THE STORY OF THE FIRST ROENTGEN EVIDENCE

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IT IS my intention to present to you a description of the principals and to some extent the scene in the courtroom where the first X-ray plate was introduced as evidence. Try to visualize my description of a courtroom well filled with prominent people in an action for alleged malpractice in the treatment of a fractured femur against a surgeon of national reputation. This surgeon was, and still is, eminent. He was the first to do an appendectomy in this country; the first to accomplish an anastomosis of the spinal accessory to the facial and descending hypoglossal nerves; a man who has simplified many of our extensive surgical procedures; one of the founders of the American College of Surgeons and the Western Surgical Association, and a member of the Board of Governors of the College of Surgeons.

Defending this suit were a United States Senator, former judges and other attorneys with distinguished records, known throughout this country. The suit was brought April 14, 1896, by one James Smith, a poor boy who was reading law and doing odd jobs to pay his expenses. He was injured in a fall from a ladder while trimming some trees, and after some time he consulted the distinguished surgeon, who made no attempt at immobilization of the thigh but advised exercise of various kinds as though treating a contusion. Prosecuting this suit for James Smith, plaintiff, were Ben B. Lindsey, a young attorney in his early twenty's, and his associate, Fred W. Parks. We have all come to know the name of Ben B. Lindsey as the founder of the Denver Court of Domestic Relations—otherwise known as the Denver Juvenile Court. It is remarkable, too, that Mr. Parks later became the youngest Senator in this State and had a varied and interesting political career.

The docket number of this case is 24,159 in the District Court of Arapahoe County, now the District Court of Denver, Colorado. At that time there was only one higher court in Colorado, the Appellate Court. On the day in question, Thursday, December 2, 1896, there sat upon the bench Judge Owen E. Le Fevre, a man who had made a considerable fortune in mining, who had been a lawyer whom every one trusted, who loved horses, sports, and his fellow-men—Judge Le Fevre, large of build and short in stature, with a very large head and a mass of snow-white hair, a closely clipped white mustache, and exceedingly pink face.

The young attorneys, Lindsey and Parks, qualified one H. H. Buckwalter as an expert in photography and in the use of roentgen rays, for he had been making X-ray shadowgraphs for the past eight months for his own amusement and that of his friends. He, with Dr. C. E. Tennant, of Denver, had become acquainted with Roentgen's work and, after similar experiments, agreed to attempt to take a picture of the hip of James Smith. Plates were made November 7, 11, 21, and 28, 1896. The most satisfactory one required an exposure of eighty minutes (personal communication from Dr. Tennant).

Judge Lindsey says that he had been in personal communication with judges in the East who had refused to accept X-ray plates as evidence, and that one of them had stated to him that he had sustained an objection to offer the X-ray plate in evidence "because," said he, "there is no proof that such a thing is possible. It is like offering the photograph of a ghost," continued the

judge, in his opinion, "when there is no proof that there is any such thing as a ghost."

In order to convey the idea of radiographic shadows to the judge and jury, Buckwalter, Lindsey, and Parks contrived a shadow box by means of a box with a small hole at one end through which illumination came from a lighted candle casting a shadow upon a screen at the opposite end of the box. They first showed the shadow of a hand. This was viewed by the jury and then an X-ray shadowgraph of a hand was shown. X-rays of other objects, such as small wheels of a clock, etc., were shown to the judge and jury. Next a normal femur was shown, its shadow being projected onto the screen by the light of the candle. Then the roentgen shadowgraph of such a femur was shown, and, finally, there was shown the X-ray plate taken of James Smith's left femur in the region of the hip joint. This radiograph showed that the head of the bone was not in normal relation to the great trochanter and shaft, and it was proposed by Lindsey and Parks that this radiograph, "shadow picture," or "roentgen picture," as it was called, be submitted to the jury as evidence that there had been a fracture of the femur in the region of the great trochanter, with impaction of the fragments.

The late United States Senator from Colorado, Charles J. Hughes, who was considered the most brilliant lawyer Denver ever had, argued for the defense for more than three hours against the admission of such evidence, stating that "X-ray photographs" are not admissible under the law, and past decisions of the courts bore this out. He contended, furthermore, that even should it be admitted that this was a photograph of James Smith's femur, it could not be used as competent testimony under the broad principle of the law upon the matter of photographs as testimony, that witnesses must testify to having seen the object which has been photographed and to having identified the photograph as a good likeness of the object—then only may any photograph be admitted as evidence. This argument for the defense had taken the entire afternoon and Judge Le Fevre informed the attorneys that he would rule the following morning on the matter of the several X-ray plates taken November 7, 11, 21, and 28, 1896, purporting to show the deformity of James Smith's femur.

There was a large crowd in the courtroom when Court convened at 9 o'clock the next morning, for the papers had printed the story of how the X-ray equipment and Crookes' tube had been produced in the courtroom and explained to the jury, and that actual X-ray photographs of the bones in the human body had been shown openly in court. This paraphernalia had made a profound impression on the newspaper men who published the whole story prominently in the morning papers.

