

The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

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MEETING/ ACTIVITY NOTES

Reported by Marv Beeferman
and Ray Chase

The April meeting of the NJARC brought two more nominations to the floor; Ray Chase and John Ruccolo as Trustees. At the March meeting, nominations for Technical Coordinator (Al Klase), Richard Lee (Vice President), Sal Brisindi (Treasurer) and Phil Vourtsis (President) were seconded. Two positions remain open - Secretary and Sargeant-At-Arms. The upcoming May meeting will provide the last opportunity to propose nominations before the June election.

As a result of suggestions by the membership, Walt Heskes was appointed to supervise a club resistor program. The program will function similar to our capacitor program (managed by John Ruccolo) but specific details are still to be worked out. For starters, Walt will purchase an inventory of the most needed values and will be pleased to accept any donations from club members including potentiometers, wirewound resistors, carbon resistors and power resistors.

The club was treated to two videos; a New Jersey Network interview with Theremin aficionado Scott Marshall and a sample of Dave Sica's 5-hour documentary on the First Annual Early Television Convention in 2003.

Dave's professional production includes coverage of the convention presentations as well as two panel discussions. The convention presentations cover a broad spectrum of early TV collecting and restoration information by knowledgeable experts in the field. Much of the equipment in the museum's collection is also featured in the video. The program is available on a single VHS tape for \$30 or on a set of three DVD's for \$35; the price includes postage.



MEETING NOTICE

The next meeting of the NJARC will take place on Friday, May 14th at 7:30 PM at the David Sarnoff Library in Princeton NJ. See the NJARC web site or contact Phil Vourtsis at 732-446-2427 for directions.

The format of this month's meeting will differ somewhat from those of the past. It will begin promptly at 7:30 with a presentation by Maurice Schechter titled "From Zworykin to Kosovo: How RCA's WWII Military Television Development Shaped Modern Warfare." In attendance will be IEEE members since the talk is also sponsored by the IEEE History Center lecture series. See this month's *Broadcaster* for an introduction to the topic.

The regular club business meeting will begin at 9:00 PM. This is the last month for accepting nominations for next month's elections.

You can order from etf@columbus.rr.com or 614-771-0510. Your editor strongly endorses this high quality production and the proceeds will be used to help the museum's operation and expansion.



NJARC members show their support for InfoAge at the April RAB meet.

Scott was interviewed on NJN's *State of the Arts* for a feature titled "The New New Thing." Scott noted that the Theremin never really met RCA's expectations as the next big thing and only remains as an oddity, in part because it's almost impossible to play well. But NJARC members know that this is not a drawback for Scott as demonstrated by a mini-concert he gave some two years ago for the club's enjoyment.

Technical Coordinator Al Klase presented a well-received presentation based

on his January 2002 QST article "The Age of the Autodyne." Al traced the use of the regenerative circuit by radio amateurs from its discovery by Edwin Armstrong through the improvements introduced by John Reinartz to its high point with the introduction of more effective vacuum tubes in the late 20s and early 30s. Al set up a "Rationalized Autodyne" based on George Grammer's landmark 1933 QST article for members to "play with" and get the true feel of the technology of the time. The sophisticated voltage-regulated power supply constructed by Al using vintage parts from plans from the 1934 *Radio Amateur's Handbook* was a nice touch.

NJARC members turned out in force to support InfoAge at the April 27th RAB meeting. Here's Ray Chase's report:

Many thanks to the 15+ members who showed up at the RAB meeting in Wall Township. Our presence created a stir even though the situation regarding Camp Evans had quickly been reversed by the actions of the township and a US Congressman. Our show of community support made them uneasy even though the dire circumstances of a month ago had been turned around by a unified front. We need to not relax at all until the property is

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deeded over and I shall try to keep you informed.

The contract for sewer repair is now let and by this time next month it should be completed to the cottages and to the Marconi hotel. There are no further events that should prevent the deeding over of the Diana site and the two cottages by summer. There are still issues with the Marconi hotel that will prevent transfer until next year but the attitude of BRAC has turned around.

If you wish to delve into significant documentation on the history and recent developments regarding these problems, please go to <http://infoage.org/noimpact.htm> for details. Of most significance is item 21, the April 6 letter from the township to the Army. It puts the whole issue in perspective. It's a good idea to check the Infoage site regularly anyway. We still need to maintain vigilance or the Army will revert to past practices. Stay Tuned!!

Ray also attended a walkdown of the site on May 5th:

This meeting and inspection was agreed to by the Army and the Township in order for the Pentagon to get an idea of the decay of the buildings at Camp Evans and to try to agree on what needs to be done by whom and by when. At the meeting was Major Hinnant from the Pentagon, a civilian representative of the Army historic preservation office, various civilians representing several functions at Fort Monmouth, the Township Mayor and attorney, the township co-chair of the RAB, environmental consultants employed by the Township, Fred Carl, myself and a few others.

