

not weigh the package and determine the amount of postage, which means that you will have to take the package to the post-office. Oh, if this were only a letter, which you could conveniently drop into a mail box. But it is not, and it must be shipped. Of course, during all this time, you hope that the dollar bill, you will put into the box will not go astray and will be found, when the package is opened.

Well, you decide that the carton is not available. You must seek corrugated or some kind of heavy paper wrapping, something in which you can pack the receiver securely. Just then you begin wondering. How long will it take to get the receiver back after service? Will it arrive in perfect shape after having been serviced? What will the mailing charge be? Maybe the local serviceman can repair the receiver. After all, you can afford to pay at least \$1.50 because the factory charge is \$1.00 and it will cost at least 25 cents each way for mailing. Maybe, it might be best to pay the local serviceman \$2.00 and have the receiver back in a day or two. Oh, what's the use of packing and taking the thing to the post-office, gambling on your ability as a packer? If you're a poor packer, the service charge might be more than you would have to pay to the local serviceman. Maybe you should not pack the job at all; instead, talk to the serviceman tomorrow.

And that's just what you do. You don't pack the set and you go see the serviceman. If he is a salesman, he'll sell you the idea of bringing the set to his shop. Pay him \$2.00 or possibly more, and you're content. Basically you're a lazy individual. You like your comfort and you're not a shipping clerk. And it's a nuisance to pack after a day's work. And the post-office is closed anyway. These are the reasons why tens of thousands of these midgets will get into the hands of the independent serviceman. These are the reasons why hundreds of thousands of books are sold by mail—you know, the ten-day free trial—send it back if you don't like it. Well, you seldom send it back. You pay the price because you're lazy.

Facsimile Notes

WE have played around quite a bit with facsimile lately and with the interest growing, it might be well to state some salient items of interest, points which might prove of value to those servicemen located in areas served by facsimile systems.

Excellent pictures can be received when conditions are correct, but very poor pictures will be received if conditions are not correct. This is in contrast to normal radio reception at the very high frequencies. Many of us marvel at the ease with which we can pick up domestic and foreign short-wave broadcasts with practically no antenna, poor locations, etc.

However, in the case of short-wave

(Please turn to page 48)

The VIDEO Reporter

by SAMUEL B. KAUFMAN

STUDIO 3H at Radio City has been a chamber of mystery these past two years. Orders to keep out were posted on front and back entrances and all for a good reason. The studio was the television program testing grounds all through the preliminary experimental period that paved the way for the regular transmissions now being maintained.

Recently, the *RADIO NEWS Video Reporter* was permitted access to the sanctum sanctorum to see just how complicated the task of putting a television show on the air really is. We anticipated that it was a ticklish job calling for an unusual blend of showmanship and engineering. Still we were amazed at the precision and efficiency of the staff in maintaining a smooth, swift production pace in the small third floor studio.

Six settings were required for the half-hour program we observed through rehearsal and actual transmission stages. Each setting was so shallow that it was virtually two-dimensional, the backdrops providing the main atmosphere. However, the few foreground props—chairs, tables, etc.—were ample to give the illusion of a greater depth than actually employed.

The settings were arranged in cycloramic fashion around the walls of the studio, with the three iconoscope cameras and microphone boom in the center. The cast, directors, camera men and engineers had to do some nimble stepping to get out of one setting and into another in time without walking in front of a "live" camera. Costume changes are made on the run. Action must be continuous. In the movies, there's a big wait between "takes," but in television all shots must be made in direct succession and the smooth manner in which the show is seen on a television receiver is remarkable in view of the breathless tasks of the cast and producers in the studio.

The half-hour production I witnessed in the making had a brush-up rehearsal—and it wasn't the first—of more than two hours. Here, the director, Warren Wade, ironed out rough spots and eliminated implausibilities in the script or settings.

"Throw away that ice!" he yelled to a property man. "Did you ever see an Englishman take ice in his whiskey-and-soda?"

It is apparent that the movies don't go in for more realistic details than television. Genuine atmosphere in foreign settings is provided even down to such a detail as using a British-type telephone in the scene representing a British hotel.

