

Guinea pig. Black and white. 500 gm. Feb. 10, 1909
Nine-thirty. Fifteen minims bacillus aerogenes capsulatus injected into right hind leg just above hock.

Ten-thirty. Small process present with only moderate swelling. Twenty minims peroxide injected proximal to process around leg.

Feb. 11. Moderate sized process. Pig moves about cage but little and practically does not use leg at all. Temperature, 102.4.

Feb. 13. Pig has improved very much. Runs about cage, eats well and uses leg somewhat. Process localized to leg.

Feb. 15. Pig died last night, not having been quite as well yesterday as the day before, but apparently doing well. Autopsy showed bacillus aerogenes capsulatus process localized, same paste-like consistency and a small amount of gas in wound.

Guinea pig. Brown and white. 450 gm. Feb. 10, 1909.

Nine-thirty. Fifteen minims bacillus aerogenes capsulatus injected in left hind leg just above hock.

Ten-thirty. Large process at side of injection, indurated, hot and tender. Twenty minims peroxide injected in a circle around process and proximal to it as in other cases. Temperature, 102.6.

Feb. 11. Lively, running about cage. Process localized to leg.

Feb. 13. Pig apparently not sick. Temperature, 101.4. Uses leg.

Feb. 15. Uses leg nearly all the time. Swelling diminishing.

Feb. 18. Pig runs about cage on leg. Swelling not tender.

At this point the experiments were suspended because it seemed that the treatment could never be applicable to humans and that even in animals the process was stopped too often at the cost of the patient's life.

CONCLUSIONS.

It is interesting to find with what ease the bacillus can be recovered from the soil, a small lump of soil having been taken at random and injected in the form of a bouillon suspension.

The bacillus grows at least twenty-four hours aerobically in glucose agar stab, glycerine blood serum, on plain blood serum, but does not grow in bouillon.

The fact that a normal rabbit when killed and incubated showed bacillus aerogenes capsulatus reaction indicates that the test for bacillus aerogenes capsulatus by inoculating, killing and incubating the rabbit is not reliable, since the same result may be obtained in a rabbit not inoculated.

The fact that the tissues in the operated arm at the site of amputation were pale and edematous, but no organism recovered by culture from the wound, makes it seem that there is a change in the tissue before the organism invades it during the process of extension up an extremity.

The smears from the three levels of the wound tend to show that the infection at the middle and lower part of the wound is mixed, with but few bacilli aerogenes capsulati present, while the purest bacillus aerogenes capsulatus infection is at the upper part of the wound in the direction of extension. This we would expect as the bacillus aerogenes capsulatus when once started in development outstrips almost all other organisms in the rapidity of the process.

Following the sudden death of the two guinea pigs after large doses of hydrogen peroxide, Dr.

Pfaff was consulted, who kindly gave the following advice concerning injections of hydrogen peroxide:

"The excess of hydrogen peroxide which is not used up in oxidizing the tissues is taken up by the blood, decomposing it so that emboli may be formed." The fact that the pigs could stand injections of 25 minims was probably because this amount was only sufficient to oxidize the tissues.

Dr. Pfaff informs me that its action upon the tissues is a caustic one and so it was probably this action, together with the necrosing action of bacillus aerogenes capsulatus toxin, which caused the paste-like consistency of the tissues at autopsy.

The sudden death of the two guinea pigs who received larger doses of hydrogen peroxide was undoubtedly due to direct injection of hydrogen peroxide into the blood stream.

The summary of the experiments, as far as life and death go, show one control to have died during the night following the injection, as would be expected, and one to have lived in spite of an apparent lesion at the point of inoculation.

In the case of the pigs injected with hydrogen peroxide, we find three to have lived apparently uninjured by the injection, and five to have died within an average of four days from the time of inoculation. From this we can draw no conclusions with the exception that in the cases which died, the length of life after inoculation was longer than would be expected in an unprotected case.

In all of the cases injected with hydrogen peroxide, whether they lived or died eventually, it seems beyond any question that the process is localized to the area below the circle of injected hydrogen peroxide.

As a final conclusion, it is sure that the injection of hydrogen peroxide into a human for the purpose of stopping the extension of a bacillus aerogenes capsulatus lesion would never be justifiable, owing to the danger to life connected with this form of treatment.

THE GAILLOUX MURDER. A CASE SOLELY OF CIRCUMSTANTIAL EVIDENCE, WITH CONVICTION OF THE MURDERER.*

BY WILLIAM F. WHITNEY, M.D., BOSTON.

THE following case presents some unusual points of interest in its medical aspect. Further, a conviction without any direct evidence or any incriminating stains upon the clothes of the defendant shows that circumstances alone, when properly brought together, leave nothing to be asked for in the way of testimony.

