ANC

APRIL
1955
35c

CQ RADIO AMATEURS' JOURNAL

WOW!

a 1000-watt rig!



in this issue:

- Automatic Code
- Collins KWS-1
- CW Monitor



Collins for NEW EASE in OPERATION



75A-4 Receiver



KWS-1 Transmitter

The new Collins 75A-4 Receiver, 32W-1 Exciter, and the KWS-1 Kilowatt Transmitter are expressly designed for SSB, AM and CW. Like all Collins Amateur equipment, they meet the same high standards as Military and Commercial equipment.

The 75A-4 Receiver features passband tuning, AVC on SSB, bridged T rejection notch filter, built-in crystal calibrator circuit, separate detectors for AM and SSB, a new noise limiter, and provision for three Mechanical Filters together with time-proven features such as good image rejection, and an accurate linear dial with calibration of 1 kc per division.

Transmitter features include a SSB generator using Collins Mechanical Filters, selectable sideband, band switching from 3.5 to 30 mc, voice control or push-to-talk, automatic load control, and dual conversion with crystal controlled high-frequency oscillator and stable, linear, permeability-tuned low frequency oscillator resulting in a linear dial similar to the 75A-4 Receivers.

Power input is one kw peak envelope power on SSB, one kw on CW, and equivalent to one kw AM when received on narrow-band-width receiver.

Several versions of the transmitting equipment are available. The 32W-1 Exciter is capable of driving a kw linear amplifier. With exception of the power supply, which is housed in a separate cabinet, it is complete in a receiver-type cabinet and can be converted into a KWS-1. The KWS-1 is also complete in a receiver-type cabinet except for power supplies, which are mounted in an attractive desk-high cabinet. As an alternate, the KWS-1 is available without the high voltage power supply as type number KWS-1K, and kits are available for converting a 32W-1 or a KWS-1K into a KWS-1.

AMATEUR NET PRICES ARE AS FOLLOWS:

32W-1 Exciter complete	**$ 895.00**
KWS-1 Transmitter complete	**$1,995.00**
KWS-1K Transmitter less H.V. power supply and P.A. tubes	**$1,225.00**
428A-2 H.V. Power supply kit for KWS-1K	**$ 545.00**
428A-1 Power supply for KWS-1K, wired and tested	**$ 700.00**
367A-2 P.A. Kit to convert 32W-1 to KWS-1K	**$ 215.00**

See your nearest Collins distributor for delivery information.

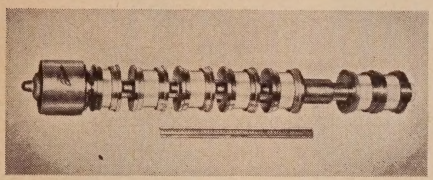
COLLINS

What's New with the Electron?

Latest power tube developments displayed by Eimac at annual I.R.E. show

New and improved klystron, ceramic and negative grid tubes highlighted the Eimac display at the annual Institute of Radio Engineers show and convention in New York City, March 21-24.

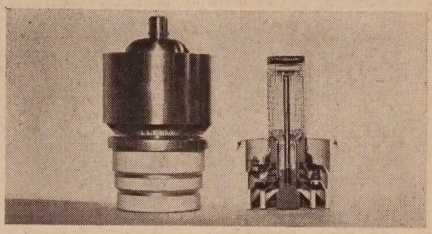
High power Eimac amplifier klystrons range in frequency from 225-3000mc and 5500-7500mc and vary in CW power output from 50 watts to 50kw. Application-proved Eimac amplifier klystrons such as type 3K50,000L,



High power Eimac amplifier klystron

delivering 10kw/CW power output at 400-1050mc, make possible high power previously limited to VHF and lower frequencies. These amplifier klystrons are of ceramic and copper construction and, although larger than negative grid tubes, are easily the lightest and least complicated of any klystrons intended for similar service. Small, rugged Eimac reflex klystrons are designed for local oscillator use as high as 9600mc in airborne environments.

Sharing the spotlight with klystrons were the latest in Eimac ceramic tube developments. Ceramic replaces glass in these tubes, giving a greater immunity to thermal and physical shock, plus allowing revolutionary construction techniques. In production, the ceramic and electrode parts are placed one on top of the other, similar to stacking



Ceramic tetrode and cross-section

poker chips. The copper metallized seals are the electrode terminals.

