

plaster bust is set on its pedestal and ready to be copied into marble. If plaster copies of the bust are required, a duplicate mold is made over the first cast or plaster bust, in twenty-five or thirty pieces, or sections, from which if attended with care fifty or a hundred copies can be cast. The lines of the mold are readily removed, and the busts complete for those who desire them.— Copying of plaster busts and statues into marble is a mechanical process. The simplicity and accuracy of the pointing instrument furthers labor greatly, and transfers the minutest parts of the original plaster model, with mathematical precision, to marble, consequently the soul of Sculpture is in producing the clay model. DANTON.

#### EFFECT OF ATMOSPHERIC ELECTRICITY UPON THE WIRES OF THE MAGNETIC TELEGRAPH.

The *Revue Scientifique*, for December last (tom. xxxvi., p. 436,) contains an interesting article by M. Baumgartner on the subject of the effects of atmospheric electricity upon the wire of the telegraph. The following are the most-interesting of his results:

1. The needle rarely coincides with the point which is determined by its astatic state, and the tension of its suspension thread; almost always it deviates more or less from this point; which proves that it is influenced by an electric current.

2. The variations are of two kinds; there are some which reach  $50^\circ$ , others extend over  $1-2^\circ$  or 8. The first are less frequent; they differ so often in direction and intensity that it is impossible to deduce a law for them. On the contrary, the small deviations appear connected by a very simple law.

The observations made at Vienna, and at Gratz, appear to show that, during the day, the electric currents move from Vienna, and from Gratz, to Semmering, which is more elevated. This direction is inverse during the night. It appears that this change of direction takes place after the rising and setting of the sun.

3. The regular current is less disturbed by the irregular currents when the air is dry and the sky serene, than when the weather is rainy.

4. In general, the current is more intense with short than with very long conductors; often even the current of the longer chain is opposed to the current of the shorter chain.

When there is a difference of intensity, this difference is far greater than that which could originate from the resistance of the longer conductor.

When the sky is cloudy and the weather stormy, there are frequently observed in the electric conductor, currents which are sufficiently intense to affect the telegraphic indicators, which are, however, far from having extreme sensitiveness.

When they were placing the conducting wires of the Northern Telegraph line, from Vienna, the workmen frequently complained of a kind of spasms which they felt in handling the wires. These spasms ceased as soon as they took the precaution not to touch the wires with naked hands. These spasms were most frequent and intense in Styria, the highest region of the line. Thus, near Kranichfeld, a workman received a shock sufficiently violent to overturn him and paralyze his right arm.

The action of the atmospheric electricity on the telegraph is stronger on the approach of a storm, and not unfrequently the wires themselves, and the poles which support them, are destroyed by electric discharges.

M. Baumgartner cites several examples in support of what has just been said. On the 17th August, 1849, a storm which had burst forth at Olmutz extended to Frielitz; that is to say, to a distance of ten miles. A workman employed at this latter station, in putting up the wires, experienced a shock which overturned him, and he experienced a real burn of the fingers which touched the wire. At this time the sky was perfectly serene at Frielitz. *Mechan-*