SUBWAY IMPROVEMENTS CAUSE GREAT CHANGE IN ELECTRIC WIRES.

Owing to the vast amount of underground excavations now having to be made in New York City in building the new subway lines, which extend for many miles, the electrical engineers of the telephone and power companies have had their hands full in taking care of the continual shifting and rearrangement of the hundreds of underground cables and wires used for telephone, light and power service.

The illustration we present herewith shows a section of Dey street where it intersects with Church street, in New York City. In the foreground may be seen one of the telephone cable manholes, in the process of reconstruction. At the left of the picture may be observed a myriad of electric power and other cables. It is astonishing to the uninitiated who, for the first time, happens to behold one of these exposed sections of a New York thoroughfare, when he observes the tremendous amount of underground wires, cables and pipes which seem to intertwine and pass each other like so many huge snakes. The magnitude of this task becomes more apparent when it is considered that there are often a dozen different voltages, both high and low, being carried by these various cables and wires, and, also, the pipe lines which pass and repass these electric lines contain gas, live steam and water. Besides this, there are the huge sewer lines. All of these various transmission cables and conduits have to be invariably rearranged and shifted about in the construction of the subway, even to different levels, or from one side of the street to the other.

Showing Vast Net Work of Electric Gas, Water and Steam Conductors in a New York City Street Exposed During Building of New Subway.

DR. DE FOREST TO HELP DETECT ZEPPELINS.

A middle-aged American inventor with an electric bulb arrived in London recently on a hurry-up call from the British Government to show Sir Percy Scott how the British capital may avert danger from Zeppelins. And when the American inventor has done his work in London he will cross the Channel to devise a system of protection from air attack for the treasures and the lives of Paris. The inventor is Dr. Lee de Forest, of New York City.

As our readers are well aware, Dr. de Forest is the inventor of the Audion amplifier, an adaptation of the incandescent electric light, by which feeble electric impulses can be magnified to a point at which they can be registered with considerable force.

For several months England has used for coast defense a system of microphone detection against submarines by means of which the vibration of the propellers of German submersibles was picked up by microphones at sea and transmitted to a base, so that the approaching submarine could be located. This defense has been credited by London with being responsible for the destruction of many submarines. In this plan an instrument fashioned on the principle of the Audion was used to magnify the impluses recorded by the microphones at sea, but that form of Audion was not perfected to the stage of Dr. de Forest's recent inventions.

The effectiveness of the coast defense system suggested to the English authorities a similar plan for defense against invading airships. But conditions were different from that of dealing with submarines, because microphones could not be placed high enough in the air to record the vibrations of the propellers of approaching Zeppelins. The success of the de Forest Audion was brought to the attention of the British authorities, and they sent for the man who had invented it to come over and make their protective system work so that London could sleep in peace.

The detection system which Dr. de Forest proposes to work out is as follows: Several delicate microphones are placed on a geometrical figure, probably each on a mast. These microphones are equipped with Audions so that any vibration reaching them is magnified several hundred times, each of the Audions being of the same recording power. The microphone on that point of the geometrical figure nearest the approaching airship will record vibrations of a greater strength than the microphone on the most distant point of the figure. The effect of the vibrations upon the intermediary microphones will, of course, be of varying force, according to the relative distance of the microphone from the source of the vibrations, the approaching airship. From the varying effects of these vibrations on individual microphones is calculated the line of direction of the approach of the vibrations on each microphone. These lines of direction when extended form the outline of an imaginary cone, at the apex of which will be found the approaching airship.

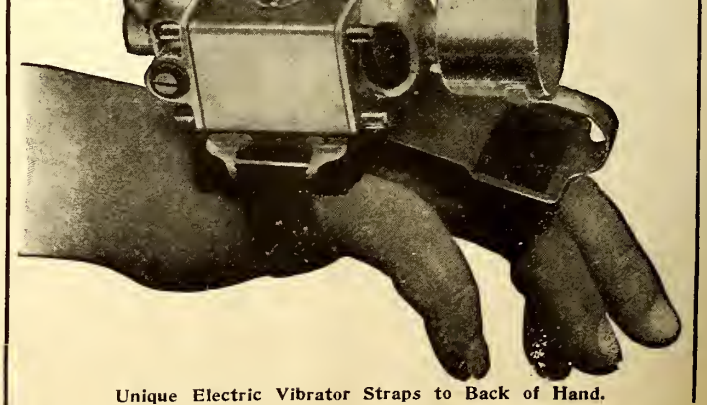
When the location of the airship has been determined, Dr. de Forest's task ends, and that of the aeroplanes and airship guns begin. It is planned to send aeroplanes out above the dirigibles after the location has been determined.

GIRL RADIO OPERATORS.

No girls have as yet qualified as licensed radio operators in this country, although it is stated unofficially that hundreds of girls are transmitting messages in amateur stations controlled by their licensed brothers. Many French girls have qualified as wireless operators, and are now in active service in the war zone.

NOVEL ELECTRIC VIBRATOR STRAPS ON HAND.

A very neat and efficient type of electric massage vibrator is shown in the illustration and, as perceived, it can be strapped to the back of the hand. The vibrations from the device may thus be transmitted through the hand to the face of the patient, etc. It is of great use to barbers and facial specialists. It is supplied for 110-volt direct-current or alternating-current circuits, and comes complete with flexible cord and attachment plug, which may be inserted in the regular lamp socket. Undoubtedly this is one of the smallest practical massage vibrators of the electric type ever devised and one that will appeal to everyone interested in any way in this art.



Unique Electric Vibrator Straps to Back of Hand.