

Big-Screen Television Pictures

One of the oft-repeated criticisms of cathode-ray television has been that the pictures on the screen were not large enough. Here is a new cathode-ray gun which reproduces really large images.

By the Television Reporter

AN electronic gun capable of projecting television images of a size and quality comparable to home movies was demonstrated by RCA engineers at the recent Institute of Radio Engineers Convention in New York. The gun is a tube about 18 inches long and produces an image about $1\frac{1}{2}$ by $2\frac{3}{4}$ inches on its self-contained fluorescent screen; this is brilliant enough to permit simple optical projection on a large-sized external screen. Its projected image of 18 by 24 inches is similar in brightness to average home movies. An image blown up to 3 by 4 feet was shown the engineers and the brightness was sufficient to make the picture visible to the large assemblage.

Brighter Pictures

The electron gun, the highlight of the demonstration, was developed by Dr. R. R. Law and his associates at the RCA Harrison, N. J., laboratories.

It was pointed out that in projection it is necessary to start with a much smaller and brighter picture than with the average cathode-ray tube where the image is viewed right off the valve itself. Hence, the brightness is dependent on the current in an extremely slender beam focused by the flying electrons in the tube

and the smaller picture needs increased beam current.

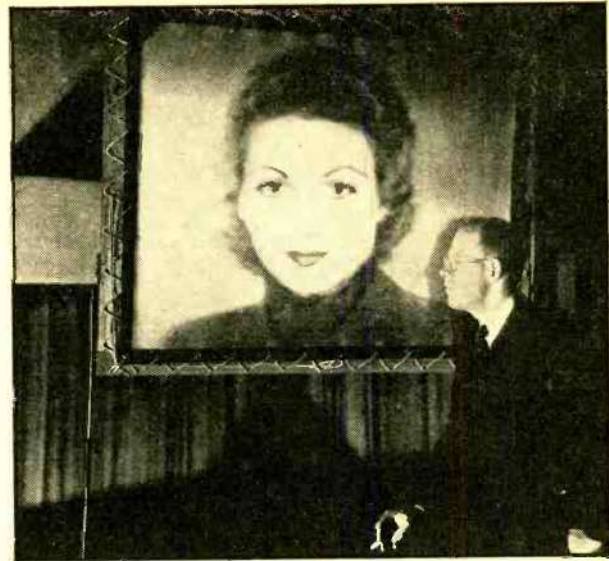
The electronic gun called for such rigid specifications that the plan was almost dropped as impracticable. The electrons must be regimented into a solid shaft of a narrow beam to pencil the received image sharply on the cathode-ray tube's fluorescent screen: the electrons are prepared for the task by being passed through three metal disks, each having center openings about the size of a pin-head. They then penetrate a fourth disk with an opening too small to pass even a thread.

Being forced through this tiny aperture, the electron bombardment is so intense that the light produced on the screen of the projecting tube is strong enough to be spread over an external screen area 100 to 400 times greater.

While the demonstration was impressive, it was declared that the device

"SHOOTS" TELEVISION IMAGES

The Electronic gun which projects television scenes on a big screen is shown here with its cover open as Dr. Law points out the special cathode-ray tube which is the heart of the system.



A 3 BY 4 FOOT TELEVISION PROJECTION
Dr. R. R. Law shows a television image projected on a large screen by his new Kinescope cathode-ray system.

would not be incorporated in home model television sets at the present stage of development, the achievement being confined to laboratory equipment and conditions.

Research Continues

Development of the projecting tube has brought about research to produce a luminescent material capable of withstanding the terrific electronic bombardment and work on this was still going on at the time of this writing.