The Army group had a private pre-meeting before opening it up to the rest of us. The Army co-chair of RAB presented a comprehensive slide presentation showing the present state of the buildings slated to go to Infoage except for the Marconi hotel, the cottages and the Diana site since these are in good shape or are almost ready for transfer. We then spent an hour touring the site.

Under a prior agreement with the Township several years ago, the Township had agreed to take possession of the buildings as they existed at that time, subject only to the environmental issues being resolved and the site being declared "clean".

What brought things to a head was delays in performing the environmental clean-up and the failure of the Army to protect, maintain, heat or take steps to preserve the buildings in the past two years. The presentation and the walk-around was depressing. On the one hand, the obvious potential of the site was abundantly made clearer in touring areas that I had not seen previously or I had not realized the full extent of the proposed Infoage properties. On the other hand, the decay and deterioration was unconscionable. The two "H" buildings and the "L" building behind the Marconi hotel had gone without power for months and without heat or dehumidification for years. Radiators had burst, roof leaks had gone without repair and buildings had not been secured. The main result was the formation of extensive mold on the interior walls of most buildings, peeling of paint on both the interior and exterior of wood buildings and water damage to ceilings and floors.

Due to the persistent efforts of Fred Carl, the portion of the L building where we have artifacts stored, was protected with de-humidifiers and that portion of the building was pointed out as an example of what could have been done throughout the site had the Army chosen to do so. There was no mold or water damage evident there.

However, the meeting was by and large positive in that Major Hinnant committed to determine the cost of proposed actions to be taken in order to make the property acceptable to the Township. He said that he would have this by June 1st (an ambitious task). The Township and Infoage will have to work out some conditions to be agreed on but the Major was positive sounding and said all the right things. Of course we've heard all this before and we'll have to maintain our vigilance to prevent it from falling apart later.

Thanks to Al Klase and Ray Chase for another job well done. On April 14th, they picked up two display cases and a recently acquired Stromberg Carlson 535M from the Sarnoff library and transported them to cottage #2 at InfoAge. The 535M is a beautiful, top-of-the-line 1940 floor model and will make a great demonstration piece for the club.

On April 15th, the team of Joe Benvenuto and Ray Chase did another

"History of Radio" presentation to an enthusiastic audience of about 50 antique car collectors (who also happen to have a few radios as well). This was the monthly meeting of the Central Jersey Antique Car Club held at the Hamilton Township Library. In addition to his usual display of early battery sets, cathedrals, tombstones, plastics and a console, Joe also brought a display of about 30 auto-related novelty transistor radios. Included were radios in the form of car models, gas pumps and spark plugs and even some of those 50s/60s transistor radios that you could remove from the dashboard and carry as a portable. This was also a big hit. The presentation was arranged by Earl Brancolino, President of the car club who recently joined NJARC.

It is believed that the majority of books purchased from the Sarnoff library have been rounded up, but there may be some smaller quantities lingering out there based on our list of those who volunteered to temporarily house them. If you still have any, please bring them to the next meeting or contact Ray Chase to make arrangements for pickup. Ray can be reached at 908-757-9741 or enrpnr@erols.com.

You may find a "LAST ISSUE" sticker on the May *Broadcaster*. This is based on non-payment or non-receipt of dues as of May 7th. If you have already responded to Marsha Simkin's mailing, your status will be updated next month. If not, please remit your dues payment (\$20) immediately so you are kept informed of all club activities.

PICTURE TUBE REPLACEMENTS

Edited by Marv Beeferman

The majority of this article is based on Milton S. Kiver's "Replacing Picture Tubes in Television Receivers" which appeared in the October 1949 issue of "Radio-Electronics"...Ed.

On occasion, you have to throw a bone to the TV collectors. Based on some previous *Broadcaster* TV restoration articles, it seems that video and audio are miles apart when it comes to troubleshooting. As radio

collectors, in one aspect of the restoration process, we're pretty lucky...most tubes are still plentiful and reasonably priced, with numerous opportunities for interchangeability. But when it comes to cathode-ray tubes (CRT's), the chances for finding an appropriate replacement for the some 200 models produced by 1950 drastically fade. If nothing else, the information in this article may be helpful in deciding how much to press the question "How's the tube?" before deciding on your next early model TV purchase.

In some cases, the substitution process can get very complicated. For example, it was the general practice to utilize the same electrical method for both focusing and deflection - electrostatic or electromagnetic. But the 5TP4 projection tube, the 7DP4 and the 9AP4, and the 12AP4 are all electromagnetically deflected and electrostatically focused. Of these tubes, only one, the 5TP4, was still being used extensively by 1950. The 7DP4 appeared in only one set, an early postwar RCA TV which was quickly dropped from production. The 9AP4 and 12AP4 are pre-war tubes and, by 1950, no more than perhaps 1,000 working TV sets contained them.

