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## A PROPOSAL TO INTRODUCE FORENSIC SCIENCE IN THE UNIVERSITY CURRICULUM

William E. B. Hall

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Each year in the United States, some 300,000 deaths are reported from obscure, suspicious criminal, or violent causes—one out of every five deaths. Out of this huge pool, are 13,000<sup>1</sup> officially recognized murders—one murder per year for every 10,000 living persons. It means over 250,000 persons now living in the United States will fall victims of known recognized homicide. How many other thousands of murders are committed, unrecognized or unsolved? These matters should make us question closely the ability, fitness, and training of those in whose hands we have placed such guardian responsibilities. It is vital that obscure, violent, or suspicious deaths be thoroughly and competently investigated so that they can be fully understood and accepted in the strictest courts where a man's life, liberty, and reputation may be at stake. It has been shown<sup>2</sup> that where these investigations are conducted, between ten and twenty per cent of all murders were on cases unwitnessed and without external marks of violence. These are the cases often reported as chronic myocarditis, a heart failure, old age, alcoholic intoxication, drowning, or plain automobile accident, an interpretation given all too often by many of our coroners or members of our own profession.

In the past, we of the medical profession have accepted often with greatest reluctance, when called upon to assist in the field or courtroom, in problems having some bearing upon the field of medicine, prepared to give expert testimony running the whole gamut of the field of medical knowledge. Today, medical science has advanced to a point where problems in court frequently can be answered only where expert testimony is sought of the carefully trained pathologist, surgeon, obstetrician, alienist, neurologist, chemist, and other specialists.

To more effectively master these problems facing the medical profession, there is proposed that:

1. Editorial: Medical Science and the Administration of Justice, *J.A.M.A.* 138:751-752 (Nov. 6) 1948.

2. Report of the Committee of the American Medical Association to Study the Relationship of Medicine and Law, *J.A.M.A.* 125:557 (June 24) 1944.

The active teaching of the science of forensic medicine should be a responsibility and duty of our medical schools to their medical students, to post-graduate students, to coroners, and members of the legal and law enforcement professions.

This should be done best through an established chair of legal medicine in every school of medicine. Today, police agencies are well developed for crime detection and identification, and the legal field is well understood and well operated. But for the most part, in the world of legal medicine, the medical mind remains untrained with little inclination or ability to assist in this field. The medical profession, as a whole, has neglected its social responsibilities, as evidenced in its failure to meet and fulfil this need for the application of expert specialized knowledge of medicine and law (Gerber).<sup>3</sup>

The low status of legal medicine in most of our states is an anomalous phenomenon that demands early correction. So far this is true. But what about our medical schools? Theirs has been a responsibility unrecognized, by them, or by us of the medical profession. In this they have been derelict. This failure appears to stem directly from the medical school curriculums. A student receives a cursory indoctrination in the rights and duties of the physician and the rights of the patient, the aspects of malpractice and the functions of court and how to conduct himself in court. But when he leaves our schools, is he prepared to assume with even moderate competence, the office of coroner which we may thrust upon him, instead of upon some neighbor who may not even have graduated from public school? Or can he give the type of assistance and advice to courts and law enforcement agencies which would be worthy of their fullest respect and appreciation? These graduates need not all be specialists in the science of forensic medicine. Such comes only with years of training in special institutions of which there are two recognized here in the United States,<sup>4</sup> in New York University operating through the Office of Chief Medical Examiner for the City of New York, and in the Department of Legal Medicine of Harvard University. This we would not ask of our students. But a chair of legal medicine would give our graduate at least a passing acquaintance and knowledge of the varying phases of this science. We do not ask that our fresh graduates, our general practitioners, know all about cancer, be able to identify it in all its aspects, internal and external. All we ask is that they display an ability to

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3. S. R. Gerber: Adequate Medical Examination in Unexpected and Violent Deaths (Correspondence), *J.A.M.A.* 138:1190-1191 (Dec. 18) 1948.

