

# HAM TIPS

from



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## NEW RCA-1847 MAKES HAM TELEVISION PRACTICAL

### LOW-PRICED ICONOSCOPE OPENS NEW FIELDS FOR AMATEUR PIONEERS

**Acclaimed at Chicago Parts Show where it  
was demonstrated in typical equipment**

The fond dream of transmitting and receiving pictures via Ham Television on Ham bands is now a reality.

June 11 to 14 were banner days for Ham Television when, for the first time, RCA engineers demonstrated really practical amateur television transmission and reception at the Chicago Radio Parts Show. The equipment used will be described. Running continuously for 10 to 12 hours at a stretch under the call of W10XEL, this gear clearly demonstrated to hundreds of enthusiastic amateurs, engineers, dealers, and distributors the practicability of good quality television communication with simplified and economical apparatus. Demonstrations were conducted on the 12th floor of the Blackstone Hotel overlooking Lake Michigan where it was possible not only to televise indoor subjects but from off the lake and along the boulevard as well. Even skeptics and those "in the know" on television were frankly amazed at the faithful reproduction and stability of the pictures along with the simplicity of the complete equipment.

#### "MINI-IKE" PAVES THE WAY



Amateur iconoscope RCA-1847 is the famous television camera "eye" that changes light variations into electrical variations. It is 7 $\frac{1}{2}$ " long and has a 2-inch face on which the images are focused. Amateur net price for the 1847 is only \$24.50. This pick-up tube—engineered by the same men who produced the larger Iconoscopes—completes the tube line required to get started in Ham Television.

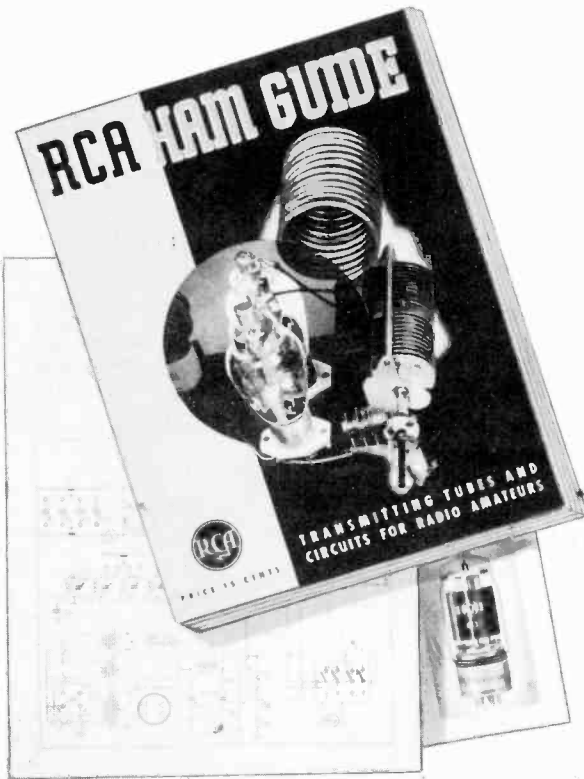
#### Small Brother to Big "Ikes"

The advent of the new amateur Iconoscope RCA-1847 now makes it possible to construct at a cost within the price range of a present-day amateur transmitter a complete television system. This "Mini-Ike" is a smaller, much simplified version of the larger and more familiar Iconoscope Television camera tubes used in large Television studio cameras. It is 7 $\frac{1}{2}$ " long, has a 2-inch face, and is capable of producing a clear, 120-line, 30-frame-per-second picture that is well suited for transmission in the 2 $\frac{1}{2}$ - or 1 $\frac{1}{4}$ -meter amateur band. RCA-1847 operates at relatively low voltage, employs inexpensive electrostatic deflection circuits, does not require keystone correcting circuits, and can utilize low-cost, short-focal-length lenses. The tube is now available through RCA Transmitting Tube Distributors at the amateur net price of \$24.50.

