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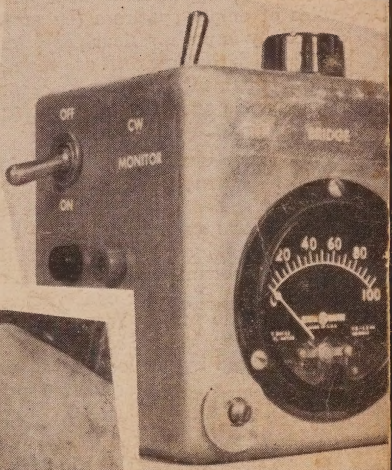
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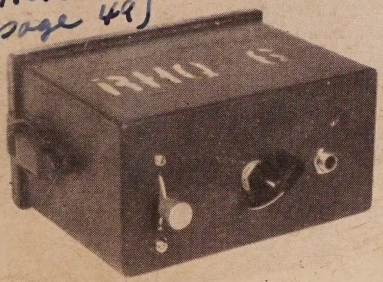
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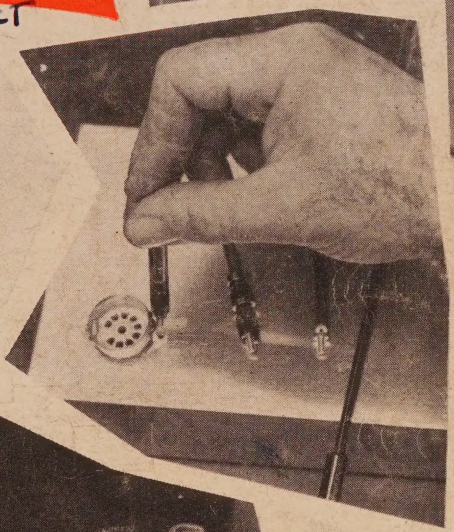
6AU8 Osc-Driver CKT
(page 49)

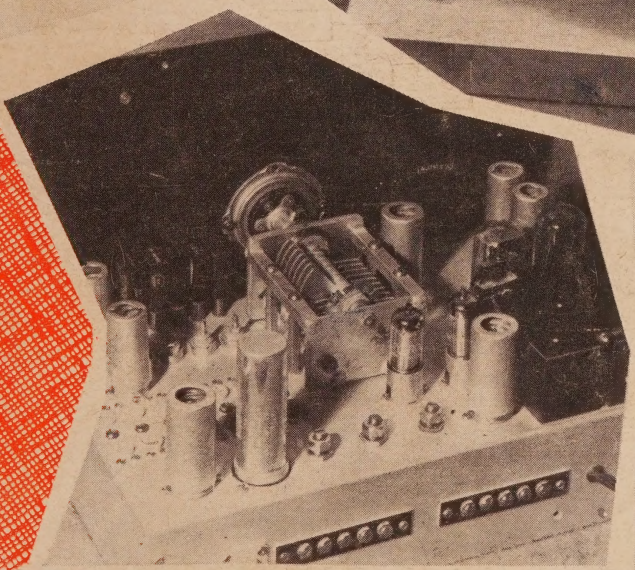














The Radio Amateur's Journal

Double Conversion Double Talk

The single conversion superheterodyne is probably the most used piece of electronic equipment in the world today as the basis of almost every broadcast receiver. On the broadcast band, it does an excellent job of receiving where stations are separated by huge voids of empty spectrum (by amateur standards) so selectivity is not a serious problem. The frequency is low enough that low drift or good stability is not much of a requirement. This low frequency also allows adequate image and spurious rejection with very simple tuned circuits.

But try to use a single conversion receiver on the higher frequency ham bands and its deficiencies are greatly magnified. You first notice that you have your choice of two ten meter bands — one (the image) is a little weaker than the other, but still strong enough to create a problem when the band is crowded. You also notice that a slight jar of the table causes signals to disappear like magic. Warm-up drift becomes quite objectionable when the set is used on higher frequency bands, caused by the local oscillator which must operate near the high frequency signal in this type of circuit.

What can be done to cure these inherent faults of the single super? Assuming the same number of front end circuits, the only way to secure better image rejection is to use a higher IF frequency. But since a high IF frequency and good selectivity are not compatible, it is necessary to again convert this high IF to a lower frequency for selectivity purposes. This is double conversion. Frequently this 2nd conversion is done with a crystal oscillator, but the main source of drift, the tuneable oscillator, is still required to operate at a high frequency. (See Block Diagram #1.)

We have now cured *one* of the faults, poor image rejection. If carried no further — which often happens — the double conversion superheterodyne still drifts and its signals still warble.

At Collins, we believe there is only one right way to build a double conversion super. That is to first convert the high frequency signal to a lower frequency signal by means of a stable crystal oscillator, providing good image rejection without introducing drift. We then tune this low frequency signal with a very stable linear oscillator, and since this oscillator is operating at a much lower frequency than the original signal, its drift and mechanical instability become almost negligible. A Mechanical Filter is then used for securing the best possible selectivity. This is not the easiest nor the least expensive way to build a receiver, but we have found it the only effective method of producing maximum performance. So look at the block diagram before you buy. Is it done the easy way or the right way?

Eugene C. Sentz

WØROW
Design Engineer
Amateur Section

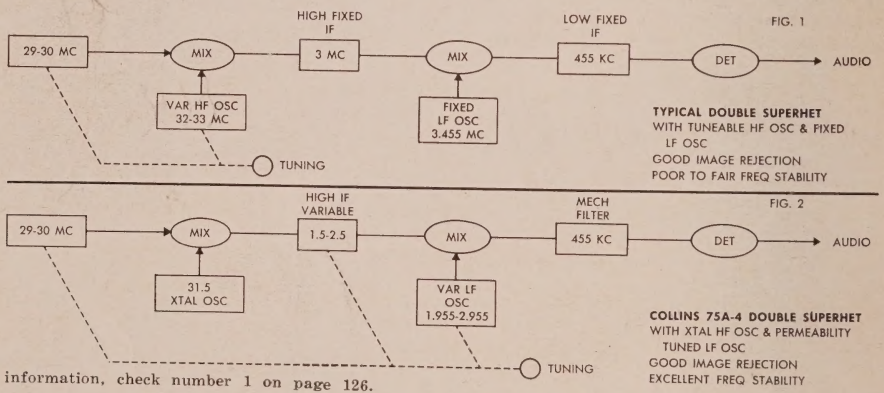


FIG. 1

TYPICAL DOUBLE SUPERHET
WITH TUNEABLE HF OSC & FIXED LF OSC
GOOD IMAGE REJECTION
POOR TO FAIR FREQ STABILITY

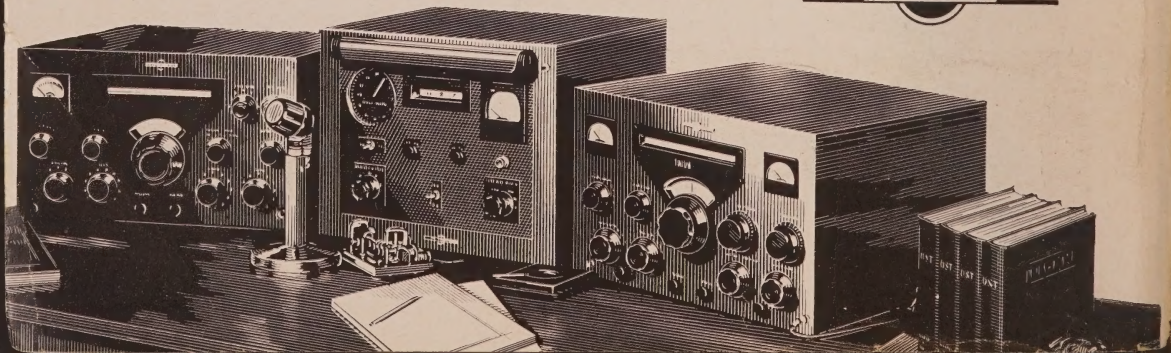
FIG. 2

COLLINS 75A-4 DOUBLE SUPERHET
WITH XTAL HF OSC & PERMEABILITY TUNED LF OSC
GOOD IMAGE REJECTION
EXCELLENT FREQ STABILITY

For further information, check number 1 on page 126.

Collins CREATIVE LEADER IN COMMUNICATION

COLLINS



There's a PR for every Service!

AMATEUR



40, 80 and 160 Meters, PR Type Z-2

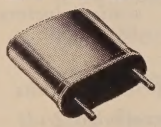
Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, permanently sealed; ±500 cycles.....**$2.95 Net**

20 Meters, PR Type Z-3

Third overtone oscillator. Low drift. High activity. Can be keyed in most circuits. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation; ±500 cycles.....**$3.95 Net**



24 to 27 Mc., PR Type Z-9A



Third overtone; multiplies into either 2-meter or 6-meter band; hermetically sealed; calibrated 24 to 27 mc., ±3 kc.; .050″ pins.

$4.95 Net

50 to 54 Mc., PR Type Z-9A

Third overtone; for operating directly in 6-meter band; hermetically sealed; calibrated 50 to 54 mc., ±15 kc.; .050″ pins.

$6.95 Net



SPECIAL TYPES

Commercial Crystals available from 100 Kc. to 70 Mc. Prices on request.

Type Z-1, AIRCRAFT

3023.5 Kc., .005%.....**$3.45 Net**

Type Z-1, MARS and CAP

Official assigned transmitter frequencies in the range.
Calibrated to .005%. 1600 to 10000 Kc. **$3.45 Net**

Type Z-6A FREQUENCY STANDARD

To determine band-edge. To keep the VFO and receiver properly calibrated.



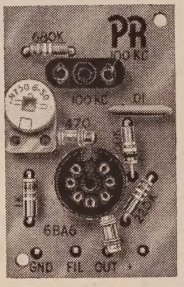
100 Kc. . . . . **$6.95 Net**

PR PRINTED OSCILLATOR KIT

Has many uses—

- As 100 Kc. Marker
- As 1000 Kc. Marker for Check Points up to 54 Mc.
- As Foundation Circuit for Low Frequency SSB Crystals

Assembled in minutes. Kit contains everything but 6BA6 oscillator tube and crystal.



Each . . . . . **$4.50 Net**



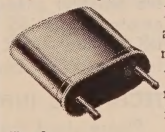
Type 2XP

Suitable for converters, experimental, etc. Same holder dimensions as Type Z-2.

1600 to 12000 Kc. (Fund.) ±5 Kc. . . . **$3.45 Net**

12001 to 25000 Kc. (3d Mode) ±10 Kc. . . . **$4.45 Net**

VHF Type Z-9R, Aircraft



For Lear, Narco and similar equipment operating in the 121 Mc. region, requiring crystals in 30 Mc. range.

Each . . . . . **$4.95 Net**

Type Z-9A RADIO CONTROLLED OBJECTS

27.255 Mc., .005% . . **$4.25 Net**



Type Z-1 TV Marker Crystals

Channels 2 through 13 . . . . . **$6.45 Net**

3100 Kc. . **$2.95 Net**

4100 Kc. . **$2.95 Net**

4.5 Mc. Intercarrier, .01% . . . **2.95 Net**

5.0 Mc. Sig. Generator, .01% **2.95 Net**

10.7 Mc. FM, IF, .01% . . . **2.95 Net**

ALL PR CRYSTALS ARE UNCONDITIONALLY GUARANTEED. ORDER FROM YOUR JOBBER.

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For further information, check number 3 on page 126.

Designed for



Application



A Really NEW FLEXIBLE COUPLING No. 39016

Incorporating features which have long been desired in a flexible coupling. No Back Lash—Higher Flexibility—Higher Breakdown Voltage—Smaller Diameter—Shorter Length—Higher Alignment Accuracy—Higher Resistance to Mechanical Shock—Solid Insulating Barrier Diaphragm—Molded as a Single Unit.

JAMES MILLEN MFG. CO., INC.

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CQ, the Radio Amateurs' Journal is published for active hams by active hams. Not affiliated with any clubs or other political groups, CQ endeavors to be a true and honest reporter for those interested in the hobby. Suggestions for improvement are welcomed.

Authors would do well to send for the CQ Style sheet which will explain our confused system of abbreviations and symbols. The article "Author Author" (October 1952 CQ) tells all about how to write articles for CQ, how much we pay, etc. Reprints of this article are available from CQ if you have been improvident in keeping up your radio library.

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The WPX Award is granted for two-way contact with certain number of amateurs in different prefixes of the world. Full details are contained in the WPX Record Book which is available for 15c from CQ. Application forms are free.

The WAZ Award is granted for contacting all of the amateur zones of the world. Current standings of amateurs working for this award will be found in the DX column. A DX Zone map of the world is available free from CQ. Send stamped envelope.

TECHNICAL INFORMATION:

Please check the 11-year cumulative index which was published in the January 1956 CQ for information about articles in past issues of CQ. The December 1956 and 1957 CQ yearly indexes will bring you up to date. Most back issues are available at $1 from us. Check our "Back Issue" ad for details on those not available. Reprints of the Cumulative Index are available free. For further information see the Ham Clinic column.

DISCLAIMER:

The authors and editors do the best they can to make everything as correct as possible in the articles. If for any reason any of them should happen to goof we hasten to point out that everything is experimental and we guarantee nothing.

For further information, check number 4 on page 126.

CQ—The Radio Amateur's Journal

October, 1958

vol. 14 no. 10

300 West 43rd Street, New York 36, N. Y.

Next Month: Parametric Amplifier construction details! (1 db noise figure on 2M) First one in the world on the air!

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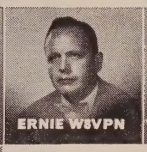


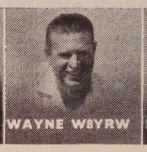


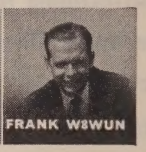
All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!













HEATH *hams work to bring you*



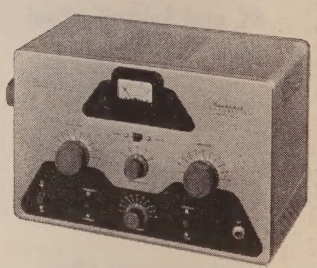


ROGER MACE (W8MWZ)
SENIOR HAM ENGINEER
HEATH COMPANY

HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

$35.95



If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single-knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 50 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 19 lbs.

HEATHKIT "APACHE" HAM TRANSMITTER KIT

- Newly Designed VFO—Provision For S.S.B. Adapter
- Modern Styling—Rotating Slide Rule Dial

MODEL TX-1 **$229.50** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.



Fresh out of the Heath Company laboratories, the brand-new "Apache" model TX-1 Ham Transmitter features modern styling and is designed as a handsome companion to the also-new Heathkit "Mohawk" receiver. The "Apache" is a high quality transmitter operating with 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, the "Apache" features built-in switch selected circuitry providing for single-sideband transmission through the use of a plug-in external single-sideband adapter. These Heathkit adapters will be available in the near future. A compact, stable and completely redesigned VFO provides low drift frequency control necessary for single-sideband transmission. An easy-to-read slide rule type illuminated rotating VFO dial with vernier tuning provides ample bandspread and precise frequency setting. Simple band-switching control allows flip-of-the-wrist selection of the amateur bands on 80, 40, 20, 15 and 10 meters (11 M with crystal control). The "Apache" features adjustable low level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL-34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely enclosed in a perforated aluminum shielding for greater TVI protection and transmitter stability. Cabinet comes completely preassembled with top hatch for convenient access without taking chassis out of cabinet. Die-cast aluminum knobs and front panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. Incorporates all the refinements necessary with many "plus" features for effective and dependable communications. Shpg. Wt. 115 lbs.

...top quality at lowest prices!

HEATHKIT "MOHAWK" HAM RECEIVER KIT

- All Critical Circuits Prewired and Aligned
- Crystal Controlled Oscillators for Drift-Free Reception

MODEL RX-1 **$274.95** Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.



Outstanding results can be expected with the new "Mohawk" receiver which is designed to combine all the necessary functions required in a high quality communications receiver. A perfect companion for the Heathkit "Apache" transmitter, the "Mohawk" features the same wide-band slide rule type vernier tuning and covers all of the amateur bands from 160 through 10 meters on seven bands with an extra band calibrated to cover 6 and 2 meters using a converter. External receiver powered, accommodations are available for these converters which will be available in Heathkits soon. The "Mohawk" is specially designed for single-sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled, wired and aligned front end assures ease of assembly. All critical wiring is done for you insuring top performance. This 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc. Five selectivity positions from 5 kc to 500 CPS. A bridged T-notch filter is employed for maximum heterodyne rejection. Complete accuracy is obtained with the use of a built-in 100 kc crystal calibrator and the set features 10 db signal-to-noise ratio at less than 1 microvolt input. S-meter and many other fine features built-in for top-notch signal reception. Shpg. Wt. 90 lbs.

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 12, MICH.

HEATHKIT PHONE & CW TRANSMITTER KIT



MODEL DX-40 $64.95

The DX-40 incorporates the same high quality and stability as the DX-100, but is a lower powered rig for crystal operation, or for use with an external VFO. Plate power input is 75 watts on CW, permitting the novice to utilize maximum power. An efficient, control-carrier modulator for phone operation peaks up to 60-watts, so that the rig has tremendous appeal to the general class operator also. Single-knob switching covers 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling makes for easy antenna loading, and pi network interstage coupling between the buffer and final amplifier improves stability and attenuates harmonics. A line filter is incorporated for power line isolation. The efficient oscillator and buffer circuits provide adequate drive to the 6146 final amplifier from 80 to 10 meters, even with an 80-meter crystal. A drive control adjustment is provided, and the function switch incorporates an extra "tune" position so that the buffer stage can be pretuned before the final is switched on. A switch selects any of three crystals, or a jack for external VFO. High quality D'Arsonval meter for tuning. Shpg. Wt. 26 lbs.

HEATHKIT DX-100 PHONE & CW TRANSMITTER KIT

MODEL DX-100 $189.50

Shipped motor freight unless otherwise specified. $50.00 deposit required on C.O.D. orders.



You get more for your transmitter dollar when you decide on a DX-100 for your ham shack! Recognized as a leader in its power class, the DX-100 offers such features as a built-in VFO, built-in modulator, TVI suppression, pi network output coupling to match a variety of antenna impedances from 50 to 600 ohms, pi network interstage coupling, and high quality materials throughout. Copper plated 16-gauge steel chassis, ceramic switch contacts, etc., are typical of the kind of parts you get, in assembling this fine rig. The DX-100 covers 160, 80, 40, 20, 15, 11 and 10 meters with a single bandswitch, and with VFO or crystal operation on all bands. RF output is in excess of 100 watts on phone and 120 watts on CW, with a pair of 6146 tubes in parallel for the final amplifier, modulated by a pair of 1625 tubes in parallel. VFO tuning dial and panel meter are both illuminated for easy reading, even under subdued lighting conditions. Attractive front panel and case styling is completely functional, for operating convenience. Designed exclusively for easy step-by-step assembly. No other transmitter in this power class combines high quality and real economy so effectively. Here is a transmitter that you will be proud to own. Time payments are available! Shpg. Wt. 107 lbs.

more fine ham gear from the pioneer



HEATHKIT GRID DIP METER KIT

A Grid Dip Meter is basically an RF Oscillator used to determine the frequency of other Oscillators, or tuned circuits. Numerous other applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, designing new coils, etc. Features continuous frequency coverage from 2 MC to 250 MC, with a complete set of prewound coils, and a 500 ua panel meter. Has sensitivity control and a phone jack for listening to the "Zero-Beat". It will also double as an absorption-type wave meter. Shpg. Wt. 4 lbs.

MODEL GD-1B $21.95

Low frequency coil kit: two extra plug-in coils extend frequency coverage down to 350 KC.
Shpg. Wt. 1 lb. No. 341-A $3.00

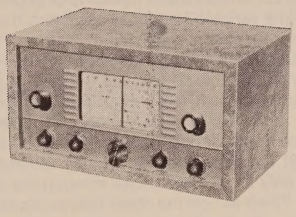
HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 12, MICH.

HEATHKIT ALL-BAND COMMUNICATIONS-TYPE RECEIVER KIT

Ideal for the short wave listener or beginning amateur, this Receiver covers 550 KC through 30 MC in four bands. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer type—power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—internal 5½" speaker—head phone jack and AGC. Has built-in BFO for CW reception. An accessory power socket is also provided for connecting the Heathkit model QF-1 Q Multiplier. Will supply 250 VDC at 15 ma and 12.6 VAC at 300 ma. Shpg. Wt. 12 lbs.
Cabinet: Fabric covered cabinet with aluminum panel as shown part 91-15A. Shpg. Wt. 5 lbs. **$4.95**

MODEL AR-3

$29.95



ALL-BAND RECEIVER

HEATHKIT ELECTRONIC VOICE CONTROL KIT

Here is a new and exciting kit that will add greatly to your enjoyment in the ham shack. Allows you to switch from Receiver to Transmitter merely by talking into your microphone. Lets you operate "break-in" with an ordinary AM transmitter. A terminal strip is provided for Receiver and speaker connections and also for a 117 volt antenna relay. Unit is adjustable to all conditions by sensitivity and gain controls provided. Easy to build with complete instructions provided. Requires no transmitter or Receiver alterations to operate. Shpg. Wt. 5 lbs.

MODEL VX-1

$23.95



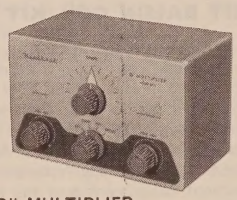
ELECTRONIC VOICE CONTROL

HEATHKIT "Q" MULTIPLIER KIT

This fine Q Multiplier is a worthwhile addition to any communications, or Broadcast Receiver. It provides additional selectivity for separating signals, or will reject one signal and eliminate a hetrodyne. Functions with any AM Receiver having an IF frequency between 450 and 460 KC that is not AC-DC type. Operates from your Receiver power supply, and requires only 6.3 VAC at 300 ma (or 12.6 VAC at 150 ma), and 150 to 250 VDC at 2 ma. Simple to connect with cable and plugs supplied. Effective Q of approximately 4000 for sharp "peak" or "null". A tremendous help on crowded phone or CW bands. Shpg. Wt. 3 lbs.

MODEL QF-1

$9.95



"Q" MULTIPLIER

NOTE: $10.65 WHEN ORDERED WITH AR-3 BECAUSE OF EXCISE TAX.

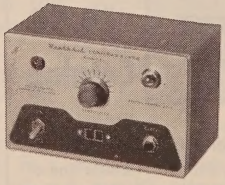
...in do-it-yourself electronics!

HEATHKIT "AUTOMATIC" CONELRAD ALARM KIT

Designed to give instant warning whenever a monitored station goes off the air, the CA-1 automatically cuts the AC power to your transmitter, and lights a red indicator. Works with any radio receiver; AC-DC—transformer operated—battery powered, so long as the receiver has AVC. A manual "reset" button is provided to reactivate the transmitter. Incorporates a heavy-duty 6-ampere relay, a thyratron tube, and its own built-in power supply. A neon lamp shows that the alarm is working. Simple to install and connect with complete instructions provided for assembly and operation. Shpg. Wt. 4 lbs.

MODEL CA-1

$13.95



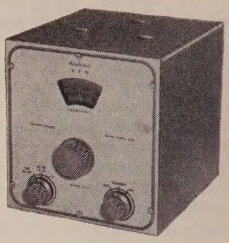
"AUTOMATIC" CONELRAD ALARM

HEATHKIT VARIABLE FREQUENCY OSCILLATOR KIT

Enjoy the convenience and flexibility of VFO operation by obtaining this fine variable frequency oscillator. It covers 160-80-40-20-15-11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a, available on most transmitters. It features voltage regulation for frequency stability, and has illuminated frequency dial. VFO operation allows you to move out from under interference and select the portion of the band you want to use without having to be tied down to only 2 or 3 frequencies through the use of crystals. "Zero in" on the other fellows signal and return his CQ on his own frequency! Shpg. Wt. 7 lbs.

MODEL VF-1

$19.50



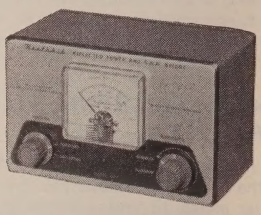
VARIABLE FREQUENCY OSCILLATOR

HEATHKIT REFLECTED POWER METER KIT

A necessity in every well equipped ham shack, the model AM-2 lets you check the match of the antenna transmission system, by measuring the forward and reflected power or standing wave ratio. Handles up to one kilowatt of energy on all bands from 160 to 2 meters, and may be left in the antenna system feed line at all times. Input and output impedances for 50 or 75 ohm lines. No external power required for operation. Meter indicates percentage forward and reflected power, and standing wave ratio from 1:1 to 6:1. Shpg. Wt. 3 lbs.

MODEL AM-2

$15.95



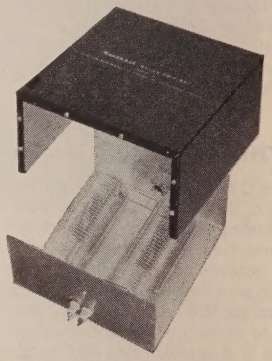
REFLECTED POWER METER

HEATHKIT BALUN COIL KIT

This convenient transmitter accessory has the capability of matching unbalanced coax lines, used on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance. Design of the bifilar wound Balun Coils will enable transmitters with unbalanced output to operate into balanced transmission line, such as used with dipoles, folded dipoles or any balanced antenna system. Can be used with transmitters and Receivers without adjustment over the frequency range of 80 through 10 meters. Will handle power inputs up to 200 watts. Shpg. Wt. 4 lbs.

MODEL B-1

$8.95



BALUN COIL

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QUAN.	ITEM	MODEL NO.	PRICE

$_____enclosed. Parcel post, include postage—express orders are sent shipping charges collect. All prices quoted are Net F.O.B. Benton Harbor, Mich. and apply to Continental U.S. and Possessions only. All prices and specifications subject to change without notice.

For further information, check number 5 on page 126.



. . . de W2NSD

never say die

The National Convention

Everybody I talked to had a good time. I had a good time too. We sold a few subscriptions to the magazine and met a lot of old friends. I've been to so many conventions now that I'll bet I had met about half of the fel lows at the convention at least twice before It seems like there is a hard core of convention-goers. They came by saying, "Glad to see you again, we met at San Francisco," etc.

The event was quite well organized and top talent was on tap for all of the lectures and forums. There were tours to just about every point of interest in the D.C. area, including one that made my eyes pop out: open house on the submarine USS Drum. What memories that brought back. I'd spent almost two years aboard that boat during the war.

At the first opportunity I rushed down to the Drum, which is now a school boat rather permanently tied up at the Navy Yard in Washington. There wasn't anyone around to guide the visitors from the convention through the boat so I set myself up as the guide and gave them the old spiel, "This is the After Engine Room, these are two Fairbanks Morse nine cylinder single acting opposed piston 1600 horsepower diesel engines, each driving a 1120 kilowatt generator," etc.

They had a rig set up in the Dinette operating on 20 SSB, just to top things off. Several other Naval ships have been active on the ham bands, but this is the first submarine.

Eleven Meters . . . R.I.P.

For the benefit of that one chap who never gets the word . . . as of September 11, 1958 there was no more Eleven Meter amateur band. Just thought I'd mention it. You won't miss it since you've never used it. Too bad you didn't give it a try now and then. The FCC pointed out in their note that the big reason they were taking it away and giving it to the Citizens Radio Service was that their monitors hadn't heard much of you on the band. Guess you left it for Charlie to do once too often, eh?

The FCC stated, "It was particularly noted that most of the reasons presented for the opposition to the reallocation of the 11-meter band were based upon potential use of this band in the future instead of on actual need or existing use of the band. Monitoring reports indicate that this band is not heavily used by the amateur service."

Let's see now, what have we left . . . ?

On The Reciprocation Front

There has been a major breakthrough on the reciprocation problem. Late word is that the AOPA (Aircraft Owners and Pilots Association) members in Congress were able to get a bill passed through the House and Senate which makes it possible for alien pilots to operate their aircraft radios while flying in the United States in private aircraft. The prerequisite for this radio license from the FCC is a valid pilot's license from their own country.

If only we had a few hams in Congress so we could further amend the 1934 Communications Act to encompass aliens with valid amateur radio licenses we would go a long way towards creating friendship in foreign countries which would pay off come the frequency allocation conferences next year and in making it easier to get special licenses for DXpeditions.

CW on Two

Several (seven) quite active VHF cw-men took me to task with a dash of vitriol for my one-sided presentation re the proposed setting aside of the lower 100 kc of both two and six meters for cw exclusively.

Since this was an ARRL proposal I theorized (correctly) that the pro side of the proposal would be well stated in QST. It thus seemed that a little attention should be placed on the negative aspects of the situation.

My question is this: granted that it is a good idea to encourage some cw operation on the VHF bands . . . why not agree on a segment for such a purpose which does not interfere with the bulk of the present activity on those bands? By establishing a DX segment up around 51 mc and 146 mc we would not have to have any FCC ruling to keep out the phone stations and we would also generate more activity in the relatively unused sections of the bands and give us a better chance of holding on to our frequencies when the next try is made to depose us. Remember, inactivity was given by the FCC as the reason for our losing Eleven Meters.

73, Wayne

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To enter this tremendous contest, simply visit one of the participating distributors and see a demonstration of Hallicrafters' latest SSB-VHF equipment.

Enter today! You may win a gift certificate *worth $100.00* as a local winner . . . plus a chance to win one of the five *grand prizes* illustrated above!

HERE'S HOW YOU ENTER—

1. Go to one of the distributors listed here—any time during the month of October. See a demonstration of Hallicrafters' latest equipment.

2. Fill out the entry card which your distributor will supply you, including call letters and completion of, in 50 words or less, *either* of these two statements:

(a) "*I prefer Hallicrafters single sideband equipment because . . .*".

(b) "*I prefer Hallicrafters V.H.F. equipment because . . .*".

3. Turn in card to distributor—do not mail to Hallicrafters. Each distributor will judge his entries and select his local winner. More than 100 such local awards will be made to entrants submitting the best, most sincere and original statements in the opinion of the distributor or other individual(s) he may designate.

4. Each local winner will receive from this distributor a *Gift Certificate worth $100.00* toward the purchase of any model of Hallicrafters communications equipment. Decision of the distributors' judges shall be final.

5. Local winners' names and entry statements will be forwarded to the Hallicrafters Company, where a panel of judges will select 1st, 2nd, 3rd, 4th and 5th place Grand Winners. Prizes to be awarded

contest month!

You may win!

5th PRIZE SX-101





Rev. Peter A. Ricke, K8HHY
Grand Winner,
1957 Hallicrafters
SSB Contest

For further information, check number 6 on page 126.

are illustrated above. Judges decisions shall be final.

6. Entries become the property of the Hallicrafters Company, and will not be returned. Winning statements may be published by the Hallicrafters Company and winners identified.

The Hallicrafters Co.
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Long Beach: Larry Lynde Electronics
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Los Angeles: Henry Radio
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Oakland: Elmar Electronics Inc.
Palo Alto: Zack Radio Supply Co.
Pasadena: Dow Radio Supply Co.
Riverside: Mission Radio Ham Supplies
San Diego:
Electronic Equipment Distributors
Western Radio & Television Supply Co.
San Francisco:
Northern California Amateur Supply
San Francisco Radio & Supply Co.
Television Radio Supply Co.
Zack Radio Supply Co.
San Jose: Frank Quement
Santa Barbara: Channel Radio Supply Co.
Van Nuys: Valley Electronic Supply Co.

COLORADO
Denver: Radio Products Sales Co.
Rogers Radio Co.

CONNECTICUT.
Hartford: Hatry of Hartford, Inc.
New Haven: Radio Shack

DISTRICT OF COLUMBIA
Washington: Electronic Wholesalers, Inc.

FLORIDA
Miami: Electronic Supply Co.
Tampa: Kinkade Radio Supply

ILLINOIS
Chicago: Allied Radio Corp.
Green Mill Radio Supply Co.
Newark Electric Co.
Genoa: Crawford Electronics
Moline: Lofgren Distributing Co.
Peoria: Klaus Radio & Electric Co.
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Indianapolis: Graham Electronics Sup. Inc.
South Bend: Radio Distributing Co., Inc.

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Council Bluffs:
World Radio Laboratories, Inc.
Des Moines: Bob & Jack's Store for Hams
Fort Dodge: Ken-Els Radio Supply Co.

KANSAS
Wichita: Molers Camera Clinic

LOUISIANA
New Orleans: Radio Parts, Inc.

MARYLAND
Baltimore: Amateur Radio Center
Silver Springs:
Uncle George's Radio Ham Shack

MASSACHUSETTS
Boston: DeMambro Radio Supply Co.
Radio Shack—Washington St.
Radio Shack—Commonwealth Ave.
Lawrence:
Young & Young of Lawrence, Inc.
Reading: Graham Co.
Springfield:
Young & Young of Springfield, Inc.
Soundco Electronic Supply Co.

MICHIGAN
Detroit: M. N. Duffy & Co.
Reno Radio
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Minneapolis: Electronic Center, Inc.

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Associated Electronic Supply Co.
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St. Louis: Walter Ashe Radio Co.

NORTH CAROLINA
Asheville: Freck Radio & Supply

NEW HAMPSHIRE
Concord: Evans Radio

NEW JERSEY
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Newark: Hudson Radio & T.V. Corp.
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Fort Orange Radio Distributing Co., Inc.
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Hudson Radio & Television Corp.
Terminal Radio Corp.
White Plains: Melville Radio Corp.

OHIO
Canton: Burroughs Radio, Inc.
Cincinnati: Steinbergs, Inc.
Cleveland:
Pioneer Electronic Supply Corp.
Columbus: Universal Service
Dayton: Custom Electronics, Inc.
Marietta: Marietta Radio & Electric Co.
Toledo: Selectronic Supplies, Inc.

OKLAHOMA
Tulsa: Radio, Inc.

OREGON
Portland: United Radio Supply, Inc.

PENNSYLVANIA
Allentown: A. A. Peters, Inc.
Elkins Park: A. G. Radio Parts Co.
McKeesport: Barno Radio Co.
Philadelphia: Almo Radio—Arch St.
Almo Radio—Frankford Ave.
Ham Buerger
Pittsburgh: Radio Parts Co., Inc.

RHODE ISLAND
Providence: DeMambro Radio Supply
W. H. Edwards Co.

SOUTH DAKOTA
Watertown: Burghardt Radio Supply

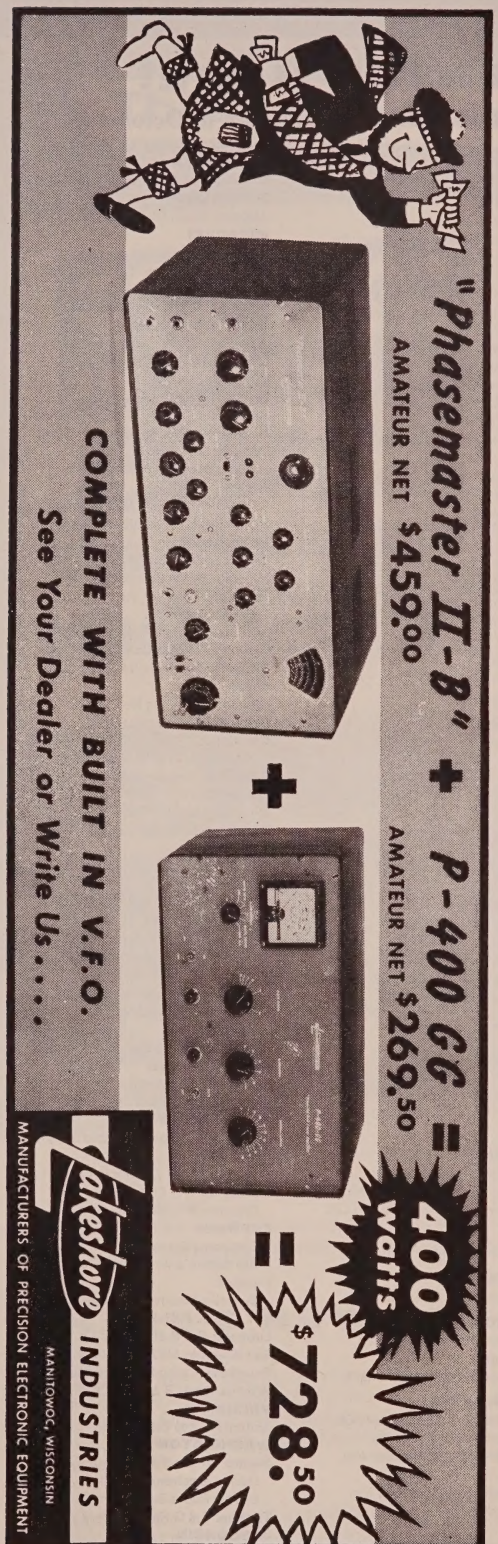
TEXAS
Amarillo: R & R Electronic Co.
Dallas: Central Electronics
Crabtree Wholesale Radio Co.
Fort Worth:
Electronic Equipment Co., Inc.
Bill Sutton's Wholesale Electronics
Houston:
Busacker Electronic Equipment Co., Inc.
R. C. & L. F. Hall, Inc.
Lubbock: R & R Electronic Co.
San Antonio: Modern Electronics Co.
Texarkana: Lavender Radio Supply Co.
Wichita Falls: R & R Electronic Co.

VIRGINIA
Arlington: Key Electronics

WASHINGTON
Seattle: Amateur Radio Supply Co.
Pacific Electronics Sales Co.
Seattle Radio Supply
Tacoma: C & G Radio Supply

WISCONSIN
Fond du Lac: Harris Radio Corp.
Madison: Satterfield Electronics, Inc.
Milwaukee: Amateur Electronic Supply

HAWAII
Honolulu: Kaimuki Radio Co., Ltd.
Precision Radio Limited



For further information, check number 7 on page 126.



Feenix, Ariz.

Deer Hon. Ed:

Sounding the Hon. Clarion Bell! Starting the Hon. Presses rolling! Warning all amchoors of the impending doom! Amchoor radio are not long for this world.

Yes indeedy, the rolling stone of doom are coming, Hon. Ed., and you knowing old saying —A rolling stone are braking glass houses. Are no time to losing. Are calling on you on acct. two heds are better than stitch in time.

Good old Seek-You will not failing the amchoors in there hour of peril. Your good old Hon. Rag will getting amchoors out of there trubble.

What are the trubble? Hon. Ed., it are Extra Sensory Persepshun. You knowing what ESP are, I'm surely. Even having tellyvishun program on ESP. Peeples telling which card are which without seeing self-same card—peeples reeding other peoples mind.

All self-thinking amchoors must rising up and stamping out this threat to amchoor radio as we knowing it today. Can you imagining what happening if ESP catching hold? Arizona Kilowhats are doing no good. Not mattering how many beems feller are having. Could even taking toobs out of reseever and making no difference.

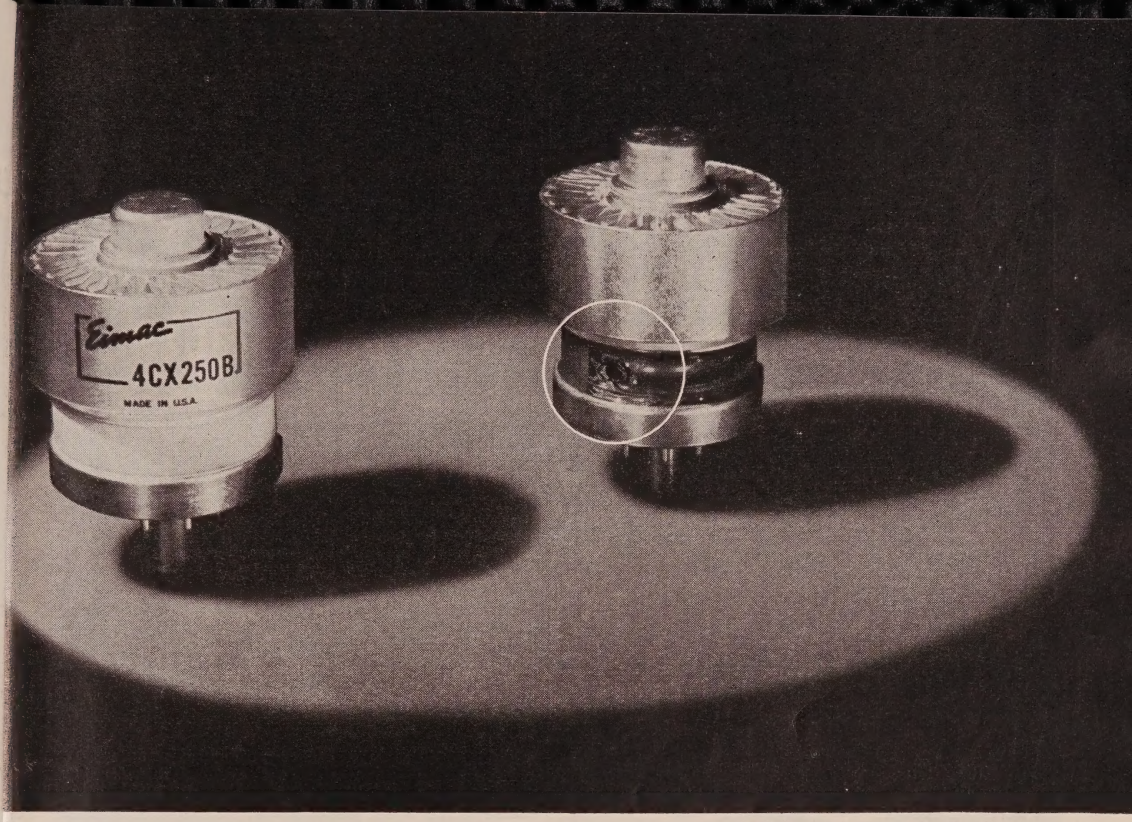
Hon. Ed., here are what cue-ess-o of future being like. Amchoor first finding reel comfortable chair and sitting in it to getting reel relaxed. Leening back, closing eyes, and making Hon. Mind a blank. (My XYL-to-be saying if this are important howcomes I not alreddy expert on ESP).

Next, amchoor are tooning across band—I meen looking—that is, thinking across the band. When coming across seek-you he wanting to answer, he answering by turning on mental plate switch and talking to other amchoor.

Of coursely, if he having cue-are-em, maybe other amchoor not heering—that is, thinking him so maybe feller having to making mental seek-you to seeing if he can getting someone to calling him.

If getting reel good at amchoor radio ESP, they not saying he having nice fist. No indeedy,

[*Continued on page 119*]



Fifth in a series describing the advantages of ceramics in electron tubes. Previously discussed: Impact, heat, vibration, compactness

Lower Dielectric Loss

is an Eimac Ceramic Tube Extra

Ceramic is considerably superior to glass in terms of dielectric loss at high frequencies. The ceramic Eimac 4CX250B and the glass envelope 4X250B shown above were operated in identical 500 megacycle RF amplifier circuits, under identical operating conditions. The glass envelope tube failed catastrophically within a few minutes due to RF heating and puncture of the glass envelope. Further tests of the 4CX250B at 500 Mc. with higher applied voltage showed no appreciable heating of the ceramic envelope material from dielectric loss effects.

Other tests compared glass envelope 2C39A tubes with 3CX100A5's, their ceramic envelope counterparts. These tubes were operated as oscillators at 2.5 KMc., under identical conditions. 3CX100A5 ceramic tubes consistently showed a 10% greater output power than the glass envelope type, due to the lower dielectric loss of the ceramic material.

These ceramic tubes are just two of more than 40 Eimac ceramic tube types whose compactness, and resistance to damage by impact, heat, and vibration make them ideal for use wherever exceptional reliability and high performance are demanded.

Write our Amateur Service Department for a copy of the booklet "Advantages of Ceramics in Electron Tubes"

EITEL-McCULLOUGH, INC.
SAN CARLOS, CALIFORNIA

Eimac First ***with ceramic tubes that can take it***

For further information, check number 8 on page 126.

Products Designed and Manufactured by Eimac

Negative Grid Tubes
Reflex and Amplifier Klystrons
Ceramic Receiving Tubes
Vacuum Tube Accessories
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Prentice Harrison, Lewes, Del.	1st	27 weeks
J. A. Niedeck, Bethlehem, Pa.	2nd	8 weeks

WE CAN PROVIDE NAMES IN YOUR AREA ON REQUEST

EMPLOYERS MAKE OFFERS LIKE THIS:

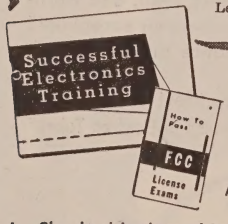
Letter from nationally-known Airlines: "Radio Operators and Radio Mechanics are needed for our company. Periodic wage increase with opportunity for advancement. Many company benefits."

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"Since enrolling with Cleveland Institute I have received my 1st class license, and am now Chief Engineer of Station WAIN. Thanks to the Institute for making this possible."

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Address .....
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Letters . . . to the editor

CG Foul Up

Dear Wayne,

I am 18 years old and a 3rd class radioman in the U.S. Coast Guard. I have been in the C.G. since 30 July 1957 and I am currently on the C.G. Cutter Bramble engaged in Arctic operations. You asked for info on Ham radio in the service so here is the situation as I found it.

I went through boot camp at Alameda, Calif.—no ham station. Next stop; radio school at Groton, Connecticut. They have a ham station there consisting of a 32V2,51J and a beat-up 20 meter beam. I was there for 5 months and spent the first 3 trying to get the officer-in-charge of radio school to get a club organized and get back on the air as the station, W1CGS, had been closed for several months and nobody seemed to have any interest in getting it back on the air. Finally I managed to make a weekly sked home for my last 7 or 8 weeks there. From radio school I reported aboard the Bramble 3 weeks before departure from Miami Beach to the Arctic. A request had been sent in to operate ham radio on the trip. It was forwarded approved all the way up to the Chief of Naval Operations who declined it. By the time we got his reply we were underway. I should explain that we had intended using the ship's transmitter for ham use and CNO said if we could get some separate gear it would be approved. That was nice to know after we were a thousand miles from a radio store.

They have a ham station here at the Naval base in Argentina but it is inoperative.

Well, there it is. I have been in the service almost a year and ham radio has become nothing but a memory, and a very fond one at that. I shudder to think of the next 3 years. Will I lose my ham spirit?

I am fond of all phases of ham radio and especially enjoyed the 10 meter hidden transmitter hunts and chasing DX on ten meters during the winter of 56/57. I chalked up 112 countries during that time using a DX-100, NC-125 and a 3 element beam. All I have now is an HQ-140X at home.

Louis J. Haake RM3
USCGC Bramble WAGL-392
c/o FPO New York, New York

No Fairy Tale

W2NSD:

We are like the Old Woman in the Shoe . . . we've read so many beam articles that we don't know what to do. Hi. PS: Like the July issue, my subscription enclosed.

W8PZQ

Army Foul Up

Dear Wayne:

I'm replying to your inquiry in the June Editorial concerning hams in the service.

I came into the Army (I'm sad to relate) last June. I had been in the Regular Reserves for two years as a radio operator. When I came in Active I was sent to Fort Knox, Kentucky, and went through a twelve week Radio operator's course. An interesting point is that even though I had been an operator in the Reserves, I was still sent to school. The Army has a rule that they do not honor Reserve specialties and will send the guy to a school anyway. It was actually ridiculous, because I took all the tests the first week and sat around

[*Continued on page 16*]

Quality...

UNSURPASSED—ANYWHERE NEAR THE PRICE!



HQ-170

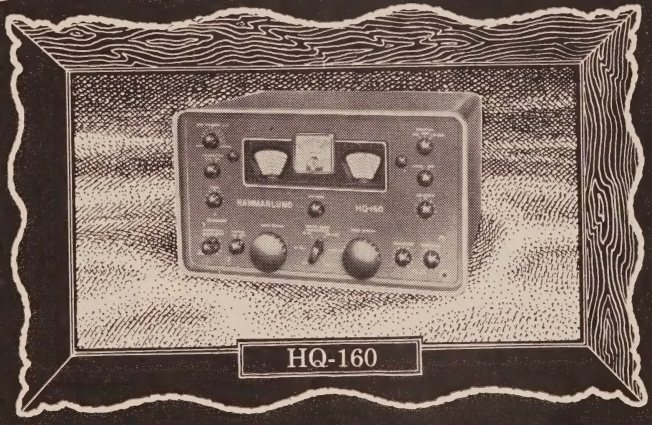
For the amateur who wants the very finest in SSB receivers. Contains all the functions necessary for solid contact in today's crowded bands. 17-Tube superheterodyne. Dual and triple conversion. Separate vernier tuning. Adjustable 60 db notch filter. 6, 10, 15, 20, 40, 80 and 160 meter amateur bands.

$359.00 *

HQ-160

You could pay twice as much, and get no more than the general-coverage HQ-160 quality. Dual conversion. 540 KCS to 31 MCS. SSB. Q-Multiplier. Electrical bandspread. Separate stabilized BFO. Crystal calibrator. Adjustable 60 db notch filter. 13-Tube superheterodyne. Crystal-controlled 2nd IF.

$379.00



Here's the pair that's making history in amateur radio. Never before has so much genuine quality and performance been offered at such low prices. Now the amateur can choose the one he wants and be sure that he's getting the very best buy in either a straight ham band or general coverage receiver.

*Telechron clock-timer, $10 extra.

Established 1910

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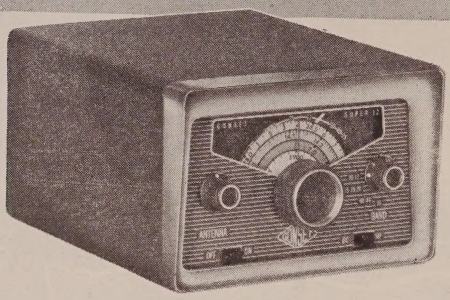
HAMMARLUND MANUFACTURING COMPANY, INC.
460 West 34th Street, New York 1, N. Y.

For further information, check number 9 on page 126.

NEW

SUPER-12 CONVERTER

GONSET



Now...SUPER-12...a modernized version of Gonset's very well known SUPER-6 Converter.

features...

...direct 12 volt operation...the perfect SW converter for the new 12 volt "Hybrid" auto BC receivers.

features...

...wide frequency coverage. 10-11, 15-20, 40 and 75 meter amateur bands. Also 19 and 49 meter international short wave bands for casual listening.

features...

...high sensitivity and stability. Has panel antenna trimmer, BC-SW switch, calibrated, easy-to-read tuning dial with planetary drive for vernier tuning.

features...

...compactness, easy mounting. Modern, attractive, blends with instrument panel of modern cars.

features...

...simple, rapid installation. No alterations or internal connections to BC set. Converter merely plugs into antenna input of car radio. Operating power is obtained from battery connection post behind dash.

Model 3261 ——— 57.50

GONSET DIVISION OF YOUNG SPRING & WIRE CORPORATION.
Burbank, Calif.

For further information, check number 10 on page 126.

LETTERS *[from page 14]*

for eleven weeks with nothing to do.

Upon being graduated from the school I was assigned to the Fort Knox Mars station as an operator.

A tip to any ham coming into service—it pays to let it be known to the powers that you are a ham and interested in being assigned to a MARS station. This is the best deal and practically the only one where you will do your intended job. I have corresponded with some of the guys from my class, and only one of five or six I know about is an operator. The rest are truck drivers, border guards (in Germany), clerk typists, etc. It seems that very few of the guys who go through radio school actually end up as an operator.

The job at the MARS station was really a good deal. I worked every other day and had every other weekend off. All I did was ham and meet a few MARS nets. The rest of the time I spent any way I wanted, building, experimenting, etc.

When I first came in the Army I applied for Guided Missile School. Nothing ever happened until I had been assigned to the Station for a couple of months. Then, just like the Army, I suddenly received word that I had been accepted and was to report to Fort Monmouth, N. J., immediately. I hated to leave such a good deal, but this way I am getting into my chosen field. I spend 12 weeks at Monmouth and am now in my 10th week of a 26 week course in testing, maintenance and repair of the Nike Ajax—Hercules Acquisition Radar and Computer, here at Redstone Arsenal, Ala.

Having taken Electrical Engineering in college and wanting to work with missiles when I get out of the Army, this is the best deal for me.

I did enjoy my stint as a MARS operator and remind any ham to let himself be known as a ham and wanting to operate MARS. They certainly don't ask him.

The Army is generally terrible, but can be made livable by getting something you want. But you have to work a little to get it.

Hope this will help you with the overall picture, Wayne, and will be glad to offer any other information. Sure wish I were a civilian again, because that job at CQ sure sounds inviting. Thanks for the nice job you are doing at CQ. It certainly is a pleasure to read CQ every month.

Am 10 meter mobile in my 1958 Fiat 600. The small cars are Great! Would also go for a Fly-In Hamfest. Let's have one!

Donald L. Schliesser, W8KAO

Oops

Dear Mr. Editor,

We have just received the June issue of your well known CQ Magazine and sorry we read on page 56 a very great mistake about our *PACC*-Certificate.

This PACC Certificate is namely *our own Certificate* and of course it is only available by our Society.

Cards should be submitted direct to the Traffic Manager of our Society, the V.E.R.O.N. (Netherlands Section of the I.A.R.U.), Postbox 6011, The Hague, the Netherlands.

We have asked our Traffic Manager, Mr. Louis v.d. Nadort, PAØLOU, to send you as soon as possible some interesting information about our Certificates.

We suppose you will be kind enough to correct your message in the next issue, because it is of international importance to have the disposal of right information especially for the dx-hams.

We thank you in anticipation and remain with good luck,

sincerely yours,

H. M. Udtoolen, PAØNP
President

Circulating Library

Dear Sirs:

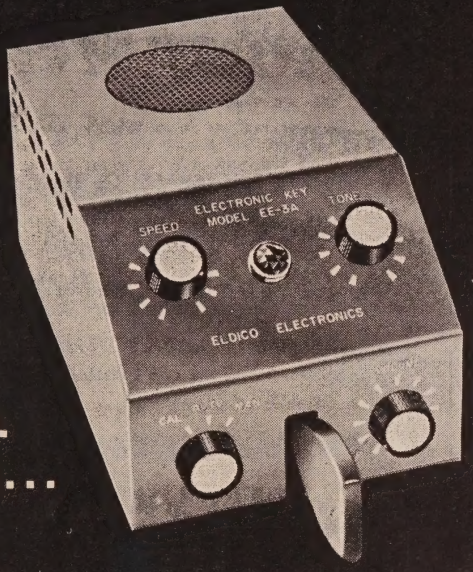
My subscription to your magazine was a gift from the XYL and I must say that I enjoy each and every

[Continued on page 18]

For further information, check number 11 on page 126. ➤

"PROOF OF THE PUDDING . . ."

For the C. W. man . . .



ON-THE-AIR REPORTS

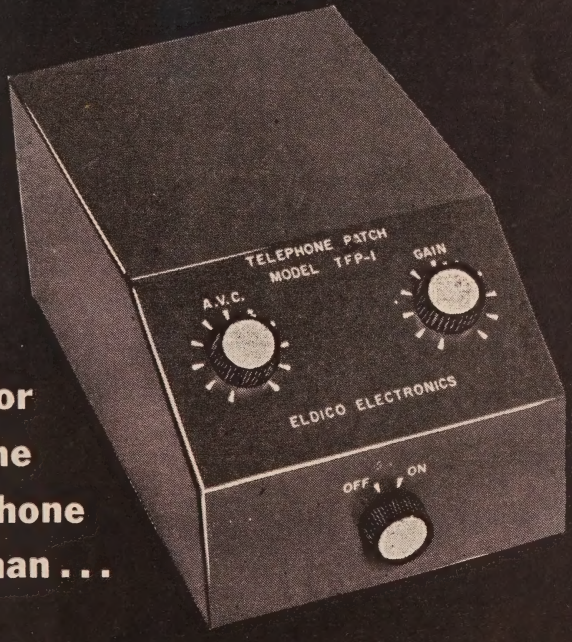
". . . miraculously reduced the effort required in sending."

". . . increased my percentage of successful CQ's."

"In a traffic net, I now have far less requests for repeats."

"Though I'm a novice, the old timers compliment me on my sending—thanks to the EE-3A."

For the phone man . . .



"Friends on the air say it's the best phone patch they've heard."

"My mother, who knows practically nothing about ham radio, didn't realize she was talking thru a patch."

"From start to finish, I never touch a knob."

"The Antarctic gang really approves of and uses my new TFP-1."

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see your dealer,
or write
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THE ONLY CONVERTER FOR AMATEUR RECEPTION ON NEW 12 VOLT AUTO RADIOS...

because Model ATC-1 is self-powered (3 penlight batteries, shelf life expectancy) and does not require a power supply. Its own power supply guarantees frequency stability—voltage fluctuations in car's electrical system will not affect it.

Simple to connect—one connection to antenna, other to receiver antenna input; only 4¾" x 3¼" x 4 1/16"—30 ounces—small and light enough to be carried easily, mounted in any convenient spot in car; adaptable to any receiver—receives AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands; the answer to mobile SSB listening—built in BFO plus a high degree of stability make the tuning of SSB, DSB, or CW signals a pleasure; provided with outstanding selectivity on AM phone by the modified "Q" multiplier circuit.

Model ATC-1, $79.50

See your Electric Parts Distributor for full information on Transistor complement, Diode clamp protection, Controls, Sensitivity, etc., or write

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Division I.D.E.A., Inc.

7900 Pendleton Pike, Indianapolis 26, Ind.

For further information, check number 12 on page 126.

LETTERS [from page 16]

issue. It does the rounds at my office where we have four other active hams. I particularly enjoy your VHF news and articles, your tongue-in-the-cheek presentation and the fact that your staff is largely composed of sportscar driving night-people. Obviously fine chaps!

Perhaps you would allow me to forward my thanks to the Manitoba Phone Net through your letters to the editor column. During a two month stay in the bush I operated portable VE4. My transmitter was a battery operated rig working up to a mighty five watts at times. The members of the net stood by for me every night and made every effort to copy my signal. During my operation there I passed personal messages, a forest fire report, a report on a lost aircraft and a request for food when our camp communications broke down. My special thanks to VE4PA, 4FF and 4RR.

