affection of almost any organ. Sometimes the patient complains alone of dyspepsia, sometimes of dizziness of the head; a common symptom is an affection of the eye, dimness of vision, pain in the left side, albumen is found in the urine and casts of the urinferous tubes, which is the surest symptom.

In the *post mortem* I made, I discovered no lesions in the organs, except the kidneys. The blood was in a fluid condition. I did not apply chemical tests for urea in the blood. I judged from the kidneys; I judge the blood was poisoned by the urea; it caused the coma. The patient died from the small red granular kidney; the kidney becomes diminished in size; I think it is, but I do not know which is the smallest form; there are three. We judge that the kidney excretes the water without excreting the urea. Urea in the blood might be decomposed into carbonate of ammonia. Never discovered the odor from the breath, the case I speak of was a living patient. I never saw it laid down as a symptom; I do not know in which sex. Bright's disease occurs most frequently; do not remember the statistics; I believe there is a slight difference. I saw a case in Roberts, in which a person of sixty-three years had undoubtedly Bright's disease.

The brain varies in different cases; in cases of dropsy, there is usually effusions of serum in different parts of the cavities of the brain, in other cases, none; the whole person is usually pale, blood deteriorated, enemic in a measure Granular kidney may produce functional heart disease, not organic. The most frequent cause of Bright's disease is a cold, exposure to cold, exposing the surface of the body to cold, chilling the skin gives the kidneys too much to do.

PROF. C. F. HIMES, *sworn*.—I am Professor of Natural Sciences in Dickinson College, of this place. I began to teach chemistry in 1855, by text books and lectures; have been engaged in teaching and studying chemistry since then; have been connected with Dickinson College for four years, since 1865. I pursued those studies for one and a half years at the University of Giesen, in Hesse Darmstadt, Germany, in the labratory of Prof. Liebig, under the instruction of Prof. Wills, the latter author of a text book on Analytical Chemistry, used extensively in this country and Europe. I heard the testimony of Dr. Aiken; if I remember aright he applied the iron and sulphur tests; he stated that he distilled the contents of the stomach with sulphuric acid, and obtained about four ounces of distillate. A portion of this he treated with caustic potash, then added a prota and sesqui salt of iron, and then a few drops of hydo-chloric acid. He stated if Prussic acid had been present in the distillate, Prussian blue would inevitably be produced. He stated in the examination in chief that a faint blue color was produced; in the cross examination he stated that this was not in itself conclusive. Upon such a statement from the chemist, I could scarcely state positively that Prussic acid was present; if not conclusive to him, it cannot be to me. In addition, this mixture will not necessarily show the presence of Prussic acid. There are fallacies connected with every test. If an insufficient quantity of hydro chloric acid were added, a precipitate would be produced of a dirty green color, or, according to some authorities, of a bluish color Admitting, however, that the whole test was properly made, it was still inconclusive. The next test, called the sulphur test, was made by exposing sulphide of ammonium to any vapors arising from the distillate before mentioned. It was then treated with per chloride of iron (the doctor may have used the term sesqui for per chloride of iron) a faint red coloration was produced, which would indicate the presence of Prussic acid in the distillate. In the absence, however, of any confirmatory test, I could not, from the statement made, as a chemist, infer the presence of Prussic acid, because of the extreme delicacy of this test, leaving out of account any fallacy there may have been in testing. By this statement I mean to say that, however clear it may appear to Dr. Aiken's mind, I would be unwilling to accept the fact for an inference of my own In addition, in all cases in which the contents of a stomach are to be examined for Prussic acid, an effort should be made to ascertain whether there may not be present in the stomach substances, harmless in themselves, which may produce Prussic acid in the subsequent chemical treatment. Such substances as ferro-cyanide of potassium, (or common name, yellow prussiate of potash,) or ferri-cyanide of pottassium, (or red prussiate of potash.) The first mentioned is an article mentioned in the dispensatory as a medicine. It is the substance used for the manufacture of Prussic acid by treating it with sulphuric acid, and distilling, as was done with the contents of this stomach. The presence, therefore, of Prussic acid in the distillate might only indicate the presence of this harmless compound in the stomach. There might be a trace of Prussic acid produced from a normal constituent of the saliva. There is present in the spittle a substance called sulpho-cyanide of soda. I would amend by saying, a compound of sulpho-cyanogen, and in consequence, the saliva or spittle, if distilled with a strong mineral acid, such as sulphuric, would give decided indication for Prussic acid. The absence of the silver test, after the iron test had given no conclusive reaction, and the sulphur test had given a faint indication, was a serious omission. According to most recent authorities, it is the most delicate of the three tests. Even had the reason assigned by Dr. Aiken for not using this test been correct, it would still have afforded a negative fact that would have been fatal to the previous tests. Or to explain. If nitrate of silver had been applied to a portion of the distillate, or vapor arising from the distillate had been allowed to act upon a drop of solution of nitrate of silver, and no positive evidence of the presence of Prussic acid been given, it would have proved as conclusively the absence of Prussic acid, and would have allowed us to infer that the faint trace obtained by the sulphur test was due to accidental and fallacious circumstances, such for example as accidental impurity of the re-agents, that is the chemicals or vessels employed. Hence I would conclude by saying that the reactions, obtained by Dr. Aiken, however satisfactory to himself, would not enable me, or permit me to say positively that Prussic acid was present in the contents of the stomach. There is an additional fact that if Prussic acid is obtained by means of the iron test and an immediate blue coloration is produced, I would look upon it as my duty, as examining chemist, to set aside the vessel containing the test until a precipitate of Prussian blue should be formed, which precipitate could be produced in open Court. Another point: there were four ounces of distillate, two ounces of which were used in testing for Prussic acid, a few drops of which would have answered for the silver test. It is not absolutely necessary to test a precipitate obtained by nitrate of silver, by the iron and sulphur tests to ascertain whether it was produced by Prussic acid. Chloride of silver and cyanide of silver might both be present; microscopic examination would show a crystaline form for cyanide of silver, and an amorphous, uncrystaline form for chloride of silver. Again, if a precipitate obtained by nitrate of silver contains chloride of silver, that fact will become apparent by placing it in (the precipitate) in the sunlight, when chloride of silver will acquire a violet tint or color, and the cyanide of silver would remain unchanged. The chloride and cyanide of silver are both white when first precipitated. As stated in all the books on the subject, light decomposes, and thus destroys Prussic acid.

