

BELL'S RADIOPHONE

A TELEPHONE IN WHICH A SUN-BEAM REPLACES THE WIRE. X RAYS SOUND TRANSMITTERS

HOW THE FALL OF A SHADOW MAY BE DISTINCTLY HEARD.

RADIOPHONE IN ARMY WORK.

Prof. Bell Will Try to Develop His Invention for Commercial Use.

Prof. Graham Bell is devoting his attention to the commercial development of an invention of his which involves nothing less than telephoning by a ray of light.

Perhaps not a single reader of this article is aware of the fact that nearly twenty years ago Prof. Bell made the discovery of a method by which he could hear a shadow fall. He found in following up the researches of Dr. Werner Siemens that the rare metal called selenium possesses the peculiar quality of varying its electrical conductivity under the action of light.

Prof. Bell found that all substances possess in varying degrees the property when made up in thin discs or thin disks or diaphragms. In a word, the great inventor laid bare for the first time a new principle of matter.

It was out of these researches that the wonderful instrument upon which he has been able to work so long. He gave it originally the name of the photophone. It aimed to substitute for the ordinary telegraph or telephone wire a ray of light. Doubtless there is many a man who would question the sanity of any one who would contend he was able to talk for a long distance over a sunbeam.

There is, first of all, a transmitter which is made up of a thin diaphragm of mica or of some other substance, silvered at its back, and in front of it a reflecting mirror. The diaphragm is connected with an ordinary speaking tube, into which the operator talks just exactly as he would talk into the transmitter of a telephone.

At the other station, where the receiving operator is, there is a parabolic reflector, at the back of which is fixed a selenium cell. The cell in turn is connected telephonically with the ear. Now when the ray of light is reflected from the sound vibrations from the tube joined with the latter, what he says may be clearly and distinctly heard at the other end of the line, that is, at the other end of the traveling ray of light.

The theory upon which this instrument is built is that it would be possible to impress with sound vibrations in exactly the same way that an electrically charged wire is impressed with the sound vibrations from the telephone. When you talk into the telephone, what takes place is simply this: The electrical current being brought to the transmitter by the carbon diaphragm, against which the voice strikes, the wire or current is set in vibration, or rather the sound vibrations are impressed upon the wire.

As the reader is doubtless aware, all the trend of modern physical science is toward establishing the close relationship between light and heat and electricity and sound. It has been found that it is not very difficult to convert the one into the other. The conversion of heat or electricity into light is a familiar and commonplace process that persons do not wonder at it at all. But when Prof. Bell went a step further and demonstrated the possibility of converting light into sound, or at least of causing a wave of light to produce a wave of sound, he entered into a new field and welded a new link in the chain of relationship and interdependence. You will see that it was not by accident that he discovered the possibility of telephoning was not conducted by the visible rays of the sunbeam at all, but by the invisible rays, of which there is knowledge only by inference.

These are called actinic rays, and then again there is another class of which the so-called X rays, which Prof. Roentgen made use of in seeing the bones of the human body.

The peculiar quality of the invisible rays is that they will pass through substances which visible rays of light will not pass through, and this is just what happened when Prof. Bell thrust this piece of India rubber into the sunbeam path in his experiment. The phenomenon showed that it was these invisible rays which really took up the sound vibrations and carried them along with them. Prof. Bell was led to change the name of his device from a photophone to a radiophone. By this new phrase the invisible rays were made clearer and more accurately descriptive name to his invention.

But Prof. Bell's researches were only begun. He had to see if they would be of any use. He had to see if they would be of any use. He had to see if they would be of any use. He had to see if they would be of any use.

It happened one day when Prof. Bell was in his laboratory, that he was sitting at his desk, and he was looking at a piece of selenium. He was looking at a piece of selenium. He was looking at a piece of selenium.

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Grading Amos Street, From Iglehart Street to Summit Avenue.

Merriam Park, Third Addition.

Grading Olive Street, From Pennsylvania Avenue to Williams Street, and Constructing a Sewer on Said Olive Street, From Pennsylvania Avenue to Williams Street.

De Bow, Smith, Risque and Williams' Addition.

Construction, Relaying and Repairing Wooden Sidewalk, Estimate No. 4, Under Contract of James Forrestal, for Term Beginning April 1st, 1896, and Ending November 1st, 1896.

Beaupre and Kelly's Addition.

Opening, Widening and Extending Mahawk Avenue (Now Smith Avenue), From Page Street to Cherokee Avenue.

Marshall's Addition.

Reassessment for Opening, Widening and Extending State Street, From the North Line of Morrison's Addition to Bunker Street, Thence in a Direct Line to Center of Ducais Street and Tyler Street West.

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