Next We'll See to Paris

So Says John Baird, Who Brings His New Television System to America to Prove He Can Do It

By GEORGE LEE DOWD, JR.

Less than five years ago John L. Baird, a young Scotch inventor, labored in an attic room in the Soho district of London, with few possessions save the dream of achieving electrical vision at a distance. His experimental apparatus he had made with his own hands from derelict odds and ends — old bicycle spreelights, lenses from bicycle lamps, tin cans mounted on a framework of old sugar boxes, and tied together with string and sealing wax. Now, this same young inventor is coming to the United States to demonstrate the first transmission of human faces and other moving images by radio across the Atlantic!

While engineers of the Bell Telephone Laboratories have been astonishing America with the first practical demonstrations of distant vision by wire and radio, as described recently in Popular Science Monthly, Baird, in England, has been achieving similar wonders. He has established what has been called the world's first television transmitting station—Station 2TV, licensed by the British Post Office. A few weeks ago he

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Ingenious and original method of scanning.

You will recall that in the method employed to send the face of Herbert Hoover from Washington to New York, the face was scanned by an arc light beam, which swept across it in a series of fifty parallel lines. This was accomplished by means of a whirling disk punctured with a spiral of fifty holes, through which the beam passed.

Baird employs not one, but three rotating disks. Instead of sweeping a narrow beam across the face in a succession of lines, he illuminates the entire face with filament lamps of 300 candlepower. The first of his disks, turning 800 revolutions a minute, contains sixteen lenses placed in staggered arrangement so that each focuses on the photoelectric cell a different section or strip of the face. The lenses are arranged in two sets of eight, dividing the face into eight strips. But interposed between the lens disk and the photoelectric cell is a second disk punctured with numerous apertures and turning 4,000 revolutions a minute. These swiftly moving slots interrupt the light rays from the lenses, and thus have the effect of breaking the image into smaller fragments. To give a still finer grain to the image, a third disk with a single spiral slot rotates at 200 revolutions a minute between the second disk and the light-sensitive cell.

The combined effect of this complicated arrangement of revolving disks is to cause the image of the face to fall upon the photoelectric cell in a succession of tiny squares of light and varying intensity. Instantly the cell translates them into a fluctuating electric current of corresponding intensity. This changing current then is amplified and transmitted.

Picked up at the receiving station, the current is amplified again and led to a tube filled with neon gas, causing it to glow with varying intensity, corresponding to the fluctuations of the current. The light from the tube passes first through a disk with a spiral slot, then through lenses in a second rotating disk. Both disks are exact duplicates and rotate at precisely the same speed as the corresponding disks in the transmitting station. The lenses focus the successive patches of light on a ground glass screen, thus building up and reproducing complete images of the original face. All this is done so rapidly that to human eyes not only does the succession of light patches become a complete image instantaneously, but the successive images themselves blend together into lifelike motion.

As in the Bell Laboratories television system, the entire success of this method depends on the perfect timing, one with the other, of the rotating disks in the transmitting and receiving stations. This demands that the motors which drive the disks in both stations be perfectly synchronized. Baird accomplishes this by coupling to the transmitting apparatus an alternating current generator, from which current is transmitted to the receiving station. There it is amplified and controls the speed of a synchronous alternating current motor.

Baird is confident that television service over the seas soon will be established on a commercial basis. Faeries, he says, will be flashed across the Atlantic on a wave length of forty-five meters. Of his visit to America, Baird said recently:

"This will be almost the last phase in the development for world-wide broadcast purposes. All that will remain will be the actual perfection of a seen image, which is approaching completion. Improvements which I have effected make it mainly a question of greater power to be able to see a person or scene thousands of miles distant."