Jas. B. Bremner, VEZAHQ
Quebec

This lending of CQ to fellow employees must stop immediately or we will have to terminate your subscription.—ed.

Oh, for the life of a bachelor

Dear Wayne:

My curiosity has gotten the better of me. Five or six years ago you were on twenty meters requesting anyone listening to send a card to a friend who was getting married. This card was to be signed by a make-believe girl friend of your pal to get him in dutch with his wife. No doubt he did receive several cards for my sister-in-law VE3BVT sent him one as did some others locally. How many cards did he receive? Are you still his friend? What happened?

Bert, VE3ANP

Well, Bert, that hoax worked out splendidly. You see, here is what happened. This friend of mine, 75 years old and living in a small town in New Hampshire (my home town), was about to get married to a gal from a small Vermont town. I got on the air and got fellows from all over the world to send post cards to him at both his address and her address, all signed by supposed girl friends and all disappointed that he was getting married and thus going out of circulation. The dozen or so fellows that I talked to on twenty meters spread out on all bands and several hundred cards came pouring in to the two small post offices from Alaska, Germany, Scotland, South Africa, all over South America, Canal Zone, etc. Plus just about every state. This naturally caused quite a stir in the post offices, which seem to keep pretty good track of post cards.

My friend had no inkling as to how such a thing had happened to him. He had no notion of my interest in ham radio and it was completely bewildering . . . and impossible to explain. I finally told him about it several months later and he turned a few of the cards that got by his wife over to me. I don't think she ever appreciated the humor of it, hi!

Another First

Dear Wayne:

The first meeting of a group of amateurs to reactivate the NARC was held in the Town Hall, Broadview Heights, Ohio, on June 14, 1958. W8UDN, Edward "Ed" Kopp was elected Chairman, and past secretary W8RHZ, Harry Steffan was elected Advisor.

Quite a number of local Hams were in attendance and the meeting was considered a success by those who organized it and arranged for use of the Town Hall.

Let's all get behind the only organization responsible for the use of the 40 meter 'fone band and the 160 meter band as of this date.

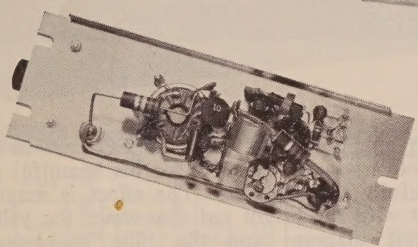
James R. Jansic, W8SZP
Pubicity NARC
RFD #6 County Rd. 172
Brunswick, Ohio

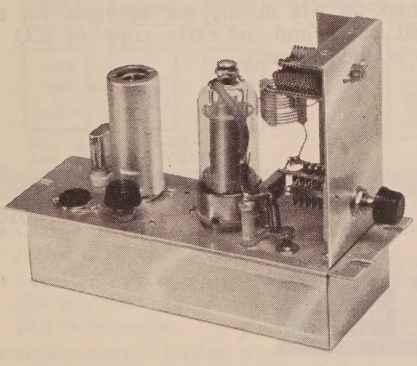
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STP-50, 6 METER TRANSMITTER

THIS TRANSMITTER IS THE FIRST OF SEVERAL STRIP TYPE UNITS TO BE MANUFACTURED BY INTERNATIONAL







SPECIFICATIONS

Power Input:	Maximum 30 watts
Tube Line-Up:	Oscillator-Buffer 12BY7
Final:	2E26
Heater Power:	6 Volts
Plate Power:	300 to 500 Volts
Crystal:	12MC Fundamental (8MC Fundamental Crystal may be used)
Size:	3" x 6" x 6"

PRICES

Kit, less tubes and crystal	**$21.50**
Kit, with tubes less crystal	**26.50**
Wired, with tubes but less crystal	**32.50**
Crystal, FA-5 12MC	**4.00**

The STP-50 transmitter doubles in the first stage and doubles in the final. By doubling in the final we will eliminate neutralization problems and we gain the ease of alignment.

AVAILABLE OCTOBER 1, 1958

HOW TO ORDER

Please supply sufficient information with order to facilitate accurate processing. Shipments are made on open account F.O.B. Oklahoma City when credit has been approved. On C.O.D. orders of $25.00 or over, ⅓ down payment with order is required.

Please include in check or money order sufficient postage and insurance for your Parcel Post Zone. Shipping weight, 5 lbs.

International

CRYSTAL MFG. CO., INC.

18 N. LEE • PHONE RE 6-3741 • OKLA. CITY, OKLA.

For further information, check number 13 on page 126.

NEW MORADCO

CM3 CONELRAD MONITOR and BROADCAST RECEIVER

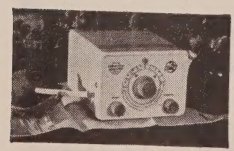


Complete Unit

NO INTERFERENCE WITH PRESENT EQUIPMENT

Gives immediate warning as soon as your Conelrad station breaks its carrier—without the slightest interference with your transmitter. The Moradco CM3 Conelrad Monitor receives the entire AM broadcast band (550 to 1750 Kc), is complete in itself. Pre-set alert switch maintains constant vigil, sounds penetrating signal. Compact metal cabinet: 5⅞" wide, 4⅛" high, 7⅜" front to back, weighs only 4½ lbs. packed for shipping. Standard 5-tube superheterodyne with added alarm circuit (6 tubes incl. rectifier).

Plug it in Anywhere



Plugs into 110-volt line in your ham shack, living room, or bedroom. Loud, 1000-cycle tone will wake you out of a sound sleep if an emergency warning comes through. Choice of colors: Russet mahogany, African ivory, or gray hammertone.

WRITE for descriptive folder.

PRICE... $39.95

MORROW radio manufacturing company
P. O. BOX 1627 SALEM, OREGON

For further information, check number 14 on page 126.

QSL contest

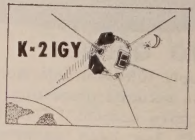
WINNER



A one year subscription to CQ goes to this month's winner VE3MR for his beautiful and carefully planned card. The effect is magnificent with the bright red sine wave, the yellow circuit diagram and the blue background. Runners up win mainly our applause for excellent cards and an extra copy of CQ to flash at their friends.

LOSERS



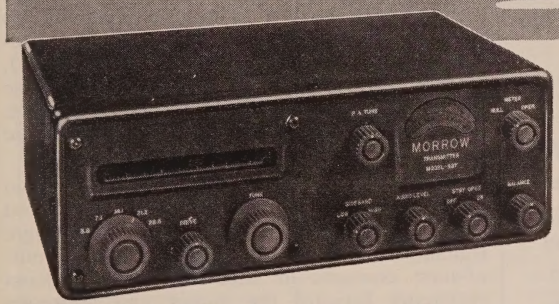




New MORADCO

SINGLE SIDEBAND
MINIATURIZED 50 WATT
TRANSMITTER
4⅛" x 11-⅞" x 7¼"

Model SBT for Fixed or Mobile Use



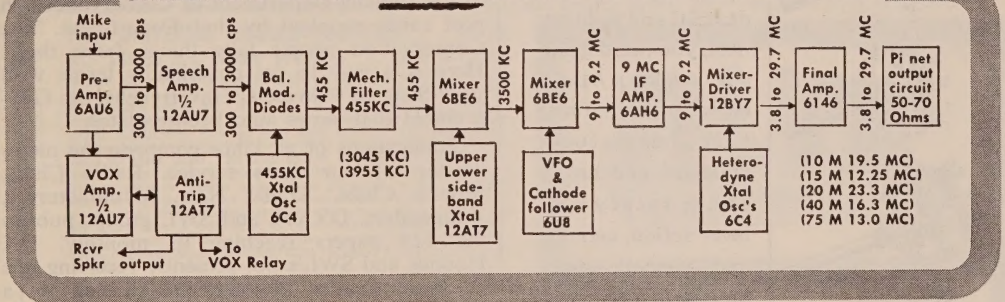
Coverage: 3.8-4.0, 7.1-7.3, 14.1-14.3, 21.200-21.400, 28.5-28.7 MC.

Calibration: VFO Calibrated, 0-200 Kc (add to frequency shown on band switch).

Filter: Uses a Mechanical Filter for Long Term Maximum Suppression of Unwanted Sideband.

Emission: Upper or Lower Sideband. CW-AM (SSB with Carrier Added).

STREAMLINE DESIGN *PROVES* MONTHS OF MORROW RESEARCH



- Change bands, set drive and peak final, null carrier in about 30 seconds.
- Excellent voice-operated control system (VOX). Anti-trip of new, improved design, plus push-to-talk.
- Semi-automatic loading when changing bands —designed for 50-70 ohms.
- Antenna (VOX) relay built in.
- By changing plugs in the universal power supply unit, the SBT operates as an exciter at about 10 watts output, or as a barefoot transmitter at about 50 watts output.
- Controls grouped for ease of operation.
- Same cabinet dimensions as MB6 and MB565: 4⅛" x 11⅞" x 7¼".
- Plug-in connections for easy removal from car.

NEW

Power Supply Unit designed especially for the SBT Transmitter; regulates all the important voltages. Also supplies voltages for the receiver. This unit operates from 6 or 12 volts DC, or from 117 volts, 60 cycles. One cable and plug makes all the connections and changes from 6 to 12 volts.

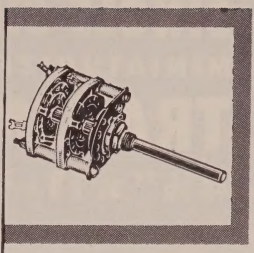
SEE YOUR DEALER . . . or write Morrow Radio Mfg. Co. for full information on the SBT Transmitter.

MORROW radio manufacturing company

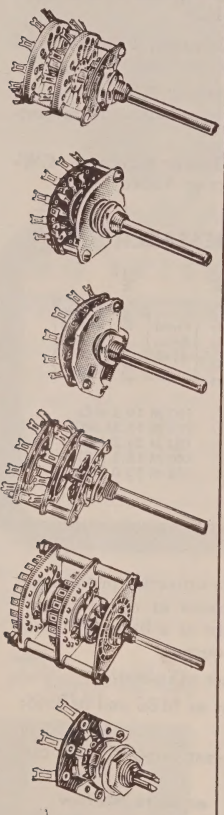
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For further information, check number 15 on page 126.

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CONTROLS • ENGINEERED CERAMICS • SEMI-CONDUCTOR PRODUCTS

For further information, check number 16 on page 126.

CLUB BULLETINS

Marvin D. Lipton, VE3DQX,

311 Rosemary Road, Toronto 10, Ontario, Canada.

A free CQ subscription will be sent each month to the individual submitting the best news item to this Department. The entire story should not exceed 2 or 3 sentences. News of inventions, outstanding accomplishments, coincidences, extraordinary DX contacts, accidents, new operating records, etc., is what we are after. All news accounts will be used to supplement CQ NEWS. The monthly winner's name will appear in this column, and in addition to the one year free subscription to CQ, he will receive a complimentary copy of the CQ news release carrying the winning episode. Send your news to the address above, not the New York office.

The BISON, paper of the Indiana Radio Club Council, recently ran a paragraph about the "promote Indiana on the air" campaign. Indiana Hams are requested to interest out-of-state contacts in that W9 state. Indiana Amateurs forward the names and addresses of contacted Hams residing in "foreign states," to the Indiana Department of Conservation, on post cards supplied by that Department. The Conservation people take things from there. Here is a way to get on friendly terms with your State or Provincial Government; the Government that issues auto license plates.

Publications of all kinds comprise the membership of our news service. Radio Clubs, Mobile Clubs, Traffic Nets, Manufacturers, Wholesalers, DX ers, and SWL groups publish the 128 papers reaching us monthly. DX Hounds and SWL's not presently receiving one of these smaller bulletins are passing up a wealth of valuable information. If you fall into this category and if you would like to share the contents of a small DX or SWL bulletin, drop me a line and I'll refer you to an editor in your neighborhood. In most cases there is little or no subscription fee.

In the past month it was our pleasure to add the names of the papers noted below to the ever-increasing list of publications in the CQ news service. Welcome, HARMONICS, South Jersey R.A., THE SIDEBANDER, SSB.A.R.A., ATHENS JR. A.R.C., Assoc. member, THE YANKEE R.C. NEWS, Yankee R.C., PANHANDLE A.R.C., Assoc. member, LARSGRAM, Lakeland A.R.Soc., RAGCHEW, Nevada, A.R.A., and SKIP, Fresno A.R.C. Inc.

73, Marv. VE3DQX.

CQ NEWS, the official news release of the Club Bulletin Department, is issued monthly to full and associated members of the CQ News Service. Editors of Amateur Radio Club Publication are invited to join the News Service gratis. Amateur Radio Clubs not publishing bulletins may become associated members free of charge by notifying this Department. Contents of CQ NEWS are extracted from affiliated club bulletins. Associated members are granted full membership upon publication of a club paper.

The specs are the proof... now your best buy in ham equipment is

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New

90-WATT CW TRANSMITTER #720

KIT $79.95 WIRED $119.95

Conservative, highly efficient design plus stability, safety, and excellent parts quality. Covers 80 thru 40, 20, 15, 11, 10 meters (popular operating bands) with one knob band-switching. 6146 final amplifier for full "clean" 90 W input, protected by clamper tube circuit. 6CL6 Colpitts oscillator, 6AQ5 clamper, 6AQ5 buffer-multiplier, GZ34 rectifier. "Novice limit" calibration on meter keeps novice inside the FCC-required 75W limit. No shock hazard at key. Wide range, hi-efficiency pi-network matches antennas 50 to 1000 ohms, minimizes harmonics. EXT plate modulation terminals for AM phone modulation with 65W input. Excellent as basic exciter to drive a power amplifier stage to maximum allowable input of 1KW. Very effective TVI suppression. Ingenious new "low silhouette" design for complete shielding and "living room" attractiveness. Finest quality, conservatively rated parts, copper-plated chassis, ceramic switch insulation. 5" H, 15" W, 9½" D.

NEW UNIVERSAL MODULATOR-DRIVER . . #730

KIT $49.95 WIRED $79.95 Cover E-5 $4.50

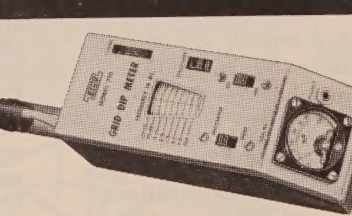
Superb, truly versatile modulator at low cost. Can deliver 50 watts of undistorted audio signal for phone operation, more than sufficient to modulate **100%** the EICO #720 CW Transmitter or any xmitter whose RF amplifier has a plate input power of up to 100W. Multi-match output xfmr matches most loads between 500-10,000 ohms. Unique over-modulation indicator permits easy monitoring, precludes need for plate meter. Low level speech clipping and filtering with peak speech frequency range circuitry. Low distortion feedback circuit, premium quality audio power pentodes, indirectly heated rectifier filament. Balance & bias adjust controls. Inputs for crystal or dynamic mikes, phone patch, etc. Excellent deluxe driver for high-power class B modulation. ECC83/12AX7 speech amplifier, 6AL5 speech clipper, 6AN8 amplifier driver, 2-EL34/6CA7 power output, EM84 over-modulation indicator, GZ34 rectifier. Finest quality, conservatively rated parts, copper-plated chassis. 6" H, 14" W, 8" D.



NEW GRID DIP METER . . . . . #710

KIT $29.95 WIRED $49.95 including complete set of coils for full band coverage.

Exceptionally versatile, stable, rugged, compact. Basically a VFO with a microammeter in its grid circuit: determines frequency of other oscillators or tuned circuits; sensitivity control and phone jack facilitate "zero beat" listening. Also excellent absorption wave meter. Ham uses: pretuning and neutralizing xmitters, power indication, locating parasitic oscillations, antenna adj., correcting TVI, general de-bugging with xmitter power off, determining C, L, Q. Electronic servicing uses: alignment of traps, filters, IF's, peaking compensation networks; as signal or marker generator. Easy to hold & thumb-tune with one hand. Continuous coverage of 400 kc-250 mc (broadcast, FM, ham, TV bands) in 7 ranges with pre-wound coils of ±0.5% accuracy. 500 ua meter movement. 6AF4(A) or 6T4 Colpitts oscillator. Xmfr-operated selenium rectifier. 2¼" H, 2⅝" W, 6⅞" L. Brushed satin deep-etched aluminum panel; grey wrinkle steel case.



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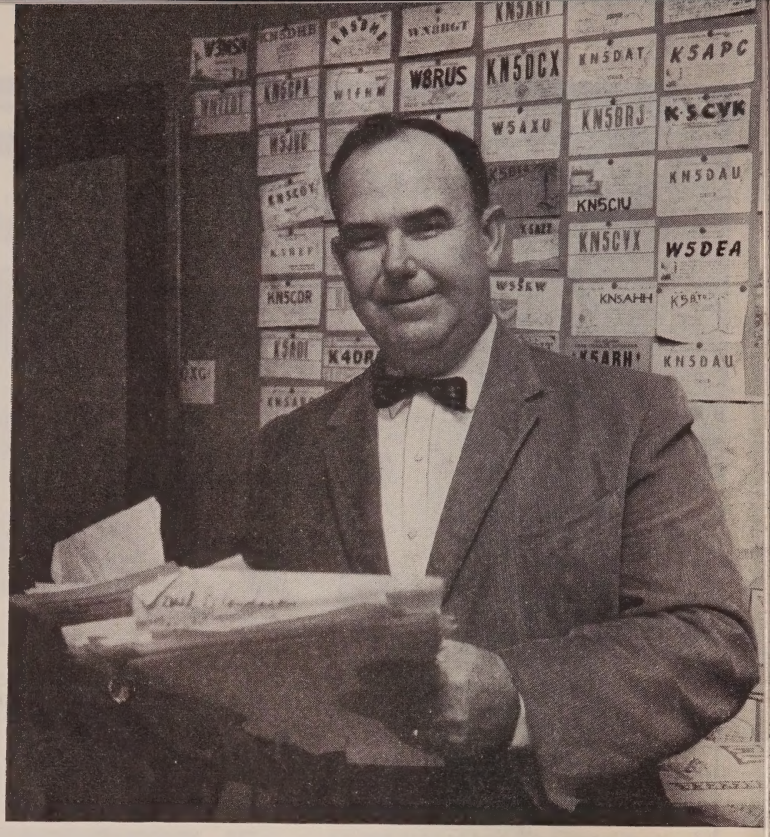
Address_____

City_____ Zone____ State_____

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For further information, check number 17 on page 126.

1957 AWARD WINNER James E. Harrington, K5BQT, holds some of the 1,500 messages he handled at devastated Cameron, La., during Hurricane Audrey. With Capt. Neal Mabrey, W5VTU, and Sgt. Michael J. McDermott, K5CTQ, both of Lake Charles Air Force Base, Harrington transported radio and emergency power equipment by boat to Cameron, and operated there around the clock for three days.





1958 Edison Award Nominations Invited!

For the seventh consecutive year, the Edison Award for 1958 will acclaim an amateur who has distinguished himself and all radio amateurs by rendering noteworthy public service.

Letters from you and others will be the only source for Award nominations. These nominations will be reviewed by a committee of impartial judges, who then will select the Award winner.

So that no worthy candidate may fail to receive the judges' consideration, your help by choosing and naming a suitable amateur is essential. The rules at right will assist you with your nominating letter. Mail it to *Edison Award Committee, General Electric Company, Electronic Components Div., Owensboro, Ky.*

RULES OF THE AWARD

WHO IS ELIGIBLE. Any man or woman holding a radio amateur's license issued by the F.C.C., Washington, D. C., who in 1958 performed a meritorious public service in behalf of an individual or group. The service must have been performed while the candidate was pursuing his hobby as an amateur within the continental limits of the U. S.

WINNER OF THE AWARD will receive the Edison trophy in a public ceremony in Washington, D. C. Expenses of his trip to that city will be paid.

$500 GIFT. Winner will be presented with a check for this amount in recognition of the public service he has rendered as a radio amateur.

WHO CAN NOMINATE. Any individual, club, or association familiar with the public service performed.

HOW TO NOMINATE. Include in a letter a full description of the service performed, as well as the candidate's name, address, and call letters. Your letter of nomination must be postmarked not later than January 5, 1959.

BASIS FOR JUDGING. All entries will be reviewed by a group of distinguished and impartial judges. Their decisions will be based on (1) the greatest benefit to an individual or group, (2) the amount of ingenuity and sacrifice displayed in performing the service. The judges will be:

E. ROLAND HARRIMAN, Chairman, The American National Red Cross.

ROSEL H. HYDE, Commissioner, Federal Communications Commission.

GOODWIN L. DOSLAND, President, American Radio Relay League.

Winner of the Award will be announced on or before Thomas A. Edison's birthday, February 11, 1959.

Employees of the General Electric Company may nominate candidates for the Edison Radio Amateur Award, but are not permitted to receive the Award.

GENERAL ELECTRIC

11-19-101

For further information, check number 18 on page 126.



NOW YOU CAN BUY MOSLEY **TRAPMASTER** ANTENNAS

ALL OVER THE WORLD

Mosley's English factory now supplies fine Trapmaster antennas to hams prevented by currency restrictions from buying in the U.S.A. For prices and other details, write

O. J. Russell, G3BHJ, Manager MOSLEY ELECTRONICS, LTD.
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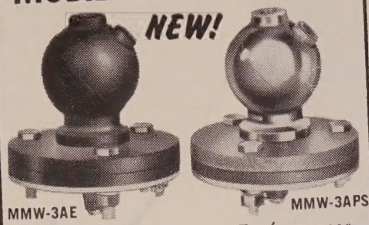
Mosley Electronics, Inc.

8622 St. Charles Rock Road
St. Louis 14, Missouri

For further information, check number 19 on page 126.

HEAVY DUTY
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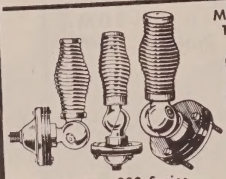


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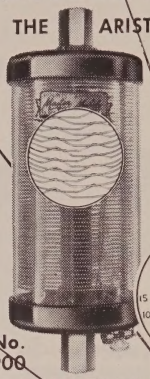
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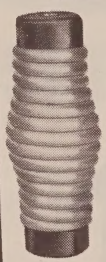
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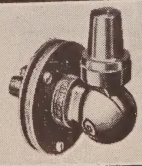


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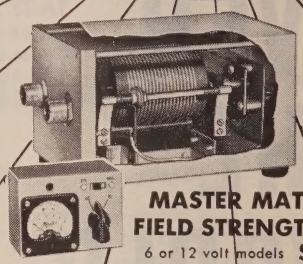


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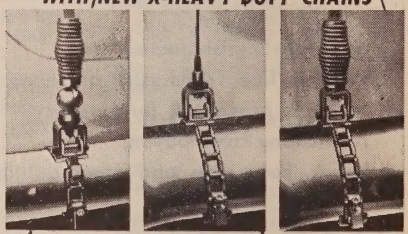
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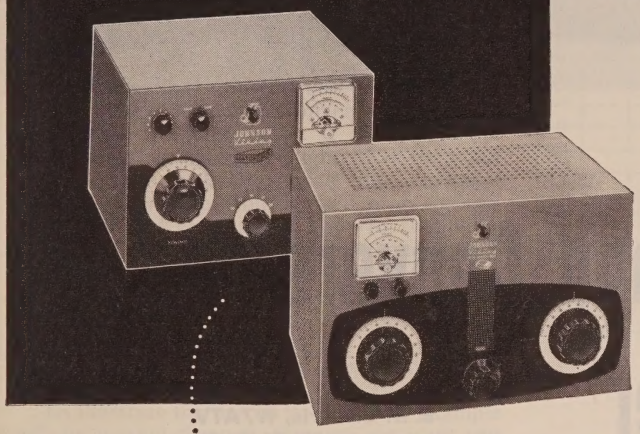
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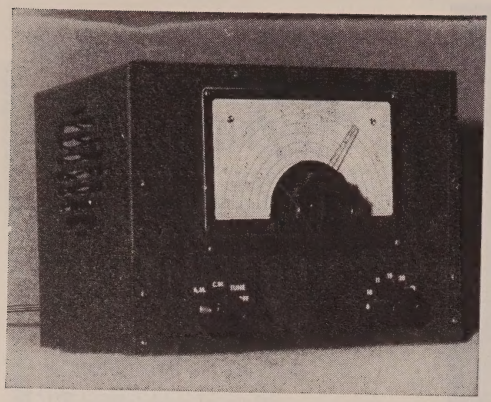
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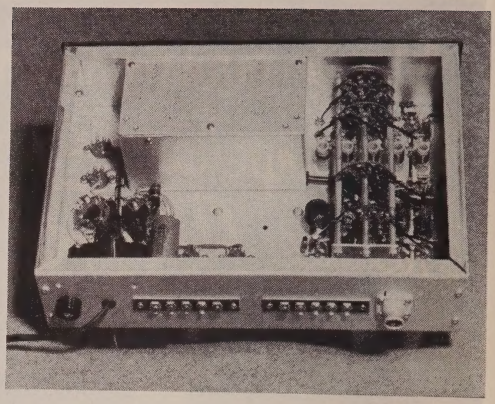
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All-Band Conversion Exciter

E. D. Crawfis, W7ATV
RFD #2, Box 796
Phoenix, Ariz.

The idea of a conversion exciter certainly is not new. The writer first saw an article describing one in the February, 1938 issue of *Radio*. Since then, numerous similar articles have appeared, all describing some variation of the basic idea. The fundamental principle of such a device is quite simple. A stable variable frequency is obtained by beating a relatively low-frequency vfo against a high-frequency crystal and using either the sum or difference as the output frequency.

The writer has long thought that the designers of these exciters were overlooking an excellent opportunity by restricting their output to one band. By proper selection of frequencies, direct output may be obtained on several bands simply by switching crystals and tank circuits. Two models of such exciters have been built and used by the writer in the last few years, with very satisfying results.

The principal reason for using a band-switching conversion exciter is to eliminate the string of frequency multipliers usually associated with a multi-band exciter. Output may be obtained directly on any band by switching the crystal oscillator frequency and the mixer tank circuit. Other general advantages of a conversion exciter are: much better frequency stability on the higher-frequency bands, and break-in operation with continuously running oscillators, by keying the mixer.

Naturally, things are not as rosy as they seem with this scheme. Probably the most obnoxious fly in the ointment is the generation of undesired mixer products. The book says that if two frequencies are combined in a mixer stage, the output will contain the two original frequencies, and also their sum and difference frequencies. While this is true, it does not begin to tell the whole story. In practice, there are also an infinite number of other frequencies, including harmonics of the original frequencies, and such combinations as three times one frequency minus twice the other. While this is not a hopeless case, it does present a problem if one is to refrain from filling the radio-frequency spectrum with "birdies."

There are several angles of attack to this problem, all of which should be exploited to the fullest extent possible. These approaches are as follows:

(1) Selection of a mixer whose characteristics approach square-law operation as closely as possible, to keep the relative amplitude of the higher-order mixer products as low as possible.

(2) The use of as many good tuned circuits as possible between the mixer and the antenna, to further attenuate frequencies which fall near the desired pass-band.

(3) Proper selection of the two oscillator frequencies to prevent as many undesired

mixer products as possible from falling in or near the desired pass-band.

Concerning the first point, reduction of higher-order mixer products depends on the tube type, operating voltages, and on *not* overdriving the mixer. The second point speaks for itself. The third point is probably the most important, and should be one of the first things considered in the design of any conversion exciter.

The table in *fig 1* shows various frequency combinations which will produce spurious signnals on the same frequency as the desired signal. The data is given in terms of the ratio of the two oscillator frequencies, in order to make the table universal. This table is based on the use of the sum frequency, but a similar table could be worked out for the difference frequency. The data includes mixer products only up through the tenth order. It is felt that the amplitude of any products higher than the tenth order will be negligible if the mixer is operated properly. The table is used more or less on a trial and error basis. The vfo frequency range and the crystal oscillator frequency are chosen for a given band. Then the range of the ratio of the vfo frequency to the crystal oscillator frequency is calculated. The table is then examined over this range to see what spurious products will be present in the desired pass-band.

To illustrate the use of the table, an example will be carried through. Suppose we want our mixer output to cover the range 7.0 to 7.3 mc. We choose 5.85 mc for our crystal frequency, because we happen to have a 5.85 mc crystal on hand. This calls for a vfo tuning range of 1.15 to 1.45 mc. We divide the extremes of the vfo tuning range by the crystal oscillator frequency and get approximately 0.20 to 0.25 for the range of oscillator frequency ratios. Examination of the table in this range shows us that we will get 5th, 6th, and 10th order products in or very close to the desired pass-band of 7.0 to 7.3 mc. We should be able to do better than this, so we try again, and choose 3.2 mc for our crystal frequency.

This requires a vfo range of 3.8 to 4.1 mc. Now we divide the crystal oscillator frequency by the extremes of the vfo tuning range (because the table is set up to use the smaller of

OSC. Freq. Ratio f_1/f_2	MIXER PRODUCT ORDER 2	3	4	5	6	7	8	9	10
0. H									$2f_2-8f_1$ or $10f_1$
0. 125								$3f_2-7f_1$ or $8f_1$	
0. 142							$2f_2-6f_1$ or $8f_1$		
0. 167						$2f_2-5f_1$ or $7f_1$			
0. 200					$3f_2-4f_1$ or $6f_1$				
0. 250				$2f_2-3f_1$ or $5f_1$					$3f_2-7f_1$ or $8f_1-f_2$
0. 286							$3f_2-6f_1$ or $8f_1-f_2$	$3f_2-6f_1$ or $8f_1-f_2$	
0. 333			$2f_1-3f_2$ or $4f_1$				$3f_2-5f_1$ or $7f_1-f_2$		
0. 400						$3f_2-4f_1$ or $6f_1-f_2$			
0. 428									$4f_2-6f_1$ or $8f_1-2f_2$
0. 500		$2f_2-f_1$ or $3f_1$			$3f_2-3f_1$ or $5f_1-f_2$			$4f_2-5f_1$ or $7f_1-2f_2$	
0. 600							$4f_2-4f_1$ or $6f_1-2f_2$		
0. 667				$3f_2-2f_1$ or $4f_1-f_2$					$5f_2-5f_1$ or $7f_1-3f_2$
0. 750						$4f_2-3f_1$ or $5f_1-2f_2$			
0. 800								$5f_2-4f_1$ or $6f_1-3f_2$	
1. 000	$2f_2$ or $2f_1$		$3f_2-f_1$ or $3f_1-f_2$		$4f_2-2f_1$ or $4f_1-2f_2$		$5f_2-3f_1$ or $5f_1-3f_2$		$6f_2-4f_1$ or $6f_1-4f_2$

Fig. 1

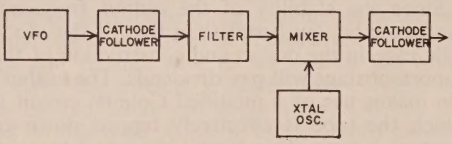


Fig. 2

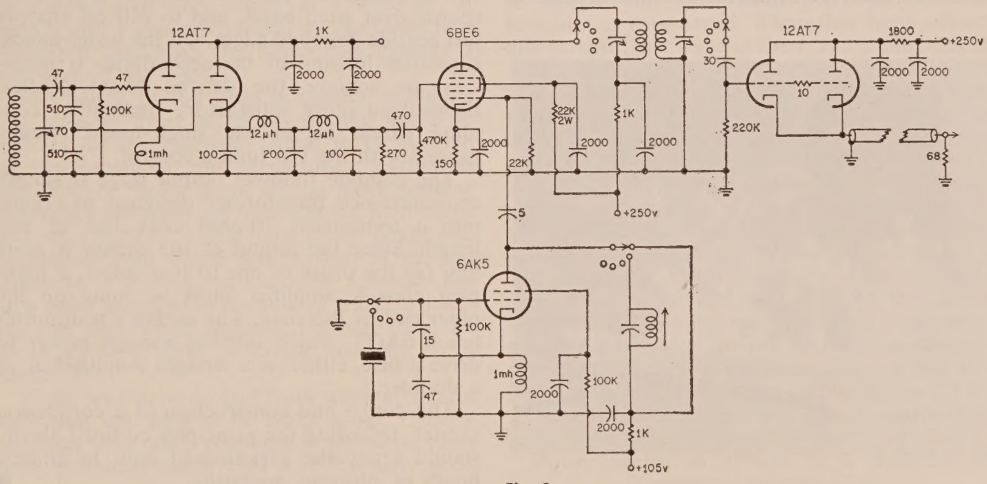


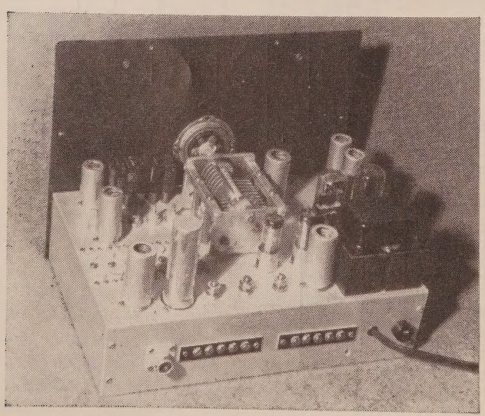
Fig. 3

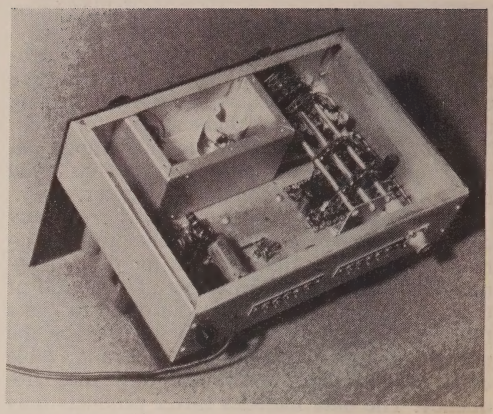
the two possible quotients), and come up with approximately 0.12 to 0.13 for the frequency ratio. Examining the table in this range shows that only 9th order products will fall in the desired pass-band. We conclude that we have picked a fairly good set of frequencies for our purpose this time.

This is not intended to be a how-to-build-it article, but rather to put across a few ideas which the experienced and progressive ham can use in designing a band-switching conversion exciter to meet his own requirements. This will be done by describing an actual exciter without going into all the constructional details. A block diagram of the exciter is shown in *fig 2*.

The vfo tunes over the range 3.5 to 4.5 mc. A low-pass filter is placed between the vfo and mixer to attenuate any harmonics which might be present in the output of the vfo. The cathode follower after the vfo provides isolation. The crystal oscillator uses a harmonic circuit because crystal harmonics are used on the higher-frequency bands to avoid using high-frequency crystals. The output stage is a cathode follower in order to provide a low output impedance to work into a matched coax cable of any length. On the 3.5 mc band, the frequency of the vfo is used directly, and the crystal oscillator is inoperative. A conventional pentagrid mixer is employed, and its plate circuit is tuned to the sum of the vfo and crystal oscillator frequencies.

Since the stability of the output frequency can never be any better than that of the vfo, a little care in the design and construction of this important stage will pay dividends. The author's vfo makes use of a modified Colpitts circuit in which the tube is effectively tapped down on the tank circuit. This circuit has one advantage over the Clapp circuit, in that it will tune over a wider range with less variation in output. The plate supply of the vfo should, of course, be regulated. Silver mica capacitors or their equivalent should be used in the tank circuit, which must be solidly constructed. The author used a





rugged double-spaced transmitting capacitor to tune his vfo, and the coil was wound on a grooved ceramic form. The entire tank circuit was shielded.

A cathode follower serves to isolate the vfo, and also to provide impedance transformation to a level at which a practical low-pass filter can be constructed. The two-section filter, of the constant-k variety, has a cut-off frequency of about 6 mc. Its purpose is to remove harmonics from the vfo output.

The crystal oscillator is a conventional harmonic type. Since it is not used on the 3.5 mc band, the grid is grounded in this position. When operating the exciter on the 7 mc band, the crystal oscillator operates straight through on the crystal frequency. On the higher-frequency bands, the plate circuit is tuned to a harmonic of the crystal frequency. Coupling from the crystal oscillator to the mixer is adjusted to give proper injection grid current.

The mixer is coupled to the cathode follower output stage by means of over-coupled band-pass circuits. These circuits are carefully tuned and adjusted to provide reasonably flat response over each band, and to fall off sharply just outside the band edges. On the wider bands, resistance loading of the secondaries is necessary to achieve the desired characteristics. Probably a more satisfactory method of coupling would be to use single-tuned circuits ganged with the vfo tuning control.

The cathode follower output stage is simply an impedance transformer designed to couple into a terminated 70-ohm coax line of any length. Since the output of the exciter is quite low (in the order of one to two volts), a high-gain class-A amplifier must be hung on the other end of the coax. The author's transmitter has a 6AG7, which supplies enough power to drive a 6L6, either as a straight amplifier or as a doubler.

The design and construction of a conversion exciter, following the principles outlined above, should repay the experienced ham in endless hours of pleasant operating. ■

MOBILING

H. T. (Tom) Orr, WØWET, K5HLG
5107 Junius St.
Dallas 14, Texas

Sooner or later every amateur owns a means of transportation other than his two feet desires to place his hobby, or a portion of it, in the "wheel", whether it be automobile, truck, bicycle, motor scooter, airplane, motorcycle or kiddie car.

The purpose of this article is not to describe how to eliminate ignition interference, build a new transmitter, or design a new mobile receiver but to point out some of the non-technical problems of being mobile.

Probably the most characteristic sign of the mobileer is the whip antenna. The big problem with whips is not loading coil losses but the fact that the American public believes that any person with a whip on his car is a law-enforcement officer. Many amateurs driving on a highway find themselves followed by a string of traffic afraid to pass. Just the sight of that whip at one of the favorite lovers' lanes makes everyone else drive away. Oh, well, there's nothing like privacy. On one occasion when other cars were being detoured around a block where firemen were fighting fire, I was directed into the block by a policeman who waved as I went by. It wasn't until I was surrounded by fire hoses that I realized that even the policeman thought I was part of the show.

The height of the whip is another problem. The amateur must adjust his driving habits to account for the antenna. Things to be avoided are low telephone lines, tree limbs, underpass and drive-in banks. Some of the more popular targets for the whip are overhanging light bulbs at service stations. I also have to my credit one fluorescent light which was broken at the entrance to a drive-in movie. One amateur has such sway in his whip because of a heavy loading coil that when making a sharp turn, he occasionally is able to knock the hat off a pedestrian.

Those who drive to and from work or school daily find mobiling to be really great. Usually one talks with other amateurs in the same town doing the same thing. This is particularly good for those who must drive through heavy traffic; the time spent is not all lost transit time, but just that much more hamming time. While others are cussing the long lines of traffic, the mobileer is enjoying his hobby.

Cross-country mobiling is usually somewhat different from the "in-town" type of mobiling. The attenuation of buildings and other objects is eliminated and distances worked increase. One of the problems of mobiling on any frequency below 10 meters is that usually a loading coil of some sort is necessary. While the airplanes have been using trailing antennas for years, few amateurs even consider such a thing. Just add enough wire to the end of the whip to make the antenna a quarter wave length on the desired band and drive away. On 15, 20 and 40 this is no problem, but generally cannot be used on 80 meters as a 50-foot wire hanging from a whip causes quite a stir among some local authorities. A piece of paper or cloth tied to the free end of the wire keeps it in the air as you drive along. Of course, many motorists will spot this wire and take it upon themselves to inform you that "some piece of wire" is hanging on your aerial. When they honk, shout and scream, just wave at them and smile; they'll soon get tired and go away. It's possible to use a different color of wire for each band and solder an alligator clip on one end for rapid connection. With this system the mobile signal compares with those of fixed stations.

CW mobile is very good in cross-country mobiling and can even be used in town with some success. In a car with automatic transmission CW mobile can be used almost anywhere. Those extra db really make the difference and operation is almost as good as at the home QTH. A key can be mounted on one end of a piece of board and the other end placed under the driver's right leg. With a little practice the sending can be as good as at the home QTH. A speed key can be used in cross-country mobiling with very good results.

Power seems to always be a problem in

[*Continued on page 125*]



We arrive at the end of the road in Austin Pass, car crammed full of radio gear.

DX-PEDITION TO AUSTIN PASS

Ken Bale, W7VCB
13427 7th Ave. So.
Seattle 88, Wash.

Hanging up the sky wire. That's beautiful Mt. Shuksan behind.



Forthwith comes the saga of a short range DX-Pedition to Austin Pass in the Mt. Baker National Forest area of North Western Washington State.

Austin Pass is literally the end of the road so to speak high in the Cascade Mountain range between Mt. Baker and Mt. Shuksan. We wanted to DX-Pedition there for two main reasons. First the area is known for its phenomenal propagation characteristics and secondly it is only open to access by car about two months during the late summer. The remainder of the year it is a very fine ski area covered with deep snow. Getting back to the extra-super propagation, the author and many others have experienced hearing such things as broadcast band stations back in the east and middle west coming in loud and clear on the automobile



The author and photog Ken W7VCB. Timer clock perched on the antenna coupler reminds us to gas the putt putt generator. (Notice our favorite radio magazine on the table. CQ RADIO no less.)

receivers during the middle of the day. On the ham bands, it is possible to get "loudest signals on the band" reports with just a few watts of power. In the past it has been likened to operating from an Aeromobile over a good salt water location but with the added pleasure of being on the very solid ground.

We who made the trip were Don, W7LAN, DXer extra-ordinaire, and myself Ken, W7VCB, just another ham. Plans called for the trip to be made Labor Day weekend when the snow would surely be melted away and plenty



W7LAN pounding brass on Kens rig. Most visitors thought we were really nuts. It helps to be half nuts on a DX-Pedition!

of fellows should be on the air.

Don planned to use his all Elmac mobile gear with A.C. power supplies, and I my Ranger-NC183D combo. Power by my 700 watt Kato-Lite. Rounding out the gear was assorted test gear, antenna couplers, spare tubes, and the usual tripe.

After dumping my XYL and harmonics with Dons XYL in Anacortes, we crammed everything into Don's Kaisermobile, and headed for the hills. As we moved out of the driveway, XYLs and Harmonics were shaking their heads and giving us that look so familiar to parting DX-Peditioners.

After getting well gassed up (on gasoline of course) we started climbing up the long long trail to our 6,000 foot camp. On the way we were able to keep in almost constant mobile contact on 75 meters with other fixed stations through out the Northwest. Many of the stations promised to look for us later in the day and to tell others to listen for us. A dead battery from too much mobiling didn't pose any problem. Should the battery be flat we could always coast down the 20 miles or more of hairpin turns charging the battery on the way.

Upon arriving up in the pass, we took a good

look around and decided to set up camp where we could view both Mt. Baker and Mt. Shuksan and still get perches for our antennas. If the bands should be dead or if the gear should fail, we could always enjoy the scenery. (See photos.) As it turned out we actually did experience a little bit of each. Band conditions were very poor and on the second day an eager bystander did put my rig off the air temporarily by hitting the key when I wasn't looking. I had been off pruning an antenna and the rig was not resonant.

Our QTH was laid out around the car, as there were snow banks on three sides. Don used his mobile gear as mounted in the car, but on A.C. power packs and I had my rig on a light card table to the rear of the car. The putt putt generator was put out in front of the car as far away as the power cables would permit. The exhaust pipe was aimed the opposite direction too and its putty putt putting could be heard echoing up the valleys for miles around.

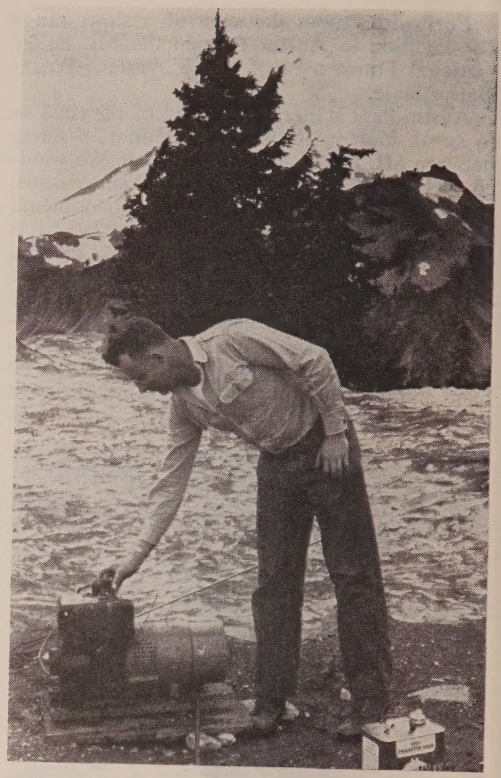
For antennas, Don made up a multi-band dipole and strung it from a snow bank to a high rock pile. I used an end fed long wire running up to a stunted tree and of course at right angles to Don's dipole. Because of the close proximity of the two 60 watt stations, it was arranged that Don would operate 10-15-20 C.W. and I would use 40-80 fone. It worked out fine and at no time did we interfere with each other, although only about 15 feet apart.

Bad QRM from atmospherics and poor band conditions took away the chances of working any real DX. The best I could do on the low frequency bands was a good collection of western states and British Columbia. Don couldn't get out of the USA either but did hear some good ones.

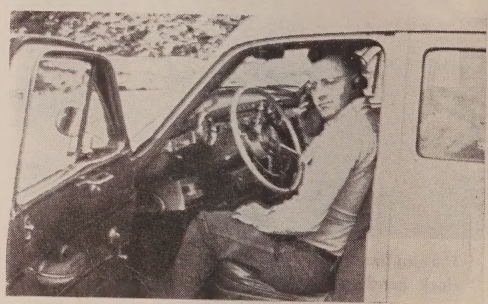
Our only difficulties were some irate campers and a sudden rain storm. No it wasn't BCI-TVI trouble with the campers. They didn't like to listen to our putt-putt rattling up the hills and demanded we shut it off and leave it off. We tried to explain why we had to have the generator and why we were there but only a ham can understand those things. About an hour later one of them came stomping down out of the hills and moved his car over directly behind ours so its bumper almost touched my operating table. Then he tied down the horn ring, locked his car, and headed back up into the hills. He was back again in a few minutes and on the run because clouds of smoke were beginning to roll out of an overworked horn. A rain storm came up suddenly in the late afternoon that nearly erased my log-book and threatened to float me down the valley marine mobile style.

Because of very bad QRM and really lousy band conditions we secured early the first day with hopes of an early start the next day and better conditions.

At 0500 next morning we started the day with W6s for breakfast and VE7 for dessert.



Don checking the gas supply. Generator did wonderful job running two rigs together on full power. Mt. Baker 10,000 ft. plus in background.



Don W7LAN checking out the mobile to see how conditions would be.

A very FB QSO with VE7Itchy Monkey was one of the nicest of our entire trip. The campers were up early too and glaring down at us from above our own camp. Lucky they didn't think of starting an accidental landslide. They finally packed up and moved out later that morning.

Pickings were pretty slim and so we decided to secure after dinner. Conditions were at an all time low and more and more tourists and hikers were heckling us. We spent so much

[*Continued on page 125*]

9,641 FCC Citations

Maurice J. Hindin, W6EUV

Amateur radio publications have recently been alerting the amateur fraternity to the coming international radio conferences. The international meetings always present the spectacle of various attacks on amateur bands from agencies which are covetous of the amateur frequencies. Amateur radio in the United States is well-established and is recognized as being a service in the public interest, convenience and necessity. Amateur radio likewise has received favorable recognition and support from the Federal Communications Commission. One of the reasons why it has received official support is the fact that regulating the amateur service has not imposed excessive burdens on the F.C.C. administration. Likewise, a basic reason that regulation has not been a serious problem is the historic effectiveness of the amateurs' own self-policing activity. The term "self-policing", of course, is not literally correct. Under the laws of the United States, as they now exist, only the Federal Communications Commission has legal authority to regulate the amateur's activity. No amateur body has any disciplinary control over any individual amateur, but the weight and influence of amateur fraternal approval is a very strong element in keeping the amateur in line. Basically, the less governmental policing that is required of amateur activity the more favorable will be the amateur's position in official circles. Since it, therefore, becomes a matter of vital self-preservation that the amateur be a law-abiding citizen in the operation of his hobby, the author undertook a limited survey to ascertain the facts as to just how effective amateur self-policing has been during the last five years.

The Federal Communications Commission operates on a fiscal year basis of July 1st to June 30th; hence, all statistics quoted in this report will be on that basis.

The 9,641 amateur violations were observed and reported by the Federal Communications Commission in the four-year period commencing July 1, 1952, and ending June 30, 1956.

Each of the foregoing instances of observed amateur regulation violation resulted in a violation notice being sent to the amateur involved.

The Federal Communications Commission violation notices fall into three main categories. The first category is the form 790 which is an advisory notice of an unsatisfactory operating condition. This form of notice is used to advise amateurs of observed harmonic radiation, key clicks or other types of objectionable operating practices. The second category is the form 792A Notice. This is an out-of-band notice and is used when the fundamental frequency of the transmitted signal is measured outside the limits of the amateur band. The third category is the form 793 Notice. This is a general citation form to notify the amateur of noncompliance with any of the rules and regulations except out-of-band operation. An analysis of the violations reported during the four years ending with June 30, 1956, is shown, as follows:

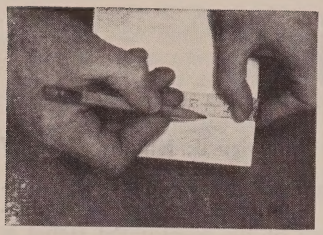
Year	Form 790	792A	793	Total
1953	526	79	487	1092
1954	629	90	524	1243
1955	1077	115	866	2058
1956	3308	159	1781	5248

From the foregoing statistics, it would appear that the year ending June 30, 1956, showed a sharp increase in violations over the immediately prior years. As a matter of fact, more than six times the number of 790 notices were given to amateurs in 1956 as were given in 1953. 1956 produced over twice as many form 792a notices as were issued in the year 1953. 1956 produced approximately four and a half times more citations of the form 793 variety as did the year 1953.

On the face of it, it would appear the amateur's violations are increasing at an alarming rate. These figures, however, may not necessarily reflect the true status of amateur activities. The increase in violations noted may well be the result of two factors. The first factor is the increased activity of monitoring stations operated by the commission. The second factor is the increase in amateur licensees.

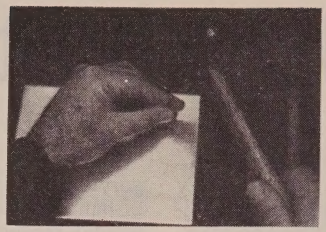
Let us examine both of these possible causes. The Federal Communication monitoring stations do not devote their activities exclusively to monitoring amateur bands. The amount of time and the occasions upon which they do monitor the amateur bands depends upon the priority specified for such activity. The priority may change from time to time and depends upon many factors. If the priority given to monitoring amateur frequencies is raised, then more time is devoted by the monitoring station to amateur frequencies. More observation time and more stations engaged in monitoring services are bound to disclose more violations than would be discovered if less time and fewer stations were devoted to such work. It could not be determined if more monitoring time or more monitoring stations were used on amateur frequencies in 1956 than in prior years or if more violations were simply observed in the same monitoring time devoted.

[*Continued on page 115*]

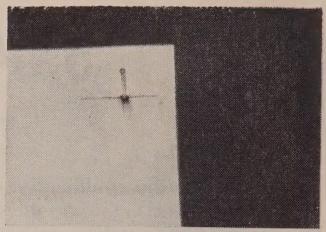


Locate the hole by scribing cross lines. These not only tell you where to start the small hole, but are useful later in checking to see that a large hole is correctly centered.

(Read across)



A hammer and nail will easly make a hole in an aluminum chassis.

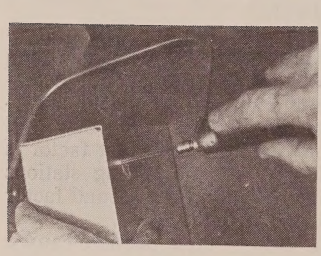


The chassis bent down slightly around hole. If the chassis had been placed on a block of wood and supported from underneath at the time hole was punched, it would not have bent down. Also, the hole is not centered to the cross scribed lines.

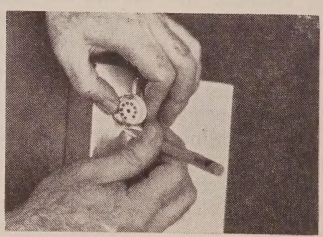
BUILD EQUIPMENT ON KITCHEN TABLE? YES!

Nothing to it. Pictures show how.

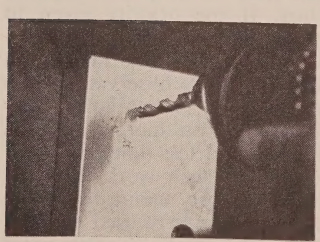
A. D. Mayo, W5DF
209 Conti St., Jackson, Miss.



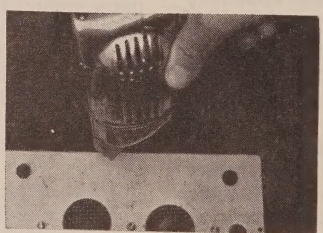
To cut socket hole, coping saw is simple, easy and cheap tool.



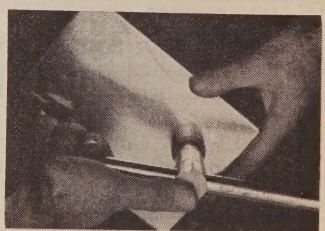
To locate screw mounting hole for socket, put socket in place and scribe through mounting hole.



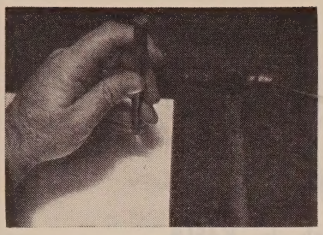
1/2 inch drill bit with 1/4 inch shank for use in small drills to make larger holes.



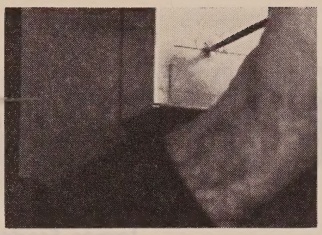
Drifting, or elongating hole in cover plate with rotary file point in electric drill.



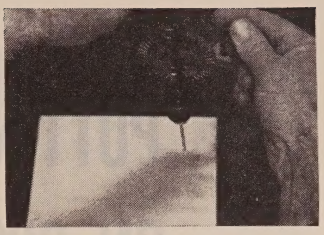
Screw type chassis punch makes socket holes easy.



Center punching before making hole will minimize the chance of getting hole off center.

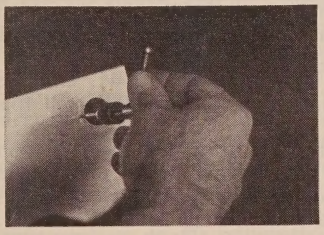


Small, round file will enlarge hole. Hole can be drifted to one side during this process if needed.

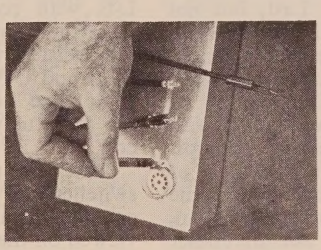


Simple drill makes holes easily in aluminum or steel. Examine drill point. If it is chipped or rounded have someone sharpen it for easy cutting.

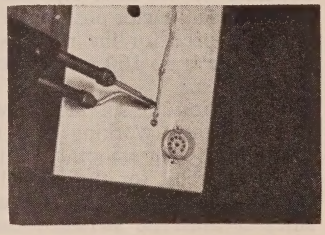
THOUSANDS of kits successfully assembled by hams testify to the soundness of home construction. Maybe you have an idea for a new device. Maybe you have only a magazine article and some parts. What's the difference between this and a kit? Seems to be mainly the fact that a new chassis has no holes where you want them. Photos show how to get holes in chassis with hand tools. Motorized tools merely make things easier.



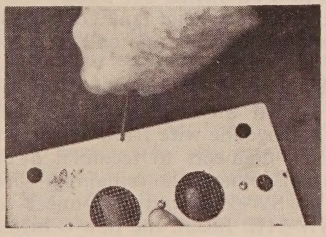
Machine screw and nut can be used to hold socket in place. This requires fumbling underneath with small nut. An easier method is to tap hole in chassis. Then threads are in chassis and no nut is needed.



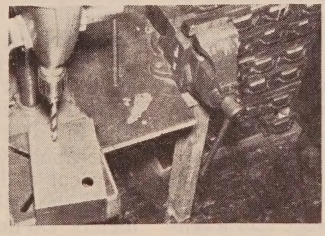
A holder type screw driver starts screw in hole easily.



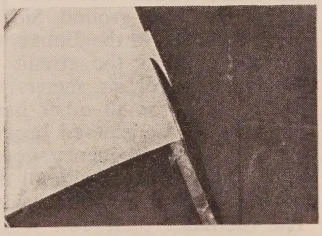
To make a ground connection to aluminum chassis, screw a lug to chassis and solder to lug.



Elongating hole with hand file.



Deluxe items for ham workshop. Drill press, heavy vise, work bench, and storage cabinet so something can be found when needed.



Aluminum roofing stock cut to size with tin snips. Roofing is a good source for aluminum stock. Most of it is thin but suitable for covers, shields, and small chassis. Sears Roebuck catalog number 13D M9682F.

PUTTING THE AF-67 ON SIX

James Frederick, Jr., K4ELB
451 Ave. B. N.E.
Winter Haven, Fla.

The migration to six meters in Central Florida led to an investigation of my brand new Multi-Products AF-67 for a possible conversion to six meters. This proved to be the perfect solution to the transmitter problem, as it eliminated the need for a separate transmitter for six meter operation.

An investigation of the Elmac circuit revealed several interesting facts. In the Elmac both the final plate and loading condensers are dual section units, one section of each is used for the higher frequency bands, and both sections for the lower frequency bands. This meant a better lc ratio would be possible for six meters. Also, because the Elmac had four tubes in the rf strip, it seemed possible to avoid doubling in the final amplifier. Last, but not least, the 160 meter position of the band switch could be used for the new six meter position, since there is no 160 meter operation permitted in this area.

