch of practical criminology well trained, experienced and conscientious technologists and field workers. Herein lies the true secret of success of the criminological department of the police.

In the discussion presented thus far, I desired to impress upon you the eminent importance of a learned personnel, which must be specialized to utmost perfection in every minute criminological branch, to the most extreme detail.

The tendency in this country is to erect magnificent buildings but to

neglect and forget the personnel. The greatness of an institution does not result from the impressive appearance of its beautiful structure, but from the scientific spirit which emanates from its research workers, captivating and fascinating the public at large. Our main concern is to secure a highly trained personnel. This must be emphasized at every occasion, as the so-called pseudo-experts are misrepresenting their knowledge and qualifications, misleading the public, the courts, and the juries. This holds true for workers and experts in theoretical and practical fields of criminology.

As the second part of my discussion I should like to present a brief review of a few modern technical procedures or laboratory methods of most recent date, as applied to practical criminological research. In other words, I intend to introduce you, Your Honor, into the workshop of the scientific criminologist and to make you a little better acquainted with the laboratory criminologist.

In the modern criminological laboratory all the traces, found at the scene of crime, are minutely scrutinized, critically analyzed, and correctly assorted and correlated. The laboratory staff produces, in supplementing co-operation, the most convincing, infallible proof of facts, brought forward by accurate and precise scientific methods.

ULTRA-VIOLET RAYS IN CRIMINOLOGY

The application of ultra-violet rays in modern criminology, particularly in the detection of different traces, is of comparatively recent origin. It is being advantageously used not only in the examination of various kinds of falsifications, but also in the investigation of forged and altered documents.

I am omitting at this time any discussion of the theoretical physics of this interesting question but would like to state in a general way that the constructed apparatus is based upon the principle, that while ultra-violet rays are invisible, they may be transformed into a visible irradiation, if they strike certain substances. This irradiation is known as fluorescence.

In the criminological laboratories of the Vienna Police, Austria, (Professor S. Tuerkel) and at the School of Scientific Police in Rome, Italy (Professor Ottolenghi), I found the "Hanau" analytical quartz-lamp apparatus in use and I was greatly impressed by its practical efficiency. Various spots, substances, fluids, etc., can under circumstances, be easily differentiated. This is of particular importance if, for instance, a large object, such as a bed sheet, a towel, or shirt, etc., has to be examined for the presence of certain traces which may be made fluorescent if exposed to filtered ultra-violet rays. One is able not only to

get a rapid orientation as to presence or absence of foreign substances in a questioned article, but also to prove, at times, that the spots or traces, apparently identical-appearing when observed by the naked eye under ordinary circumstances, possess a varied origin.

I have secured an analytical ultra-violet apparatus for my criminological laboratory, not only to carry on original research work but also for the benefit of our community, should occasion require its use.

Further laboratory investigations must be conducted to demonstrate the usefulness of this apparatus for various practical needs of criminal pathology. I wish to again emphasize that the Hanau apparatus is an excellent device for the study of questioned documents, or secret, criminal (convict's letters), or political correspondence (for intelligence service).

KOEGEL'S APPARATUS

The famous photochemist, Professor C. Koegel, constructed a new, more perfect apparatus with the aid of which ultra-violet rays of various lengths can be advantageously used in the examination of different things. His remarkable research work established a new era for criminological laboratory work.

At the Institute of Criminal Law and Criminalistic, Vienna, Austria, under the directorship of the world-famous criminologist, Professor W. Gleispach, president of the University of Vienna, I learned the great value of the Koegel's apparatus for practical criminological investigations.

With the Koegel apparatus we are able to expose the object to be examined to rays of known length and to study the effect. For instance, if one desires to detect changes or marks present in or within the tissue of a paper, rays of $366 \mu\mu$ length are employed, as their penetrating power is more pronounced than that of rays of $313 \mu\mu$ length, because the latter-mentioned ultra-violet rays are absorbed by most substances.