Cross Examined.—All these are good in their way, and corroborative of each other. Can't say which is the best test. The silver is the most delicate, sulphur more delicate than the iron. Have seen Taylor's Medical Jurisprudence. If Dr. Aiken added only a few drops of hydro-chloric acid a fallacy may have been produced. Can't say that I have a reason for supposing that Dr. Aiken used too much potash for the quantity of acid.

No other substance in nature would have given these indications, *with the smell*, but Prussic acid. I do not know of any substance that would have produced the red color which Dr. Aiken procured but Prussic acid, except that the per-chloride of iron (the re-agent used,) has a yellowish redcolor itself, which might be mistaken for Prussic acid. A few drops with the distillate used would not have produced a perceptible color. The silver test would have been a more decisive test. Glenin's, Hand Book of Chemistry has the results of analysis of saliva. If there were any saliva in the stomach, treatment with sulphuric acid would produce Prussic acid. Hydrocyanic acid is not a gas, it is a liquid; a very volatile liquid. Nitrate of silver is a test in itself.

(A great deal of testimony in this cross examination is not reported because of its general unimportance.)

Counsel for the Commonwealth now notify the counsel for the defence that they will offer, as evidence in chief, after discovered testimony as to the purchase of Prussic acid by Doctor Schoeppe, at Harrisburg, shortly before the death of Miss Stennecke; or as rebutting evidence. Objected to by counsel for the defence.

After argument, testimony admitted.

C. E. MAGLAUGHLIN (*Steorn.*)—I saw witness yesterday afternoon that I now propose to offer. Yesterday noon after the adjournment of Court, I procured a subpoena from Mr. Bixler, clerk of the Court, I procured it yesterday or had it from Thursday for other witnesses I took it to Mr. Campbell Chief Burgess, directed him to go to Mr. Herron's drug store and ascertain when there, whether they had not sold Prussic acid to Dr Schoeppe immediately before Mrs Stennecke's death. That he should bring with him subpoened all the persons in the store, but that if he would send with him the person who he could be confidant could identify Dr. Schoeppe as the person who had procured the Prussic acid, and that he shoul bring any witness he can obtain by the evening train if possible, if they could not reach the carstobring them up by private conveyance. That if he found any witnesses he should telegraph to me as to his success. I received this telegram.

HARRISBURG, May 27 1869.

Mr. Herron sold it. He comes with me this evening. J. CAMPBELL.

After the evening train came in I saw Mr. Herron enter the door of the Court room and I walked down the aisle to meet him. I brought him up to the railing surrounding the Bar, and asked him if he recognized the Doctor, he looked at him, I pointed to the Dr. with his spectacles, he shook his head, and said I don't think that is the man. After Court adjourned met Herron going out of Court room he then told me that he believed he was the man but he would like to see him again. I requested him then, that he should be in front of the Court House this morning at the opening of the Court, that he could then see him with his hat on and then let me know whether he recognized him. I saw Mr. Herron; he then told me he was certain he was the man.

EVIDENCE FOR THE COMMONWEALTH.

DR. W. W. HERRON, *Sworn*:—I am a druggist. Do business in the Jones House Harrisburg. I saw Schoeppe In our store. I have an entry of the 23d of January. I know it was about that time because we were painting the store. He asked for an ounce of hydrocyanic acid diluted, I mean diluted Prussic acid. He got it. I charged him 30 cts and he objected to the price.