In telling of this Judge Lindsey states: "The electrical apparatus, batteries, Crookes' tube, etc., were all in the courtroom. We offered to show the jury the bones in their hands, which created such terrific excitement about the courthouse that extra bailiffs were called in to keep the court in order during the argument. The excitement was intense, the 'gallery' all on my side, restrained from breaking into applause on several occasions because of their anxiety to have this 'miracle' demonstrated and actually recognized by a court."

The following is a verbatim copy of Judge Owen Le Fevre's opinion on the exhibits, consisting of four X-ray plates, as handed down (*Denver Republican,* Thursday morning, December 2, 1896):

The defendant's counsel objected to the admission in evidence of exhibits, the same being photographs produced by means of the X-ray process, on the ground that, being photographs

of an object unseen by the human eye, there is no evidence that the photograph accurately portrays and represents the object so photographed. This rule of law is well settled by a long line of authorities and we do not dissent therefrom as applied to photographs which may be seen by the human eye. The reason of this salutary rule is so apparent to the profession that as a rule of evidence we will not discuss it.

We, however, have been presented with a photograph taken by means of a new scientific discovery, the same being acknowledged in the arts and in science. It knocks for admission at the temple of learning; what shall we do or say? Close fast the doors or open wide the portals?

These photographs are offered in evidence to show the present condition of the head and neck of the femur bone, which is entirely hidden from the eye of the surgeon. Nature has surrounded it with tissues for its protection and there it is hidden; it cannot by any possibility be removed nor exposed that it may be compared with its shadow as developed by means of this new scientific process.

In addition to these exhibits in evidence, we have nothing to do or say as to what they purport to represent; that will, without doubt, be explained by eminent surgeons. These exhibits are only pictures or maps to be used in explanation of a present condition, and therefore are secondary evidence, and not primary. They may be shown to the jury as illustrating or making clear the testimony of experts.

The law is the acme of learning throughout all ages. It is the essence of wisdom, reason, and experience. Learned priests have interpreted the law, have classified reasons for certain opinions which, in time, have become precedents, and these ordinarily guide and control especially trial courts. We must not, however, hedge ourselves round about with rule, precept, and precedent until we can advance no farther; our field must ever grow, as trade, the arts, and science seek to enter it.

During the last decade, at least, no science has made such mighty strides forward as surgery. It is eminently a scientific profession, alike interesting to the learned and unlearned. It makes use of all science and learning. It has been of inestimable service to mankind. It must not be said of the law that it is wedded to precedent; that it will not lend a helping hand. Rather, let the courts throw open the door to all well considered scientific discoveries. Modern science has made it possible to look beneath the tissues of the human body, and has aided surgery in telling of the hidden mysteries. We believe it to be our duty in this case to be the first, if you please to so consider it, in admitting in evidence a process known and acknowledged as a determinate science. The exhibits will be admitted in evidence

It is my pleasure to acknowledge the kind offices of Judge Ben B. Lindsey, the Honorable Fred W. Parks, Dr. W. W. Grant, Dr. C. E. Tennant, and Mr. Cornelius Westervelt for the data incorporated in this paper.

DISCUSSION

DR. I. S. TROSTLER (Chicago): Dr. Withers' paper is of great interest because of its historic value. It gives in detailed particulars what is surely the first instance in the United States, if not in the world, wherein roentgenograms were introduced as evidence before a court of justice. This history of our work has been most interesting to me, and, while I knew something of this Colorado case, I did not know the details and am very glad that Dr. Withers gave them to us in manner and form as he has done.

Radiological history is being written every day, but much more of the record of events which transpired thirty or thirty-five years ago should have been written at the time. I have found such records much in demand, having, during the past month, had numerous requests for reprints of a brief historic outline of some interesting events in radiology which I presented before the Section on Radiology at the 1930 meeting of the Illinois State Medical So-

ciety and which was published in the *Illinois Medical Journal* (November, 1930).

In Dr. Francis Williams' monumental work on "The Roentgen Rays in Medicine and Surgery," the first edition of which was published in 1901 (2d edition in 1902, only five months later), these facts were not recorded. This apparently well-informed author said: "There is, I think, no question but that radiographs will eventually be admitted as evidence by the courts, and they can make some doubtful points perfectly clear."