The day after I witnessed the rehearsal, I watched the actual program over a receiver in the studio control room, dashing out to the studio proper occasionally to compare reception with the pick-up. Everything went smoothly and, despite the studio hubbub and the dashing about of the cast, directors and engineers, the performance as viewed over the television receiver was well-knit and definitely superior to Hollywood's Grade B products.

CBS has completed its Chrysler Building television transmitter installation as we write these lines and the chances are that test transmissions will be on the air when this issue reaches you. Dr. Peter Goldmark, the chain's technical television chief, revealed that the equipment and installation represent an investment of \$600,000. That's a lot of money to spend before a single image went out over the facilities but Dr. Goldmark thinks it's worth every cent of it because anticipated results will bring many benefits.

For one thing, Dr. Goldmark remarked at a press inspection of the installation, the CBS station will provide a better signal than the NBC transmitter due to the design of the antenna atop the Chrysler Building. An NBC spokesman promptly challenged this claim by pointing out that Columbia won't know how good its video signal is until it gets it on the air.

Major Edward Bowes officiated at the inspection tour and threw switches for a photographer even though there wasn't any current behind them.

CBS proved that it was definitely "in the picture" in more ways than one insofar as video matters are concerned. Gilbert Seides, television program director, was reported to be working on advanced program technique long before the transmitter was completed. The technical set-up in the Chrysler Building, accomplished after considerable difficulty in getting the bulky equipment more than seventy stories in the air, is one of the best in the world and, along with NBC's splendid Empire State Building unit, should do much

towards creating a mass demand for television receivers in the huge New York service area.

ORDINARILY, television signals don't carry beyond the horizon. Or, so video engineers would have us believe. However, television signals from London have been received in the United States at intervals and RCA has recorded the images, as received at Riverhead, Long Island, on movie film. The results are surprisingly good, taking into consideration that some detail is lost in photography.

RCA experts attribute successful trans-oceanic video reception to higher-value ionization density in the upper layers of the ionosphere during the winter months.

Reception was accomplished on a special set utilizing two stages of radio-frequency gain and other refinements including a Rhombic antenna 800 feet long and 150 feet wide with adjustment provisions. After considerable experimentation, a camera recorded the images.

THE Wald Television Laboratories, have announced a television attachment which would convert any radio set into an image receiver. This seems to be the type of unit very popular in England right now and referred to there as an "add-on" unit.

The chief advantage of the "add-on" instruments in England is confined to boosting the sales of ordinary sound receivers in areas not yet serviced with television. The sales story is "Buy any good radio set now and it won't be out-of-date when television arrives; just attach an 'add-on' unit and you'll have a perfect television receiver."

EVEN though elaborate television displays are featured by RCA in the Hall of Television at the New York World's Fair, the permanent television tour in Radio City is expected to draw 400,000 visitors during 1939, this estimate being based on past attendance plus the huge throngs due to come to the city. While there is no competition between the Radio City and Fair Ground displays of RCA, considerable "sales" effort is being placed on the former.

At 55 cents a head, a total of 400,000 television tourists represents quite an income for RCA. But even more important than this revenue is the promotional value of having such a great number of potential look-and-listeners pay to see a television display. True, many of the visitors come from cities and towns not yet in video service areas. But a great percentage does come from areas where stations are planned, if not already built.

CBS will not have any television tie-in with the Fair, but there is a possibility that visitors will be permitted at the Grand Central Terminal studios.

THE marvels of television are thus far confined to novelty. But the day isn't far off when people will accept the idea of receiving images through the air in a matter-of-fact manner. That's when program material will have to prove suitable enough to carry on the following built on just the sheer magic of the new medium.

The networks are looking ahead to that day and are building up the program production end while selling the public on the technical end.

NBC recently engaged Max Gordon, the noted Broadway stage producer, to assist its television and radio drama efforts. This acquisition was loudly proclaimed by the network in an elaborate promotional mailing piece in which Mr. Gordon states his stand in the following words:

"By furthering and developing Television right from the start, I hope to prove to theatrical people that Television is the greatest supplementary medium for their activities.