Cross-Examined. It was put in an ounce bottle with a glass stopper, a round bottle, the usual kind of paper that Lubin's extract. Don't know whose preparation of Prussic acid it was, the original label was on the bottle, ours was not. He got one bottle. There was no wrapper on it, I wrapped it up. They generally have a blue wrapper on, but we have them in our chemical case unwrapped, of course I would sell the unwrapped one first. They are blue bottles—not necessary to be corked, I can't say whether it had ever been open or not. I have no idea how long it had been standing on our shelves. "Prussic acid 30 cents, German physician," is the entry in my book. Sell Prussic acid to physicians, sold some yesterday morning before I came here. We sell a great deal of it, have a great many physicians who deal with us, who purchase it. Came up yesterday afternoon, evening train. Mr. Maglaughlin brought me to the Bar, pointed out to me the Dr. I shook my head, did not say what Mr. Maglaughlin said, could not see the Dr. well had but a side view, could not tell him without his hat on, that I would see him when he went out of the Court room: I did not make the remark Mr. Maglaughlin said—I think "I said I cannot tell." Saw the Dr. yesterday evening and saw him this morning with his hat on. It was the same kind of a hat. It was a hard silk hat. I saw him in the store and yesterday, never saw him before. I don't suppose the Dr. was in the store more than five or six minutes, but a few moments—Mr. Maglaughlin came to see me before the April Court about this matter. It was the month of March. I told him that I sold to a German physician, that of late we had sold several times, and that we had several German physicians as customers. I looked over the memorandum, with Mr. Maglaughlin and another gentlemen, to find entry, and did not find it, found it yesterday, looked in the same book, did not look fully, told him I could hunt it up. Got a letter from Wierman which made me look for memorandum—wrote dispatch to Maglaughlin, did not send it—called once at Maglaughlin's office wanted to go to the jail to identify the Doctor, Mr. Maglaughlin was not there. Have sold drugs a dozen times to Juniata German physician, don't known is name. I think he never bought Prussic acid from me, because no entry—this is the only entry I have of Prussic acid. Memorandum lies open to the public, and contains every item sold—from 1 cent in value to $50—lies on silver mounted show case—all items are included, if many, in brackets, sometimes name of purchaser is put sometimes not.

Re-in-Chief—I have no doubt that the Doctor, is the man that bought the Prussic acid.

EVIDENCE FOR DEFENCE, RESUMED.

DR. M. F. ROBINSON, *Sworn*:—Have been practising medicine 22 years—heard Dr. Conrad's testimony of *post mortem* examination. She might have died of insomnia, which would not have been revealed by the examination. The kidney is the only organ showing the pathological condition causing the disease.

Cross-Examined: This disease when terminating in death, is accompanied with symptoms. Symptoms are appearances before death. The pathological lesions which produce the symptoms of this disease may be connected with a contracted kidney.

Ques. Is not the contracted kidney, the granular kidney? *Ans.* I am not able to say positively.

Ques. Does not urea exist in the blood in all cases of contracted kidney and uremia?

Ans. Urea exists in the blood in health.

Ques. In what proportion does it exist.

Ans. I am not wise above what is written. I have never seen the proportion written. I do not know that urea exists in the blood in the proportion of 30 drops to the thousand. I may have seen it, but I did not charge my memory with it. Never read Dalton's Treatise on Physiology, (dated 1861.) Don't know that it exists in the proportion of 16 hundredths in the thousand. Until recently it has been a mooted question whether urea exists in the blood or whether it is the result of secretion of urine in the kidneys. The recent experiments of Hammond have settled that question in the majority of medical minds. Uremia is a blood poisoning, produced by the checking or any material lessening of the elimination of this substance, (urea) from the blood. The kidneys is both a secreting and excreting organ.

Q. Is not urea decomposed in the blood and exhaled from the lungs as ammoniacal gas.

A. I am not sure I am right in that manner, but that it produces its poisonous effects without undergoing decomposition.

I do not regard Bright's disease, and uremia as identical. Contracted kidney is one of the conditions of Bright's disease. Never held a *post mortem* for Bright's disease. Never held one in a case of death occuring from uremia. Our knowledge of uremia is but recent, I mean the whole medical profession. The disease until recently has been mistaken for apoplexy and in *post mortem* examinations for apoplexy, and where there were no lesions of the brain, it was called nervous apoplexy. It is now generally believed that, the cases called nervous apoplexy, were cases of uremic poison. I am not able to say what the effects upon the blood after death, would be from uremic poison.

