

The Atlantic Cable and Hughes Telegraph.—By using the Tomasi relay the Hughes telegraph has been able to print messages which were transmitted through resistances far greater than those of the Atlantic cable, and Abbé Moigno ventures the prediction that the experiments will soon be successfully repeated with the cable itself.—*Les Mondes*. C.

Paste for Paper.—To ten parts by weight of gum arabic add three parts of sugar in order to prevent the gum from cracking; then add water until the desired consistency is obtained. If a very strong paste is required add a quantity of flour equal in weight to the gum, without boiling the mixture. The paste improves in strength when it begins to ferment.—*Chron. Industr.* C.

Burnt Steel.—Mere heat does not harm steel or iron; they may be heated and cooled an unlimited number of times, provided they are not allowed to come in contact with the air so as to absorb oxygen. In heating a piece of steel the amount of blast has much more to do with the burning than the heat. If the extra oxygen is taken out of the burnt steel it can be made to work just as well as it did before. The proof that heat does not harm steel is found in the fact that if a piece of steel is put in a closed box, and luted up so as to keep out the air, it can be heated and cooled an unlimited number of times without injury.—*L'Ingen. Univ.* C.

Light and Electricity.—In 1873 W. C. Röntgen was led by observing that a glass plate which had been fractured by the electric spark became doubly refracting, to inquire whether a similar influence might be exerted by electricity without fracture. Kerr, Gordon and Mackenzie subsequently published a series of experiments upon the subject, none of which seemed very conclusive until Kerr's communications appeared in the *Philosophical Magazine* for 1879. Röntgen was then induced to experiment with various substances, and he found that transmitted light undergoes changes through electric influences which are precisely similar to those of ordinary double refraction. The intensity varies in the electrical field with the electrical force, and it increases with the difference of potential between the electrodes. By these experiments he has succeeded in thoroughly confirming the classification of fluids as positive and negative.—*Ann. der Phys. und Chem.* C.