

Television in K6 Land

Experiences with a Ham-Built Camera-Modulator Unit in Hawaii

BY JOHN F. SOUZA, JR.,* K6PHD

"Like the thrill that comes with that first unforgettable DX contact" is the way K6PHD describes his reactions when he saw for the first time an image on the screen of the television camera-monitor built by a group of K6 hams. In this article he points out some constructional improvements in the camera-modulator described in an earlier issue of *QST*.

A TELEVISED PICTURE might seem commonplace to the many who are fortunate enough to be living in localities where television programs may be tuned in with the nonchalance that comes with familiarity, or to those who have been able to view this phenomenon in laboratories or at public showings. Here in Hawaii, however, the story is a little different. Except for a very few who have been able to accomplish this feat by a trip to the mainland, the entire population, including most hams (whoever heard of a ham with enough dough for a trip?), have yet to see what an actual televised image looks like.

With a ham's curiosity, which is quite a factor to take into consideration, it was decided even under the existing circumstances to do something

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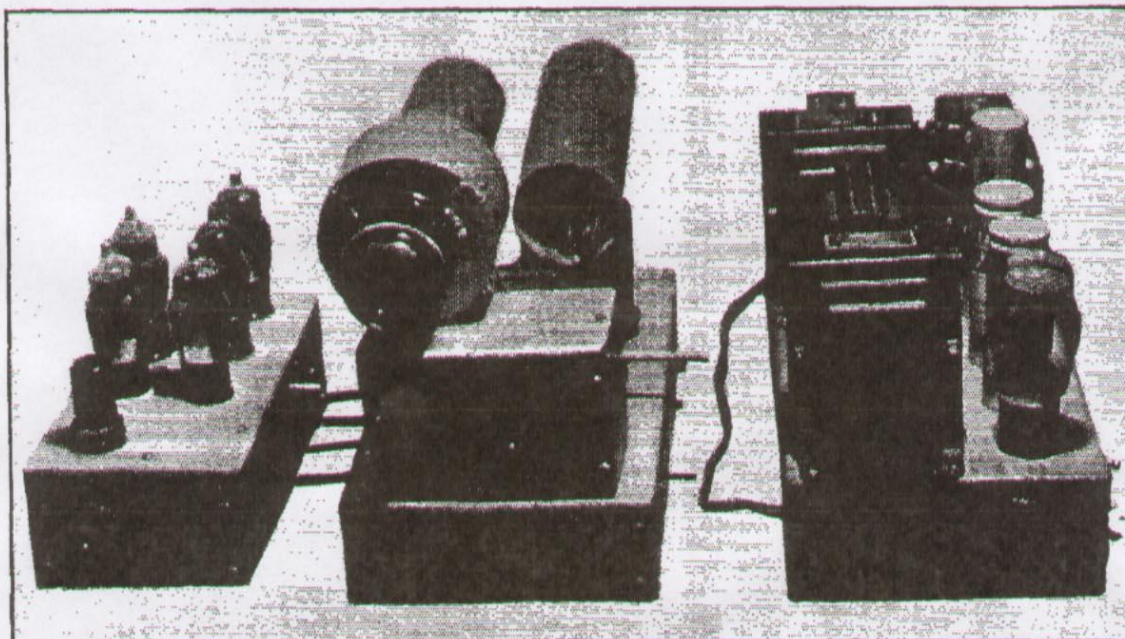
¹ Lamb, "Television Camera-Modulator Design for Practical Amateur Operation," *QST*, October, 1940, p. 11.

about it by constructing Jim Lamb's camera-modulator unit as described in the October, 1940, issue of *QST*.¹