DR. JACOB ZITZER, *sworn*—I have been a practicing physician about twenty-two years; I practiced eighteen years in this country, and the balance, three years, in the old country. I have in my experience seen cases of death from Prussic acid; about six or seven cases of those dying from Prussic acid, and three of them I had the chance to see the *post mortem* examination; was present when it was made. In reference to prussic acid, I would commence. When a person or a patient takes prussic acid that would fall in a disease, and then would fall in three stages. The first stage would be as soon as the poison is received into the stomach; it would cause a faintness, dizziness, loss of speech, a paralytic condition of the whole system, the face somewhat congested, the eyes brilliant, the pupil enlarged, irregular action in the heart, a beginning of shortness of breath, unable any more to speak. These would be generally the symptoms of the first stage of the intoxication from prussic acid, which stage will last from three to seven minutes. After the second stage commences, the physiognomy of the features of the face will turn to a kind of bluish, blowed up congestion, cyonantic condition; on both sides the exausted parts will project, that is the ends will project; the nervous system of the face becomes enlarged, the eyes become wild, quivering pretty much like in epilepsy, the breathing very hard, almost impossible to get sufficient air, and in the latter part of the second stage the breathing becomes wheezing and almost convulsive, the heart irregular and almost jumping, so that it can be seen almost through the clothes, slight heat over the body, trembling of the muscles. These would be the general symptoms of the second stage, lasting, from what I saw, from five to ten minutes. The third stage generally commences from changing the features from a bluish to a pale ashy color, a perspiration over the face, the eye sunk, loses a brilliant sight, becomes watery, the breathing spasmodic, almost impossible to get breath, the pulse from jumping becomes weariscome, irregular, until it finally has ceased circulating, the breath ceasing in a short convulsive expiration, the pupil of the eye fixed, cloudy, watery, sunk, the head dropping towards the breast, the whole process ending in about from twenty to thirty minutes, in the cases I saw. These were the external symptoms that I saw in poisoning from prussic acid.

In the *post mortem* examinations of those I saw where death was from prussic acid, from seven or eight days after death, the external appearance was not very plain, except a kind of a bluish discoloration about the neck. By exposing the brain, under the *pia-mater*, almost congestion of the blood, diffused on the top of the brain. By dissecting the brain, it showed an engorged condition of every part of the brain, and an effusion of a bloody, watery fluid. The bronchia was congested, dark red, the epithelium filled with a dark, bloody slime; the lung congested, so that each lobe of the lung showed an engorgement of blood; the æsophagus was, near the stomach, congested, the stomach the same, only the inside of the stomach had none of a blackish appearance. The liver didn't show much of a change. The rest of the organs in the abdomen were pale; the secretion and excretion organs were empty, and the spine showed no change. This is what I saw in three cases.

In reference to morphia: I saw one *post mortem*, two deaths in which I did not see the *post mortem*.

The symptoms that I observed were the stimulating effects of the opium, which lasted a short time, an hour or an hour and a half. When I found the patient delirious, somewhat wild, flighty, his eyes red and congested, watery, and the eyelids half shut; the speech stamering or broken, the pulse very frequent, skin hot, quick breathing, and a good deal through the nose, the tongue very dry, and a wheezing sound through the wind-pipe. The rest of the extremeties natural and warm; these were about what I would take for the first stage in an overdose of opium or any one of its compounds. Morphia the same. That condition I observed lasted five or six hours. Then his eye became dark, his face pale, his mouth sunk, his tongue and lower jaw drawn back, his tongue dry, a short wheezing sound in breathing, in inspiration; the expiration scarcely perceptible; by touching or shaking him he would fly up, scare up, but soon fell in a stupor again. The cheek and body in a heavy sweat, (this I would not like to say is a general symptom, as I used a good deal of camphor and other stimulents as an antidote;) the heart; the pulsation was very fast, irregular, spasmodic contraction of the muscles of the extremities, quick and quivering, unable to swallow—that, I thought, was about the second stage of the disease from intoxication. It lasted six or eight hours. After I found congestion was produced, the feature to commence to change to a kind of pale ash color, his eyes became watery, slimy, his lips drawn up, couldn't make any impression on his mind; his tongue drawn back and dry, his pulse irregular and wearisome, heart jumping, with a long interval; the exhalation of the breath very long, his inspiration interrupted, convulsive, his skin clammy, and the extremities cold. In that condition I left him, and he died about an hour afterwards. The third stage lasted about six or seven hours.

Post mortem after death from morphia. I was present at one. I state only the organs that were found abnormal. By exposing the brain, an effusion of blood was found between the small and the large brain. The brain itself was hard congested, by each incision the presence of coagulated blood, quantities of effused serum and blood between the ventricles of the brain, and particularly on the base of the brain. There was along the spine a slight discoloration of congestion, congestion of the lungs; a good many spots of effused blood between the lobes of the lungs, the intestines full of gas, melt and liver normal, bladder and urethra were full of urine. This was all. I heard the testimony of Dr. Conrad, of the *post mortem* of Miss Stennecke. It was not complete, because not all the organs of the body were examined. Secondly, I thought by opening of the skull, the *dura-mater* and the adjoining sinus was accidently opened by the saw, so that it couldn't be told where that blood that escaped in opening the skull had come from; and third, I would have paid some attention to the softening of that part of the brain spoken of. In opening the skull, the dura-mater ought to have been preserved, turned the attention to that softening of the brain; the examination of the spine, kidney, and, I think, the sexual organs, ought to have been examined. I think it absolutely essential that these organs should have been examined to determine the cause of death. I thought the blood ought to have been examined, to see whether it was blood or blood water; if blood water, it would become black in that length of time under the ground, from decomposition. Softening of the brain would not occur, unless something was the matter. The dark color of the blood would often result from decomposition. I heard Mrs. Horn's testimony.