One of the major rules that drive CRT interchangeability is based on some major differences between electrostatic and electromagnetic deflection of the CRT beam:

- Since electrostatic deflection is accomplished by employing balanced voltages, voltage amplifiers are required in the output stage of the horizontal and vertical sweep systems.
- For electromagnetic deflection, the beam is subjected to the magnetic field established by a deflection coil, and this field, in turn, is developed by the current flowing through the coil windings. Thus, with electromagnetic deflection, the vertical and horizontal sweep amplifiers must be capable of providing large amounts of current.
- Electrostatic deflection tubes require extensive high voltage bleeder networks to furnish the correct focusing and centering voltages.
- Electromagnetic deflection tubes utilize relatively simple high voltage power supplies. The energy, in many instances, is furnished by the horizontal sweep system.

Conclusion: Electromagnetic and electro-

static deflection tubes are not interchangeable without extensive circuit alterations.

The table provided on page 5 provides a comparison of major tubes available by late 1949. Let's start with the 3K4. It has a 3-inch viewing screen and utilizes electrostatic deflection. The only set built that utilized this tube was the famous \$99 midget Pilot TV-37. There are no known replacements for this tube. The only other 3-inch tube listed is the 3NP4, but the fact that it uses electromagnetic deflection and requires 24,000 volts for beam acceleration makes it an unsuitable replacement.

The next three tubes (3NP4, TP-400A and 5TP4) are all projection tubes which developed small, intense images that were enlarged five to 15 times by suitable optical systems. None of these tubes are interchangeable, the chief obstacles being differences in physical size, variations in basing and second-anode voltages. The 3NP4 was designed specifically for the North American Philips projection system used in the United States. It differs so radically in design that it requires a special high voltage power supply and mounting assembly. The TP-400A was an exclusive product of the Philco Corporation, and is found only in Philco projection TV's. The 5TP4 was employed more extensively, appearing in all projection receivers not utilizing the North American Philips system.

Of the four 7-inch tubes listed in the table, only one, the 7JP4, was still in use by 1950. The other three, which appeared since the end of WW II, were subsequently replaced by the 7JP4. The 7DP4, appeared exclusively in 7-inch RCA sets during the first year of postwar TV production and is not interchangeable with the other three CRT's.

The 7EP4 appeared for a brief period but was soon replaced by the 7GP4 which, in turn, was superseded by the 7JP4. The 7EP4 suffered from lack of brilliance, since only 2,500 volts were employed for acceleration. The 7GP4 was a step above and the 7JP4, using 4,000 to 6,000 volts gives satisfactory images and has a higher deflection sensitivity. The 7JP4 and the 7GP4 are directly interchangeable without any circuit changes. This is not true for the 7EP4 and the 7JP4; the 7JP4 cannot operate at the 7EP4's 2,500 volt potential and the sockets of the two tubes differ. But set modifications can be made to raise the required potential to 5,000 to 6,000 volts and socket changeout is a relatively simple

matter.

The 9AP4 may not be immediately recognized since it was a prewar tube and was not used in any postwar receivers. Extensive modifications to the high voltage supply would be required to replace it with a 10-inch tube. R.f. and flyback power supplies were not used in TV receivers in 1939; the supplies followed conventional lines. A 10BP4 might be considered as a replacement but a 9,000 volt supply would be required.

We come now to the 10-inch tubes. The 10EP4 is similar to the 10BP4 except that it uses 1,000 volts less for acceleration. There are no significant differences between the two except that the 10BP4 was more plentiful. If a 10BP4 is used as a replacement and a brighter image is desired, a way to increase the acceleration voltage will be explained later.

The 10FP4 (which uses a thin aluminum layer over its fluorescent screen to increase brightness) is similar to and directly interchangeable with the 10BP4. However, the 10FP4 does not require an ion trap. Thus, substitution for a 10EP4 or 10BP4 (if electromagnetic coils are used) involves laying the ion trap aside. If a fixed or permanent-magnet type of ion trap is used, it may be removed entirely from the set.

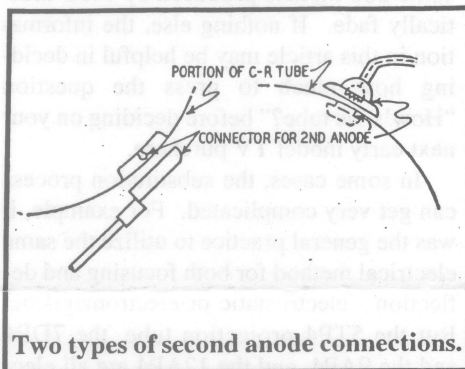
The 10HP4 is a 10-inch version of the 7JP4 and completely interchangeable with it (as far as electrical characteristics are concerned). Using electrostatic deflection, it is not interchangeable with the other 10-inch tubes that have been mentioned. The tube was limited to use in Belmont TV's, manufactured only by Sylvania and is seldom encountered by collectors.

