

range is 0 to 50 volts, a.c. or d.c. If a higher range is desired a higher voltage will have to be used.

The vacuum tube voltmeter is of conventional design and the circuit has appeared in various issues of *RADIO NEWS*. In combining it with other instruments which use the same power supply it is necessary to isolate the negative leg from the chassis in order that the meter may be used for other purposes. In order to make this easy we use a plywood panel as the potentiometers we used in the V.T.V.M. were not of the insulated shaft variety, which would make it necessary to insulate them from the panel, if it were metal. For those who do not understand the principle of operation of the "Slide-Back" V.T.V.M. it will be explained later.

The "Signal Chaser" section, of the "Four-in-One" Tester, as we have called it, is nothing more or less than an r.f. detector and amplifier combined. The 6B7 tube amplifies and rectifies any r.f. or i.f. signal that is fed into the r.f. or i.f. tip jack. The rectified signal is passed through an a.f. amplifier and is heard in the speaker.

A signal generator is connected to the set under test and the prod is touched to the plates of each successive stage until the signal disappears. This is the stage that is bad. Note that the test lead is not connected to the grid of the tube but to the plate. This is to prevent detuning the circuit as would be the case if the grid were touched with the prod. The blocking condenser in the input of the 6B7 prevents the plate current from being impressed on the 6B7 grid. This allows the signal to pass through without disturbing the circuit of the set. Of course, some loading of the plate circuit will be present, but it will not be sufficient to detune the stage under test so as to throw the signal so far out of tune as to be inaudible.

This is not to be compared with the tuned method of "Signal Tracing," but in an instrument of this size there is not enough room to make provision for a tuned detector. The all around performance is satisfactory for the purpose intended.

Audio signals are applied to the posts marked a.f., and are passed through the a.f. amplifier in the usual manner.

The meter used in this instrument has a 0-5 ma. movement. This was used in place of a 0-1 ma. due to the fact that it is used as a leakage tester for electrolytic condensers. Of course, a more sensitive meter could be used provided a suitable shunt were used for the leakage test, but it was not necessary to use a more expensive meter because the vacuum tube voltmeter circuit does not require such a sensitive movement. This saves the use of an expensive meter and also does not make the condenser tester section of the instrument so delicate as to need any special precautions to

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The VIDEO Reporter

by SAMUEL KAUFMAN

IN telecasting the G.O.P. National Convention from Philadelphia, *NBC* and *RCA* achieved a great technical feat by conveying the daily proceedings to look-and-listeners in the huge New York television service area. And the feat was enhanced by the retransmission of the New York video impulses by the General Electric station in Schenectady.

But the fact that W2XBS had to yield all other programs during the convention week was a self-admission of being short-handed in both personnel and equipment. Can you imagine a newspaper that printed nothing but convention news during a convention week just because its ace reporters were dispatched to the scene?

Looking-in on the convention in New York was a thrilling thing, indeed, even though quality was occasionally below the standard of local pickups not requiring long coaxial cable relay. But everyone likes a bit of variety. It would have been pleasant to have something else—even the usual poor commercial films—between convention pickups.

There's a growing tendency on the part of the W2XBS staff to prefer outside news pickups to original studio productions. First, there's no talent cost—a considerable item to the telecasters even though the entertainers claim they are paid very small fees. But considering the eagerness with which even stellar names volunteer for video programs, perhaps they are not being underpaid at all. Many are willing to go on just for the prestige and experience.

What television needs is a good sense of program balance. Nothing seems to be done on proportionate basis. And, in an art catering to persons with many tastes, it seems silly for the program lads to go overboard on single program topics.

PHILADELPHIANS, too, were able to look in on the convention proceedings originating in their very own city. All of which seems fair enough. Arrangements for the local telecasting of the Republican sessions were made in a joint effort of the Mutual Broadcasting System and Philco's video transmitter, W3XE. Outstanding fact of the arrangement was the MBS statement that W3XE serves 5,000 set owners; this, if accurate, is an amazing total of television receivers in an area where the new art is highly experimental.

