How to insulate these wires was a knotty problem. Mr. Edison sent me to his library and instructed me to read up on the subject of insulation, offering the services of Dr. Moses to translate any French or German authorities which I wished to consult. After two weeks search, I came out of the library with a list of materials which we might try. I was given carte blanche to order these materials from McKesson & Robins and, within ten days, I had Dr. Moses' laboratory entirely taken up with small kettles in which I boiled up a variety of insulating compounds. The smoke and stench drove Dr. Moses out of his laboratory. The results of this stew were used to impregnate cloth strips, which were wound spirally upon No. 10 wires one hundred feet in length. Each experimental cable was coiled into a barrel of salt water and tested continually for leaks. Of course, there were many failures, the partial successes pointing the direction for better trials. These experiments resulted in our adopting refined Trinidad asphaltum boiled in oxidized linseed oil with paraffin and a little beeswax as the insulating compound with which to cover the bare wire cables, which had been previously laid along side of trenches throughout the streets of this little Jersey village. Through the pot in which this compound was boiled, we passed strips of muslin about 2½ inches wide. These strips were wound up into balls and wrapped upon the cables. After the man who served these tapes upon the cables had progressed about six feet, he was followed by another man serving another tape in the opposite direction, and he in turn by a third man serving a third tape upon the cable in the direction of the first winding. After

the cables were all covered with this compound and buried, the resistance to earth was found to be sufficiently high for a working system.

I remember the first circuit which was completely ready for lighting ran from the machine shop to the railroad, branching north and south along the track. I had informed Mr. Edison that afternoon that this circuit was ready to light, but was told not to turn the light on until he gave the word. This happened to be the night of the election for President of the United States and Mr. Edison announced that I should not light this circuit unless Garfield were elected. That night in the upper story of the Edison office, a group of kindred spirits gathered about a table at which presided Mr. Edward H. Johnson at the key operated upon a loop in one of the Western Union lines passing through Menlo Park which carried the press despatches to the New York papers. As the news came over the wire of the result of the election in distant states, a tally was kept; and, as soon as Mr. Edison saw that there was a safe majority for Mr. Garfield, I was ordered to turn the light on the circuit along the railroad track.

It was during the Fall that the Steamer Columbia was wired in New York by Philip Suebel, the lamps being brought down to New York from Menlo Park by Mr. Upton and myself in a basket. If I remember correctly, that was the first place where enclosed "safety catches" were used.

The lamps for lighting the color printing establishment of Hines, Ketchum & Co. were also made in the laboratory at Menlo Park and carried to New York in a basket by Mr. E. H. Johnson and