Question. On the supposition that that testimony is true, what would you suppose to be the cause of Miss Stennecke's death?

Answer. The symptoms which she described, would make a person think, without taking the *post mortem*, as if she had died of apoplexy. Softening of the brain, or the encephala, matiola, of itself would be a sufficient cause of death. What disease would the condition of the brain, as described by Drs. Conrad and Ridgley in the *post mortem*, indicate as the cause of death? Ans.—It might indicate different diseases. For instance, the softening of the brain itself might produce death; the escaped blood, not knowing where it came, from if it had been confined in a certain place, would have indicated apoplexy.

From Mrs. Horn's testimony and the *post mortem*, as detailed by Drs. Conrad and Ridgley, what disease would be indicated as the cause of her death?

Ans. From that testimony and from that effused blood escaped in the skull at the time, by the opening of the skull and if that blood had been confined in a certain place it would indicate appoplexy.

Cross-Examined:—I mean softening of the brain before death. A part softened and the rest in its normal condition would indicate that softness arose from disease.—A skillful physician on a *post mortem* examination, could tell whether a softening of the brain occured during life or was caused by decomposition. First, chemically, Secondly, by the microscope, the nutrition of the part itself; Third, the pathologic, anatomic changes. Softening can be caused by the obstruction of a blood vessel which nourishes a certain lobe of the brain. Such a part would go sooner into decomposition than if it had been healthy. Then again it would be less able to resist a certain force of blood in circulation than if in its normal state.—It would depend on the anatomical construction of the different parts as to whether decomposition would commence equally in all the parts. The brain mass goes under the same rule as to decomposition.

Q. If different parts of the brain comprised of the same material, one part healthy and the other diseased at the time of death would it indicate any difference between the healthy and different parts in decomposition?

Answer. Of course it depends on the nature of the disease whether the diseased part would be longer decomposing.

If the whole brain was also decomposed it would indicate that decomposition had commenced at the same time. If the whole brain were soft the patient wouldn't last long. A part of the brain is hard, the pons variolii, the upper part is more soft. I have seen a body taken up after lying twelve or fourteen days. I have seen a body buried five days in which decomposition had not commenced. I have seen them after being there when decomposition had not taken place.

Re-Chief:—Where a poison was killed and thrown into a castle, six months after you could see where the injury was done to the brain.

Re-Cross-Examined:—I have seen cases of rapid decomposition, especially in warm weather.

Prof. T. G. WORMLEY, *sworn*:—I reside in Columbus, Ohio; am by profession a physician and chemist. I occupy the chair of Chemistry and Toxicology in Starling Medical College, Columbus, Ohio, and of Chemistry in the Capitol University in the same city. I have occupied the position in the latter Institution since 1851, in the former since 1855. Toxicology means science of poisons. From the year 1856 or 1857, until 1867, I devoted my attention almost exclusively to the effect and chemical properties and methods of detection of the principal poisons. I make it my object to supply myself with all systematic treatises upon the subject; and also with the leading journals relating to the subject as published in this country and in Europe. I have published a systematic treaty upon the subject the title of which is "Micro Chemistry of Poisons." (This is a copy of the book.)

Prussic or Hydrocyanic acid is a transparent, colorless, volatile liquid, composed of the elements carbon, nitrogen and hydrogen, and having a rather peculiar, characteristic odor. As found in the shops, it is in a state of mixture or solution with water, constituting a mixture containing, according to the U. S. pharmacoporid 2 per cent of the anhydrous acid, the pure Prussic acid, undiluted with water. The dilute acid, as found in the shops, is subject to considerable variation in regard to its strength among a number of samples examined, in the state in which they came from the hands of American manufacturers, none was found to contain 2 per cent of the pure acid, and one sample was found to contain not a trace of the acid. (Micro-Chemistry of Poisons. Page 168.) All these samples were of American manufacture.

In some instances the acid proves almost instantly fatal. I should say within a few minutes, without any marked symptoms, other than entire loss of sensation and consciousness. In others, there is quickly induced loss of sensation and motion; the face becomes livid; the jaws closed and fixed, the eyes prominent, open and glaring, pupils dilated, froth frequently tinged with blood, escapes from the mouth; the finger nails and frequently the fingers and toes contracted, the pulse is small or entirely absent, the respiration entirely arrested or convulsive, with comparatively long intervals between the acts of respiration. In a number of cases involuntary evacuations have been observed. If life is prolonged for some minutes, there is generally violent convulsions. In regard to the time of death from Prussic acid, death takes place usually within fifteen or twenty minutes after the taking of the poison. It has occured within two minutes. The longest period in any well authenticated case, during which the patient survived, is five hours. This case is cited by Prof. Casper of the University of Berlin. It was in a case of poisoning by cherry laurel water, (Page 88 Volume 2d Casper's Forensic Medicine.) In this case there were most violent convulsions. I believe it is generally admitted that Casper has had, on account of his official position, the largest personal observation in cases of poisoning. The next case in regard to time is that known as the Wakefield case, in which death occurred in three hours. It is recorded in Taylor on Poisons, London edition, 1859, pages 696 and 664.—The next case is one in which the acid proved fatal in about one hour and ten minutes in St. George's Hospital Reports, 1868, London, page 220, both in this case and the Wakefield case the poison was oil of bitter almonds, and in the last case cited, there were violent convulsions and dilated pupils.