The transmissions were jointly supervised by David Grimes, chief engineer of Philco, and Jack Poppele, ditto of WOR-Mutual.

This Philadelphia effort might imply future video tie-ups between Philco and Mutual. What with hints of CBS going into the equipment field and NBC already tied up with RCA, there may be nation-wide alliances between telecasters and makers of home receiving equipment.

WOR, incidentally, soon expects to operate a television station in the New York area. The site wasn't announced but it seems likely that it will be atop a Madison Avenue skyscraper where the Newark broadcasting firm recently leased roof space for its frequency-modulation station. If so, the move will consolidate all of New York's television facilities—NBC-RCA, CBS, DuMont and Mutual—within a half-mile area of the midtown zone.

NOW that the FCC has put a temporary crimp on the mass merchandising possibilities for television receivers, RCA shows that participation in the new art by amateur experimenters is by no means curtailed. The firm recently demonstrated its latest assist to

amateurs. It consists of a small television transmitting tube which opens the way for hams to operate two-way television stations in their own shacks. Obviously, the application of the apparatus will be limited, despite the low estimate of \$300 for a complete two-way set-up.

The Video Reporter was among the press representatives attending the first demonstration of the equipment at the RCA labs in Harrison, New Jersey. While impressed with the low-cost of the equipment and the simplicity with which it can be set-up and operated, it is difficult to see any wide demand for the apparatus which has technical limitations.

Getting out an iconoscope-type tube at \$25 is an achievement, but the 120-line image is



Above: Cause—Republican Convention. Below: Effect—H. Hoover televised.

not too desirable and the receiver tube, too, offers too small a picture.

It's all interesting. And, perhaps, it will appeal to some hams, not in its demonstration form, but in just certain features that they can individually adapt to their own experimental theories.

WORD reached the Video Reporter that there was "wholesale" firing of television personnel at W2XBS shortly after the FCC expressed itself on the course video progress should take. But on checking with NBC we were told that "just ten persons" were let out and that undoubtedly they will be recalled with "an anticipated television revival" in the Fall of this year. The suspended ten employees were drawn from both the program and engineering sides of the W2XBS set-up.

SOME folks around Radio City seemed a bit skeptical when the Video Reporter mentioned the fact that television reception on board an ocean liner was nothing new. So here are a few details concerning the feat:

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the correct amount of tension and proceed to wrap it as the first connection. It will be necessary for an assistant to hold the antenna against itself while the actual wrapping is being completed, in order that the correct amount of tension will be maintained.

The correct amount of tension as applied to an aircraft antenna is customarily accomplished by noting the amount of pull upon the shock-cord assembly or the spring and pulley attachment. It should never be tightened to the point where all elasticity is utilized. A certain amount of elasticity must be present in the antenna in order to cope with structural bends and vibration. If icing conditions occur, an antenna which is too tight will usually snap. However, by having the correct amount of tension applied to it, it will stand up much longer under severe icing conditions. It is well to note here also, that if solder is used in the installation of an aircraft antenna that some means must be provided whereby corrosion is minimized. By spotting the soldered connection with either shellac or varnish, corrosion will be held at a minimum. It is not advisable however, to use too much solder at any time, because this increases the r.f. resistance somewhat at the connection. One or two drops are sufficient on any connection utilizing the tie-in described above, because the tightly wound spirals take care of "surface contact."

The actual installation of any aircraft antenna should be carefully performed, and care taken with each connection made; making certain that good insulation is maintained throughout the entire installation by utilizing insulators placed at least six to four-teen inches from end supports.

(To be continued next month)

Video Reporter

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The demonstration was conducted by the Baird Television Development Company, of London, and the images, transmitted from a studio in the British capital, were received in mid-Atlantic aboard the *S.S. Berengaria*. And here's the most amazing fact of all. The demonstration occurred in the Spring of 1928—a full dozen years before the recent RCA shipboard reception test! Of course, the methods employed are generally obsolete now, but shipboard observers declared that the images were clear and faces were easily recognized.

