

The Twelfth Ordinary General Meeting was held on Wednesday, February 12th, 1873, Mr. LATIMER CLARK, Vice-President, in the Chair.

THE CHAIRMAN said he had to make an announcement which he was sure would be received with much satisfaction by the members. He was happy to state that they had received two very handsome presents from their members. Mr. C. F. Tietgen, the Chairman of the Great Northern Telegraph Company, Copenhagen, had presented £100 to the funds, in addition to £25 by which he became a life member; and Mr. H. G. Erichsen, of the same company, had presented the like sum, and had also become a life member by the payment of £25.

Professor FORSTER rose and said, he was sure he only expressed the feeling of all the members of the Society in proposing a cordial vote of thanks to Mr. Tietgen and Mr. Erichsen for their very liberal donations to the Society. The generosity of the gift was all the more striking, inasmuch as the Society was so much in its infancy that they must consider it somewhat a venture to become a life member of it; and they had still to prove that they were worthy of being joined as a life-long affair. This was an instance of great liberality on the part of these gentlemen, who instead of waiting to see what this Society eventually became, had given those handsome donations.

Major WEBBER begged permission to second the motion. As their treasurer he felt how much the Society was likely to benefit, not only by the example but by the actual gift, it was not sufficient for him to say.

Mr. ERICHSEN, in acknowledgment of the compliment paid him, said—"I believe in Telegraphy."

THE ACTION OF LIGHT ON SELENIUM.

The following communication from Mr. WILLOUGHBY SMITH was then read:—

"Wharf Road,

"4th February, 1873.

"My dear Latimer Clark,—Being desirous of obtaining a more suitable high resistance for use at the shore station in connection

with my system of testing and signalling during the submersion of long submarine cables, I was induced to experiment with bars of selenium—a known metal of very high resistance. I obtained several bars, varying in length from 5 to 10 centimetres, and of a diameter from 1 to $1\frac{1}{2}$ millimetres. Each bar was hermetically sealed in a glass tube, and a platinum wire projected from each end for the purpose of connection.

“The early experiments did not place the selenium in a very favourable light for the purpose required, for although the resistance was all that could be desired—some of the bars giving 1,400 megohms absolute—yet there was a great discrepancy in the tests, and seldom did different operators obtain the same result. While investigating the cause of such great differences in the resistances of the bars, it was found that the resistance altered materially according to the intensity of light to which they were subjected. When the bars were fixed in a box with a sliding cover, so as to exclude all light, their resistance was at its highest, and remained very constant, fulfilling all the conditions necessary to my requirements; but immediately the cover of the box was removed, the conductivity increased from 15 to 100 per cent., according to the intensity of the light falling on the bar. Merely intercepting the light by passing the hand before an ordinary gas-burner, placed several feet from the bar, increased the resistance from 15 to 20 per cent. If the light be intercepted by glass of various colours, the resistance varies according to the amount of light passing through the glass.

“To ensure that temperature was in no way affecting the experiments, one of the bars was placed in a trough of water so that there was about an inch of water for the light to pass through, but the results were the same; and when a strong light from the ignition of a narrow band of magnesium was held about 9 inches above the water the resistance immediately fell more than two-thirds, returning to its normal condition immediately the light was extinguished.

“I am sorry I shall not be able to attend the meeting of the Society of Telegraph Engineers to-morrow evening. If, however, you think this communication of sufficient interest, perhaps you will bring it before the meeting. I hope before the close of the session that I shall have an opportunity of bringing the subject more fully before the Society in the shape of a paper, when I shall be better able to give

them full particulars of the results of the experiments which we have made during the last nine months.

“I remain, yours faithfully,

“WILLOUGHBY SMITH.

“Latimer Clark, Esq., C.E.”

THE CHAIRMAN remarked that he thought this was a very interesting scientific discovery, and one on which it was probable they would hear a good deal in future. He had himself witnessed these experiments, and could confirm all that Mr. Smith had stated. Its sensibility to light was extraordinary, that of a mere lucifer match being sufficient to effect its conductive powers. For the experiments which would be carried on in future, selenium, sulphur, and phosphorus, which belonged to the same group, would be experimented upon, as also, he believed, tellurium. He had heard of one instance in which plumbago had shown similar effects. Selenium, he said, existed in two forms, like sulphur and phosphorus. In the ordinary form, vitreous, it resembled dark brown glass, and when softened by heat it could be drawn into threads at a temperature twice that of boiling water; but when the heat was carried beyond that it became crystallized, and it was only in that state the material became conductive. Mr. Smith showed him some experiments, in which he placed pieces of rock salt, alum, and other substances before the selenium, which might have intercepted the rays of heat; but the effect was as powerful through these as through the ordinary air. It was satisfactory to know that Mr. Smith was continuing his experiments in this direction, and he had no doubt his future communications on the subject would be as interesting as the present one had been. It seemed to him (the chairman) to afford a most reliable means of measuring the intensity of light, and to constitute a perfect photometer.

The first Paper read was “ON THE APPLICATION OF IRON TO TELEGRAPH POLES,” by Major Webber, R.E.

THE use of iron in telegraph poles is generally supposed to be a matter of £ s. d. Iron has been so employed for many years, and numerous modes of adapting the material to the requirements of a standard to support telegraph wires have been from time to time