At half-past twelve in the morning of March 1, 1908, a police officer on his rounds found the outer door of a small plumber's shop on Hall Street, in Lowell, unlocked. He entered and, upon pushing open the door of a small inner room used as an office, noticed the odor of gas which was escaping from an open burner. He shut it off and then stumbled over the

*Read at a meeting of the Massachusetts Medico-Legal Society, June 15, 1909.

body of a man on the floor, with his head underneath a desk in the space between the two rows of drawers forming the sides. The desk stood in a corner of the room with its back against one wall and with one of its ends against another. In this wall was a window close to the desk. The man lay on his side with his head in a pool of dark blood, estimated from one to two feet in diameter. There were blood spatters on the side of the row of drawers next to his head, but none on the front of them. There were also spatters on the lower part of the adjacent wall of the room, about a foot distant; none, however, higher than twelve or fourteen inches above the floor.

The officer pulled him from beneath the desk, turned him on his back, and, finding that he was dead, summoned aid.

The medical examiner, the late Dr. Irish, was called, who arrived at half past two, about two hours after the body was found. He observed that the body was somewhat warm, that rigor mortis had not set in, and that there were injuries to the head.

At the autopsy, performed about ten o'clock the same morning, it was found that there were two rather irregular linear cuts over the left eye down to the bone, and a deep contused wound with fracture of the skull above the left ear. This was two and one-half inches long by two inches wide by one inch deep, and beneath this the bone was comminuted. The middle meningeal artery was torn and the bleeding had come chiefly from it.

The appearance and shape of the wound rendered it probable that it had been made by a single blow of a heavy rounded or angular instrument. A heavy soldering iron could have made it. No instrument, however, was ever found. It could easily have been thrown into the canal near by.

The face was burned about the lips, chin and inside of the mouth as far back as the tip of the epiglottis with a corrosive substance. The blood on the floor beneath the head was of a peculiar dark tarry appearance and remained semisolid without clotting.

The problems which at once presented themselves were:

1. To determine the time of death, which, as will be seen later, was of the greatest importance.
2. To determine the nature of the corrosive substance, as a possible clue to the assailant.

The man had evidently been recently killed when first seen at twelve-thirty, and two hours later rigor mortis had not set in. It is to be said here that its commencement was never noted. Assuming the average time for its beginning to be from two to four hours after death, it would place the time of death between half-past ten and half-past twelve, the time when he was discovered. This was as near as it could be fixed. The blood beneath his head had not clotted regularly and thus failed to be of any help in determining the time.

A small whiskey glass containing a few drops of a dark fluid stood on a chair in the room. This glass and some of the blood scooped up from the floor were sent to me for examination.

The blood presented an extremely interesting appearance. It was of a dark-brown color, of soft consistency, and moist. Microscopic examination showed perfectly well-preserved blood corpuscles when a little was pressed out under the cover glass. If, however, a little water was added they

quickly dissolved, forming a deep-brown fluid. Some of the blood preserved in a tightly corked bottle presented the same characteristics at the time of trial, ten months later. A little of the blood applied to blue litmus paper, previously moistened, turned it a deep red; in other words, giving a marked acid reaction. A little of the blood was rubbed up with water, filtered, a few drops of a solution of barium nitrate added, and a heavy white precipitate formed at once. The same tests were made with the fluid from the glass, with similar results. The substance in the glass was also still moist at the time of trial.

These physical properties and chemical reactions proved that the substance mixed with the blood and in the glass was identical and was sulphuric acid. The same shade and density of color of the fluid in the glass was reproduced on mixing together commercial sulphuric acid and cheap whiskey. The burns about the face and inside of the mouth were, therefore, due to sulphuric acid. It was further probable, from the marked injection of the superficial vessels of the tongue, seen upon microscopic examination, that the acid was taken into the mouth voluntarily, or poured in while the man was unconscious but still alive.

A police officer picked up from the window sill of the room a partly smoked cigarette of a brand known as "The Sweet Caporal All Tobacco Cigarettes."

On the same day (Sunday) Napoleon J. Rivet was arrested on suspicion as he came from mass. He was the last person known to have been with the deceased, Gailloux, before his death. On the cuff of one sleeve of his coat were two or three minute red stains. These, he explained to the chief of police who questioned him in regard to them, came from a cut on his hand. Of this, however, there was no evidence. These stains were in reality due to acid. But as its character was not satisfactorily determined on account of the small amount, they were not placed in evidence by the prosecution. On searching his coat, there was found a box containing four cigarettes like the one partly smoked found on the window sill.

At the trial it was shown that the deceased had taken out a life insurance policy for one thousand dollars which he had assigned to Rivet. It was claimed by the defense that this assignment was made to cover a loan of five dollars advanced by Rivet to pay the dues on a watch bought on the installment plan by Gailloux. On this policy Rivet had paid the premiums for some time.

Just before the murder the defendant had been employed as a helper in some copper works at Taunton, where he had free access to carboys of sulphuric acid, and also to the vats containing sulphuric acid in which the copper was dipped to clean it. The acid in the vats was of a light-green color from the copper salt left in solution. His landlady saw two bottles, one containing a brown liquid and the other a light-green one, on the shelf of a closet in the room which he occupied in Lowell. These, however, were never found afterward.