4. To this list should be added a third school, the Medical College of Virginia, Richmond, Va., under the Chief Medical Examiner for Virginia.

recognize that something is wrong, that there is something that might be cancer, that measures will be taken promptly in his or some specialist's hands to identify the questioned condition and place it under proper treatment, instead of the misinterpretation and delay that may lose a patient's life in the hands of the inexperienced. Just so, in the same way, we ask that our medical schools train our students, that they may at best recognize something of the medicolegal aspects of the various contacts in his practice, that they may be better able to avoid misinterpretation of the facts and observations of a case, that they recognize when more capable advice and assistance are needed, so that the innocent may not be needlessly subjected to prosecution, and the operations of justice furthered.

Our students should be prepared to assist the law enforcement and legal agencies in questions of murder, rape, the hit-and-run driver, and the many other perpetrations of crimes of violence, and know how to make available evidence to clear the innocent suspect as well as convict the guilty. He must know the many new instruments now used by police agencies, the spectroscope, the X-Ray, the X-Ray diffraction spectrometer, the electron microscope, and many other instruments of science. He should know the principle of their operation and why they are used. As he encounters the medico-legal case he must know how to procure material that will serve in the development of evidence by his coroner's department or other law-enforcement agencies. He must know how to preserve that evidence, safe from change, safe from hands that would destroy incriminating evidence, safely identified in such a manner that the peculiar features required for evidence in court will not be damaged or altered. This is important as shown in a recent case.

The sound of a gun shot was heard in a house of a very wealthy man shortly after he had returned from a swim in a lake. The man, who had previously threatened to take his life, was found dead on the floor, and a revolver lying some distance away on a dresser, in a position that would have been very awkward for the deceased. There was involved a series of insurance policies for extremely heavy sums, invalidated for suicide, doubled for accident. At autopsy the bullet was removed and properly marked for identification and at request of police and district attorney was left in the pathologist's possession pending a coroner's inquest. The bullet was placed in a steel desk which had a lock to it, in the hospital laboratory office, the door of which was closed with a Yale lock. Subsequently, the pathologist was visited and requested to show the bullet to a member of the district attorney's office, and an attorney for one of the insurance companies, an attorney for the widow, and a member of the firearms division of the police department, all of whom learned how and where the bullet was kept. The following day, the office door, closed the previous evening, was found open and the bullet missing. As in the case of many hospitals, others had access to keys for various

departments. It was quite evident that the bullet had not been kept in a tamper proof, safe location. At the same time, it was found that something had happened to the revolver in question, rendering it unsuitable to take any possible fingerprints. The pathologist had previously taken paraffin impressions of the victim's hands demonstrating distribution of nitrate grains on one hand such as would be acquired by firing a revolver. This was held sufficient by the coroner's jury and at subsequent litigation to clear the widow of possible charge of murder. She had generally been considered quite suspect in the case, there having been much trouble between the couple and her activities having been unaccounted for, for the specific time of her husband's death.

Our students must also be taught how and under what circumstances to take dying declarations. So many aspects have arisen with regard to this single item, so many points of legal do's and don'ts, that most of our profession are willing to see an injustice or crime go unpunished, rather than submit to the humiliating exposure, under cross-examination, of their good-intentioned but often inept attempts at performing this so vital office towards the exposure of a crime in which the accused will rarely be able to exercise his constitutional right to face his accuser.

Lastly, our students must be sufficiently well taught in this science, so that they will understand how to properly weigh facts, evidence, and circumstances they may be confronted with. It is important to recognize the evidence of suspicious circumstances, the possibility of crime, and to point to the possible suspect. It is just as important, if not more important, however, to be able to recognize or interpret evidence, which may clear the actually innocent from the humiliation and retribution of the suspect and guilty. In the same manner, we must know how to recognize those things which superficially suggest crime but are actually due to natural or accidental circumstances and which, if unrecognized, may needlessly call for the full engagement of the whole machinery of the legal and law enforcement agencies directed towards crime detection and its prosecution. Let us cite two cases.