#### How the 1847 Works

The principal parts of the 1847 are its mosaic, signal electrode, collector, and electron gun. The position of these parts in the 1847 is illustrated

(Continued on page 2, column 1)



### NEW RCA HAM GUIDE RECEIVES WIDE PRAISE

**Contains 48 Illustrated Pages of  
Xmtg-Tube Circuits and Data**

Here is the transmitting guide amateurs from coast-to coast are acclaiming! Written specifically for the amateur, this new book contains forty-eight pages of authoritative technical data on RCA's most popular amateur tubes such as the 802, 806, 807, 808, 809, 810, 811, 812, 828, etc. Carefully proved circuits are shown with each tube in order to utilize the tube to its best advantage. Six complete pages are devoted to the general design and operation of amateur transmitters. Two complete transmitters are

described in detail from mike- and key-to-tank. These descriptions include pictures and complete circuits. One transmitter is a complete 5-band cathode-modulated 'phone/c-w rig working from 10 to 160 meters. Power input is 220 watts on 'phone and 450 watts on c.w. The other transmitter is a plate-modulated outfit with 310 watts input on 'phone and 450 watts on c.w. It also operates from 10 to 160 meters. The design of these transmitters is simple and straightforward.

All in all, this 8 $\frac{1}{2}$ " x 11" book contains over 70 illustrations and more than 30 up-to-the-minute transmitting circuits. It is easy to read and completely different in style. You can obtain a copy of the RCA HAM GUIDE from your RCA Transmitting Tube Distributor, or by sending 15 cents direct to the Commercial Engineering Section, RCA Manufacturing Co., Inc., Harrison, N. J.

# HAM TIPS from RCA

## New RCA-1847 Makes Ham Television Practical

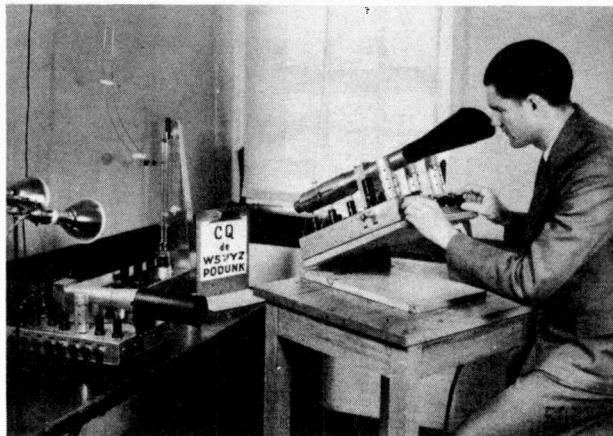
(Continued from page 1, column 4)

in the diagram below. The mosaic consists of a large number of small photosensitive particles deposited on one face of a transparent sheet of insulating material. The particles are spaced a very small distance apart so as to be insulated from each other. On the opposite face of the insulating sheet is the signal electrode, a transparent conductive film. This electrode makes contact with a band of conductive material on the inner surface of the bulb. Another band of conductive material is mounted on the external surface of the bulb, directly over the internal band. The capacitance between the two bands, in series with the capacitance between the signal electrode and mosaic, provides coupling between the mosaic and the signal-electrode terminal.

In the operation of the 1847, an image of a scene is focused on the mosaic and the beam of electrons provided by the electron gun is made to scan the image. As the beam moves over the image, there is generated across the signal-electrode load resistor a voltage whose magnitude at any instant depends on the image brightness at the point where the beam is striking at that instant. This voltage is used as the video signal for Television transmission of the scene viewed by the Iconoscope.

### How Much Illumination is Needed?

The lighting equipment required for operation of the 1847 can be simple. Inside-silvered lamps are a convenient form of light source. When an f:2.3 lens is used, adequate lighting of photographs, drawings and other still subjects can be provided by a single 200-watt, inside-silvered, spot-



This is a complete Ham Television station. It was constructed to illustrate the practicability of radio amateur Television transmission and reception on 2½ meters. Demonstrated in actual operation, this equipment was hit of the Chicago Radio Parts Show. Most amateurs already have many of the required components. But even though you start from "scratch," it is possible to duplicate this system for no more than the cost of an ordinary medium-power transmitter.

light bulb. A value of 1.5 focal lengths is generally suitable for the distance from the lens to the subject. For this spacing, the illumination on the subject should be not less than about 3,000 foot candles.\* The 200-watt bulb described above can provide this illumination on the subject when the bulb is about 15 inches from the subject. For televising "living talent" it is generally desirable to have a larger spacing between the lens and subject so that the lens will have a larger field of view. When this spacing is approximately 10 focal lengths or greater, the necessary illumination on the subject is 1500 foot candles.