"Television provides a new field for the showman to apply his knowledge of the public's likes and dislikes. It will be my task to bring more of this knowledge and experience to sound and sight broadcasting. The future of Television is enormous and I feel honored by this call from NBC."

Incidentally, the capital "T" in Television in the above quotes was used in the NBC broadside. Maybe that psychologically emphasizes the importance Mr. Gordon and the network both place in the video art.

CBS, too, is getting some television help from the outside. Donald Hunter Munro, television

(Televise further on page 46)

- tion unreported at that time in this country.
- 6.01 meg., VK9MI, S.S. Kanimble; Audible with weak signal between 2:30 and 4:30 irregularly.
- 6.08 meg., ZHJ, Penang, Straits Settlements; 3:40 to 5:40 a.m. daily with weak volume; English announcements.
- 6.085 meg., CRY9, Macao, Portuguese China; Fair volume on Monday from 5:30 to 7 a.m., and irregularly on Wednesday from 5:30 to 6:15 a.m.
- 6.11 meg., ???? Bangkok, Siam; Unidentified Siamese station reported irregularly near 6 a.m.
- 6.12 meg., FK8AA, Noumea, New Caledonia; Scheduled Tues., Wed., Thur., Fri., 11:30 p.m. to 12:30 a.m.
- 6.16 meg., VPB, Colombo, Ceylon; Fair signal strength from 4 to 6:30 a.m. irregularly.
- 6.17 meg., ZHO, Singapore, Straits Settlements; sometimes used simultaneously with ZHP (9.69 meg.) between 2:40 and 6:40 a.m.; announcements in English.
- 6.20 meg., "Radio Boy Landry," Saigon, Indo-China; fair volume from 2:30 to 6:30 a.m. irregularly.
- 6.24 meg., ZGE, Kuala Lumpur, Straits Settlements; Scheduled Sunday, Tuesday, Friday from 3:40 to 5:40 a.m., but reported to be off the air temporarily at present.
- 6.425 meg., PO6ZA, Dutch Guinea; reported irregularly with weak volume near 11 p.m.
- 6.50 meg., ???? Khabarovsk, U.S.S.R.; strong station, but extremely irregular between 2 and 6:30 a.m.
- 6.54 meg., YHSU, Port Moresby, Papua; weak signals between 3:30 and 6 a.m. irregularly.
- 6.72 meg., VK2MA, City unknown, Australia; heard irregularly from 1:30 to 5:30 a.m. Sunday mornings relaying the programs of VK2ME, Sydney.
- 6.88 meg., XOJD, Hankow, China; audible irregularly between 3 and 5 a.m.
- 6.96 meg., ???? Wellington, New Zealand; on the air Saturday 8 p.m. to Sunday 4 a.m. irregularly.
- 7.10 meg., FO8AA, Papeete, Tahiti; volume quite good Tuesday and Friday from 8 to 9:30 p.m.; recorded music and announcements in English.
- 7.255 meg., JVV, Tokyo, Japan; new station reported at irregular intervals between midnight and 5 a.m.
- 7.31 meg., 4 p.m., Port Moresby, Papua; weak signal strength from midnight to 2 a.m.
- 7.99 meg., PMD, Bandoeng, Java; heard irregularly with extremely weak volume near 11 p.m.
- 8.07 meg., VHSU, Port Moresby, Papua; usually operates simultaneously with 6.54 meg. from 3:30 to 6 a.m. irregularly.
- 8.09 meg., YDX, Medan, Sumatra; scheduled to relay YDA and NIROM network near 11 p.m., but heard very irregularly in this country.
- 9.37 meg., XOY, Chengtu, China; heard with fair volume but very irregular from 6:45 to 7:30 a.m.
- 9.51 meg., HS8PJ, Bangkok, Siam; good volume; operates only on Thursday from 5 to 7 a.m.
- 9.51 meg., HS8PJ, Bangkok, Siam; good China; on the air from 3 to 7 a.m. irregularly; also scheduled 9 to 10 p.m., but never reported in America on this transmission.
- 9.53 meg., VUC2, Calcutta, India; Extremely weak and usually inaudible from 11 p.m. to 1 a.m.
- 9.55 meg., VUB2, Bombay, India; Extremely weak and usually inaudible from 1:30 to 4 a.m.; also on the air from 6:30 to 7:30 p.m., but blocked by American station.
- 9.56 meg., XGAP, Peking, China; Volume weak and partially blocked by Germany's DJA from 6 to 8 a.m.
- 9.59 meg., VK6ME, Perth, Australia; Weak signal strength daily except Sunday from 3 to 5 a.m.
- 9.59 meg., VUD2, Delhi, India; Volume fair from 4:30 to 8 a.m.; also sched-