Eimac also announced improvements in popular commercial and military tube types such as the 3X2500A3 and 3X3000F1 power triodes, as well as new high vacuum rectifiers and water- and air-cooled tetrodes.

Along with the new, Eimac featured products that have been performance proved through years of operation in all types of commercial and military service. These tubes, of course, included the Big Six of Amateur Radio operation, the 4-65A, 4-125A, 4-250A, 4-400A and 4X150A radial-beam power tetrodes and 4E27A radial-beam power pentode.

New developments and standard line tubes shown at the I.R.E. show represent the leadership and reliability that have made Eimac the world's largest manufacturer of transmitting tubes.



The Big Six of Amateur Radio: 4-65A, 4-125A, 4-250A, 4-400A, 4X150A, 4E27A

"What's New with the Electron," a brochure distributed at the I.R.E. show discussing Eimac tube developments of the past year is available upon request. Write our Amateurs' Service Bureau for your free copy.

Eimac

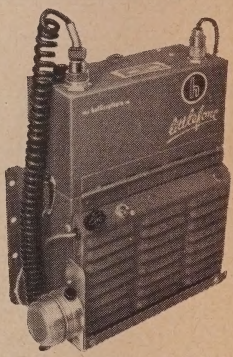
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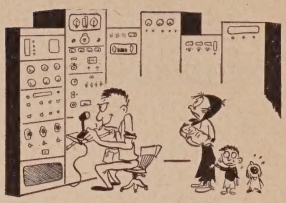
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OUR COVER

Judging from the mail the cover last month was quite a hit. This artwork (?) came from the evil pen of one Paul Lippman, who also had something to do with the cover this month (in case you hadn't noticed). Mainly, the cover this month gives you a look-see inside the new Collins KWS-1 kilowatt rig. Further amplification of this will be found starting on page 20.



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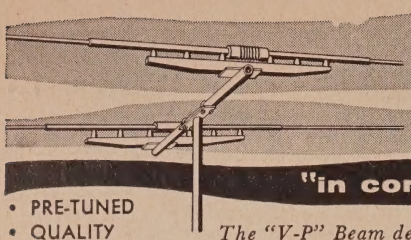
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Mosley "VEST POCKET" ROTARY BEAMS

"in compact beams quality counts!"

- PRE-TUNED
- QUALITY COMPONENTS
- EASY ASSEMBLY
- PROVED PERFORMANCE

The "V-P" Beam design was originally described in May '54 QST and is featured editorially in 1955 ARRL HANDBOOK.

MOSLEY beams are designed FOR HAMS — BY HAMS. They are made as small as possible and still maintain **true beam performance**. Correctly proportioned element length to coil inductance results in high forward gain, good front-to-back ratio, negligible end-fire and low SWR over the entire band.

Every part of a MOSLEY "V-P" Beam is designed for heavy duty service in all kinds of weather. Although every model but the 40 meter beam can be supported with a TV rotator, MOSLEY beams are no flimsy, light-weight weaklings. Aluminum elements pre-cut, pre-drilled, pre-tuned and color coded. One piece aluminum boom. All non-ferrous parts plated. Heavy varnished redwood cross arms can't cause distortion of beam pattern. Shipped "knocked down" but assembly is quick and simple. Each model complete with coils and all parts. Ask your jobber, listed below, for free copy of MOSLEY Catalog H55 giving complete electrical and mechanical data.

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Model #VPA 40-2. Forward gain: 5db. Front-to-back ratio: 19 db. SWR: 1.07 to 1 at resonant frequency. $74.95

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Model #VPA 20-3. Forward gain: 7.5 db. Front-to-back ratio: 28 db. SWR: 1.05 to 1 at resonant frequency. $79.95

MOSLEY 2 ELEMENT 20 METER BEAM
Model #VPA 20-2. Forward gain: 6db. Front-to-back ratio: 20 db. SWR: 1.2 to 1 at resonant frequency. $55.95

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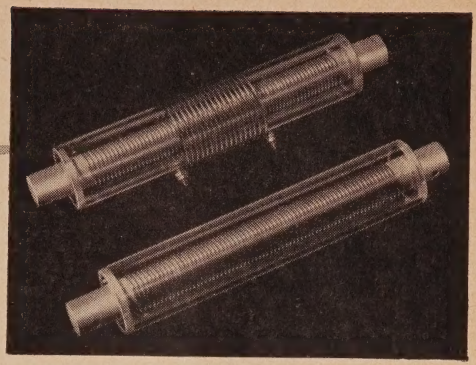
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Poorly constructed loading coils are false economy if it's enduring beam performance that you want! Compare MOSLEY quality, materials and workmanship. See them at your distributor or write for brochure.