Conversion to six meters was started with the final stage, working back to the oscillator. Everything went smoothly until the problem of a tuned circuit for the crystal oscillator came up. This at first seemed to be a major problem, since it must be switched out for the other bands. To complicate matters the oscillator band switch was inside the VFO housing.

The simple solution which resulted was to put the tuned circuit from the plate side of the crystal socket to ground. Since there were two crystal sockets in the Elmac, the coil could be switched out of the circuit by using crystal socket "X2" for six meters only, and crystal socket "X1" for all other bands. VFO operation was not considered because the VFO did not cover the frequency necessary for multiplying to six meters without modifications, and crystal operation was considered satisfactory. The oscillator plate coil was first grid-dipped to 8.3 mc, but proved to work better when resonated about 7.6 mc, as the stage had a tendency to cut out of oscillation when the coil was tuned too close to the crystal frequency. This coil must be grid-dipped only with the crystal switch in the "X2" position.

After final checking, the rig was fired up and adjusted for maximum grid drive with the final high voltage off. To my surprise I had over three mils grid drive. High voltage was applied to the final and it dipped sharply into resonance. Power output on six was compared with the output on ten, and proved to be about the same.

Several other Elmacs have been converted in the same manner and all work equally as well. It is a real potent signal squirter, accounting for 27 states, Canada, and Sweden to date on six meters. Assuming you are sold, proceed as follows:

Locate the crystal socket "X2" and connect coil L-a from the plate side to ground. (This is the top lug on this socket)

Next clip out resistor R-34, and install coil L-b, with condenser C-a in parallel with it, from the terminal of switch SW-31 from which the resistor was removed to the junction of R-33 and C-35.

Remove the 160 meter coil, L-41, and use the form to wind new coil L-c. Reinstall this coil.

Note: in referring to switch terminals on switches SW-51 a, b, and c, terminals are counted from counter-clockwise to clockwise as viewed on the schematic diagram of the AF-67. As viewed from the rear of the transmitter, terminal 6 on each wafer is just to the right of the mounting screw which passes through the three sections of the band switch. Section a is the wafer on top, b in the middle, and c on the bottom.

Next clip out the wire connecting switch terminals 4 & 5 to 6 on switch SW-51A. In the same manner, remove the wire connecting terminals 4 & 5 to 6 on switch SW-51C.

Next locate the 80-160 meter tank coil, L-54. Clip the wire which connects one end of L-54 to terminal 6 of switch SW-51B. Very carefully cut coil L-54 at the center tap, and remove the half which was used only for 160 meters. Do not remove the wire from the center of the coil which connects to terminal 5 of switch SW-51B. Disconnect the remaining wire on terminal 6 of SW-51B, and re-connect to terminal 5 of SW-51B. Install the new 6 meter coil, L-d, from terminal 6 on switch SW-51B

[*Continued on page 114*]

A Quick Attachable Noise Limiter

E. H. Sommerfield, W2UQB
408 Day Hollow Road
Endicott, New York

Since most automobile broadcast receivers are mounted in locations convenient for replacement of tubes rather than for the addition of accessory circuitry, it was felt that any noise limiting device must be designed to be attached at the speaker terminal, which is usually accessible. The greatest service the noise limiter can perform is to prevent noise shock pulses from "ringing" the speaker cone. Although the noise pulses are usually short in time compared to the audio, accompanying ringing can mask the incoming audio. There is nothing new in this idea nor in the use of back-to-back diodes to limit these peaks. The innovations of this circuit are in the use of particular class of diode and the transformer.

The diode is of the avalanche classification. In reference to fig 1, essentially no conduction takes place until a threshold of .25 volts for an average diode. This is a power level of 15 milliwatts across a 4 ohm voice coil. Strange as it may seem, this low value is ample audio for a car. Maximum voltage drop across the diode centers around .5 volts or 60 milliwatts on noise peaks, which is not enough to cause ringing in the "speaker". An auto transformer was added to reduce this maximum level. By adding a resistance in series with the diode, this maximum level can be given a range of adjustment up to 60 milliwatts.

One of the disadvantages is a loss in audio level and low frequency response due to the transformer. This can be compensated for by adjusting the volume control. There is also a certain amount of distortion on extra loud signals but the amount observed is tolerable. In reference to fig 2, it will be noticed that refinements have been added to permit silencing the receiver during transmission. With a 15 or 30 watt transmitter, it is improbable that the receiver will be damaged. I have operated a 700 watt sideband transmitter with the receiver connected identically with fig 3 for six years with no noticeable effects. Although I haven't tried other transformers, there should be no reason why any universal output transformer could not be used with approximately a 20:1 "Z" ratio between the diode's tap and the speaker tap both referenced to ground.

For simplicity in construction and installation, this circuit would be difficult to beat. ■

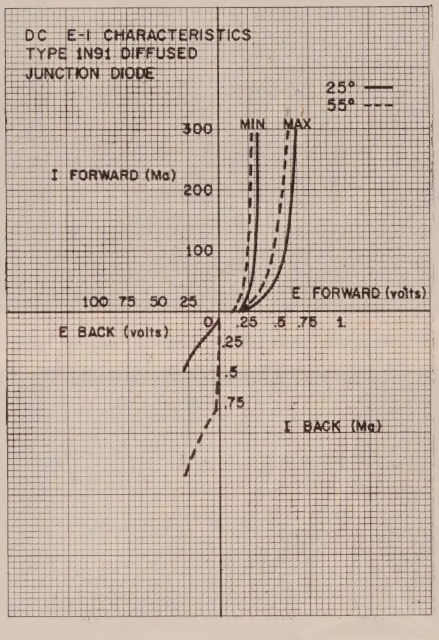
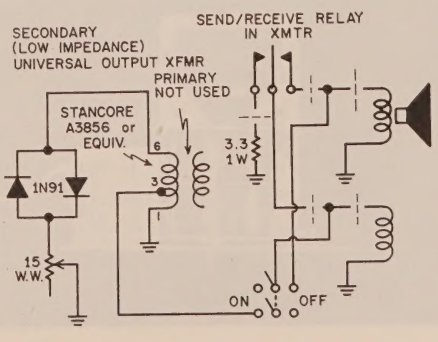


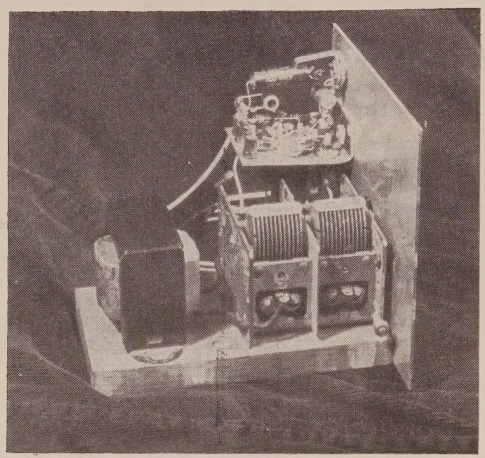
Fig. 1—DC E-I characteristics of Type 1N91 diffused junction diode used on quick-attachable noise limiter.

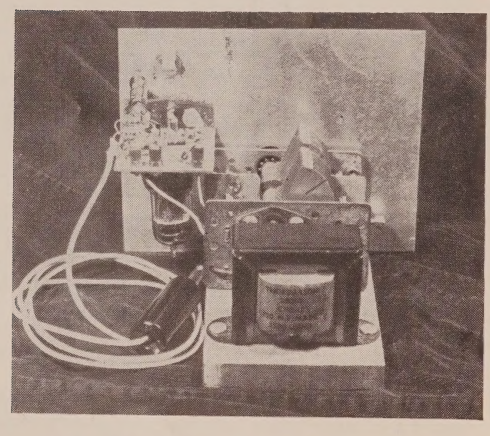
Fig. 2—Circuit diagram for quick-attachable noise limiter.

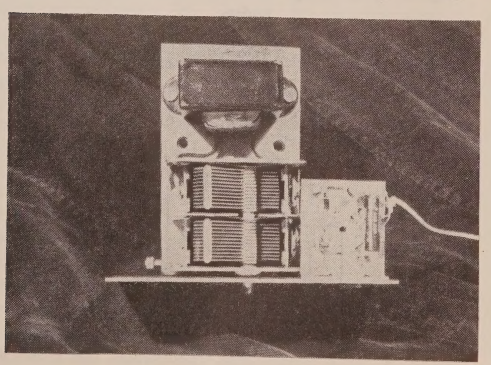


A Tunable Audio Filter

Thomas E. Beling, W9AEI,
4619 Alexander Drive,
Fort Wayne, Indiana







Probably the most congested portions of the entire radio spectrum are the 40 and 80 meter Novice cw bands. The number of stations per kilocycle is difficult to estimate, but, when propagation conditions are good, the situation can best be described as bedlam. From the viewpoint of the average Novice, reception is even more difficult than the number of stations would indicate. Most Novices cannot afford receivers with the extreme selectivity required to discriminate against interference only a few hundred cycles from the desired station. Since an outboard unit of some sort is indicated, an audio filter appears to be the logical choice. Selectivity can be made very good, although the high-Q chokes usually required are expensive. Also, most audio filters are limited to a single frequency, so that any tuning changes required to compensate for transmitter or receiver drift must be made with either the main tuning knob of the receiver or the bfo pitch control. Usually, neither control provides the really fine tuning that is necessary if very high audio selectivity is used.

The little filter described here overcomes most of the disadvantages of conventional filters by employing a high inductance audio choke which is tuned at audio frequencies by a two gang TRF broadcast capacitor. The filter network, consisting of L_1, C_2, and R_3, is connected in a "bridged-T" circuit. The bridged-T has a response curve as shown in fig. 1. When correctly balanced it will not pass the frequency to which it is tuned. Theoretically, the rejection is infinite, but actually a small amount of voltage will get through due to capacity across the choke. The theory of the filter is this: at the null frequency of the bridged-T, V_{1A} operates as a cathode driven amplifier with a high gain.

At all other frequencies, there is a voltage on the grid of V_{1A} which reduces the gain through negative feedback. If the bridged-T is unbalanced by decreasing R_3 to a too low value, regeneration and oscillation will occur. However, if the value of R_3 is made higher than the correct value for balance, the effective selectivity will be reduced. This provides a

handy way of reducing the filter selectivity when interference conditions are not too severe.

With the values shown, the filter is useful with best notes in the range of 800-1100 cycles. The selectivity is poor at small values of C_2 due to the shunt capacity of the choke. In operation, the control R_3 is adjusted to a point considerably below oscillation. The signal is then carefully tuned in, and R_3 is advanced to the point where the selectivity is as great as desired. Then C_2 is carefully adjusted to make sure that the signal is at the peak of the filter response. If the receiver or transmitter signal drifts slightly, C_2 can be adjusted to compensate for it. In general, if C_2 is adjusted very far, R_3 will require readjustment. When set up for maximum selectivity, there is a very distinct ringing on the output. However, cw can be copied quite easily at a rate of 10-15 wpm, which is about as fast as one should go under severe interference conditions anyway.

The filter really has to be used to be appreciated. With it, it is possible to make clean, easy copy from signals which appear to be hopelessly buried with the filter switched out. Slight adjustments of C_2 keep the signal really peaked and all by itself as the receiver drifts slightly. Another advantage of an audio filter that is not commonly realized is that it increases the sensitivity of a receiver greatly. The ultimate sensitivity of a receiver depends on its ability to separate a signal from a noise. At low frequencies most of the noise we are concerned with is atmospheric or man made in origin, but reducing the bandwidth still has the effect of increasing the sensitivity of the receiver. To cite an example: with a typical receiver bandwidth of 3 kc this filter will produce an improvement in sensitivity of 18 db, or the same result that would be obtained by boosting transmitter power 60 times.

Construction of the unit is not at all critical. The choke and capacitor were mounted on a phenolic board, but any insulating material should be satisfactory. The rotor of C must be floating, of course. Power supply requirements are 150-250 V. @ 2 ma. and 6.3 V. @ .3A and may be obtained from any convenient source. In my case, I borrowed the power from the transmitter screen supply.

I designed this unit originally because I had persuaded my wife to get her Novice ticket, and so I became curious as to what went on in the jam-packed Novice bands. A few sessions in the melee convinced me that I needed something better than I had to make sense out of the confusion. This little gadget is simple and non-critical enough for any Novice to build, does not require chopping into the receiver, and will add immensely to operating pleasure in a crowded cw band.

My thanks to my good friend Ed Carr for the fine photographic work. ■

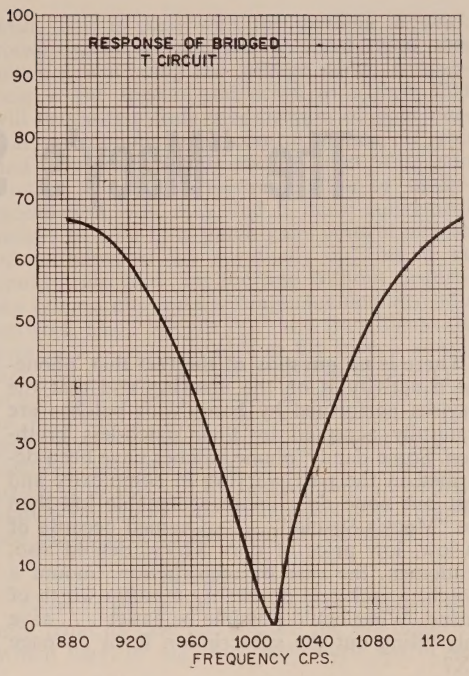


Fig. 1—The Bridged T network increases the receiver selectivity.

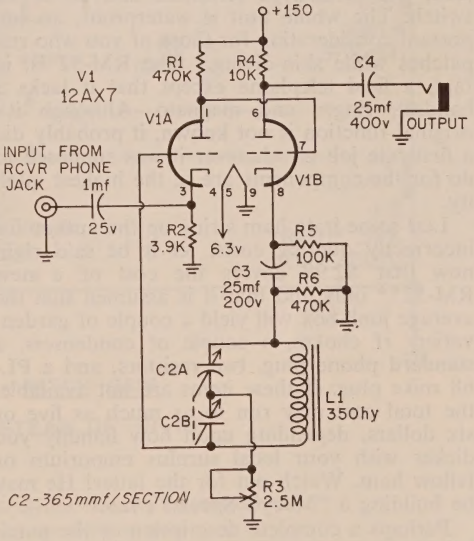


Fig. 2—The circuit diagram of the Tunable Audio Filter. An external power supply is required.

The "Macy's Special" Patch

Will A. Connelly, W6QID
14529 Manecita Drive
La Mirada, California

There is no question of the fact that 'phone-patch activity is on the upswing and that the services performed by hams with patches are gratefully accepted by their patch-less brethren. Some dandy 'phone patches have been described in the past, varying in complexity and cost but none do a more acceptable job than the "Macy's Special" . . . so named because of its low, low price of *only* $2.98! Behold also, gentlemen, the ease of construction: mount a switch, a jack and do twenty minutes worth of wiring. What could possible be easier . . . save only filling out the subscription form on page XX?

The heart of the "Macy's Special" is an item only recently seen on the surplus market, the RM-52 Signal Corps Remote Control unit. This device consists of a case 6½" x 3¼" x 4½" overall which encloses a transformer, two condensers, a battery holder, a mike jack, a phone jack, two screw-type terminals and an SPDT switch. The whole unit is waterproof, an important consideration for those of you who run patches while skin-diving.* The RM-52 is, in fact, a field telephone except that it lacks a handset, ringer and magneto. Although it's original function is not known, it probably did a first-rate job of whatever it was supposed to do for the components are of the highest quality.

Lest some irate ham string up the author for incorrectly quoting costs, let it be said right now that $2.98 covers the cost of a new RM-52** only and that it is assumed that the average junk-box will yield a couple of garden-variety rf chokes, a couple of condensers, a standard phone plug, two resistors, and a PL-68 mike plug. If these items are not available, the total cost may run to as much as five or six dollars, depending upon how handily you dicker with your local surplus emporium or fellow ham. Watch out for the latter! He may be building a "Macy's Special", too.

Perhaps a complete description of the patch is in order.

*(here, here . . . ed)

**RM-52's are probably available from:
Fair Radio Sales
132 S. Main Street
Lima, Ohio
at $2.98 each brand new or $1.95 each used.

The Line Section

Basically, a patch transfers audio *voltage* from the line to the transmitter when transmitting and audio *power* from the receiver output to the line while receiving. Telephone lines have a nominal impedance of 600 ohms so the 600 ohm transformer winding is used to make the connection to the line. While a patch *could* work with the transformer winding connected directly across the line, this must not be done for it presents a dc load to the line that looks exactly to the line like an off-the-hook telephone. Obviously, failing to disconnect the patch under these conditions would prevent dialing of your regular telephone (which depends upon intermittantly opening and loading the line) and would create a busy signal for all incoming calls. If you're on a party line, you would also destroy your neighbor's telephone service. There is no surer way to get yourself in hot water with Ma Bell. To prevent this sort of horror, the two 4 mfd condensers found in the RM-52 are connected in series with the transformer 600 ohm primary winding.

Unless you are a pure genius and have a *perfectly* flat antenna line and *perfect* grounding and shielding for your rig, you are going to have *some* rf on the phone line when you are transmitting. Equally certain is the fact that somewhere in your transmitter audio you will rectify some of this rf and wind up with rf feedback. So it is also necessary to provide some filtering to keep the rf out of the transmitter audio. This chore is done by the rf choke and bypass in each leg of the transformer primary circuit.

The Receiver Connections

Getting the audio from your receiver to the patch is simply a matter of running the audio from the 'phone jack or the speaker voice coil connections to the 150 ohm winding of the transformer. Don't worry about impedance mis-match; for all practical purposes, the only problem created by mis-matching is a loss of efficiency in power transfer. This is actually no problem at all, however, because you only need a small fraction of a watt of audio into the line and you won't have to be very efficient to handle *this* power! Your real concern should be directed toward holding the power *down* to a

level that won't cause cross-talk in the line. More on this later.

No switching is needed in this circuit. It is not necessary to break the speaker connection when the patch is in operation as long as you have some form of receiver muting in your station when you transmit. This is usually done by opening the receiver B-plus, though any other arrangement which silences the receiver while you're on the air will do. The amount of phone line audio absorbed by the constant load on the 150 ohm secondary will not be serious for you have ample gain in your transmitter speech amplifier to compensate for this loss.

The Transmitter Connections

In this circuit, the transformer couples voltage from the phone line to your speech amplifier, utilizing the 4000 ohm winding. Again, a ferocious-looking mis-match occurs which is of no consequence. When connected to the phone line, with an average voice speaking at the other end, a half-volt or more of audio will be present across this winding. Your microphone only delivers a few millivolts when you yak at it, so instead of worrying about mismatch, we'll concern ourselves with getting this half-volt (or more) chopped down to a usable level. This is done with the dividing network consisting of R1 and R2. In most cases, this network will bring the voltage which will appear at the speech grid down to a level that will necessitate little modification of your normal microphone gain control setting. If you find that you must drastically reset your gain control to prevent overmodulation or undermodulation, you may find it more convenient simply to wire in a 'patch gain' control instead of the network. We eventually did this so we could "ride gain" on the line without disturbing our normal mike settings. Incidentally, this network also "bridges out" the transformer to present a high impedance to the speech amplifier grid and, if the gain control is used, a capacitor should be provided as shown in fig. 1 to maintain a high impedance input at full patch gain. A switch pole is provided here to connect the transformer to your rig when the patch is in use and the microphone in normal station operation. The mike plugs into a standard phone jack on the front of the patch.

Construction

Now, to the actual construction. Remove the unit from its case and discard the old batteries which may, or may not, have been left in the

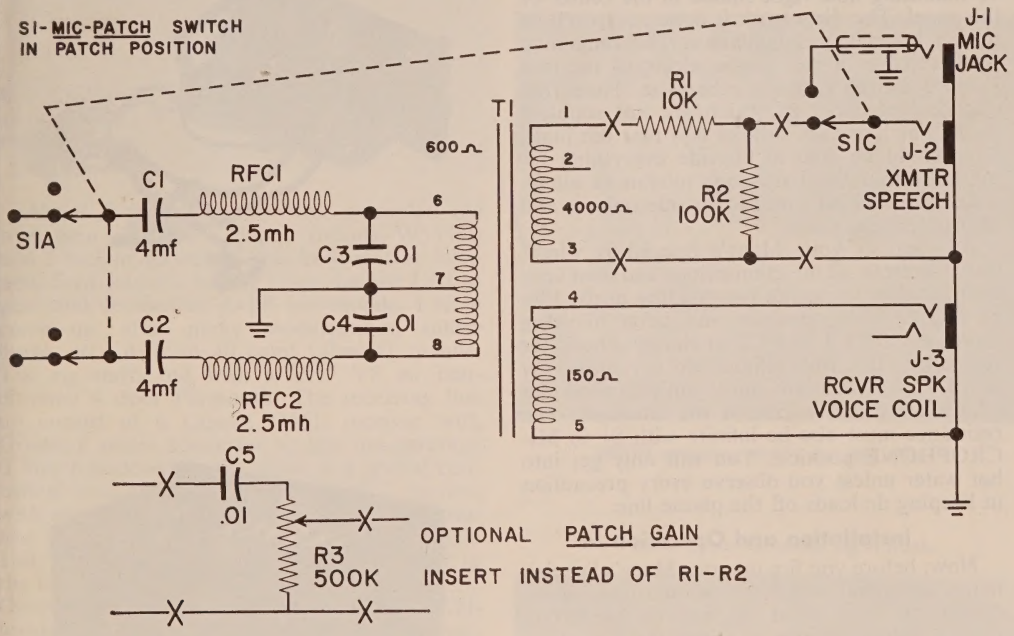


Fig. 1—Circuit diagram of the phone patch special. Network C5—R3 may be substituted for R1—R2 to permit the riding of gain.

PARTS LIST

C1, C2—4 mfd, 50V*

C3, C4—100 mmfd to .01 mfd (Use identical parts)

C5—.01 or larger

J1—Phone jack

J2—Phone Jack*

J3—3 circuit jack*

R1—10,000 to 50,000 ohms, ½ W

R2—10 times resistance R1

R3—Patch Gain Control (optional in lieu of R1-R2)—100K to 500K pot.

RFC1, RFC2—RF chokes, 2.5 mh

S1—4PDT switch; Centralab 1458 or equal

T1—Transformer, 600 ohms to 250 or 4000 ohms and 150 ohms.*

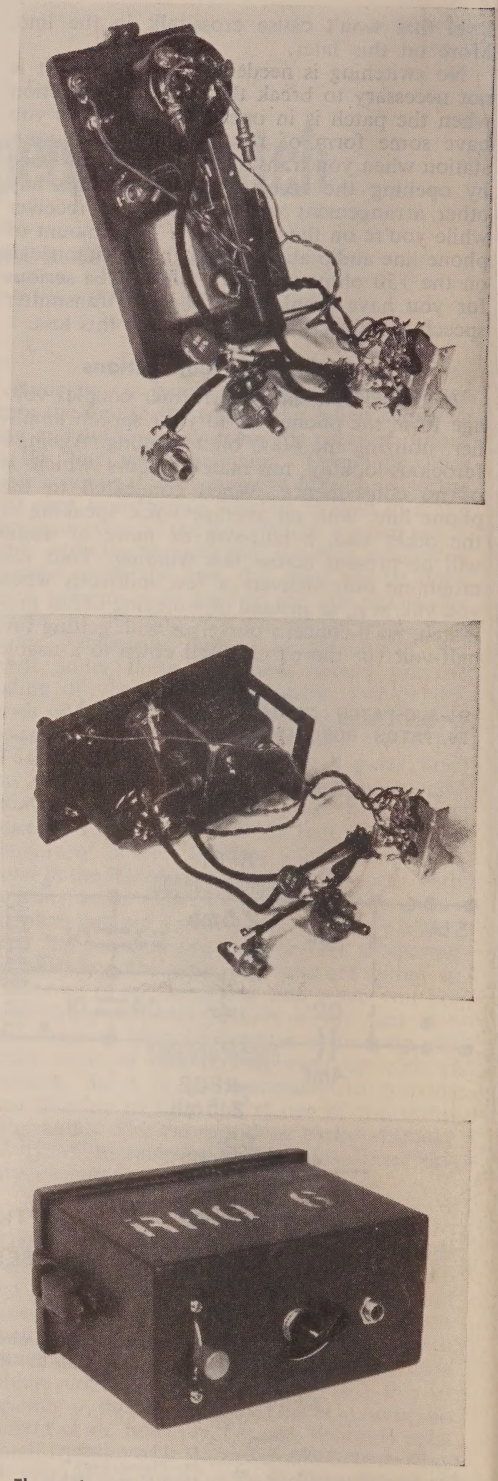
battery holder; RM-52's are somewhat corroded inside but none that we have seen, seriously so. At any rate, they're easy to clean up with a toothbrush and a solution of bicarbonate of soda. Clip the wires to the battery holder and remove it. This is worth saving, if it's clean enough, for a good many transistorized items require a 6 volt source. Now fire up your soldering iron and remove *all* the old circuit wiring; note that you must remove the two jacks to get to their terminals because of the rubber waterproofing seals. If you *don't* plan to run patches while operating underwater, just nip the seals away with a pair of dikes. Remove the SPDT switch. The part list calls for a Centralab 1458, 4 pole, 2 position switch which will cost about six-bits. If you have some other switch on hand (or switches, an SPDT and a DPST toggle, for example), there's no reason why you can't substitute if it will fit into the patch housing. If you do use the 1458, mount it ¾" in from one side of the patch; the screw mounting centers are 1½" and the slot between the screw holes should be 1-1/16" long by 1/16" wide. Now drill a ⅜" hole one inch from the opposite side of the patch and centered vertically on the panel. This is the mounting hole for the mike jack. If you substitute a volume control for the R1-R2 network, drill a ⅜ mounting hole right smack in the center of the panel. The dirty work is done . . . you'll be testing in another 20 minutes. The remaining work consists of the simple wiring of the unit in accordance with the schematic. Note that electrical components which are not supplied in the patch are not critical and that the junkbox should be able to provide everything required within the barn-door tolerances allowable. Use shielded wire for the microphone and transmitter leads.

As soon as your Macy's Special is wired, visually check all the connections and then connect an ohmeter to the two binding posts. Flip S1 to "PATCH" position and, after allowing a moment for C1 and C2 to charge, check the resistance: if it isn't infinite, *do not connect it to the telephone line* until you've found out what's awry and corrected the situation. The resistance must also be infinite with S1 in MICROPHONE position. You will only get into hot water unless you observe every precaution in keeping dc loads off the phone line.

Installation and Operation

Now, before you fire up your Macy's Special, here's one point which you should inscribe indelibly on your mind (it may be burned in with a soldering iron if desired); *the audio power from your patch into the telephone line must never exceed 1 milliwatt.* This power will be present when an ac voltmeter connected across the line reads about 0.75 volts and is, in broadcast or telephone talk, zero level, zero VU or zero dbm—you pays yer money and takes yer cherce but you *never* insert a higher

[*Continued on page 112*]



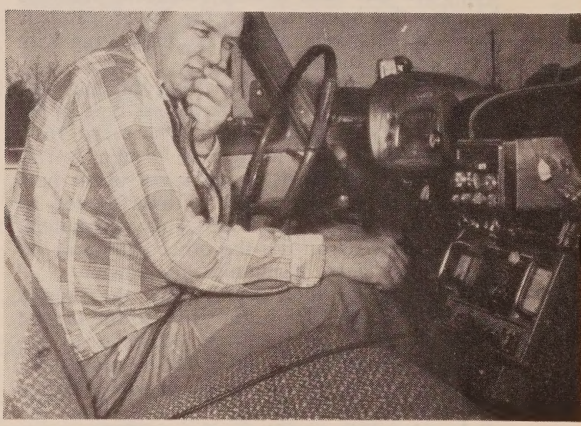
Three views of the completed patch. Note that the author used R3 for variable gain.

All Band Mobile (Almost)

L. L. Chilton Jr., W5THI
3412 Whittier St.,
Fort Worth, Texas

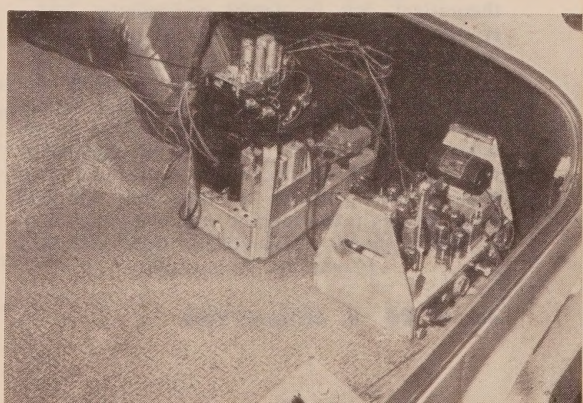


W5THI and his Plymouth. Note the 2 meter antenna on roof.



W5THI operating mobile standing still.

The 2 meter crystal controlled rig in trunk.



About 5 years ago my wife presented me with twin girls (Two Happy Infants—W5THI) and I had to go out of the fixed station business. So I found a willing buyer for the Collins gear and decided to go all out mobile. I have come up, after many modifications, solder burns, etc., with an all band (almost) mobile. The rig starts out with a 1957 V8 air conditioned 4 door Plymouth. The receiving line up consist of a Gonset G66B receiver with Gonset 6 meter converter to give me coverage 6 thru broadcast. In the trunk is a crystal controlled receiver on 29640 and on 2 meters, with squelch controls up front. The transmitter line up consist of an AF67 covering 6 thru 160, plus a 2 meter crystal controlled unit in the trunk. I modified the AF67 to hit 6 meters. Other innovations include a Leece-Neville alternating system with ammeter and volt meter, panel mounted loop jack for transmitter hunts and conelrad control. The log book is carried in the glove box! The antennas consist of a W5BZO all band base loaded job, 10 meter whip on 29640, and 2 meter whip mounted in center of top. I might say the fins on the '57 Plymouth make a FB place to mount antennas, if you can bear the stares from the curious public. ■

Stop Those Harmonics

E. H. Marriner, W6BLZ
528 Colima Street
La Jolla, California

The Harmonicker (GE Ham News Nov/Dec 1949, Vol 4-#6) circuit is becoming increasingly popular because more amateurs are using vertical and all band antenna systems. A dipole type antenna offers a great amount of attenuation to the second harmonic of the transmitted signal. The vertical and all-band type of antenna radiates all of the harmonics. The FCC has been issuing numerous citations because the harmonics of the lower amateur band 2nd harmonic signals are interfering with commercial stations.

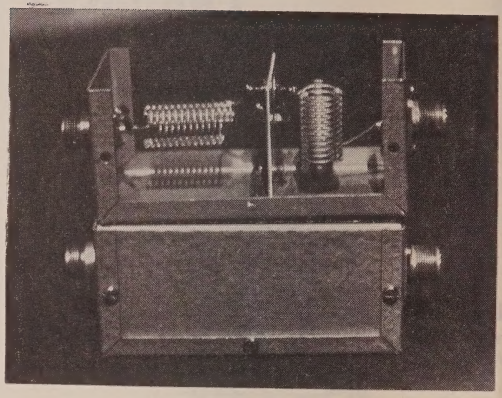
Another good reason for using this harmonicker filter in place of the low pass type is for campatibility of urban living. There are 160,000 amateurs and many live within a few blocks of each other. It behooves us to help each other out by reducing interference as much as possible so both may enjoy his hobby. If one fellow is on 80, the other can work 40 if the other gents harmonics are down.

This type of filter will reduce the second harmonic 30 db. This attenuation to the second harmonic will help prevent overload in the double conversion receivers. The receiver generates spurious signals when overloaded and you will hear the other fellow all across the dial unless his signal is down. This simple filter will reduce other harmonics correspondingly each octave. It will give 48 db attenuation to the third harmonic, 59 db to the fourth, and 79 db attenuation to the eighth and down a long ways at the TV frequencies. This is theoretical, but in actual construction some rf may by-pass the filter if good construction is not followed.

There are several disadvantages to the harmonicker circuit. One unit is needed for each band. It is difficult to make any good rf switch which doesn't leak rf. Therefore separate boxes and connectors are needed for each band. Perhaps some ingenious manufacturer will put these filters on the market with a good switch.

The original harmonickers were designed

[*Continued on page 96*]



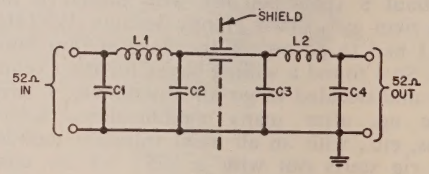


Fig. 1

Parts List

Boxes	ICA Flexi-Mount cases Type 29439 2¼" x 2¼" x 5"
80 meters	C-1, C-2, C-3, C-4—800 mmfd each, Type DD Disc Ceramics 1000 v wkg. L-1, L-2—2.3 μh each. 12 turns #808T Air-Dux Miniductor coils. Illumitronic Co., Sunnyvale, Calif. (1" dia., 8 turns/inch)
40 meters	C-1, C-2, C-3, C-4—500 mmfd each, type CRL DD disk ceramic 1000 v wkg. L-1, L-2—1.0 μhys each 11T of #508T Air Dux coils. (⅝" dia., 8 turns/inch)
20 meters	C-1, C-2, C-3, C-4—220 mmfd Type CRL DD disk ceramics 1000 v wkg. L-1, L-2—.55 μhys each 10T of #408T Air Dux (½" dia., 8 turns/inch)
15 meters	C-1, C-2, C-3, C-4—150 mmfd disk ceramic CRL DD 1000 v wkg. L-1, L-2—.37 μhys 7T of #504T Air Dux. (⅝" dia., 4 turns/inch)
10 meters	C-1, C-2, C-3, C-4—110 mmfd CRL DD disk ceramics 1000 v wkg. L-1, L-2—.28 μhys Air Dux or 5 turns #504 (⅝" dia., 4 turns/inch)

The Vox-Break

R. F. (Frank) Biloon, K2ECY
President,
R. F. Biloon Associates

Modern methods of amateur communicating are streamlined. "One-switch" stations are no longer in style. The time is now rapidly approaching when all stations, whether 'phone, cw or both, will have to be equipped with a break-in system in order to achieve efficient station utilization.

The Aug, 56 issue of QST featured articles on both cw and phone break-in systems for amateur use. This article describes a Vox-device adaptable to any type of amateur station.

Referring to the circuit diagram of fig. 1, it is seen that the input to the (12AX7) two-stage speech amplifier has no grid input resistor. This feature was incorporated in order to cause no alteration of the transmitter speech amplifier input characteristics.

A (6AL5) gating control tube is used in both modes of operation, one half for cw and the other for phone. Here the negative bias voltage as seen by the (12AU7) output tube grid through the phone—cw selector switch is sufficient to keep the output tube from drawing plate current in the absence of a phone or cw signal. In the 'phone case, one half of the output tube is wired as a diode which in the presence of speech voltage provides a ground return path for the phone portion of the gating tube. In the cw case, depressing the key provides the required grounding path. In both cases the negative bias on the output tube grid is reduced to the point where current flows actuating the plate circuit relay.

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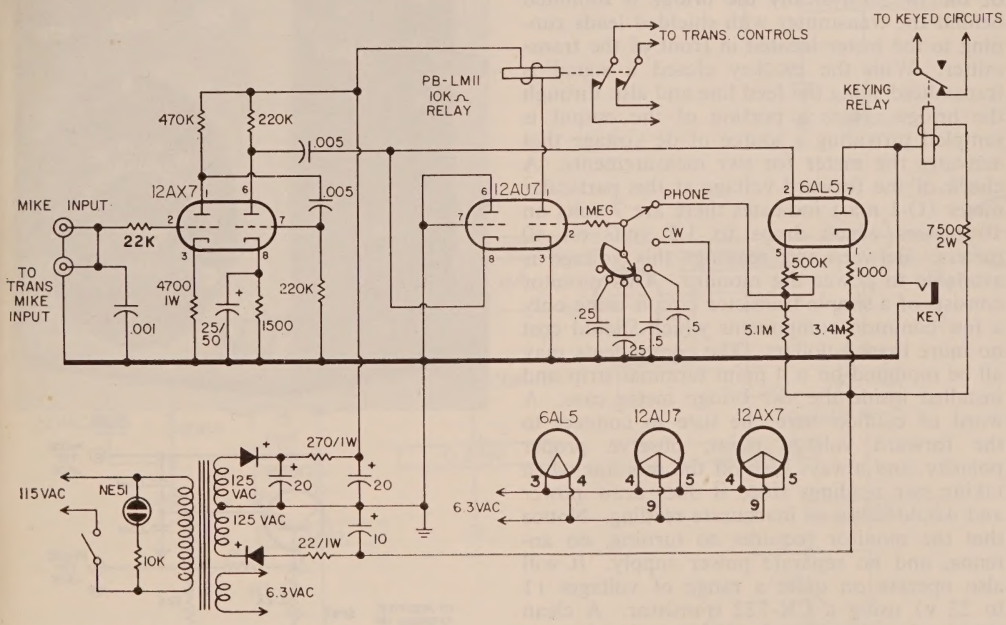


Fig. 1—Circuit of the Vox Break-in device. The pot in the 6AL5 cathode permits control over the audio gating level.

THE MONOMATIC

A. L. Williamson, W8JVD
181 E. Wilson Bridge Rd.
Worthington, Ohio

For many years I have experimented with various monitors for working cw but have never found any that would satisfy me. Therefore cw operation lately, on my rig, has been a rare event. Most monitors either have a short antenna, need to be tuned, or else must be coupled closely to a final amplifier. This of course is asking for trouble since any stray leads radiating harmonics would create a real TVI situation. A receiver could be used for monitoring but this becomes difficult if the other station operates about 10 kc away.

Being a firm believer in tuned "cloud warmers" with coax feed lines I have found that an swr bridge is a most useful piece of equipment. In addition this bridge, with the following inexpensive modifications, meets my requirements for a cw monitor.

The original bridge is of the type that can be left in the line for continuous observation of the swr. Physically the bridge is mounted behind the transmitter with shielded leads running to the meter located in front of the transmitter. With the cw key closed a signal is transmitted along the feed line and also through the bridge. Here a portion of the output is sampled providing a source of dc voltage that activates the meter for swr measurements. A check of the forward voltage at this particular meter (O-1 ma.) indicates there are 7 volts on 10 meters which drops to 1.5 volts on 40 meters. Between swr readings this voltage is available to power the monitor. This monitor consists of a simple transistor circuit using only a few common components which should cost no more than 3 dollars. The components may all be mounted on a 4 point terminal strip and installed inside the swr bridge meter case. A word of caution here: be sure to connect to the forward voltage point, observe proper polarity, and always turn off the monitor when taking swr readings since it does draw power and would cause an inaccurate reading. Notice that the monitor requires no turning, no antenna, and no separate power supply. It will also operate on quite a range of voltages (1 to 22 v) using a CK-722 transistor. A clean signal of approximately 1000 cycles is generated without any noticeable change of amplitude on all bands from 10 to 40 meters.

Monitoring might be done in several ways on the "Monomatic." I use a single headphone and copy from my receiver speaker. A split headphone set could be rigged with one phone for monitoring and the other (with separate cord to the receiver) for copying. Another method might be to eliminate the use of headphones entirely by designing a battery powered transistor amplifier/speaker system which could use the "Monomatic" as a driver.

Any way you might use the "Monomatic" I believe you'll find it has many advantages and few, if any, of the disadvantages of other cw monitor systems. ■



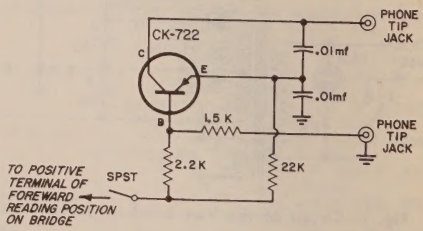


Fig. 1

The 6AU8 Driver

Albert Newland, W2IHW
206 S. Highwood Ave.
Glen Rock, New Jersey

Before building or modifying an existing 50 mc transmitter with the idea of using a 6U8 perhaps it might be worth while to study the following. A survey of some past articles shows the use of the 6U8 with voltages and currents similar to those of fig. 1. As may be seen, Resistor R_1, recommended by the International Crystal Co., when using the 6U8 and a 50 mc crystal is missing. This alone causes a voltage to be developed across the crystal that is somewhat in excess of that recommended by the manufacturer. The high value of the pentode grid resistor and the high grid voltage is for the purpose of tripling and not straight through operation. This high value is to increase the harmonic content in the pentode section which is undesirable when operating straight through. The 6U8 is rated at 18 ma for the triode and 10 ma for the

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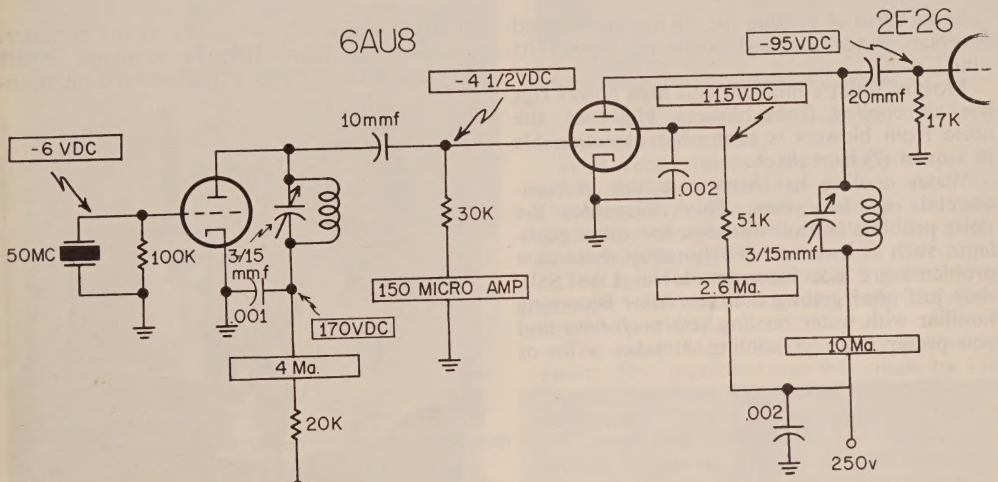


Fig. 1

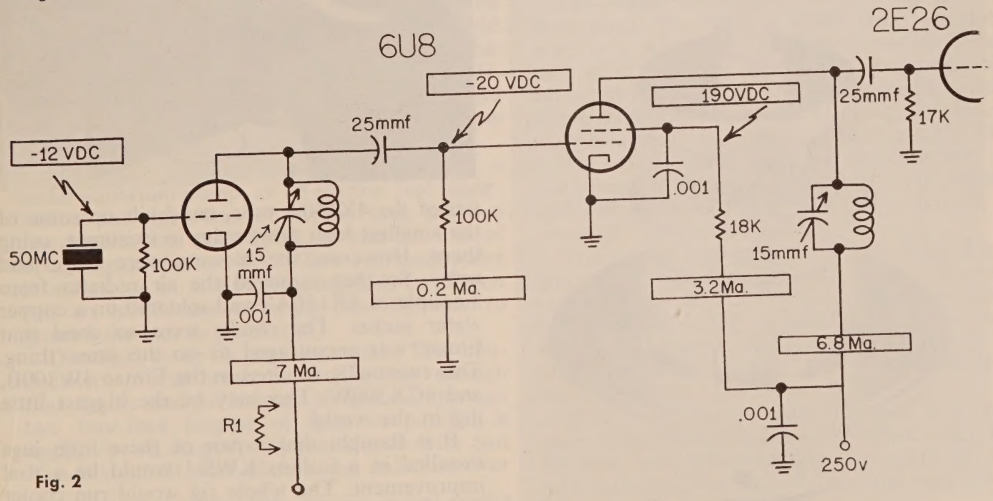
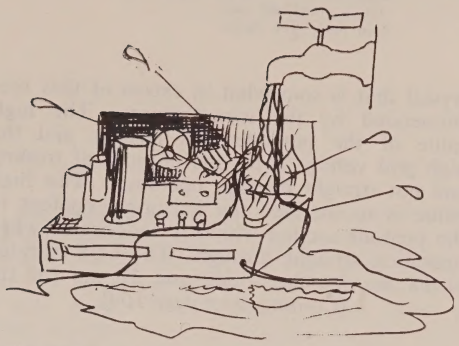


Fig. 2

WATER COOLED RIGS



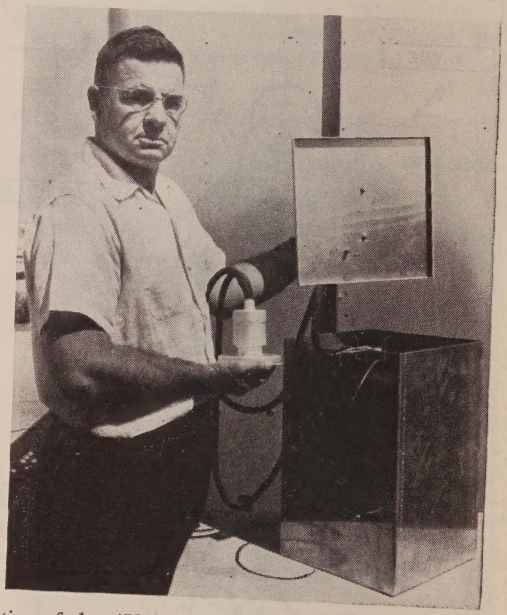
Paul M. Barton, W6JAT
Jennings Radio
P.O. Box 1278
970 McLaughlin Ave.
San Jose 8, Calif.

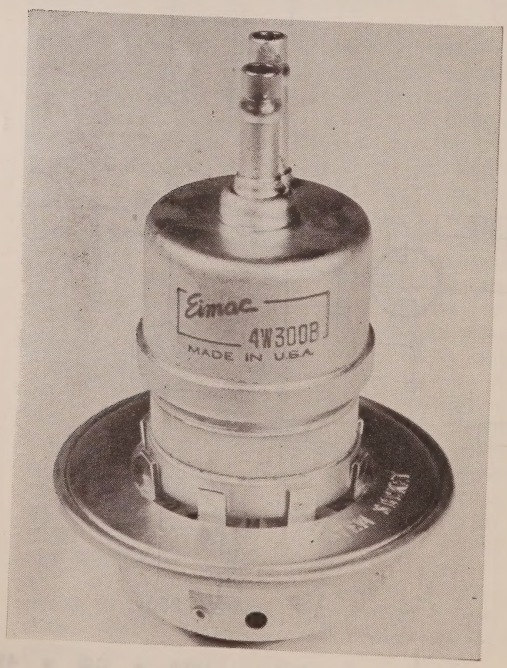
Some form of cooling the rig has been found necessary since the first spark rig zipped its tune.

Most of today's medium and high power rigs use air cooling from blowers. However, the noise from blowers is somewhat objectionable in a quiet (?) ham shack.

Water cooling has been common in commercial rigs for years. This overcomes the noise problem and substitutes a few other problems, such as leaks, etc. Fortunately, these new problems are not insurmountable. Like SSB, they just need getting used to. After becoming familiar with water cooling you may even find you prefer it to air cooling. It takes a lot of air to do the cooling of a few quarts of water.

About ten years ago, Jo Jennings, W6EI and Lew Steward, W6JTQ discovered the beau-





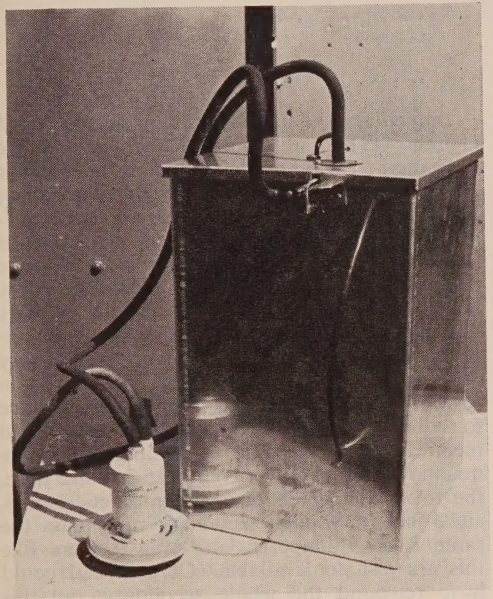
ties of the 4X150A tube, and built up some of the smallest high power rigs in existence, using them. However, the blowers were large and noisy. So they removed the air radiator from a couple of 4X150A's and soldered on a copper water jacket. The results were so good that Eimac was encouraged to do the same thing. This eventually resulted in the Eimac 4W300B, and 4CX300W. This may be the biggest little jug in the world.

It is thought that a pair of these little jugs installed in a Collins KWS-1 would be a vast improvement. The whole rig would run cooler and the blower could be operated with a series

resistor, cutting down the air noise.

Recently, Eimac has brought out the 4CX-1000A* and its water cooled equivalent, still under an experimental number, the X703. These are possibly the most desirable tubes for high power ham rigs on the market today. Their size, stability, gain, efficiency, etc., are "the greatest."

Why such a high power tube in a KW maximum rig? Why do they build a good "Hi fi" set for home use with enough power *capability* for an auditorium? It's because good quality from a linear amplifier can only be had by



operating the amplifier well below its maximum capability.

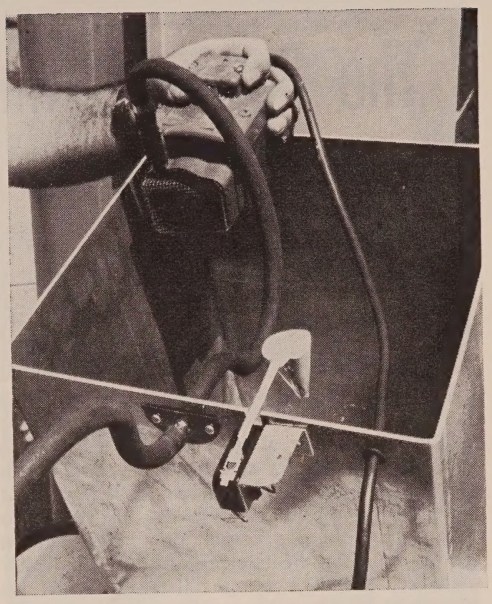
If you are to operate *low level* AM under unmodulated conditions with 1KW input you will have about 333 watts output and 666 watts of plate dissipation, continuously. This is just about right for the 4CX1000 or X703.

For SSB operation, these tubes are just right for a legal gallon of high quality with low spatter co-efficient.

For water cooling, a gallon metal can, a small aquarium pump, or an electric fuel pump, and about eight feet of rubber hose make a fine system for a 4W300B. If you do lots of operating or run two 4W300B's with their water in series, as in a KWS-1 modified, or if you run an X703, use a larger can. Be sure to ground the can to your rig.

Distilled water is not essential. The conductivity of tap water is usually low enough that the dc and rf leakage to ground through two four-foot lengths of hose in parallel is negligible. (2 megs for system shown with San Jose Water.) If your plate meter indicates over

*See jim dandy amplifier using this tube in next month's CQ.—Ed.



a few milliamperes of leakage, use longer lengths of rubber hose.

It is recommended that some water *flow* safety device be used to protect your tube. Commercial devices are expensive and sometimes not completely satisfactory for such a small volume system.

The can is aluminum, but a 5 gallon oil can or milk can would do very well. The size is not at all critical.

The pump is an immersion type aquarium pump. This particular one was made by Little Giant Vaporizer Company, Oklahoma City, Oklahoma. The one shown is Model 2, 110 vac, .75 amps and is sufficient for moderate operating or power. For more ambitious operation, use Model 3, 110 vac, 2.1 amps.

The water safety switch is more positive than most. The return water from the tube goes to a tubing in the water can lid. When the lid is in place, the water flows into the funnel attached to the arm of the micro switch. Micro switch #BZ2RW-A2, Minneapolis Honeywell Regulator Co. or local distribution. The micro switch contacts control the filaments of the tube. The funnel is formed of .010" copper and soft soldered. The hole in the bottom is about ¼" and is not critical.

Your water system *must* be light tight. Light encourages the formation of "stuff." Let the experts name it. Your system should be maintained below 120°F as salts in the water will remain in solution and not coat the inside of your tube water jacket, like the inside of a tea kettle, below 120°F.

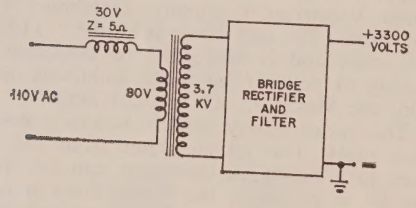
Even with water cooled anodes, it is recommended that some air be blown over the filament seal. Over-heating any part of the tube seriously shortens its life, and may cause it to gas up immediately. ■

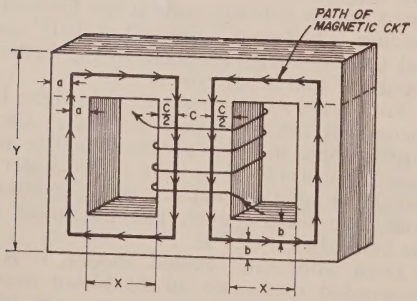
The Power Saving Voltage Dropper

Howard M. Felperin, K2KVG

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Mount Vernon, N. Y.

While browsing along New York's "Radio Row" one Saturday afternoon, I came upon a 6000 volt plate transformer with a somewhat unbelievable price tag of $4.00. Why so cheap? Simple, no center tap. However, it was so appealing in its clean, gray, hermetically sealed case that I bought it anyway, all 40 pounds of it. Now the question was what to do with it. I reasoned that there must be a way to preserve its 500-1000 watt capabilities, while at the same time bypassing its two disadvantages, namely, the lack of a center tap, and the impractical voltage rating. The first problem could be solved by the use of a bridge rectifier, but the second was a bit more perplexing. How could I drop the secondary voltage into the practical region of 3000-4000 volts?





LENGTH OF MAGNETIC CIRCUIT IN INCHES = 4X + 3Y

Immediately, I began scanning old copies of CQ and QST as well as the *Handbook*, but the only methods I was able to find were a resistor in series with the primary, or a filament or toy train transformer connected so its secondary was in series with the primary of the power transformer and bucked the line voltage, hence dropping it by that amount. In order to draw 600 watts from the secondary, the primary current would have to be more than 6 amperes, and as much as 8 or 9 with the primary operating at reduced voltage. The idea of a resistor in the primary was thus discarded, since to reduce the primary voltage by 30 volts would mean a resistor capable of dissipating a large quanity of useful power. While at the same time, the toy transformer idea was impractical also, since its low voltage secondary must pass the same 8 or 9 amperes, and transformers like this are just not available. Of course, I could have rewound the whole secondary, but this seemed much too drastic a step. Now, what to do?

At this point I recalled that Ohm's Law applies equally well for impedance and reactance as for resistance. In accordance with this principle an inductor in series with the primary of the transformer could easily provide sufficient reactance to drop the voltage across the primary to approximately 80 volts. Also a well designed iron cored inductor would consume negligible power provided the dc resistance was low, as it would be when you consider that it need provide only 5 ohms impedance for a drop of about 30 volts. (See fig. 1).

Before proceeding to design a suitable inductor I purchased an old 6.3 volt, 5 ampere filament transformer for a dime (at the same place where I made the fateful purchase described earlier), removed all windings already on it, and exposed the steel core. Now to the design of the reactor. A digital computer is desirable; a slide rule and full coffee pot could be tried as a substitute. First we must change 5 ohms impedance to an equivalent value of inductance. If #16 wire is used, then the re-

sistance of the inductor will be negligible and we can consider the 5 ohms impedance as pure reactance. Hence in the formula $X_L = 2\pi fL$ we can substitute XL = 5 ohms, $2\pi = 6.28$, f = 60 cycles. Thus 5 = 6.28 X 60 X L, and after grinding the crank we come up with L = .013 henries. To compute the inductance of an iron cored coil we find the formula (Radiotron Designer's Handbook, 4th Ed. pp. 242-243).

$$L = \frac{3.2 \times N^2 \times \mu x a}{10^8 \times l}$$

Solving for N, we get

$$N = \sqrt{\frac{L \times l \times 10^8}{\mu x a \times 3.2}}$$

where

N = number of turns

(a) a = effective cross sectional area of coil in square inches

(1) 1 = length of the magnetic circuit in inches (see Fig. 2)

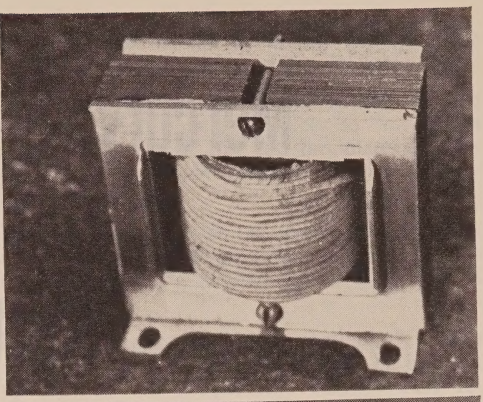
μ = effective permeability

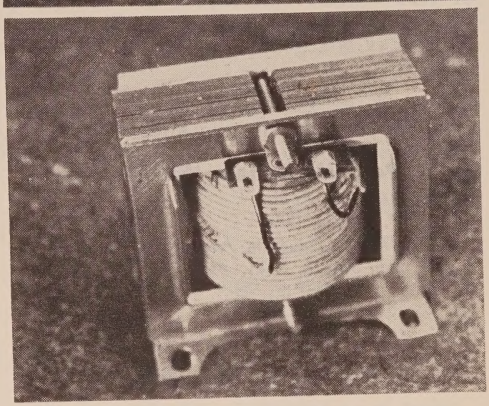
The typical value of μ in a core made of 4% silicon steel is about 400 (4% silicon steel is the standard core material at 60 cycles). (Reference Data For Radio Engineers 4th Ed. Page 285). In my particular core the length of the magnetic circuit was 11 inches, and the two window cutouts provided for a coil with cross sectional area of between 2.1 and 2.7 inches^2. Taking the average, I used 2.4 for a. Now I could make substitutions, for L 0.013, a 2.4, l 11, 400. Plugging these values into the formula and solving for N, we get,

$$N = \sqrt{\frac{0.013 \times 11 \times 10^8}{400 \times 2.4 \times 3.2}}$$

Again we grind the crank and come up with $N = \sqrt{4658}$ therefore N = 68.