In the 12-inch class, there is one prewar tube (the 12AP4) and four post-war tubes (the 12JP4, 12KP4, 12LP4 and the 12QP4). The remarks made previously with regard to the 9AP4 also apply to the 12AP4. The 12JP4 (a product of Du Mont) utilized neither an ion trap nor a metal-backed screen and was susceptible to spot formation. The 12QP4, with a gun structure that requires an ion trap, was developed to deal with this problem. The 12LP4 (a big brother of the 10BP4) also used an ion trap while the 12KP4, having a metal-backed screen, does not.

All four of the post-war 12-inch tubes are interchangeable based on the following modifications:

1. Both the 12JP4 and the 12QP4 contain a second-anode bulb contact which is a re-

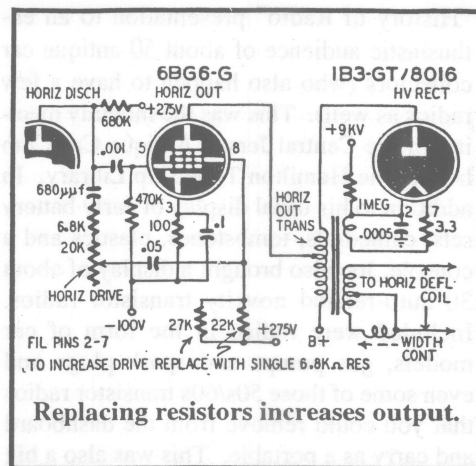
cessed ball cap and therefore requires a female connector. The second anode bulb contact of the 12LP4 and 12KP4 is a recessed small cavity and a male connector must be used. Thus, when interchanging these two sets of tubes, the second-anode connector must be changed.



2. Replacement of a 12JP4 may result in poor beam focus. This is because the focus coil current for the 12JP4 is 146 ma while the others require from 11 to 36 ma less. If sufficient resistance variation is not available in the original 12JP4 set, paralleling a fairly high-value resistor (start with 15,000 ohms) across the focus coil will do the trick.

The table reveals that the deflecting angle in the 12JP4 and 12QP4 is 50 degrees while the angle in the 12LP4 and 12KP4 is 54 degrees. If a 12JP4 or 12QP4 is replaced by either of the other two tubes, the image may not be wide enough to fill the screen. In most sets, sufficient reserve power is available so that the width control can widen the image. However, in some sets, it may be necessary to increase the B-plus fed to the horizontal sweep system. While each set presents a distinct problem in this respect, a useful procedure is to start with the B-plus voltage of the horizontal output amplifier. Where the amplifier is a pentode or beam-power tetrode, the voltage on the screen grid rather than the plate should be increased. In such tubes, amplification is controlled more by the screen grid potential than it is by the plate voltage.

To illustrate this point more fully, the usual horizontal output circuit employed with 10-inch CRT's is shown. To obtain a greater horizontal sweep and at the same time increase the high-voltage output, the two screen-grid resistors of the 6BG6-G are replaced with a single 6,800-ohm, 2 watt resistor.



Additional height, if required, can also be obtained by raising the plate and screen voltages of the vertical output amplifier.

The remaining tubes listed in the table possess electrical properties which are very similar and which would permit interchangeability without any circuit changes. However, physical differences which would prompt extensive cabinet alterations would exclude some substitutions.

In closing, let's just touch on the subject of CRT rebuilding. My sources tell me that there is only one quality firm left in the US that still restores B&W TV CRT's...Hawk-Eye Picture Tube Mfg. Inc. The cost is not pretty. One customer found on the net suggests that you "don't bother calling unless you are prepared to pay about \$250 (for a 21" CRT) plus shipping both ways." This doesn't seem too unreasonable considering the work involved. The electron gun must be cut out and replaced with a new one. Then the gun must be accurately "set," a vacuum pulled and the tube sealed and tested.