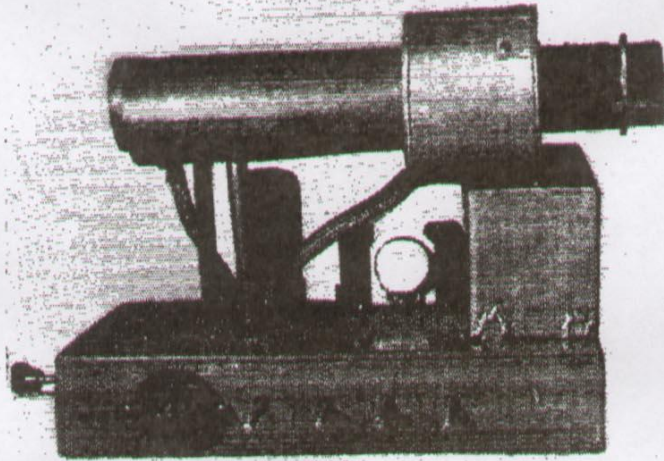
Sometime in August of 1941, with sleeves rolled up and fingers crossed, the gang here, consisting of K6AYD Tam, FAZ Katahara, THA Sone, QLG Kalehawehe and yours truly, stripped the decks for action. The result was that an exact replica of Lamb's unit was built. The different units were farmed out to the several boys for construction since our homes are scattered throughout the island, making it impossible for us to get together for a sufficient length of time to complete the project in one place. It might be said at this time that K6AYD was the only one of the gang who had the pleasure of witnessing television while a student at RCA Institute, and full credit for the success of this venture is hereby given him.

The Fun Begins

To say that the fun had just started then would be a gross understatement. After completion of all units, they were hooked up and the set turned on for the first time. Although our anticipation was running very high, the immediate results were not very satisfactory. In fact, no sort of picture, outside of a few optical illusions, could be picked up. A very thorough check of all circuits was made and, as might be expected, a few minor errors in wiring were found and corrected. This proved conclusively the theory that it is advisable always



The complete camera-modulator combination and its power supply, assembled and in operation.



Side view of the camera-modulator unit built by the K6 gang.

to check thoroughly any type of equipment before "firing" it up, a practice which to my knowledge is seldom followed by most hams.

With hope revived sky high, the rig again was turned on. The results of all this extra labor were gratifying, as a faint picture now could be picked up on the monitor. This picture, nevertheless, left much improvement to be desired.

Before anything else could be accomplished, December 7th burst upon us, turning the red light on all activities. With all energies turned to more important things, television was shelved for the duration — or so we thought. Those hams who have experienced total black-out restrictions like those we underwent here in Hawaii after Pearl Harbor will understand how long a night can be, so it isn't surprising that, since usual hamming was out for the duration, interest in our television experiments was revived.

Shielding the Video Amplifier

In October of 1943 whatever parts of the original units could be scraped together were dusted off and activity resumed. Attention first was focused on the video amplifier. With the "ike" bias at the most negative position, the video gain could be turned up with no sign of instability. However, decreasing the bias would cause instability and produce a signal which would black out the raster on the monitor.

Since it was apparent that stray pulses affecting the final picture were being generated, the first two stages of the amplifier were put into individually shielded compartments. This arrangement put the 6J7 grid cap just below the collector ring, thereby eliminating the short shielded line to the 6J7 grid. An 1851 was substituted for the 1852 in the stage following the 6J7, since this arrangement provided better circuit isolation. This put the 6J7 at a higher level, making the grid lead to the 1851 direct and short.

Front view of the camera-modulator unit with front shield and lens removed, showing the alterations which were made in the original design.

The front end of the original video shield was cut off and a larger shield, 4 inches in diameter and 3 inches long, was installed. This provided about an inch clearance all around the collector ring, reducing the capacity between the ring and the shield to a minimum.

After these changes had been made the video amplifier appeared to be very stable. The front cover of the enlarged "ike" shield was designed so that it could be removed to facilitate installation of the collector ring and 6J7 grid connections. With the pick-up removed and the front cover replaced, a 10,000-cycle tone from a signal generator fed to a test prod inserted into this opening would produce

a clean signal which would tend to overload the amplifier whenever the prod was brought closer than about one-half inch from the grid. With the test prod in this position, the output as measured with an output meter was 25 volts. The 10,000-cycle output signal was found to be excellent as checked on a 'scope.