Lastly, and most important, was the fixing of Rivet's movements on the previous evening. It was acknowledged that the men had been together about seven o'clock the previous evening, and were to have met again later at a saloon. There was no evidence that they did. One witness testified that she saw Rivet pass her shop, not far distant from the place where the murder was committed, at about twenty minutes past ten going in that direction. His sister showed that he came to her house between twenty and thirty minutes after eleven and passed the night there, and there was nothing in his manner when he came in to arouse suspicion.

Two other circumstances were brought out to which importance was attached by the prosecution.

First, about two weeks before the deceased alleged he had been made very ill after drinking two glasses of whiskey given him by the defendant. His symptoms were severe pain in the stomach and vomiting, lasting for twenty-four hours. This the government claimed was consistent with sulphuric acid having been given with the whiskey.

Second, that the two men had been found by some boys drinking at the scene of the murder on the Saturday night previous. It was suggested that the murder was contemplated then, but the entrance of the boys prevented its accomplishment. In any case, it showed they were accustomed to go there.

The defense was an alibi, and that the circumstantial evidence was not sufficient to implicate the prisoner.

After a short deliberation the jury returned a verdict of murder in the first degree.

It is impossible in briefly presenting a case to give an adequate picture of the force of the evidence as presented to the jury. One must sit through the trial itself to thoroughly appreciate it. The one important fact was that the defendant was the central figure about which everything was grouped. Not a spark of evidence was introduced to show that there was any one else to be benefited by Gailloux's death. Nor was any one but the defendant associated intimately with him.

As to the circumstances, if taken singly, there is not one that points solely to Rivet. A great many people smoke that peculiar brand of cigarettes. Any one can procure sulphuric acid from a druggist without a prescription, and it does not have to be entered in the poison book. Moreover, there are many other liquids besides sulphuric acid and sulphate of copper that have a brown and green color. All this was ably argued by the defense, but in spite of it, when these facts were all linked together, they formed a chain which unerringly drew the defendant to the electric chair.

The part played by the sulphuric acid in the tragedy is only a matter of conjecture, and probably will never surely be known. One theory is that Rivet intended to get Gailloux drunk, and, when stupid, to give him a dose of sulphuric acid in the hopes that it would eventually kill him. But the victim was not far enough gone to swallow

it, and then Rivet, finding himself discovered, dealt the fatal blow. Another theory is that he poured the acid into Gailloux's mouth and over his face after he was struck down, in the hopes that the case would be regarded as suicide, and the blow on the head explained by a fall against the desk.

Whatever the circumstances were, my own opinion is that the acid was introduced when the man was lying where he was found, as otherwise it would be difficult to explain its intimate mixture with the blood which had flowed from the wound in his head.

THE DIAGNOSIS OF ULCER OF THE DUODENUM.

BY E. A. CODMAN, M.D., BOSTON,
Assistant Visiting Surgeon, Massachusetts General Hospital.

(Concluded from No. 24, p. 857.)

CASE XXXVII. Mr. C. S. H., age thirty-six. Lawyer. Massachusetts General Hospital. May 25, 1907. Vol. 563, p. 297.

"Two years ago seized with attack of acute pain in region of gall bladder, with vomiting and no jaundice. This pain with remissions and exacerbations went on for nearly a year. He was then free of it until last December, when he had another attack lasting several weeks. For past two weeks has been having frequent attacks of severe pain in the right hypochondrium with some vomiting. Yesterday had an attack which was much worse than any he had had before. Pain has continued. Patient required large doses of morphine to keep him quiet; vomited yesterday. Bowels constipated. No urinary symptoms. No jaundice. Temperature, 100.4; pulse, 108. Abdomen tender and spasmodic, especially in right hypochondrium.

Operation.—Cloudy peritoneal fluid and fibrin. Gall bladder normal except for adhesions. "Small perforation, apparently in duodenum close to ampulla of Vater." Region of perforation apparently well walled off by adhesions from abdominal cavity. Wicked.

(In all probability this localization of the perforation was inaccurate.)

CASE XXXVIII. Mr. J. C., age forty-three. Shipping clerk. June 19, 1907. Massachusetts General Hospital. Vol. 580, p. 25.

"For past year has had grumbling pain in appendix region, associated with constipation; gives no history of gastric ulcer or indigestion."

Seven years ago he had a similar sudden abdominal pain. At the time of entrance his symptoms were typical of acute peritonitis from perforation of the duodenum. An incision was made over the appendix first, which was found slightly enlarged but evidently not the cause of the trouble. The incision was enlarged upwards and perforation found in the anterior wall of the duodenum. It was successfully sutured and the patient made a good convalescence.

On July 22, 1908, the patient reported by letter that he was perfectly well except for a slight indigestion, which was easily relieved by eating. On Aug. 13, 1908, he reported that the indigestion had disappeared. On March 21, 1909, he says that he has been perfectly well since, and has had no trouble of any kind, although his occupation calls for considerable physical strength.

CASE XXXIX. A baby, S. C., age three months. Massachusetts General Hospital Oct. 8, 1907. Vol. 680, p. 185.