The longest case in which Prussic acid as such, was used, so far as I can find recorded is the Marcooly case, in which death occurred in about one hour. (Taylor on poisons, page 639.) In another case death next occurred in about fifty five minutes, the is the one of the seven Parisian epileptics in which death occurred in forty five minutes. There is a case cited by Beecker, in which Prussic acid was taken, and death did not occur for thirty six hours. Beeker himself however attributed the death to the consequences of bleeding and the (want of diligent attention). This case is referred to in Taylor on Poisons, 664. Taylor does not consider it one of poison by Prussic acid, although it is collated under the head of poisons. I know of no other systematic writer on the subject who cites this Beeker case, or a case of poison by Prussic acid.

In regard to the symptoms by Prussic acid, as well as the *post mortem* appearances, I would refer the Court more especially to Tardieu's Medico-legal and clinical treatise upon Poisons. Paris, 1867. This is a treatise upon this subject from an entirely new stand point, being confined chiefly to the medico-legal relations of the symptoms and *post mortem* appearances, the treatise being not exactly on poisons, but rather on the subject of poisoning. I would ask attention to the celebrated Pralet case, which was a case of apoplexy, and in which there was a conviction by poisoning from Prussic acid, based upon an undefinedod or, present in the body at the time the analysis was made, the body having been disinterrod six or seven days after death; and also, upon some colorations observed during the chemical analysis. An abstract of the case and the reports made to the court, will be found in Christison on poisons 518, 1845, and Taylor on poisons, 1859, 657, who mentions it as Pralet's case. The entire history of the case and the facts upon which the person charged with the poisoning was finally acquitted will be found in Orfila's treatise upon Toxicology, Paris, 1852, volume 2, page 364, and the epitome found in Christoson and Taylor, gives the principal facts in the case, except the grounds of the chemical evidence. These principal facts are (without here read from Christoson, page 518). I might refer here to the principal elements in the chemical analysis (passed for the present).

Post mortem appearances. The body usually exhales the odor of Prussic acid, the face livid, the body rigid, and frothy matter is usually found around the mouth, these are the principal external appearances. The blood vessels of the brain and the lungs, are usually engorged, the stomach is sometimes reddened, the liver spleen and sometimes the kidneys are congested. The latter is so common that Casper states page 63, vol. 2. that "Congestion of the liver kidneys and inferior cava has been always present." The veinous system throughout the body is engorged with blood, while the arteries are empty. The blood throughout the body is usually liquid and of a dark color. The brain, and internal organs, and more especially the blood exhaless the odor of Prussic acid, In regard to the *post mortem* appearances, I would refer more especially to Tardieu, 1036; also, to Taylor on poisons, 649, (witness proposes to give translation from Tardieu,) overruled by court as incompetent for witness to give such translation as an expert to be read to jury. (Counsel may plead before Jury in argument, with regard to the import of the staring condition of the eye continuing so long after death.) I would refer to Christison, page 595. The staring expression of the eye, is so marked, so peculiar, that it has been claimed by some persons to furnish proof of the evidence of death from Prussic acid. This condition has been observed in death from other causes.

Tardieu is considered one of the greatest living authorities on the subject, his personal experience being perhaps only second to the late Casper. I mean "on the subject of poisoning," the symptoms and post mortem appearances.

The dark colored fluid blood is the condition in which it is generally found, in cases of sudden death; it is not peculiar to death from Prussic acid. It has been claimed in death from Prussic acid, that the blood had rather a peculiar bluish appearance. In cases of sudden death the blood is usually found in a fluid condition, whether from Prussic acid or not. Can not designate any time during which this fluid condition is continued.

CHEMICAL ANALYSIS.

I have heard Prof. Aiken's testimony. For the detection of Prussic acid, we have several tests. The most recent is that proposed by Schroeter, which depends upon a blue color produced on paper, or impregnated to paper by prussic acid, the paper having previously been moistened with a solution of guiacum and sulphate of copper. This test has very recently been proposed, and is said to be exceedingly delicate. As yet, however, I have had no practical experience as to the real delicacy of the test, I have not applied to which it may be subject.

