

# The VIDEO Reporter

BY W. C. DORF

Will the future will be as bright as the year in which television made its auspicious debut with regular television programs to the American public? The ever increasing activity in recent weeks, with announcements of new cathode-ray tubes, complete receivers and kits, new design in television antennae, the granting of several important television patents, new stations, and other inter-related progressive advancements, strongly point to '39 as the television year. It is increasingly evident that the large broadcasting chains, receiver manufacturers and parts companies are all set to take their individual places in this new radio field of video art.

A review of the statements made by many of the leading executives and engineers emphasized the fact that television's major problem at this time is the program; that is, the type of program best suited to television, the art of staging the program, and primarily its financing. As David Sarnoff, President of RCA, recently pointed out in an address, "You can't have home receivers before you have transmitters to send them programs. You can't have transmitters until you have programs to put on those transmitters." Will these obstacles and other problems confronting this field be overcome, so that the American radio enthusiasts can look forward to the early introduction of television on a commercial basis? "Undoubtedly," says this writer, but the reader can form his own good opinion and at the same time keep posted on all the latest television developments, by reviewing the monthly material gathered here, there and everywhere on the New York television front.

## Special Demonstration for the Auto Moguls

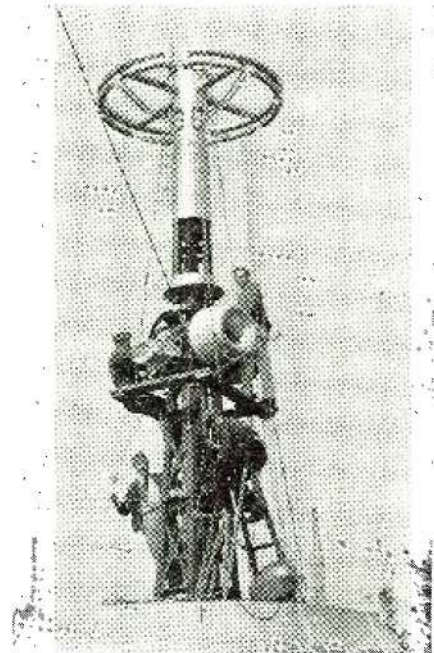
**D**URING the recent auto show in New York City, the various auto manufacturers were given a demonstration in the NBC studio in Radio City on the practical application of television. NBC's mobile unit telecast a parade of the new 1939 cars in Rockefeller Plaza, which was followed by a studio video presentation of the latest motor car advancements in gear shifts, motors, etc.

## One Up for Schenectady

**T**HE General Electric Company is constructing a new 10-kw. television station in the Helderberg Hills, twelve miles from Schenectady, N. Y. It is to be linked with the studio by a 1.4 meter ultra short-wave beam instead of a coaxial cable. The station is to be constructed on top of a 1500 foot hill with the antenna on 100 foot towers. The new station is to maintain its own motion picture department and a camera equipped truck roving the Albany district for spot telecasting.

## New Profits for Servicemen

**M.** B. SLEEPER, well known engineer and radio pioneer (and I mean pioneer, remember way back, the *Sleeper reflex* circuit), gave an in-



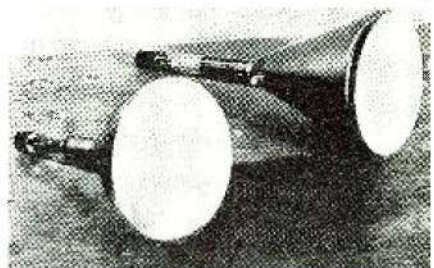
Erecting NBC's Television Antenna.

teresting talk over station WOR on the new Andrea sight and sound receivers. He brought out some excellent points one of which was right down the serviceman's alley, viz—"One of the most serious problems in television is the total lack of trained television servicemen to install and service the sets. They are so different from broadcast receivers that radio receiver experience is not adequate. This makes television an entirely new field." Plenty of work ahead, radio-tricians, and there's a tip to get busy and brush up on the mysteries connected with this new radio equipment.