- uled 6:30 to 8:30 p.m. and 10 p.m. to 1 a.m., but reception unreported on these transmissions.
- 10.90 meg., "Radio Boy Landry," Saigon, Indo-China; operates irregularly from 12:30 to 1:30 a.m. and 7 to 8 a.m.; Also reported near 6 a.m.
- 11.42 meg., XGRV, Chungking, China; heard weakly and irregularly from 4 to 5:30 p.m.
- 11.53 meg., ???? Philippine Islands; unidentified station reported several times near 6 a.m.
- 11.69 meg., XTJ, Hankow, China; audible irregularly with fair volume between 4 and 6:30 a.m.
- 11.87 meg., VUM2, Madras, India; scheduled 12:30 to 1 a.m. daily, but usually inaudible in America.
- 11.90 meg., "Radio Hanoi," Hanoi, Indo-China; on the air irregularly near 5 a.m.
- 15.15 meg., YDC, Bandoeng, Java; Usually used in summer and heard with fair volume from 2:30 to 7:30 a.m.
- 15.16 meg., VUD3, Delhi, India. Irregular and now replaced by VUD4 (15.29 meg.) from 6:30 to 8:30 p.m.
- 15.30 meg., YDB, Sourabaya, Java; operates from 7:30 to 11 p.m., but received very irregularly in America.
- 15.51 meg., XOZ, Chengtu, China; extremely weak but audible irregularly from 6:45 to 7:30 a.m.
- 19.02 meg., HS6PJ, Bangkok, Siam; fair signal strength; works only on Monday from 5 to 7 a.m.

The Video Reporter

(Continued from page 14)

production manager of BBC, is coming to the network in an advisory capacity to work with Gilbert Selles. He will remain a month, giving the CBS lads some pointers on British methods.

A LONG list of big-name talent is available to both networks right at the start of regular television transmissions. It seems that the headliners of radio, stage and screen are eager to get in "on the ground floor" regardless of monetary returns.

Important figures in politics and public life have also accepted early participation in television experiments.

One thing television is assured of is an ample supply of headlining personalities.

THE recognition of photographic technique in television is indicated by NBC's appointment of A. Burke Crotty, head of its photo staff, to the new post of production manager of the television mobile unit.

In his new duties, Crotty will supervise the newsreel-type crew manning the vans equipped to pick-up and relay programs from points outside the studio.

by W. C. Dorf

SINCE the last issue, television has advanced so rapidly that it has become the center of interest in New York's radio activities. Newspapers and periodicals are carrying daily news items and advertisements are now appearing on televisions, both in assembled units and in kits. The large radio chains have held open house for the press to preview their new tele-studios, several new companies entered the manufacturing field, new transmitters were introduced and special vision displays took place. That the past month was unusually active and outstanding as far as television was concerned is clearly evident by the following brief outlines on a few of the important developments:

After many obstacles, the Columbia Broadcasting Systems' television transmitter installation atop of the Chrysler Tower is practically completed and ready for operation. The complete job was under the direction of Dr. Peter Goldmark chief television engineer of CBS. The height of the installation above the street, the small space the construction engineers had to work in, and the fact that life in the office building had to go undisturbed while materials were being hoisted to the tower multiplied the problems. However these difficulties are things of the past and Dr. Goldmark predicted more or less regular experi-

mental test programs to go on the air around April 15.

THE staff doctors, internes and nurses of the Israel Zion Hospital of New York were recently witnesses of television inaugurating a new era in medical teaching. A demonstration conducted by the American Television Corp. enabled the hospital staff in a room 500 feet away from the operating room, to view the surgeons hands and hear his comments as he performed an actual abdominal operation. Telecasting equipment has been installed permanently in the hospital and additional kinefs or televisions are to be installed in the offices of staff doctors so that they can watch difficult or unusual operations. An electric camera was suspended above one of the hospital's regular operating tables and surrounded by four lights equipped with metal water jackets.