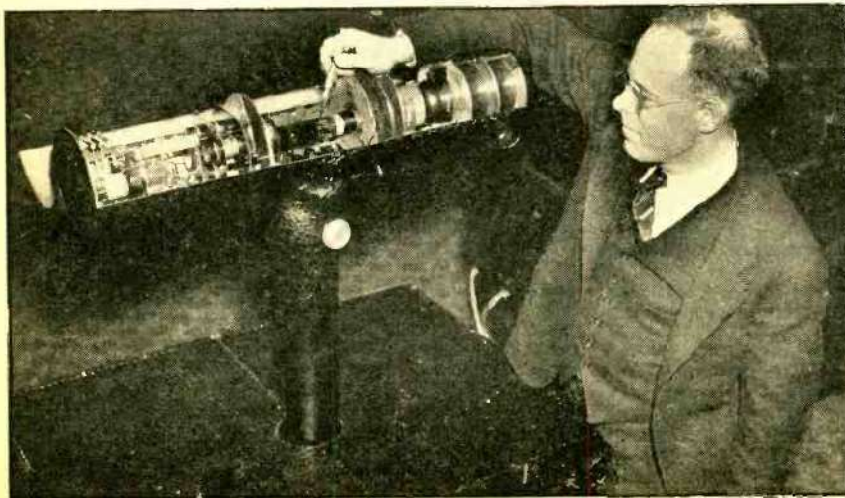
The Law projector was demonstrated on the arbitrary American standard of 441 lines. At the convention, Mr. C. E. Burnett, of RCA, described methods by which the Kinescope tube may be quickly tested for qualities of faithful image reproduction.

His method called for a specially generated set of impulses instead of usual image signals. Since the cathode-ray receiving tubes are most susceptible to distortion when recording impulses at a high frequency, the test current was set to provide a pattern at the valve's upper limit of frequency reproduction; the resulting very fine, polka dot pattern was described as the same that might be obtained if a half-tone photo-engraving were made of a blank sheet of grey paper.

The irreducible minimum of reproduction on the 441-line standard is represented by such a pattern and, if the tube performs with uniform response at this frequency, Mr. Burnett pointed out that it can be trusted to record larger areas of light from a televised subject with at least equal fidelity.

Outdoor Pick-ups

According to a report by R. B. James, Harley Iams and W. H. Hickok, RCA engineers, on the relation of outdoor illumination to television pickups, it is believed that present television pick-up equipment is sufficiently responsive to light to be generally successful for baseball, which is played in the brightest months of the year (*Turn to page 173*)



support a rocking Telefunken spark threatening to kiss him good-bye under the urging of a hurricane-mad galloping tub, is now being proposed for the imposing title of National Communications Director. If our readers will remember, Bliss was National Secretary-Treasurer of the ARTA, but more recently has been organizer of New York Postal Local of the CTU. We hope Brother Willard will get another pair of glasses if elected.

One for the record: "After 20 years of standing watches around the clock. . . I would like to begin to enjoy something that would permit me to forget the everlasting thought of having to make a certain time limit . . . not to miss a watch or be late for one. I would like to know that in the system for which I work, a better position . . . be given to the employee having the longest seniority and the best qualifications . . . I would also like to see that such labor policies (of the company's) be not abrogated at the first fall of the Stock Market. Certainty that Sunday and holiday work would be compensated by extra money . . . I should like to rest two days in seven and know that I would not be called the day before my two days off to work for John Whoosis because he couldn't come in . . . and that by my own efforts I could creep slowly up the hill of accomplishment would be a sort of earthly paradise." Very well done, "Anonymous" You are not alone in your ambitions.

Our Westcoaster reports: Shipping is very good. Ships are being drydocked and placed back in operation. The Marine situation is vastly improved with wages averaging 30 to 40% higher than '27 or '28. The West Coast brothers continue to yell "scab" at the East Coast brethren who take Copeland books or certificates. Yet they want the SS companies to obey the Wagner act. Obedience to law affects both sides. It says "collective bargaining." Remember?

On this Coast third class men are still operating Airways. Listening to some of the young fellers just starting out on the 600-meter band shows radio schools are still doing business and placing many graduates. Uncle Sam has been hiring more radiospectors so's to watch the lads. Airways are hiring more ops. Wages are still low but expect same to rise shortly. Legislation is pending stating radiopi must be over 21 years of age to be a licensed operator. Good idea, but the amateurs are fighting it. Speaking of overtime pay, if members of the crew and officers get overtime, why shouldn't radiopi get same? Getting "QTE" in the wee hours surely deserves it.

And now, me hearties, there is the situation. CTU MarDiv and ARTA. Two organizations with but a single thought: the unionizing of the rank and file radiopi for greater recognition, more wages and better working conditions. Which side of the fence to fall on? Or is the question: AFL or CIO? You will be harangued by organizers from both unions. Before making a decision, it is our suggestion to first go into conference with yourself. And so with best wishes for a clear head, 73, ge GY.