The silver test consists in the production of a white precipitate of cyanide of silver, when a solution of nitrate of silver is added to a solution containing hydrocyanic acid. The reagent will also produce white precipitates, when added to solutions containing chlorine, (you might substitute solutions containing hydrocloric acid, and chlorine) phosphates, carbonates, or any one of several other salts. The cyanide of silver is readily distinguished from all these white precipitates, excepting that from hydrocloric acid, in that they are readily soluble in cold diluted nitric acid The cyanide of silver, when present in notable quantity, may be distinguished from the chloride of silver, in that it is insoluble in ammonia. A very small quantity of cyanide of silver might speedily disappear under the action of ammonia. The chloride and cyanide of silver may also be distinguished, by washing, and drying the precipitate and heating it in a tube, having a very contracted, or capillary neck, when the cyanide of silver would give off, cyanogen gas, which if ignited will burn with a rose-colored flame. This test when applied to hydrocyanic acid in solution, will produce a visible reaction, if the solution contains even no more than the one hundred thousand part of its weight of the poison, and this result may be observed, if only one drop of the solution be experimented upon. The method of distinguishing between the cyanide and the chloride of silver, by heating, and observing whether an inflammable gas is produced, will with care, serve to indicate the one five hundred part of a grain of hydrocyanic (prussic) acid. The silver test for the detection of the vapor of prussic acid, I shall now refer to. When a solution of muriate of silver is exposed to the vapor of prussic acid, the liquid speedily acquired a white film of the cyanide of silver, which is crystaline in its form, as thus produced. Although there are several other vapors, such as chlorine, iodine, bromine, that may produce under the same conditions a white, or whitish film or deposit, under the action of the test, that resulting from all of these latter, is destitute of crystaline form, *i. e.* amorphous. The crystaline form, therefore serves to distinguish the action of the vapor of prussic acid. from that of all other volatile substances. In this manner, *i. e.* by the test applied in this manner, the vapor from one grain of liquid, containing only the one hundred thousandth part of a grain, of prussic acid, will yield under the microscope, as satisfactory evidence of prussic acid as any other quantity of poison, however large. I mean, it would be as satisfactory evidence of the poison, as a few grains of wheat would be of its character, as a bushel would be. (Plate 4 Figure 2nd. Wormley on Poisons, represents the action of the one one hundreth thousandth part of the grain, as seen through the microscope under an amplification of one hundred and twenty five diameters.) As there is some discrepancy in the books as to the value of the nitrate of silver tests, I might state, that although it has been for a long time known, that when a solution of nitrato of silver was exposed to the action of the vapor of Prussic acid, a white film or deposit was formed, yet so far as I know, that this deposit was crystaline in its nature, was not observed until about 1867. The more fact that it was crystaline is stated by Taylor in his work on Poisons, edition of 1859. In his work on the Practice and Principals of Medical Jurisprudence, English edition of 1865, he enters into some detail in regard to the test. Dr. Guy of King's College London, in the 3d and last edition of his Forensic Medicine, 1868, also mentions the fact in connection with this test. With these exceptions, I believe there is no other systematic work on the subject of poisons, excepting my own, that treats of this method of the application of the test. All the facts relating to this test, as detailed in my own work, are the results of a long series of oft repeated experiments, by myself.

I will next consider the iron test. This depends upon the production of Prussian blue; when a solution of Prussic acid is treated with caustic potash, and a solution of proto and sesqui-chloride of iron, hydrocloric acid being then added, to redissolve the precipitated oxide of iron. The only precaution necessary in the application of this test, is that a sufficient quantity of hydrocloric acid be added, to redissolve these oxides of the iron, as a precipitate from these many have a blue color, even in the absence of the production of Prussian blue. I would refer to my own work, page 181, on this point. The Paussian blue, produced from very dilute solutions of Prussic acid, has at first a greenish color, but finally, after many hours, it will subside as a blue deposit, even if only the twenty-five thousandth part of a grain of hydrocyanic acid be present in one grain of liquid. I might say that this Prussian blue is very permanent, and can be preserved for some length of time, as has been done in medico-legal investigations.

The sulphur test. This consists in treating the Prussic acid solution with a solution of yellow sulphuret of ammonium, when sulpho-cyanido of ammonia will be produced, which, after driving off the excess of sulphur by a moderate heat, will strike, or produce, a deep blood red color when treated with the per-salt of iron. From very dilute solutions, this test produces only a faint red, but even one drop, containing the ten thousandth part of a grain of Prussic acid, will, under the action of the test, yield an orange-red coloration. This test may also be applied for the detection of the vapor of Prussic acid. The fallacies attending this test are meconic acid, and alkaline acatates, the former of which will also strike a blood red color, under the action of the test; whilst the latter may produce a coloration, which might easily be confounded with that produced with very dilute solutions of Prussic acid. It, therefore, becomes necessary in all cases to decide to which of these substances the red coloration is due. If it be due to hydrocyanic acid, it would be quickly discharged by a solution of corrosive sublimate, whilst if due to the solution of meconic acid it would undergo no change under the action of this reagent. Again, the coloration due to hydrocyanic acid, resists the action of diluted hydrochloric acid, whilst that due to meconic acid, and the alkaline acetates is quickly discharged by hydrochloric acid. The books state that this test, when applied to the detection of the vapor of hydrocyanic acid, is free from any fallacies. That is true, upon the assumption that the reagents are free from hydrochloric acid in any form, and from meconic acid and alkaline acetates, which can only, however, be established by direct proof. In this case, so far as I understand the evidence, there has been no proof of the purity of the reagents, and vessels employed. I would further remark, as is well known, the sulphuret of ammonium, if exposed to the vapor of hydrocyanic acid in a laboratory, will speedily absorb the poison, with the production of sulpho-cyanide of ammonia, the substance in question. I would ask attention, with regard to the purity of reagents, to my work, page 59. In the form of vapor, there would be a marked reaction, with the one ten thousandth part of a grain of Prussic acid; in one grain of water, and in a liquid form, with the one twenty-five thousandth part of a grain. One grain of water is equivalent to one drop.