THE General Electric Co. is enrolling prospective television servicemen, planning to give these men a thorough course in the installation, care and servicing of a modern television. The present opportunities in the television field are increasing daily. Placements will go to those who are trained in the fundamentals.

RUMORS from good sources, report that DuMont will be in the field shortly with a 22-tube receiver equipped with a 14 inch kinescope. Its tuning range will take in four separate channels. General Electric is planning to bring out four or five different chassis, one with push-button control. Andrea has a 25-tube set with a 12 inch tube, under construction.

ENGINEERS are said to be developing a radio relay system to bounce television pictures from city to city on a 500 mc. channel. It is planned that automatic stations, located on lofty towers, buildings or hills will relay the telecasts. The relays, it is expected, will be located about twenty miles apart.

Advertising and Television

IN an address before the Advertising Club of New York, Mr. John Black of the J. M. Mathes agency pointed out that selling by television is not something for the future but is present now and on our doorstep. He thought that television, which unites the sight appeal of the printed word and the sound appeal of radio, promises to be the apex of all advertising media.

The speaker declared that the best authorities agree that there is no immediate prospect of national coverage via the new medium, but regional coverage "is an early likelihood," according to Mr. Black, and it is time for advertising men to begin concentrated studies of all phases of television.

W2XVT—Telecasting

ALLEN B. DU MONT Labs. W2XVT, Passaic, N. J., has been reported on the air with video and audio signals every morning from 8 to 9 a. m. Check them on 45.25 and 49.75 mc. Their power at present is said to be about 50 watts.

Big Names in Radio

ON the completion of its recent initial public financing of 600,000 shares of common stock at \$6.00 a share, Farnsworth Television and Radio Corp. proposes to begin manufacture of television transmitting and receiving apparatus based on inventions of Philo T. Farnsworth, its director of research. A part of the cash proceeds of the offering, together with additional shares of common stock, will be used for acquisition of the business and properties of The Capehart, Inc., and certain properties of General Household Utilities Co.

RCA Paves the Way

OUR correspondent on the Pacific Coast reports that the RCA tele-exhibit at the San Francisco Golden Gate International Exposition is televising the "looker-ins," passing before the iconoscope and the receivers at the rate of 13 to 15 per minute. This goes on for 8 to 10 hours daily, which is plenty i. b. for television. Missionary work which will pay in sales of receivers when tele hits its stride. The RCA exhibit at the Worlds Fair here in New York will televise the visitors in the same way, but of course in New York "ahem" in a bigger and a better way.

To Introduce Kits Under \$60

WE have word that Louis Pacent of the Pacent Engineering Corp. will come out shortly with



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a complete line of kits and Receivers. Louis Pacent is an old pioneer in radio, always to the front with the best in receiver developments, lately with phono pickups and sound recording equipment. It is reported that the televisions are to be marketed at a low price, with kits to sell around \$60.

Five Band Mobile
(Continued from page 24)

the battery and the genemotor in order that a voltage drop will not occur due to the heavy current drawn by the motor.

The other half of the chassis is used to mount a complete a.c. pack as shown. A common filter network is used to take care of both the genemotor and the pack.

Effective filtering for high-frequency operation is had by using the r.f. chokes and by-pass condensers to keep any and all r.f. from returning to the power supply. A change-over switch is provided to shift the filter input to the power supply from the source being used. All of the tube filaments connect in parallel with each grounded on one side directly to the chassis. Hum is not noticeable when operating from the a.c. supply.

The speaker is mounted on the panel where it will occupy the space between the genemotor and the filter choke and will be under the switch as shown. This speaker is a Utah 3 1/2" permanent magnet type having a 3 ohm voice coil.

The portable works equally well on both power supplies and the plate voltage is the same, so performance is identical in both cases. By placing a small amount of bias on the 6N7 modulator tube, the plate current variations are kept within limits for good regulation from the power supply.

