

# Radio News

July, 1937

## "Empire State" TELEVISION *Shows Marked Advance*

Latest experimental transmissions from the NBC television transmitter using the new standard 441-line picture bring video images to a point of clarity in marked contrast to earlier efforts. Field tests continue.

*By the Television Reporter*

**L**IKE its chief rivals in the race for American television supremacy, the Radio Corporation of America has adopted the 441-line picture standard recommended by the Radio Manufacturers' Association. In this move, RCA was paralleled by Philco and Farnsworth. These new systems were described in May, 1937, **RADIO NEWS**. This arbitrary agreement on standards between rival contenders for national leadership in sight transmissions is conceded to be one of the greatest strides made toward the establishment of the new industry.

RCA, joined in its television ventures by its energetic subsidiary—the National Broadcasting Company—is always quick on the trigger in its developmental activities but ever conservative in announcing its new findings. And this has been especially true in television.

### More Optimism

As far as public statements were concerned, this company always maintained a timidity in relating its experiments with visual transmissions. But, now, with the definition boost to 441 lines—a much higher element image than England's—we find a more optimistic tone in the television statements of the company's chieftains.

This was particularly noted in the Annual Re-

port for the year ending December 31, 1936, by General James G. Harbord, chairman of the board, and David Sarnoff, president. Instead of the anticipated prediction of an indefinite period of development, the report, while not offering an exact prediction of television's commercial arrival, contains the phrase: "The need for additional experimentation indicates that this work will continue for some months to come." To this writer—and to many industry leaders—the use of the word "months" rather than years by the television-conservative RCA heads does truly indicate that sight broadcasting will soon turn that much exploited corner after traveling in a straight line for years.

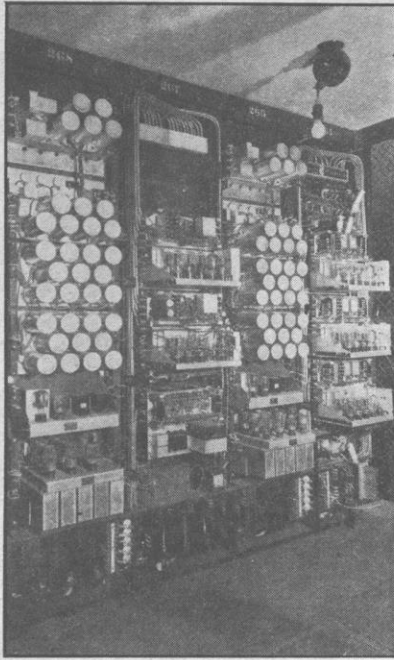
### SHE WILL VISIT YOU AT HOME

*Betty Goodwin, NBC's television announcer, as she appears on the screen of the RCA television receiver. When commercial broadcasts are started, you may expect to see and hear her as a regular visitor in your living room.*



### Finer Images

NBC experimental transmissions from the video station atop the Empire State Building in New York were boosted from 343 to 441 lines last January. The earlier standard was put into effect in June, 1936. In just little more than a half-year, the definition grew by 100 lines! A finer image was achieved. The photographs accompanying this article contain reproductions of actual images received over the air on the new standard. Here, indeed, is progress! Even the non-technical observer is readily impressed by such evidence.



#### BEHIND THE SCENES

*This apparatus, the synchronizing signal generator, is the heart of the experimental television system.*

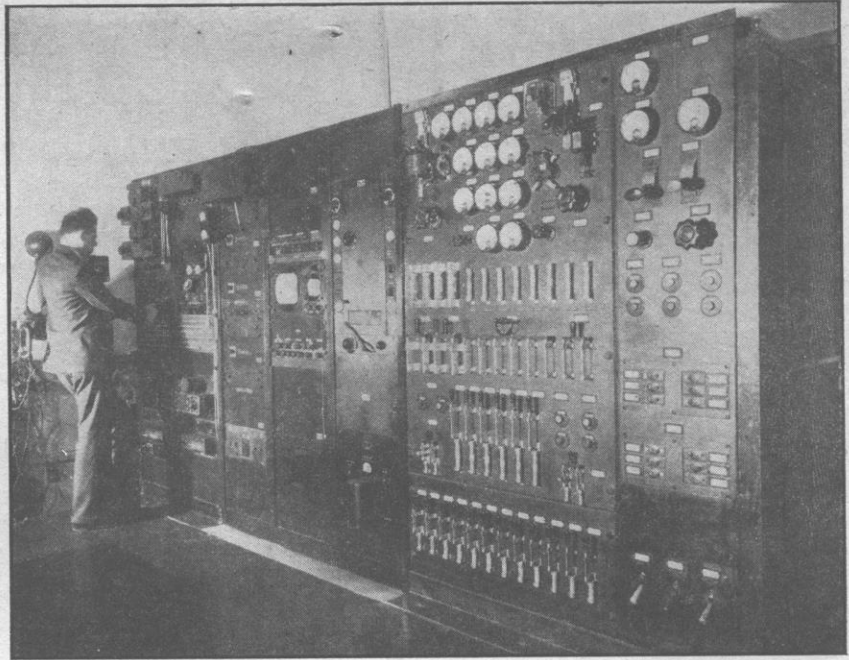
The Empire State transmitter is fed by a coaxial transmission line with programs originating in the NBC television studio in Radio City—about three-quarters of a mile away. The picture wave-frequency is 49.5 megacycles while the sound channel is 52.75 megacycles; provision of 2.5 megacycles is made on each side of carrier. The 441-line system is employed at 30 frames per second. Messrs. Sarnoff and Harbord declared that, in the field tests now in progress, images of motion pictures as well as live performers are being successfully received in about 100 homes of RCA engineers in the metropolitan New York area and in the outlying suburbs.