Now we come to the actual winding of the inductor. I decided that #16 cotton covered wire represented the best compromise between current carrying capacity and ease of winding. I found that the easiest method of winding the reactor was as follows. I removed all of the laminations from the core and rearranged them so that all of the "E" units rested upon one another. Then I wound the coil on the cardboard tube from a wax paper roll, and fitted it snugly over the center section of the





"E" laminations, using only as many laminations as needed for the form to fit over tightly. I then replaced the "I" laminations by butting them against the "E" units and replacing the outer frame.

All that was left to do now was to test the little monster. With great apprehension I plugged in the line cord and carefully touched the test leads from the volt-meter to the transformer secondary terminals. Success! The reading was 3700 volts. There was only one flaw. The reactor emitted a loud hum which seemed to be caused by the vibration of the outer laminations against the frame. This was quickly remedied by placing a few layers of insulating tape between the two parts in order to absorb these vibrations. The inductor in actual operation only gradually warms up and then remains comparatively cool as it easily dissipates its small quantity of power.

The principle upon which this device operates lends itself to many applications. The reactor which I have described represents a problem within a problem, since it had to be designed to pass extremely high current. This factor made necessary the use of low gauge wire and hence a large core. In many applications the construction of a similar inductor is simplified, since the power involved is much less than 600 or 700 watts. To illustrate this,

[*Continued on page 59*]

Mercury Rectifier Tests

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San Jose 8, Calif.

It has been found that mercury rectifiers, such as 857B, 872, 866, FG-105, etc., can be reliably tested by examining their firing voltage on an oscilloscope.

Light the filaments and allow to warm up *completely*—often many minutes more than is necessary for normal use.

Apply ac voltage across the tube through a suitable current limiting resistor. Increase the current to the rated maximum continuous duty current for the rectifier. A 125 volt supply is quite satisfactory for this. Then put the oscilloscope directly from anode to cathode of the rectifier and observe the waveform.

The most meaningful pattern is seen when the scope is across the rectifier under test.

The sine wave starts to go positive and when it is far enough positive, the tube fires and the scope trace drops back to the DC tube drop. During the inverse half cycle, the negative

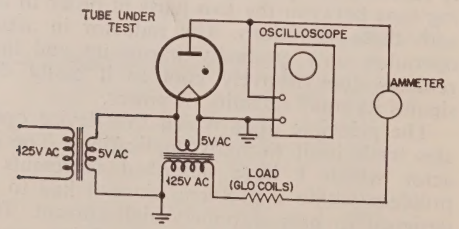


Fig. 1—Set up for observing waveform across the mercury vapor rectifier under test. Note the use of the filament transformer for plate voltage.

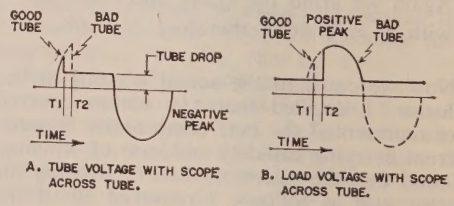
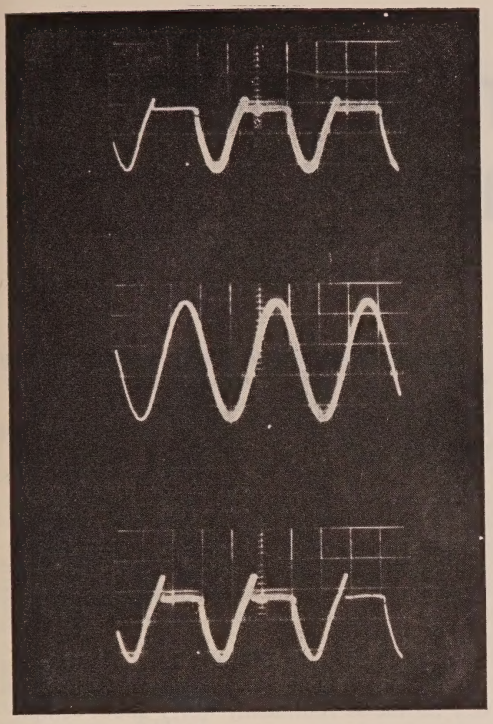


Fig. 2—Waveforms that should be developed across the load and tube. They may be compared with some actual scope waveforms shown on next page.



Read from top to bottom

Doubtful tube possibly good

Sine wave for comparison

Definitely bad tube

peak of the sine wave is seen on the trace.

The important point for this test is the height of this spike at the beginning of the positive peak. A "bad" tube will show a higher spike. A good tube will show a small spike.

For a given supply voltage and load resistor, a good tube will indicate a certain (pre-set) current. By comparison in the same setup, a marginal or bad tube will indicate a lower current. Normal variation between good tubes is about 5%. Bad tubes will be from 6% to 10% low with the same set-up.

For a new set-up to conduct this test, use known good and bad tubes for comparison, to become familiar with the size of the trace of the spike or overshoot voltage.

The firing voltage, as indicated by the height of the spike is related to the "hardness" of the tube, which is, in turn, related to its operating peak inverse voltage.

This spike, or overshoot, actually represents an ac component in the dc output of a rectifier system and can be appreciable in some cases.

This test has been used very successfully to detect rectifiers that were likely to "invert" in service. The use of this test has materially reduced power supply breakdowns due to rectifier inversions.

It is important to test (& operate) these tubes *at* rated filament temperature. A low temperature increases the probability of inversion of the rectifier.

Mercury vapor rectifiers, particularly large ones like the 857 B, should, ideally, be brought up to filament temperature slowly. This reduces the likelihood of a drop of mercury getting under the oxide coating and raising the coating.

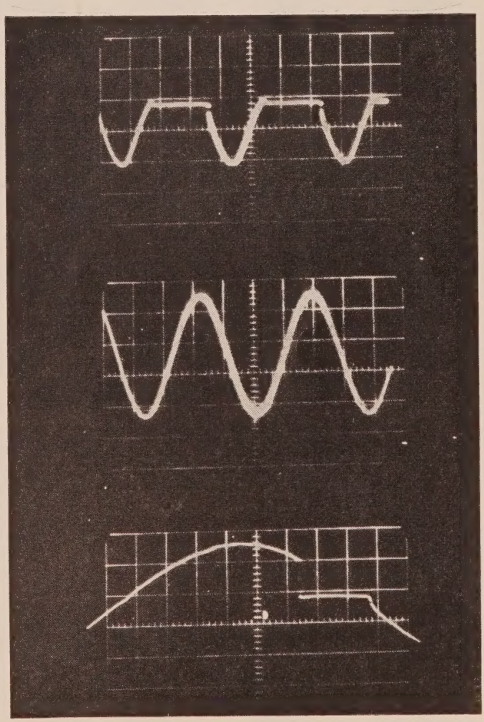
To prevent damage to the filaments from mercury, stored rectifiers should be brought up to heat for thirty minutes or more at least every 3 weeks. ■

Read from top to bottom

Good tube

Sine wave for comparison

Very bad tube (expanded scope trace)



Simple VOX for Sane Mobile Operation

Stan Bell, K6ESZ

5009 Grove Street
Oakland, California

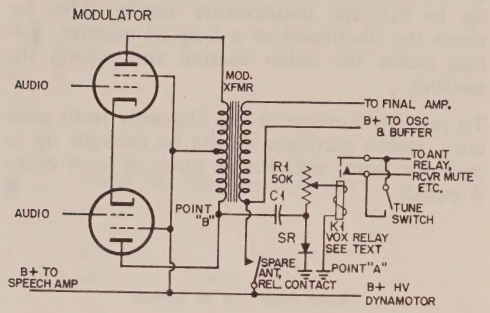


Figure 1 is a typical mobile transmitter employing push-pull modulators.

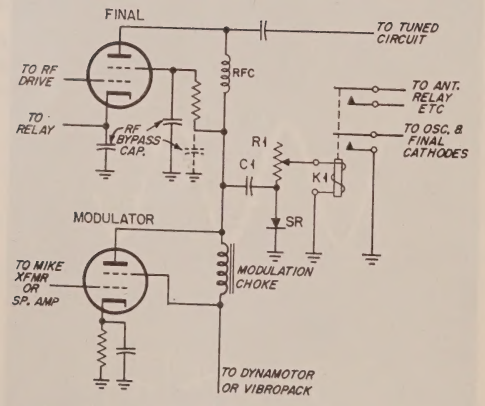


Figure 2 is a typical Heising modulated rig. Keying the rf section in the cathodes is convenient for VOX with single ended modulators.

This article could be titled, "Look Ma, No Hands" but I believe this would be carrying things too far. After all, I still need to turn my mobile rig on and off when I enter and leave the car.

In crowded traffic or on hairpin mountain turns I feel that a driver's hands should be on the wheel of the car and not gripping a microphone. To this end, I have put a very simple gadget on my rig which enables me to put my transmitter on the air without the use of my feet or hands—all I need do is to open my mouth and talk.

No complicated tube circuits are used in my voice-operated break-in scheme, nor is it necessary for me to continually worry about complicated adjustments.

Most mobile transmitters are put on the air with one or more relays which are actuated by pushing the button-switch on a hand-held microphone. Usually, one relay switches a common antenna between receiver and transmitter, and at the same time starts the high-voltage dynamotor. Extra contacts on the relay may be used to mute the receiver.

In my system, the high-voltage dynamotor is turned on and left on; only supplying voltage for the modulator. Referring to the circuit diagram, it can be seen that when I speak into the microphone AF is generated which is the "motive power" to operate a relay which applies high voltage to the final, as well as operate the antenna relay and receiving mute contacts. It is as simple as that!

To use the rectified AF however, a small low current dry disk rectifier is needed. A 50,000 ohm potentiometer is used to set the "voice trip level" and works very effectively.

Proper adjustment of the potentiometer results when the receiver will not throw the transmitter on.

The relay used in the system is a surplus relay that will operate within a range of from twenty to sixty volts. Its coil will have a resistance running between 3000 and 12,000 ohms. Coils which do not draw more than 10 milliamperes will have little effect on the audio.

Although there may be concern over the amount of current drawn by the dynamotor while it feeds the modulator and is awaiting

[*Continued on page 59*]

ALL IN A NAME

by Al Edwards, W2BOH
Bellerose, New York

W9VOJ is a Hollander, W1RL is a Dane and W7LEE is a Turk
Call ZS1PQ, if you want to work Dixie.

News item:
Two Californians, K6LNM and W6LSI, make New York!

Refreshments named after hams
(Some of them are probably teetotalers)

Scotch	W6IRH
Rye	W5VYD
Bourbon	W1EAT
Gin	W6SIJ
Seltzer	W9KHU
Bitters	W9SJO
Beer	K6GSO
Wine	W3YGW
Champagne	K6DVI

Port–W3HYU Sherry–G6JK Martini–W7IFW
Sweet–K6MAA Dry–W5TAA
Straight–W5IOY

It takes two hams to make a highball . . .

High	W9KCL
Ball	WØTKE

Two others will make applejack . . .

Apple	W9HQF
Jack	W6AHO

Shaker is W8QLR
Flask is W3BNI
Glass is K2JNY
Bar is DL9EJ

Beverage and Cola are W1MGP and W2VZQ
Note: K6GMG is not permitted to mix the drinks!
W5LOO may mix them but keep him away from the expensive stuff.
Shhhh . . .
(W7MO is a Drinker)

Look up W3HRA if you want a Treat
W1LQ and W5HVE will make Black Coffee together

For very young hams:
W5AXB and W9IWF will make Lemon Ade

Motor Vehicles and Accessories named after hams
(Free advertising for some cars and a truck)

Dodge	W7BTV	Lincoln	W3SLU
Ford	W5CHE	Packard	W6ISQ
Nash	K4BAZ	Studebaker	WØGZR
Austin	W1AHX	Hudson	W9FFN
Buick	K2IHR	DeSoto	K6IMW
Chrysler	W1RHM	Jeep	WØEDT
Olds	W6JTM	Mack	K2ABS

Rolls-Royce K6BWC-W3SKF

Some of these may still be around . . .

Moon	W2NVW	Maxwell	W3SZQ
Chandler	W4FLW	Durant	W2JCR
Hupp	K4GSP	Star	W3UWL
Chalmers	W3UMF	Pierce	W3LNZ
Mercer	K4EDW	Graham	W4FDA
Franklin	K4GSO	Paige	W3QMS

Start is WØWZJ . . . Stall is WØJER
Speed is W4BIP . . . Park is WØEAR
Driver is W9GDQ . . . Passenger is W3LOD

. . . Parts and Accessories . . .

Brake	W9VMS	Dimmer	G3ERJ
Piston	W3IEJ	Horn	K2BDP
Spring	W6IRD	Heater	W4WII
Shackle	G2DVQ	Hub	DL9OG
Pump	W8IXK	Trim	W1ATC
Rocker	W2MNU	Carrier	K6CLY

Fender and Hood are W6NUK and WØQOY
. . . Dash is WN3DTP
Lock and Key are K6JGT and W7WUA . . .
Jack is K1KXR
Van–W9IGK Hack–K2BP Buggy is W3KZ
Rumble and Knock are W9LHS and W3SDU
Rattles is WØZWI
Bump and Dent are W7VOY and W4VJU
Wham and Smack are K4EJB – W3AYS
(For Service, call W4IE or W2MTY)

Tires and Tubes?

Fisk	K2CRK	Goodyear	K4IDQ
Lee	W4IK	Firesone	W2UYH
Dunlop	ZL4FY	Goodrich	W4SPV

We wonder if any of these hams are what their names indicate?

Alderman	W4BVK	Miller	K4ABO
Baker	W5YCC	Miner	W9DDA
Banker	W3BHV	Monk	WØJJL
Barber	W8ALY	Nurse	W9YNK
Bishop	W2VUW	Painter	K6IYC
Bookbinder	W6GSV	Parson	W9DEI
Boss	K2GHM	Pastor	W2KCN
Brewer	WØAG	Pilot	K2EDQ
Butcher	W8IWJ	Porter	WØAGG
Butler	K5DHK	Postman	K2ALY
Carpenter	W8AA	Priest	WØDGR
Chancellor	W5IM	Purser	W4TWP
Collier	WØEG	Rector	WØLKF
Constable	W7UYV	Sailor	K4HXP

Cook	W5DDU	Seaman	WØRDZ
Dancer	WN8BKT	Sergeant	WØWAJ
Deacon	K4BSZ	Sexton	W7VCR
Ensign	K2ABX	Shepherd	W7TXH
Farmer	WØYCT	Sheriff	W9FLI
Foreman	W8WZK	Shoemaker	W9WAR
Glazier	W2OXP	Showman	W3PVG
Guide	W1YVE	Singer	W2RQJ
Hunter	W2TH	Skipper	W6KF
Judge	W2GIC	Steward	W4AFI
Knitter	W9AGR	Stoker	W5AFS
Lawyer	WN3FTL	Usher	W4JMH
Major	W9NEO	Warden	WØYYF
Mason	K2AFO	Weaver	W1AKL
Mayor	K2DJD	Workman	W7MFD
Merchant	W2LGF	Writer	W6TRU
Messenger	W3AGF	Yeoman	WØQWY

KNØCEG is a Sportsman
W1WUA is an Earl
W7AAP is a Duke
W9FGF is a Baron
W3RT is a Knight
K5DTV is a Prince
VE3AWN is a Sovereign

Music and Dance terms named after hams:

Music	W7UUO
Band	W2PTJ
Melody	W9EXO
Medley	W9FYH
Tune	W4GUB
Horn	W2LLA
Pipes	K9ARB
Fife	WØOSD
Drum	W2AZB
Viola	K6DGO
Organ	W1JBP
Gong	W6TPW
Harp	W5ICC
Minor	W4HRB
Major	W9NEO
Scales	W1BOB
Treble	K2GSM
Sharp	K6CAE
Keys	W8MYL
Sing	W7OOA
Alto	VE8TS
Bass	K4EKU
Dance	W3YQU
Swing	W2OWM
Whirl	WN3FCE
Waltz	W6JIY
Peabody	W6JUW

Rock and Roll are DL4MX and W2DPZ

List of hams whose names are used in games. (Indoor type)

Chess:

King	W2LTJ
Queen	W2OUX
Bishop	K6BM
Knight	W1VMG
Rook or Castle	W2JMQ WØGDA

No Pawn has a ticket.
The term 'Check' was donated by W3NBJ.
Mr. Chess is W3WKX!

Cards:

Hand	K6EH
Bridge	K2IQA
Deck	W1RAC
Deal	WØOZK
Trump	W3VLT
Spade	W9PIL
Diamond	W2BRY
Club	W6HGY
Meld	W2HHA
Pass	WØMSA
King	W2JW
Queen	K4BAF
Jack	W6AHO

Who is a Joker?
W1DRO is a Card!

There would be plenty of Hearts if certain hams would spell their names correctly!

Names of hams with ham terms for names

Gear	KØBXM	Tester	W9BIE
Driver	K6GNK	Current	W4VNO
Slicer	W3UL	Ohms	W9DAC
Trimmer	W1SCZ	Watts	W7AQO
Patch	W8BPD	Power	WØVPO
Crystal	W6KJY	Plate	W2RRU
Key	W5CDO	Blower	W2AX
Signal	ZL3HB	Clamp	W5NFJ
Carrier	K6BKQ	Dial	K5ADC
Gain	W6KFN	Coil	K2QFY
Peak	W1BWN	Link	W2VKF
Null	W8VKP	Loop	WØZIA
Hum	G5UM		
Ripple	W9SIZ		
Shields	KØCNH	Pole	W2ZQC
Tower	W2HJG	Guy	W3JO
Beam	K2BX	Cable	K4BKT
Boom	W6BHS	Zepp	W4OOT

Shock is WØJWF
Spark is W9UWK
Lines and Mains are W2EIQ and W6ARJ
Band Hopper — W2SMN & W2ZXZ
Call Book — WØMBW & WØSPP

High Pass — WØWWB & WØMSB
Hobby Shack — W9KCU & W9AVY
K2HMH is S9 plus

Hardware and Tools for hams:

Brace	WØFJY	Bolt	W1DGA
Drill	K9CLS	Rivet	VE2SN
File	W9PMN	Washer	VE2ASN
Reamer	K2MOE	Staples	W4IDE
Wrench	WØMQB	Screws	W5UQC
Hammer	W9AUU	Pulley	W2TQQ
Vice	W5VCE	Hook	W6DJC
Punch	G6UR	Rod	W2KVY
Solder	G5FA	Fitting	W1NJS

Putting hams' names together . . .
. . . to make a common expression:

Candy and Cake	VE2QC	es	G3CNO
Ways and Means	W3ANL	es	K4ARC
Hope and Pray	WØPAA	es	K6GTJ
Hunt and Fish	W4ROA	es	K6EYS
Rod and Reel	W2KVY	es	KN4IAL
Hug and Kiss	W5CFQ	es	W2REZ
Kiss and Tell	W9JEI	es	W6IEC
Ham and Swiss	W1RRX	es	WTIUW
Wit and Wisdom	W3BTC	es	K6KDQ
Lock and Key	W4YPX	es	WØSGJ

Hook and Eye	W2NPF	es	W3PSX
Rank and File	W8VGQ	es	W4KBJ
Adam and Eve	DJ2UF	es	VK2JC
Fine and Dandy	K2CWS	es	G3BJB
Rock and Roll	K2EKR	es	W5ULH
Salt and Pepper	ZL1CK	es	W7JDC
Look and See	W4PCZ	es	W5LTD
Gold and Silver	W2IHX	es	K2AXF
Stocks and Bonds	K4HLO	es	WN7AIJ
Hale and Hardy	W5RDS	es	W5GPG
Rough and Ready	ZL3DT	es	W7IES
Pain and Ache	G3ATH	es	W3NEC
Fife and Drum	W2TDI	es	W2AZB

. . to express opposite conditions:

Rich or Poor	W4OSJ	es	W6JSO
Black or White	K4HHV	es	W5CCR
High or Low	W3FJI	es	K6GBI
Sharp or Dull	W6LNF	es	W2PHW
Stout or Slim	WØSFQ	es	DL2XY
Long or Short	W2JBY	es	W7BCU
Old or New	W8VDL	es	W4SRM
Broad or Narrow	W4KTN	es	K4AG
Senior or Junior	W2VUM	es	W2HPS
Straight or Bent	W5IOY	es	W1IES
Walk or Ride	WØSZB	es	VK3NH
Damp or Dry	W2VVK	es	W5TAA
Bow or Stern	VE7KJ	es	K2LMA
Hill or Dale	WØZWW	es	WØJNC
Bright or Dull	W2QPI	es	W2PHW
Early or Tardy	W4YKR	es	W6JLA
Sweet or Tart	K6MAA	es	K2CFP
Head or Foot	K4AOC	es	VK3ZAL
Young or Old	K6OAR	es	W5LAN
Real or Fake	W6PUY	es	W2EQP

Well, what do you know, they are naming colors after radio amateurs.

Buff	W2ABS
Blue	W8LXJ
Gray	W7AVB
Green	W2NSD
Brown	W7AMZ
Orange	W3ZDF
Lavender	W5WXA
Vermilion	W7KBR
White	W5CCR
Jet Black*	W1LQ

*K2MEN is Blacker

Note:
No Red is licensed, but some use this for a nickname like W6HJY.

Associated terms:

Tint	K6DTR
Tone	W2LCV
Hue	W4PNT
Dye	W2YGP

SIMPLE VOX [*from page 56*]

"call" for final current, there need be no alarm unless the dynamotor is one of those which would frighten off the largest battery. However, if you use a class B type modulator or even one in class AB2, current demands are light.

For tuning up, a switch is merely paralleled across the switch contacts supplying the high-voltage for the final.

No sir! there is nothing like operating mobile with both hands on the wheel; your eyes on the road and alert for any emergency. It only takes a regular operator's headset or a chest microphone easily made out of a pair of coat hangers and the few parts shown in the diagram.

INSTALLATION NOTES

1. See that audio is available to throw the relay.
   Plate voltage must be supplied to the modulator and speech amplifier stages, (if any), on standby as well as after the relay has thrown. If the speech amp will not stand full voltage install a dropping resistor and bypass.
2. Select C_1 large enough to cause the relay to stay closed between words after R_1 has been set.
   For mobile operation it is safter if the relay drops out between sentences; emergency breaks then are possible. *Your* voice governs the value of C_1 but expect values of 8 to 20 mfd.
3. For high powered rigs it is convenient to connect point "A" of fig. 1 to the modulator supply line rather than ground. This makes it possible to use a condenser rated at 150 volts rather than one rated for the full supply voltage.
4. Smoother operation may result with point "B" connected to either modulator plate lead so try both.

Install this simple system of voice operated control and you'll be glad you did! ■

POWER [*from page 53*]

assume that you need a 5 volt, 6 ampere filament transformer, and you have a 6.3 volt transformer which is capable of supplying the necessary current. You guessed it; just wind a coil and place it in the primary of the 6.3 volt transformer. And remember, there are only 30 watts involved, so the reactor need only be designed to pass about 300 mils. This inductor could be wound very conveniently on a ferrite core.

If, however, the reactor is to be wound on an iron core, there is one thing to look out for, saturation of the core material. All core materials have what is known as a BH characteristic or curve which plots the flux density against the magnetizing force within the core. If the core is being operated within the linear portion of the curve of the material of which it is made, everything will be fine, but if the core is being operated in the region where the BH curve flattens out, anything can happen. The way to avoid this is to use a core which comes from a transformer whose total ampere turns are more than the total ampere turns in your inductor. (See Reference Data for Radio Engineers, 4th Edition pp. 324-326). ■



by DONALD L. STONER, W6TNS
P.O. Box 137, Ontario, Calif.

semiconductors

Circuits for transistorized ham gear continue to arrive for this column, and several of the more interesting devices are reproduced this month. I should point out that these circuits have not been tested by the author and I cannot assume responsibility if you slash your wrists trying to get such a unit to work. Additional information can only be supplied by the contributor.

W6AHO, 653½ Sunset in Venice, California, leads the column with a clever device to generate harmonics of a 100 kc and a 1000 kc crystal for communications receiver calibration. A circuit for the calibrator is shown in fig. 1. It is particularly applicable if you hesitate to make power connections, to your receiver, for a conventional vacuum tube calibrator. A collector potential of six volts is supplied by four flashlight batteries which will last for essentially shelf life. A General Electric 2N170 NPN transistor is used as the crystal oscillator. The resistors are not critical and 20% values should be satisfactory. Any of the following coils can be used for the 5-35 mh. inductor: Meissner rf chokes—19-6891, 19-6874, 19-6892, 19-6889, or any width coil with the appropriate inductance range. The 100 kc markers are strong to 18 mc, and the 1000 kc markers can be heard to 30 mc.

Looking for "high power" transistor transmitters? The circuit shown in fig. 2 will run 1.5 watts input on the 80 meter band, and was supplied by John W. Hopkin, W1SPU. John reports that he has worked several W6's and VE's with this device. The transmitter uses two 2N269 PNP transistors in a novel push-pull circuit. The crystal is connected between bases and the output tank is fed by the collectors. Coil L1 is 30 turns, center-tapped, wound on a 1" diameter form. It should resonate at 3.5 mc with the 200 mmfd variable capacitor about half-meshed. The link winding is 4 turns tightly

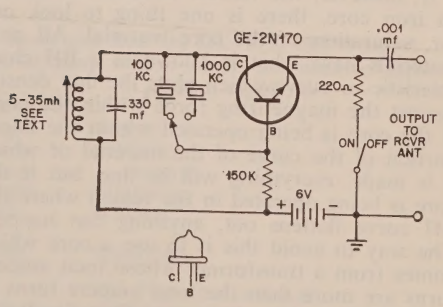


Fig. 1—Circuit for a simple calibrator. Markers up to 30 megacycles can be heard.

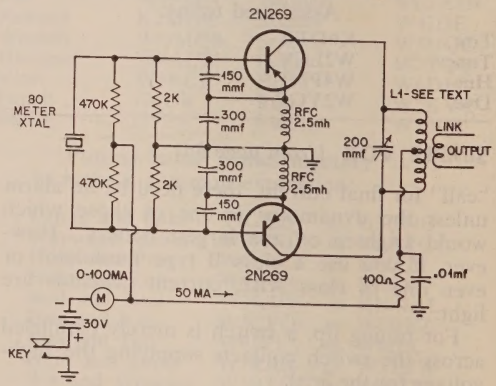
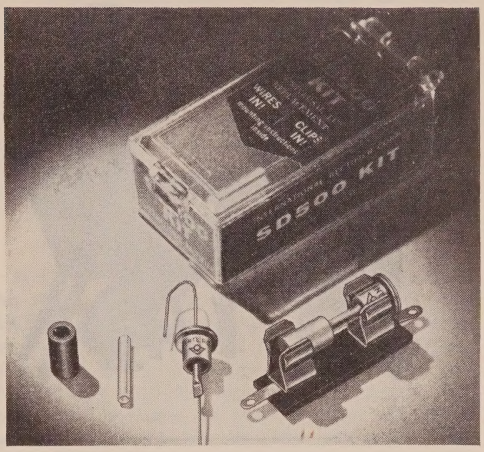


Fig. 2—"High Power" for 80.

wound and coupled at the center of the L1 winding. With a potential of minus 30 volts on the collectors, the transistors should be loaded to about 50 ma., in the bottom of the resonance dip.

From Microtran, 145 E. Mineola Avenue, Valley Stream, N. Y. comes another circuit for DC-DC power converter, and is designed to work with their new line of transformers. The transformer is actually "two-in-one." The winding that couples the collectors to the load is wound on a standard frame, while the feedback winding (between collectors and bases) is a toroid device. This feature is well worth considering when brewing your own DC power converters. Since the toroid only handles the base current, it can be a very tiny unit, thus lowering the overall cost. So long as the feedback voltage is supplied by a square loop source (such as would occur with a toroid form) the voltage step up transformer can be almost any iron core unit. But, I digress—for more information on the Microtran DC-DC power converter transformer write to the above address.



The International Rectifier Corporation SD-500 kit is a truly universal rectifier replacement. It may be wired in place of defective rectifiers, or clipped into holder with the accessory parts supplied.

NEW LITERATURE

General Electric Company has prepared data sheets on their new computer line, types 2N524 through 2N527, and are available by requesting ECG-308 from the Semiconductor Products Department, General Electric Co., Syracuse, N. Y.

Data sheets ECG-309 and ECG-314 describe two new General Electric *tetrode* transistors, the 3N36 and 3N37 respectively.

That facinating device, the unijunction transistor, is decribed in two new brochures published by GE. One of the brochures contains information on the six types currently available, while the other shows 12 basic circuits for using the unijunction. If interested, write for GP-176, the above address.

Don't miss this one! Motorola, Inc. has published a practical application brochure for their low cost experimenters transistor, the 2N554. The booklet describes amplifiers, power supplies, battery chargers, control units, an electric organ, plus a completely transistorized geiger counter. This brochure is available from Motorola distributors only. Los Angeles area—Kierulff Electronics.

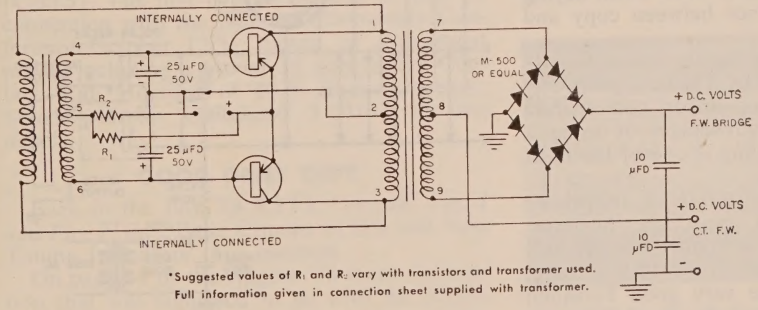
CBS-Hytron has announced a new line of PNP transistors in five packages with large signal current gains and high collector-base ratings. Complete data on over 100 EIA types in this broad new line is available [illegible] the Advertising Dept. [illegible] port, Mass.

Information has been released by General Electric on their new silicon controlled rectifiers. The development type ZJ39A is described in bulletin ECG-322 and a reprint on solid state thyratron switches is available in ECG-320.

TRANSISTOR NEWS

General Electric Company is marketing a new germanium power rectifier, in the 4JA3011

[*Continued on page 66*]



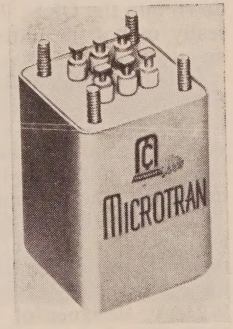
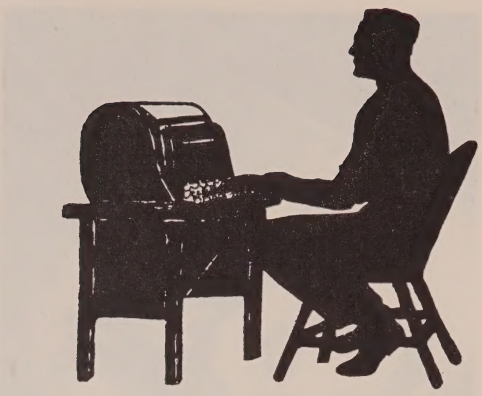


Fig. 3—A typical DC-DC converter using the new Microtran power supply transformer. Full load efficiency may run up to 90% using this transformer and circuit.



RTTY

Byron H. Kretzman, W2JTP
16 Ridge Dr., High Hills,
Huntington Station, N. Y.

Amateur Radioteletype Channels

National, FSK 3620, 7140, 27,200, 29,160, 52,600 kc.
National AFSK 27.2, 147.96, 144.138 mc.
Area Nets:

California	147.85 Mc.	AFSK on AM
Chicago, Ill.	147.70 Mc.	AFSK on FM
Detroit, Mich.	147.30 Mc.	AFSK on FM
Washington, D.C.	147.96 Mc.	AFSK on AM
	147.495 Mc.	AFSK on AM
New York City	147.96 Mc.	AFSK on AM
Livingston, N.J.	146.30 Mc.	AFSK on AM
Buffalo/Niagara	147.50 Mc.	AFK on AM
Boston, Mass.	147.96 Mc.	AFSK on AM
Seattle, Wash.	147.00 Mc.	AFSK on AM
Spokane, Wash.	147.15 Mc.	AFSK on AM
Minneapolis, Minn.	144.90 Mc.	AFSK on AM

...ing with fsk is something to which ... much attention. As ... know, ... in conjunction with an SX-101. (CQ, May '58, pg. 61) An ordinary 'scope, connected to look at the 50-kc i.f. is used as a tuning indicator. Initially, the 'scope was adjusted to get a good look at the keying pulses of the fsk signal being received. It soon became obvious which stations were using direct keying (from the keyboard or TD) and which were using polar relays.

Now, the transients observed on those stations using direct keying do not mess up the copy—unless the signal is weak and fading down into the QRN. *That is* when clean keying really makes the difference between copy and no copy.

Sure, it's easier to key the fsk diode directly from the keyboard or TD. That's a good way to get started on RTTY, but as you operate you will soon see the advantages of using a local loop, and clean keying is one of the most important among them.

This month, the tidy tidbit of teleprinter technology is for TD's, especially; however, the basic principles can be applied equally well to a keyboard. It comes from Phil Catona, W2JAV, designer of the very good Terminal Unit that was described in the April '58 issue of CQ.

Fig. 1 is the schematic diagram of Phil's very simple but effective way of operating a polar relay, such as the WE 215A or 255A, from a TD. As you can see, connections are quite simple. Power is supplied from an "isolation" transformer *T* or from a small power transformer such as the Stancor PA8421. If you already have such a supply, just connect the 1500-ohm resistor to one side and ground the other.

Adjustment is extremely simple. At point *X*, in series with one of the relay coils, insert a zero-center milliammeter (50-0-50 ma or 100-0-100 ma) and adjust the 5k pot *R* for equal and opposite currents for mark and space. That's all there is to it. The "reversing switch" is not a necessity, but it is handy if you have two different kinds of diode keyers like the W6AEE and the W6NRM types.

At W2JAV, the polar relay base was removed and the relay was mounted in a plastic box with an octal socket. The whole works was then mounted inside the Model 14 TD; actually on the underside.

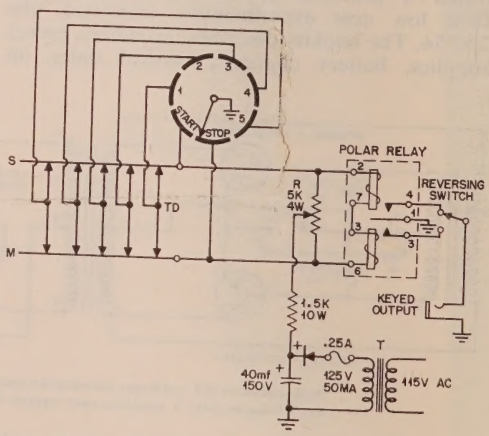


Fig. 1—Schematic Diagram, W2JAV's TD Keyer

ACROSS THE NATION

Activity in the 1st Call Area is perking up with W1NJF in Worcester, Mass., W1LFI in West Boylston, Mass., and OBS W1OUG going strong. W1ZXA reports that he will soon be closing down his Rhode Island station for good. (Better get in that QSO for WAS-RTTY!)

W8GWZ in Ann Arbor, Michigan, has written a fine article on TU engineering. Watch for it. W8OKK is now slant-3 in Emporium, Pa., and has built the W2JAV TU from April CQ.

K2GQ in East Orange, N. J. (ex-W4VP), has disposed of his Model 26 and now has a new Model 15. W2OKO in Summit, N. J., is getting on 2-meters with the W2JAV Tone Generator from Feb. '8 CQ. (See the Good Grief Dept. pg. 85, Aug. '58 CQ) K2HJC in Morrisonville, N.Y., has acquired a Model 15, a Klienschmidt TT-4A, a CV-31C converter, and an 0-5/FR exciter.

W9YBG, Trustee for K9ATE, reports that the Wheaton Academy club is set up with a Model 19, a KWS-1, and a 75A-4. W9LXQ has moved to a new QTH in the Indianapolis area, but will soon have his 32V2, with a pair of 4-400's as a final amplifier, back on with his Model 26 and 75A-4. W9QUN in Milwaukee, Wisconsin, is getting ready for RTTY.

W3ZCS in Pittsburgh, Pa., has built the W2JAV TU, with band-pass filter, and is now building the W2JTP transistorized fork standard. (pg. 56 RTTY Handbook) W3CRO is getting up a 60-foot well-guyed tower in spite of difficulty with the "town Fathers." W3PYW has worked VK3KF and W2ZXM/MM several times. Frank has been working hard planning the RTTY program for the ARRL Convention.

The July meeting of the RTTY Society of So. California, Inc., at W6AEE had 78 attending, including 18 XYL's. It started at 3 pm and had talks by W6CMQ on low-noise VHF receiving gear, W6TD on converters, and W6ORS on a miniature exciter.

SOCIETIES

W9GRW reports the organization of the Chicago Area Teleprinter Society, Inc. (CATS). The first convention will be held in connection with the National Electronics Conference October 12th. Plenty of equipment prizes, including a Model 15 door prize! Contact Ray Morrison at 8029 Keeler Avenue, Skokie, Illinois (ORchard 3-0016) for the details.

GOOD GRIEF DEPT.

Back in the July '58 RTTY Column, *Fig. 1* and *Fig. 2*, the "Basic Circuits of Old and New Tuning Indicators" are reversed.

On page 84 of the August '58 issue, the caption that was supposed to go with the photograph got lost on the cutting room floor. What it should have said, was:

Left to right, Jack Pitts W6CQK and Byron Kretzman W2JTP visiting the Press Wireless, Inc. transmitting station at Belmont, California. Photo by F. A. Bartlett (Bart, W6OWP) of Prewi.

On page 86 of the same issue, in the diagram of the Zero Bias or Distortion Generator, there should be a jumper between the second and third contacts of the left hand wafer of the function switch in order to apply the 14-volt battery minus in the mark position.

COMMENTS

A few years ago, your RTTY Editor asked the ARRL how come W1AW didn't put out ARRL Official Bulletins on RTTY as well as on CW. A very nice and detailed reply was received at that time from W1BDI who explained that facilities, manpower, and time just were not available to provide this additional service. A later visit to W1AW confirmed this: only a Model 12 (in the basement) was available, and the regular operators had their hands full preparing Kleinschmidt tapes for the bulletins and the code proficiency program.

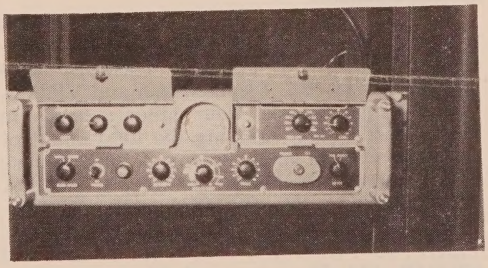
Although years have passed and RTTY activity has steadily increased, the situation at W1AW is still pretty much the same. The breach was filled to a considerable extent, up to last year, by W1BDI personally, who painstakingly punched tapes from the Bulletins and transmitted them for the East Coast RT Net.

This year, as most of you know, Boyd (BeeP) Phelps, WØBP, began his famous "Forty RTTY Net" and has since done yeoman service to the RTTY fraternity by transmitting taped bulletins of all kinds. At his central U.S. location [illegible] added [illegible] meters. This fall a fourth transmitter added for 6-meters. Simultaneous transmission will be then made on 7140-kc, 21,090-kc, 52.6-Mc, and 144.9-Mc. Roll call starts at 2 pm CST Sundays, and stations not included in the regular roll call are invited to join by answering CQ calls directed to their district. The frequency of listening will also be indicated.

P.S. **Help stamp out Dual Identification!**

(See Comments, p.. 86, August 58 *CQ*)

73, Byron, W2JTP



URA/8A Converter used at K2AAA in Bayside, New York. This is a discriminator-audio type of terminal unit.

by BOB ADAMS, W3SW
919 McCeney Road, Silver Springs, Md.

sideband sideband sideband

SIDEBAND

Six hundred enthusiastic operators attended the Single Side-Band Dinner on August 16th, held in Washington during the ARRL's tenth Convention. Side-banders from nearly every State in the Union, and from twenty foreign countries saw General "Butch" Griswold, KØDWC do a splendid job as master of ceremonies. Many door prizes were awarded during the convention to lucky winners. General Curt LeMay, K4RFA, Brig. General Earl Cook, W4FZ and Admiral Virden, on behalf of the Armed Services, praised the accomplishments of the amateur fraternity, and especially pointed out the superiority of SSB in military applications. Vice President Nixon during his speech, referred to the reliability of SSB from his plane while flying through the South American countries recently.

The technical sessions with Sam, W3HN as program chairman were very informative and very well attended. Papers were read by John [illegible] of Collins, Stu Seeley, W2ZE of RCA, [illegible] of Central Electronics, [illegible] Tom Stew- [illegible] of [illegible] and Jim Noland, WØAWX of WKL Labs.

During the past month six additional "Worked 100 Countries SSB" were awarded to WØQXZ, WØFUH, W8PQQ, ZL3PJ, K2MGE, and W2OQO bringing the membership in this exclusive club to nineteen. Evidently the QSL problem is still very tough. We especially congratulate. K2MGE who received number 18 and is the first of the opposite sex to qualify. Considering that she has a husband and four children to look after while chasing DX and QSL cards this is really a remarkable accomplishment.

We hope you were all lucky enough to work the latest DXpeditions including: VQ9GU, Saychelles; FO8AT, Clipperton; YXØAB, Aves Island; HB1TL/FL, Liechtenstein and VP2VB, British Virgin Islands. Your editor is happy to have worked them bringing the total count of countries worked since moving to Silver Spring to 124. Among the leaders in two way SSB DX are: W6UOU, 130, W2JXH, 130; W6ITH, 130, ZL3PJ, 130, VK3AEE, 134, F7AF, 130, TI2HP, 130; K6GMA, 130; W4IYC, 126; and VE3MR, 123. There are probably many others with as many or more worked but these are the only ones which have advised their totals.



John, GC3AAE

Harry, W2JXH gives us the following good news from Rundy, W3ZA/3W: On August 7th the FCC approved the portable operation of W3ZA/3W in the Republic of South Viet-Nam, and communication between that station and other amateur stations licensed by the FCC is *not* prohibited. This does not change the status of Viet-Nam with regard to Article 42, Section 1 of the Atlantic City Conference and working stations in Viet-Nam other than W3ZA/3W is still prohibited. Rundy's QSLs are handled by W2JXH. Send a self addressed, stamped envelope to Harry at 101 East 72nd Street, New York, N. Y.

Bob, K2ZSQ, is active on six meter SSB with 75 watts. K2IQR and K2ZOB are also on six with side-band. We expect to hear of some excellent results from side-band operation during the next openings.

Joe, 9G1BF whose picture appeared in our last column has returned to Guernsey, on the Channel Islands for a six months' holiday, and will operate as GC2MF.

John, GC3AAE whose photo appears this month reports a very successful DXpedition to the Channel Islands during June, last. Fifteen hundred SSB contacts were made with 112 countries, all on the twenty meter band. QSL's were sent out direct if IRC's were sent to John, otherwise the cards were sent via the bureau. John is looking the map over to select another new country to operate from soon.

W6WFR, Vic sends us the unusual photo of his Volkswagen with a large transformer in

the rear. While this is just being transported to his home. Vic intends to remove the case and use the transformer itself in his new 1KW linear for the car installation with his KWM-1 as a driver. Wonder where the passengers will sit?

We welcome the folllowing newcomers to SSB: ZP5KA, MP4BBW, PY4AEX, PY4OD, PY7CP, UB5FJ, HL9KR, ZC4DA and OK1MB.

Cliff, K9EAB of Peoria, Illinois was stricken with polio in 1949 and as a result is almost completely paralyzed. He must remain in an "iron lung" twenty-two hours each day. His right thumb is the only extremity with useful motion, and with it Cliff has learned to operate a key at 25 W.P.M; some days a little faster. He received his Conditional license in November 1956, after becoming interested in amateur radio through his cousin, K9CDC, and helped by Doc, W2KER. After a short time on AM and CW, Cliff went on SSB and so far has worked seventy-five countries. His total DX worked on all modes of communication is 161 countries. The photo of Cliff operating from his iron lung shows some of the certificates he has been awarded including: WAC, DXCC, worked SSB, WAVE, WAS, WAA, BERTA, etc. and he is close to WPX. Cliff handles many phone patches, keeps regular schedules with many other amateurs including VK4AB. K9EAB and Ramsey of VK4AB have enjoyed 186 consecutive QSOs, and Cliff says Ramsey is his number one "old buddy." Cliff handles VK4AB's W/K QSLs.



Ahmed, HZ1TA

A big thrill for Cliff was during a round-table with OD5BZ, OHØNC, SM5KP, YV5FL and VK4AB and if an African station called in it would have made it WAC on 20 meters. Another highlite of his life was in having Mark of HZ1AB visit with him after Cliff had phoned-patched HZ1AB on several occasions.

Cliff's Dad while not a Ham officially, is the secretary, antenna erector, leg man, band changer, dial tuner and phone patcher. Our hats are off to you Mr. Corne for helping Cliff so thoroughly enjoy side-banding and in setting such a wonderful example to the rest of us. Listen for K9EAB with Cliff's cheerful voice on the mike, it will be a very nice QSO.

73, Bob, W3SW



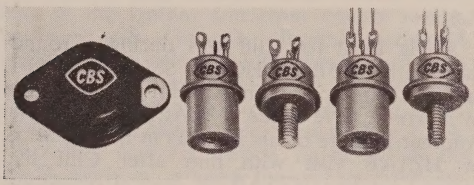
Cliff, K9EAB

SEMICONDUCTORS [*from page 61*]

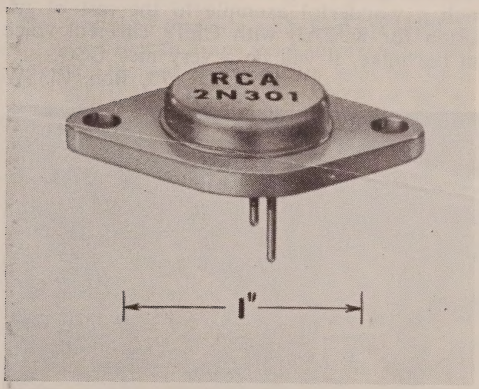
series. The 3011 A, B, and C have peak inverse ratings of 100, 200 and 300 volts respectively. Full load current is 5 amperes for the A and B, and 2.5 amperes for the C rectifier. Bulletin ECG-321 describes these new units.

A new silicon rectifier all purpose adapter kit is available at International Rectifier Corp. distributors. The SD-500 silicon junction rectifier can operate at 100°C ambient with a resistive, inductive or capacitive load and will supply 130 volts per rectifier at ½ ampere.

An extention of the Pacific Semiconductors "Vericap" line, has been announced, along with price reductions up to 40%. The capacity



CBS-Hytron is now supplying power transistors in these packages. The unit shown at the left is their famous $1.35 experimenters transistor, the 2N255.



Introducing the new RCA 2N301 transistor. The rating of this device has been stepped up 85%, and it is now rated at 5 watts! Same low price.

ranges from 20 to 100 mmfd and [illegible] voltage controlled capacitors have high "Q" factor and are particularly useful in AFC and modulation applications. Curves, ratings, and detailed specifications and application notes are available from Pacific Semiconductors, Inc., Culver City, Calif.

Four new germanium PNP alloy junction transistors, 2N670 through 2N673 have been announced by Philco, and are designed for use in high voltage, high current pulse amplifiers and switching circuits. Typical uses are for magnetic core switching, magnetic drum or tape writing, relay actuating and large signal class B audio amplifiers. For more information, write Lansdale Tube Company, Lansdale, Pa.

RCA is in pilot production of two new diode rectifiers and should be in full production by the time you read this. The diodes, which will be available from RCA distributors, are rated at 400 and 500 volts, peak inverse, at 500 ma forward current. I understand the price of these diodes will be *very* competitive!

Data sheets are now available for the newly redesigned 2N301 and 2N301A. As reported last month, the rating has been stepped up to 5 watts, an increase of more than 85 per cent over the original design. The data sheets of these, and other RCA transistors may be obtained by writing RCA, Semiconductor Division, Somerville, N. J.

The 2N351 and 2N376 are 4 watt power transistors from RCA, and are intended for car radio audio output stages, or push-pull class B modulators or amplifiers. The package is the same as the new 2N301 (see photo).

An extension of the drift transistor family has been announced by RCA. The 2N373 is intended for 455 kc i-f amplifier applications, while the 2N374 is designed to be employed in converter service in broadcast band radios. Application data sheets are available for these two types and they contain typical circuits.

Sylvania has brought out two new transistors for high speed data processing systems. The 2N576 and 576A are NPN devices and feature 20 and 30 volt collector ratings, respectively.

Sylvania is also manufacturing drift transistors. In addition to the 2N247, 2N370, 2N371, and 2N372, they have just announced the 2N544. This unit is designed as an rf amplifier at frequencies up to 1.5 mc. It should be noted, however, that the gain is useful even up to 20 mc.

The Sylvania renewal line has been expanded to include 22 power transistors. These include the 2N155, 2N176, 2N234, 2N34B, 2N36B, 2N250, 2N255, 2N256, 2N257, 2N285A, 2N301, 2N301A, 2N307, 2N307A, 2N350, 2N351, 2N352, 2N353, 2N399, 2N401, 2N419, and 2N420.

Tung-Sol Electric, Inc., Semiconductor Div., 95 Eighth Avenue, Newark 4, N. J. are now using a new cold-weld seal process that produces a hermetic, copper-to-copper seal, and makes possible an all copper transistor. This of course helps to dissipate the heat generated in the junction. This new process has been incorporated in the Tung-Sol 2N378, 2N379, 2N380, and 2N459. For more information, write to Tung-Sol, 200 Bloomfield Avenue, Bloomfield, N. J., Attn.: technical publications dept.

That about saturates our collector for this month fellows, if there is any particular circuit you would like to see, drop a line.

73, Don, W6TNS

by GEORGE JACOBS, W3ASK
607 Beacon Road, Silver Spring, Md.

PROPAGATION

CQ DX CONTEST SPECIAL

Propagation conditions during the upcoming CQ DX Contest are expected to be almost as good as last year's record breaking Contest.

Despite the fact that the peak of the present sunspot cycle has passed, solar activity during October and November, 1958, is expected to surpass the level observed during any previous Contest period, except last year's. Because of the correlation that exists between solar and ionospheric behavior, propagation conditions during this year's Contest should be almost as good as last year's, and better than during any Contest previous to 1957. Exceptionally good DX conditions are forecast to all Zones of the world on the 10, 15, and 20-meter bands during the Contest, provided that no sudden radio storms develop.

CONTEST DATA

The Phone Section of the CQ World wide DX Contest will be held from 0200 GMT October 25 until 0200 GMT October 27. The CW Section from 0200 GMT November 29 until 0200 GMT December 1. See page 32 of August CQ for complete Contest details.

FORECAST

For the past eight years CQ has provided a special Propagation analysis for the Contest periods. Previous forecasts have attained exceptionally high accuracy. This year's forecast contains an analysis of more than three hundred paths centered on eight major geographical areas of the United States. There's one almost custom made for your QTH. The analysis is based upon normal propagation conditions. In the event that a radio storm should develop during the Contest, paths passing through or near the auroral zones may become weak, fade considerably, or may blackout entirely. On the other hand, during such storms, conditions on north-south circuits often improve. If a radio

LAST MINUTE FORECAST FOR OCTOBER

Normal propagation conditions are expected during the CQ World Wide DX Contest period October 25-26th. Radio storms are forecast for October 10-12 and 18-20.

MONTH: OCTOBER, 1958

ALL TIMES IN E. S. T.

NORTHEAST USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
NORTHERN EUROPE	5A-7A (3) 7A-1P (4) 1P-5P (2)	5A-8A (3) 8A-2P (4) 2P-6P (3) 6P-9P (2)	4A-7A (4) 7A-4P (3) 4P-9P (4) 9P-4A (3)	5P-7P (2) 7P-3A (4) 7P-2A (2) *
CENTRAL & EASTERN EUROPE	6A-8A (2) 8A-1P (3) 1P-3P (2)	5A-8A (2) 8A-2P (3) 2P-5P (2)	3A-6A (3) 6A-12N(1) 12N-3P (2) 3P-7P (4) 7P-3A (2)	5P-8P (2) 8P-1A (3) 8P-12M (1)*
SOUTHERN EUROPE & NORTH AFRICA	5A-7A (3) 7A-2P (4) 2P-5P (3)	5A-8A (3) 8A-1P (2) 1P-7P (4) 7P-10P (2)	8A-1P (1) 1P-10P(4) 10P-6A (2) 6A-8A (3)	5P-7P (2) 7P-3A (4) 7P-2A (2) *
EASTERN MEDITERRANEAN	5A-7A (2) 7A-10A (3) 10A-4P (2)	5A-7A (2) 7A-11A (1) 11A-7P (3) 7P-9P (2)	3P-5P (1) 5P-7P (4) 7P-11P (3) 11P-4A (2)	7P-1A (2) 8P-12M (1) *
CENTRAL & SOUTH AFRICA	6A-11A (2) 11A-4P (4) 4P-7P (3) 7P-9P (1)	5A-8A (2) 8A-11A (1) 11A-1P (2) 1P-6P (4) 6P-9P (3)	1P-3P (2) 3P-10P (4) 10P-5A (3) 7A-9A (2)	6P-12M (2) 8P-11P (1) *
CENTRAL AMERICA	6A-8A (2) 8A-4P (4) 4P-7P (3) 7P-10P (2)	4A-8A (2) 8A-3P (4) 3P-6P (5) 6P-4A (3)	7A-9A (4) 9A-4P (2) 4P-11P (5) 11P-3A (4) 3A-7A (3)	5P-6A (4) 6A-8A (2) 8P-4A (3) *
SOUTH AMERICA	5A-2P (3) 2P-5P (4) 5P-10P (2)	6A-10A (3) 10A-3P (2) 2P-7P (4) 7P-3A (2)	3P-6P (2) 6P-1A (5) 1A-3A (3) 3A-8A (2)	6P-5A (3) 8P-2A (2) *
MALAYA & SOUTHEAST ASIA	7A-10A (1) 3P-7P (2)	7A-10A (2) 4P-9P (3)	6A-9A (2) 4P-9P (1) 9P-2A (3)	NIL
AUSTRALASIA	8A-12N (2) 12N-4P (1) 4P-7P (3) 7P-10P (2)	7A-9A (3) 9A-4P (2) 4P-11P (3) 11P-1A (2)	9P-12M (2) 12M-4A (3) 3A-7A (2) 7A-9A (4)	2A-8A (3) 4A-8A (2) *
JAPAN AND FAR EAST	4P-8P (2)	3P-5P (2) 5P-9P (3) 9P-11P (2)	4P-9P (2) 9P-2A (3) 2A-8A (2)	12M-5A (1)
GUAM & PACIFIC	8A-11A (1) 2P-4P (2) 4P-6P (3) 6P-8P (2)	8A-11A (2) 3P-5P (2) 5P-11P (3)	7P-10P (2) 10P-3A (3) 3A-6A (2)	11P-3A (1)

OCTOBER, 1958

ALL TIMES IN E. S. T.

SOUTHEAST USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
EUROPE & NORTH AFRICA	6A-8A (3) 8A-1P (4) 1P-5P (2)	6A-8A (3) 8A-12N (2) 12N-4P (4) 4P-9P (2)	1A-7A (3) 12N-3P (3) 3P-10P (4) 10P-1A (2)	5P-7P (3) 7P-10P (4) 10P-12M (3) 7P-11P (3) *
CENTRAL & SOUTH AFRICA	7A-12N (1) 12N-2P (2) 2P-5P (4) 5P-8P (2)	12N-3P (2) 3P-6P (4) 6P-8P (3) 8P-11P (2)	1P-5P (2) 5P-10P (3) 10P-2A (2) 7A-9A (2)	5P-7P (1) 7P-12M (2) 8P-11P (1) *
AUSTRALASIA	7A-12N (2) 12N-3P (1) 3P-5P (2) 5P-7P (3) 7P-10P (2)	7A-10A (3) 4P-7P (2) 7P-9P (3) 9P-2A (2)	7P-11P (3) 11P-3A (4) 3A-7A (3) 7A-9A (4)	2A-7A (3) 3A-7A (2) *
MALAYA & SOUTH EAST ASIA	7A-11A (2) 11A-2P (3) 6P-8P (3)	6A-9A (1) 2P-6P (1) 6P-11P (2)	5P-8P (1) 6A-8A (1)	NIL
FAR EAST	4P-6P (3) 6P-8P (2)	3P-6P (2) 6P-9P (3) 9P-2A (2) 6A-9A (2)	9P-6A (2) 6A-8A (3)	NIL
SOUTH AMERICA	7A-3P (3) 3P-6P (4) 6P-10P (3)	6A-9A (3) 9A-3P (2) 3P-9P (4) 9P-3A (3)	6A-8A (3) 8A-3P (2) 3P-5P (3) 5P-4A (4) 4A-6A (2)	6P-5A (4) 5A-8A (2) 7P-4A (3) *
ANTARCTICA	2P-4P (2) 4P-6P (3) 6P-9P (2)	5P-7P (2) 7P-12M (3) 12M-3A (2)	7P-10P (2) 10P-6A (3) 6A-8A (2)	2A-6A (2)

OCTOBER, 1958

ALL TIMES IN C. S. T.