The Technical Review

(Continued from page 171)

these booklets are still available to all readers. Simply ask for them by their code designations and send your request to RADIO NEWS, 461 Eighth Avenue, New York, N. Y. The literature marked with an asterisk is available only to bona-fide servicemen, dealers, and engineers. In applying for these folders it is necessary to send in your request on your card or letterhead. If you are an amateur give call letters. The list follows:

- A11—56 page Catalog. Montgomery Ward & Co.
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- A13—McGraw-Hill Publishing Co., General catalog listing radio text books.
- My1—Service booklet, Readrite Meter Works.
- My2—Folder on small motor-driven "Handee" tool. Chicago Wheel & Mfg. Co.
- My3—Resistor catalog. International Resistance Co.
- My5—D. Van Nostrand Company's general book catalog.
- My6—Volume control guide. Central Radio Laboratory.
- My8—Condenser catalog. Solar Manufacturing Company.
- Je1—Circulars on power equipment. Pioneer Gen.-E-Motor Corp.
- Je2—Parts Catalog. Allied Radio Corp.
- Je3—Radio Receiver Catalog. Modell's*
- Je4—Catalog on P. A. equipment. United Sound Engineering Co.*
- Je5—Tube Chart Arceturus Radio Tube Co.*
- Jy1—Instrument Topics. A new folder published periodically by Clough-Brengle Co.*
- Jy2—Instrument Catalog. Triplett Electrical Instrument Co.
- Jy3—Catalog on industrial capacitor replacements for refrigerators, etc. Aerovox Corp.*
- Jy4—Sound Equipment Guide. Wholesale Radio Service Co.
- Jy5—Parts Catalog. Radolek Co.*
- Jy6—Latest Catalog on accessories. Radio Corp. of America.*
- At1—Broadside on Super-Pro. Hammarlund Mfg. Co.
- At2—Catalog on Transmitting Equipment. Wholesale Radio Service Co. Inc.*
- At3—Folder on Western Electric 633, a dynamic microphone.
- At4—Tube Folder. Weston Electrical Instrument Corp.*
- At5—P. A. Catalog. Webster Co.
- At6—Catalog on Electrical Wiring Accessories. Harvey Hubbell Co.*

Big-Screen Television

(Continued from page 143)

and usually in fair weather. Such events as parades and races also offer no great difficulty with illumination, they said. Pick-ups of football games showed less likelihood of satisfaction—particularly those extending into late afternoon hours of the sport's later season. But the engineers pointed out that the television equipment cannot be blamed for any shortcomings because even the persons in the stadiums must strain their eyes to follow plays under such conditions.

But in a later paper by Dr. V. K. Zworykin, G. A. Morton and L. E. Flory, it was revealed that new Iconoscopes, now in their later experimental stages of development, bring within possibility sensitivity many times that of present pick-up equipment. They claimed that such advances will improve the television camera's ability to pick up scenes in bad weather or at other times when illumination is low.

The theory and performance of the Iconoscope was also discussed. Because the broad theory of Iconoscope operation had been known to the I. R. E. members for some time, the new paper dealt with a detailed mathematical exposition of the principal factors involved.

Albert Rose and Harley Iams spoke on the general technical considerations of pick-up tubes utilizing cathode-ray scanning, pointing out that the one favored by RCA was to allow a constant number of electrons strike the surface while controlling the secondary emission by electric or magnetic fields.

There are Two Howards

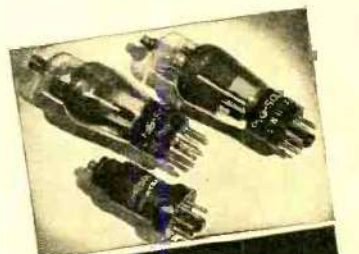
Chicago, Ill.—Howard Radio Company of Chicago, a manufacturing concern, has no connection with Howard Radio Company, Inc., of New York City, a chain of radio retail stores. The New York Howard has been reported in bankruptcy; while the Chicago manufacturer is doing business as usual.



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