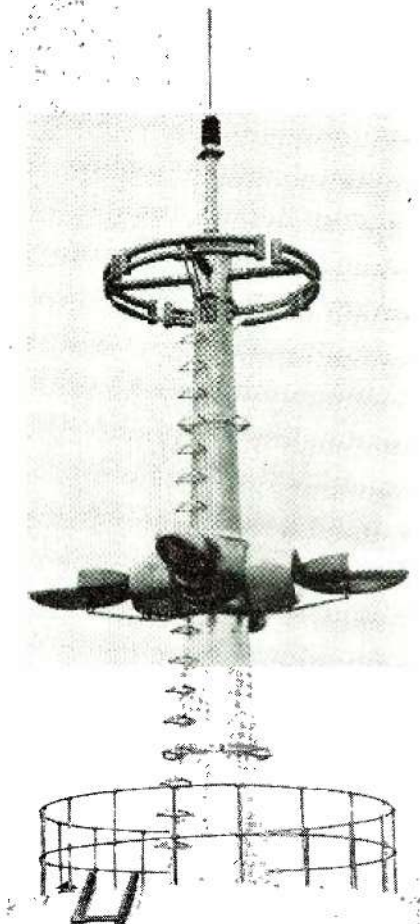
Mr. Sleeper stated the Andrea sets will be released after the first of the year, when the New York television transmitters will start scheduled broadcasting.

## Compact 16-Tube Kit

**Y**OUR reporter dropped into the Wholesale Radio Service Co.'s showroom the other day and saw the new Garod Television Kit in assembled form. This new rig is adapted to the RMA standards, reproducing images scanned at 441 lines, interlaced, 30 frames per second. The kit is inex-  
(Scan further on page 50)



Compare the new "Stubby" with the older type of Cathode Ray Teletube.



Completed NBC Television Antenna.



## 4 WINNERS

FROM SEARS NEW  
RADIO CATALOG

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Silvertone  
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time, and easily for 24 hours and more.

The stability is obtained by an electron-coupled oscillator circuit consisting of a very wide-spaced, Steatite-insulated, ball-bearing tuning condenser, high-Q 15/41 Litz inductance wound on low temperature-coefficient Steatite form, and a padding or "swamping" capacity of low-drift silver-plated-on-mica construction completely ceramic-sealed. All are housed in a tightly closed metal box. This box provides a "dead air" mass around the frequency determining circuit which effectively resists temperature changes. In turn, enclosed inside the outer cabinet 9½" high, 10½" long and 6" deep, the effects of external short-duration temperature changes such as might affect stability are effectively eliminated from the tuned circuit. Stability is further assured by running tube heaters continuously. The heating elements maintain temperature within narrow and stable range well above ambient temperature.

The fundamental range of the oscillator is 850 to 1030 kc., so that it may be checked directly against the signals of broadcast stations tuned in on the receiver—or even directly upon the frequency meter in the case of locals for it is in itself a receiver. Harmonics of this range cover 1700 to 2060 kc. thus including both new and old 160 meter amateur bands. Through the use of a 43 power pentode as oscillator, it can both be run in the frequency stable range well below maximum rating, and at the same time put out husky harmonics right down into the 5 meter band. Coupling is to the plate of the 43 electron coupled oscillator, in itself forming no part of the oscillator circuit, and additionally isolated by a small 3-35 mmfd. adjustable coupling condenser which may be so set that external coupling will not affect oscillator frequency.

To be fully useful for measurement of received signal frequency, a high-gain pentode is used as beat-note detector-amplifier, and is coupled to the isolated oscillator plate circuit; thus may the user measure not only his own transmitter frequency, but the frequency of signals heard upon his receiver. This detector-amplifier is the pentode section of a 25A7G dual tube, its diode being the power supply rectifier. A.c.-d.c. operation is provided, not in the interest of cheapness, but in order to obtain the best possible supply voltage regulation. Omitting the usual power transformer, which always introduces some regulation problems, operation is direct from the power line, with only the B supply filter and rectifier tube as factors to impair regulation. By isolating the power line from the metal cabinet, the possibility of shock usual to user simultaneously touching a grounded metal object and the chassis is eliminated completely, and the frequency meter cabinet may be directly grounded.

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pensively priced (sells around \$99.00), it is well designed and compact. It employs a five-inch electrostatic deflection type cathode-ray tube, and the video receiver utilizes 16 tubes in all, which includes 5 of the new type 1852 high-transconductance tubes. The power supply employs one 5Z3 and one 879 high voltage type rectifier.