### Gear Uses B. C. L. Parts

Major equipment required for the operation of an amateur television system includes a television receiver, a pick-up camera and monitor unit, and an ultra-high-frequency transmitter. Such equipment has been built in our laboratory by our engineers and described in detail in a series of articles recently published in the May, June and July issues of QST. A feature of all of this apparatus is that *standard broadcast receiver parts are used almost exclusively throughout the circuits.*

### Receiver is Straightforward Super

The Television receiver itself is a superheterodyne and is designed to cover the 112-116 Mc amateur Television band. The output of the receiver terminates in a 3-inch Kinescope, type 3AP4/906-P4, which produces bright pictures in black and white. The tube line-up is as follows: A 956 Acorn type pentode is used as the first detector with a 6J5 oscillator. There are two i-f's using 6AC7/1852's. The second detector utilizes one diode section of a

\*A foot candle is the amount of illumination produced by a standard candle at a distance of one foot.

### "CALLING CQ-VIDEO"

6H6 and is followed by one 6AC7/1852 video stage. The other half of the 6H6 is used as a detector for synchronizing purposes only. This diode feeds a 6SC7 double triode, the first half of which is used as amplifier and the second half as sync separator. Multivibrators containing one 6SC7 each are the scanning oscillators. The Kinescope anode potential of 1500 volts is obtained inexpensively from a small receiver power transformer with two 5U4-G's in a voltage-doubling circuit. The remainder of the tubes are operated from a low-voltage 5Y3-G supply.

### Modulator Contains "Ike"

The modulator furnishes the complete television signal for modulating the r-f amplifier of the television transmitter. It consists of the RCA-1847 Iconoscope, a video amplifier capable of raising the initial signal to a level sufficient for modulation, a monitor Kinescope, scanning circuits for the Iconoscope and monitor, blanking and synchronizing signal generators, a high-voltage supply for the Iconoscope and monitor, and a low-voltage regulated supply. The scanning frequencies are 30 frames

per second and 3600 lines per second. The video channel width thus required is about 200 kc., which, of course, means 400 kc. on the air with double sideband modulation. Inasmuch as the entire 2½-meter amateur band (for which this equipment is intended) is only 4000 kc. wide, it is apparent that the channel width must be restricted to the minimum value needed for reasonable definition.

### Xmtr Uses Twin Beam 829

The r-f transmitter proper is of simple and straightforward design. It has no frills or doodads. Although the rig employs a 40-meter crystal, only four r-f stages are required. The tube line-up begins with a 6L6 Tri-tet crystal oscillator, followed by a 6L6 5-meter doubler and then a 6L6 2½-meter doubler. Output from the last doubler is sufficient to drive fully an 829 twin beam power tube as a straight push-pull final amplifier on 2½ meters. This transmitter is capable of kicking out a carrier of 20 watts or better with video grid modulation and, incidentally, makes an excellent "phone transmitter having considerably greater carrier output when used with conventional plate modulation.

Actual field tests conducted with this television gear have been made with the receiver located about 1½ miles from the transmitter. It is anticipated that distances of 10 to 15 miles can easily be covered with this same equipment.

### We Scan the Crystal Ball

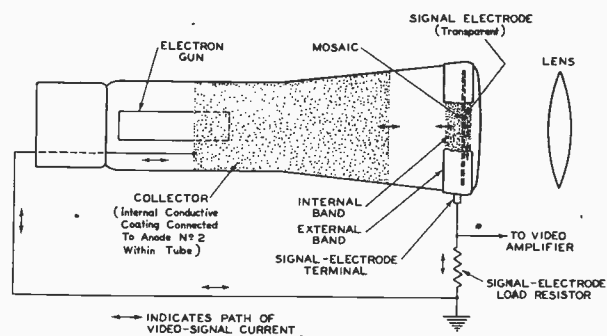
Television provides the next major development of amateur radio and once again the Ham is in an ideal position to go places. In this new art, amateur Television provides rich opportunity to gain new experience in circuit applications and to work with the fascinating principles of lighting, photography and optics—all thrown in one. For those who have felt that amateur radio is growing dull, here is the answer.