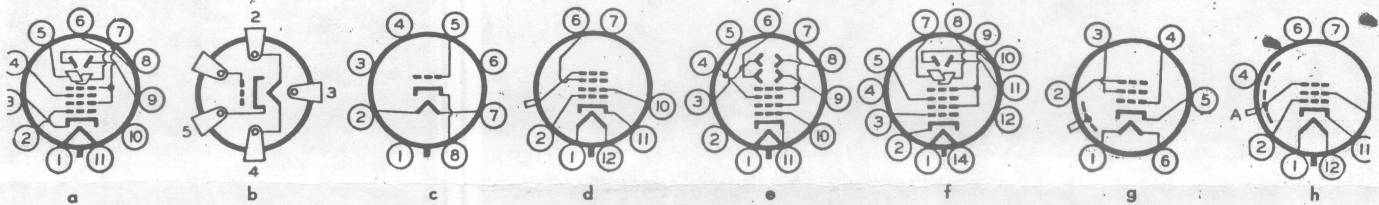
RCA's MILITARY TV EQUIPMENT

Edited by Marv Beeferman

Modern warfare using remote transmission of images as a means of weapons guidance and aerial reconnaissance can trace its roots to before W.W.II in the vision of Vladimir Zworykin and David Sarnoff of RCA. On May 14th, prior to conducting club business at 9:00 PM, the Sarnoff Library and the NJARC will host a presentation by Maurice Schechter titled "From Zworykin to Kosovo: How RCA's

TELEVISION TUBE TABLE

Type	Screen diam. (in.)	Length (in.)	Base	Socket	Bulb contact	Total defl. angle	Type defl.	Type focus	Heater volts	Heater amps.	Focus coil ma	Ion trap	Typical Operating Cond.				Type
													Cutoff bias	Grid No. 2 volts	Anode No. 1 volts	Anode No. 2 volts	
3KP4	3 $\frac{1}{4}$	11 $\frac{1}{2}$	Magnal	A	None	—	E	E	6.3	0.6	—	No	-64	—	1000	2.5KV	3KP4
3NP4	2 $\frac{1}{2}$	10	Special	B	Cup	42°	M	M	6.3	0.6	—	Metal screen	-65	—	—	24KV	3NP4
TP400A	4	12 $\frac{3}{4}$	Octal	C	Cavity	50°	M	M	6.3	0.6	—	Metal screen	-65	—	—	20KV	TP400A
5TP4	5	11 $\frac{1}{4}$	Duodecal	D	Cavity	50°	M	E	6.3	0.6	—	Metal screen	-70	200	4900	27KV	5TP4
7DP4	7 $\frac{1}{4}$	14 $\frac{1}{2}$	Duodecal	D	Cavity	50°	M	E	6.3	0.6	—	Mag.	-45	250	1430	6KV	7DP4
7EP4	7	14 $\frac{1}{2}$	Magnal	E	None	—	E	E	6.3	0.6	—	No	-60	—	650	2.5KV	7EP4
7GP4	7	14 $\frac{1}{2}$	Diheptal	F	None	—	E	E	6.3	0.6	—	No	-60	—	1000	3KV	7GP4
													-120	—	1620	4KV	
7JP4	7	14 $\frac{1}{2}$	Diheptal	F	None	—	E	E	6.3	0.6	—	No	-180	—	2400	6KV	7JP4
9AP4	9	21	6-pin	G	Metal cap	—	M	E	2.5	2.1	—	No	-45	250	1460	7KV	9AP4
10BP4	10 $\frac{1}{2}$	17 $\frac{3}{4}$	Duodecal	H	Cavity	50°	M	M	6.3	0.6	115	Mag.	-45	250	—	9KV	10BP4
10EP4	10 $\frac{1}{2}$	17 $\frac{3}{4}$	Duodecal	H	Cavity	50°	M	M	6.3	0.6	115	Mag.	-45	250	—	8KV	10EP4
10FP4	10 $\frac{1}{2}$	17 $\frac{3}{4}$	Duodecal	H	Cavity	50°	M	M	6.3	0.6	115	Metal screen	-45	250	—	9KV	10FP4
10HP4	10	19 $\frac{1}{4}$	Diheptal	F	None	—	E	E	6.3	0.6	—	No	-100	—	1500	5KV	10HP4
12AP4	12	25	6-pin	G	Metal cap	—	M	E	2.5	2.1	—	No	-45	250	1425	7KV	12AP4
12JP4	12	17 $\frac{1}{2}$	Duodecal	H	Ball cap	50°	M	M	6.3	0.6	146	No	-45	250	—	10KV	12JP4
12KP4	12 $\frac{1}{4}$	17 $\frac{3}{4}$	Duodecal	H	Cavity	54°	M	M	6.3	0.6	135	Metal screen	-45	250	—	11KV	12KP4
12LP4	12 $\frac{1}{4}$	18 $\frac{3}{4}$	Duodecal	H	Cavity	54°	M	M	6.3	0.6	110	Mag.	-45	250	—	11KV	12LP4
12QP4	12	17 $\frac{1}{2}$	Duodecal	H	Ball cap	50°	M	M	6.3	0.6	110	Mag.	-45	250	—	10KV	12QP4
15AP4	15 $\frac{1}{2}$	20 $\frac{1}{2}$	Duodecal	H	Ball cap	52°	M	M	6.3	0.6	160	No	-45	250	—	12KV	15AP4
15DP4	15 $\frac{1}{2}$	20 $\frac{1}{2}$	Duodecal	H	Ball cap	52°	M	M	6.3	0.6	146	Mag.	-45	250	—	12KV	15DP4
16AP4	15 $\frac{3}{4}$	22 $\frac{1}{4}$	Duodecal	H	Metal cone rim	53°	M	M	6.3	0.6	140	Mag.	-60	300	—	12KV	16AP4
16FP4	16 $\frac{1}{8}$	20 $\frac{1}{4}$	Duodecal	H	Ball cap	62°	M	M	6.3	0.6	146	Mag.	-45	250	—	13KV	16FP4
19AP4	18 $\frac{3}{4}$	21 $\frac{1}{2}$	Duodecal	H	Metal cone rim	66°	M	M	6.3	0.6	146	Mag.	-45	250	—	13KV	19AP4
20BP4	20	28 $\frac{1}{4}$	Duodecal	H	Metal cap	50°	M	M	6.3	0.6	140	No	-45	250	—	15KV	20BP4