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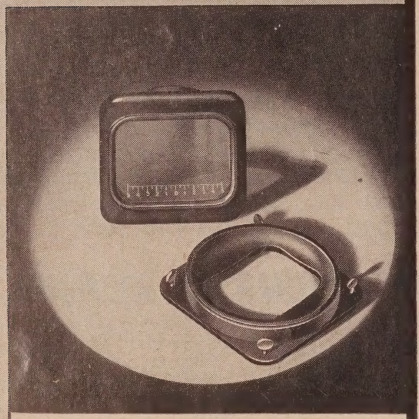
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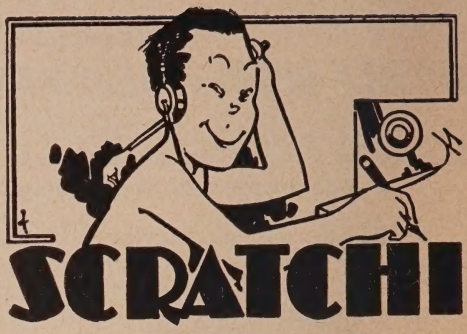
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JAMES MILLEN MFG. CO., INC.

MAIN OFFICE AND FACTORY
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Feenix, Ariz.

Deer Hon. Ed:

Gracious to goodness, the trubbles an amchoor can getting into just in orders to pursooing his hobby. Why is it, Hon. Ed? A feller can planning everything down to nats eye-brow, then sum foolish thing are happening, and all plans are going out the galley toward west.

Like taking cupple weeks ago. Scratchi are deciding to doing reel first-classy job in 4th-cuming dee-x contest. I are out to showing all other stayshuns I not taking back seats to nobuddy. Yes indeedy, I are going to put signal on air that sounding like local over in vee-k land. Are going to making the dee-x working me in self defense, just to getting me off there freakwency.

Wunce having made up mind, Scratchi are not wun to sitting around on laurels. First thing are doing is boosting inputs to transmitter final toobs. After all, this five kilowhats may be hunky-dunky with sum people, but when you are after the reel dee-x, you needing sooper-power. So, buying water-cooled jackets for toobs, running in pipes for water, and borrowing extra power supply to putting in series with present wun. First step are therefore all done.

Next—new antennas. Scratchi thinking only wun way to reely getting out, and that are with rombics. No sooner said than started. I making sum quick calculayshuns on angles and distances and gains. Wowiee!! what a signal I'll be having. Going out and walking around on sum spare cupple acres we having neer house on Hon. Brother Itchi's ranch, and finding spots where wanting to put up poles for rombics. Figuring that to rombics doing reel slicky 1/c job.

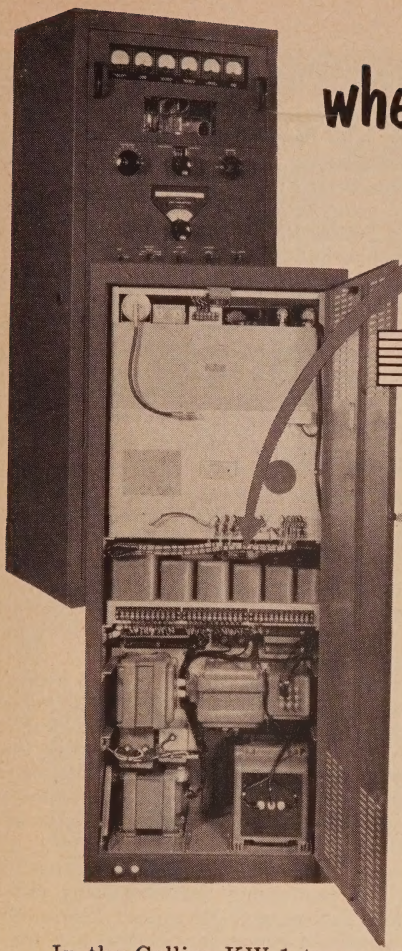
That nite I calling up well-digger frend of mine and he saying he be happy to coming out next day to drilling holes so can putting in masts.