#### To Be, or Not to Be?

IS television right around the corner??? As previously stated we in common with many others believe that it is. Yet it is rumored that one executive associated with the business end of broadcasting has expressed his opinion that it will be four years hence before any appreciable number of New York City homes are equipped with television receivers—due primarily to lack of suitable programs before that time. What is more, this same rumor has it, he has placed a wager that the end of 1940 will still find television so much in its infancy that not one home out of a thousand in New York City will be equipped for television reception. And New York is supposed to be the ringleader in this new art. The funny part of it is, this bet was snapped up by another man who has been identified with the technical end of the game for years.

If the experts can't agree among themselves, where does that leave Mr. John Q. Public?

#### Stubby Videotron for Lower Cost

THE National Union Radio Corp. just made an important announcement of a new improved type of cathode-ray television receiving tube, the size and design of which should materially lower the cost of televisions. It has been designed by Marshall P. Wilder, television engineer of the above company.

The tube is considerably shorter than the earlier 9-inch screen models permitting the use of more compact cabinets and direct "off-the-screen" viewing. Also, the image is reproduced in black and white tones preferred by many television enthusiasts.

Mr. Wilder has nicknamed the tube "Stubby" because of its shape in comparison to the earlier 9-inch models. Offering the same size picture as the old 23-inch-long tube, the new Videotron measures only 16 inches in length—approximately the length of the present tube with 5-inch viewing screen.

#### New Streamlined Antenna

THE new RCA-NBC unique streamlined television antenna marks a revolutionary engineering advance in telecasting antennas. Mounted on top of the *Empire State Building* in New York City television signals are now being launched into space from its torpedo-shaped radiators.

RCA engineers say that the device



overcomes a technical bottleneck in the transmission of television signals by departing from the use of wires or their equivalent in pipes or masts in various arrays. The new device is designed to radiate television waves over a band-width of 30 megacycles a second without accentuating or "peaking" the energy contained in any segment of the band. In engineering terms, the transmission characteristics of the antenna is "flat" over a 30 megacycle band.

The desirability of creating such an antenna (which is still so new that it has not yet been named) was realized in the first field tests conducted on the present experimental standard of 441 lines to the picture. Antenna designs existing at that time were found insufficient to handle the desired band-width. The new device, in contrast, will accommodate six times the desired band coverage.

When this antenna problem was presented some months ago, it was erected by a research group under N. E. Lindblad of the RCA Laboratories at Rocky Point, L. I. With them worked R. K. Gallup, E. D. Thorne and L. A. Batterman, as well as G. L. Usselman, whose specially designed test transmitter made possible vital observations.

The radiation components of the new antenna consists of two "doublets" for the picture signal and four "doublets" for accompanying sound. Both antennas are energized through concentric feeders in a common vertical shaft. Interference between sight and sound signals is eliminated by calculated arrangement of the two antennas and by using the equivalent of a closed loop for the sound channel and open radiators for picture signals.

The electrical measurements involved in the new structure are as precise as the specifications for a watch, yet in service it must withstand the rigors of the elements at its precarious perch. The antenna includes electrical heating units to prevent the formation of ice, which would enlarge its effective physical dimensions and detract from the perfection of its performance. The entire structure is topped by a lightning rod.

The radiating units nearest the top are for sound signals, and consist of a unique type of doublet, which doubles back on itself. The four together form a complete loop.

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**A New Receiver**  
(Continued from page 35)