WWII Military Television Development Shaped Modern Warfare.” The talk is part of Rutgers’s IEEE History Center lecture series and will be also open to IEEE members and the general public. Mr. Schechter, chief engineer for DuArt Film and Video, will provide a well-illustrated presentation that will trace the development of military television to the end of the war, where practical TV-guided weapons were used in combat in 1945.

Mr. Schechter has spent nearly 20 years researching this subject from the proving grounds of Nevada to the National

Archives. His talk will include a demonstration of the restored television equipment used during the war for TV-guided weapons. Among his many images, he will be showing archival footage of the developmental TV bombs and filmed recordings, or kinescopes, from bombing runs.

To get a head start on the subject, Mr. Schechter has provided a short history on the subject on the Military Radio Collector’s Association (MRCA) web site. Development of the hardware by RCA was divided into “project blocks,” each block building on the previous one to advance

the technology.

Block 1 (with a contract date of 1942) consisted of the ATE, ATF, ATG and ATH camera/transmitter series with the camera and transmitter housed in a single case. The sets consisted of four fixed independent channels in the 100 MHz band, each channel being 9 MHz wide due to the use of double side band transmission. RF power was 15 watts, input voltage was 12.5 VDC and the system used an iconoscope and 829 output tube. Support components were a camera transmitter, dynamotor, antenna and monitor.

Block 2 equipment differed very little from that of Block 1, with most changes made to expedite production and simplify installation.

Block 3A introduced the ATJ set. In this unit, the camera and transmitter were separate units and the transmitter was tunable to five different frequencies in the 300 MHz band, each 8 MHz wide. The pickup tube remained an iconoscope but 8025's were used for the output while input voltage was increased to 27.5 VDC. The ARJ matching receiver was tunable to 5 channels in the 300 MHz band and had a self-contained dynamotor and 7" green phosphor CRT.

Block 3B introduced the ATK with improved sweep oscillators in the camera and stability improvements to the transmitter. The ARK was the matching receiver to both the ATJ and ATK transmitting sets with improved RF and IF stages. RCA subcontracted part of the production run to Farnsworth Television (CFN), which also produced the ATK and ARK sets.

A second contract for 3B changed nomenclature to the "AN" (Army-Navy) system and further improvements were made. For example, a solenoid-controlled haze filter was added to the camera. A third contract took advantage of new image orthicon technology in the form of the LM-15, the first production image orthicon, and later on, the improved 2P21 orthicon.

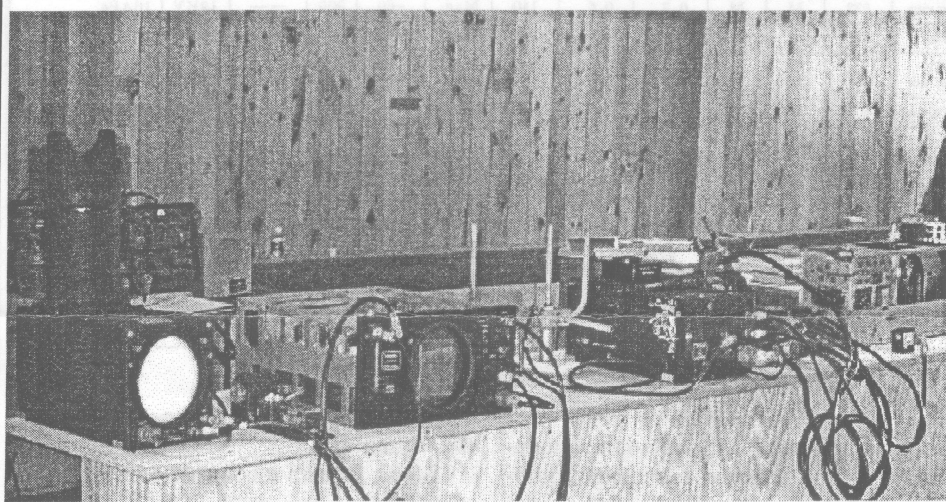
Following the war, a modified block 3B provided the AXT-2 camera with the ability to be used in observation and telemetry applications. One such application was the jet propelled Bell YP-59B aircraft. Two cameras were connected to a relay unit feeding a single transmitter. The guidance aircraft could remotely switch from a display of the instrument panel to the horizon.