In the December, 1903, issue of the *Brooklyn Medical Journal,* Hon. W. W. Goodrich, Chief Justice of the Appellate Division of the Supreme Court of the State of New York, mentions a summary of the case described by Dr. Withers, which was published in the *Chicago Legal News.*

Probably one of the most celebrated cases in the United States (although not the first) in regard to the admission of roentgenograms as evidence is that of Bruce *vs.* Beall (99 Tenn. 303), which was decided on Sept. 30, 1897. Judge Beard, who wrote the decision for the Supreme Court of Tennessee, said: "In the progress of the trial, one, Dr. Gattman, was introduced as a witness, and he was permitted to submit to the jury an X-ray photograph taken by him, showing the overlapping bones of one of the plaintiff's legs, at a point where it was broken by this fall. This was objected to by the defendant's counsel. This picture was taken by the witness, who was a physician and a surgeon, not only familiar with fractures, but with the new and interesting process by which this particular impression was secured. He testified that this photograph actually represented the condition of the leg at the point of the fracture in question, and, as a fact, that by the aid of X-rays he was enabled to see the broken and overlapping bones with his own eyes, exactly as if, stripped of the skin and tissues, they were uncovered to the sight. We might, if we desired, rest our conclusion on the general character of the exception taken to this testimony, but we prefer to place it on the ground that, verified as was this picture, it was altogether competent for the purpose for which it was offered. New as this process is, experiments made by scientific men, as shown by the record, have demonstrated its power to reveal to the natural eye the entire structure of the human body, and that its various parts can be photographed as its exterior surface has been and now is."

In the early years of roentgenography, there were quite a number of decisions against the admission of roentgenograms as evidence. Some of these were in Massachusetts, New York, Ohio and elsewhere, but soon the light of sense and justice prevailed and roentgenograms were admitted.

April 16, 1920, I presented a paper entitled, "An Important Supreme Court Decision" before the Chicago Medical Society, which was published in the *Illinois Medical Journal* (August, 1920), wherein I discussed a decision by the Illinois Supreme Court relative to a case wherein roentgenograms of a skull were submitted by a dentist who made them. The Court said:

"Some witness must be able to testify that the picture offered in evidence shows accurately what the witness saw when he looked into the body with the fluoroscope *or* he must be able to say that he is skilled in the use of the X-ray machine and in taking and developing X-ray pictures and that he took the picture offered in evidence with the body in a certain position (describing it) with a machine which he knew to be in good working condition and accurate, and that from his experience he was able to say that the picture produced by the machine was an accurate picture of the internal condition of the body." The judgment for the plaintiff in this case (Roscoe Stevens *vs.* The Illinois Central Railroad Co.) was reversed because the dentist did not and could not qualify properly according to the foregoing requirements.

In that paper I said: "Here is a decision from our own Supreme Court, which verifies and backs up what radiologists have been trying for a long time to impress upon those referring X-ray work—that expert radiol-

ogists, and only graduates in medicine who can qualify as such, should make radiographic examinations."

I owe you an apology for reading you a lesson in the course of a discussion of a fine historic paper such as Dr. Withers has presented, but I cannot help making a practical application of what is an extremely interesting and valuable contribution to the literature of radiology.

The Legal Aspects of X-ray. S. W. Donaldson. Jour. Michigan St. Med. Soc., October, 1930, XXIX, 700.

The legal aspects of the X-ray are more or less confined to three main divisions, namely: (1) Liability arising out of the use of the X-ray, either for diagnostic or therapeutic purposes; (2) liability arising out of failure to use the X-ray, and (3) the X-ray films as evidence. The State and Federal rule regarding physicians in general is as follows: "A physician is bound to bestow such reasonable and ordinary care, skill, and diligence as physicians and surgeons in the same neighborhood, in the same general line of practice, ordinarily have and exercise in such cases." "In the case of a specialist, the standard would be ordinarily that possessed by practitioners devoting special attention and study to the same branch in similar localities, having regard to the present state of medical science."

Most malpractice cases fall under the head of negligence, but there are three other sources of liability which must be remembered: *(a)* Cases in which the operator guarantees no harm; *(b)* the fact that the X-ray is inherently dangerous, and *(c)* the danger of electrocution from high tension current.

The insurance companies carrying malpractice insurance now have a clause in their policies stating that they are not liable for suits brought about by damages after the X-ray has been used for therapeutic purposes. In some instances, the presence of an X-ray burn has been satisfactory evidence that negligence did exist, the argument evidently being that no burn will result from proper equipment properly used, but generally this rule of "*res ipsa loquitur*" does not constitute evidence that negligence did exist. Failure to use the X-ray has been the basis of several suits, and the general principles of the practice in the community usually govern in such suits. With regard to radiographs as evidence, the courts have apparently transferred bodily the rules relative to photographs, and the general tendency is to refer to them as secondary evidence. Undoubtedly there has been a great abuse of the X-ray in the court room and incompetent evidence has been allowed, due to the fact that unskilled men have misinterpreted the findings disclosed. Some courts have given the proper ruling in this connection, one stating as follows: "I do not think the doctrine that an ordinary photograph is the best evidence of what it contains, should be applied to the X-ray films. They constitute an exception to the rule concerning ordinary documents and photographs, for the X-ray films are not the best evidence to laymen of what they contain. The opinion of the expert is the best evidence of what they contain—the only evidence."

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