For the purpose of detecting the presence of free hydrocyanic acid, the subject under examination should be placed in a wide mouthed bottle, or some similar vessel, and an inverted watch glass containing a drop of the solution of nitrate of silver, or of potash, if intended to apply the iron test; or of sulphurette of ammonium, if intended to apply the sulphur test, and the glass be allowed to remain for some minutes, or longer, it then being removed and examined for a white precipitate, or by the iron or sulphur tests to ascertain whether the poison is present. If either of these tests should now indicate the presence of the poison it would follow that it, the poison existed in its free state, in the substance submitted to examination, or possibly existed in the state of an alkaline cyanide, for other may be formed. Should this method fail to reveal the presence of the poison, the suspected substance might be introduced into a retort, taking care, however, not to add sulphuric acid, and then subjected to distillation at a moderate temperature. After the distillation has progressed until a portion of the fluid has passed over, the distillate, which should be received into a receiver known to be pure or free from any foreign substance may then be examined by the ordinary test. If the poison should now be detected in the distillate it would indicate that it existed in its free state, or possibly in the form of an alkaline cyanide, in the substance submitted to examination. Should sulphuric acid be employed in the distillation, then hydrocyanic acid would appear in the distillate, whether it existed in its free state in the substance submitted to distillation, or as an alkaline cyanide, ferro-cyanide, or as a sulpho-cyanide. This method of procedure would evolve the poison, whether it existed either in its free state, or that of a simple cyanide, or a ferro-cyanide, or as a sulpho-cyanide. By a free state I mean in the state we find it in the shops. The alkaline cyanides are about equally poisonous, with free Prussic acid. Ferro-cyanide is destitute, or nearly so, of poisonous properties, and is used medicinally. The sulpho-cyanides are either inert, or have no very active properties. From what has been stated, therefore, if the distillation had taken place under the action of sulphuric acid, and even if hydrocyanic acid was found in the distillate, it would be impossible in a chemical point of view, to state that that acid, or poison, existed, as such, in the substance submitted to examination. With regard to the sulpho-cyanides, one of them, viz: the sulpho-cyanide of potassium, which would evolve Prussic acid as already stated, exists normally in human saliva, which not unfrequently finds its way, in a very notable quantity, into the stomach. The quantity of the sulpho-cyanide of potassium in the saliva is subject to considerable variation. The smallest quantity that has been discovered is known to be in the proportion of four thousandths of one per cent., the maximum about one-tenth of one per cent. In other words it seems to form to from one one-thousandth to one twenty-five-thousandth part, by weight, of the saliva in its natural state It is true that sulpho-cyanide of potassium does not contain its own weight of Prussic acid. Thus assuming the constitution of sulpho-cyanide of potassium, as stated by the most or all observers, to be composed of one equivalent of potassium, two of sulphur, two of carbon, and one of nitrogen; then 97 parts of the salt would be equivalent to 27 parts of pure Prussic acid. It is now universally admitted that sulpho-cyanide of potassium is one of the constituents of human saliva I refer to Lehman's Physiological Chemistry, or Gmelin's Chemistry, and Taylor on Poisons, 633. That the saliva passes into the stomach I believe is not questioned. Some of the most striking experiments upon this subject are those of Pereira's, vol. 2, 1033, 1854, Materia Medica and Therapeutics. It has been already stated that per-chloride of Iron, strikes a red color with meconic acid, and Dr. Christison held this red coloration was sufficiently characteristic to prove the presence of that substance, viz: Meconic acid. Professor Pereira contended, on the other hand, that the production of the red coloration, was *not* sufficient in itself to prove the presence of this substance—Meconic acid; since the sulpho-cyanides would also produce a red coloration under the action of the iron reagent and, moreover, that one of these Sulpho-cyanides, namely, the Sulpho-cyanide of Potassium, was frequently found in the contents of the stomach. To substantiate his position he examined a number of bodies in the dissecting room, and his results were that in a large majority of cases he found that the saliva and the contents of the stomach would strike a red color, under the action of the Persalt of Iron. He states "the reaction is distinct and unequivically." In regard to the fact, whether Ferro-cyanides and Sulpho-cyanides will yield Prussic acid in the distillate when distilled with diluted sulphuric acid, I would refer to my work, page 189, where the subject is discussed at considerable length; and, also, to Taylor on poisons, page 680, at bottom of page, where he sets forth, that if the poison be found in the distill