A new booklet, just off the press, contains complete data on how actually to build the complete Television station described in these columns. Get a copy from your nearest RCA Transmitting Tube Distributor, or write to the RCA Manufacturing Company, Inc., Commercial Engineering Section, Harrison, New Jersey.

## THORIATED-TUNGSTEN FILAMENTS REVIVED

Thoriated-tungsten filaments of RCA transmitting tubes possess the capability, in many cases, of being reactivated after their emission has dropped off as a result of temporary tube overloads. The reactivation treatment is not 100 per cent effective but is worth trying when your hopes for saving "low" tubes have faded. The reactivation schedule is as follows: Operate the filament at rated voltage for 10 minutes or more without voltage applied to any of the other tube electrodes. The process may be accelerated by raising the filament voltage above its rated value by a small amount for a few minutes. The maximum voltage that should be used is 7.5 volts for 6.3-volt types, 9 volts for 7.5-volt types, 12 volts for 10-volt types, and 13 volts for 11-volt types.

## FUNCTIONAL DIAGRAM OF THE 1847 MINI-IKE



# RADIOLAB NEWS

ALF M. LANDON  
GOVERNOR OF KANSAS  
TOPEKA

July 24, 1936

Mr. Bob Smith  
Radio Laboratories  
1515 Grand Avenue  
Kansas City, Missouri

Dear Mr. Smith:

We should like to express our appreciation for your cooperation and assistance in supplying us with material and apparatus on short demand to facilitate our preparation for the broadcast of Governor Landon's Notification Ceremonies last night.

The special boxes that you built up for us proved satisfactory in every way. We may return some of the panels to you for engraving.

Thanking you again.

Very truly yours,

*H. A. Rahmel*  
H. A. Rahmel

HAR MEB

McAllen, Texas  
July 7, 1936

Radio Laboratories  
1515 Grand Ave.  
Kansas City, Mo.

Gentlemen:

It gives us great pleasure to express our thanks and appreciation for your wonderful cooperation and service; and we know after using your public address systems almost three years that they are absolutely first class and belong with the leaders. After using the two 20 watt systems for so long and with such fine success, we did not hesitate to purchase the 50 watt system and it really is more than we expected.

We enclose a program so you can see this is one of the largest celebrations put on in the state this year outside of the Texas Centennial Exposition; and we covered all the events--Rodeo, Horse Show, Pageant, Patriotic Speaking and all events--besides covering a 70 mile territory with the portable cars advertising the celebration. Everything went over splendid due to your superior P.A. systems which we have.

Thanks and some more thanks.

Nelson Sound Service

Per:

*John D. Nelson*

## P.A. MEN ARE BUSY



Pictured above is the latest sound car built by ARTHUR CARROLL, Carroll's Radio Service, Coffeyville, Kansas. Carroll took time out from building them for resale to make one for himself. Only color photography could do justice to the car. The three aluminum trumpets are highly finished in a dark green, the exact shade of the car itself.

A recent car built by him for a troupe of aerial barnstormers has again proved the value of sound car advertising. On their first stand, at Wichita, deeply in debt, they pocketed enough to come out on top with a plentiful reserve. The ballyhoo equipment in this car was a 6 volt job with one trumpet and two parabolic reflectors. The pusher-outers were one Fox and two Jensens.

Ted Love, serviceman at Trenton, Missouri, has "gone PA" in a big way.

Fourth of July a carnival set up in Trenton a few steps from a movie house. The theatre manager got Ted to ballyhoo his show to combat the carnival competition. Instead of the poor day the movie would ordinarily have had, the house was packed for all four performances, and it was necessary to close the box office on the last show. There simply wasn't any more room for would be patrons!

Ted and his "Big Berthas" delivered the goods

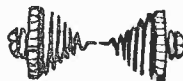
in great style. He can cover half of Trenton with his outfit!

John Nelson, McAllen, Texas, had a big Fourth, too. With two sound trucks on the road and a Centennial celebration to cover, he was a busy man. He reports great success--but read his letter for yourself. We can't help but reproduce it above, it's such a fine testimonial for Radiolab.

Midwest Sound at Russell, Kansas, is one of the latest converts to aluminum trumpets for real coverage. With a pair of trumpets, a dual channel custom-built 100 watt amplifier, and all the trimmings including carbon, crystal and velocity mikes, the Midwest truck can tackle anything. When last heard from, a 26 county jaunt was coming up. Russ Overly has promised pictures and we hope to show them here next month.