Operating Data

The proper crystal is inserted into the six prong socket mounted under the milliammeter. This type of socket was chosen so that the crystal could be mounted in one of several positions for easiest access. Variable crystals are used on the 80 and 40 meter bands that allow 6 kc. variation on the former and 12 kc. variation on the latter. The indicator lamp will glow dimly when the crystal is working properly and any excessive current passing in this circuit will show in the lamp's increased brilliancy.

The 6L6 amplifier stage is tuned in the following manner. Set the antenna condenser to about full capacity and then tune the plate condenser for the usual resonance dip. Tune the antenna condenser to bring up the current to the 6L6 to a maximum of 60 or 70 ma. at resonance. The condenser capacities may be raised by adding small air-tuned units of 100 mmfds. across each one as it will be found that the full capacities will be needed in most cases.

The unused coils are shorted out when the switch is rotated and will not absorb energy from the coil being used.

The speech equipment should be tested before the final assembly is made. A 5,000 ohm resistor of ten

watt rating is connected across the output of the modulation transformer. This resistor should have a tap across part of the resistance so that a speaker or pair of phones may be connected temporarily as a monitor to test the audio.

The microphone injut jack is completely enclosed within an aluminum shield together with the grid resistor. This is necessary in order to prevent hum from getting into the amplifier. Test the unit with the gain wide open so that the presence of hum or distortion may readily be heard.

The receiver should also be checked for over-all performance on the antenna to be used for portable work.

This portable has been used as a 10 meter mobile.

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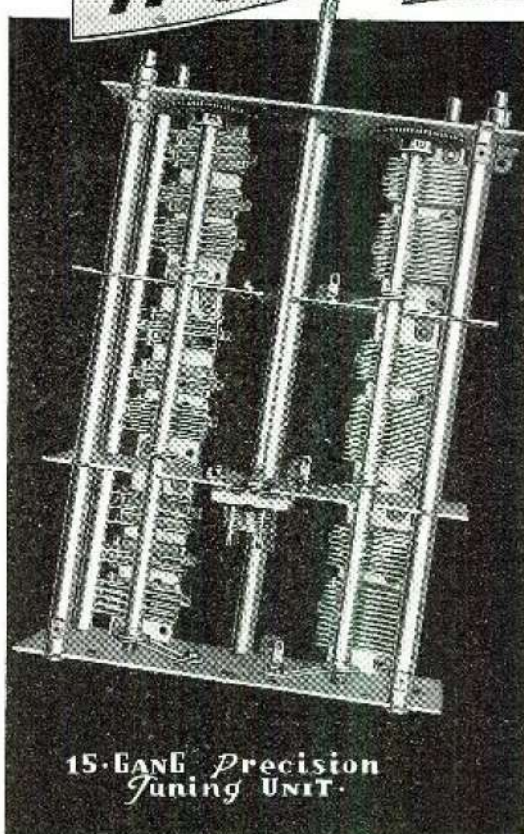
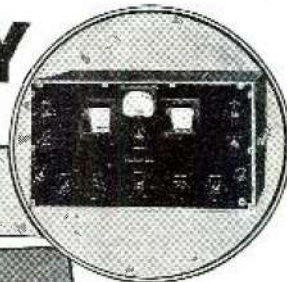
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INSIDE STORY

of the

HQ-120-X



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THE TUNING UNIT of a highly selective and sensitive short wave receiver is really one of the most important parts. As an example, the I.F. amplifier in the "HQ-120-X" is sensitive to 1 kc. without the crystal and less than 100 cycles with the crystal. This means that the condenser must be tuned to 1 part in 30,000 in the first instance, and 1 part in 300,000 in the second when operating at 30 mc. This calls for a condenser absolutely free of all bearing play; only pure rotational motion is permissible. The principle of design is the same as used in watch making. Single polished steel ball bearings are used at each end of the rotor shaft. Six sets of dual inlaid silver to silver contacts and small area widely spaced plates insure electrical stability. This tuning unit costs over 20 times as much as the usual remodeled broadcast condenser. Try an "HQ-120-X" and note the difference!

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Send me 16 page booklet.

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