"A Shadow in Court"—The Sequel

By William F. Rigge, S. J.

ON February 4th of last year there appeared in this journal an article under the caption "A Shadow in Court." It instanced a case in which the liberty of an accused man hung upon the accuracy with which an astronomer could determine from the position of a shadow the exact time at which a photograph had been taken. As the account was written immediately after the first trial, the subsequent history of the case is not without interest. A brief recapitulation of the facts will obviate the necessity of referring to the original number. E was arraigned on the charge of having placed with malicious intent a suitcase containing dynamite upon D's porch between 2 and 3 o'clock on the afternoon of Sunday, May 22, 1910. The State produced only two witnesses, girls about 16 years of age, who stated that while walking in the neighborhood shortly before three o'clock, they saw a man answering E's description carrying such a suitcase. The attorney for the defense found upon investigation that the girls at the time were coming from a church a mile away. They had attended services there, and had posed for their photographs twice in front of the building. A prominent shadow in one of the pictures gave the attorney the idea of consulting an astronomer in the hope of finding from the position of this shadow the time at which the exposure had been made. The astronomer testified that the time was within one minute of twenty-one and a half minutes after three o'clock. In that case the girls could not possibly have seen the accused at the place and time they averred. This testimony served to split the jury.

At the second trial substantially the same testimony was advanced as at the first. The attorney for the prosecution, an expert criminal lawyer, realized that his only hope of success lay in invalidating the evidence advanced in the name of science. For this purpose he belittled the calculations and predictions of scientific men generally, and by his sarcasm and witticisms kept the jury in continuous laughter. The unanimous verdict of "Guilty" drew a sentence of fifteen years in the penitentiary.

The defense then appealed to the Supreme Court of the State. While the sifting of the evidence was in progress, the first anniversary of the taking of the photograph occurred, and it gave the expert an opportunity of verifying his findings. The time he had assigned was in error only a quarter of a minute.

Some months later the Supreme Court decided that the accused had been convicted upon insufficient evidence. In preparing for a third trial the prosecution called upon G. D. Swezey, professor of astronomy at the University of Nebraska, to remeasure the position of the shadow and recompute the time. Prof. Swezey, narrating the event at a public meeting of the Nebraska Academy of Science, held in Lincoln, on May 3d last, said that he studiously refrained from consulting or even referring to any of the former measurements or findings until he had completed his own calculations. The outcome was that he obtained a difference of only twenty-nine seconds, thus falling decidedly within the one minute that the defense had allowed as a probable error. The State then abandoned the prosecution.

On May 22d last, the second anniversary, the shadow was again on the same spot it covered at the instant the original photograph was taken. It will be there each anniversary as long as the building stands and the point that cast the shadow, as well as the wall upon which it fell, remain in their original position.

Note that in the first and third pictures the left corner of the shadow is exactly in the middle of a weather board, and that it is below that spot in the second picture and as much above it in the fourth. The computed time, therefore, was certainly correct to the minute, and probably so even within a few seconds.

Resuscitation from Electrical Shock

By T. Commerford Martin

OF late years, the increased knowledge of electrical phenomena and the riper experience in handling electrical energy, have done much to lessen the number of fatal accidents from electrical shock. On the other hand, the extended introduction of electricity into the arts and industries, the establishment of numerous circuits of high voltage for transmission and distribution purposes, and in general

the preference given to the alternating current for a wide variety of work on account of its flexible use over large areas, have brought a much higher degree of risk than obtained under the old regime of direct current of relatively low potential. The net result has been an apparent swelling of the death roll to an abnormal extent, although in proportion to the universalized employment of electricity, the percentage of shock and fatality has doubtless fallen considerably. There are no exact statistics available on this important subject, but in view of the part that electricity plays in modern life, such data might well be increased in some of the inquiries of the United States Bureau of the

Census. In 1895, when the present writer was one of its editors, the *Electrical World*, impressed with the necessity for popular instruction on the subject, issued in broad sheet form a chart of instructions to be followed in cases of apparent death from electrical shock; and a revised version of these rules was issued by the same journal in 1902. Without question, the use of these rules for securing resuscitation was successful in a great many instances; and the demand for the charts, circulated gratuitously, became so great, no one can now say how many thousands were printed. They are to this day a prominent feature on the walls of electric power plants throughout the world. It happened, however, that this chart was based on the Sylvester method, directing that the victim of the shock should be laid on his back, and his chest expanded and compressed by drawing his arms forward and then pushing them back against his ribs. Serious doubt arose in the course of time as to the real virtue of this method, and meanwhile the Schäfer method attracted attention as probably superior in effectiveness. It consists simply in laying the victim on his belly, and then applying pressure rhythmically on his loins and lowest ribs. This is known as the "prone pressure" method, and it was soon taken up in Europe, although both there and here the Sylvester method persisted. A crisis was reached about three years ago, the older charts were no longer given out, and it was felt that something must be done to secure unanimity; in doing which the percentage of cases of resuscitation would obviously be raised. When the matter, or the situation, came to the notice of the National Electric Light Association, with its 1,500 private corporations engaged in public service in the United States, to the tune of 100,000 employees, \$2,500,000,000 investment and 1,000,000 or more customers, it took the problem up with commendable activity, and at once organized the forces of safety. Two years ago it called into conference the leading engineering societies of the country, the United States Army and Navy, the United States Bureau of Standards, the American Museum of Safety, and the American Medical Association; and the authoritative dealing with the problem was relegated by unanimous vote to the last named powerful organization, the National Electric Light Association and the American Institute of Electrical Engineers. These three bodies selected their representatives as members of a commission, its expenses to be borne entirely by the National Electric Light Association, and then the work was taken seriously in hand. The members are as follows: Dr. W. B. Cannon, chairman, Professor of Physiology, Harvard University; Dr. George W. Crile, Professor of Surgery, Western Reserve University; Dr. Yandell Henderson, Professor of Physiology, Yale University; and Dr. S. J. Meltzer, head of the Department of Physiology and Pharmacology in the Rockefeller Institute of Medical Research—the four from the American Medical Association. Dr. E. A. Spitzka, Director and Professor of General Anatomy, Daniel Baugh Institute of Anatomy, Jefferson Medical College, and Mr. C. L. Eglin, Past-president of the National Electric Light Association—named as representatives of the National Electric Light Association. Dr. A. E. Kennelly, Professor of Electrical Engineering, Harvard University, and Dr. Elihu Thomson, Electrician, General Electric Company—nominated by the American Institute of Electrical Engineers. Mr. W. D. Weaver was elected secretary by the other members of the commission. It is quite needless to point out the distinction and capacity of this able body of men.

Three problems confronted the commission, and in reality only one of them has been disposed of thus far, in the issuance of the new rules, which are based wholly on the Schäfer prone method, approved because of its superior simplicity in application, easy performance by laymen, slight risk of injury to the subject, large ventilation of the lungs, and absence of trouble from the falling of the tongue back into the air passage. The new rules have been issued, both in broad sheet and in vest pocket form, with illustrations of the method. These are copyrighted by the National Electric Light Association to secure integrity of the rules, and are issued at cost, but on request anyone can secure permission, without charge, to reprint in any form, as the commission desires to give the rules the widest vogue and publicity. These documents were formally presented at the National Electric Light Association convention at

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The liberty of an accused man hung upon the shadow at the right.

An astronomer testified that the picture was taken on May 22d at 3:21½

One minute before the computed time.

One minute after the computed time.

Photograph taken at 3:21½, May 22d, 1912, vindicating the astronomer.