CENTRAL USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
WESTERN & CENTRAL EUROPE	6A-10A (3) 10A-12N (4) 12N-2P (3) 2P-4P (2)	5A-11A (2) 11A-2P (4) 2P-4P (3) 4P-9P (2)	11A-3P (2) 3P-8P (4) 8P-2A (3) 2A-6A (2)	5P-12M (2) 6P-11P (1) *
SOUTHERN EUROPE & NORTH AFRICA	6A-8A (3) 8A-1P (4) 1P-3P (3) 3P-5P (2)	5A-8A (3) 8A-12N (2) 12N-5P (4) 5P-9P (2)	12M-3A (2) 3A-6A (3) 6A-4P (1) 4P-8P (4) 8P-12M (3)	5P-2A (3) 6P-1A (2) *
CENTRAL & SOUTH AFRICA	5A-10A (1) 10A-12N (3) 12N-3P (4) 3P-7P (2)	5A-12N (1) 12N-2P (3) 2P-5P (4) 5P-10P (2)	1P-3P (2) 3P-6P (3) 6P-10P (4) 10P-4A (2) 7A-9A (1)	6P-1A (2) 7P-11P (1) *
GREENLAND	9A-12N (2) 12N-5P (3)	8A-2P (2) 2P-5P (3) 5P-8P (2)	6A-4P (2) 4P-8P (3) 8P-12M (2) 12M-6A (1)	6P-5A (2) 7P-4A (1) *
ANTARCTICA	9A-2P (2) 2P-8P (3)	8A-11A (2) 11A-3P (1) 3P-7P (2) 7P-11P (3) 11P-3A (2)	3A-9A (2) 2P-6P (1) 6P-9P (2) 9P-3A (3)	12M-5A (1)
CENTRAL AMERICA & NORTHERN SOUTH AMERICA	6A-8A (3) 8A-4P (4) 4P-8P (3) 8P-10P (2)	5A-8A (3) 8A-5P (4) 5P-10P (3) 10P-5A (2)	1A-6A (3) 6A-9A (4) 9A-6P (3) 6P-10P (5) 10P-1A (4)	7P-5A (4) 5A-7A (2) 8P-4A (3) *
SOUTH AMERICA	6A-8A (2) 8A-4P (4) 4P-8P (3) 8P-10P (2)	5A-9A (3) 9A-2P (2) 2P-6P (4) 6P-2A (3)	12M-5A (3) 5A-8A (4) 8A-5P (1) 5P-12M (4)	8P-4A (3) 9P-3A (2) *
HAWAII	10A-12N (3) 12N-8P (4) 8P-10P (2)	9A-4P (2) 4P-8P (4) 8P-11P (3) 11P-2A (2)	2A-5A (3) 5A-9A (2) 9A-5P (1) 5P-7P (2) 7P-2A (4)	11P-7A (4) 12M-6A (3) *
AUSTRALASIA	8A-11A (2) 11A-3P (1) 3P-6P (2) 6P-10P (3)	7A-10A (3) 10A-4P (2) 4P-10P (3) 10P-2A (2)	4P-8P (1) 8P-11P (2) 11P-3A (4) 3A-9A (3)	2A-7A (3) 3A-6A (2) *
JAPAN & FAR EAST	2P-5P (2) 5P-7P (3) 7P-9P (2)	6A-9A (1) 2P-5P (3) 5P-8P (4) 8P-11P (2)	2A-8A (2) 8A-2P (1) 2P-8P (2) 8P-2A (3)	12M-7A (1)
MALAYA & SOUTH EAST ASIA	1P-3P (1) 3P-8P (2)	7A-11A (2) 2P-4P (2) 4P-10P (3)	6A-9A (2) 8P-11P (2)	NIL

OCTOBER, 1958

ALL TIMES IN C. S. T.

NORTH CENTRAL USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
EUROPE & NORTH AFRICA	7A-10A (2) 10A-12N (3) 12N-2P (2) 2P-4P (1)	7A-11A (1) 11A-1P (3) 1P-4P (2) 4P-8P (1)	1P-3P (1) 3P-6P (3) 6P-11P (1) 11P-3A (2)	5P-11P (1) 6P-11P (1) *
CENTRAL & SOUTH AFRICA	7A-9A (1) 9A-1P (3) 1P-5P (4) 5P-7P (2)	10A-12N (1) 12N-4P (2) 4P-6P (4) 6P-10P (3)	2P-4P (1) 4P-6P (2) 6P-10P (4) 10P-4A (2)	7P-12M (2) 8P-11P (1) *
AUSTRALASIA	7A-9A (1) 1P-3P (1) 3P-7P (3) 7P-10P (2)	7A-9A (2) 9A-2P (1) 2P-6P (2) 6P-9P (3) 9P-2A (2)	6A-8A (3) 4P-8P (1) 8P-11P (2) 11P-3A (4) 3A-7A (2)	12M-7A (3) 1A-6A (2) *
MALAYA & SOUTH-EAST ASIA	9A-11A (1) 1P-3P (1) 4P-8P (2)	9A-12N (1) 12N-2P (2) 2P-5P (1) 5P-10P (3)	6A-9A (2) 2P-6P (1) 6P-10P (2)	NIL
FAR EAST	2P-4P (2) 4P-6P (3) 6P-8P (2)	2P-6P (2) 6P-8P (3) 8P-11P (2)	1A-6A (1) 6A-9A (2) 2P-7P (1) 7P-10P (2) 10P-1A (3)	2A-7A (2) 4A-6A (1) *
SOUTH AMERICA	7A-9A (2) 9A-2P (3) 2P-6P (4) 6P-10P (2)	7A-9A (3) 9A-1P (2) 1P-5P (3) 5P-9P (4) 9P-2A (2)	2P-4P (2) 4P-6P (3) 6P-2A (4) 2A-8A (3) 8A-2P (1)	6P-4A (3) 8P-2A (2) *

OCTOBER, 1958
ALL TIMES IN C. S. T.

SOUTH-CENTRAL USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
EUROPE & NORTH AFRICA	6A-8A (2) 8A-12N (3) 12N-2P (2) 2P-4P (1)	6A-8A (3) 8A-12N (1) 12N-4P (3) 4P-9P (2)	6A-2P (1) 2P-12M (2) 12M-6A (3)	6P-8P (2) 8P-11P (3) 8P-11P (1) *
CENTRAL & SOUTH AFRICA	7A-12N (2) 12N-3P (3) 3P-5P (4) 5P-7P (2)	12N-3P (2) 3P-5P (3) 5P-7P (4) 7P-11P (3)	3P-5P (2) 5P-7P (3) 7P-11P (4) 11P-2A (3) 7A-9A (1)	7P-12M (2) 8P-11P (1) *
AUSTRALASIA	7A-9A (1) 2P-4P (2) 4P-7P (3) 7P-10P (2)	7A-10A (3) 3P-6P (2) 6P-9P (3) 9P-7A (2)	4P-7P (2) 7P-11P (3) 11P-3A (4) 3A-7A (2) 7A-9A (4)	12M-7A (3) 1A-6A (2) *
MALAYA & SOUTH EAST ASIA	8A-2P (1) 5P-9P (2)	8A-12N (1) 12N-5P (2) 5P-8P (3) 8P-11P (2)	6A-8A (1) 3P-8P (2) 8P-11P (1)	2A-7A (1)
FAR EAST	2P-4P (2) 4P-7P (3) 7P-9P (2)	2P-4P (2) 4P-6P (3) 6P-8P (4) 8P-12M (2) 6A-9A (1)	3P-7P (2) 7P-9P (3) 9P-1A (4) 1A-6A (2) 6A-9A (3)	12M-6A (2) 1P-6A (1) *
SOUTH AMERICA	7A-9A (2) 9A-2P (3) 2P-5P (4) 5P-8P (3) 8P-10P (2)	5A-8A (3) 8A-2P (2) 2P-6P (3) 6P-9P (4) 9P-5A (2)	3P-7P (3) 7P-2A (4) 2A-6A (2) 6A-9A (3) 9A-3P (1)	7P-7A (4) 8P-6A (2) *

OCTOBER, 1958
ALL TIMES IN M. S. T.

WEST-CENTRAL USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
EUROPE & NORTH AFRICA	6A-8A (2) 8A-12N (3) 12N-2P (2)	6A-10A (2) 10A-2P (3) 2P-5P (2)	7A-1P (1) 1P-3P (2) 3P-8P (3) 8P-12M (2)	6P-11P (2) 7P-10P (1) *
CENTRAL & SOUTH AFRICA	6A-1P (1) 1P-7P (3) 7P-9P (2)	6A-2P (1) 2P-4P (2) 4P-7P (3) 7P-9P (2)	4P-6P (2) 6P-10P (3) 10P-12M (2) 7A-9A (2)	6P-11P (2) 7P-10P (1) *
AUSTRALASIA	6A-9A (1) 12N-2P (2) 2P-6P (3) 6P-10P (2)	6A-9A (3) 9A-3P (1) 3P-9P (3) 9P-2A (2)	1A-6A (2) 6A-8A (3) 5P-9P (1) 9P-11P (3) 11P-1A (4)	12M-7A (3) * 1A-6A (2) *
MALAYA & SOUTH EAST ASIA	7A-1P (2) 4P-8P (3)	7A-9A (2) 9A-4P (1) 4P-9P (2) 9P-11P (1)	6A-9A (1) 5P-10P (2)	2A-6A (1)
FAR EAST	1P-3P (2) 3P-6P (4) 6P-8P (2)	7A-9A (2) 1P-5P (2) 5P-8P (4) 8P-11P (3) 11P-7A (1)	2A-6A (2) 6A-9A (3) 4P-6P (1) 6P-8P (2) 8P-2A (3)	1A-7A (2) 2A-6A (1) *
SOUTH AMERICA	5A-7A (3) 7A-1P (2) 1P-3P (3) 3P-5P (4) 5P-9P (2)	1A-7A (2) 7A-1P (1) 1P-3P (3) 3P-6P (4) 6P-1A (3)	3P-5P (2) 5P-7P (3) 7P-12M (4) 12M-7A (3)	7P-4A (3) 4A-6A (2) 8P-4A (2) *

OCTOBER, 1958
ALL TIMES IN P. S. T.

SOUTHWEST USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
EUROPE & NORTH AFRICA	7A-9A (2) 9A-12N (3) 12N-2P (2)	5A-10A (2) 10A-2P (3) 2P-4P (2) 4P-6P (1)	7A-11A (1) 11A-2P (2) 2P-8P (3) 8P-12M (2)	7P-11P (1) 8P-10P (1) *
CENTRAL & SOUTH AFRICA	5A-8A (1) 8A-12N (2) 12N-3P (3) 3P-10P (2)	6A-11A (1) 11A-2P (2) 2P-6P (3) 6P-11P (2)	12N-4P (2) 4P-10P (3) 10P-12M (2) 6A-8A (2)	6P-10P (2)
SOUTH AMERICA	5A-12N (3) 12N-4P (4) 5P-6P (3) 6P-9P (2)	5A-7A (3) 7A-1P (2) 1P-6P (4) 6P-9P (3) 9P-5A (2)	2P-4P (2) 4P-2A (4) 2A-6A (3)	6P-3A (3) 7P-1A (2) *
GUAM & PACIFIC ISLANDS	11A-1P (2) 1P-7P (3) 7P-9P (2)	10P-7A (3) 7A-9A (2) 9A-11A (2) 11A-1P (3) 1P-10P (2)	4A-7A (3) 7A-9A (4) 9A-1P (2) 8P-10P (2) 10P-4A (4)	11P-7A (3) 12M-6A (2) *

OCTOBER, 1958
ALL TIMES IN P. S. T.

SOUTHWEST USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
AUSTRALASIA	7A-10A (1) 10A-12N (2) 12N-6P (3) 6P-8P (4) 8P-12M (3)	7A-1P (3) 1P-5P (1) 5P-7P (2) 7P-11P (4) 11P-3A (3)	4A-7A (1) 7A-9A (3) 9A-11A (1) 9P-11P (2) 11P-4A (4)	12M-7A (3) 1A-6A (2) *
JAPAN, OKINAWA & FAR EAST	12N-2P (3) 2P-7P (4) 7P-9P (2)	12M-5A (2) 5A-11P (1) 11A-1P (3) 1P-6P (1) 6P-12M (3)	6A-11A (2) 11A-1P (1) 7P-10P (2) 10P-6A (4)	10P-8A (3) 11P-6A (2) *
PHILIPPINE IS. & EAST INDIES	9A-11A (2) 2P-6P (3) 6P-10P (1)	8A-11A (4) 11A-2P (3) 2P-4P (1) 8P-10P (2) 10P-4A (3)	11P-3A (2) 3A-6A (3) 6A-8A (4) 8A-10A (2)	2A-6A (1)
MALAYA & SOUTH EAST ASIA	8A-11A (2) 2P-9P (3)	8A-12N (3) 3P-10P (2) 10P-2A (3)	1A-7A (3) 7A-12N (2)	4A-6A (1)
HONG KONG, MACAO & FORMOSA	1P-3P (3) 3P-7P (4) 7P-9P (3)	7A-10A (1) 1P-6P (2) 6P-12M (3) 12M-2A (2)	4A-7A (2) 7A-11A (3) 7P-10P (2) 10P-4A (3)	1A-4A (2) 1A-3A (1) *
ALEUTIANS	10A-12N (2) 12N-6P (4) 6P-8P (3)	9A-11A (2) 11A-7P (4) 7P-9P (3) 9P-12M (2)	11A-6P (2) 6P-10P (4) 10P-4A (3) 4A-11A (1)	8P-6A (3) 9P-5A (2) *
SIBERIA	1P-3P (3) 3P-6P (4) 6P-8P (2)	9A-6P (2) 6P-10P (4) 10P-12M (2)	6P-9P (2) 9P-12M (4) 12M-4A (3) 4A-12N (2)	10P-6A (3) 11P-5A (2) *

OCTOBER, 1958
ALL TIMES IN P. S. T.

NORTHWEST USA TO:

	10 Meters	15 Meters	20 Meters	40/80* Meters
EUROPE & NORTH AFRICA	8A-11A (2) 11A-1P (1)	6A-10A (1) 10A-2P (2) 2P-5P (1)	10A-2P (2) 2P-7P (3) 7P-1A (2)	6P-9P (1)
CENTRAL & SOUTH AFRICA	8A-11A (1) 11A-1P (2) 1P-6P (3)	1P-3P (1) 3P-9P (2)	1P-4P (1) 4P-8P (2) 8P-12M (1)	5P-9P (1)
AUSTRALASIA	11A-2P (3) 2P-5P (2) 5P-7P (4) 7P-10P (2)	6A-9A (3) 9A-2P (2) 2P-7P (1) 7P-10P (3) 10P-1A (2)	9A-12N (2) 6P-8P (2) 8P-10P (4) 10P-6A (2) 6A-9A (4)	9P-7A (3) 10A-6A (2) *
MALAYA & SOUTH EAST ASIA	8A-4P (2) 4P-6P (3) 6P-8P (2)	7A-9A (3) 9A-3P (2) 3P-8P (3) 8P-10P (2)	7A-9A (2) 9A-5P (1) 5P-11P (2) 11P-7A (1)	3A-6A (2) 4A-6A (1) *
FAR EAST	12N-2P (2) 2P-5P (4) 5P-8P (3)	6A-9A (1) 12N-4P (3) 4P-7P (4) 7P-12M (2)	6A-8A (3) 8A-1P (2) 1P-5P (1) 5P-10P (3) 10P-6A (2)	11P-6A (4) 12M-6A (2) *
SOUTH AMERICA	5A-7A (2) 7A-1P (3) 1P-4P (4) 4P-8P (3)	6A-8A (3) 8A-11A (2) 11A-4P (3) 4P-8P (4) 8P-12M (2)	12M-7A (3) 1P-3P (2) 3P-6P (3) 6P-12M (4)	6P-3A (3) 7P-2A (2) *

SYMBOLS INDICATING NUMBER OF DAYS CIRCUIT IS FORCAST TO OPEN DURING MONTH.

(1) 1-4 days (2) 5-11 days (3) 12-18 days (4) 19-26 days (5) over 26 days

* Indicates time of possible eighty-meter openings.

The 160-meter band is likely to open approximately 10% of the nights on those circuits for which 80-meter openings are shown with a symbol of (3) or better.

Six-meter openings are likely to occur on approximately 10% of the days on those circuits for which 10-meter openings are shown with a symbol of (4) or better.

The CQ DX Contest Special Propagation Charts are based upon a double-sideband A. M. radiated power of 500 watts at radiation angles less than 15 degrees. For each 6 DB difference in radiated power, adjust the symbol shown by 1. These forcasts are calculated from basic radio propagation data published by the Central Radio Propagation Laboratory of the National Bureau of Standards, and are valid through November 15, 1958.

storm should develop during the Contest period concentrate on working east-west paths during the daylight hours, and north-south paths during the morning and evening hours. The east-west paths appearing in the Propagation Charts with a rating of (3) or higher are expected to hold up during all but the most severe type radio storm. A "last minute forecast" for the Phone Section, made at press time, appears elsewhere in this column. Up to the minute propagation forecasts during the Contest period can be obtained from WWV on 2.5, 5, 10, 15, 20 and 25 mcs, at 19½ and 49½ minutes past each hour. WWV forecasts are intended primarily for north-Atlantic circuits, with a similar forecast for north-Pacific circuits broadcast from WWVH, Hawaii, on 5, 10 and 15 mcs at 9 and 39 minutes past each hour. These forecasts consist of a letter-number combination transmitted in slow Morse Code. The letter "N" indicates conditions at the time of broadcast are normal; the letter "U" that conditions are presently unsettled or erratic, and the letter "W" that conditions are distrubed and a radio storm is in progress. The number indicates the average quality of propagation conditions forecast for the next few hours as follows:

1—useless	6—fair to good
2—very poor	7—good
3—poor	8—very good
4—poor to fair	9—excellent
5—fair	

This year CQ begins a *new* Contest propagation service for it's readers. Five days before each Contest period (Phone and CW) CQ will prepare a special forecast, based upon all the latest ionospheric data, for each six hour period of the Contest. Copies of these forecasts will be available from the Propagation Editor, 607 Beacon Road, Silver Spring, Md. for a self-addressed stamped envelope.

SIX METERS

Although the six-meter band is not included in the Contest, a few DX openings are likely to occure during October, becoming more numerous later during the winter months. DX conditions to South America, Europe and Africa should peak around noontime, with the band opening towards the west later during the afternoon.

SUNSPOT CYCLE

The monthly sunspot number reported for July, 1958 was 198. This results in a smoothed sunspot number of 198 centered on January, 1958. The smoothed sunspot number forecast for October, 1958 is 155.

SOLAR ECLIPSE

On October 12, 1958 a total eclipse of the sun is expected to occure. The eclipse will be visible along a path extending from the South Pacific islands off the east coast of Australia eastward across the Pacific to Chile and Argentina. It will not be visible in the northern hemisphere. A total eclipse is of great importance to radio propagation research since during such an event the sun's radiations are cut off from reaching the earth, and theoretically the ionosphere should become very weak. Measurements made during previous total eclipse have substantiated this fadeout in the ionosphere. Shortwave radio signals being reflected from the ionosphere along the path of the eclipse on October 12, can be expected to be subject to weak signal strength and rapid fading.

Next month's column will contain an analysis for the CW Period of the CQ Worldwide DX Contest. Good Luck.

73, George, W3ASK



Hmmm—I thought so . . . . .

by **DON CHESSER, W4KVX**
R.F.D. 1, Burlington, Ky.

DX DX DX DX DX DX DX DX

WAZ

#744	G3IOR	Patrick J. A. Gowen	(13th G3)
#745	G3AJP	John D. Baker	(14th G3)
#746	W2BRV	Fred J. Albert Jr.	(48th W2)
#747	W4BJ	Raymond Farwell	(24th W4)
#748	OE3RE	Dr. Emmerich Rath	(5th OE)
#749	W5OGS	Glenn W. Fuller	(33rd W5)
#750	JA6AD	Hiroshi Yamamoto	(2nd JA6)
#751	W4AAU	H. Chason Spong	(25th W4)
#752	W3NCF	M. S. Hunter	(37th W3)
#753	ZS1OU	Jack P. Snyman	(2nd ZS1)
#754	G8KU	P. B. Briscombe	(8th G8)
#755	W1BIL	Eugene B. Petit	(19th W1)
#756	W4VPD	Enos L. Schera Jr.	(26th W4)
#757	UB5KAB	Leo P. Yailenko	(1st UB5)
#758	VE3KE	Victor Williams	(5th VE3)
#759	W6NJU	Gar Stilwell	(168th W6)
#760	W1ZW	P. K. Baldwin	(20th W1)
#761	W2QJM	Frank N. Kryss	(49th W2)
#762	W9KXK	Paul Niles	(40th W9)
#763	K6AYA	Ronald B. Patterson	(169th K6)
#764	WØAJU	M. G. Bullock	(28th WØ)
#765	JA3BP	Seimi Hamada	(1st JA3)
#766	HB9ET	Kurt Ruesch	(6th HB)
#767	DL7CS	Bruno Stangnowski	(5th DL7)
#768	W9HCR	Elmer C. Zindars	(41st W9)
#769	DL3BJ	Josef Kruse	(5th DL3)
#770	G3GFG	D. R. Payne	(15th G3)
#771	SP7HX	Roman Izykowski	(1st SP)
#772	W3JZY	Andrew H. Abraham	(38th W3)
#773	W9YOR	Donald Novak	(42nd W9)
#774	PAØFX	H. VanEreen	(3rd PAØ)
#775	ZL1AH	J. D. Wightman	(9th ZL)
#776	ZL2HP	T. J. Kendrick	(5th ZL2)
#777	ZL4BO	V. R. Jackson	(1st ZL4)
#778	W2BYP	George A. Mack	(50th W2)
#779	W3AYS	C. Bayard Smack Jr.	(39th W3)
#780	VK3CX	Alan G. Brown	(7th VK3)

Congratulations are due the above successful winners of CW/Phone WAZ awards. The shorter list than usual represents stabilization of WAZ processing, which is now current. All applications are now being processed immediately on receipt.

But this editor is now being bombarded with cries of "Where's my WAZ certificate?" Investigation by Wayne uncovered a huge stack of them under a mailing table in CQ's New York office. A new mail clerk promises faster service, but even so the two-weeks' interim for preparing the certificates has proved unrealistically optimistic. Please amend that to a month, and please be patient!

The following leather-lunged DXers have made WAZ the hard way—All Phone! Only two made it with JT1AA phone QSL's. The others have had zone #23 confirmed for years, but have hung up on the Russian zones, especially #19, which have proved nearly as difficult to confirm as #23. Congratulations, fellows!

All Phone WAZ

#13	OK1MB	Beda K. Micka	1st OK
#14	CX2CO	Richard Sierra	1st CO
#15	W6GVM	Emil F. Malek	3rd W6
#16	W9NDA	Paul L. Edwards	1st W9
#17	F8DC	Tony Petitjean	1st F
#18	9K2AZ	Wm. N. Burgess	1st 9K2
#19	W5KBU	Buster Parker	1st W5

WPX

At long last we're happy to start the WPX rat race, to publish the first box scores, and to anounce we're also current with WPX processing. A list of all WPX certificates issued to date follows:

CW WPX

#1	W6KG	Lloyd Colvin	1st CW
#2	W2HMJ	Aug. Nickel (350)	1st W2
#3	W1BFT	Carl B. Evans	1st W1
#4	W5KC	Vincent L. Rosso	1st W5
#5	W5AFX	A. R. La Marche	2nd W5
#6	SM5AHK	Curt R. E. Israelsson	1st SM
#7	W9IU	Leslie D. Gregg	1st W9
#8	W8KPL	W. W. Simpson	1st W8
#9	LU5AQ	Antonio Navatta	1st LU
#10	W9BPW	C. W. Tinsley	2nd W9
#11	W2DGW	John Lubinski	2nd W2
#12	OK1MB	Beda K. Micka	1st OK

Phone WPX

#1	W8WT	Lester A. Jeffery	1st Ph
#2	G3DO	D. A. G. Edwards	2nd Ph

SSB WPX

#1	TI2HP	Humberto Perez	1st SB

14 MC CW Sticker

	W9IU	Leslie D. Gregg	311

Congratulations!

The difficultness and scope of the WPX

award, incidentally, became apparent while checking the cards for these first awards. Every application above included complete sets of confirmations for dozens of other awards throughout the world, such as WAC, DXCC, WAA, WASM, even WAZ, and all since January 1, 1957! It would appear, at this first review, that WPX will prove all-encompassing. If you can qualify for WPX your ability to qualify for many other awards will be a foregone conclusion.

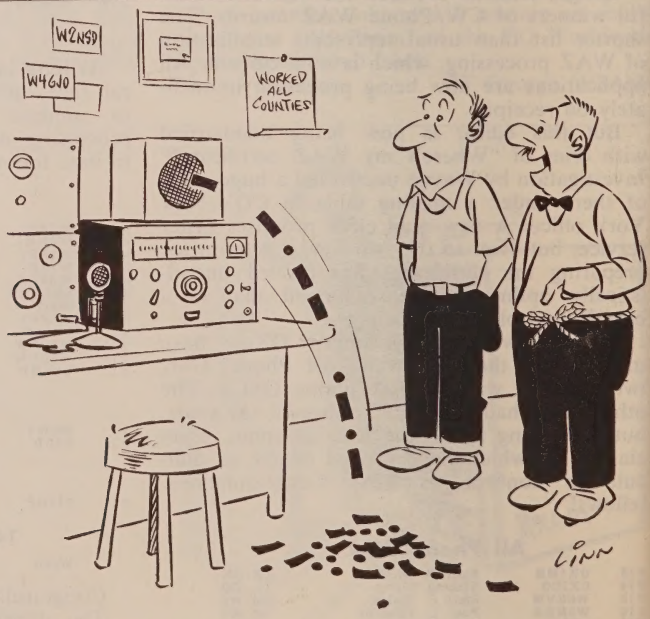
You are reminded that WPX is now being handled entirely by the DX department of CQ, and all inquiries, applications, and cards should be addressed to the DX Editor, address at the head of this column. Cards may be submitted in any quantities, and will be checked, accredited, and returned immediately. Please enclose sufficient postage for their return. A charge of $1 in currency or IRC's is made for the WPX certificate, which will be issued and mailed from CQ's New York office, as with WAZ.

Following are a few notations made during processing of the first WPX cards: Only legitimate prefixes, as authorized by the governments concerned, may be counted. HB1TL/AR or HB1TL/FL count only as HB1, even though the latter is Liechtenstein. Those suffixes are used to indicate geographical locations, such as Swiss cantons. HE is the official Liechtenstein prefix. Likewise, VK2AYY/LH counts as VK2. The suffix /P indicates portable operation in many countries, but cannot be considered different from the prefix appearing at the beginning of the call unless another prefix is included, such as SM8AQT/LA /P, in which case it would be counted as LA8. In cases where no numeral occurs in the suffix, the numeral appearing in the call's prefix will be used. Thus DL4GH/TA would count as TA4, and VE3BQR/SU as SU3. If no numeral appears in the prefix, use Ø. Thus, RAEM counts as RAØ, and WAR counts as WAØ. To avoid confusion and unnecessary correspondence, no exceptions will be made in the few instances where the same prefix is assigned two or more countries, such as KC4/Navassa and KC4/Antarctic. It is believed these instances are too few to make a difference in the over-all picture. Finally, the QSL cards must exclusively tell the story. No certified logs or affidavits, please. We have only a tiny staff to administer both WAZ and WPX, and we must keep correspondence over incorrect cards at a minimum. Thanks very much for your co-operation.

DX NEWS

(All times noted are GMT)

Zone #2 leads off our DX roundup this month. If you need it for WAZ, a good bet is VE8PB, located on Ellef Ringnes Island (78°N, 103°W). He's quite active, and he QSL's via his Call Book QTH. The annual rash of vacationing DXers to FP8, *zone #5*, seems to have reached a climax, with Gus Roblot, FP8AP, doing a stunning job as St. Pierre's one-man chamber of commerce and welcoming committee. He has done a magnificent job of making the W's visits pleasant and enjoyable, and cutting red tape in local officialdom. Some W's have reported having their FP8 calls within two hours of landing on the island. These include FP8AB (QSL to K2JGG), FP8AR (QSL to W2HTI), FP8AS (W2EQS), FP8AT and FP8AU (K2GMV).



"Sure puts out a solid signal, doesn't it?"

FP8AV (W3MYL), FP8AO (W2ORA), FP8AX (VO1BF), FP8AY (VO1BD), FP8AZ (K2IAD), and FP8BA (K2YLD).

But the big DXpedition of the month was that of FO8AT, Clipperton Island, *zone* #7. Sponsored by the San Diego DX Club, this expedition was another of those last minute rush affairs, with the official permission and license arriving from Tahiti only hours from ship sailing time. The usual frantic rush and confusion ensued, complicated by the inability of Bob, W6ZVQ, scheduled to make the trip, to get away from his work. Doug, K6RXM, was thrown into the breach at the last minute. Further complications arose in the failure of a new KWM-1, loaned by Collins for the purpose, to arrive in time for the sailing. A substitute KWM-1 was flown down by Jerry Tasto, Burbank representative of Collins, which arrived in the nick of time. Other equipment included a Viking II, a 2-element tri-bander beam and a vertical antenna by Hy-Gain, and a 750 watt gasoline generator.

Previous arrangements had been made with Scripps Institution of Oceanography, whose motorship, the "Spencer F. Baird," makes regular trips to Clipperton waters for IGY studies, to include one radio amateur and his equipment on this trip. With the help of the San Diego DXers, Doug and his gear were tossed aboard in time for the ship sailing, August 1. They arrived Clipperton six days later and a successful and easy landing was made in the lee of the abandoned LST by Doug plus eleven men and one woman, put ashore to perform IGY studies. Soon after reaching shore, rains and extremely high winds arose, making immediate operation impossible. He finally got on the air the evening of August 8, resulting in one of the most massive pile-ups ever heard on 14 mc CW, later duplicated on 14305 kc SSB, and continuing at this writing. For some unexplained reason, the Clipperton party found itself with a shortage of gasoline for the AC generators, limiting FO8AT activities to about 5 hours a day, thus creating the continuous pile-ups. This, plus the unfortunate lack of a DX adaptor for his KWM-1, making it necessary for Doug to reset his VFO each transmission, have resulted in some criticism by DXers, most of whom have no inkling of the pressures and difficulties under which most DXpeditions are made. We can be sure Doug is doing his best under the circumstances.

FO8AT is scheduled to QRT August 24th and return to San Diego by air from Panama. Costs of this DXpedition are being underwritten by the San Diego DX Club, which hopes to recover some of the expenses by small donations from appreciative DXers. This is no "dollar a QSL" operation, and all cards will be answered, regardless. Send your QSL's and monetary thanks to George Keeler, W6KSM, 6738 Rolando Knolls Drive, La Mesa, Calif., the FO8AT QSL manager. Cards are promised to be prompt and 100%.

If this DXpedition proves successful, financially, the San Diego DX Club hopes to come up with another, possibly to Socorro, XE4, and possibly in time for the CQ World-Wide DX Contest, CW weekend. We hope to have more about this next month. Other *zone* #7 doings: YS1MS, 14309 kc SSB, 1400GMT; YS1TT, 21410 kc SBB, 1900; YN1AA, 14009 kc CW, 0300; YS1IM, 14036 kc CW, 0530.

Another attempt at Navassa Island, KC4, *zone* #8, is planned this fall by HI7LS, presently on temporary assignment on Eleuthera, Bahama Islands, reports Andy, W4IYT. Using Coast Guard transportation (which will limit operation to one day), HI7LS, in company possibly with VP7BH and a third operator from Grand Turk, hopes to climb the cliff with DX-100, Viking II, a SSB rig, SX-100, HRO-7, and 2 kw power plant! John Beck, ex-W6MHB, TI9MHB, etc., operating as VP7BT, Eleuthera, has racked up 90 countries in the first 5 weeks of operation. Reg, W6ITH, now back at FS7RT, has cancelled or indefinitely postponed his Anguilla, VPØRT, trip, and so has Danny, VP2VB. The entire island of Anguilla is under smallpox quarantine, reports Larry, W5HJA, and no one is permitted in or out for the next month or two. Danny plans to continue his VP2 sweep with St. Kitts, starting about August 15th. Look for him on his usual freqs of 14075 kc CW, 14195 kc AM, and 14310 kc SSB. Some unhappy joker has been creating false pile-ups by signing VPØAA, first telling his QSO's to QSL via VPØAB (there's no such QTH), later telling them to QSL via W4KVX. Sorry, fellows—you worked another weirdy! Fred, ex-VP2LU, is now on Grand Turk, awaiting a VP5 call, reports John, W2DGW. His VP2 call expired last January and the authorities would not renew it. If no VP5 call is forthcoming, he will operate VP5FH, and promises to cover all bands this fall and winter, including 160 meters (W1BB, perk up!). Other *zone* #8 activities: VP2LB, 21248 kc AM, 1900; VP2GV, 21200 kc AM, 2300; VP2LO, 14057 kc CW, 0300; PJ2ME, 14058 kc CW, 0000; FG7XF, 14043 kc CW, 0000; VP2DA, 21200 kc AM, 0030; HI8GA, 21243 kc AM, 2000.

Belated word has reached us of an impending DXpedition to Galapagos, HC8, *zone* #10, by Ron, WØAGO as HC8AGO; Paul, WØLUX, as HC8LUX; and Vic, WØWGF, as HC8WGF, starting about September 19th and continuing for two to four weeks. Arranged in co-operation with the Quito Radio Club of Ecuador, of which two to four Quito members may also accompany the DXpedition as operators and interpreters, the foray promises to be big-time, with around-the-clock operation on SSB, AM, and CW, the emphasis being on SSB. Equipment includes HT-32, SX-

101, KWM-1, tri-band beam, trap vertical, two generators, and assorted movie and still cameras. Operations will probably be confined to the 10, 15, and 20 meter bands, with daily skeds with Quito on 40. Cards should go to the home calls of the individual operators, complete with stamped and addressed return envelopes. Small donations to help with expenses would be most welcome. The operators point out that they are not speed artists, and will avoid pile-ups as much as possible (!). If things get too rough they might shut down, for they have 62 islands they want to visit and photograph. They ask help by not interfering with their skeds with home, for they'll be away two months, and they want to keep in touch with their families.

Trinidade Island, PYØ, *zone #11,* attains new country status December first, writes W1WPO in a letter to PY1CK, with credits OK back to 1945. Jami, PY2CK, says he, PY1CK, PY1HQ, and PY7AN, are still planning a Trinidade operation, as PYØNA and PYØNB, on CW, AM, and SSB, using Apache and DX-100, for a week or ten days, during late October or early November, depending on when the Brazilian Navy has a ship going there. Other *zone #11* activities this past month: ZP5LS, 14033 kc CW, 2230; ZP5MQ, 21240 kc AM, 0045.

G3ZY just completed a successful DXpedition holiday to Monaco, *zone #14,* operating as 3A2CF on 7, 14, and 21 mc from August 4th to 17th. QSL's should go to his home QTH. He reports that QSO's with a 3A2CF prior to those dates are worthless. It is possible that ARRL may soon recognize the United Nations extraterritorial ground at Geneva, Switzerland, prefix 4UZ, with DXCC separate country status, similar to Jerusalem, ZC6UNJ, writes Jean, HB9J. He, as Swiss delegate, and HB9SI, chief communications operator of the United Nations Radio, Geneva, discussed the matter with Budlong, W1BUD, at the IARU Region I convention in Godesberg, Germany. Bud seemed agreeable to the idea, Jean reports. HB9SI is now in operation from this possible new country, only 2 miles long, with 500 watts and excellent equipment, using the call 4UZA. Don't pass him up! OY7ML is on 14020 kc CW each Saturday and Sunday at 2300 looking for DX who still need that rare country. He is also active most days from 0730 to 0830, same frequency. Also, from zone #14: PI1BV, 14062 kc CW, 0400 (FB WPX!); SM1BVQ, 14040 kc CW, 0200; HB1TL/FL, 14310 kc SSB, 0400.

Still another DXpedition, this one promising to be the biggest and most awesome of them all, covering several continents and *5 years* of travel, starting from Czechoslovakia, *zone #15,* this November and returning to the starting post in 1963, is described by Beda, OK1MB. OK2HZ and OK2ZH, well-known explorers and expeditionists, who made tours of Africa and South America shortly after World War II, will follow approximately this itinerary: Czechoslovakia, Roumania, Bulgaria, Greece, Turkey, Lebanon, Jordan, Egypt, Saudi Arabia, Yemen, back to Saudi Arabia, Kuwait, Iraq, Persia, Afghanistan, Pakistan, India, Sikkim, Nepal, Ceylon, back to India, Burma, Thailand, Malaya, Java, Sumatra, Borneo, Celebes, Australia, Tasmania, New Zealand, New Guinea, many different islands in Polynesia, Philippines, China, Tibet, Mongolia, back to China, Korea, Japan, and back to Poland and home.

Equipment for the expedition will be two 8-cylinder trucks, equipped with photo labs, an inter-truck 30-watt radio crystal controlled in the 25-26 mc region, and two KWM-1 transceivers, purchased by OK1MB from Ted Henry, W6UOU, for the purpose of keeping in touch with home, and for amateur radio. The KWM-1 units will be set-up at OK1MB and OK2HZ, in Gottwaldov/Zlin, for several weeks prior to departure of the expedition, resulting in the first SSB operation from that country.

OK1MB will act as QSL manager for the tour. Calls anticipated will be OK7HZ plus the /suffix (prefix) of the country visited, such as OK7ZH/AC4 and OK7ZH/JT1. Further details will be presented. Other zone #15 notables this month: UP2KBC, 14040 kc CW, 0200; UP2NM, 14065 kc CW, 0300; UR2KAE, 14074 kc CW, 0345; UQ2AN, 14011 kc CW, 0300; HV1CN, 14105 kc AM, 2300.

The Maldive Islands, *zone #22,* operations continue with VS9MA as mainstay, shortly to be joined by VS9FUB (G3FUB) and VS9MI. AP2U reports via the WGDXC Bulletin that amateur radio in Pakistan is now forbidden. There is no reason given; duration indefinite. 4S7PJ says the same goes for Ceylon. A state of emergency has been declared, and all 4S7's have been ordered to turn in their transmitters to the nearest police station. Other zone #22 activities: VU2SS, 21118 kc AM, 1730; VU2RM, 14322 kc SSB, 1130; VU2RA, 14016 kc CW, 0400; VU2AJ, 14020 kc CW, 1000.

Through a remarkable interpretation of the rules, the FCC has given Rundy, now signing W3ZA/3W, *zone #26* the green light to legally work W's, so long as his call is thus sanctioned by Viet Nam authorities. Presumably, however, it is still illegal for us to work Viet Nam using such calls as 3W8AA or XV5A. Presuming even further, this may pave the way to the legal operation of Americans in other banned countries, such as 4W, EP/EQ, and PK, if those prefixes are attached as suffixes to a W call, and, of course, if such operation is permitted by the subject countries. It's a very interesting development! At this writing VS1BB and party are still awaiting permission from the Indian government for their Nicobar and Andaman Island trek. Also from zone #26: XZ2TH,

14014 kc CW, 1600, XW8AI, 14022 kc CW, 1030; HS1C, 14023 kc CW, 1130.

VK9LE, Cocos-Keeling, *zone #29,* is now working 21220 kc AM most days around 1500, reports G3AAM. Other zone #29: ZC3AC, 14024 kc CW, 1300.

Alan, VK2AIR, recently returned from his VK2AYY/LH, Lord Howe, *zone #30,* DXpedition, reports his exciting two-weeks trip a success after working 1911 contacts, 1428 of them W's. He worked 43 countries, made WAC in 30 minutes, and at his best pace knocked off 170 per hour (woweee!). Jack, W6NTR, heard him work W1ELR, Vermont, to complete his WAS.

Conditions were poor during much of his session, Alan reports, and it's his opinion Lord Howe isn't a hot radio spot. He was caught in a radio black-out the day he arrived, and it took days to recover. Fifteen meters was practically useless, and he heard only one signal on 28 mc. Although the island is only 400 miles from Sydney the islanders cannot hear the medium and short-wave BC stations much of the time. About 80 calls found their way to Alan's black-list for violations of his "ten commandments." He spent several nights visiting VK2FR with the intention of showing him how to contend with the pile-ups, but they spent most of the time overhauling VK2FR's station, VK2QL reports. They got it fired up and worked about 200 phone contacts. VK2FR is now continuing Lord Howe activities. W2CTN is doing a magnificent job of handling the North American distribution of VK2AYY/LH cards, and will do the same for VK2FR in the future. For your Lord Howe QSL, simply send W2CTN your card and include a stamped and addressed return envelope. Duplicate cards may be obtained under the same system. Other zone #30 doings: VKØTC, 14008 kc CW, 0800; VKØKT, 14040 kc CW, 0500.

The Chatham Islands, *zone #32,* near New Zealand, will be counted as a new DXcc country after October 1, with credits for QSO's back to November 15, 1945. John, W6BYB, cut short his tour of the South Pacific islands because of cancellation of airline flights. He managed a few hours visit to ZM6AS on his return, and a longer stay in Fiji. The VR5 expedition plans had to be abandoned. While in the Cook Islands John Met ZK1AK, who turned out to be none other than ex-ZL1FT, a well-known DXer of years ago. VR2DA, Vatakoula, Fiji Islands, quite active with 5 watts to a 6AQ5 doubler (!), with understandably weak but consistent signals, promises a fast QSL. VK9AD finally got on SSB with low power and a temporary dipole, but he's installing a Valiant and re-erecting his quad beam. Further from zone #32: VR2DG, 14050 kc CW, 1200; KS6AG, 14082 kc CW, 1000; YJ1DL, 14037 kc CW, 1245; VR2DA, 14018 kc CW, 1000; FK8AS, 14175 kc AM, 0730; FO8AK, 21090 kc AM, 0400; ZK1BS, 14080 kc CW, 0900.

VQ9GU's remarkable four weeks' operation from the Seychelles, *zone #39,* ended with Jim's even more remarkable comment that he was amazed at the interest shown in VQ9 by DXers! He'll be back, he says, the next time with his own AC generator. If you missed him (and the chances are you did!) QRX for next year's Seychelles trip by VQ4ERR, who will also bring his own power plant. Heard Island has been abandoned and all installations removed. Further Heard Island operations are not likely. Other zone #39 interests: FB8XX, 14060 kc CW, 0910; FB8ZZ, 14049 kc CW, 1100; VQ8AL, 14040 kc CW, 0500; VQ8AJ/C 14098 kc CW, 1430.

LA4DD reports the regular Jan Mayen personnel, *zone #40,* will arrive about September 15th and will be on the air about the 20th, after their license arrives. The call letters are as yet unknown. Meanwhile, LH1B/P, Arne, reported to be on Bear Island (counts as Svalbard), has been active on 14070 kc CW at 0000. Others in zone #40: KG1DL, 14061 kc CW, 0900; KG1EE, 14050 kc CW, 1400; and TF2WCY, 21250 kc AM, 1900.

QSL NOTES

Over 1200 cards, about 300 of which are for W's, arrived in OK1JX's mail box this month from Mila, JT1YL, her first shipment for world-wide distribution. These long awaited cards from a zone #23 YL will soon be in the mail to their addresses, direct mail if an IRC was sent OK1JX, via the bureaus if not. Only a very few—W6YK, W6YY, W1FH, W8BKP, W9RBI, W3JNN, and W2HTI—will receive phone confirmations; the rest are CW.

Also, over 800 cards from ZD7SA, via CN8GU, hit the mails this month, about 500 of them via the bureaus, the remaining directly (to those who sent stamped and addressed envelopes). CN8GU is returning to the States September first, but he will continue the ZD7SA QSL chores from this address: RFD #2, Mascoutah, Ill.

Gene, W2FXA, advises he is handling QSL's for Gaby, FY7YF, for the W2/K2 gang, but it is also possible for him to obtain QSL's for other than W2's if all other methods fail. For direct service a stamped and addressed envelope to W2FXA will be required. Otherwise, cards will be distributed via the bureaus. Foreign stations should include sufficient IRC's to cover postage.

Mac, K2QXG, who is currently handling the QSL project of VK9VM, discloses his system of handling the cards, which he says works like a charm. VK9VM tells all his QSO's to QSL via K2QXG. Mac has a stock of his cards, of course. Once a week VK9VM sends Mac an air-letter sheet (cost 10 cents to anywhere in the world) listing log data on all the W's worked during the week. When Mac receives the W's card and return envelope he makes out

the VK9VM card, slips it in the provided envelope, and mails it. It's as simple as that. The local WXers have their QSL's in a week, and the cost to the rare DX station is virtually nil.

"VK9VM tells me many W's send their cards dilrect air mail, and expect him to QSL the same way," continues Mac. "The cost? Oh, brother! If some of the W's would take on the job for just one rare DX station QSLs would be accurate, fast, and 100%.

"I don't send the DX Card until I get the W's first," he adds. "I've had several notes expressing appreciation for the fine service, which costs me about one hour of my time per week."

WPX

CW		Phone	
W2HMJ	444	W8WT	337
W6KG	353	G3DO	315
W5KC	351	CO8JK	300
OK1MB	338		
SM5AHK	311		
W9BPW	310		
W9IU	346		
W5AFX	308	SSB	
W1BFT	304	TI2HP	155
LU5AQ	301		
W2DGW	301		
W8KPL	300		
SM5CCE	299		
DL7CS	299		
W1NLM	285		
W4KVX	172		
K6SXA	150		

ADDRESSES

BV1US—(For QSO's from March 9, 1956 to Dec. 3, 1957) SFC Leo W. Fitzpatrick, K2MZM, HQ Det, QTC, APG, Aberdeen, Md.

CEØAC—c/o RCC, P O Box 761, Santiago, Chile

CN9 QSL Bureau—Amateur Radio Club Zona Norte, P O Box 124, Tetuan, QSL's may be sent via CN9BK, AAEM, or URE

CN9BI—Manuel Lobato Ricos, C. Mohamed V 13, Tetuan

CN9BK—Fernando Diaz Gomez, Pl. Ben Azuzz 3, Tetuan

CN9BL—Augusto Gruls Tintorel, Eletras Marroquies Presa del Lau, Beni Hassan

CN9CA—Luis Llodra Isaco, Cine Avenida, Larache

CN9CB—Pedro Rizo Buades, Avenida Navarra 8, Tetuan

CN9CC — Juan Astorga Quires, Avenida Navarra 1, Tetuan

CN9CD—Antonio Gonzales Ocana, Ada. Hospital Militar 8, Tetuan

CN9CE—Andres Trinidad Saiz, Cuartel Mejasnia Pabellones, Suboficiales, Tetuan

CN9CF—Carlos Irisarri Calwey, Pabellones Prensa, Tetuan

CN9CG—Francisco Gonzales Ocana, Pasaje Buruaga 12, Tetuan

CN9CH—Rosa Fuentes Cascajares, Pl. Ben Azuzz 3, Tetuan

CN9CI — Enrique Perez Flores, C. General Aliau 2, Tetuan

CN9CJ—Juan Lopez Rodrigo, Avenida Hospital Militar C. Rabida 19

CN9CK—Francisco Torres Burgueno, C. Miramar 53, Rio Martin

CN9CL—Alfredo Feliz Gracia, Pl. Ben Azuzz 3, Tetuan

CN9CM—Juan Lozano Cabanas, C. Correo 12, Rio Martin (Tetuan)

CN9CN — Jose Miguel Sanches Ortega, C. Mohamed Ben Hossains 7, Tetuan

CN9CO — Antonio Martinez Moreno, C. Falange Marruecos 10, Tetuan

CN9CP — Hermelinda Cabanas Sesena, C. Mohamed V 13, Tetuan

CN9CQ—Carmentsoler Flores de Astorga, C. Antonio Navarra 1, Tetuan

CN9CR—Jose Fernandez Miranda, Iglesia San Antonio (Porteria), Tetuan

(Note: Include "Spanish Morocco, North Africa" with all the CN9's)

CR6AI—Joao Chaves, P O Box 64, Caala, Angola

ET2TO—QSL to WØWET, Howard T. Orr Jr., 821 26th Ave. N E, Minneapolis 18, Minn.

FP8AT—QSL to K2GMV, 119 East 38th St., New York 16, N. Y.

FP8AU—QSL to K2GMV, 119 East 38th St., New York 16, N. Y.

FP8AZ — QSL via Richard A. Daynard, K2IAD, 55 Central W., New York, N. Y.

FP8BA — QSL via Jonathan M. Marks, K2YLD, 117-16 Park Lane S, Kew Gardens 18, N. Y.

FU9AY—QSL to Jacques Legoff, Base Chaleix, Noumea, New Caledonia

HB1UE/FL—QSL via HB9UE

HC4IM—Box 4881, Manta, Ecuador

HI8GA—44, Dr. Delgado Street, Ciudad Trujillo, Dominican Republic

I1DCO/M1 — Luigi Venuti, 13/3 Paolo V Street, Ferrara, Italy

KA5MK—Marcel Kurbin, 610 AC&W Sqdn Det 7, APO 929, San Francisco, California

KB6BK—Bill Mace, Canton Island, Phoenix Group, South Pacific

KC6ZD—J A Rudick, Kusaie, via Task Unit 7.1.3., Task Group 7.1., APO 436, c/o PM, San Francisco, California

KH6AZM/KW6—QSL to KH6AZM, Robert B. Figueroa, 1351 Palolo Ave, Honolulu, Hawaii

KJ6BU—Ray, 2011 Mormon Rd, Roanoke, Va.

KM6BL—Navy 3080, FPO, San Francisco, California

KM6EVK—Navy 3080, Box 99 FPO, San Francisco, California

KP4AMX—c/o U S Weather Bureau, San Juan, Puerto Rico
KR6HP—QSL via Okinawa Amateur Radio Club, Box 739, APO 331, San Francisco, California
KX6AX—Midway Amateur Radio Club, Navy 3080, Box 19, FPO, San Francisco California
KX6BX—Bikini Amateur Radio Club, APO 436, San Francisco, Calif.
KX6CD—QSL to Leonard G. Parsons, W5LGG, 246 Southill Rd, San Antonio, Texas
KX6CE—NAN Radio Club, Task Unit 5, APO 437, Box 5, c/o PM, San Francisco, California
KX6CF—Alfred L. Rich, FPO 824, Box 6, San Francisco, Calif.
KX6CI—Sandia Radio Club, c/o JTF-7, APO 436, c/o PM, San Francisco, California
KX6CJ—P. R. Cleary, FPO 824, Box 11, San Francisco, California
KX6CK—L. H. Bauer, Task Unit 7.1.3., Task Unit 7.1., APO 436, c/o PM, San Francisco, California
KX6CL—R. A. Irvine, Task Unit 7.1.3., Task Group 7.1., APO 436, c/o PM, San Francisco, California
KX6CM—Margaret K. Ryburn, 1960th AACS Sqdn, FPO 824, Box 811, San Francisco, California
KX6CW—William N. Ryburn, 1960th AACS Sqdn, FPO 824, Box 11, San Francisco, California
KZ5BB—George H. Hamilton, P O Box 407, Balboa, Canal Zone
OQ5RC—P O Box 634, Elisabethville, Belgian Congo
PY4ZI—"Ibsen," P O Box 3, Itauma, Brazil
ST2AR—Box 253, Khartoum, Sudan
SVØWT—(Crete) Frank Trull, Box 458, APO 291, New York, N. Y.
VK2AYY/LH—QSL via John M. Cummings, W2CTN, 159 Ketcham Ave., Amityville, N. Y.
VK9BS—c/o A.P.C., Port Moresby, Papua Territory, Australia
VK9CP—Rev. Fr. C. J. Patrick, QSL via VK9YT or VK9MK
VK9DT—Doug Taylor, Dept. Posts & Tel., Port Moresby, P. T., Australia
VK9GV—G. V. Campbell, c/o Post Office, Lae, T.N.G., Australia
VS9MA—Don Tranmer, RAF Gan Island, BFPO 180, Maldive Islands
VK9ML—M. S. Lang, O.T.C. Station, Rabaul, T.N.G., Australia
VK9NT—Norm Casey, Dept. Posts & Tel., Rabaul, T.N.G., Australia
VK9RD—Ruth Donovan, Dept. Posts & Tel., Port Moresby, P.T., Australia
VK9SB—D. S. Brown, Dept. Posts & Tel., Port Moresby, P.T., Australia
VK9VG—Howard Vinning, Dept. Posts & Tel., Lae, T.N.G., Australia
VP2DA—QSL via W8VDJ, Robert E. Lora, Shady Acre Golf Course, McComb, Ohio (Include stamped and addressed return envelope)
VB7BH—Wm. E. L. Morris, NAA c/o PAA, Eleuthera AAFB, Patrick AFB, Florida
VP8BJ—G. N. Biggs, 5 Dean St., Port Stanley, Falkland Islands
VP8BN—Joe Booth, c/o Supt. Posts & Tels., GPO, Port Stanley, Falkland Islands
VP7BT—J. R. Beck, c/o VP7NM, Box 48, Nassau, Bahamas
VP8CC—C. Johnson, c/o Mr. L. Hill, 12 Greencourt Rd., Petts Wood, Kent, England
ex-VP8CZ—QSL to G3LWS (via RSGB)
VP8DE—P O Box 195, Port Stanley, Falkland Islands
VP9EB—QSL via VP9CY
VQ4FK—Post Office, Manyani, Kenya
VQ4HA—J. Biron, Cable & Wireless Ltd., P O Box 777, Nairobi, Kenya
VQ9GU—QSL to Jim Chapman, VQ4GU, East Africa Film Services, P O Box 2818, Nairobi, Kenya
VR1C—Daniel J. Allen, c/o Wireless Dept., Betio, Tarawa
VR2DG—QSL via VR2AS
VR4CI—QSL via ZL1ADU
VS1FW—B. J. Poole, G3MRV, R. N. Wireless Stn., Kranji, Singapore 23, Malaya
VS1GC—Nev, Bedok Village, Singapore 16, Malaya
VS1JF—QSL via F. Johnstone, VS1FJ, 52/6 Upavon Rd., RAF, Changi Singapore 17, Malaya
VS2DQ—J. C. Pershouse, Sungei Raya Estate, Langkawi Island, Kedah, Malaya or P O Box 600, Penang, Malaya
VS5AA—QSL via Malayan Radio Society, Box 777, Kuala Lampur, Malaya
VS6DX—Sid, RAF, Little Sai Wan, Hong Kong
VS9O—G3IRQ QSL via RSGB only
WØBKL/KG6—P O Box 1363, Agana, Guam
XW8AL—Phanh, P O Box 115, Vientiane, Laos
YS1MS—W/K stations QSL to W3EQK, Arthur W. Plummer, 3804 Rexmere Rd., Baltimore 18, Md.; VE/VO stations QSL to VE3AML, Rowland C. E. Beardow, R R #3, Sarnia, Ont. (enclose stamped and addressed envelope for cards return)
YS1TT—QSL via W3NHB, Robert Richardson, W3NHB, P O Box 154, La Plata, Md. (enclose stamped and addressed return envelope)
YVØAB—QSL via KV4AA
ZB1VJ—V. J. Debono, 25 St. Margaret St., Sliema, Malta
ex ZC4FB—QSL to G3LWS (via RSGB).
ZD6NJ—P O Box 88, Zomba, Nyasaland
ZD7SC—A. J. Davis, c/o Cable & Wireless Ltd., "The Briars," St. Helena
ZE6JX—Vic Holliday, P O Box 703, Bulawayo, Southern Rhodesia

ZK2AB—C. P. Slaven, Niue Island, via New Zealand

ZM6AS — Via F. Hip Fenton, Civil Air, Faleoko, Western Samoa

ZP5LS—P O Box 512, Asuncion, Paraguay

ZS8R—(Outgoing cards) V. V. Parkhouse, c/o Audit Dept., Imperial Reserve, Mateking B. P., South America (incoming cards) Philippe A. Bates, W3SOH, 4223 Frost St., Philadelphia 36, Pa.

5A1TX — Box 666, Tripoli, Libya, North Africa

The Ohio Valley DX Bulletins

If you would like much faster and more comprehensive DX news coverage and articles than space in this column can permit, we suggest you try the weekly Ohio Valley DX Bulletins, edited and published by W4KVX. Annual rates, for a minimum of 40 issues, are $5 second class mail, $6 first class, $7.50 air mail, to the U.S., Canada, and Mexico, and $4 a year plus postage to other countries. Write W4KVX (address at the head of the DX column) for further details. Sample copies are available upon request.

de DL4LR/W2LR

"I recently returned from a four-year tour in Munich Germany where I operated DL4LR. If such a request is in order, I would appreciate a note in your DX section to the effect that I am back home to stay and will gladly send QSL's to any U.S.A. ham whom I have missed. I have my logs and plenty of QSLs on hand." G. L. Graveson, W2LR, 74 Washington Avenue, Amityville, New York.

ADDRESS INDEX

Do you need an address that's been published in CQ this year? You can find it in the DX Department of the issue listed below. This list will be accumulative until December, when we'll drop the whole thing and start anew.

