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1935 Magic-News Pictures by Wire

Tribune in Wirephoto System

By WHITLEY NOBLE

LADDIN with his magic lamp and ring and the two frightful genii, slaves thereto, in their best moments couldn't have done it. They lacked imagination and never operated that fast. The flashing of pictorial matter by wire across a continent 3,000 miles wide in the brief space of one-sixtieth of a second is a miracle of today. Wirephoto, the new system of telephotography by which The Chicago Tribune collects pictures and photographs from far and wide in somewhat the same manner (though far more marvelously) as it collects news by telegraph, operates with a speed approximately the same as that of light.

Photographs scanned by an uncanny "electric eye" are borne by electrical impulses along wires to other "electric eyes" in far-away cities, picked up at an amazing rate of speed, and reproduced upon negatives to be made immediately into duplicate photographs, so that readers within the daily circulation range of newspapers participating in the Wirephoto service may see them in just a matter of minutes and hours after they are taken. No longer do



Diagrammatical layout of Wirephoto equipment, showing among the various units the sending and receiving machines, switchboard, and power plant. This equipment occupies 240 square feet of floor space.



Nerve center of Wirephoto, the switchboard. The three panels (left



board at the left.

A portion of picture an inch

wide and II inches deep can be

transmitted in one minute.

power plant's function is to supply

an absolutely constant source of volt-

age to the sending and receiving ma-

chines, as no commercial source of

The operator, having started his

Minneapolis, Denver, Dallas, Milwaukee, Omaha, Dayton, Miami, Atlanta,

and Syracuse. Two Chicago afternoon

newspapers subscribed at a later date,

or, in other words, after equipment

for Wirephoto had been ordered. The

Tribune is the only morning news-

paper in Chicago participating in





to right) are the talking circuit, receiving bay, and sending bay.

by side with the day's grist of news, important stories of eventful happenings, accounts of vital and startling day occurrences, flash on parallel wires the last-minute photographs that il- organizing by the Associated Press lustrate the news. Speeding trains of this modern magic service. At and specially chartered planes, pho- the beginning its great expense tograph vehicles of yesterday, are snaillike by comparison.

38 Newspapers Linked in 10,000-Mile Circuit

Wirephoto, materialization of a ten-year-old dream and result of three or four years of careful planning, begins operating now, today, tomorrow, not later, acording to schedule, than the new year. The Tribune and 37 other newspapers in 24 cities are joined in the 10,000-mile network of the Wirephoto circuit, which land, San Francisco, Kansas City,

obstacles of time and distance compel stretches from coast to coast and news photographs to trail hours and from as far north as Minneapolis to days behind the actual news. Side as far south as Miami, for the pur-

pose of supplying each other with the important news pictures of the No small undertaking has been the

ization. It was necessary to obtain guarantors among the member newspapers of the Associated Press to underwrite the cost of purchase and installation of equipment. The Triband the New York Daily News were quick to act in the matter of underwriting the huge expense involved. Also among original guarantors of the project were newspapers in Baltimore, Washington, Buffalo, Detroit, Cleveland, Philadelphia, St. Louis, Los Angeles, Oklahoma City, Oak-

this new telephotograph service. In the office of each newspaper taking the service, except in cities in which the Associated Press mainloomed as a possible obstacle to realtains central offices, is located the equipment for sending and receiving photographs and pictures by wire. In those cities in which there are central Associated Press offices the equipment is in the central office. The equipment room in each case occupies 240 square feet of floor space.

Pressing of a Button Starts Wirephoto Day

electricity is steady enough for the The Wirephoto day begins in each purpose. The power plants consist of the 24 equipment rooms over the of special generators, regulators, and country with the pressing of a butstorage batteries, the last named inton which sets in motion a power dicated on the key to the sending plant, a unit of the equipment which and receiving bays shown on this includes a sending and a receiving page by the abbreviation G.T.Bats. machine and a bay or switch-The generators are the source of board for each. The panel contains power; the storage batteries and also a talking circuit with loudregulators keep the generators speaker over which any point in the steady circuit may talk to the others. The



A leased wire 10,000 miles long links The Chicago Tribune with newspapers in 23 other cities in Wirephoto system of the Associated Press, which taps most important news source centers of the nation.