## MERCHANDISE NOTES

NEW - FRONT WHEEL STATIC ELIMINATORS



Two little gadgets to be placed in the front wheels of any model car to remove the common trouble experienced of static charges building up in the wheels due to their being insulated from the car body by a grease film. Absolutely cure front wheel noise in car sets. Your cost at Radiolab, per set of two, 18¢.

PRICE CHANGE - #9909 PICKUP  
RCA viscous damped, page 11, Summer Supplement.  
New list price \$13.00, your cost \$7.80.

SOLD OUT - ELLIS MICROPHONES AT \$6.95

NEW - PARABOLIC REFLECTORS

Same as those on Page 4, Summer Supplement but have snap-on cover, speaker screen and felt lining. Your cost \$8.85. New line does not supersede others at \$5.95. Both in stock.

NEW - VARIMATCH TRANSFORMERS

United transformers for modulation that never become obsolete. In stock at Radiolab. See dope in Radio or write us for quotations.

## UNLICENSED 5 METER RIGS IRK F.C.C.

Bootleg operation of 5 meter transceivers has plagued the Federal Communications Commission into declaring war on unlicensed operators.

The Commission cites these penalties as laid down by the Communications Act of 1934 as punishment for illegal use of the air waves: A fine of not more than \$10,000 or imprisonment for not more than two years, or both. In addition, a fine of not more than \$500 may be imposed for each and every day during which the offense occurs.

The Radiolab catalog, in scarce face type, calls attention to the fact a license is necessary for operation of transceivers and prospective purchasers are so advised.

You need this  
BOOK



New 1937 Edition of the Electrad  
Volume Control Guide Now Ready.  
Get Your Copy While Supply Lasts!

Art Moss, president of Electrad, Inc., 175 Varlok Street, New York City, has just announced that the Electrad Volume Control Guide for 1937 is ready for distribution to the service industry. Thousands of dollars and thousands of hours of painstaking work have produced the most complete and informative guide available to the serviceman.

How to get your copy FREE

Simply send two complete Electrad Volume Control cartons to Electrad, Inc., 175 Varlok Street, New York City, mentioning that Radiolab is your jobber. You will also receive the Electrad tact regularly as issued. Act now! Supply limited!

# RADIOLAB NEWS

## THE STUDIO STOOGES

Radio is looking forward to its greatest season this fall with all networks predicting full commercial schedules and outstanding stars. A preview of the KMBC-COLUMBIA schedule reveals such new features as NELSON EDDY, MAJOR BOWES, KATE SMITH, the DETROIT SYMPHONY, POPEYE, EDDIE CANTOR, PITTSBURGH SYMPHONY, JOE PENNER, GUY LOMBARDO and others. These, in addition to the unusually large number of headliners who have remained through the summer.

TED MALONE, former KMBC program director who went to New York and achieved nationwide popularity with his program "BETWEEN THE BOOKENDS," has moved to a new morning schedule at 10:00 A. M., CST., effective August 17, preparatory to taking on a commercial sponsor at that time in October. Each time Ted has been taken off the coast-to-coast network, the CBS offices have been flooded with listener and station demands for his return. He is currently Number One CBS fan-mail puller.

HAPPY HOLLOW, KMBC's daily dramatic feature released to the Columbia network, has been on a three weeks' vacation. They resume Monday, August 17, at 12:15 P.M., CST.

MRS. MARCELLE, ace KMBC announcer, was wedded to MARTHA BENEDICT of Milwaukee in Kansas City, August 1.

MUTUAL BROADCASTING SYSTEM sent a staff from Wm. Kansas City, to cover the London Notification ceremonies in the evening, but also a 15-minute and a 30-minute period in the afternoon—a description of the parade.

MARY GOLDENBERG, WHB chief engineer; JOHN SCHILLING, WHB general manager; KAYE KYLE, manager of station KGNO; M. H. STRAIGHT, WHB continuity editor; JOHN CAMERON SWAYZE, news commentator; and DICK SMITH, WHB announcer made the Popoka trip.