CEØAG	May
CN8GU (ZD7SA)	Aug
CN8IF	Feb
CN8JX	Feb
CO2YZ	May
CR4AH	Aug
CR8AC	Feb
CT2BO	Sep
CX8CS	Sep
DL4 QSL Bureau	Jul
DL4BL (K4ADU)	Feb
DL4DH	Aug
DL4TW	Aug
ET2TO	Jul
EL3B	Aug
ET3PRS	Aug
FA3DU	May
FB8XX	Feb
FE8AK	Feb
FF8AC	Feb
FK8AS	Sep
FL8AC	May
FP8AB	Sep
FP8AR	Feb
FP8AS	Feb
FP8AX	Feb
FP8AY	Feb
FY7YE	Mar
G3LWS/VP8	Sep
G5RV	Jul
GC3MFS	Sep
HA8WS	Feb
HB1PL/AR	May
HB1RS/FL	Feb
HC1BP	Sep
HC8GI	Feb
HE9LAC	Mar
HI8RM	Mar
HK7AB	May
HL2AM	Feb
HL9KS	Mar
HL9KT	Sep
HND9A	Aug
ex-HR2WC	Jul
HS1A	Mar
HS1C (ex-K2VOV)	Mar
I1AFS	Sep
JT1AA	Feb
JZØHA	May
JZØPB	Aug
K2IVJ/VE8	Sep
K6ICS	Feb
K8JTI/VE8	Sep
KA2MP	Mar
KA2NY	Sep
KA2QT	Sep
KA5ZS	Feb
KA8KW	Mar
KAØIJ	Sep
KAØSC	Feb
KC4US	Feb
KB6BH	Aug
KB6BJ	Sep
KB6BL	Sep
KG1BB	Feb
KG4AQ	Mar
KG6FAE	Mar
KL7CEW	Feb
KP4ANU	Jul
KR6JR	Jul
KR6QM (K9CZX)	Jul
KS6AD	Feb
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KW6CA	Mar
KW6CE	Feb
KX6CH	Jul
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LB9OE	Sep
LJ3D	Sep
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LZ1WD	Sep
MP4BCG	Mar
MP4BCK	Sep
OA4AP	Feb
OA4IGY	May
OD5CB	Sep
OK1LM	Sep
OQ5IE	Sep
OR4VN	Sep
OY7ML	Sep
PI1LS	Jul
PJ2SA	Feb
PJ3AB	Jul
PJ5AA/PJ5CA	Feb
PJ5CB	Aug
PY3ANS	Sep
PY4AO	Sep
SM8AQT/LA/P	Sep
SM8BYG/MM	Sep
SP5KAB	Sep
SV1AB	Mar
SV1SP	Feb
SVØ Stations	Feb
SVØWB (Rhodes)	Aug
SVØWE (Rhodes)	Aug
SVØWK (Crete)	Aug
SVØWN (Crete)	Aug
SVØWP	Mar
SVØWQ (Crete)	Feb
SVØWZ (Crete)	Aug
TF2WCO	Sep
UA1KAE (All)	Aug
UA9DK	Feb
UA9DN	Mar
UAØLA	May
UB5DW	Mar
UB5KAB	Mar
UO5AA	Mar
UO5PK	Sep
UQ2AN	Sep
USFA	Sep
VE3AHU/SU	Feb
VK2FR	Jul
VK4AL	Aug
VK9AD	Feb
ex-VK9JF	Sep
VK9RR	Aug
VK9VM	Sep
VKØAS	Feb
VKØTC	May
VP1DL	Sep
VP1WN	Sep
VP2AB	Sep
VP2AZ	Mar
VP2KM	Mar
VP2LB	Sep
VP2LO	Sep
VP4TF	Feb
VP4WI	Sep
VP5BE	May
VP5FH	Mar
VP5RD	Sep
VP5TS	Mar
VP8CI	Sep
VP8CR	Sep
VP8CW	Mar
VP8CY	Mar
VQ2FC	Mar
VQ3DQ	May
VQ4AQ	Mar
VQ8AJ	Sep
VQ8AS	Feb
VR1A	Mar
VR3A	Sep
VR3O	May
VR4CW	Feb
VR6TC	Mar
VS1HJ	Feb
VS1HS	Jul
VS1HU	Feb
VS1HZ	Feb
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VS9AG	Feb
VS9AG/ZD3	Mar
VS9AJ	Aug
VU2 Bureau	Feb
VU2GE	Mar
VU2RC	May
W4FCB/KS4	Feb
W4QCW	Feb
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W7CKY/KL7	Sep
WV4BW	Feb
XEØDOT	Aug
XEØUN	Sep
XEØUUE	Aug
XV5A	Mar
XW8AE	Mar
ex-XW8AG	Jul
XW8AI	Sep
XZ2OM	May
XZ2SY	Sep
XZ2TH	Feb
YJ1DL	Mar
YU1UB	Mar
ZB1DS	Sep
ZB1DZ	Sep
ZB2R	Feb
ZC4FL	Sep
ZC4FM	Sep
ZC4IP	Mar
ZD1EO	Sep
ZD1FG	Sep
ZD3F	Sep
ZD3G	Jul
ZD7SA	Jul
ZD7SB	Jul
ZE7JF	Sep
ZK1BS	Feb
ZS6AQA	May
ZS9G	May
3A2 Bureau	Feb
3V8CY	Feb
4W2RP	Feb
4X4DK	May
5A5TK	May
9G1BL	May
9G1BQ	Mar
9G1CH	Sep
9G1CM	Mar
9K2AN	Aug
9K2AP	Sep
9K2AQ	Sep
9K2AZ	Sep

73, Don, W4KVX

by THOMAS K. AALUND, K2VBI
Box 13, Roslyn, L. I., New York

overseas echoes

Word comes from Telefunken that one of the pioneers of electronic tube development in Europe has passed away. Professor Hans Rukop, who died recently at the age of 75, was connected with tube development at Telefunken since 1914. He was on their board of directors until 1950 and later acted as a technical consultant for Telefunken. Time passes almost unnoticed and we hardly realize that our 'young electronic industry' is slowly reaching a rather mature age and has come a long way since its infancy.

But problems are part of development and our frequencies are getting more and more crowded. We all have noticed that commercial stations appear from time to time on frequencies allocated exclusively for the use of amateurs. Some of these stations appear to be operating on definite schedules, others only occasionally. A noteworthy step has been undertaken by Swiss amateurs, according to *Old Man,* July 1958, HB. The USKA is sending out to all their members, report cards to be filled out and to be returned to USKA. These report cards contain space for time, date, frequency, as well as type of emission. A space is also provided for remarks. Who knows—maybe some day these cards will accumulate in sufficient quantities and they may have enough weight to influence the powers that be. How about some other clubs considering something along similar lines?

The Boletin Informativo CRAG, April 1958, TG9, carried a reprint of W2NSD's editorial in the January 1957 issue of our CQ and also excerpts of his editorial of the January 1958 CQ. They urge all amateurs to take note of these editorials, particularly in view of the forthcoming conference on frequency allocations. We are pleased to note that they concur with the opinion of W2NSD and agree fully with their recommendation. The CRAG, incidentally, is looking back on a ten-year history as a very active club in Guatemala and their tenth anniversary was even given considerable space in one of the local newspapers there.

Amateur callbooks of the ARRL as well as other countries are a nice thing to have, but even with the most diligent efforts it is not possible for all calls to be listed correctly, as there are new calls being issued daily, QTH changes, etc. Various foreign club magazines list up to date call sign directories from time to time, and this writer will make an effort to keep these listings on hand. A self-addressed envelope will bring a prompt reply giving the latest QTH if available. At present the following ones are on hand: TG9 as of April 1, 1958; OE, as of July 2, 1958. The *Short Wave Magazine,* July 1958, G, also starts with this issue a complete listing of all British mobile stations (separate license required for mobile operation in G), including call, bands worked, type of car and even license plate number. These are not changed there annually as they are here, so that they are a handy means of identification. The listing is not complete, but subsequent listings will be published. There are about 550 hams in G licensed for mobile operation. As a point of interest it might also be mentioned that they have 65 amateurs licensed for amateur television transmission.

Das Elektron, June 1958, OE, covers several applications for transistors and this writer took interest in two of the circuits offered: One is a two-transistor flasher unit for signaling devices using a six volt input and having a frequency of 1.5 cycles; the other is an AC power supply of approximately 50 watts output and having very good frequency accuracy, making it suitable for running such items as tape recorders from a low voltage DC power source.

With all the foreign publications that go through the hands of this department the question came to our mind if it is not a bit confusing to the average amateur to figure out just what type of tube might be referred to when you see, to take an example, ECC91 referred to in a European magazine. How many people know that this is a 6J6 or how many people have the means of finding such information? This writer is at present compiling a listing of American-European equivalents and it will be published in the pages of CQ as soon as it is complete. Any additional information will be published later as it becomes available.

73, Tom, K2VBI

VHF

50mc. 144mc. 220mc. 420mc. and above

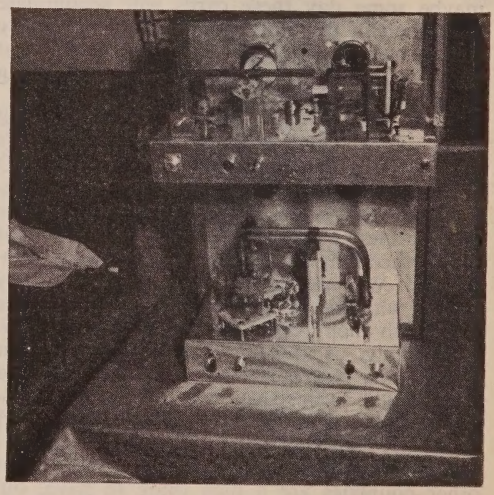
by SAM HARRIS, W1FZJ
P.O. Box 2502, Medfield, Mass.



Len Berg (SM6BTT) at six meter operating position.

Two meters makes the headlines this month with the passing of the annual Perseids Meteor Shower. It is hard to evaluate the potentialities of a Shower using only the number of contacts completed as a measure. Many of the reports indicate fewer long bursts and fewer contacts than had been expected.

It has been three years since I have had any meteor skeds during the Perseids. This year I spent eight hours a night listening to schedules in all directions. The frequency of pings, bursts, etc., were certainly on a par with those of three years ago. For instance W5JWL managed to put in 8 overdense bursts of 20 second duration one half hour period. (Later reports indicate that he heard nothing from me.) WØIFS in Minnesota was heard from Maine to Florida. All reports indicate numerous 30 second overdense bursts. W4EQM was heard (and worked) by many stations in the New England area and as far west as Illinois. All in all, I heard workable signals from Minnesota, Arkansas, South Carolina, Alabama and Mississippi. At last report W9WOK needed only Georgia for all states east of the Mississippi and a grand total of 40 states.



144 mc rig (Swedish style) as of a year go.

It was quite apparent however, that many contacts were flubbed due to inexperience with the high overdense occurrence found during the Perseids. This shower practically guarantees three or four 15 to 20 second overdense bursts per hour. Twenty seconds is long enough to exchange calls, reports and SK's. If, however, the schedule calls for 30 second transmissions from one guy followed by 30 seconds from the other guy, ad infinitum, it is obvious that maximum utilization of overdense bursts is not being obtained. For instance, while listening to the WØIFS-W1AZK schedule, I heard two successive 30 second, 5-9-9 transmissions from WØIFS followed two minutes later by another 25 second 5-9-9 burst. As of last reports however, no contact was established. A simple one by one and a break takes about 7 seconds. If the other operator happens to be awake he will waste another second getting back, and take about 9 more seconds giving your call, his call, your report and BK. You have used up 17 seconds of this burst and it behooves you to get on the ball. Proper procedure is R, 5-3, SK, BK. Do not sign your call on this break. You just don't have seven seconds to waste and you have already idenified yourself and acknowledged his call on the previous break. Now comes the biggest hassle of all. If your overdense burst has petered out, you don't know if he heard your report and roger. He may feel he has made a complete contact and you feel that without his final roger you haven't. If you are lucky and the burst holds out for another 5 seconds you will hear his SK, your call, his call. Now he is worried about whether you got his SK or not. If your burst will last for another 5 seconds he is all set except you are not sure that he got your final OK et.

The point is: During this entire burst you were exchanging information. No one has clearly defined just what constitutes an exchange of information. Obviously if I hear you give my call de your call and break and I come back and you hear me give your call de my call, we have exchanged information. Reports, R's and SK are more information. Where do you draw the line? For example, in the last 6 seconds of one of the half minute transmissions from W4EQM, I heard him S9 sending W1FZJ de W4EQM. Fortunately this was the beginning of my 30 seconds and I sent W4EQM de W1FZJ, R, S2, BK. Whereupon he says W1FZJ de W4EQM, R, S2, S2 and out he fades. Now any fool can see that we exchanged information. But did we have a contact?

Convention

The national convention at Washington done come and gone. Things to remember: W1HOY, W1RUD, W1PYM and W1FZJ walking up the Washington Monument (889 steps) to save the elevator fee (10 cents per.) Elevator ride down was free.

VHF sessions included the "Antique Wireless Association's" latest slide show entitled "The World Above 50 Mc." Hank (W2UTH) presented the show and I can assure you it shouldn't be missed. Walt Bain (W4LTU), Ross Bateman (W4AO) and Steve Martin presented some good information on a parametric amplifier using PSI's vari-cap as the active element. Some excellent noise figures were obtained at H. F. and good results are predicted at VHF. CW assignments on the VHF bands was the prime topic of conversation. E. P. Tilton gave the best advice of all. "Don't waste your time arguing. Write the F.C.C." (Too late now.)

CW Versus Phone

My Position on the cw versus phone has certainly been expressed in the past few years. No one has pushed harder for a voluntary cw band on two meters. I have an aversion to increasing the legislation within our band limits. I don't like a few "do gooders" telling the world how nice it would be if everybody thought like them. I think that it is the duty of our league to make a survey of the likes and desires of the members involved before making any recommendations to anybody about anything. I question the qualifications of anyone on our board of directors or on our payroll at Headquarters (EPT excepted) to make any decision or recommendation concerning amateur radio in the VHF region. Maybe you like a dictatorship but I am an American and I have come to like the democratic way of doing things.

VHF Convention

The "Syracuse VHF Round-Up" is due again. The date—**October 11, 1958.** Advance registration must be obtained from W2EMW, 18 Homeland, North Syracuse, New York. Write now! Do not delay! Old Meteor Scatter himself, Walt Bain, will be the principal speaker. Large VHF forum with all the experts on the panel will follow. Special entertainment for the ladies. Good food, plenty of room, dancing to follow. Don't miss this one. Bring your C.C.C. cards and get your certificate on the spot.

1215 MC Record

Those intrepid W6ers have gone and done it again. W6QDJ/6 and W6MMU/6 operating portable from Mt. Pines (el. 8830 ft.) and Mt. Hamilton (el. 4420 ft.) respectively, made contact useing the 1296 mc band. The 225 mile path is far from line of sight being mostly over a mountain chain with 5000 foot peaks. Equipment used included crystal controlled transmitters with 2C39 triplers in the output and crystal controlled converters (Microwave Associates 1N21 E's in the front end of course). CW was employed at both ends of the contact.

Mid-path assistance was provided by W6BUT at Taft, California, located approximately 195 miles along the path to the south of Mt. Hamilton. The two meter liason equipment failed to make the grade over this difficult path and W6BUT provided the only pre-contact liason. Credit for assistance should go to W6FZA, W6ABN, K6TAM and anybody else who helped. Those W6ers sure are triers. Guess us East coasters will have to import some west coast talent if we want to keep up. . . .

Bag Bottoms and Coffee Pots

I don't know how they manage to do it but it seems that if the boys in the "Queen City Emergency Net" get aholt of 1000 bag-bottoms from Kroger Spotlite or French brand coffee bags they can get a forty-eight cup coffee urn. All good coffee drinkers and Hams are urged to send their bag-bottoms to W8MXR, 3862 Malaer Drive, RFD #2, Sharonville, Ohio. Bag-bottom donors from out of state are entitled to one free cup of good coffee upon application in person.

Moon Bounce

Just as you have got used to not hearing about it, I feel that it is time to mention it again. No news from anywhere else at this time but W1FZJ is back on it again. Antenna is working and transmissions are being made each night during the period starting eight hours after moonrise and ending nine hours after moonrise, GMT. Transmissions are limited to the nightime hours or between 2300 hrs. GMT and 1200 hrs GMT. (Still have to work for a living.) Transmissions are on the odd five minutes, frequencies ten kc above and below the transmitter are monitored on the even five minutes. Antenna at present is 128 elements on an el az mount. Schedules are solicited from interested parties. Transmitter frequency is 144.250.

Goteborg S, Sweden — From Len (SM6BTT) via Leroy (W5AJG) we receive the following:

"I had schedules with OE6AP May 3, 4. His rig is 80 watts, 14 elements and E88CC xtal converter. E88CC is a European twin-triode with a transconductance of 12000 ohms, noise figures of 3-4 db is obtainable in Wallman cascode circuit. OE6AP didn't hear me and I didn't hear him either, but SM4BIU with 24 foot long Yagi heard some S6 bursts. However, the problem is that the distances are too short, about 650 miles. It's difficult to get schedule partners at the easy 0900-1300 mile range here in Europe."

"Tests with HB9RG during June 8th gave us two S7 bursts at his end. At 0911 local time he got me for 30 seconds but only at strength S3. I am sorry to say that I heard only a few weak pings from him, the Perseids will give us QSO's though."

"The NBS prediction cards for MUF gives us 50 mc hopes too. The MUF is rising during August and september and reaches 28 mc during September. As I have only the 1958 prediction cards I can't make any comparisons with 1957. Suggest that we had the peak last year, and then the band must be opened this fall and winter too. (This after studying 50 mc for years of 1946, '47 and '48)" *Thanks for the interesting information Len (and Leroy). Hope we all see you on six again this fall and winter.*

Anchorage, Alaska—From the cold front and Jack Reich (KL7AUV), we hear that:

"Jim Tvrdy, KL7CDG, is being transferred to the States at the end of August, but the rest of us locally are getting in shape for a good season, we hope. I expect to have my RTTY gear operating on six at will, but believe CW will be my main mode. Built a new converter which isn't completely wiped out by Channel 2 five blocks away, and hope to be able to operate West and Southwest afternoons and evenings while Channel Two is on." *That RTTY sounds good to us Jack, maybe we'll see you there.*

Sudbury, Ontario—A bit of news from Don Mac Lean, (VE3CKA):

"There are five active stations on six meters here, VE3BEK, VE3CJM, VE3CJI, VEBCJN and VE3CKA. Three of us are using Gonsets, thanks to the local C.D. We had a fair opening on July 6th with some very strong, steady signals, lasting about six hours. There was another on the 31st but not like the first."

"The band is monitored by VE3BEK fifteen hours a day, so how about you southern boys keeping the beams up north?" *Sounds like a good idea Don, we'll sure be a-lookin'.*

Cold Spring, Minnesota — Gerald Theis (KØGLV) sends a bit of information from his location:

"I have been on six about four weeks. Have no local activity within about seventy miles, so—so far no luck. The rig is a homebrew running about 20 watts to a 4 element beam and a converted AR 2 feeding into an old S.R. 19. Would very much like to hear from anyone close to central Minnesota and try this rig out." *Get with it you Minnesota gang, make Gerald's receiver sound like an opening.*

South Lancaster, Massachusetts—Some news from an expedition (all over now) and Mac Maurer (W1QMS).

"Monitored six meters from Prince Edward Island from July 6th-14th. Used Gonset III with R9'r ahead. The 5 element Hi-Par beam was erected on the highest spot on the island and pointed at Massachusetts. Didn't even hear Helen!"

"Although plagued by two full days of radio blackout and no openings I have some good news. I succeeded in getting Smitty, VE1ZM, on six and worked him mobile and fixed. He is now running 50 watts, has a hot converter, and a five element beam. I believe this is a first and he wants to work out. Look for him on 50.5."

"Needless to say my Saturn 6 Halo 'took' the islanders and the VE1's marveled at the Gonset III packaging." *F. B. Mac, glad to know the VE1's are interested, we'll surely be looking for them.*

Forest City, North Carolina—Wayne McLeod, (K4RSP), a newcomer to VHF sez:

"Would surely appreciate any information on converters, rigs, antennas etc., from anyone who would care to write. Have just been bitten by the VHF bug and need information on everything." *Happy to welcome you to the ranks of VHF men, Wayne, and know the boys will come through for you.*

Rahway, New Jersey—Bob Brown (K2ZSQ) sends us a little information about a lot of people.

"I just got up a 5 element beam, what a difference! Also got my dad on six meters, K2ZSP. He is on every evening usually after 1830."

"Several new stations on six locally K2MMM, W2ASW and K2ZDI, all of Rahway."

"My 35watt homebrew transmitter was built by Mike, K2DZM, who is active on 6, 220 and 420. He has worked 11 states on 220. Runs 100 watts on all VHF bands and uses an HQ129X for a receiver. Mike has a two meter ground plane, a 4 element 6 meter beam and two very long beams for 220 and 420."

[*Continued on page 98*]

by **FRANK ANZALONE, W1WY**
14 Sherwood Road, Stamford, Conn.

CONTEST CALENDAR

September	**27-28**	**MARC VE/W**
October	**4- 5**	**VK/ZL Phone**
October	**11-12**	**VK/ZL CW**
October	**11-12**	**Peruano Phone**
October	**18-19**	**Peruano CW**
October	**25-26**	**CQ WW DX Phone**
November	**8- 9**	**ARRL SS**
November	**15-16**	**ARRL SS**
November	**22-23**	**RSGB 21/28 Phone**
November	**29-30**	**CQ WW DX CW**

VK/ZL

This popular contest with the boys "down under" starts at 1000 GMT Saturday and covers a 24 hour period. We told you all about it back in July. This year you send your logs to the N.Z.A.R.T. Contest Committee, Box 489, Wellington, New Zealand.

PERUANO

This one is a Pan American affair and offers a good opportunity to get some of those missing countries for your WAA certificate. You have 36 hours starting at Noon EST Saturday to compete for a certificate. July Calendar gave the details. Your log should be mailed within 20 days to: Radio Club Peruano, Att. Pres. Comision Concursos, Casella 538, Lima, Peru.

WORLD WIDE DX CONTEST SCHEDULE

Time Zone	Starting Time	Ending Time
	Phone	
GMT	Sat. Oct. 25th 0200	Mon. Oct. 27th 0200
EST	Fri. Oct. 24th 9:00PM	Sun. Oct. 26th 9:00PM
PST	Fri. Oct. 24th 6:00PM	Sun. Oct. 26th 6:00PM
	CW	
GMT	Sat. Nov. 29th 0200	Mon. Dec. 1st 0200
EST	Fri. Nov. 28th 9:00PM	Sun. Nov. 30th 9:00PM
PST	Fri. Nov. 28th 6:00PM	Sun. Nov. 30th 6:00PM

MARC VE/W

The annual Canadian/U.S. party is held the last week end in September. Work any 20 hours out of a 30 hour period beginning at 6 P.M. EST Saturday. Use any band, phone and CW, everything counts. See last month's calendar for details. Send your logs to Contest Chairman, Gordon H. Webster, VE2BB, 69 Pine Beach Blvd., Dorval, Quebec, Canada.

CQ WW DX

You can't blame us if you don't know about this one. Rules in detail were published in the August issue. Copies were mailed to all foreign amateur journals as well as leading U.S. clubs. And each winner in last year's contest also received a copy. There is still time for you to send for a supply of log sheets and report forms. Send us a large self-addressed

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Air Force Mars Eastern Technical Net

Sundays 2-4 PM EDT 3295 KC, 7540 KC, 15,715 KC

Oct. 5-12—Transistor Fundamentals—Panel of engineers from Philco Corp. Transistor Laboratory.

Oct. 19—Information Theory—Mr. John Pierce of the Bell Telephone Laboratories.

Oct. 26—Satellite Tracking at the Yale Observatory—Mr. James Douglas of Yale University.

Nov. 2—Radio Traffic Control—Commissioner T. T. Wiley and panel, N.Y.C. Dept. of Traffic.

Nov. 9—Sourcing and Curing Radio Interference—Mr. Harry Wallace, Consulting Engineer.

ARMY MARS

Wednesday Evenings 9 PM (New York Time whether EDT or EST) 4030 kc upper sideband.

Oct. 1—"Engineering the White Alice Network" by Robert B. Stecker, Supt. Systems Engineering, Defense Projects Division, Western Electric Company.

Oct. 8—"Characteristics of SSB Power Amplifier Circuits" by Warren B. Bruene, Technical Consultant, Collins Radio Company.

Oct. 15—"Technical Facilities of Radio Free Europe" by Claude M. Harris, Director of Engineering, Radio Free Europe.

Oct. 22—"Application of Transistors to Power Supply Equipment" by Sidney Moskowitz, Vice Pres. Electronic Research Associates, Inc.

Oct. 29—"Maser Amplifiers and Oscillators" by Dr. Gerhard Weibel, Section Head, Submillimeter Research Section, Sylvania Electric Products Co., Inc.



The 8th Midwest YL Convention held at Toledo, Ohio on May 22, 1958, brought together these 27 YLs. L. to r., front: W9SJR, W8's HWX, VWL, HRS, OTK. Second row: W8ATB, W4BLR, W8's RZN, HUX, MBI, VJO, W3UUG, W9's MLE, YWH. Third row: W9AYX, K9EMS, W9LRT, W8's IDV, VRH, RIR, MHE. Fourth row: K8's EJX, HWC, W8KLZ, W9RUJ, KN8JWQ, K8BPQ.

YL

The 19th YLRL Anniversary Party will be held Nov. 12-13, 1958 (phone) and Nov. 19-20, 1958 (cw). Rules will be given in November CQ.

by LOUISA B. SANDO, W5RZJ
212 Sombrio Drive, Santa Fe, N. M.

AWTAR

The 4th of July started off with a "roar" instead of a "bang" in San Diego—the roar of 61 planes taking off for the 12th Annual All Woman Traanscontinental Air Race, with destination of Charleston, S.C. For the 6th year a network of amateur stations was in operation to relay information to race officials and to handle messages for participants in the race.

Radio chairman at San Diego was Pat, W6GGX. Other members of the San Diego YLRC operating W6GGX/6 (on 7210) at the Ninety-Nines Hq. in the Lafayette Hotel and W6MWU/6 relaying on 2 meters from the air-



W5TXK, Margaret, operating at the Jackson, Miss. airport during the Powder Puff Derby. She was assisted by members of the Jackson Amateur Radio Club.

field were K6QKE, Mavis; K6UHI, Betty; K6VRH, Ellie; W6VSL, Barbara; W6WDL, Babs; W6MWU, Mary. K6MGL, Becky, and Florence Irwin assisted in logging plane information. Nightly skeds were kept between W3GTC, Carolyn, amateur net chairman, who was in Charleston, and Pat, W6GGX, on 20 meters via the SSB stations of W6JUT and W4TWW.

Other YLs who assisted were W7DRU, Fran, at Tucson; K5MIN, Vera, at Abilene, Tex.; K5IMD, Betty, chairman at Tyler, Tex., assisted by Dexta Rogers; W5TYK, Margaret, chairman at Jackson, Miss.; K4AIQ, Carolyn, chairman at Macon, Ga. W4VCB/3, Ev, spent many long hours at Charleston assisting W3GTC.

On July 9 when the winners were announced in Charleston, W6QPI, Betty Gillies, AWTAR Chairman, gave the information to Carolyn who relayed it to race officials in San Diego via K6BPL.

The YLs participating wish to thank each of the Hams who assisted in relaying traffic and helping to keep the net frequencies clear. They also appreciated the loan of Hallicrafters equipment at several of the stop-over cities.

WITH THE CLUBS

The 4th Anniversary Party of the Texas YL Round-up Net will be held Nov. 8 at Tyler, Tex.—"Rose Capitol of the World." Hostesses for the get-together will be W5's YAJ, LGY and K5's IHF and IMD. Reservations for the luncheon and party should be made with K5IMD, Betty, by Oct. 30. The TYLRUN at this writing numbers 106 members from Texas, Okla., La., N.M., Ark., Colo., Mo. and Kans.

The LARKs held their annual family picnic in June and at that time elected these officers for the coming year: President, K9IVG, Roberta; VP, W9TMS, Blanche; sec'y, K9BWJ, Mary Alice; treas., K9EMS, Eve; Novice rep., K9IWR, Lynn. The LARK's cw net now meets on Mondays at 1 p.m. CST on 3750 but NCS W9MYC will tune down the band for Novices.

Members of WHOOT initiated their club call, K5QHI, and their transmitter and receiver (modified by W5MTQ), for Field Day. WHOOT now offers a club certificate: Work seven of their members, July 1, 1958, or after, and send log information (no QSLs) to Ruth Jones, K5GMI, 1908 Argentia, Dallas, Tex.

ZS6GH, Diana, 1958 secretary of the SAWRC, advises that the WAYL certificate costs 2/6d (7 IRC) and the KKK certificate is 5/– (double the price of the WAYL certificate). SAWRC has quite a few W girls as members, and welcomes any others who are interested. Dues are $1 a year.

The HAWKs of Indiana had a fine feature write-up in the Sunday Magazine section of the *Indianapolis Star* for July 27. It included a number of photos and details about many of the members, including 76-years young Lulu Perrine, K9BZU, and Priscilla Rae Organ, Kn9MPN, who has become a Ham despite handicaps of spinal arthritis and impaired vision of 26 years duration.



Some of the San Diego YLs who assisted with the AWTAR radio net. L. to r., W6GGX, Pat, S.D. chairman; W6VSL, Barbara; K6VRH, Ellie, and W6WDL, Babs.

HERE AND THERE

W4UF/W4ZKD, Dot, was invited to present a paper on her research work on blood parasites at the 6th International Congress of Tropical Medicine and Malaria at Lisbon, Portugal Sept. 5-13. Dot planned to leave Florida in mid-Aug. to fly to England for a three-week visit there and in Scotland before flying to Portugal. . . . W4BWR, Ruth, is happy over her OM winning a '58 Mercury. Didn't take her long to get an Elmac installed in it.

How is this for coincidence—Jane Purcell of Hollywood holds the call Kn6RGM; her OM has the call Wn6RGM! No doubt by this time they both have Generals.

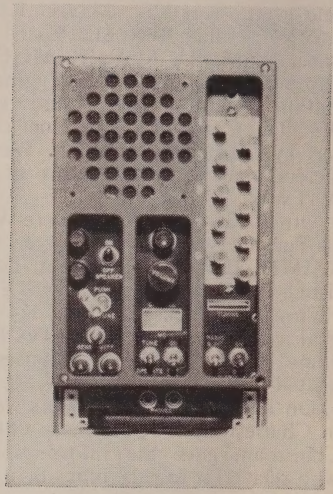
Bina, PY4APA (featured in this column in March CQ), has been released from the hospital and has an apartment in Tulsa with her sisters Eunice, PY4AUT, and Ziza, PY4AUL.

When Colfax, Wis. was struck by a tornado in June, W9RUJ, Mary, spent the night handling traffic. . . . KØATT, Freda, has been more than busy in the midst of the Kansas floods.

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SURPLUS

by KENNETH B. GRAYSON, W2HDM
110-20 71st Ave., Forest Hills 75, N. Y.



Just about everyone who dabbles in surplus converting has been interested in doing a job of the BC-603. And well they might, for this unit is available for under fifteen dollars just about everywhere and is usually in pretty good shape.

If you are interested in a wide band FM receiver then you are all set to go by just powering the thing. But chances are that you will be wanting to change the original tuning range of 20-28 mc to the 50 mc band and modify it for AM reception. Last month we went into the six meter conversion and ac power supply for it. This month we cover the de-FMing of it, a much more formidable task. You see, once you start looking closely into the bowels of the 603 you find, much to your dismay, that all of the wiring has been made into a harness and is stuck together permanently with goo. This means that you have to perform major surgery for even minor conversion attacks.

Because FM is wide in bandwidth due to the sideband distribution, the FM receiver must be equally as wide in order to pass the necessary intelligence. It is common to "load" circuits in order to increase the bandwidth by adding resistors across the tuned circuits to decrease the Q of the circuit. This is what was done in the BC-603. Therefore the first part of the conversion is to remove the loading resistors and sharpen the receiver selectively.

The actual process of removing the components used to broaden the receiver is accomplished by removing one i-f transformer at a time by unsoldering the leads going to its terminals and removing the shield and transformer mounting hardware. When the shield is removed, the components will be visible. Unsolder all resistors and those capacitors used for by-passing and save them for future use. The by-pass capacitors are square postage stamp type mica capacitors and usually have one lead connected to the screw stud used for mounting. The four rods (one in each corner) are all of the connections we will make use of. All other connections at the base are not used and may serve as tie-points later on. Note that the ends of each coil are terminated at these four rods, and that the resonating condenser is mounted between two of these rods. Each resonating condenser is about 50 mmfd. in value. With all unused components removed we will have a conventional i-f transformer with a resonant frequency of 2.65 mc or a little higher. Check the resonant frequency of each coil with a grid dip oscillator. Don't forget that there is an additional capacity due to wiring and tube capacity yet to be put across each coil, therefore the coils will probably resonate a little higher in frequency . . . say 2.8 mc. Reconnect the transformer after remounting it, using only the plate and grid connections. The AVC and B-plus conections will be added later.

The only i-f transformer that may give you trouble is the final one, FL-4, originally used as a discriminator transformer. On this one again remove all components including the resonating capacitors, but leave the coils alone for the time being. Clean up all excess solder and then carefully remove the bottom section of the output coil, leaving two identical coils one on each ceramic form. The leads of these coils should be connected to the corner rods as in the original transformers. A 56 mmfd is all that we should have to use in order to resonate each coil, but use a grid dip oscillator to check this to be on the safe side

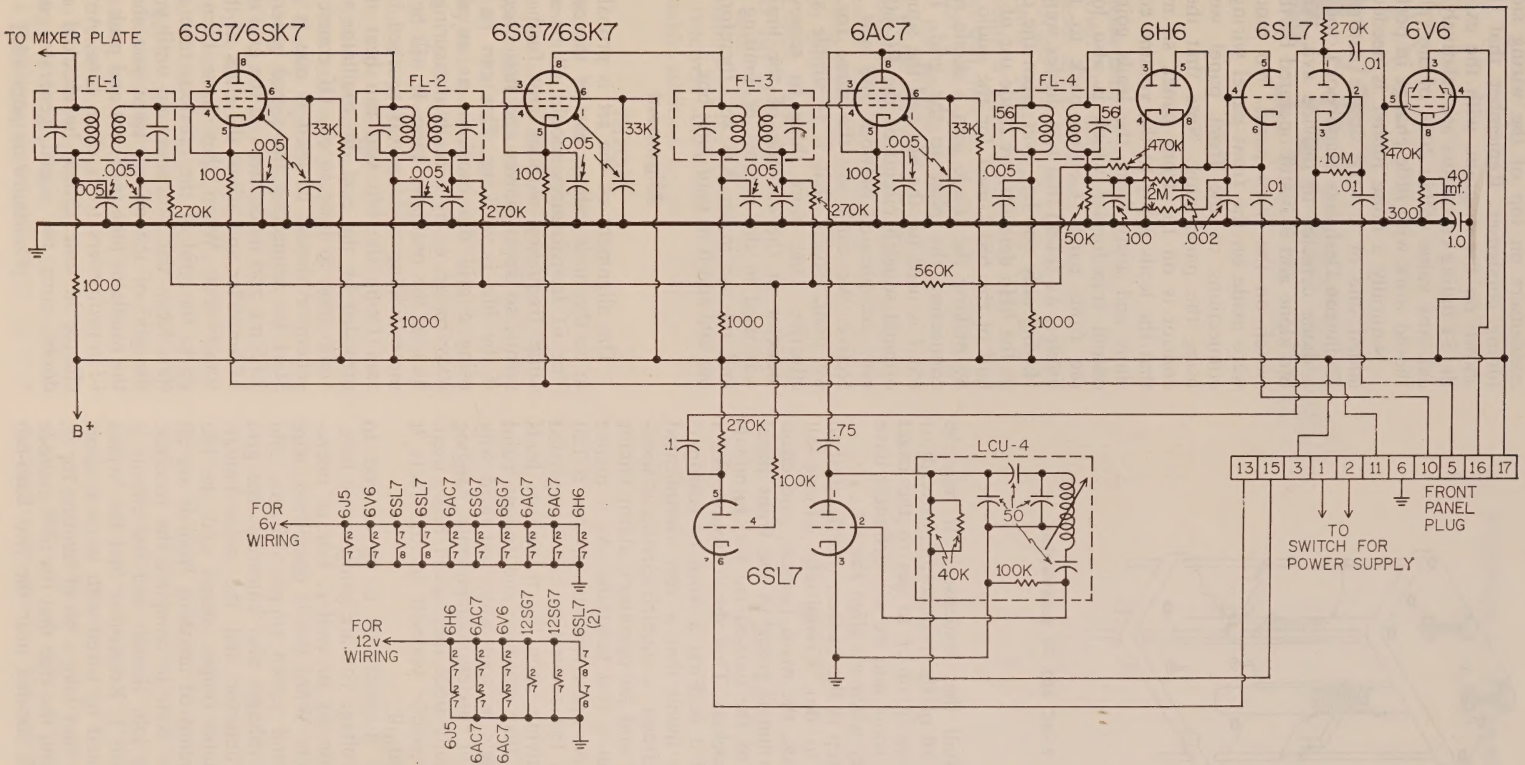


Fig. 1—Circuit of the modified i-f, detector, noise limiter, and audio of the BC 603.

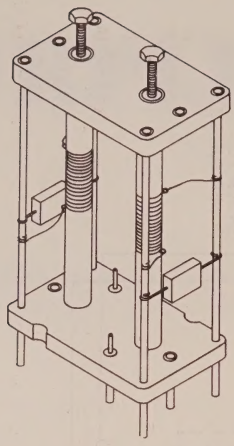


Fig. 2—BC 603 i-f construction.

once you install the condensers. It may be necessary on all of the transformers to adjust the slug screws in order to get to the exact frequency we want, and we will definitely have to do this later when we align the set.

The next step is the hardest (the hardest to get yourself to do). Completely remove all terminal boards, the main harness, and clean up all the terminals going to the front panel plug and all of the unused (so far) terminals on the tube sockets. That should sound like a big job—well it is. First a word of reason is in order. We found that a very complicated delayed avc circuit, a squelch circuit, a sensitivity control and an operator's alarm circuit were giving us a real headache. As a matter of fact this one part held us up for a full month. Next, the conversion can be speeded up by not relying upon the tracing of leads covered with that moisture and fungus paint that always gets in your way, and third why leave a lot of useless components hanging around especially since they aren't being used. Once you reconcile yourself to the facts it isn't too bad at all.

Rewire the filaments. It is up to you to decide what voltage you are going to use here. For mobile use six or twelve. For ac operation use 6 volts. When this is completed, wire in the plate and screen supply voltages, and then the avc voltages also known as the grid return. The detector and the noise limiter, audio and audio output stages and the bfo if you have removed anything from it are all that has to be done to complete the receiver. That is a big job, though and the circuit is shown in figure 1. Remember that the bypass capacitors should be wired with leads as short as possible. It may take a bit of hunting for it, so we'll give you the clue that the 6V6 cathode bias resistor is located near the two bath-tub condensers on top of the wiring side of the tuning condenser. Remember that the values shown on the diagram, with the exception of the i-f tuning capacitors are relatively not critical. Any value within 20% of the value shown should work with little change in performance.

Naturally a noise limiter is needed and we added one of a very simple nature (source: Radiotron Designers Handbook), together with a diode detector to provide avc. We left the bfo alone and it is still operated by the TUNE switch on the front panel. No modifications were made on the front panel wiring, and all connections to the front panel were made using the panel plug. Note that the volume control is on the front panel, so make sure that the leads going to the volume control are short and away from the leads going to the output transformer which is also located on the front panel. Getting back to the noise limiter, we found that two diodes were needed. Having only one left over from the other half of the 6H6 detector, we made use of the other half of the 6SL7 used for the audio amplifier by making the triode into a diode merely by connecting the plate to the grid. The other 6SL7 is used for the bfo and the squelch. The original squelch circuit of the BC-603 used a very complicated network and was fairly effective. We can't say the same for the one we used, except that it is simple and fairly effective. One more thing to remove is the inductor in the cathode of the limiter. This was used in the process of limiting and will find no use in an AM set, therefore take it out and add it to your junk box.

Alignment

The alignment of the set is probably going to be the most tedious part of the conversion. The i-f transformers should all be about the same frequency without any further adjustments, so apply power and first check to see if the bfo is working. This can be done by using a grid dip oscillator as an absorption wave meter, or by actually measuring the grid bias of the oscillator tube. It will be on 2.65 mc providing nothing was touched inside the can. Using the bfo you can beat the signal provided by the grid dip oscillator to get an audio tone to tune in on. Of course a signal generator should be used if one is available. Start by connecting the signal generator (set 2.65 mc and modulated) at the grid of the last i-f amplifier and adjust the slugs of the output transformer. When they have been peaked, go to the grid of the previous tube and peak this. Keep this procedure up until you get to the grid of the mixer. Here you should pull the oscillator tube (6J5) out and peak all of the i-f transformers for a clean tone. Any sudden change in tone should be checked and if in doubt, turn the signal generator off for a

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by DONALD L. STONER, W6TNS
P.O. Box 137, Ontario, Calif.



Novice

The intense activity of the summer is letting up somewhat. Now that school has started the Novice bands are a little less crowded. On 15 meters, Novices were heard from dawn to dusk and a contact could always be had on 40 meters. Summer static was pretty bad on 80 meters but that will let up for the winter and Q5 contacts will be the rule rather than the exception. But enough of these reflections, let's get down to the business at hand.

I ran across a good deal on a book, that some of the readers may be interested in. The title is "Troubleshooting and Repair of Radio Equipment" and is available from the Government Printing Office, Washington 25, D.C. under the number D 101.11:11-4000. The cost is $2.00 check or cash. The manual contains a wealth of information on the techniques of troubleshooting receivers and transmitters. It would be a valuable addition to your hamshack.

THEORY

Last month we discussed oscillations and their connection with mechanical devices. It would be nice if we could connect an antenna to that steel rule (that was used to demonstrate oscillations) but unfortunately, that won't work. Why not, the man asks? Well, here's why not. The rapid motion of the rule created changes in air pressure that we call sound. Changes in air pressure don't travel very far before they are dissipated or confused with other pressures. How far can you yell? A mile? Possibly, but you surely couldn't make WAS that way! Rather than try to move the air, how about moving the tiny molecules that exist all around us? To do this, we must use electromagnetic energy, or radio signals as some people call them. Another thing wrong with propagating sound is that it is low frequency, usually in the hundreds or low thousands of cycles. To transmit electromagnetic energy to distant places usually requires frequencies that are millions of cycles per second.

As you may have guessed, the electromagnetic energy is in the form of an oscillation, but it is a variation (above and below an average point) of electrical potential (voltage). The transmitter supplies the electrical potential (in the form of oscillations) to the antenna, and the antenna radiates the oscillations in the form of electromagnetic energy. You might think of the molecules that exist between your transmitter, and the other fellow's receiver, as a long line of ping-pong balls. Your antenna energy "bumps" the first ball, which in turn bumps the second one, which in turn bumps the third one, and so on. Thus, at the receiving station the motion of the molecules duplicates the energy that was radiated by the antenna. In essence that is how you communicate with other stations. But, remember, it takes high frequency electrical oscillations (that are converted to electromagnetic radiation by the antenna) to accomplish this wonder. Also keep in mind that the antenna is like an electromagnet (which radiates magnetic force) and the transmitter is like a battery used to power the electromagnet.

Let's see how oscillations are created in the transmitter. The oscillator section is the heart of the transmitter, and the heart of the oscillator (in a Novice transmitter) is the quartz crystal. As you may know, the crystal determines the frequency of the oscillations, but you may not understand why. Last month we spoke of mechanical resonance. The piece of quartz that is placed in the holder is etched or ground so that it is mechanically resonant at the frequency marked on the case. When the crystal is "twanged," it will oscillate just like the steel rule. However, the oscillations will not be so extreme and they are very fast (you cannot see them). To start the crystal oscillating, we do not "twang" it with a finger, as we did the rule, rather we apply a pulse of voltage to it. Upon receiving the pulse, the quartz will start to oscillate at its natural resonant frequency, but the oscillations will die out very rapidly unless they are sustained. This is where the oscillator tube enters the picture. When the crystal oscillates, it generates a tiny voltage. This voltage is applied to the input of the oscillator tube. The tiny oscillations from the crystal are amplified in this tube (in other words the power or voltage is increased). This amplified oscillation

is applied (or fed back) to the crystal to sustain the oscillation. If this feedback voltage was not present, or was not strong enough, the stage would not continue to oscillate.

Fig. 1 shows a very simple oscillator circuit. The input to the tube is the grid and the output is the plate. The cathode is common to both input and output. The signal appearing in the output circuit is fed back to the crystal and also used to drive a power amplifier stage. The other end of the crystal is connected to the grid circuit (input) and the voltage "goes around in circles" from output to input. This is known as *feedback*. A similarity can be found in the public address system in your school. A person talks into the microphone (input) and the amplifier increases the level of his voice until it is strong enough to operate the speakers (output). But what happens if the microphone picks up the sound of the speakers? Feedback occurs between the input and output and you hear a very loud piercing squeal. This squeal is an oscillation! The acoustics of the room (and other factors) determine the frequency of the squeal. Thus, the room is "equivalent" to the crystal and the amplifier is "equivalent" to the oscillator tube. Next month we shall see how the oscillation and the oscillator stage fits in with the rest of the Novice transmitter.

NET NEWS

Fred Leggs, KN9MXK, Indianapolis 2, Indiana, would like to start a Novice net and would appreciate tips and suggestions from anyone.

"The Palmetto Novice Net of South Carolina has not been in operation during the summer but will resume operation on Sept. 8, on 3745 kc at 2000 EST." All Novices are invited to check in, for more info write John W. Fuller, K4HQK, P. O. Box 407, Barnwell, South Carolina.

K1CVH, 194 Maxfield St., New Bedford, Mass. writes to inform us of a teen-age phone net on 40 meters. Teen-agers and/or ex-Novices are invited to check in. For more information write Bill, K1DDR, 210 Oberlin Rd., Hamden, Conn.

WHO'S DX?

Staff Sgt. Bud Lafferty, KG1CK, has had considerable trouble with the QSL situation. I am having cards printed for Bud, and if those of you that have worked KG1CK will drop me a self addressed stamped envelope, I will check the contact against Bud's log and QSL for him. Sorry for the delay fellows, but these things happen.

Don Grantley, WIA-C2022, Mount Raven, Holbrook NWS, Australia, is a new DX reporter. Don's list of Novice stations heard in Australia is included in the column this month.

Another short wave listener, Jack Rouse, 96 Ward Street, Wallingford, Conn., advises us that UA3KWA is always on the lookout for Novices on 15 meters, and has in-fact worked quite a few.

Hugh R. Paul, Jr. W8LMK, Paw Paw, Michigan, sent along a photo of his friend Ken Haswell, G2CWL, and wishes to advise the readers that Ken works Novices on 15 meters. Look for these fellows.

HELP WANTED

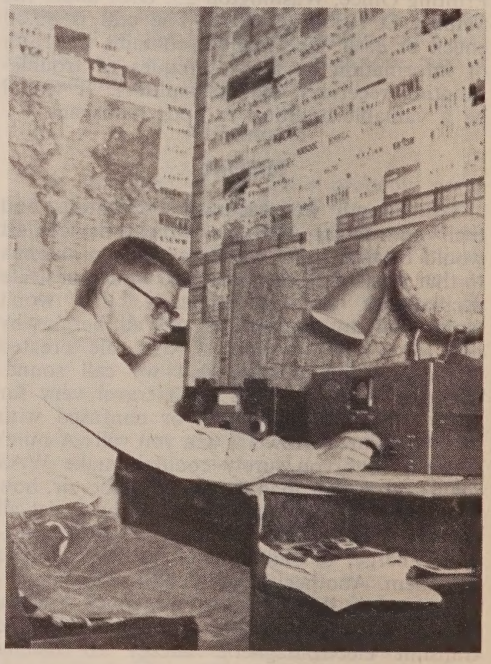
The Pomona Valley finally has a radio club and they are starting Novice code and theory classes. Club meetings the 2nd Wednesday of every month. For more information on the Novice classes, contact Hillis Hauck, KN6DQA, 794 Gleneagles Avenue, Pomona, Calif., or phone National 28993.

Paul Nugent, W1JNX, 149 Millet St., Boston 24, Mass., will be very glad to assist anyone in his area get a ham license. His phone is COlumbia 5-4196.

Bob Brown, K2ZSQ, 67 Russell Avenue, Rahway, New Jersey, can be counted on for a helping hand to anyone that wants to obtain a ham ticket.

The following persons have written requesting help with the examinations. Can you help them?

W1—Ronald Wilbur, 199 County Street, Taunton, Mass. Telephone Vandyke 2-6928



Lon Woodbury, KN7BOM, Box 63, Kingston, Idaho has QSL wallpaper. Lon has a WAS of 45 and needs Vt., Nev., and Colo. to complete the list. Listen for him on 40, running the S-20R and Adventurer.

W7—Ronald White, 540 NE 44th, Apt. 7, Portland 13, Oregon

W9—Curtis Ewing, 528 North Earl Avenue, Lafayette, Indiana. Phone 29-8516

WØ—Tom Vars, 1804 Stanford, St. Paul, Minn. Telephone MI-95343
Thomas L. Lloyd, Green City, Mo.
Douglas L. Millburn, Toddville, Iowa

Elsewhere—A/2c Fred Strickler, AF-2737, Box 475, 6930th RGM, APO 291 N. Y., N. Y.
Billy Mason, 3070 N. W. 186th, Miami, Florida. Phone NA-12754.

LETTERS

Irving Livant, KN2JUG, RD #1, Ludlowville, N. Y., wonders about using a switch to change impedances on the Heath AM-2. I don't think it would be a good idea to switch the tiny rf voltage, Irv, but you might try it.

Herb Howe, KN7CWO, 527 S. Vancouver St., Kennewich, Washington, wrote a nice long letter describing his home brew transmitter and NC-173 receiver. He runs 8 watts on the 40 meter band and has accumulated 7 states so far.

John Pitman, WV6BGD, 610 Vesta St., Ontario, California, is knocking them dead with a Command Transmitter (per The Novice and Technical Handbook) running 20 watts input. John QSL's 100%, likes to gab, and would like pen pals.

Another friend, Steve Nix, WV6BMI, 334 Beverly Court, Ontario, California, doesn't even know he has a ticket yet. The little white envelope arrived the afternoon of the day that he left on vacation . . . hi.

Carl Wells, KN6GUI, 2916 Heather Avenue, Redding, California, has collected 30 states and 3 countries with a DX-20 and an S-40A. He would like to sked Mont., Wyo., and Arizona on either 15 or 40 meters. All letters answered.

Al Marcus, KN6TQB, 574 Ninth Avenue, San Francisco 18, Calif. had a strange case of BCI. Seems a little ole lady complained because Al "was playing his radio (ham rig) so loud." It turned out to be a defective air raid siren two miles away and was heard all over San Fran. Waaal, we get some pretty bad heterodynes out this-a-way.

Art Cheshire, 426 Elm St., Jonesboro, La. stomps 'em with a DX-40 and HQ-110 and has worked 29 states and 3 countries on 15. Art would appreciate some help with a new 15 meter beam.

Charles Carter Woodman, KNØKXR, 630 S. Patrick St., Rapid City, S. Dakota, reports that he seems to get maximum output from his WRL Globe Chief 90 at 140 ma. of plate current.

John Aldrich, W1NZZ, 103 North St., Lakeport, N. H., is open for Novice skeds if anyone needs that state. John is on all Novice bands.

Ed Dougil, Jr., KN20SC, 310 Ann St., Harrison, N. J. reports that he worked one of our DX reporters, Ivor Stafford, VK3XB, with a homebrew 6146 rig and an SX-99. The WAS total is 20 states.

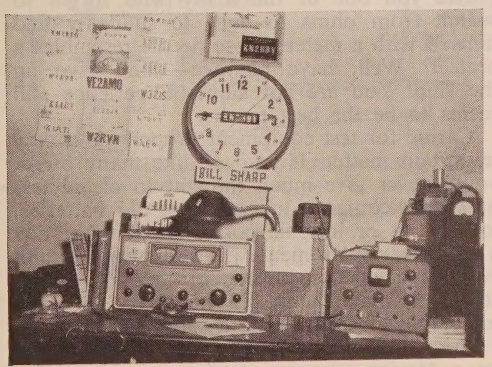
Don Johnson, KNØQMU, 3527 Knox North, Minneapolis 12, Minnesota, has worked 7 states and 23 contacts in his first week of operation with a Globe Chief 90A and an S-40. He QSL's 100% and would like 80 and 40 meter skeds.

Charles F. Ackerman, WV2APX, 620 Fairview Avenue, New Market, N. J. operates on 80 meters with a DX-20 and SX-99 receiver. The antenna is an eight foot mobile whip. His first contact was with KN2RBI.

William Ziegenfus, WV2AXJ, 48 Madison Avenue, Lindenwold, N. J. got tired of waiting for his Novice, so he tackled the General and passed before the Novice ticket arrived! He is currently running a NC-109 and is planning on getting a Heath Apache.

Bob Saville, KN90KE, 6903 N. Kimberly Drive, Peoria, Illinois, uses a NQ-110 and a Globe Scout 680-A on the 40 and 15 meter bands. Bob thanks W9FM and K9EMJ for their code and theory classes that were held at the Peoria Area ARC.

[*Continued on page 118*]



Bill Sharp, KN2HBV, 618 N. Salina St., Syracuse 8, N.Y. sends a "sharp" picture of his Knight 50 watt rig, and HQ-100. Bill has worked 500 QSO's and has most of them confirmed!



Ken Haswell, G2CWL, will be listening for Novices on the 15 meter band. Thanks to Hugh R. Paul, Jr., W8LMK, for supplying this picture.



ham clinic

by CHARLES J. SCHAUERS, W6QLV
CQ Magazine, 300 West 43rd St., New York 36, N. Y.

The best overall investment an amateur can make is in good reliable test equipment. Why? Well, for one reason it seldom if ever becomes obsolete. Of course there are exceptions. But the ham who buys a good vacuum tube voltmeter today for example can look forward to it giving years of satisfactory service if handled properly.

Skimping on test gear is not understandable when one willingly pays $500 or more for other equipment. Like insurance, test equipment when needed can sometimes approach "pricelessness"!

The selection of test equipment should be carefully done. It is better to pay an extra dollar or two for an accurate test unit than to hobble along with a real cheap device whose accuracy is always in doubt. Where money is a prime consideration, the do-it-yourself kits as offered by Allied Radio and the Heath Co. should be considered.

Recommended for the amateur just starting out as well as the firmly entrenched experienced ham are the following items of test gear: vacuum tube voltmeter; grid-dip meter; pocket voltohmeter with a sensitivity of at least 5000 ohms per volt and a good pair of high impedance headphones. With these items, nearly all modern circuits can be readily tested.

The ham who has invested $1000 or more in equipment may be wise to buy a good tube tester too; but not one which tests for emission only. The set should be a mutual conductance (gm) tester and also contain provisions for indicating tube element shorts.

Many hams are not cognizant of what can really be done with the very popular grid-dip meter. This instrument, for my money, is worth more to me than any other test gadget I have. With it, frequency, rf loading, capacitance, inductance, parasitics and many other factors can be measured. By adding a 400 cycle modulator to it, it can be used for BC receiver alignment (if it is voltage stabilized and carefully calibrated).

To the serious ham an oscilloscope is a must. With it he can make very close measurements and analyze circuit performance with very little difficulty. For the SSB enthusiast a scope often spells the difference between low and high efficiency.

If you like working with transistors, a vacuum tube voltmeter is quite essential because it takes very little power from a circuit and makes for accurate parameter measurement. Having high Z input, it will not disturb circuits whose circulating currents are minute—but important.

The lowly headphone can be used in a number of ways. In audio circuits, it can be used for signal tracing in conjunction with a blocking condenser. With a battery it can indicate open coils, shorted condensers, open resistors, poor relay contacts and many other things. Only in very high Z circuits does it fail to perform well.

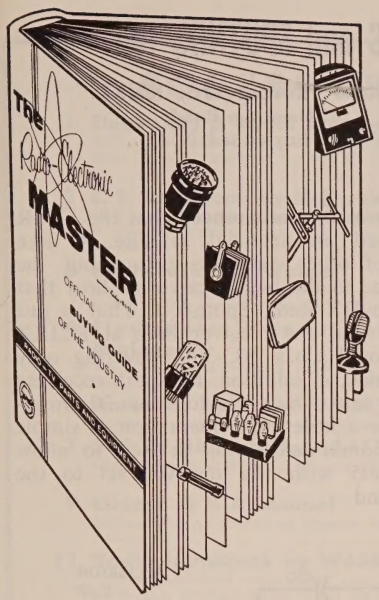
Knowing how to use test equipment is another matter. More meters have "popped their innards" through operator carelessness than any other piece of electronic gear. A wise precaution on any ham's part is to buy a few *Littlefuses* made especially for test instruments. There is wisdom in burning out a few low priced fuses instead of an expensive microammeter.

Are you one of the many who forgot to switch from ohms to volts to suddenly find himself with a meter whose needle resembles a pretzel? Well, have courage—don't give up the ship! You are not alone. Experience still seems to be the best teacher.

Caring for test equipment properly is a very important matter. If you are like many of us, you'll never give much thought to cleanliness of switch contacts, loose knobs, old batteries, loose jacks or internal corrosion. But one day a particular instrument will stop working and you'll realize that a certain amount of instrument maintenance is necessary. A well maintained instrument is a safe instrument!

Prior to coming to Europe I happened in on a Novice who was testing an old surplus power transformer with a pair of test leads whose prods were badly insulated. Come to find out, 2000 volts were lurking in the wind-

[*Continued on page 109*]



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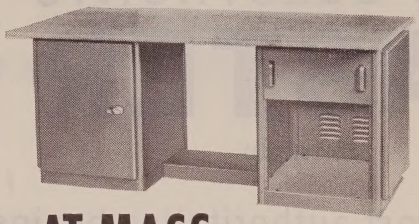
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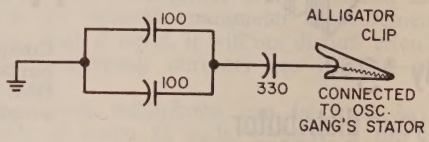
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For further information, check number 46 on page 126.

BC and SPUTNIK, too

by Karl Thurber, Jr., K2IKZ
247 Hamilton Road,
West Englewood, N. J.

When it was first announced that the USSR had launched an artificial satellite, I, like thousands of other amateurs throughout the world, turned to the ham receiver to hear that latest choice DX item, Sputnik I. That is just fine, except that the receiver here at K2IKZ is the National Co.'s NC-300, covering only the ham bands; in addition, no spare receivers were to be had which would tune 20 megacycles. After a little experimentation, a simple condenser combination was devised to allow tuning 20.005 with the receiver set to the 15-meter band.