The "ike" bias resistor, R_2 in QST , was next removed, with the result that the bias range was increased, thereby providing smoother control. The polarity of C_{20} was found to be reversed as shown in the diagram, so this also was corrected.

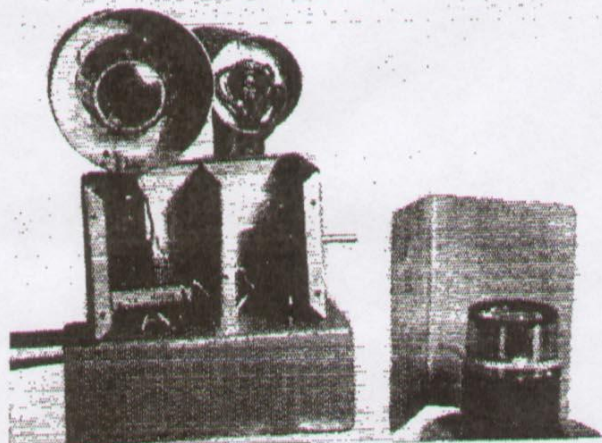
With all these changes incorporated, pictures of very good definition were obtained. What improvement, if any, could be attributed to the reduction in the ring-to-shielding capacity of the "ike" is not known, since no picture with sufficient definition for examination could be obtained when using the original $2\frac{1}{2}$ -inch shield.

Reduction of Glare

Reduction of glare from the photoflood lamp while viewing the finished picture was accomplished by tapping off the vertical, horizontal and video signals from the camera and feeding them into a 3-inch 'scope in an adjacent room, which made viewing much more pleasant. Apparently this simple arrangement had no adverse effects upon the image.

Our original intention was eventually to put a

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signal on the air by the addition of a suitable transmitter and receiver. In fact, all parts necessary for the construction of a receiver using a 3AP4 black-and-white tube were on hand and construction contemplated, but the components were sold early in the war as replacement parts because of the critical shortages existing in the local service field at that time.

The fulfillment of our ambition actually to put a signal on the air for the first time in Hawaii will have to await the return of those good old days. In the meantime, all energies are dedicated to the hastening of that day and the thrill of tuning in a real ham television signal.

Notwithstanding all the energy consumed and the headaches involved, I feel justified in saying that the final results were worth all of and more than the effort which was expended, and the thrill of "peaking" up that first picture on the monitor, faint though it was, can be compared to that unforgettable moment which comes only once to each ham when, in the haze of QRM, he touches up the old receiver a hair's breath to pull in his first DX contact. Can more be said?

Correspondence

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king. People lined the banks cheering and waving American and Australian flags. Later, on shore, to say that the Aussies are very hospitable is putting it mildly. We were treated as though we had already won the war and saved Australia from enemy invasion. . . .

I spent approximately seventeen months in the Southwest Pacific, mostly in Australia, Java and the Fiji Islands. . . . During this time I had been transferred from the transport to another ship for duty. We, the dozen or more of us who had been ordered to Guam and the Asiatic Station, had been assigned to different ships in the Asiatic Fleet. We were no longer "war orphans," and we all had a job to do.

Some of those boys will never return. They were assigned to ships lost in those first few months of 1942. They were good radiomen, and I know that they were on the job and doing it well.

I also had the experience of being reported "missing in action" which caused the folks at home a bit of worry and confusion. This was cleared up later and branded as "bum dope" by my appearance in person at the old homestead for a week's visit. . . .

— R. D. Johnson, CRM, USN, K6NSD

BEST SPOT IN THE ARMY

23rd Army Airways Communications System Sqdn.,
Peterson Field, Colo.

Editor, *QST*:

When I first came to Peterson Field, we had a control tower with one transmitter and four re-