

current. The secondary current charges one sphere with positive and the other with negative electricity. Oscillating discharges then take place between the two spheres, and electric force is radiated through the surrounding ether. Electric waves continue vibrating in all directions, from the space between the spheres, as long as the key is kept down. These electric waves strike the coherer *jj* at the distant station to which the message is being sent, and cause the layer of filings to become a good conductor of electricity. The current of the battery *g*, then passes through the coherer and works the relay *n*. The lever of the relay makes the connection in the circuit of a stronger battery *r*. The current of this battery then circulates, and part of it works the Morse recorder *h*, whilst part actuates a rapper *pp*, resembling the hammer of an electric bell, that strikes the coherer and destroys its conductivity. Immediately the filings constitute a break in the circuit of the relay battery; the lever of the relay springs back, and breaks the circuit of the battery of the recorder; and the armature of the recorder, no longer held down by the electromagnets, should, one would think, be raised by the spring to which it is attached. Such, however, is not the case. The coherer is again made a conductor by the Hertzian waves, that continue to vibrate through the ether, as long as the distant operator at the sender, keeps his finger on the key. Another current passes through the relay, another through the recorder, and another through the rapper, which again destroys the conductivity of the filings. But in the interval between the two currents that passed through the recorder, the armature of the recorder has not had time to rise, because, being heavy and having relatively great inertia, it cannot follow the rapid movements of the light hammer of the rapper, and the light lever of the relay. The effect of these short successive currents, on the recorder, is the same as that of one continuous current, and the armature remains down as long as the operator at the sender keeps his finger on the key, so that the movements of the key are exactly reproduced by the armature of the recorder, and the dots and dashes of the Morse code. are produced on a paper ribbon, by a point attached to the armature.