

## Broadcast Photos Latest Achievement

In broadcasting photographs from Station WEAJ in New York and receiving them in a private home 25 miles away from the transmitting station, radio engineers have gone a step farther towards the day when broadcasting of pictures of events, as well as the events themselves, will be as common as broadcasting of music.

The sending apparatus developed by Dr. E. F. W. Alexanderson, of the General Electric Co., and used in the recent demonstration from WEAJ, is essentially similar to that used by the Bell Telephone Company in sending photographs across the country by telephone wires, as that used by the Radio Corporation of America in transmitting photographs across the ocean by radio, and as that invented by C. Francis Jenkins, of Washington, and used by the Navy Department to send weather maps to ships at sea. Another form of the same apparatus has been developed by *Radio Broadcast*, which recently conducted the first sending of photographs by radio for reception on a set that could be built at home.

In all of these methods, the heart is in the so-called photo-electric cell. This device takes a beam of light that falls on it, and converts it to electricity. It depends on the fact that when a film of metal, such as potassium or sodium, is illuminated, it gives off electrons. These are the tiny atoms of electricity, of which the atoms of matter are supposed to consist. Their motion inside the cell results in a minute electric current. Vacuum tubes like those in ordinary radio receivers can amplify this minute current millions of times, if necessary.

In the Alexanderson transmitter, the photograph to be sent is wrapped around a cylinder which revolves in the same way as the old-time cylindrical phonograph records. But instead of the needle and sound box of the phonograph, a lens focuses a spot of light from a tiny lamp on to the cylindrical picture. A toothed revolving disc breaks the reflected light up into a series of impulses bright or faint, depending on the brightness of the part of the picture illuminated at the time. These impulses of light fall on the photo-electric cell, which produces a varying electric current corresponding to the picture. This apparatus is connected to the radio transmitter replacing the microphone, and so the radio impulses go out from the

aerial, carrying the picture with them.

In the Bell transmitter, and certain others, a photographic negative is used instead of the print, and the light shines through it to the photo-electric cell.

In the device for receiving the picture any standard radio set can be used for converting the radio waves back to electrical impulses. But instead of feeding these impulses into a loud speaker to emerge as sound waves, they go to a box where they are amplified further. Then they go to a Moore neon lamp, a form of electric bulb in which the light is furnished by glowing neon gas, instead of a tungsten filament. Unlike the tungsten light, which takes a brief time to start glowing after the current is turned on, and which remains glowing for an instant after the current is off, the neon lamp goes on and off instantaneously. On account of this advantage it has been extensively used in phototelegraphy and television. Forms of it were employed in the Bell Laboratories system of television, demonstrated last April, and in Dr. Alexanderson's own television system, which had its public debut a few weeks ago.

In this way a beam of light is obtained from the neon lamp that varies as did the beam reflected from the cylindrical picture in the transmitter. This beam is focused on a sheet of sensitive photographic paper, which is wrapped around a cylinder revolving like the cylinder at the transmitter. Both cylinders slowly move in the direction of their length as they turn, covering the whole picture. About 90 seconds of broadcasting time is required for a 4½ by 8-inch picture. The photographic paper is taken from the receiving cylinder and developed in the same manner as any ordinary print, made from a snapshot negative. It is a facsimile of the original picture.

Other forms of apparatus for transmitting pictures by wire or radio have been demonstrated from time to time. Their chief differences are in the method of varying the light in the receiver. In the Bell apparatus, by which anyone with the price can wire a photograph in a few hours from New York to San Francisco, a "light valve" takes the place of the neon lamp. An electric bulb of the ordinary type provides the light, and its intensity is varied by the valve, which in turn varies according to the current reaching it from the distant transmitter. As a negative is em-

ployed in the Bell transmitter, the light in the receiver shines on a photographic film, instead of a sheet of photographic paper, wrapped around the cylinder. Thus a duplicate negative is obtained from which any number of prints can be made.

The Cooley "rayfoto" device, that was demonstrated at the recent New York radio show by *Radio Broadcast*, uses an electrical discharge playing directly on the sensitive paper to form the image. In the Radio Corporation's radiophoto system, the amount of ink sprayed pneumatically on ordinary paper is regulated by the incoming current.

Science News-Letter, February 4, 1928

### PSYCHIATRY

## Critics Praise Insane Art

Art critics of Paris are greatly excited by an exhibit of painting and sculpture by patients afflicted with mental disease, according to reports received by the American Medical Association from its French correspondent.

It is a difficult matter, apparently, to choose between the psychopathic art and the products of the ultra-modern school, futurists, cubists and the like. Only the work of patients who were not artists before their admissions into institutions, it is stated, are included in the exhibition.

This does not necessarily mean that the ultramoderns, who paint voluntarily the impressions of the subconscious mind, are insane, in the opinion of Dr. August Marie, a well-known French expert on mental disease. Such artists contend that they give free reign to their emotions and depict their inmost dreams without the control of reason very much after the manner of spontaneous art of savage tribes and prehistoric races.

The insane merely describe the vagaries of their subconscious minds and hallucinations for the satisfaction they get out of it, it is believed. Most of them have no notion of technique yet one painted in quite unearthly colors, roaring flames and waves of fire worthy of Turner. This picture was bought by a wallpaper manufacturer to serve as the basis of a new wallpaper design. A psychopathic priest depicted a pope blowing soap bubbles before an assemblage of swooning frogs.

The French expert believes that some of the paintings if removed from their environment and placed in the collections of a reputable dealer would command high prices, the medical correspondent declared.

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