The "LET'S TALK POLITICS" broadcast over WHB, Kansas City, consists of election news by JOHN CAMERON SWAYZE, interviews with various party leaders, letters of opinion from listeners and a straw vote which is taken from various organized groups and in the sponsor's stores, using special locked ballot boxes.

WIBW boasts a new Wurlitzer organ. "ORGANALITIES" features JACKIE MCKINNEY at the console at 2:30 every afternoon except Saturday and Sunday.

The entertainers of WIBW enjoyed Senator Capper's picnic, July 14, at Garfield Park in Topeka where the picnic is held annually. This year was the twenty-ninth annual picnic and the Senator's seventy-first birthday.

BUNKHOUSE BILL, who really has been a cowboy, has joined WIBW. Bunkhouse can play anything with strings. He's featured on the Farm programs daily at 5:30 and 11:15 A.M.

Do you like Believe It or Not and Radio Oxfax? If so, you ought to be interested in Question and Answer day on the VARIETY MATINEE PROGRAM. WREN every Wednesday, 1:00 to 2:00 P.M.

NCB has used "Echo Chambers" to produce effects of caves, large halls, etc., for several years. WREN had occasion recently for a cave effect, and it was so satisfactory that plans are being made for a permanent setup to be used on future programs. Perhaps we'll have a short article on this in a future issue of the News.

## Best Gag of the Month

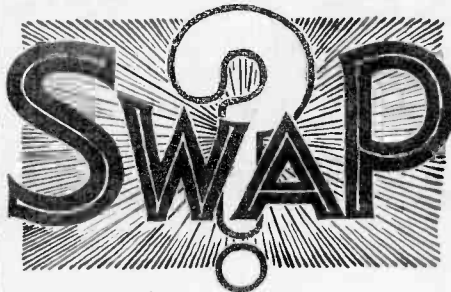
The funniest things on the air these days are the thousand and one terrible puns in the "Knock, Knock, Who's There" song. The worst one was committed by Stoopnagle and Bud, August 5 on NBC.

"Knock, knock."  
"Who's there?"  
"Doctor Lee."  
"Doctor Lee who?"  
"Doctor Lieber Augustine."

AL MEYER, formerly chief engineer KGBZ, York, Nebraska, recently joined the WREN engineering staff. He takes charge of the new RCA 5-C transmitter.

FAME--WALTER VARNUM, WREN, loaned his fountain pen to GOSDEN of AMOS and ANDY. WALT LOCHMAN, W9XBY, read the "Latest Baseball Scores" from a day old newspaper to his sports broadcast audience. WLEF pulled the same boner some time back, broadcasting a day old weather report from a day old paper.

News of YOUR station will be welcome. Mail it to.....THE STUDIO STOOGES



This column is open to all Radiolab customers for the exchange of service equipment. No charge is made for the listing, and no responsibility can be assumed by Radiolab.

-----Wanted volt-watt-meter. 0-150 volts AC, 0-1500 watts. Can use 750 watt.---DONALDSON RADIO COMPANY, 1701 GRAND, KANSAS CITY, MO.

-----Sell or swap--Gernsback Manuals 1 and 2. Also Rider's #2 for Rider's #4. Will sell cheap an RCA test oscillator.---POPMA RADIO SERVICE, ORANGE CITY, IOWA.

-----For sale: Mimeograph. Takes letter size paper. Hand operated. Has counter. \$10.00---RADIOLAB, BOX 142, KANSAS CITY, MO.

-----Readrite 1936 model #430 tube checker, brand new in original box for typewriter in Al condition.---RADIOLAB, BOX 143, KANSAS CITY, MO.



ARCTURUS offers you an unbeatable combination. It's the ONLY line which gives a dealer ALL 4 TYPES of TUBES his customers want—GLASS, "G," METAL and the NEW CORONET METAL TUBE for modernizing old glass-tube sets! FOUR ACES that guarantee you your full share of Sales and Profits!

**RADIOLAB'S THE DEALER OF 'WINNING HANDS'**

**ARCTURUS**



**CORONET METAL "G" and GLASS RADIO TUBES**

Warner Brothers' music publishing houses came back in the fold of A.S.C.A.P. on August 6, releasing the ban on their tunes. Some 26,000 songs were carefully deleted from air shows during the restriction since the first of the year.

## SIMON -