EMOTION REGISTERING DEVICE

Through the kindness of the Italian Government, particularly of His Excellency Mr. Bianchi and His Excellency Mr. Bocchini, I had ample opportunities to study the various Institutions of Criminology and allied scientific institutes in Italy. At the Physiological Department of the University of Bologna, directed by Professor Patrizzi, I observed a device which objectively registers the emotional reactions of an individual, an apparatus which some of our newspapers call "lie detector" or "crime detector." The apparatus really is a large glove, made out of an India rubber-like substance, into which the hand fits

very comfortably and very loosely. In using this apparatus, the hand of the delinquent is placed into it just like into an ordinary glove; the glove is then filled with water and connected with a sphygmometer, a registering device. Any emotional oscillations will promptly be visible and recorded. It can be practically employed, for example, in the following manner: A suspected murderer is shown, under some pretense, a series of photographs of various individuals who are unknown to him, among which the picture of the murdered person is hidden. As soon as the picture of his victim confronts him, his uncontrollable emotional reaction (surprise, fear, remorse, etc.) is signalled on the sphygmometer. Since this apparatus will register any emotional reaction, such as anxiety, fright, joy, sudden interest, intense attention, etc., which may accidentally occur during the examination, one has to be extremely cautious in its application and interpretation. Its use in practical criminology as a device for detection is, therefore, very limited and should never be placed in the hands of individuals who want to prove something forcibly.

CRIMINO-PHOTOGRAPHY. CRIMINO-BALLISTICS.
CRIMINO-HEMATOLOGY

I am leaving undiscussed the newest advancements in the technic of photography of the scene of crime, of the identification of bullets, guns, etc. (crimino-ballistics), as well as of the various systems of dactyloscopic registration of criminals. The technic employed in the finding and securing of fingerprints on the premises of crime also requires expert knowledge and criminological intuition. All the questions connected with these two significant problems demand, indeed, a detailed discussion, which I am not able to accomplish during this brief presentation.

The examination of traces of blood, interpretation of various blood marks and spots, their shape, mode and time of development, etc., form important phases for the crimino-pathologist or laboratory criminologist and require special technical procedures and apparatus (crimino-hematological technic).

I hope I will have the opportunity in the near future to present this chapter of practical crimino-pathology in a deserving manner, as blood marks left by the victim or the attacker often furnish valuable information.

I should like to emphasize before this distinguished audience the importance of the determination of the blood group at medico-legal (coroner's) autopsies in instances of murder, as such a test may later prove to be of essential significance for that particular case (subsequent test-

ing of spots of victim's blood on the clothing of the suspected delinquent: comparison test).

PRESERVATION OF DELINQUENT'S TRACES

One of the pre-eminent problems of practical criminology is the preservation of all the criminologically important marks, traces, changes, effects, etc., found and observed on the place of crime, not only for the purpose of later study and scientific analysis, but also to demonstrate, in a most truthful manner, the evidence detected.

Up to date, photography was the main method employed; plaster of Paris copies of suitable objects were also taken. But both procedures are not the best and most satisfactory methods, they do not plastically illustrate some of the most minute points of interest to us.

A short time ago Dr. Alphons Poller, of the University of Vienna, Austria, in collaboration with his devoted wife, an American lady, developed, after many years of intense study and experimentation, a colloidal mass (negative mass), known as "negocoll," with which one is able to make exact, and I mean microscopically exact, copies of nearly everything one may encounter. With the aid of another colloidal substance, termed "hominit" (the positive mass), the positives are produced.

With the Poller's method we succeed to duplicate plastically any important mark at the scene of crime, such as, for instance, a part of the wall with the bullet perforation, a shoe imprint in gravel or even in snow, the mark of the delinquent's instrument on a window frame, and any other conceivable finding. The duplicates are of such an exactness and precision that one is unable to distinguish between the original and its copy.

Dr. A. Poller's invention is of momentous significance to criminology. Such plastic, natural and life-like copies of important traces or marks of delinquents can be thus easily demonstrated in our criminal courts with convincing effect. I am here demonstrating the anatomical copy of my right hand, made by Dr. A. Poller during my last sojourn in Vienna, and I wish that you would examine the papillary lines, the pores of the sweat glands, the veins, and all other anatomical characteristics, I mean the entire skin relief, with this magnifying glass, in order that you may convince yourselves of the anatomical exactness of the duplication.

The Poller's method is the most perfect procedure for the preservation of all the traces detected at the scene of crime and must be employed by every criminological department.

AT MERCY OF CRIMINALS

Your Honor, my brief presentation should illustrate the complexity of the problem of detection of crime and the inestimable value of scientific criminology in its practical application.

If we expect to be successful in our daily struggle against delinquents, scientific study and training is indispensable; accidental success should not inebriate our minds.

Scientific organization for the detection and prosecution of crime is a paramount necessity as otherwise we are at the mercy of the criminals.