#### Larger Service Area

"The distance over which these television programs have been received," they stated, "has exceeded our immediate expectations. In one favorable location programs have been consistently received as far as 45 miles from the

#### "FELIX" IS NOW A GUINEA PIG!

*This photograph of the grinning cat was received over the new 441-line system. No longer a "ghost" but clear and distinct in every detail.*



#### TELEVISION OPERATORS WILL HAVE PLENTY TO DO

*One glance at this Empire State transmitter control board would indicate that future television operators have plenty to learn to thoroughly understand their job. Thus television has become an added subject in radio schools.*

television transmitter."

In answer to the writer's query on the power used for television transmissions, NBC referred to a paper by R. R. Beal, RCA Research Supervisor, which stated that "the filament power is sufficient to produce an electron emission of 18 amperes per tube which permits a video carrier power of 8 kw. With a tank circuit loading to pass the 1.5 mc. sidebands." The paper, though, was based on the old 343-line standard and while the author set forth some facts on the boost in definition, no exact mention was made of the new power rating. Likewise, there is still some reluctance to give out data on the probable cost of receivers, the number of tubes to be used in home models, etc. The parent company and the subsidiary hold that it

#### TELEVISION'S CONTROL ROOM

*It takes three trained engineers, pictured below, to keep the system working satisfactorily. In the foreground: One monitors the sound. Center: The program director. At rear: A third engineer monitors the video system.*



is premature to make such statements as the definite day for public participation and commercial programs has not been named.

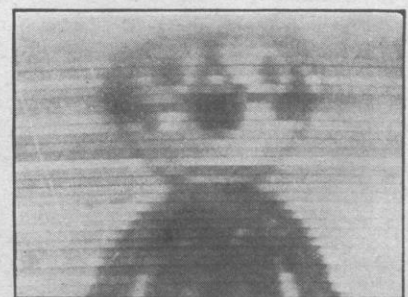
It is understood that the 100 test receivers around the New York area retain the tuning range of 42 to 84 megacycles. As in the case of other leading systems, the receiver gets sight and sound simultaneously. Single-knob tuning is employed and separating is easily achieved by the spacing of the transmitted carriers. A complex array antenna to produce a horizontally polarized field is employed.

#### Collecting U.H.F. Data

That the tests have been highly instructive was emphasized in the Sarnoff-Harbord report. "Much has been learned about the behavior of ultra-short waves and how to handle them," they stated. "More is known about interferences, most of which are man-made and susceptible of elimina- (Turn to page 60)

#### A "GHOST" OF YEARS AGO

*This is Felix as photographed a few years ago with the early 60-line transmissions. Compare this picture with the one on the left of this page.*



# Empire State Television

*(Continued from page 8)*

tion. The difficulties of making apparatus function outside the laboratory are being surmounted. The technical fundamentals of our system have been confirmed. Theory has been put into practice, and the experience gained thereby is enabling the laboratories to chart the needs of a practical television service.

"A major problem in television is that of network program distribution. The present facilities for distributing sound broadcasting cover the vast area of the United States and serve its 128,000,000 people. Similar coverage for television programs in the present state of the television art would require a multiplicity of transmitters and network interconnections by wire or by radio facilities still to be developed.

"The field tests are not completed, but the capabilities of the RCA television system are being constantly expanded, and we are moving toward ultimate realization of satisfactory high-definition television for public service."

In addition to the technical phases of television progress, NBC has been concerned with program development for the sight-and-sound shows that may soon be a commonplace on the airlines. Continuity, make-up, costuming and other important production phases are being experimented with so that there will be no "guinea pig" era when the commercial launching of the new art takes place.

Miss Betty Goodwin, formerly of the press department, has been named the network's first "regular television announcer."

(Editor's Note: The audio and video signals from the Empire State are regularly received up through Connecticut and as far as Massachusetts, by amateurs, according to a representative of RADIO NEWS who interviewed many amateurs at a recent Amateur Convention in Middletown. At times when DX conditions prevailed on the ultra-high frequencies these signals came in with tremendous volume, exceeding that of locals. Just what this means in terms of interference between television