Project MIMO

MIMO is an acronym for Miniature Image Orthicon. During the war, advances in tube miniaturization made project MIMO possible. The project entailed the use of a medium-angle guided bomb-type missile with television guidance. The system was to consist of a small cylindrical camera unit placed in the nose of the missile, a small transmitter, power supply and a dipole antenna. The complete system weighed 50 pounds, had a power of eight watts in the 300 MHz range and was designated the AN/AXT-7.

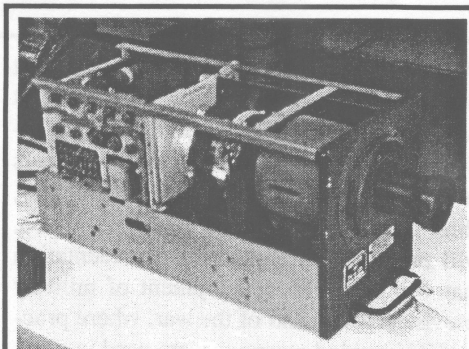
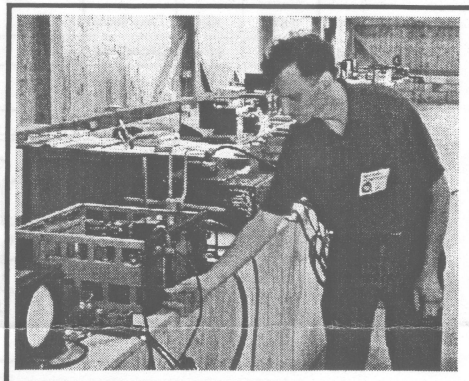
Project Ring

This equipment was developed for long-range, high-altitude reconnaissance operation. Since it was designed for attended operation, weight and complexity considerations were secondary to the production of high definition television pictures. The project was a joint development between NBC and RCA. The transmitter operated on either 90 or 102 MHz with a peak power of 1400 watts. Range was 200 miles at 22,500 feet.



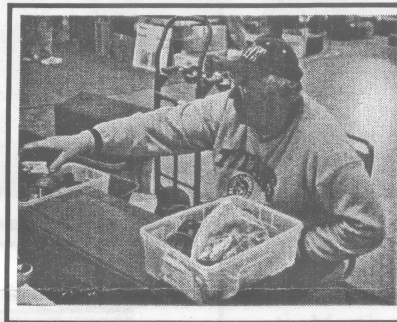
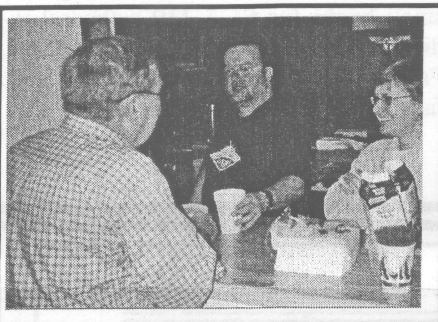
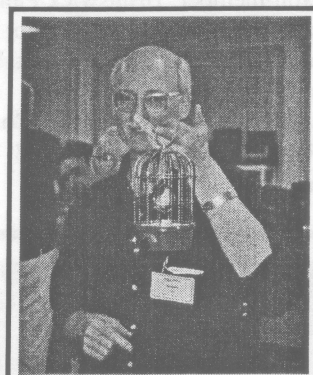
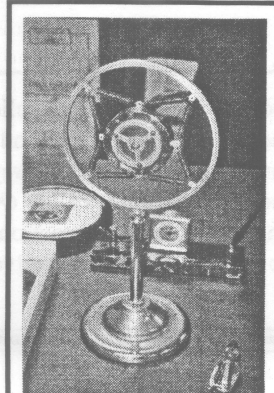
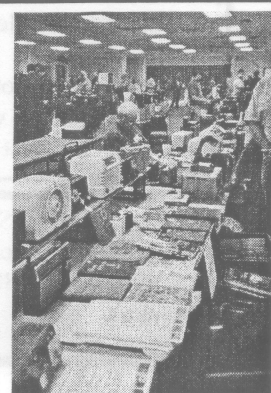
A complete military television transmitting and receiving system used during WWII to guide bombs to the target. The equipment is known as Block 3 and was developed by RCA. This is the first time in over forty years that a complete block system has been known to be fully restored and transmitting and receiving over the air in exactly the same way it did in 1944.