The "gizmo" is simply 2-100 mmfd silver mica condensers (parallel), connected in series with a 330-mmfd silver mica. The "gizmo" is clipped between the stator of the oscillator (first from front) gang of the large 3-gang variable, and ground.

Using a crystal calibrator and/or WWV's 20-mc signal, the operator should tune across the range until the 20-mc signal is heard; Sputnik's channel is 5 kc higher. Record the dial reading so that you will be ready for future "baby moons."

Using this easily-improvised set-up, excellent tape recordings of the satellite's signal were made.

For those of you who still listen to the standard broadcast band (you'll find DX there, too!) it was found that the same condenser combination would bring in the high-end of the broadcast band, 1430-1600 kc. Larger value condensers extended the receiver's tuning range lower in the band, but tracking and sensitivity was somewhat impaired as the frequency range was lowered.

It would seem reasonable to assume that other ham-bands-only receivers could be modified without "digging into" the receiver, with little difficulty.

It is probable that the Soviets will continue to use the 20-mc frequency for some time to come. The Soviet magazine "Radio" designated this range, along with the 40-mc channel, for future satellite launchings.

How about trying this modern version of SWL'ing?—Interplanetary style. ■

BOOKSHOP

1 Electronics & Radio Eng. by Terman
1078 entertaining educational pages, this one is a gotta for every hamshack, too bad it's so expensive $13.50

2 E. E. Handbook by McIlwain
1618 pages, a better buy per pound than Terman, but it gives just formulas, tables & circuits, not so much explanation $10.00

3 Cybrenetics by Weiner
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4 Electronics Manual for Radio Engineers
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5 Antennas by Kraus (W8JK)
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The author wishes to make no claims as to the originality of the following, but has used it with considerable success while teaching basic electronics to Airmen of the United States Air Force.

The decibel and its relationship to power ratios, voltage gains or losses, etc., has always been a source of much confusion among students of electronics, hams and others, unless he was capable of handling logrithms, powers of tens and mathematics of considerable depth. Even then, it requires the use of a log table or slide rule to compute even the simplest problems involving the decibel.

Examination of the formula for decibels shows that db equals 10 log P1/P2 (when power ratios are known). Since the computation of decibels involving voltage or current ratios assumes a common impedance be at all times considered, it is usually prudent to ignore all but power ratios until one becomes familiar with the mechanics involved. Consulting either a log table or a slide rule we can easily determine that 1 db is equal to a power ratio of 1.27 : 1. Further investigation would reveal that 2 db is equal to a power ratio of 1.6:1 (approximately). It is interesting to note that 1.6 is the result of raising 1.27 to the second power. (1.27 × 1.27 equals 1.6). As all amateurs know 3 db equals a power ratio of 2 : 1, which is the result of raising 1.27 to the third power. (1.27^3). In short then to convert decibels into the equivalent power ratio, it would only be necessary to raise the figure 1.27 to the power equal to the number of decibels involved. Obviously this requires far too many separate steps and becomes hopelessly awkward when many db are considered. A greatly simplified method becomes apparent when the following table is considered.

1. db. equals a power ratio of	1.27 : 1
2. db. equals a power ratio of	1.6 : 1
3. db. equals a power ratio of	2.0 : 1
10. db. equals a power ratio of	10.0 : 1
20. db. equals a power ratio of	100.0 : 1
30. db. equals a power ratio of	1000.0 : 1 etc.

It is interesting to note that db's can be added



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arithmetically, while the ratios naturally multiply. Let us consider the problem of converting 16 decibels into its equivalent power ratio. 16 db equals 10 db plus 3 db plus 3 db. Converting to equivalent power ratios we can note $10 \times 2 \times 2$ equals 40. Therefore 16 db represents a power ratio of 40 to 1. Since decibels represent ratios only, a positive 16 db would indicate a gain of 40 to one, while a negative 16 db would represent a value of 1/40 of the original value. By the same reasoning 37 db can be converted to its equivalent power ratio: 37 db equals 30 db plus 3 db plus 3 db plus 1 db. Converting to power ratios we find that $1000 \times 2 \times 2 \times 1.27$ equals 5080. Consequently 37 db gain implies a power ratio of 5080 : 1.

From the foregoing it can be seen that any decibel to power ratio can be converted easily in a matter of seconds. Further it requires no reference tables or slide rules. It is necessary to commit to memory only the ratios equal to 1 db; 3 db; 10 db and so on. A few minutes practice with this system will permit anyone to equal the best slip stick artist in solving problems involving decibels and power ratios. ■

HARMONICS [*from page 46*]

for low power using silver mica condensers. It is now possible to use disk ceramic 1200 v dc condensers enabling the filter to be used on kw rigs. The disk condensers, while they are not extremely accurate or stable, are good enough for this application. The actual cut-off frequencies of the filter is between the amateur bands. This was done to make the input and output impedance 50 ohms in the band pass of the filter. (See fig 1). If the filter was designed for a cut-off at the high end of the amateur band the impedance using this constant K filter would be high, increasing the SWR and pop the condensers. It would be necessary to go to a more complicated M derived filter to accomplish this. Long as we are only interested in cutting off before the second harmonics, this filter is satisfactory.

At the present no other solution presents itself to those who insist on using all-band antenna systems. There is less than 1 db loss in these filters. The entire price to construct all of these filters should not exceed the price of a regular low pass filter. Yet this filter has the advantage of preventing TVI, plus reducing QRM to your fellow amateurs on the higher bands.

Theory

The action of the filter is based upon the fact an inductance represents a low impedance to low frequencies and a high impedance to high frequencies. Whereas the opposite conditions occurs with a capacitance. When induct-

[*Continued on page 108*]

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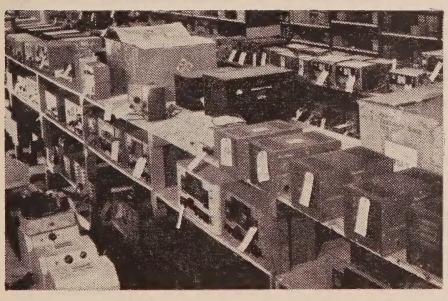
Stable! Sensitive! Features 10 dial scales for coverage of 160 to 1¼ meters with National's exclusive new converter provision with receiver scales calibrated for 6, 2 and ¼M, using a special 30-35 tunable IF band. Longest slide rule dial ever; more than 1 ft. Three position IF selector - .5kc, 3.5kc, 8kc - provides super selectivity. Separate linear detector for single sideband. Calibration reset adjustable from front panel to provide exact frequency setting. Dual conversion.

Leo I. Meyerson, WØGFQ, says, "Here's a part of our reconditioning department where five trained technicians are continually repairing and perfecting used equipment. As many as 500 new items go through here each month. But we need more. Over the years we have built such a tremendous market for used equipment, that sometimes we even have a waiting list for certain items. Because of this guaranteed market, we can offer you a better price on your trade-ins. We want them! We need them! We'll allow more for them! Let us give you our top quotation for your present gear when you buy your new NC-300."

Amateur Net: $399.00

Only $22.95 per mo.

your present equipment may be enough for down payment.



XCU 300 Plug-In Crystal Calibrater: $23.95

FREE — Limited Time Only!

2400 Hour Clock with NC-300 Purchase

$15.00 VALUE

Gives 2400-hour time every hour of the day in every time zone all over the world. Key cities shown clearly. Direct reading, no computing or calculation necessary. Order your NC-300 now while this offer lasts. Clock will be mailed to you and guaranteed by clock manufacturer.

Dear Leo: Please send your free 1959 Catalog, information on the National line, and quote your best trade offer on my present

_____

for a new NC-300. C-10

NAME: _____

ADDRESS: _____

CITY & STATE: _____

WORLD'S MOST PERSONALIZED RADIO SUPPLY HOUSE

World Radio LABORATORIES

ELECTRONIC HEADQUARTERS

3415 W. BROADWAY, CO. BLUFFS, IA., Phone 2-0277

For further information, check number 23 on page 126.

NOW you can improve speech intelligibility and cut through QRM with the

SHURE Ranger

MODEL NO. 505T

CONTROLLED MAGNETIC MICROPHONE WITH TRANSISTOR AMPLIFIER



All the advantages of controlled magnetic microphone construction—ability to withstand hard usage and extremes of climate and weather conditions—are yours in this sturdy, reliable microphone. The Ranger 505T has a flat frequency response characteristic (200 to 4000 cps), controlled to provide maximum speech efficiency.

It is ideally suited for SSB-AM transmission. Fits naturally and comfortably in the palm of the hand . . . takes up minimum space in mobile or fixed-station equipment. Equipped with heavy-duty push-to-talk switch.

LIST PRICE $48.50

SHURE *The Mark of Quality*

SHURE BROTHERS, INCORPORATED
222 HARTREY AVE., EVANSTON, ILL.

MICROPHONES, HIGH FIDELITY AND ELECTRONIC COMPONENTS

For further information, check number 24 on page 126.

VHF [*from page 82*]

"July 23rd VE1HT was barreling in here about 5-9 and W1HOY was knocking him out (*Sorry.*) She is right on his frequency and when she goes on, oh, oh. *Funny, the way I heard it VE1QY was the one on Helen's frequency, and the one who knocks her signal out.*

Grabill, Indiana — Word about a couple of things from Bob Zimmerman (K9GXI):

"It might interest you to know that I worked 10 new states on the 6th of this month, (July), to bring my total to 33 states. I run 50 watts to an 832A and use one of my S.E.I. beams about 40' up." *Have heard from a number of the fellows concerning that opening. Sure was a honey.*

Wilmington, Delaware — Dana Huhn (W3HWQ) sez:

"Thought you would like to know there is a fairly active station on in Delaware. I am on the following bands: 430, 11 elements, 70'; 220, 11 elements 70'; 144, 22 elements, 70' 6, 5 elements. Receiver is an NC300 with all converters. The Gonset on 2, the Globe 680 on six, Homebrew on 430 and 220. I am working on a kw two meters with a pair of 4-125A's." *A lot of the fellows will be looking for you on those VHF bands Dana. You can count on a busy time.*

Lewiston, Maine — A few notes from Clem (K1GPJ).

"I got my license on May 18, 1958 and to August 1, 1958 had made 821 contacts. On July 15th W1UAR in Massachusettes, W1EXZ in Vermont and myself had a three way contact with all parties hearing each other. Have hopes of having an all New England QSO on six meters in the near future"

"Have worked K2RRG in New Jersey and a number of New York stations. Have now worked 29 states and have 29 confirmed."

"I'm on every morning from 0700 to 0800 on 50.250 mc and usually on also from 2100 every evening. Anyone who wants the state of Maine give me a shout." *And there are lots of them in there Clem, most everyone needs Maine.*

Meriden, Connecticut — Doug (W1KLK) also comes up with a little about a lot.

"Main project here has been six meters. The 6n2 works fine. Receiver is a tecraft-converter into an RME-45 which has double conversion to 85 kc added. Also noise clipper and audio filter. Present plans are for a coax tank circuit with 6BCY. The antenna on 6 is a 4 element beam on 12 foot boom. By the August contest it will be a 7 element on a 24 foot boom."

"Plans for two meters include a new beam (32 elements) and coax tank front end with 417A or 416B if I can swing it."

"W1OAX has taken his YX 150 final and Collins and moved to New Mexico. He leaves his states worked total for Connecticut at 22."

"KN1IHA, Al, is the latest addition to the Meriden 2 meter gang. He is also mobile with ARC-5 and Gonset receiver."

"K1AFR, John, has built himself a crystal converter and a pair of 6146's in push-pull for two meters. He uses an 8 element telrex from a fine VHF location in Hamden, Connecticut."

"W1VSE, Mert, has been busy of late. He now has two rigs on 6 and two rigs on 2. One six meter rig is a converted ARC-5 where 8 mc VFO is used. On two he uses an 829B or YX150 rig. The antenna is a 10 element beam but plans are for a 40 element array."

"W1PTG, Al, has been back on two meters from the WNHC-T.V. transmitter."

"K1AZG has an 829B rig modulated with a pair of 807's. He puts out a fine signal as long as his overload relays don't kick out."

"K1CRQ, Stew, has been building long yagis. In September another get-together is planned at his QTH." *Fine business, Doug, always good to get these bits of news.*

73, Sam, W1FZJ

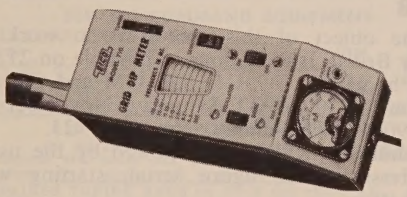
KEN-ELS *headquarters for* EICO



90-WATT CW TRANSMITTER #720

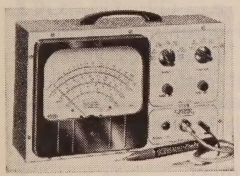
KIT $79.95 WIRED $119.95

Conservative, highly efficient design plus stability, safety, and excellent parts quality. Covers 80 thru 40, 20, 15 11, 10 meters (popular operating bands) with one knob band-switching. Finest quality, conservatively rated parts, copper-plated chassis, ceramic switch insulation. 5" H, 15" W, 9½" D.



NEW GRID DIP METER . . . . . #710

KIT $29.95 WIRED $49.95 including complete set of coils for full band coverage.



EICO Deluxe PEAK-to-PEAK VTVM #249

with 7½" meter and exclusive Uni-Probe (pat. pending). Kit only $39.95; Factory Wired only. **$59.95**



HQ-160
GENERAL COVERAGE RECEIVER

*Telechron automatic clock-timer $10 extra.

$379.00

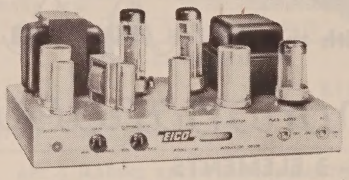
WØZKD—Glen
WØZCN—Ken } **Fort Dodge**

428 Central Ave., Fort Dodge, Iowa
Phone: 5-2451

WØCRP—Russ
KØABO—Rog } **Cedar Rapids**

67 16th Ave., S.W., Cedar Rapids, Iowa
Phone: EM 4-1172

KEN-ELS RADIO SUPPLY



NEW UNIVERSAL MODULATOR-DRIVER #730

KIT $49.95 WIRED $79.95 Cover E-5 $4.50



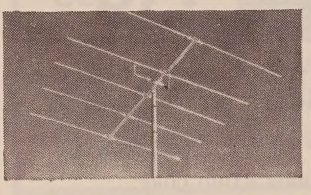
COLOR and Monochrome DC to 5 MC LAB & TV 5" OSCILLOSCOPE #460

KIT $79.95 **WIRED $129.50**

- Features DC Amplifier

5" PUSH-PULL Oscilloscope #425: Kit $44.95, Wired $ 79.95.
7" PUSH-PULL Oscilloscope #470: Kit $79.95, Wired $129.50

A Complete Line of hy-gain



6 METER
5 ELEMENT
$12.95

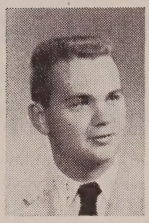
6 METER, 8 ELEMENT BEAM: $24.95

The hy-gain 6-meter beams are adjustable for max. gai... over the entire band, from our instructions. No further tuning necessary. Calibration Chart supplied with each instruction manual. Factory preassembled, these beams feature heavy wall ½" aluminum elements of 6061T6 alloy and 1¼" diameter aluminum booms. May be stacked for additional gain. Stacking Bars available at $3.95 extra.

10% down — 24 months to pay. Your trade-in may cover down payment. Export business welcomed.

For further information, check number 25 on page 126.

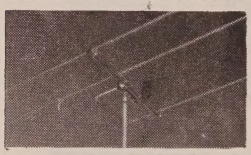
For prompt, friendly service on
HY-GAIN
Talk to


Terry
W9DIA


Steve
W9EAN

Perfect 1:1 SWR
with the NEW hy-gain
monobanders

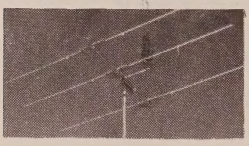
10M - 3 ELEMENTS



18 lbs.
Boom Length: 104"
Longest Element: 17'10"

$24.95

15M - 3 ELEMENTS



30 lbs.
Boom Length: 142"
Longest Element: 23'10"

$34.95

20M - 3 ELEMENTS



48 lbs.
Boom Length: 212"
Longest Element: 35'9"

$59.95

Average Gain: 8½ db. Average F/B Ratio: 24 db.

SEE THE COMPLETE HY-GAIN LINE . . .

See Terry Fri. eve 6 to 9 PM & Sat. 9 AM to 3 PM at

HARRIS RADIO CORP.
289 N. Main, Fond Du Lac, Wisc. WAlnut 2-4670

Write for free used equipment listing—10% down —24 mos. to pay.

Wisconsin's Largest Ham Distributor

AMATEUR ELECTRONIC SUPPLY
3832 West Lisbon Ave., Milwaukee 8, Wisc.
WEST 3-3262

For further information, check number 26 on page 126.

CONTEST [*from page 83*]

envelope and sufficient new rate postage.

Look for OHØNB and OHØNC (Aland) during the Phone section. There is also a possibility of some CW activity. During the CW week-end we are promised some Luxembourg activity by DL7AH and DL9PF. They will be signing LX1RX and LX1KA. And there is still a possibility that PY2CK will be at Trinidad for the Phone section of the contest. Hope to have more for you next month.

ARRL SS

A good opportunity to limber up your fist for the real contest that comes up at the end of the month.

RSGB

The object of this contest is to work as many British Isles stations as possible on 21/28 mc Phone. (G, GC, GD, GI, GM and GW.)

Time—0700 GMT Saturday, November 22 to 1900 GMT Sunday, November 23.

Numbers—RS report followed by the usual progressive three figure serial, starting with 001, etc.

Points—Five points for each completed contact. A station may be worked only once on each band.

Bonus—A bonus of 50 points can be claimed for the first contact with each British Isles country/numeral prefix, e.i. G2, G3, GC2, GC3, etc. There are 36 combinations in all. A new bonus has been added this year. An additional 50 bonus points can be claimed for each ten G3 stations worked.

Scoring—Final score is obtained by adding the total contact points PLUS the total bonus points. There is no multiplier.

Awards—Certificates will be awarded to the leading station in each overseas country and each call area in VE, VK, W/K, ZL and ZS.

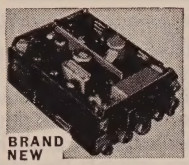
Send your logs to the R.S.G.B. Contest Committee, New Ruskin House, Little Russell St., London W.C.1, England.

High man in the 1957 contest was G3DO with 4140 points. The highest overseas entry was VQ4RF with 2120 points. Certificate winners over here were: W8NWO 1540, W1FZ 710, K2TCD/2 560, KØITF 515, W6AED 445 and W3HQO 385. Winners across the border were: VE2YU 1405, VE3AIU 1095, and W2ZRX/VO1 680. Up in state 49, KL7PIV was top man with 1180 pts.

That's it for this month. Hope you sidebanders don't pass up the Phone section of the contest. The few SSB stations that were on last year were crying for lack of activity. Watch W3ASK's Propagation column for last minute forecast of what to expect in the way of conditions. Please George, make it another good year. Good luck, fellows.

73, Frank, W1WY

BC-645 XMTR RECEIVER



BRAND NEW

15 Tubes 435 To 500 MC

Can be modified for 2-way communication, voice or code, on ham band 420-450 mc. citizens radio 460-470 mc. fixed and mobile 450-460 mc television experimental 470-500 mc. 15 tubes (tubes alone worth more than sale price!): 4—7F7, 4—7H7, 2—7E6, 2—6F6, 2—955 and 1—WE316A. Now covers 460 to 490 mc. Brand new BC-645 with tubes, less power supply in factory carton. Shipping weight 25 lbs. **$29.50**

PE-101C DYNAMOTOR for BC-645, has 12-24V input (easy to convert for 6V Battery operation) only **$7.95**

UHF ANTENNA ASSEMBLY, for BC-645 ..... $2.45
Complete set of 10 Plugs for BC-645 ..... **$5.50**

CONTROL BOX for above $2.25

SHOCK MOUNT for above 1.25

CONVERSION BOOKLET. Instructions for most useful surplus rigs **$2.50**

SCR-274 COMMAND EQUIPMENT

ALL COMPLETE WITH TUBES

Type	Description	Used	LIKE NEW
BC-453	Receiver 190-550 KC	$14.95	$16.95
BC-454	Receiver 3-6 Mc	9.95	12.95
BC-455	Receiver 6-9 MC	10.95	13.50
BC-450	3-Receiver Control Box	1.49	1.95

110 VOLT AC POWER SUPPLY KIT

For All 274-N and ARC-5 Receivers

Complete with metal case, instructions **$7.95**
Factory wired, tested, ready to operate $11.50

SPLINED TUNING KNOB for 274-N and ARC-5 RECEIVERS. Fits BC-453, BC-454 and others. Only ..... **49¢**

BC-457 TRANSMITTER—4-5.3 Mc. complete with all tubes and crystal. BRAND NEW **$7.88**

BC-458 TRANSMITTER—5.3 to 7 Mc. complete with all tubes and crystal. BRAND NEW **$7.88**

BC-459 TRANSMITTER—7-9.1 Mc. complete with all tubes and crystal. BRAND NEW **$12.95**

ARC-5/T-19 TRANSMITTER—3 to 4 Mc. BRAND NEW complete with all tubes & crystal **$8.88**

BC-456 Modulator ..... **USED 3.45** **NEW 4.95**
BC-451 Transmitter Control Box ..... 1.25 **NEW 1.49**

POWER SUPPLY KIT for all Command Transmitters, Input 110 v 60 cycles AC. Output 450V DC @ 200 mils; 250V DC @ 40 mils; 28V DC @ 2 Amps. All parts with chassis and instructions, included. OUR LOW PRICE **$29.50**

BC-603 FM RECEIVER. 10-channel push button tuning or continuous tuning, 20-28 Mc. Complete with speaker tubes, squelch. 12-V Power Supply. Exc. **$10.95**
BRAND NEW $14.95

AC POWER SUPPLY for BC603, 683. Interchangeable, replaces dynamotor. No revr change except add on-off switch to front panel. Provides 220VDC @ 80 Ma. 24 VAC @ 2 Amps. Complete kit, with easy instructions **$10.50**

SCR-522 2-METER RIG!

Terrific buy! VHF Transmitter-receiver, 100-156 Mc. 4 channels. Xtal-controlled. Amplitude modulated voice. They're going fast! Excellent condition.

SCR-522 Transmitter-Receiver, complete with all 18 tubes, top rack and metal case.
COMBINATION ..... Special **$33.33**

Receiver only, with all tubes $19.50
Transmitter only, with all tubes $22.25
Accessories for above available.



WILLARD 6-VOLT MIDGET STORAGE BATTERY

3 Amp. Hour. **BRAND NEW.** 3⅝" x 1-13/16" x 2⅜". Uses Standard Electrolyte ..... Only $2.69

2 VOLT BATTERY "PACKAGE"

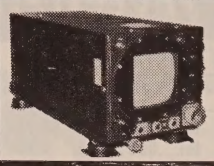


1—2V. 20 Amp. Hr. Willard Storage Battery $2.79
1—2V. 7 prong Synchronous Plug-in Vibrator 1.49
1—Quart Bottle Electrolyte (for 2 cells) 1.45
ALL BRAND NEW!
Combination Price **$5.45**



BC-442 ANTENNA RELAY

Wonderful Value! Consists of ¾ amp 2" RF Ammeter (antenna current indicator). 0-10 scale. Transmitter-Receiver Switching relay, in aluminum case with associated components. BRAND NEW **$2.49**



ASB-5 'SCOPE INDICATOR

BRAND NEW, including all tubes, together with 5BP1 'Scope Tube. Originally used in Navy Aircraft RADAR equipment. Easily converted for AC operation.

VALUE $250.00!

OUR LOW PRICE **$15.95**

BC-659 TRANSMITTER & RECEIVER

27 to 38.9 Mc F.M. Two preselected channels crystal controlled. 5 to 10 watts. Complete with speaker, tubes. Excellent used **$11.95**

Vibrator Supply for 6-12-24 Volts, New $11.95

BC-620 FM TRANSCEIVER, 20-28 Mc BRAND NEW **$9.95**

PE-120 6-12V Power Supply, with Tubes and Vib, NEW **$11.95**
Shock Mt. Rack, New $2.95

ARC-5/R28 RECEIVER



2-meter Superhet, 100 to 156 Mc in 4 crystal channels. Complete with 10 tubes.
BRAND NEW **$24.45**

110 V AC Power Supply Kit for above $9.75

ARC-5/T-23 TRANSMITTER

100-150 Mc Includes 2-832A, 2-1625 Tubes, BRAND NEW **$19.95**

SPECIAL OFFER! Limited quantity ARC-5/T23 xmitters.
BRAND NEW, less tubes $7.95
Excellent Used, less tubes $5.95

ARC-5 MARINE RECEIVER-TRANSMITTER

Navy Type Comm. Receiver 1.5 to 3 Mc BRAND NEW with 6 tubes **$16.95**

Navy Type Comm. Transmitter 2.1-3 Mc BRAND NEW with 4 tubes and Xtal **$12.45**

MODULATOR for above, new, with tubes $4.95

Hi-Fi DYNAMIC HEADSET with Cushions

Freq. Range: 40-14,000 CPS. No Distortion.
BRAND NEW **$7.95**

MICROPHONES

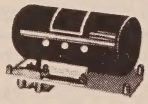
Model	Description	Excellent Used	BRAND NEW
T-17	Carbon Hand Mike	$4.95	$7.45
T-30	Carbon Throat Mike	.39	.79
T-45	Army and Navy Lip Mike		1.33
T-24	Carbon Mike		5.95
TS-9	Headset		3.88
RS-38	Navy Type	2.79	4.95

HEADPHONES

Model	Description	Excellent Used	BRAND NEW
HS-23	High Impedance	$2.25	$4.75
HS-33	Low Impedance	2.79	4.75
HS-30	Low Imp. (featherwt.)	1.25	1.99
H-16/U	High Imp. (2 units)	3.75	7.95

TELEPHONICS—600 ohm HEADSETS BRAND NEW PER PAIR $3.45

CD-307A Cords with PL55 plug and JK26 Jack ..... .99
Earphone Cushions for above—pair ..... .50



MOBILE-MARINE DYNAMOTOR

Input 12V DC. Output: 625 V DC @ 225 Ma. for press-to-talk intermittent operation. Shpg. wt. 14 lbs.
OUR LOW PRICE **$9.95**

SCHEMATIC DIAGRAMS For any equipment on this page, each **65¢**

Please include 25% Deposit with order—Balance C.O.D. 50c HANDLING CHARGE on Orders under $5.00 MINIMUM. All Shipments F.O.B. Our Warehouse N.Y.C.

G & G Radio Supply Co.

Telephone: CO 7-4605

53 Vesey St., New York 7, N. Y.

For further information, check number 27 on page 126.

GUARANTEED CRYSTALS!

HERMETICALLY SEALED CRYSTALS ½" Spac. .050 or .093

Amateur & Novice Fund. — .01% tol. ea. $2.50
Marine & Aircraft Fund. — .005 tol. ea. 4.10

Overtones:
10 to 30 Meg. tol. .005% ea. $3.75
30 to 54 Meg. tol. .005% ea. 4.10
54 to 75 Meg. tol. .005% ea. 4.25
75 to 90 Meg. tol. .005% ea. 5.40

Special! FT-243 Prec. Calib. to 1st Decimal

2 Meters { Exam: *8010.6 x 18=144.190 / Exam: *8010 x 18=144.180
Note— 10 KC difference between the above

6 Meters { Exam: *8340.6 x 6=50043.6 / Exam: *8340 x 6=50040
Note—3.6 KC difference between the above

Calibrated FT-243 as exam. above* spec. .....ea. $1.19
Thin-Line FT-243—6 Meters,
50 meg. to 52.44 meg.....ea. $1.79
52.45 meg. to 54 meg.....ea. $2.39
2 Meters, 144 meg. to 148 meg.....ea. $1.79
Hermetically Sealed Fund. .01 Tol.....ea. $2.50

NOVICE BAND FT-243 Fund. or DC-34 Freq... $1.19
80 Met. 3701-3748—Steps of 1 KC. FT-243 or DC-34
40 Met. 7150-7198—Steps of 1 KC. FT-243 only
Dbl. to 40 Met. 3576-3599. Steps of 1 KC. FT-243 or DC-34
15 Met. 5276-5312—Steps of 1 KC. FT-243

4035 4995 5880 6362 6815 7316 7 7558 3 7710 7875 8066 7 8283 3 8575
4045 5030 5892 5 6373 3 6825 7325 7560 7716 7 7880 8073 3 8290 8580
4080 5035 5900 6400 6840 7340 7566 7 7720 7883 3 8075 8291 7 8583 3
4095 5080 5906 7 6400 6850 7350 7573 3 7725 7890 8090 8300 8590
4110 5127 5 5925 6405 6873 3 7358 3 7575 7730 7891 7 8091 7 8306 6 8591 7
4135 5165 5940 6406 6 6875 7366 7 7580 7733 3 7900 8100 8308 3 8600
4165 5205 5950 6425 6900 7373 3 7583 3 7740 7906 6 8106 6 8310 8608 3
4175 5235 5955 6440 6906 6 7375 7590 7741 7 7908 3 8108 3 8316 7 8610
4190 5245 5973 3 6450 6925 7400 7591 7 7750 7910 8116 7 8320 8615 7
4215 5327 5 5975 6473 3 6940 7406 6 7600 7760 7916 7 8120 8325 8620
4220 5385 5995 6475 6950 7408 3 7606 6 7766 7 7920 8125 8330 8625
4255 5397 5 6000 6500 6973 3 7416 7 7608 3 7770 7925 8130 8340 8630
4280 5435 6006 6 6506 6 6975 7425 7610 7773 3 7930 8133 3 8350 8633 3
4295 5437 5 6025 6525 7000 7433 3 7616 7 7775 7933 3 8140 8375 8640
4300 6040 6540 7006 6 7440 7620 7780 7940 8141 7 8400 8641 7
4330 5500 6042 6550 7025 7441 7 7625 7783 3 7941 7 8150 8408 3 8650
4340 5545 6050 8158 3 8425 8656 3
4395 5582 5 6073 3 8160 8430 8660
4397 5 5587 5 6075 8166 7 8440 8670
4445 5645 6100 8170 8441 7 8675
4490 5660 6106 6 8173 3 8450 8680
4495 5675 6125 8175 8458 3 8683 3
4535 5687 5 6140 8180 8460 8690
4540 5700 6142 8183 3 8470 8691 7
4580 5706 7 6150 8190 8475 8700
4610 5725 6173 3 8191 7 8480 8708 3
4620 5730 6175 6573 3 7040 7450 7630 7790 7950 8200 8483 3 8710
4635 5740 6185 6575 7050 7458 3 7633 3 7791 7 7958 3 8206 6 8490 8716 7
4680 5750 6200 6600 7073 3 7466 7 7640 7800 7960 8208 3 8491 7 8720
4695 5760 6206 6 6606 6 7075 7473 3 7641 7 7806 6 7966 7 8210 8500 8725
4710 5773 3 6225 6625 7100 7475 7650 7808 3 7970 8216 7 8508 3 8730
4735 5775 6235 6640 7106 6 7483 3 7658 3 7810 7973 3 8220 8510 8733 3
4780 5780 6240 6650 7125 7500 7660 7820 7975 8225 8518 7 8740
4785 5782 5 6250 6673 3 7140 7506 6 7666 7 7825 7980 8233 3 8520 8741 7
4815 5800 6273 6675 7150 7508 3 7670 7830 7983 3 8240 8525
4820 5806 7 6273 5 6700 7200 7510 7673 3 7833 3 7990 8241 7 8530
4840 5820 6275 6706 6 7206 6 7516 7 7675 7840 7991 7 8250 8533 3
4845 5825 6300 6725 7225 7520 7680 7841 7 8000 8258 3 8540
4852 5 5830 6306 6 6725 7240 7525 7683 3 7850 8025 8260 8541 7
4880 5850 6315 6750 7250 7530 7690 7858 3 8030 8266 8550
4900 5852 5 6325 6773 3 7273 3 7533 3 7691 7 7860 8033 3 8270 8558 3
4930 5860 6375 6775 7275 7540 7700 7866 7 8040 8273 3 8560
4950 5873 5 6340 6800 7300 7541 7 7708 6 7870 8041 7 8275 8566 7
4980 5875 6350 6806 6 7306 6 7550 7708 3 7873 3 8050 8280 8570

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For further information, check number 28 on page 126.

SURPLUS *[from page 88]*

second. Should the tone continue with the signal generator off, you have an oscillation, and this will require detuning or anyone of a dozen procedures to eliminate. If you have followed the directions carefully you will find that the set may oscillate while you are aligning it, but that the backing off of the slug adjustments will eliminate the oscillations. In severe cases you will have to increase the size of the plate decoupling resistor (that's the 1000 ohms resistor at the bottom end of the i-f return for B-plus) and also increase the size of the by-pass condenser associated with the resistor. Front end alignment was described last month, so we won't go into that except to say that the rf gets aligned at the low end of the band with the slugs and at the high end of the band by means of the trimmer condensers.

It is a usual practice to disable the avc when aligning a set by shorting it, but since this is not always advisable especially when the i-f gets a large portion of its bias from the avc line, we found that the alignment can be accomplished by the monitoring of the avc voltage (about 8 to 10 volts) with a vtvm.

MAIL

It is gratifying to get as much mail about the simple feature of handbooks. It seems that the surplus hound is far from down and out and that surplus is still a big business. As you will see next month, this column is not devoted only to the conversion of military surplus, but that from time to time we will spend a little effort bringing an older piece of equipment to a new life having reached the status of surplus or junk in the light of present equipments. Of course everybody likes to have new gear, but a lot of us cannot afford to go out and buy all of the new stuff that is on the market. So bringing the older gear to life again will in a sense be using surplus.

We recently got a request from Harvey House of 2022 Bentley Ave., Orlando, Florida for a BC-652-A handbook. A day later we got a second request from another ham about the same gear. Strangely enough it isn't listed in any of the listings of available field manuals published by the Signal Corps, so if anyone has any data on this, please contact both Harvey and myself on this gear. In case you have a copy of the BC-654-A handbook, get in touch with K3BVV. That long awaited TCS conversion is not in my hands any more. It has been months since it was submitted for publication (and I'll bet the author forgot about it), but the backlog of articles is what has held it up. It will be in soon, but just in case KX6AF is looking for a conversion or a

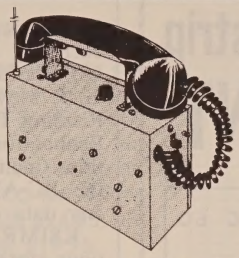
[Continued on page 104]

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12 VDC	540 VDC	450 MA	DA-12	9.95	6.95
12 VDC	425 VDC	163 MA	WE-377	12.95	9.95
12 VDC	225 VDC	100 MA	D-402	8.95	5.95
12 VDC	250 VDC	60 MA	DM-32 12 V	4.95	——
12 VDC	275 VDC	150 MA	DM-64	8.95	——
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6 VDC	640 VDC	260 MA	Recond't. by G.E.	12.95	
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SURPLUS *[from page 102]*

handbook as is Harold Cutshall, WØQPQ/7 currently at East 9905 4th Avenue, Spokane 63, Washington. Received a letter from Mr. G. J. Meyers, Jr., Executive Vice Pres. of the Reading Tube Corporation, Box 126, Reading, Penna. for conversion data and coil information (including where to purchase coils) for the BC-AR-429 receiving set. If anyone has any data on this please contact him directly.

K8IMR came up with a Bendix Communications system model 3801, with a model 3103 receiver and a 3006 transmitter. We give up except to say that it is probably airline surplus . . . can anyone help? K8JBE points out that the ARR-1 makes a good pre-amp for 10, 6 or 2 meters—just tune the coils for the band you want. Archie Love W4TCM is looking for a TBX-8 as well as a handbook for it. He claims he has used a Heath Battery Eliminator for the transmitter filaments while using a motor to drive the hand generator.

W3HSL wants conversion info on the ASB scope as well as the schematic for same. Has anyone a BC-1066 conversion for John Giddings PO box 3931, Bay Pines, Florida? Fred Lampell, K2OMY needs the AN/VRC-4 handbooks as well as the BC-609D interphone schematic. The BC-348-0 is still a hot receiver and Hugh Richards Jr., Box 631, Ft. Myers, Florida has one and is looking for the handbook that goes with it. 73, Ken W2HDM

6AU8 *[from page 49]*

pentode sections. Although not too important, this is actually opposite to what might be desired. Driving a 6146 or a 2E26 is marginal.

Fig. 2 shows the same type of circuit using a 6AU8 which has a triode rating of 9 ma. and a pentode rating of 15 ma. This is the way we want it and we can run both sections cold for long life. Of particular interest (except for the first grid resistor) is the complete difference in values of resistance, capacitance, voltage and current. In studying the two schematics you will note that not only is more desirable operation of the crystal obtained but the large output of the pentode section with only 150 microamps of grid drive is extremely attractive and we still have 5 ma. of pentode plate current in reserve. We all know that 95 volts on the 2E26 grid is more than enough, thereby making tubes, components, crystals, and adjustments less critical. A potentiometer or variable resistor in place of the 51 K in the pentode screen will control your drive to the final stage. The use of the 6AU8 is not limited to only 50 mc so why not give it a try?

NOTE:

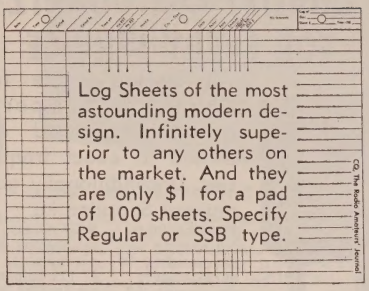
The 6U8 and 6AU8 do not have the same socket connections. ■

THE HAM SHOP



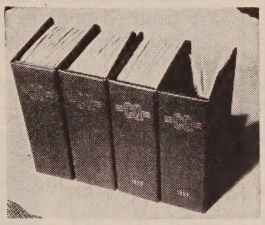
GLOBE

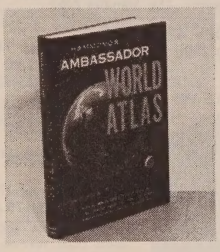
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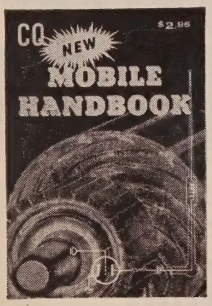
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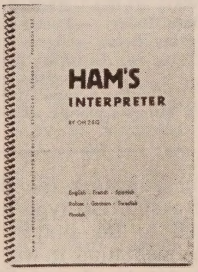
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For further information, check number 32 on page 126.

VOX-BREAK [*from page 47*]

The keying relay selected follows straight or automatic keying perfectly from a few words to over fifty words per minute and its contacts are used to actuate the transmitter keying circuit. For those transmitters in which grid-block or cathode keying is employed, this relay may be eliminated from the circuit altogether along with its series connected 7500 ohm resistor. In this case the connections to the transmitter keyed circuit are made directly across the contacts of the Vox-Break keying jack.

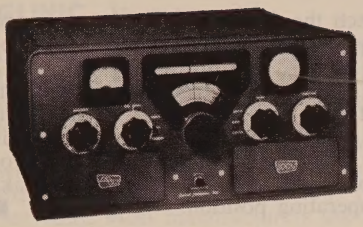
The plate relay contacts are heavy duty and are used to operate the transmitter controls as desired. For well shielded transmitter installations good quality connectors such as the Amphenol type 91MC or MP should be installed for cable entrance at the transmitter. It is also suggested that a small line filter be inserted in each line at the back of this connector inside the transmitter. A 3.9 microhenry choke in series with each line and a small .01 mfd ceramic button capacitor connected from each connector contact to ground serve the purpose perfectly. It is up to the individual reader to decide how the relay contacts are to be employed. In the author's Vox-Break the relay contacts go directly across the dpst plate voltage switch in his Viking II which in turn controls the antenna relay and receiver muting. Any combination to accomplish the same purposes will be satisfactory.

Parts List

Transformer —Stancor PS8416
Rectifiers —Federal 1002A
Rotary Switch—Mallory 3115J
Plate Relay —Potter & Bromfield LM-11
Keying Relay —Sigma 41 DC Keying Relay
Any low voltage 50 to 200 ohm keying relay may be used. Several available surplus.
All other parts as shown on schematic diagram.

For adjusting the plate circuit relay "on" time a shorting type five-position switch is attached to the output tube grid. After some experimentation it was determined that delays of 0, ¼, ½, 1 and 1½ seconds were all desirable and these have been included in the design. The cw man will find the ¼ and ½ second delays most applicable to traffic net operation with the 1 and 1½ second delays more suited to the usual cw ragchew. The phone man will find the ¼ second delay best for chatting with the SSB stations, the ½ and 1 second delays best for AM phone net use and the 1½ second delay most suitable for the ordinary AM phone conversations. In the event that automatic VOX operation is not desired during a voice contact it is only neces-

[*Continued on page 108*]



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NO TUNING CONTROLS — CE BROADBAND Couplers in HIGH EFFECIENCY CLASS AB^2 using single 813. Easily driven to 600 Watts PEP Input 160 thru 10 by a 20A or 100V. Built-In HEAVY DUTY POWER SUPPLY — 45 MFD PAPER Capacitor. Meter reads WATTS INPUT, GRID DRIVE, RF AMPS, and SWR. Completely shielded — TVI suppressed — parasitic free. REMEMBER there is LESS than ONE S UNIT difference between the 600L and a 2 KW PEP job. .....PRICE $495.00

THESE MULTIPHASE EXCITERS PIONEERED AMATEUR SSB

MODEL 20A



MODEL 10B — 10 watts PEP. Plug-in coils 160 thru 10 meters. Perfect voice control on SSB—DSB—AM and PM — CW breakin. Carrier and calibrate level controls. 40 DB suppression.

Wired.....$179.50 Kit.....$139.50

MODEL 20A—20 watts PEP. Bandswitched 160 thru 10 meters. SSB—DSB—AM—PM and CW. Magic eye monitors carrier null and peak modulation. Ideal for driving AB1, AB^2, and most Class B linears.

Wired.....$279.50 Kit.....$219.50

MODEL 10B



Central Electronics, Inc.

1247 W. Belmont Ave. Chicago 13, Illinois

For further information, check number 33 on page 126.

Hint: November 1st New Rates

We're not trying to be difficult or anything . . . it's just that postal rates are going up in 20% leaps and we have to raise the subscription rates if we are to stay in business. The present rate runs $4 per year, $7 for two and $10 for three years. This will go up to $5 for one, $9 for two and $13 for three. Some economies can be realized if you subscribe through your club at our club rates (have your club secretary write for info) or if you buttonhole the editor at a convention or hamfest. All of these arrangements are quite an improvement over the newsstand rate of a flat $6.50 per year. It is therefore highly recommended that you get your subscription in soon, or extend your present subscription at the present rates.

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ANNOUNCEMENT

Again in this issue a new section appears in CQ where distributors may advertise trade-in and reconditioned equipment. This section, called the TRADING POST will be confined only to legitimate ham distributors as a means of announcing the many excellent used items available.



BARGAINS: Send for list of reconditioned receivers and transmitters with new guarantee. 10% down with up to 24 months to pay. In stock new Collins, Johnson, Hallicrafters, WRL, National, Hammarlund, Gonset, Elmac, Drake, Central Electronics, B & W, Hy-Gain Mosley, Gotham beams. Shipped on approval. Write en, WØZCN, or Glen, WØZKD for your best deal. **KEN-ELS RADIO SUPPLY CO., 428 Central Ave., Fort Dodge, Iowa.**

RECONDITIONED and GUARANTEED TO SATISFY: Hallicrafters S40B $65.00, S85 $89.00, SX42 $139.00, SX43 $89.00, SX99 $109.00, SX101 Mark III $309.00, National NC98 $109.00, NC188 $119.00, NC109 $169.00, NC183D $275.00, NC300 $289.00, Johnson Viking II $189.00, Ranger $199.00, "500" Like new $649.00. Collins 75A1, 75A2, 75A3, 32V2, 32V3, BW 5100, 5100B/51SB-B. Many others. Write "Vince" WØNTA. RADIO TRADE SUPPLY CO., 1224 Grand Ave., Des Moines, Iowa.

RECONDITIONED and GUARANTEED. Satisfaction guaranteed. Terms financed by us. Hallicrafters S38 $29.00; S85 $89.00; SX99 $119.00; SX96; SX100; SX101; HQ100 $139.00; HQ110 $189.00; HQ140 HQ150; National NC98 $99.00; NC125 $129.00; NC300 $279.00; HRO50T; HRO60; NC183D; Central B slicer $39.00; Globe Scout $69.00; Viking II; Ranger; Valiant; Pacemaker; Thunderbolt; Heath DX35; DX100; Collins 32V; 75A2; 75A3; 75A4; etc. Many other items. Write for free list. HENRY RADIO, BUTLER, MO.

sary to switch the device over to the cw mode and depress the telegraph key for "press-to-talk."

No TVI has resulted from the installation and use of the Vox-Break and it has been found that usual receiver speaker volume is insufficient to trigger the unit with the microphone a couple of feet away from the speaker at the operating position. ■

HARMONICS [*from page 96*]

ances are connected in series on a line and capacitors in shunt, then dc will flow in opposition and the ac of low frequencies are subject to only a small impedance. As the frequencies increase the series impedance and shunt circuit decreases. If the inductances and capacitances are correct with low rf leakage then the frequencies above a critical frequency f_o will be attenuated and the network forms a low pass filter. Because the cut off frequency is much higher than the amateur band to secure a 50 ohm match the disk ceramic condensers may be used. Ceramic condensers are stable enough for this application and 10% deviation may be tolerated securing standard types to work in the filter, as the impedance curve rises slowly toward the cut off frequency.

Technical Information: For one section of filter.
Example: Using values for 80 meters.
800 mmfds and 2.3 μhys.

1 Section: $f_o = \frac{1}{\pi \sqrt{LC}}$

Where f_o Cut Off Frequency.

$$= \frac{1}{\pi \sqrt{2.3 \cdot 1600 \cdot 10^{-18}}} = 5.23 \text{ mc.}$$

Using this value of **5.23 mc** we can find the impedance of the filter at the operating frequency. **(See Fig. 1)**

$$Z_o = \sqrt{\frac{L}{C}} = \sqrt{\frac{2.3 \cdot 10^{-6}}{1600 \cdot 10^{-12}}} = 38\ \Omega \text{ at zero frequency.}$$

$$Z_o = \sqrt{\frac{38}{1 - f_1^2}} \quad \begin{array}{l} \text{where } f_1^2 = \text{operating frequency.} \\ f_o^2 = \text{cut off frequency.} \end{array}$$

Impedance:

zero frequency	38	ohms.
1.0 mcs.	38	ohms.
2.0 mcs.	41	ohms.
3.0 mcs.	47	ohms.
3.5 mcs.	51	ohms.
3.8 mcs.	55	ohms.
4.0 mcs.	58.5	ohms.
5.2 mcs.	Infinity.	

These are theoretical calculations. Extra capacity due to feed line etc. may add some error. The original article states the input and output impedance is not too critical. ■

ings ready to snuff out a young life! Do not be foolish and depend on old worn test leads and prods. Remember: the ordinary test prod is not built for high voltage!

One common mistake made by amateurs when testing commercial gear is to use a voltmeter whose sensitivity is low (1000 ohms per volt). Most manufacturers use meters having a sensitivity of 20,000 or more ohms per volt. If you follow their voltage charts reproduced in their instruction books using a low sensitivity VM you'll wind up with wrong voltage readings. In some circuits a difference of 3 or 4 volts is very important.

Yes, the day of the "hit and miss" era has since long passed. But as long as we have ham radio we'll have those with us who say: "heck, I've been on the air 20 years and never needed anything 'fancy' to do my testing. Only thing I need usually, is a good half watt neon bulb!" Hmmm! I wonder!

OBSERVATION

In thumbing through various technical periodicals containing transistor circuitry, it is quite evident that one needs a "universal" manufacturers guide if he is to find out who makes what transistor. For example, few technicians or engineers could tell you who makes the "2N638" without charts such as those reproduced in SEMI-CONDUCTOR PRODUCTS (published by the publishers of our own CQ), or charts from the specific manufacturer.

At the present time there are so many transistors on the market that it is hard to keep track of them—let alone know their characteristics. Some companies like General Transistor, General Electric, Sylvania, GE, Texas Instruments etc., to name a few, publish very useable characteristic charts and handbooks on their semi-conductor products.

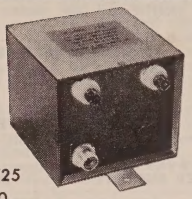
Observed: the numbering system for semiconductor products is pretty sad. We hope that the time will come when transistors having the same characteristics but made by different manufacturers will bear the same number, just as most tubes do today. We know of the work involved in standardization and sincerely hope those connected with it realize that they have most hams who do a lot of their own design and construction on their "side of the fence." Authors of articles containing transistors should include a few of the most important parameters for the transistors they use and let the reader know WHO makes them!

QUESTIONS

Bad Connection

I have a homebuilt transmitter using an 829B in the final. Lately I have noticed that my final current seems to vary without modulation, that is, on standby. I've checked the final tube, the meter and the power supply.

you'll want this
Universal 1KW Balun



Balun
Model 725
$19.50

. . . Because it's the answer to feeding either a single or folded type dipole or, the driven element in a beam antenna.

The Model 725 Balun also solves the problem of impedance matching. It is particularly effective on any multiband antenna with a 300 ohm feed point.

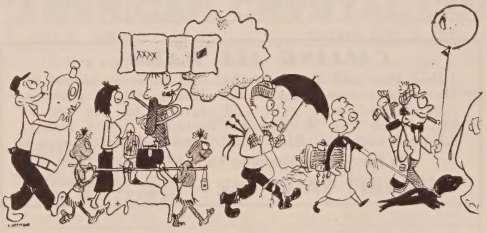
Frequency: 1.5 to 30 MC. Impedance: 75 ohms unbalanced to 300 ohms balanced. Max. Power Rating 1 KW on CW and AM (100% modulated), 4 KW P.E.P. on SSB.

See this rugged universal model at your favorite dealer, or write B&W direct.

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Canal Street & Beaver Dam Road
Bristol, Penna.

For further information, check number 34 on page 126.

WATCH FOR THE GIGANTIC
NOVEMBER ISSUE



ARE YOU MOVING?

If you expect to move, and IF you know your new address now, and IF you don't want to miss any issue of CQ here are three things you can do right now!

1. Tear your name and address label off the wrapper of this issue and paste it in this box right over these words, or make a complete and accurate copy of your old address label.
2. Print your name and NEW post office address in the lines below:

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(City) (Zone) (State)

3. Cut out this whole box and mail it to: CQ Magazine, 300 W. 43 St., New York 36, N. Y.

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Input 110 V. 60 cyc. Fresh from aircraft — so you know it's good! Includes receiver and two tuning units: TN-1: 38—90 MC; TN-2: 80—300 MC **$29.95**

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110 VAC POWER SUPPLY: for above. Just plug in. No conversion needed.
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T-21 TRANSMITTER: 5.3-7 MC. Excel. cond. 3.95
R-25 MARINE RECVR.: 1.5-3 MC. Excel. cond. 8.95
R-26 RECEIVER: 3-6 MC. Excellent cond. 5.95
MD-7 MODULATOR: Excel. 8.95
Write us for your ARC-5 Equipt. needs.

BC-1335 TRANSCEIVER
Two-channel, crystal controlled, FM. 18 tubes! Output: 1.5 W. For fixed or mobile installation. Range: 5-10 miles. Built in, vibrator type power supply operates from 6 or 12 VDC. New in original carton **$29.95**
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For further information, check number 35 on page 126.

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CPO Box 1556, Tokyo, Japan

Now what do I do?

How about checking your antenna relay contacts? Also look into transmission line continuity and connection. Sure you don't have something arcing over in the set? How about a cold soldered joint in your power supply's bleeder system? Loose tank connections? How about a resistor changing value? Check for loose filament connection on final tube. Hope you find your trouble.

No High Frequency

I have a real old RCA receiver which used to work fine on 10 and 20 meters; now I hear nothing at all on these bands. All tubes test okeh. Voltages seem to be fine too. The trouble started when I put my transmitter on the two mentioned bands. Any tips?

Yes! First of all, check your antenna coils in the receiver—bet they're open due to RF. If they are not, check your band switch contacts and clean them carefully. When an old receiver stops operating on one or more bands suspect switch contacts first. If you had given us the type number of the receiver we might have been able to offer you a few more specific hints as to probable trouble.

WRL SM-90

Will the screen modulator SM90 made by World Radio Labs. work with a Heath DX 20 transmitter and what do you think of it?

Yes. I think it is well worth the money.

2E26

Can Is use 2E26s in place of the 1625s in the linear described on page 317 of the current ARRL Radio Handbook?

No.

Theory

Is there any objection to asking questions relative to radio-electronic theory? Sometimes, outside clarification is needed to help in understanding a technical point or two.

No, in fact we have answered many theory questions. However, not always to the satisfaction of the correspondent. For example, one ham wrote in wanting to know "where the other sideband went" in SSB. We carefully explained balanced modulator cancellation to him but he said he couldn't see through our explanation. We tried again—but still no luck in getting the point across. By the way, anyone know where that other sideband really did go?

R.F. Resistance

Here's a question on theory received recently. What actually is RF resistance? How can it be minimized?

Actually, it applies to the resistance of a conductor plus any additional resistance due to skin effect present at higher frequencies. It can be minimized by silver plating conductors to "current traveling depth" or the utilization of Litz wire or flat copper stripping.

Transistor Course

Where can I get a homestudy course in transistor-electronics without having to take a lot of radio theory etc.?

CBS-Hytron Sales Corp. of Danvers, Mass. offers a course in transistors. Contact your local CBS tube distributor for details. Also, the Philco Technological Center, 22nd and Lehigh Ave. Phil. 32, Pa. puts out a fine course too—complete with training kit.

Tech Twists

If you have to ship a piece of delicate electronic gear, you can make sure it will arrive at its destination in good shape if you incase it first in a plastic clothes cover (obtainable at most dry cleaning establishments); and then surround it in a heavy cardboard carton with very cheap sponges obtainable at the five and dime store. Rubberized horsehair is even better if you can obtain some in block form from a local supplier. A KE-93 receiver shipped this way 6000 miles arrived in France without a scratch.

Temporary test prods can be made from old ballpoint ink fillers which have a recessed insulated point. Merely snap out the point and run a wire through the plastic ink container and solder the end to the tip, which is then snapped back in place after the wire has been pulled back to allow this to be done. But for goodness sake, don't use a metal filler! If you use a plastic filler without a recessed point it would be wise to wind enough plastic tape above the tip to prevent accidental contact with the point when using the prod.

CORRESPONDENCE

We have been receiving many letters which do not include self-addressed and STAMPED envelopes. Fellows, we do not mind digging for the extra 3 or 4 cents, but with the number of letters we receive this mounts up. For quick replies use airmail (7¢) on inner and outer envelope. Thank you!

Please confine one question to one letter. Before you write HAM CLINIC check through CQ to find out if the information you are seeking is covered in some other department. When seeking information on current or recent articles drop a line to the author, that is why his address is included under the article title.

QUESTION OF THE MONTH

Being too lazy to write for an index for past issues of CQ I thought I would write to you to find out the following: in what issues can I find information on the GDO (grid-dip oscillator)?

We receive many questions like this one. Readers are reminded that the CQ 11 Year Index is obtainable from the editorial office (address at the head of this column). Now back to the question of the month.

QUARTZ CRYSTALS IN THE AMATEUR BANDS
ONLY $1.50 (with this advertisement)



Here's your opportunity to buy a quality crystal for your rig. These are **not** surplus crystals, but are newly manufactured to the highest standards. Mounted in hermetic sealed HC6/U holders. Special prices when this ad accompanies your order. Order will be mailed the same day it is received.

Meters	Frequency Range	Crystal Modes	Price
80	3500 to 4000 KC	Fundamentals	$1.50
40	7000 to 7300 KC	Fundamentals	1.50
20	14000 to 14350 KC	Fundamentals	1.50
15	21 to 21.45 MC	Third Mode	1.50
10	28 to 29.7 MC	Third Mode	1.50
6	50 to 54.0 MC	Third Mode	4.50
2	144 to 148 MC	8000 to 8222 KC by 18 times 9000 to 9250 KC by 16 times	1.50
Citizen Band Crystals		27.255 MC	1.85

TWO-WAY COMMUNICATION CRYSTALS

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FREQUENCY RANGE	CALIBRATION TOLERANCE	PRICE
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15 MC to 30 MC	.0025%	$3.00
30 MC to 50 MC	.0025%	$4.00
50 MC to 60 MC	.0025%	$5.00

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For further information, check number 36 on page 126.

SSB

TUBE LINE UP
12AX7 Speech & 9 Mc XTL OSC
12AU7 Speech
12AT7 Mod.
2—6AL5 Balanced Mod.
6CL6 9 Mc Amp.
6CL6 Mixer
1626 VFO
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Push To Talk-120 watts P.E.P. 40 watts A.M. Using the famous BC 458 cabinet and VFO, we are able to bring to Ham Radio at a ridiculously low price SSB for everyone. Mobile or fixed. Upper lower sideband. Foolproof. 2 bands 14 & 3.5. Not a kit. By building your own power supply you save.