The pathologist was asked by the coroner and police to examine an old man found dead on the kitchen floor of his small home, in which he lived alone. He had been thought to have kept a considerable sum of money with him, none of which had been found. Early the morning of his death, neighbors had heard considerable thumping and other noises from the house, and when the old man failed to make his usual mid-morning appearance, they had investigated and found him dead. The room looked as though there had been a fight, was almost wrecked and blood was smeared and spattered over walls and floors. The old man's face and scalp were badly bruised and cut, and he lay in a large pool of his own blood. The picture strongly suggested homicide, but there was not evident weapon. Hair from the scalp was found on the bloody, sharp edge of the upright kitchen stove. Autopsy showed the man to have suffered an independent hemiplegia or stroke, as a result of which

he had repeatedly fallen and injured himself in his semi-conscious efforts to recover from his collapse.

The second case should emphasize the importance of actually viewing the scene of suspected crime. Something may be observed which will change the entire complexion or interpretation of a case such as can never come from the autopsy itself. It emphasizes also the need for constant awareness of the possibility of misinterpretation of the suspicious case.

This case was preceded by a series of sex crimes, particularly assault on boys and girls. On this particular late afternoon, playing children found one of their schoolchums, a boy of about eleven, dead in a boxcar, suspended by a binder twine cord from the car roof, the cord tied in a slipknot noose around the neck, the tie at the back of the neck. The toes and feet were behind and on the car floor, the body slightly slumped forwards at an angle of about 45 degrees from the floor, hands not touching the floor, the cord being almost vertical. The clothes were not disarranged. Without further information and on the basis of the above findings—and rumors—the physician who was first called on the case, gave as his opinion on the witness stand that this was another case of a sex crime, that the child had been evidently enticed to the boxcar and there strangled to death by the cord and his body subsequently suspended by the cord from the car roof. As the coroner's medical examiner, and at the request of the police, the pathologist was able to examine the scene of the boy's death. Autopsy showed the findings typical of death by strangulation from hanging. There were no marks of previous strangulation by other means such as garrotting. In the boxcar, examination showed the body was not drawn into position by pulling on the cord over the roof beam, as usually occurs in homicide where suicide is simulated. Rust on both shoe insteps, corresponding with the iron car support rods beneath the door, suggested that the boy had climbed into the car by himself. A fresh indentation in the middle of the right sole followed by fresh scrape and twist marks that extended to the shoe tip were not covered with rust, dust, and grass stain that appeared over the rest of the sole. Careful search of the car floor demonstrated a somewhat oval but actually quite irregular stone, roughly  $1\frac{3}{4}$  inches in diameter about 30 inches behind where the boy was found. It fitted the depression of the shoe sole exactly. This told the story. It was learned that another boy of the neighborhood had been proudly demonstrating what his father had looked like when he was found a suicide, by hanging. Other boys of that neighborhood had subsequently experimented to learn the sensation of "near" hanging. Our boy in question, had similarly tried this experiment, stepping accidentally on the little rock while he tried and tightened the cord, already tied to the car roof beam. Under the boy's weight the unstable rock had twisted, and his feet slipped backward beneath him, projecting the boy forward against the tightening noose. Unconsciousness can come quickly in that manner, long before balance can be regained, or straining hands bring the body back to vertical, to ease the constricting noose. Death here was purely accidental.

This indicates the great assistance the examining physician can offer other investigative forces when he is willing to extend his interest beyond the mere discovery of the final cause of death. It also points

to the great urgency for most careful study of a given case and its circumstances, to guard against the great harm that may come from an unguarded or careless interpretation. It is the kind of assistance that can come from the medical graduate who has been adequately trained in this other aspect of legal medicine, stemming from well-rounded curricula in our medical schools.

Nor should our medical schools stop with the instruction of the undergraduate body in the varying aspects of legal medicine. Active post-graduate training should be offered through brief, as well as longer specialist's courses, leading in the latter to specialty certification in this branch of pathology. Training should be extended to incoming coroners of our states, that they may be better qualified to carry out their duties. Similarly, post-graduate training in this phase should be available to members of the legal profession. Those of us who have had experience in this work, have learned that many of our most apt students in these sessions will come from members of the various sheriffs', state, and local police forces. Our medical schools should assume the responsibility of post-graduate training of these men, in the especial phases in which legal medicine has a bearing on their own police professions. The great success of the Department of Legal Medicine of Harvard University in its seminars for coroners and police officers points emphasis to this assertion.