power plant, adjusts the sensitive the machine, taken to the darkroom tunes the light valve mechanism by the receiving machine, making the tension on a little ribbon vibrate at a natural frequency of 1,200 cycles a second. This operation requires less than five minutes. Then the control station in New York opens the talking circuit. All points report that they are ready, and each lists what pictures it has for sending. What pictures will be transmitted first and the order of sending all pictures of the day are decided by the control station, though from time to time throughout the day changes may be made in the order of sending for the purpose of pushing especially import tant pictures ahead of others that may have been scheduled earlier. Before a station sending a picture begins the actual sending it transmits for a few seconds into each re-

ceiving station an amount of power corresponding to the lightest and the darkest parts of the picture in question. Each point adjusts its power to the receiving equipment at the value of those two limits, knowing that the receiving machine, when adjusted to receive the two extremes of light and darkness in print, will handle normally all intervening shades. Then comes the signal from the

bay of the sending station-three interruptions of power-and operators at receiving points press a button on the receiving machine. A second or two later a button on the sending machine is pressed, starting at the same instant receiving machines on the circuit.

Negative on a Cylinder **Receives Incoming Picture**

A cylinder on the receiving machine at every station, eighteen inches long and twelve inches around. has been loaded with a negative upon which can be received a picture of any dimensions up to eleven by seventeen inches. The negative, fastened to the cylinder, is in a lightproof container. The negative then is exposed to a light from a lamp focused through an aperture one one-hundredth of an inch wide, before which is a ribbon which admits little or much light according to the strength of the current caused by the picture on the sending machine. In case the portion of the incoming picture is very black the aperture which admits light to the negative is nearly closed; where very light, the aperture is nearly

At the end of the picture the re- sized pictures at a normal rate of

ceiving machine automatically cuts sixty-odd or more in a sixteen-hour off. The cylinder is removed from day.

machinery by meter readings and and opened, and the negative removed and developed. If the picture is the maximum size of eleven by seventeen inches its transmission has taken just seventeen minutes, for the recording light, one one - hundredth of an inch wide at its maximum, puts its imprint upon the negative on the cylinder, which is revolving at the rate of 100 times a minute, at the rate of an inch a minute. In other words, a portion of a picture one inch wide and eleven inches deep can be transmitted in a minute, the transmission itself being carried out, as pointed out before, with the approximate speed of light.

More Than 60 Pictures the Average for a Day

The operation achieved on the sending machine at the time the receiving machines are getting the pictures is much the same as that described in the preceding paragraphs, though in the reverse. Upon the cylinder of the sending machine is placed not a negative but a positive print of a picture or photograph. The cylinder turns at a hundred revolutions a minute, the print being scanned in strips of one one-hundredth of an inch by means of a light beam focused first on a light valve

aperture similar to the light valve used in sound picture work. The valve chops the beam at a frequency of 2,400 cycles, passing a pulsating beam which is turned through ninety degrees of focus sharply on the surface of the picture.

Since the light reflected from the picture surface is proportional to the tone density of the surface, the pulsating beam is modulated with the

tone values of the picture before reflection to a photocell. The light valve, an aperture one one-hundredth of an inch square, is partly covered by two duralumin ribbons connected to form a loop. A magnetic field at right angles to the plane of the ribbons and a 2.400 - cycle current through the ribbons furnish shutter action. As the ribbons vibrate on their inward swing the aperture is closed, and on their outward swing the aperture is opened. A singletube amplifier furnishes the regulation necessary just before passing the power to the line. The principle of operation at the receiving points is similar to that of the sending light valve except that only one ribbon is

Thus do "electric eyes" in the various points in the 10,000-mile circuit transmit or receive average



(Associated Press photos.)





Wirephoto receiving machine shown from three angles. X—Recep tion beginning. The receiving equipment under the hood in foreground, moving to left across the carriage at an inch a minute, will expose the negative within the lightproof cylinder. Behind the machine is the power plant, which supplies an absolutely constant flow of current for the transmission equipment. Y-A closeup showing the cylinder in which the negative is contained. Z-Here the incoming picture has been recorded on the negative within the cylinder, and the operator is removing the cylinder. This goes to the darkroom, where it is unlatched and the nogative is removed and developed. Meanwhile another cylinder containing a negative is put on the machine.

shown in figure A, but photographed from a different angle. C-Machine from above. In the foreground, driving motor and clutch. At the right of motor and clutch are, at bottom, switches for turning on motor and light beam. Above them, in order, a rheostat for controling light intensity, a meter indicating light intensity, a starting button, and an auxiliary button for emergency stops.

Three views of Wirephoto sending machine. A-Here the hooded

"electric eye," which converts tones of pictures into electrical

impulses for transmission by wire, has moved at an inch a minute

most of the way across the cylinder upon which prints are mounted

for sending. B-Approximately the same stage of sending as