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Prices subject to change without notice. **$160** Less Pwr. Supply

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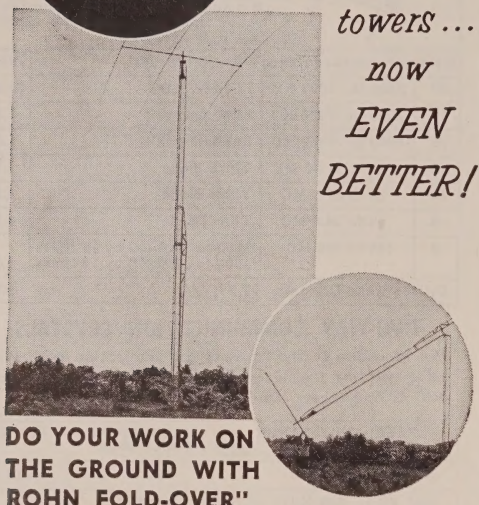
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"Largest Exclusive Manufacturer of TV-Communications Towers"

For further information, check numbr 37 on page 126.

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AM Models $14.95. Dual hy-brid Sideband models $24.95. No switching... No disconnecting... Models for single or double connector microphones. See them at your distributor. For literature write to

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May 1947; Jan. 1949; Feb. 1949; Jan. 1950; March 1951; April 1950; and Jan. 1953, all contain info on GDOs.

(Most back issues are obtainable for $1 from CQ.)

THIRTY

So far, we have given you the service you have a right to expect from a magazine that is still growing. When we have not had or could not get the information you requested we told you so. We are not infallible and can make mistakes just like anyone else. Taking care of this column and its resultant correspondence in our sparetime leaves us little of the latter. But even if you do not have a question to ask we would like to hear from you. While in Europe I plan to visit most large cities in most countries over here, so if you have some special ham friend you want looked up, drop us a line, we'll add "visiting service" to other services now being rendered.

73, Chuck, W6QLV

PATCH [*from page 44*]

power level into the line. Why all this concern? Crosstalk.

The telephone line which runs between your home and the local telephone office almost always physically parallels dozens, or even hundreds, of other lines. This physical proximity leads to inductive coupling which is not a factor with normal, i.e., zero level, audio on the line but which will actually result in your receiver's signal being heard in neighboring lines if you use higher line level. Earlier, it was said that no surer road to Ma Bell's disfavor existed than a dc load on her lines. This is absolutely true, but excessive line levels run a darned close second. If you don't have an ac voltmeter handy, use this rule of thumb: THE AUDIO FROM YOUR RECEIVER, AS HEARD IN YOUR TELEPHONE, MUST NEVER BE AS LOUD AS YOUR OWN VOICE HEARD IN THE PHONE WHEN YOU SPEAK NORMALLY. Actually, keeping the audio in the line low also serves the advantage of making the party at the other end sound off. One of the most common problems in running patches, particularly with the ladies, is that the party at the far end of the wire seems reluctant to talk directly into the telephone microphone and at better-than-normal voice levels. As a result, the usable audio-to telephone-line-noise ratio (signal to noise) is usually pretty low and overall system intelligibility far lower than either the phone or radio-link intelligibility taken

NEW! 1 INCH PANEL METERS Self-shielded Moving coil



ALCO MINIATURES

D.C. MICROAMMETERS

0-300	5.95	0-500	5.75

D.C. MILLIAMMETERS

0-1	4.95	0-100	4.95
0-5	4.95	0-200	4.95
0-10	4.95	0-300	4.95
0-50	4.95	0-500	4.95

D.C. VOLTMETERS 1000 Ohms Per Volt

0-3	4.95	0-50	4.95
0-10	4.95	0-150	4.95
0-300			4.95

A.C. Rect. Type—1K Ω per V

0-15	5.25	0-150	5.25
0-300			5.25

ALCO ELECTRONICS MFG. CO. Lawrence, Mass.

alone. If people have just a little difficulty in hearing the party at the other end of the line, they naturally tend to talk more loudly. Don't believe it? Make a long-distance call sometime and note how much louder *you talk!* All told, it is distinctly advantageous to keep under the zero VU limit for psychological reasons as well as for the dictates of good engineering practice.

Now, to the final hook-up. Your patch is completed so all you have to do is make the connecting cords and plug 'em in. The connection to the receiver speaker voice coil is made with a piece of lamp-cord terminated in a PL-68 plug. The cord to the transmitter speech must be of shielded wire (RG-58/U is FB) and terminated at one end with a PL-55 and at the other with a connector suitable for your rig. The line to your telephone may be of lamp cord, twin lead or what-have you. Connect it from the binding posts on the rear of the patch to the two fuses in your telephone terminal box or to the red and green wires where the cord on your phone terminates at a block. Be sure these connections are made neatly so that they cannot short circuit—remember what was said about dc loads!

Ready to try it? Let's go. Contact some patient local ham buddy and get him on the air. Your PATCH-MIC. switch will be in MIC. position while you gab on the air. Now phone him. *After* you have him on the horn, flip the switch to PATCH. While he transmits on the air, increase your receiver gain control until you have a .75 volt maximum signal on the line or until you hear him clearly in your telephone receiver. Now you transmit while he talks to you on the telephone. Adjust your transmitter gain control (or PATCH GAIN CONTROL, if you built one in) until you have normal modulation as indicated by your normal modulation checking method. A word of caution: This particular method of checking is loaded with feedback possibilities that will give you embarrassingly high line levels unless your buddy keeps his telephone well separated from his speaker and his speaker volume low. At the first sign of feedback, flip the switch back to MIC.

In normal patching, remember just four things and all will be well. First, watch your line level: second, keep an eye on modulation, riding gain if necessary: third, never transmit either dial pulses or telephone operator's voices over the air: and fourth, always keep one hand on the patch switch—YOU and you alone are responsible for anything said over your station and not a few words frowned on by the FCC are wending their way into everyday conversation.

You now have a Macy's Special patch which will cut the mustard with the best of them. Good luck . . . and the author needs patches into Detroit, Gages Lake, Illinois, Lake Geneva, Wisconsin . . . Please hurry if you live in these areas! ■

GOOD BUYS — ALL NEW

TRANSFORMERS . . . all have 115 volt, 60 cycle primaries
Scope, 2500 v/3 mils & 2.5 v/1.75 a ..... 5 lbs. **$1.95**
Scope, 6.3/1.85, 6.3/0.6, 700 ct/30, 525/5, 2.5/1.75, 6.3/0.6, 2 and 3 KV ins, upright shielded ..... 5 lbs. **$3.45**
Power, Stancor P-4004, upright double shell, 800 vct/175 mils, 5 v/3 a, 6.3/2.5, 6.3/2.5 and 2.5/1.75 + bias tap. 10 lbs. **$5.95**
Power, 790 vct/120 mils, 5/3, 6.3/4.4, 6.3/0.6, HS 10#. **$2.95**
Power, 550 vct/240 mils, 5/3, 6.3/11.1, 17/1.2, HS 14#. **$3.45**
Filament, 2.5/10, 6.3 ct/5.5, 6.3 ct/1, HS ..... 13 lbs. **$2.29**
Filament, 6.3/22, 6.3 ct/2.4, 6.3/2.25, 6.3 ct/0.6, 9#. **$3.29**

CATHODE RAY TUBES 3FP7 **$1.00** ppd 5FP7 **$1.29** ppd
3BP1 **$1.75** 5JP2 **$3.45** 5GP1/5BP1XXX **$2.45**

CHOKES . . . all are potted types, hermetically sealed
10 hy/500 mils, 100 ohm, 2000 v RMS test ..... 30 lbs. **$6.95**
10 hy/150 mils, 160/210 ohm ..... 5/6 lbs. **$1.69** 2/**$2.95**
4 hy/60 mils, 412 ohm, 2400 volt test ..... 1 lb. **59c** 2/95c

MISCELLANEOUS VALUES . . . read carefully, some will go fast!
Meter, 0-50 microamp, 2½" round ..... 1 lb. **$4.95**
25K ohm, 160 watt bleeder resistor ..... 1 lb. **69c**
Full wave xfmr-rect combo for 24 vdc/800 mils 5 lbs. **$2.59**
Triple 20/400 octal plug-in electrolytic ..... 8 oz. **2/95c**
1/32 amp Slo-Blo, 3AG fuses **10/39c** Box of 100 for **$2.95**
5.3 MC IFs by RCA, double slug tuned ..... 5 oz. each **6/95c**
455 KC IFs, very nice with schematic ..... 8 oz. **79c**
Skirted black knobs with indicator line, 2" ..... 3 oz. **3/95c**
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BC-610 tuning units 3 lbs. **$3.45** Complete set **$24.95**
BC-610 RF coils ..... 2 lbs. **$1.95** Complete set **$10.95**
Dynamotor, 6 volt/26 amp input, 600 volts/150 mils intermittent duty cycle ..... 14 lbs. **$6.95**
Selsyns, Delco type II-A, C-56701 motor-reapeater ..... 13 lbs. each ..... natural brass finish **$9.95** 2/**$17.95**

VACUUM TUBES 701-A ... **$3.95**/pair 3B24 ... **$4.95**/doz.
717-A, 2X2, 1642, 958-A **$2.95**/doz 89Y, HY-615 **$19.95**/doz

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For further information, check number 38 on page 126.



Lighted Globe

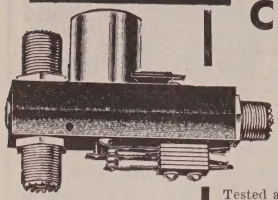
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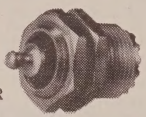
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Power consumption, AC models Approx. 4 watts, DC models 3 watts. V. S.W.R. at 150 mc 1.1 and 1.2 at 300 mc. Coil voltages: AC 6, 12, 24, 115, 220; DC 6, 12, 24, 48, 110, 220. Special coil voltages available.

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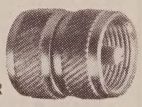
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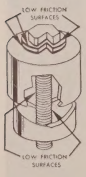
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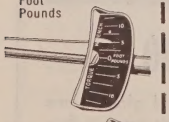
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For further information, check number 40 on page 126.

YL [*from page 85*]

How about it, gals? As part of Chapter 3, "History of the YLRL," the calls of all the YLs who joined YLRL in the first year of its existence, 1939-40, are listed as they appeared each month in "YL Harmonics." Let's hear from you and see what's happened in nearly 20 years! Also included in this chapter is a reproduction of the ad for the book "200 Meters and Down" which appeared in QST for May, 1939, together with the letter written in response to it by W7FWB, Ethel Smith (now K4LMB) which sparked YLRL into being. A couple of pages from the original story, "The YL's Unite!" by Nita Bien, W8TAY (now W4JCR) which appeared in QST for May, 1940 are included, also the W8 YLs at Cleveland, the YLARC of Greater St. Louis, and the N.Y.C. YLRL, oldest of the YL clubs still in existence. Many photos of the early members, words of the YLRL song by W8UDA, and numerous other details are given. This is only one chapter in "CQ YL." There are 17 other chapters in the book covering every facet of the YLs' participation in Ham radio. Order your copy from your column editor, Louisa Sando, W5RZJ, 212 Sombrio Dr., Santa Fe, N.M., $3.50 postpaid. Please indicate if you wish it autographed.

33, Louisa, W5RZJ

AF-67 [*from page 38*]

Coil Data

Coil L-a: 20T. #30 scramble-wound on a ⅜ slug for m. (8 mc)
Coil L-b: 22T. #22 close-wound on a high value 1-watt res. (25 mc)
Coil L-d: 2T. #16 ½ inch ⅜ inch, wound on former coil L-41 form (50 mc)
Coil L-d: 2T. #16 ½ inch ID, spaced to ¾ inches. (50 mc)
Condenser C-a: 7-40 mmfd ceramic trimmer

to terminal 6 on switch SW-51C.

This completes the conversion. Place an 8334 (and up) mc crystal in socket "X2". If a grid-dip meter is available, check all the new coils to be sure that they are near resonance. Turn the rig on, with the high voltage off the final (switch SW-52 in extreme counter-clockwise position) and adjust coils L-a, L-b, and L-c for maximum grid drive, which should be about three mils.

Assuming all is satisfactory, put high voltage on the final and check for resonance. The tank circuit is resonant with the tank condenser near minimum capacity.

This transmitter should give you very satisfactory service on six meters. It will load to just about anything you could think of using for an antenna. I would like to thank Michael Axman, W4VOZ, who assisted with the "brain work" in this conversion. ■

CITATIONS [*from page 35*]

On the other hand, the increase in violations may have resulted, also, from the increase in the number of licensed amateur stations. An analysis of station and operator licenses, however, doesn't help much. The ratio of increased violations in 1956 over 1953 does not bear a close correlation to the increase in number of licenses. The annual reports of the Federal Communications Commission show that as of June 30, 1952, there were 110,968 amateur operator licenses in effect, 12,827 of which were Novice licenses and 3,615 of which were Technician licenses. The following table shows the new licenses issued in each year of the survey period.

Year	*Novice*	*Technician*	*Other Classes*	*Total*
1953	9386	3652	4844	17882
1954	12044	3253	3723	19020
1955	18882	2314	4144	25928
1956	16819	3322	5199	25340

Apparently only a relatively small percentage of Novices secure a General license as can be seen from the small number of "other class" licenses issued in any year as compared to the total Novice licenses issued in the previous year.

As of June 30, 1955, the Federal Communications Commission reported that there were 139,993 licensed amateur stations, and as of June 30, 1956, the amateur stations licensed had increased to 150,549. The net increase in amateur station licenses for the year was 10,556 or approximately 7% more than the previous year. The violations reported, however, showed an increase of approximately 260% for the same year. The violations, therefore, increased far more rapidly than could be explained by the normal increase in station licenses.

One further possible explanation of the sharp increase in observed violations is the development of the Novice classification. Between June 30, 1955, and June 30, 1956, some 16,819 Novice licenses were issued and 3322 Technicians were licensed. Statistics of Novice licenses issued in previous years mean very little in connection with this study since Novice licenses are valid for only one year. It is safe to assume that persons receiving Novice licenses in previous years have either dropped out of the hobby or are now numbered as General licensees. Although exact figures are not available, Novice class licensees have received the highest percentage of citations.

If Novice licensees as a class do receive more citations than amateurs with General class licenses, then it may be desirable for some appropriate body to re-evaluate the licensing requirements for Novice licenses. A disproportionate ratio of violations committed by Novice ticket holders especially in the field of

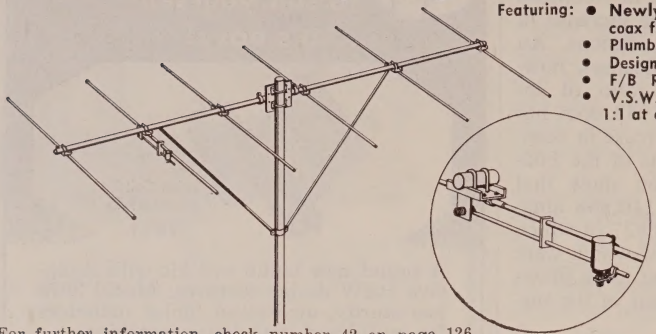


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For further information, check number 41 on page 126.

The "Lunenburg" Long John Antenna for 6 Meters



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radiation harmonics might indicate that more technical information should be required as a condition to issuance of a Novice license, thereby insuring some preliminary study in connection with suppression of harmonics.

While the issuance of a citation by the Federal Communications Commission does not ordinarily involve any penalty except the preparation of a reply and an explanation including details of corrective action which has been taken, repeated violations have resulted in suspensions or revocations of the amateur license. Suspensions and revocations are likewise on the increase. For the fiscal year ended June 30, 1953, four license suspensions occurred. For the fiscal year ended June 30, 1954, ten license suspensions occurred. For the fiscal year ended June 30, 1955, five suspensions occurred. For the fiscal year ended June 30, 1956, seventeen suspensions occurred, and thirteen orders to show cause why disciplinary action should not be taken against amateurs were issued by the Commission. Suspensions increased three-fold in 1956 over 1955.

Although the Radio Act of 1934 provides for criminal penalties for violation of the Federal Communications Commission regulations, no criminal proceedings were instituted against licensed amateurs by the Federal Communications Commission during the four-year period involved in this study. Several criminal convictions were obtained against persons who operated radio transmitters on amateur frequencies without having been issued a license.

Although the number of violation citations might not be considered as a large number considering the number of amateurs licensed during that period of time, nevertheless, two matters should cause the serious amateur to reflect upon the effectiveness of self-regulating activities. The first is the fact that officially observed violations in 1956 were almost five times the number of observed violations during the same period of time the year before. The second aspect is the fact that the officially observed violations do not necessarily represent all of the violations which actually may have occurred.

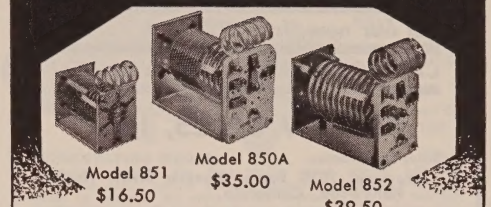
During the year 1956, 236 amateur ob-

servers participating in the ARRL official observer program observed and sent out 10,348 co-operative report notices of regulation violations. While these notices do not carry with them the legal injunction of an official F.C.C. notice, they do nevertheless represent observed violation of amateur regulations. It is, of course, impossible to tell how many of the 10,348 official observer notices were in fact duplications of the 5,248 official citations issued by the Federal Communications Commission for the same period, but it is safe to assume that in some cases at least the two sets of notices did not relate to the same occurrences nor duplicate each other.

While it is undoubtedly true that the issuance of informal official observer notices undoubtedly gave many amateurs an opportunity to correct their illegal practices before being observed by an F.C.C. monitoring station, it does not answer a fundamental question which must be asked; that is, why did this number of observed violations occur in the first instance? As a hobby-saving precaution, it is not sufficient that amateur violations be detected by fellow amateurs before they are observed by an official monitoring station. The violations simply cannot be permittted to occur in the first instance regardless of who observes them first. The fact that the F.C.C. observed only 5,248 amateur violations in 1956 should not lull the amateur into any sense of false security. Given a higher monitoring priority, more and more violations would be officially observed. A hard look at the practical effectiveness of the amateurs' self-regulating activities is timely. Careful attention to the regulations and an active campaign on the part of the amateurs to live with the regulations and reduce the number of violation citations can be an important factor in maintaining the status of the hobby. Too many violations could easily cause the F.C.C. to question seriously if the amateur service is really entitled to the consideration it has received.

It is hoped that analysis of the available statistics might prove valuable in charting a course of more complete amateur compliance with regulations. The necessity of amateurs' voluntary compliance with the regulations should be obvious to all. With limited budgets available for communication commission personnel and monitoring services, any substantial increase in time or personnel required for regulating the amateur services will inevitably raise questions as to whether or not the amateur services justify such required increase of personnel. It is a vulnerable point that powerful grabbers would delight to emphasize. It might, therefore, be time well-spent to analyze the type of violations which have been observed and reported by the Federal Communications Commission and to take a good hard look at the effectiveness of amateurs' self-regulating activities. ■

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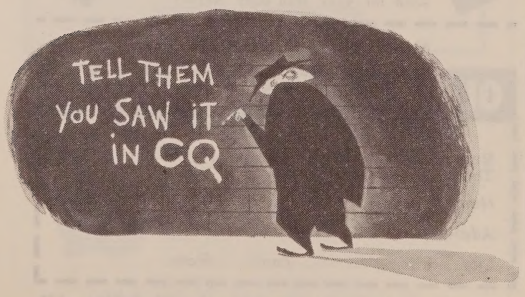
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NOVICE [*from page 91*]

Todd Fonstad, KN9LWU, 316 Jefferson St., Waupaca, Wis. is interested in two meter walkie talkies. Look for him on 40 if you have any info.

Jim Johnson, KN7CNT, 209 Karr Avenue, Hoquiam, Washington, has been on for about 5 months haunting the 80, 40, and 15 meter bands with his Adventurer. He will sked anyone needing a Washington contact.

John Stone, KN4VUR, P. O. Box 392, Leaksville, N. C. is active on 21.150 and would like skeds with 7's and Ø's. John QSL's 100% when he picks 'em off with his Globe Scout 680-A and S-85. By the way, he is looking for an SX-71 or SX-76.

Don Evans, WV6AWR, 241 W. Ave. "L," Lancaster, California, makes them sit up and take notice with a Viking Adventurer and a SX-99. Don would like 40 meter skeds with all states except Calif. and Arizona.

Jim Charipar, 701 7th Ave., Iowa City, Iowa, is an expectant Novice. He plans on running a DX-20 and an SX-99. Give a listen for him.

John Schroeder, WN6UFJ, 5735 Jefferson Avenue, Hollydale, California, just passed the General test. While a Novice, he worked 21 states and some impressive DX, with a AT-1, long wire ant., and a HQ-100 receiver.

Peter Henderson, WV2APZ, 36 Woodhull Pl., Northport, L. I., N. Y. is using a Heath AR-3 and a DX-40. He has two antennas including a Demi-Quad (PE-Jan-58). Pete would like to see more information on operating technique.

Jerry Janka, KN9JHY, 141 Andy Drive, Melrose Park, Illinois, wrote an interesting letter suggesting that we drop the DX reports, Help Wanted and Letters. Jerry had some gud arguments, too, but he didn't say what to put in their place. This constitutes almost the entire column—hi.

Dell Keene, KN6EOK, 1853 East Gage Avenue, Los Angeles 1, California, slugs away on the 40 and 80 meter bands with an AT-1 and a brand new HQ-110. The antenna is a Hy-Gain 14AV. He will sked for any reason or if anyone wants nomination to RCC.

Bill Crook, KN6GNO, 997 Capri Drive, Campbell, California, runs a "baby 7 watt" rig and a S-38-C. He has totaled 216 QSO's with 160 QSL's for confirmation. Bill would like to work a Texas station. Hw abt it?

George Kracke, WV2AGR, Shewenko Avenue, Millvale, N. J. is having trouble getting out on the 40 meter band. Can anyone help him?

Paul Nugent, W1NJX, and Howard Gould, KN1HHN, 29 Eire St., Dorchester 24, Mass. would like to start a radio club and would like interested hams in the area to contact them.

Toby Rayer, 1516 N. Ridge Dr., Cincinnati 31, Ohio, writes to say he is starting an SWL

QSL bureau.

Al Bogdonoff, KN2HIR, 1716 Avenue "T," Brooklyn 29, N. Y. is on 40 meters with a DX-20 and an S-38-D and is rockbound on 7155. To date he has worked 187 contacts in 18 states. Nice going, Al.

Tim Morrell, KN1GBI/1, Box 413, York Harbor, Maine, is very active on 15 with a Globe Scout 680-A and a S-85 feeding a home-brew single element "beam." He needs skeds with Okla., Ark., La., Miss., Ariz., N. & S. Dakota and Alaska. He will sked anyone needing N. H. or Maine.

Mike Broga, K1DGQ/DL4, 586 C&G Sqdn., APO 109, N. Y., N. Y. has been too busy to send in DX reports but will resume shortly. He is expecting the DL4 calls to arrive soon. Mike would like a teen-agers contest—everybody else has them—hi.

Late Late letters for the 807 arrived from:

C. E. Corbin, WV6AWH, R@, Box 313, Merced, California

George Hall, WV6AGH, 1750 E. Westward Avenue, Banning, Calif.

John Palesch, R6, Oswego, N. Y., WV2AND

Joe Allison, WV2AYV, 49 Orlando Avenue, Albany 3, N. Y.

73, Don, W6TNS

SCRATCHI [*from page 12*]

they saying he reel 1/c thinker.

I'm surely you reelizing reel problem here. Not having to having lisense to operating on ESP. Not needing to taking FCC eggsaminayshun. Anybuddies can be ESP amchoor, even if they not knowing di-dah from dah-dah-dit-dit.

Thinking of fun amchoors having in dee-x contest. Have to ESP'ing in foren languige. It would be like kibitzing at United Nayshuns, only worse.

Maybe worst thing would be your Hon. Mag. Yes indeedy, Hon. Ed., thinking or artickles you having to printing. Maybe one on How to Increesing Your Signal 6 DB by Eating Alaska Salmon. Or maybe one on Latest Style in Operating Chairs.

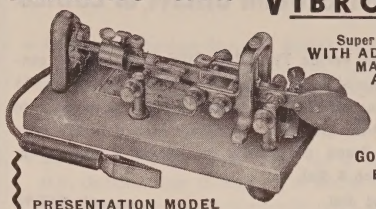
Or how about How a Sponge Rubber Cushion Helped Me Work For More States. Maybe even Get Your Feet Up in the Air for Reel Dee-X. Possibly you having artickle called Ware the Right Clothing and Work the World. Hon. Ed., you might even having to sponsor a stile show!!

It's not too late. Tell everybuddies they can avoiding this fate. Telling all amchoors not to thinking. No thinking allowed. Just pounding good old key or using good old mike. Remember—no thinking.

Eggscuse me Hon. Ed., I seem to be heering something in my mind. Quiet! CUL, Hon. Ed., I thinking somebuddy calling me mentally.

Respectively yours,
Hashafisti Scratchi

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V.H.F. ROUND UP: Don't forget October 11. That is the date of the Syracuse VHF Round-Up. All the big DX men will be there, so don't stay home and listen to a dead band. Contact Bob Mele, W2EMW, 18 Homeland Dr., N. Syracuse, N.Y.

ATTENTION MOBILEERS!! Leece Neville 6 volt 100 amp. system alternator, regulator and rectifier, $45.00. Also Leece Neville 12 volt 100 amp. system, alternator, regulator & rectifier $85.00. Perfect condition. Herbert A. Zimmerman, Jr., 115 Willow St., Brooklyn 1, N.Y. K2PAT, ULster 2-3472.

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FOR SALE: Complete 12 volt mobile-40W. Bromeco 10M & 20M with 6146 output. Lysco V.F.O. Morrow conv. 3 band with built in noise clipper. PE 101 C dynamotor base loaded 10M or 20M antenna including mounts, cables etc. Excellent condition. $125.00. K2BNW, 9908 Avenue M, Brooklyn 36, New York, IN 2-1494.

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FOR SALE: A good HQ-129X and a new (6 months old) Gonset Super 6 converter. Will sell to the highest bidder. Ted Hart, 3622 Rawlins, Dallas, Texas.

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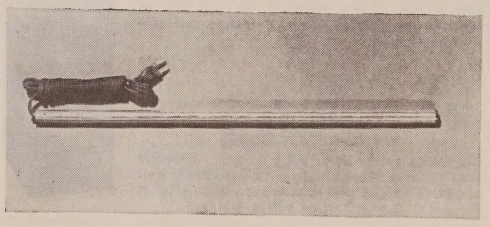
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SELLING station to pay bills. DX-100, $175; SX-71, $140 or both (in excellent condition) for $295 plus extras to make station complete. John Steiner, Sta. A, Box 36, Radford, Va.

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FOR SALE: SX-88 with R-46 speaker. Viking II with all accessories. Both excellent condition. A. J. Latimer, Jr. Viroqua, Wisconsin.

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WANTED: BC-610E and Up, BC-614E and Up, BC-939, BC-221. All types of test equipment, PRC, GRC, URD, SCR. Complete sets or parts. We buy all types of electronic surplus. RADALAB, INC., 87-17 124th Street, Richmond Hills 18, N.Y.

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WANTED: BC779 Super Pro in good condition with power supply and schematic if possible. Leonard Huff, 2903 Mass. St. Seattle 44, Washington.

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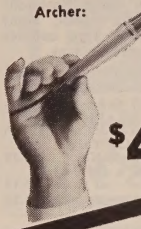
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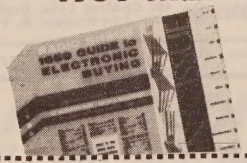
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730 Commonwealth Ave., Boston 17, Mass.

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☐ One 'Lipstick' Mike (Q-9950) $4.95
☐ One Telegraph Speed Key (Q-7071) $1.88
☐ One 5" slide Rule (Q-7011) $2.90

Name _____
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City _____ Zone ____ State _____



167 Washington St., Boston, Mass.
230 Crown St., New Haven, Conn.

For further information, check number 48 on page 126.

LOWEST PRICES ANYWHERE!



FIELD TELEPHONE SWITCHBOARD

BD72—Portable telephone switchboard. 12 private lines with additional 4 lines available. Hand ringing magneto type using flashlight batteries. Automatic signal, night light & alarm. Desk type cabinet with folding, adjustable legs.

Special $17.95

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Milliammeter DC 0-100 mills scale, 2 inch dia. D'Arson VAL movement, 1.2 MA full scale deflection, 20 scale division. **Special** $2.29

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Special — AN 130 Whip — Brand New, Built-in loading coil w/screw in base 2PC attached — **special** ..... $ .69
AN29C Teles. 14 inch — 12 ft. Spec. **$3.49**, Fishpole — 3 ft. **$.39**, 6 ft. **$.89**, 9 ft. **$1.39**, 12 ft. **$2.19**, 15 ft. **$2.79**, 18 ft. **$3.89**, 21 ft. **$4.39**, 24 ft. **$4.99**
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J45—Thigh Code Key $1.79
J38—w/on off switch $1.13
J48—Key/Cover W/PL55 $1.95

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DM94 — New — 28V 10.5A, 300V 260MA; 250V 10MA; 4700 RPM—Spec. $4.95
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PE 101 for BC 645 etc. Has 12-24V imput (Easy to convert for 6V Bat. Opr.) only $5.95
FL-8 Radio Filter..... $1.49

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Ant Switching 12V, Coil 44 ohms ..... $ .98
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D.P.S.T. Bat Handle ..... $ .79
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D.T.S.P. ..... $ .79
3 P.S.T. Bat Handle ..... $ .79

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BC191 — 100W XMTR Freq. 200-500KC, 1500-12500KC Uses Plug-in Tuning Units, 12V imput voice and CW complete W/Tubes $27.95
Less Tubes $19.95
Tuning Units for above 5-10 inc. $4.95

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T17 Carbon Hand $4.95
RS38 — special $1.95
Coil Crds, 3&4 cond. 7-8' $ .99

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HS 33 Low imput $3.95
HS 30 Low imput $1.75
HS 23—8,000 Ohms $2.95
H16U—Hi Imput $2.75
H63U—w/Boom Mike $6.95
Ext. Cord CD307A ..... $ .89
Plugs: PL55 ..... $ .38
PL68 ..... $ .42
Interphone control ..... $ .98
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BC611 — Fully Checked Out
Less Batt. $59.95
Matched Pair $108.95

WE ARE SUPPLIERS OF MAINTENANCE PARTS OF ARMY GROUND EQUIPMENT SEND US YOUR INQUIRIES
SEND FOR FREE BULLETIN, MIN. $2.50, F.O.B. WHSE, 25% on C.O.D.

East Meadow Surplus Co. 462 Chestnut Lane, Dept. C10 East Meadow, N. Y.

For further information, check number 49 on page 126.

Watch for the GIGANTIC November Issue

QSL (Cont'd)

QSL SAMPLES, Dime, refundable. Roy Gale, Waterford, Conn.

QSL's-SWL's: High quality, reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams Street, Rutland, Vermont.

QSL's-SWL's. 100—$2.50. Samples, 10¢. QSO file cards, $1.00 per 100. Rusprint. Box 7507, Kansas City 16, Mo.

QSLS??? LARGEST variety samples 25¢. (refunded). CALLBOOKS (fall) $5.00 postpaid. Sackers, W8DED, Holland, Michigan. (Religious QSL samples 10¢).

"QSL's, $4.65 for 500. Send 4¢ stamp for free brochure. K9EUF Pring, 1839 46th Street, Rock Island, Illinois.

QSLs—We've printed a million. Samples 10¢. Larger quantity 25¢. Refunded. VYS QSLs, 1704 Hale, Ft. Wayne, Indiana.

SWAP OR SELL

NEED THE FOLLOWING BACK ISSUES OF CQ: November 1955, July 1956, February 1957. Will swap a brand new first MOBILE HANDBOOK or copy of COMMAND SETS, or $1 in cash for the above three issues. Must be in good condition. Offer limited to first 100 copies. Send to CQ Magazine, 300 W. 43rd St., N. Y. 36, N. Y.

RADIO MAGAZINES. Buy, sell, trade. Bob Farmer, Plainview, Texas.

PE 103 White Elephant? Here is your chance to unload as I will pay $10.00 for each PE 103 Dynamotor, unaltered, complete and with cables, new or used. Send cheapest transportation and subject to inspection to William C. Grove, 3402 Forest Drive, Cheyenne, Wyoming.

SWAP OR SELL: slide rule, drafting instruments, stamp collection, RC equipment, model engines, 600v.-200mil. power supply, ARC5's, BC-221 freq. meter, 3 element 15 mtr. beam, tubes & parts. Want Tribander, Multitester, DX-35 or equivalent or ??? Dick Bailey, Box 374, Milford, Delaware.

WILL TRADE: Regent Bell & Howell projector and #252 movie camera both 8 mm. Like new for viking ranger must be in excellent working condition. Albert C. Roat, 5 Broadway, Jim Thorpe, Penna.

FOR SALE OR SWAP: General Radio Co. Type 715-AE DC Amplifier $149.50; Central Electronics MM-2RF Analyzer with adapter for receiver $95.00; TS-47APR Test Oscillator 40 to 500 megacycles on fundamentals and usable harmonics above 2000 mcs. $135.00 with manual; Lavoie Frequency Meter 375 to 725 megacycles $15.00 with manual. H. T. Cervantes, 190 Croton Ave., Mount Kisco, N. Y.

MISCELLANEOUS

PRESERVE YOUR HAM TICKET, Social Security Card, small photo, passes and anything else of value that is wallet size. We will laminate it in clear plastic, guaranteed for life. Lamination will prevent it from getting torn, soiled or frayed. Send your ticket or anything of value with $1 in stamps or cash for each item that you want preserved. 24 hour service. Send to Dept. HW, CQ Magazine, 300 West 43rd St., N. Y. 36, N. Y.

DECORATE YOUR CAR WINDSHIELD WITH YOUR CALL LETTERS. Attractive 1" letters and numbers available in gold or black. Complete single set 75¢, two sets for $1.25. Include name, call, address and color preference. Money refunded upon return of unused decals if not satisfied. All orders must be prepaid. Send to Box RJ, c/o CQ Magazine, 300 West 43rd St., N. Y. 36, N. Y.

HAMS! In central Illinois it's Knox Electronic Supply, 67 North Cherry, Galesburg, Illinois.

"YOUR BEST CONTACT" (spiritual side of ham's life). Free. "Rus" Sackers, W8DED, Holland, Michigan.
An organization composed of Christian hams has been organized for the purpose of Christian fellowship and tract work among hams. Anyone wishing information on the organization can write Rus Sackers, W8DED, P.O. Box 218, Holland Michigan.

MOBILING [*from page 31*]

mobile work. Unless the mobile is equipped with some sort of special voltage-generating system, it is best to mount a trickle charger in the car and plug it in every night. Another possibility is to connect the output of the battery charger to a plug which fits in the cigarette lighter socket.

A word of caution to mobilers that attend drive-in theaters. Do not operate your transmitter the next time the movie is dull. Those drive-in PA systems soak up rf like West Texas soaks up water. Some people get downright indignant at hearing "CQ 40" come over their speaker instead of the movie's sound track, as dull as it may be.

As I have been mistaken for a policeman, I have also been mistaken for just the opposite. On one occasion while chasing DX from a high hill with an engine-generator for power, I found myself suddenly surrounded by squad cars with drawn arms pointing my way—ordering me to come out with my hands up. It took a lot of convincing that I was an amateur radio operator and not a spy operating a short-wave radio station.

Now, in order to be mobile, it is necessary to be prepared to answer many questions about your hobby. The following are the most common, there are many more. Prepare at least one answer for each of the following:

Are you a policeman?
What's that big aerial for?
Have you got television in there?
Is that thing there for a telephone?
Who can you talk to with that thing?
Can you get police calls?
How far can you talk?
What do you talk about?
Are you one of those people who interferes with TV?
Do you ever talk with_____? (Any name or QTH may be inserted here.)
What kind of license plates are those?
Are they legal?
Since when did _____(insert the name of your state here) quit putting numbers on license plates?

So, this is mobiling. It's a great sport! ■

AUSTIN PASS [*from page 34*]

time keeping little kids out of the gear and trying to explain why we were there, that there was no time to ham. Ever try to DX-Pedoperate with about a hundred people looking over your shoulder, tripping over power cables, and stepping on test gear.

The car did start ok and we didn't have to coast down the hill. Both of us were tired, hungry, but ready for another expedition when the time is right. What member of the great amateur radio fraternity doesn't love a DX-Pedition any place and any time? ■

HAMS—HOBBYISTS—DEALERS! Here's a
DEPENDABLE SOURCE of SUPPLY
for RECEIVING TUBES



1-YEAR GUARANTEE

Nationally sold ZALYTRON Tubes are BRAND NEW Quality Tubes, guaranteed to perform as well and as long as tubes much higher priced. **Why pay more?** Try them once, you'll buy them always. Every tube we ship is covered by our Full Refund Guarantee . . . **YOU be the judge!** Send today for new Price List "Q".

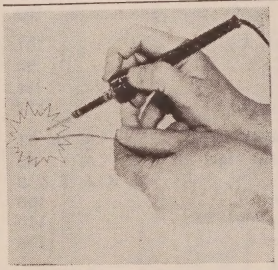
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220 West 42nd St., New York 36, N. Y.



RADIO AMATEUR CERAMIC SPECIALTIES
ONLY **$2.75**

#M1. Approx. 20 ounce mug, embossed with colorful amateur figures. (For a "YL" figure, order Item #M3), and amateur's individual call sign made with one-inch black characters.

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Box 223, Rowley, Mass.



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Calling all radio "hams" and handy men! You can't afford to pass by this all-purpose soldering iron. Small, rugged, really "heats up"; has fine tip for hard - to - get - at places. Repairs radios, TV sets, and many items about the house. 25W, 110-120V, AC/DC Complete with cord.

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Send for Gift Catalog
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Westerly 3, Rhode Island

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REQUEST IT WITH YOUR NEXT ORDER OR INQUIRY TO:—
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2053 W. Venice Blvd., Los Angeles 6, Calif.

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Reader Service

CQ Magazine, Dept. RS
300 West 43rd Street
New York 36, New York

Reader Service Coupon J
Void after Oct. 25, 1958

Please send me information on your ads in the October 1958 CQ keyed as follows:

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Name _____ Call _____ Engineer ☐
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Address _____ Type of work (specify) _____
City _____ Zone _____ State _____

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"TAB"—THAT'S A BUY—BARGAINS!

BC457/4 to 5.3mcs as is/good parts....$1.39
AN-ARR2/RCVR as is/good parts....$1.79

650 to 850VDC up to 450 mils POWER SUPPLY PARTS KIT includes TRANSF., RECTIFIERS, CAPACITORS & DATA 6 & 12 Volt Fil Taps. **Delivers 850 VDC** (no fil) PS65CK $16. Built PS65CW $24

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Inpt 95A71 Driver 1.78 to 1/32K to 10KΩ $2

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WILLARD 6V/6AMP Plastic Battery $3.00
WILLARD 2V/20A. Plastic Battery $2.50
"ORSA" Swedish Wood Saws.....$3
CH SWITCH 3PDT/10Amps Hvy dty 2/$1
BANDPASS FILTERS 60 or 90 or 150 Cys .....$1.95@

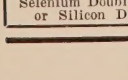
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TPF52/778VCT @ 200ma, 5V @ 3A, 6.3VCT @ 5A **$4** @ 3 for.....$11
TPF/540VCT @ 30ma/6.3V @ 2A.....$2
TPF61/500VCT @ 70ma & 6.3V @ 4A $3
TPF62/550VCT @ 250ma & 6.3VCT @ 2.5A & 12.6V @ 3.5A & 5V @ 2A $5
TFO2/2.5VCT @ 10A/5KV.....$4
TR400R/2x16V @ 1A ea.....$3.45
TFO5/7.5VCT/12A/15KV KENYON $9
Collins CHITRAN 672N107 PRI 220V 4600CT @ 325ma. 3500CT @ 425ma, $59
TP514 Pri/110, 220, 440V—Secd 880VCT @ 735ma G.E./USN Acq **$90 @, $9 @ 2/$15**
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DC-METER Dejur 800 Ma/3½" $3@, 2/$5
DC-METER One Ma/4" Rect. $5@, 2/$8
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DC MTR 100Ma/2½" .....$3@, 2/$5
DC MTR 1 Ma/4" Rect. .....$5@, 2/$8

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CHOKE 1.8 Hys. @ 700ma $3
CHI029 CHOKE 8 Hy @ 750ma.....$12
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CHI034 CHOKE 5 Hy @ 500ma.....$6
CHOKE 8 Hy @ 150ma $2
UTC/CG40/10 Hy @ 200ma **$3** @ 2/$5
CTC/RS8150/8 Hy @ 150ma/80Ω.....$3
CTC/RS8250/8 Hy @ 250ma/90Ω.....$5
CTC/RS8105/8 Hy @ 105ma/100Ω.....$2
STAN/C2700/2-12 Hy @ 200ma/80Ω $6
STAN/C2701/3-12 Hy @ 350ma/80Ω ...$10
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CHI008 GE/MUMTL/0.5 Hy/HIQ .. @ $1
CHI003 UTC/10 Hy @ 125ma.....@ $2
KEN/3-14 Hy @ 1.1 Amps/5KV $25
CHI045/6 HY @ 305ma/3.5KV/500ohms H'SLD $3
CHI046/15 HY @ 80ma 2.5KV/1120ohms H'SLD $1.50
CHI047 30 HY @ 25ma/1.5KV/8200ohms H'SLD $1.80
CHI048 9 HY @ 270ma/2.5KV/890ohms H'SLD $3.25
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0B2	.65	6C5	.69	45	.89
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0Z4	.60	*We Trade!*		RK60	1.17
1A7	.90	6CB6	.80	HY69	2.20
1B3	.78	6CD6	1.49	75	.81
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1R4	.5/$1	6CL6	1.40	83	.95
1R5	.78	6CG7	.89	4-65A	19.00
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1S5	.68	6CM6	.79	4X150A	38.00
1T4	.85	6CS6	.70	4X250B	41.00
1T5	.95	6CU6	1.29	4-400A	45.00
1U4	.6/$1	6D6	.99	4E27A	39.00
1U5	.75	6E5	.79	250TL	19.45
1X2	.75	6F4	2.49	307A	.2/$1
2C39A	10.00	6F5	.63	316A	.5/$1
2C40	6.00	6F6	.99	VR92	.5/$1
2C43	7.00	6F7	.99	350A	2.45
2C51	2.00	6F8	1.39	350B	1.75
2D21	.68	6H6	.59	368A	4.50
2E22	1.75	6J4	1.72	371B	.95
2E24	2.00	6J5	.59	3146	3.90
2E25	3.25	6J6	.59	446A	.2/$1
2E26	2.75	6J7	.99	450TH	43.50
2E30	1.75	6J8	1.39	450TL	43.50
2E35	1.60	6K6	.59	460	11.50
2K25	15.00	6K7	.79	701A	3.95
2K26	39.00	6K8	.99	703A	1.00
2K28	30.00	6L6	1.19	707B	3.50
2V3	2/$1	6SN7	.72	715C	10.90
2X2	.48	6T8	.98	717A	.5/$1
3A4	.70	6V6GT	.90	723AB	8.00
3A5	.55	6X5	.49	725A	2.75
3API	3.95	12AT6	.59	801A	.5/$1
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3C24	2.50	12AU6	.63	804	8.85
3D23	4.00	12AU7	.69	805	4.75
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3E29	7.00	12AX7	.79	807	1.19
3Q4	.68	12AY7	1.29	808	.85
3Q5	.86	12B4	.55	809	2.40
4-65	15.00	12BA6	.65	837	1.08
4-125	30.00	12BA7	.99	811	2.70
4-250	34.00	12BD6	.59	812	3.30
4X150	18.00	12BE6	.59	813	8.69
4X250	36.00	12BH6	.79	814	2.35
4X500	37.00	12BH7	.99	815	1.85
5AP1	2.95	12BY7	1.00	826	.2/$1
5BP1	3.95	12BZ7	.99	828	9.00
5BP4	3.25	12H6	.75	829B	8.00
5CP1	1.95	12J5	.69	832A	6.00
5CP7	9.00	12J7	.69	833A	36.00
5R4	1.00	12J8	1.35	837	.2/$2
5T4	1.25	12K8	.89	866A	1.50
5U4	.59	12SA7	.69	954	.10/$1
5V4	.89	12SC7	.89	955	.3/$1
5Y3	.65	12SF5	.69	957	.3/$1
5Z3	.89	12SG7	.89	958A	.2/$1
5Z4	1.00	12SH7	.89	991	.5/$1
6A7	1.00	12SJ7	.75	1614	2.00
6A8	.99	12SK7	.75	1619	.5/$1
6AB4	.59	12SL7	.79	1620	2.00
6AC7	.79	12SN7	.69	1625	.4/$1
6AG5	.69	12SQ7	.69	1626	.5/$1
6AG7	.97	12SR7	.69	1629	.4/$1
6AK5	.69	15E	1.19	2050	1.25
6AL5	.59	15R	.4/$1	5517	1.25
6AQ5	.66	FG17	3.49	5608	3.95
6AR6	1.95	19T8	1.16	5618	3.25
6AS7	3.49	24G	2.00	5651	1.35
6AT6	.2/$1	25A6	1.19	5654	1.20
6AU6	.79	25A7	2.19	5656	4.25
6B8	1.35	25C5	.81	5663	1.15
6BA6	.59	25L6	.72	5670	1.00
6BE6	.59	25T	4.00	5686	1.75
6BG6	1.49	25Z5	.72	5687	2.25
6BH6	.79	25Z6	.75	5691	4.70
6BJ6	.72	26A7	3.69	5725	1.95
6BK7	.99	FG27	8.28	5732	2.00
6BL7	1.95	HV27	19.39	5736	85.00
6BN4	.69	28D7	.89	5749	1.95
6BN6	1.08	FG33	15.00	5750	2.75
6BN7	1.99	EL34	3.49	5751	1.25
6BQ6	1.19	35A5	.69	5814	1.20
6BQ7	.99	35L6	.59	5879	1.20
6BX7	1.11	35T	4.49	5894	$12.00
6BY5	1.19	35Z5	.89		
6BZ6	.91	RK39	2.99	No See—Write!	

"TAB" TERMS: Money Back Gtd. $2 min. order F.O.B. N.Y.C. Add Shpg. charges or for C.O.D. 25% Dep. Tubes Gtd. via R-Exp. only. *Prices shown are subject to change.*

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Kit 5 Mycalex Glass/HF Strips
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Kit 10 Switches
Kit 75 Mica Condensers
Kit 150 Carbon Resistors ½/1/2W
Kit 25 Panel Lamps
Kit 12 Electrolytic Cond's
Kit 15 Volume Controls
Kit 56 Tube Sockets
Kit 65 Tubular Condensers
Kit 500 Ceramic Condensers
Kit 5 lbs Surprise Package
Kit 10 Transmit Mica Cond's
Kit Glyptal & Cement
Kit 3 Telp/Patch Xfmrs
We Ship Eleven!!!

Kit 5 Sub-Min Tubes
Kit 40 Insulators
Kit 35 Power Resistors
Kit 75 Mica Condensers
Kit 5 Crystal Diodes
Kit 200ft Hook Up Wire
4 Rolls Plastic Tape assorted types
Kit 100 Ceramic Condensers
Kit 50 Coil Forms
Kit 5 FT243 Xtal Holders
Kit 65 Inductors & Coils
Kit 5 Microswitches
Kit 10 Wheat Lamps
Kit 3 Transistor Xtnrs
Kit 8 Xtal Osc-Blanks

ONE EACH ABOVE KIT ONLY 99c

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NEW 28VDC RELAY SUPPLIES
Cased Filtered Ready to Work
B24VAR 24VDC at 1 amp Filtered.....$ 6
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NEW GTD. RADIO & T.V. RECTIFIERS
Postpaid 48 states orders $10.
75Ma 49¢, 5 for $2; 100Ma 59¢, 6 for $3
150Ma 70¢, 8 for $5; 250Ma 79¢, 6 for $4
300Ma 88¢, 5 for $4; 350Ma $1.00, 8 for $7
400Ma $1.10, 5 for $5; 500Ma $1.35, 5 for $5

New Silicon 500ma./
280VRMS/400 P.I.V.
Hmt Sealed $1.50 @ 5 for $6.50, 40 for $46
orders $10. Postpaid 48 states

SELENIUM Full Wave Bridge

DC AMP	18VAC 14VDC	36VAC 28VDC	72VAC 54VDC	130VAC 100VDC
½	$1.00	$1.90	$3.85	$5.00
1	1.30	2.00	4.90	8.15
2	2.15	3.00	6.25	11.10
3	2.90	4.00	8.60	13.45
6	4.15	8.00	18.75	31.90
10	6.10	12.15	26.30	41.60
12	7.75	14.90	33.95	43.45
20	12.85	24.60	49.90	76.75
24	15.00	29.45	57.50	81.15

"TABTRAN" Rectifier Xfmrs

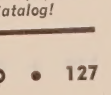
Sec'd Volts (DUAL†) 0-9-15-18-&-0-9-15-18. Series Sec'ds 0-3-6-9-12-15-18-21-24-27-30-33-36 Volts

TR4001 @ 1 Amp† ea/sec/w	$4.50
TR4002 @ 2 Amp† ea/sec/w	6.00
TR4003 @ 5 Amp† ea/sec/w	8.15
TR4005 @ 12 Amp† ea/sec/wnds	16.20
TR4006 @ 24 Amp† ea/sec/wnds	35.30
TR4007 @ 50 Amp†* ea/sec/wnds	57.45

†Wndgs in Series at Ratings shown: Parallel 2X Current. Voltage output. 0-9-15-18

Slim Jim Dynamic Mike Hand or Std $3.49
Neck Mike Carbon New .....89¢@, 3/$2
Telescoping 9 to 38" Antenna.....$1.69, 2/$3
60Mc's/IF-Strip $5; 30Mc's/As is $3.00
866A/2 Combo & Fil XFMR/7.5KV Ins 5.98
Xmtting Mica's .006 @ 2500V. 5 for ..$1.00
Relay 4PDT/3Acts/12 to 24VDC $1@, 6/$5
Hvy Dty 115V/60Cy Selsyns. 2 for...$9.00
Miller 2.5MH/2.5&5Mtr Chokes ...8/$1.00
Vibrators 6 or 12VDC $1.49@; 4/.....$5.00
Blower 24VDC/100CFM $2.98
Blower AC/Miniature 6&12VAC $1.00
Co-Ax Cnnctrs PL259A/SO239/40c ea. 6/$2
Battery Charger 6 or 12Volt/4A..... $9.95
AN Voltmeter 0-30VDC $2.49@, 3 for $6.00
RDZ/USN 200-400Mcs Rcvrs As Is...$25.00

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INFRARED—SEE IN DARK. IMAGE Converter
H Sensitivity 2" Dia.
Resolution up to 350lines/inch/in TUBE & DATA $5 @, 2 for $9
TPF516-4720VCT@290Ma H'sld $18.00

Wanted—Tubes ALL TYPES!!!

Top $$$ Paid For 304TL Sperry & Raytheon 2K33A, 2K39, 2K41 & 2K42, 2K43. Also EIMAC!
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New and outstanding SSB gear available from Allied...get the deal of a lifetime in October!

TRANSMITTERS

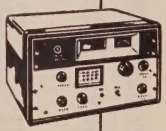
Collins 32S-1 (NEW)
Collins KWM-1
Central 600L
Central 20A
Gonset GSB-100 (NEW)
Hallicrafters HT-32
Hallicrafters HT-33A (NEW)
Johnson Thunderbolt
Johnson Pacemaker
Johnson "500"
Lakeshore Phasemaster II
Lakeshore P-400-GG





RECEIVERS

Collins 75S-1 (NEW)
Drake 1A
Hallicrafters SX-101
Hallicrafters SX-100
Hammarlund HQ-110 with HC-10
Hammarlund HQ-170C (NEW)
Hammarlund HQ-160C
National NC-109
National NC-303 (NEW)
RME 4350 with 4301
TMC GSB-1



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BONUS TRADE-IN ALLOWANCE

When you trade with ALLIED for SSB equipment in October, we'll give you a whopping 10% MORE than our regular high trade-in allowance for your old ham gear. You'll not only get our regular liberal allowance, but we'll add a big EXTRA 10% to help you get that SSB rig you want. Remember—you get that 10% bonus at ALLIED—during October only. Our usual liberal time payment terms still apply—only 10% down, up to 18 months to pay.

Select your new equipment now from the 1959 ALLIED Catalog—just off the press. It's packed with *everything* in Ham gear. including many new SSB units.

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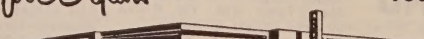
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For further information, check number 51 on page 126.

National's New Ham Band Receiver···NC-303

NEW
dual noise limiters. Separate automatic noise limiters for AM. Separate double-ended manual limiter for CW and SSB.

NEW
exclusive WWV converter provision. No interference with dial calibration or frequency coverage. Accessory calibrator provides one microvolt sensitivity on 10 mc WWV frequency.

NEW
front panel SSB selector with exclusive, new "IF SHIFT" for instant sideband choice . . . eliminates retuning or detuning.

NEW
tone switch provides for attenuation of highs, lows, or both for maximum readability.



NEW
"Q" Multiplier provides razor-sharp rejection notch (more than 60 db deep). May be tuned continuously across entire receiver passband. Separate notch frequency and notch depth controls.

NEW
5-position IF selector provides sharp, SSB-1, SSB-2, medium and broad selectivity. .5 Kc, 2 Kc, 4 Kc and 8 Kc bandwidths provide optimum selectivity for SSB, CW, phone, phone net and VHF plus sideband selection.

NEW
fine tuning vernier dial drive provides super-precision for CW and SSB tuning.

NEW
hi-speed, 40-1 tuning dial with logging scale.

ONLY
$44.99*
DOWN!
UP TO 24 MONTHS TO PAY.

Suggested cash price $449.00. (slightly higher west of the Rockies and outside U. S. A.)

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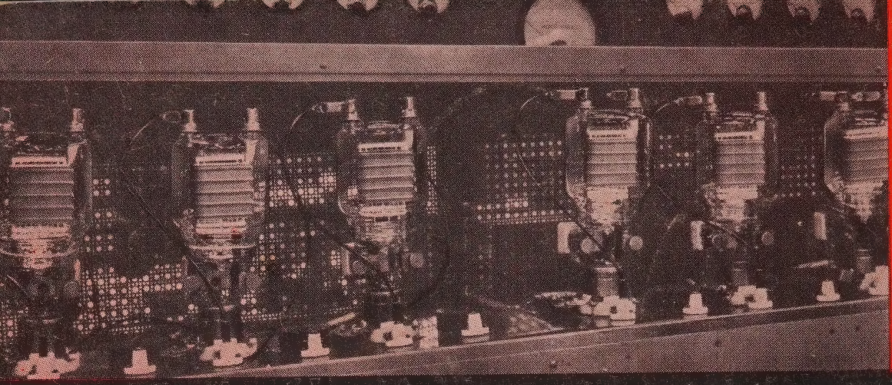
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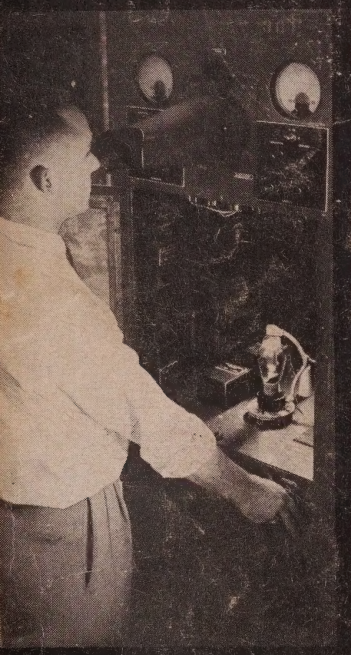
BURTON BROWNE/New York

For further information, check number 2 on page 126.



100% electrically stabilized under conditions at —or above—tube's rated maximum plate dissipation and plate current

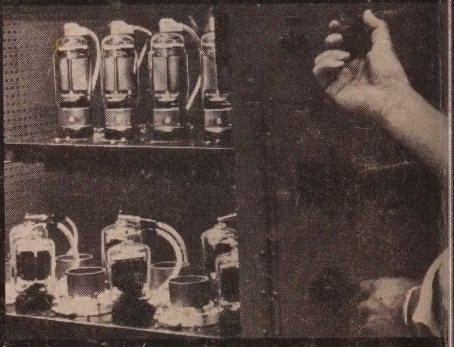
EVERY TUBE... 100%



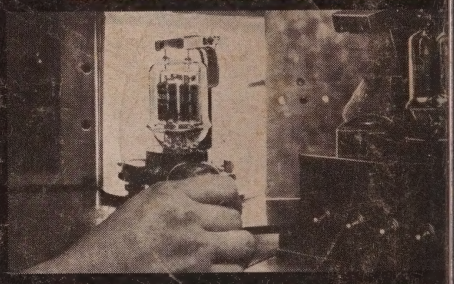
100% tested to assure low values of gas current and grid emission



100% tested for cathode emission



100% tested for internal continuity and shorts



100% tested for "key" electrical characteristics —to assure excellent electrical uniformity between individual tubes of the same type

Did you know that every single RCA amateur power tube you buy is tested for its "solid-signal" capacity?

To make sure every RCA amateur power tube that leaves the factory will take the "gaff" of transmitter operation...to be certain that every RCA amateur power tube type has high uniformity of characteristics from tube to tube...to assure you that every RCA amateur power tube you buy is capable of providing maximum hours per tube dollar, RCA puts amateur power tubes through some of the most rigid tests on record. Examples of these tests are pictured here.

Proving-ground tests like these are just a few reasons—among many—why leading amateur and commercial transmitter designers specify RCA power tubes year after year.

RCA power tubes are known for conservative ratings, large reserve of cathode emission, and full power output at relatively low plate voltages. And they are available at RCA Industrial Tube Distributors everywhere. For technical information on specific types, write RCA Commercial Engineering, Section I-37-M, Harrison, N. J.

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Electron Tube Division **Harrison, N. J.**