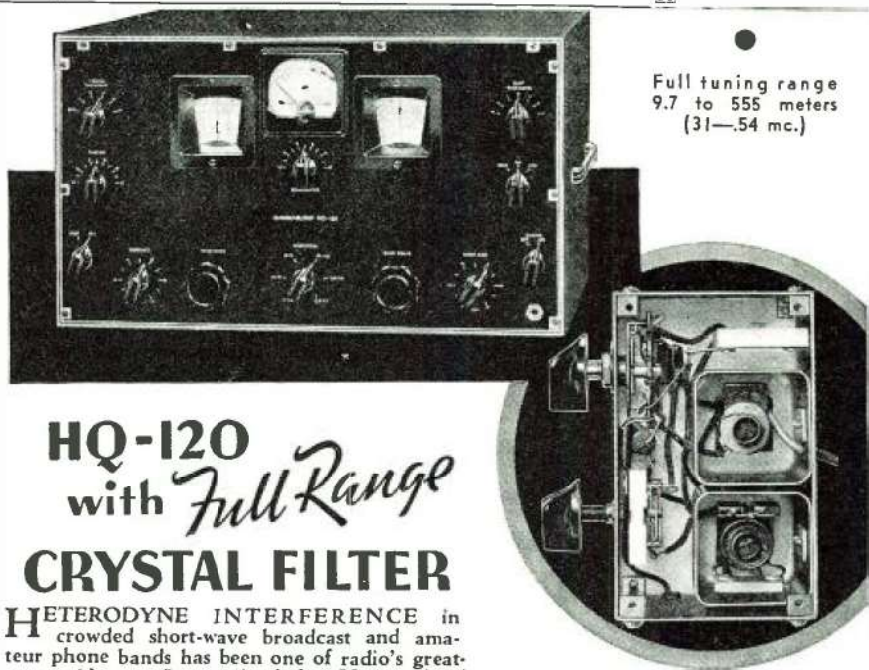
discussion employs a type VR-150 regulator tube in the plate supply circuit. Its function is to keep the oscillator plate voltage constant regardless of variations that may take place in either the line voltage or the output voltage of the power supply. The regulating facilities of this tube are likewise applied to the meter amplifier tube to maintain the accuracy of the signal strength meter readings even

against line voltage variations.

An exclusive feature of the HQ-120-X receiver is the new crystal filter circuit, providing a complete range of variable selectivity from the maximum band-width of the set to the usual razor-edge selectivity of ordinary crystal filters. It has heretofore been the practice in receiver design to vary overall selectivity by varying the coupling between i.f. stages, but once the crystal is switched in the selectivity becomes fixed or nearly so, as determined by the crystal. If the crystal circuit is designed to provide most effective selectivity for c.w. operating it is proportionately less effective for phone and vice versa. But in this new design variable selectivity is provided

solely by the crystal circuit and selectivity can be varied in five steps, from ¼ to 2½ kilocycles (all measurements at 10 times down). This means that anything from excellent single-side-band c.w. selectivity to a band width that permits not only completely understandable but good voice and music quality is obtainable, all by virtue of this innovation. With the crystal cut out the normal selectivity is 3½ kc. at 10 times down. Selectivity variation is accomplished by a six position switch on the front panel, the crystal being in the circuit in five of these positions. This circuit is not to be confused with other so-called "variable selectivity crystal" circuits.

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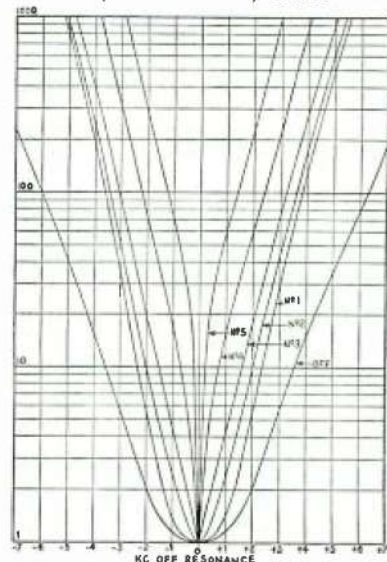
**HQ-120**  
with *Full Range*  
**CRYSTAL FILTER**

**H**ETERODYNE INTERFERENCE in crowded short-wave broadcast and amateur phone bands has been one of radio's greatest problems. It remained for Hammarlund engineers to develop a satisfactory "full range" crystal filter applicable to reception of both voice and music. The use of this variable crystal filter for phone reception allows the operator to phase out annoying heterodyne and splash-over interference and still bring in vocal or musical programs with marked clarity. The phasing control is located on the panel just below the selectivity switch. No longer is it necessary to wait for an interfering station to sign off or fade out in order to enjoy the program or get the announcement of call letters of some distant transmitter. See curves at right.

There are many other exceptional features that make the new "HQ-120" an outstanding buy for 1939. Consider how many times short wave reception has been made impossible due to automobile ignition interference and similar disturbances. The "HQ-120" has a highly effective noise limiter for just such occasions. Over 310-degree band-spread, with dials calibrated in megacycles; special antenna compensator for improved signal-to-noise ratio; accurate "S" meter for measuring signal strength; beat oscillator; A.V.C.; phone jack, and 10" permanent magnet dynamic speaker make the "HQ-120" a receiver you'll be proud to own.

Write Dept. RN-2 for 16-page booklet

"HQ-120" selectivity curves.



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