Left to Right: Bombardiers monitor with hood, destructor panel, receiver, receiving antenna, transmitting antenna, transmitter with test meter, junction box, dynamotor, camera and light box.

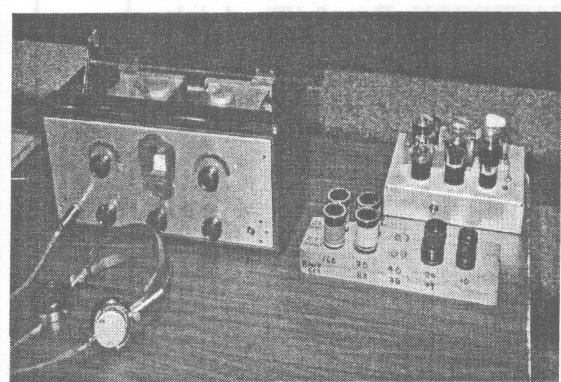


Iconoscope television camera, known as a "conversion unit." This camera used the first design of a pickup tube that RCA developed and focused at a great distance.

APRIL SWAPMEET



AL's AUTODYNE



Some intense DX'ers

CONNECTIONS

Free exposure for buyers and sellers! Unless requested otherwise, each ad will run for two months in both the *Jersey Broadcaster* and the *Delaware Valley Oscillator*. All buying and selling transactions are the responsibility of the parties involved.

FOR SALE

Check out NJARC's capacitor program for those most commonly needed replacements. Contact John Ruccolo at any club meeting or call him at home (609)-426-4568 to find out what's available. All proceeds go to the club.

Non-member: Old radio and radio/record player combo. Original condition but showing signs of wear and tear. (See photo to right.) hr.burns@verizon.net (Helen Burns).

The NJARC tube program offers clean, tested, boxed tubes at very reasonable prices with availability at any club meeting (no dealers, please...not for resale). Proceeds go to the club. Of course, donations of radio-type tubes in any condition are welcome. See Gary D'Amico at the next meeting.

National NC100 ASD with manual. Has been re-capped, needs alignment, \$55. Jack Winans, 609-882-9296, WA2LGE@aol.com.

Non-member: Brunswick Panatropé console, late 30s, nice veneer but rather plain and boxy, AM/SW/78 turntable, storage space for records, usual amount of scratches, reasonable. Contact John Ruccolo at 609-426-4568 for phone number.



Spring cleaning sale: Shortwave radios - Hallicrafters SX99 \$100, SX130 \$120, SX-43 \$130, Lafayette HA225 \$70, BC348 \$65, Heathkit G4-1680 \$65.

Test equipment - HP 400D AC voltmeters, 1mV to 300V full scale, 4MHz bandwidth, great for measuring gain in broadcast band radios, audio work, etc., good operating condition, \$10. Measurements grid dip meter with book, \$50. Tube testers, distortion analyzers, spectrum analyzer, scopes, etc. available - ask.

Near recent (1980s?) stereo equipment receivers, tuners, turntables, \$10 each (working).

Parts available: Tek465, Philips 3052 and various other HP and Tek equipment. Steve Goulart, 732-219-6963, sgoulart@att.com

WANTED

Large tuning knob for Pilot TV-37, handheld remote control for Fisher RK-20, handle and plastic bezel for military Zenith Transoceanic 520/URR, large and small knobs for RCA 110 cathedral radio. Frank Johnson, 530 Elford Road, Fairless Hills, PA 19030, 215-943-8295, fadacat@aol.com.

The attached story comes from the Dec. 6th, 1948 edition of the *Easton Express*. It certainly brought back some memories. The first TV set in my family was a Du Mont hand-me-down from my uncle. I believe I was about 5 at the time and am not sure about the model year. But I do remember a very small screen (5 inches?) that was covered by a huge magnifier. The magnifier came with the set and pivoted on a hinge above the screen. I think I was more impressed by the magnifier than the TV; it offered hours of entertainment exposing the previously hidden details of every household object and eight-legged creature I could fit behind the screen.

TV magnifiers were common in 1948; I found one ad for the Television Magnifier Co. of Brooklyn, NY which offered them for 7, 10 and 12" tubes. The magnifier in the article was probably of this type where it was not attached to the set but supported on brackets on which the TV rested. It was made of Lucite, came in a clear or light blue and sold for \$14.95 for a 7" tube and \$22.95 for a 10" tube.

Television 'Bubble' Causes Shop Fire

PATERSON, Dec. 6 (AP)—A television set gave an unscheduled performance yesterday in the window of a Main street radio shop when an optical enlarger caught the slanting rays of the sun and started a fire.

The flames were quickly extinguished by firemen. Minor damage was done to several sets in the window. Firemen took no chances for an encore. They removed all magnifiers before leaving.