SPEAKING of old-time television demonstrations brings to mind one of the first video displays we witnessed. It was arranged by WOR, Newark, New Jersey and took place at the department store of L. Bamberger & Company in that city.

It was a peep-hole, scanning-disk affair and the program consisted of a puppet show. We mention it because at the moment the idea of puppets is leaping to the fore as ideal program fare in the New York television area.

Bill Eddy, the clever television craftsman imported to the New York NBC-RCA studios from the old Farnsworth station in Philadelphia, has perfected a mechanical puppet which moves about by an intricate arrangement of gears and motors. And we're told he expects to build several other "characterizations" along similar lines so that NBC could have an entire stock company of robot puppets.

AND it's a puppet, too, that captures stellar honors at the RCA television show staged for visitors at the New York World's Fair. A young fellow named Burr Tillstrom presents an extemporaneous act with doll-like figures manipulated by his hands. His clever, unrehearsed repartee has all the makings of smash hit television program fare but his demonstrations are limited to receivers displayed in the RCA building on the Fair grounds. There are other excellent video performances, too, presented solely for the entertainment of Fair visitors. The shows are presented continuously by a small company of variety performers. On the whole, the programs are superior to the telecast fare on W2XBS in recent months. But an RCA spokesman told us that there's a definite ruling prohibiting the acts to go on the air so that all video set owners in the metropolitan area could look-in in addition to the observers in the Fair building proper.

Maybe it's spite. And maybe it's something else. But, in turn, the demonstration sets in the building don't carry the W2XBS programs, even when they originate in the very same Fair building—as they occasionally do.

WHILE there are no apparent new strides in equipment demonstrated at the Fair, RCA has done a bit of sound thinking on how to display its television sets to best merchandising advantage. The idea of letting crowds swarm around receivers and view the images while standing was rejected this year. Instead, a group of individual settings—each representing a living room—is employed. The visitors file in and are comfortably seated in small groups and are able to view a short variety show in complete comfort. The programs originate before large audiences outside and are repeated after short intermissions so that visitors can observe both the transmitting and reception techniques.

IMPROMPTU television demonstrations in semi-public spots in the New York area are running a bit out of hand insofar as manufacturers and dealers are concerned. The makers of video equipment can do much to instruct the retailer on how to demonstrate his sight-and-sound receivers in a manner best suited to merchandising practice. But the growing use of television sets in restaurants, bars, hotel lobbies, theater lounges, etc., is what's worrying the men concerned with future sales.

To some extent, the public demonstrations that are in the hands of men in other trades do promote the video art. But the manner in which the receivers are operated bothers the equipment men because they feel that a large share of the sets are operated in a negative manner that would curtail rather than boost the sale of television models for the home.

HERE'S an example of what takes place. The Video Reporter was having dinner at a New York restaurant one night when the voice of Lowell Thomas reporting the day's news was heard from a loudspeaker. Looking ceilingward in the direction the sound came from, we noticed that reception was made on a television receiver mounted high on the wall almost flush with the ceiling. The viewing angle was terrible and the distance of the diners from the television screen made the image seem of postage-stamp size.

We reached one definite conclusion concerning the demonstration: It certainly wouldn't boost set sales. Furthermore, it wouldn't boost patronage of the restaurant either. Hoisting the receiver to ceiling height represented a teaser that was annoying. A bad view is worse than none at all. Actually, reception of the Lowell Thomas program on sound radio alone would have served a better promotional and entertainment purpose for the restaurant.

Retailers give careful instructions on operating a receiver to every purchaser of a set for home use. They should take especial care in advising buyers who intend using the sets for semi-public demonstrations. The latter purpose can boost or hamper additional video sales. And it's to the best advantage of all concerned—user and seller alike—to operate the receiver in the most practical manner for comfortable viewing.