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AN EVENING ELECTRICAL SCHOOL.

A contemporary has made the suggestion that there is need of a place in this city where instruction in electricity and the kindred sciences could be obtained in the evenings. Many young men enter the service of the electrical companies and are thrown entirely upon their own resources as regards future advancement in technical knowledge. We are in constant receipt of inquiries as to the best means of obtaining a knowledge of electrical engineering. Many who are anxious to become electrical engineers cannot afford the time and expense incurred by pursuing a college course.

The lesson of the day in this city seems to be that our electrical systems are not properly cared for. The numerous deaths that have occurred show the need of intelligence in administering electrical systems of distribution. There is no doubt that there is room for a better class of men in the electrical profession than have hitherto filled its ranks. It is also safe to say that there are a very large number in those ranks who long for technical instruction and who are in a position to profit by it.

TESTING ARMOR PLATES FOR OUR WAR VESSELS.

One of the most thorough trials of heavy armor plating ever made in this country was conducted at the naval ordnance proving grounds, at Annapolis, September 18. Three plates of foreign manufacture were tested, each plate eight feet by six, and ten and a half inches thick. They were (1) a compound steel and wrought iron plate, made by Cammell & Co., of Sheffield, England; (2) a steel and nickel plate, the nickel alloy being about four per cent, made by Schneider & Co., of La Creusot, France; and (3) an all-steel plate from the same makers.

The targets were arranged on the arc of a circle, with the gun in the center, the muzzle of the gun being 28 ft. from the face of each plate, and the plates being set upright in a backing of heavy oak timbers, flanked on the sides by steel posts, all solidly bolted to the oak backing. The gun was a 6 in. rifle, the usual length of which is 16 ft., but this gun had been specially made with a length of 17 1/2 ft., to give the projectile a higher initial velocity.

Four shots were fired at each plate, striking respectively in order near the right and left hand corners at the bottom and top. At the first shot on the Cammell compound plate there were many flying fragments, and the projectile went entirely through the plate and eleven inches into the backing, the metal around the hole being crushed into many small pieces, and the plate being considerably cracked.

In the first shot at the all-steel plate, the projectile embedded itself in the plate to the depth of about fourteen inches, its point just penetrating, but there were no cracks. At the second shot the projectile barely made a hole through the plate, and was itself forced back, falling on the ground. The third and fourth shots were similar, except that in the latter case the projectile was broken up. The first shot at the nickel-steel plate barely pierced it, but the projectile was broken into fragments. By the second and third shots the projectile was almost entirely embedded in the plate, but did not go through it, and by the fourth

shot the projectile was broken up, its point having just pierced the plate, in which, however, no cracks were made.

Although further tests are to be made of the all-steel and nickel-steel plates, using an eight-inch gun, the compound plate was so badly damaged that it was decided not to risk another trial of it hereafter. The trial described was conducted under the direction of a board of officers, with Rear-Admiral Kimberly as president, and Secretary Tracy was present, giving it his personal attention.

Dancing to Music from Afar Off.

An interesting and really notable musical and vocal entertainment was given recently from New York to a very large audience assembled at the Grand Union Hotel, Saratoga.

As our readers will conjecture, the audience, which numbered at times no less than 800 people, was brought en rapport with the performers by means of a "long distance" telephone circuit running a distance of 180 miles from 18 Cortlandt Street, New York, to Saratoga. From Cortlandt Street a circuit had been run to the Madison Square Garden, and the concert being given by the Strauss orchestra was taken in alternation with the other numbers of the programme, which comprised selections by the long distance orchestra, flute and cornet solos, a whistling song, and glees by members of the technical staff, one of whom also recited Tennyson's "Charge of the Light Brigade." The orchestral music was listened to at Saratoga by means of sets of hand telephones, and every note was heard distinctly, even to the applause of the audience gathered at Madison Square.

A very novel and striking use was made of this telephonic concert by Mr. A. S. Hibbard, who happened to be entertaining a number of his friends at his residence in Morristown, N. J., the same evening. Mr. Hibbard's private telephone line was connected at Cortlandt Street with the circuit running to Madison Square Garden, and the strains of the famous orchestra were heard so plainly in the house at Morristown that dancing was carried on to the accompaniment with perfect ease and comfort by the guests there assembled.

If some one had told Herr Strauss that his orchestra was playing for dancers who were enjoying themselves at Morristown, some twenty or thirty miles distant, the information would probably have been received with sheer incredulity, yet such was actually the case. Two Strauss waltzes were enjoyed by Mr. Hibbard's guests, and afterward the orchestra at Cortlandt Street was switched in, and dancing was continued by the music of the less ambitious band of performers.

We believe this is the first instance recorded of the transmission of music by telephone with sufficient volume and clearness for dancing to be indulged in by the listeners.—Electrical Engineer.

Waste of Water.

The Review and Record, a paper devoted to real estate matters over in Brooklyn, concludes that few people have any conception of the amount of water which escapes from faucets left running during cold weather where there is danger of freezing over night. In the annual report of the Zanesville, Ohio, water works, recently issued, there is a table published which is sufficient to astonish the unthinking who indulge freely in the water waste business. The table gives various sizes and pipes, head and pressure, and commences with an aperture the diameter of which is one sixty-fourth part of an inch, equivalent to that of a cambric needle. Under a head—we will say of 150 feet—equivalent to a pressure of almost 65 pounds to the square inch, the quantity of water which would escape during the year, if always open, would reach 26,280 gallons, or through an orifice the size of a pin, equal to one thirty-second of an inch, the quantity escaping in the same time and under the same pressure will be 115,632 gallons. Where so large a quantity as that will escape from a small orifice it is only a question of figures to ascertain how much water is lost through the winter months during the prevalence of frost.

The average yearly wages of men, women, boys, and girls in the United Kingdom and in the United States in the following classes of mills are:

Table with 3 columns: Category, United States, Great Britain. Rows include Cotton, Woolen, Worsted, and Linen.

These estimates are given by Consul Brown, of Glasgow, and Mr. Wadlin, chief of the Massachusetts Bureau of Labor Statistics, in his latest report.