Next day he showing up brite and erly, in his well-digging truck. We driving out on land, and starting first hole. He putting truck rite on spot; setting up drill, starting engine, and old drill starting to digging in grate shape. Boy oh boys, I saying to myself, dee-x contest, here I come. Few minutes later, we down to ten feets, so pulling up drill, and going over ot have looksee at hole. Hon Ed! No hole! Sand are filling up hole like sixty.

Good old well-digger frend shaking Hon. Head,

[*Continued on page 8*]

where only the best will do

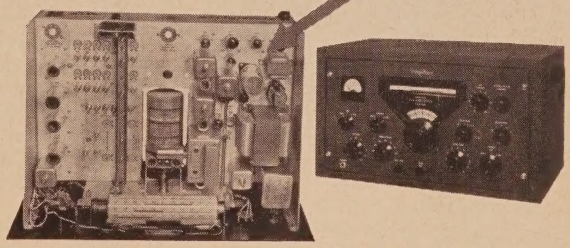


COLLINS uses

CHICAGO

the World's Toughest Transformers

in the new KW-1 transmitter and 75A-3 receiver



In the Collins KW-1 transmitter, where quality and performance are the only considerations, Collins chose CHICAGO transformers.

The conservative ratings and precision construction of Chicago's "Sealed-in-Steel" transformers are a complete guarantee of reliability for this superb 1000 watt transmitter. To insure excellent intelligible audio quality, only CHICAGO transformers are used throughout the audio system.

Recognized by hams everywhere as the finest in receiving equipment, the Collins 75A-3 features remarkable stability, calibration accuracy and high sensitivity. This receiver, designed for long periods of trouble-free operation, is powered exclusively by CHICAGO transformers.



Chicago's FREE Catalog CT-153, listing hundreds of stock transformers for ham, industrial and military applications is now available from your CHICAGO distributor, or from Chicago Standard Transformer Corporation.

CHICAGO STANDARD TRANSFORMER CORP.

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Heathkit GRID DIP METER KIT



MODEL GD-1B

$19.50 Ship. Wt. 4 lbs.

The invaluable instrument for all Hams. Numerous applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, design procedures, etc. Receiver applications include measuring C, L and Q of components—determining RF circuit resonant frequencies.

Covers 80, 40, 20, 11, 10, 6, 2, and 1¼ meter Ham bands. Complete frequency coverage from 2—250 Mc, using ready-wound plug-in coils provided with the kit. Accessory coil kit, Part 341-A at $3.00 extends low frequency range to 350 Kc. Dial correlation curves furnished.

Compact construction, one hand operation, AC transformer operated, variable sensitivity control, thumb wheel drive, and direct reading calibrations. Precalibrated dial with additional blank dials for individual calibration. You'll like the ready convenience and smart appearance of this kit with its baked enamel panel and crackle finish cabinet.

Heathkit ANTENNA COUPLER KIT

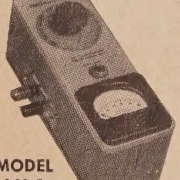


MODEL AC-1

$14.50 Ship. Wt. 4 lbs.

The new Heathkit Antenna Coupler Model AC-1 was specifically designed to operate with the Heathkit Amateur Transmitter and will operate with any transmitter not exceeding 75 watts RF input power. Rugged design has resulted in a sturdy, well shielded unit featuring a copper plated chassis and shield compartment. Coaxial 52 ohm receptacle on the rear of the chassis connects to a three section Pi- type low pass filter with a cut-off frequency of 36 Mc. Tuning network consists of a variable capacitance and tapped inductance in an impedance matching unit. Capacity coupled neon lamp serves as a tuning indicator and will also provide a rough indication of power output.

Heathkit IMPEDANCE METER KIT



MODEL AM-1

$14.50 Ship. Wt. 2 lbs.

The Heathkit Antenna Impedance Meter is basically a resistance type standing wave ratio bridge, with one arm a variable resistance. In this manner it is possible to measure radiation resistance and resonant frequency and antenna transmission line impedance; approximate SWR and optimum receiver input. Use it also as a monitor or as a field strength meter where high sensitivity is not required. Frequency range of the AM-1 is 0–150 Mc and range of impedance measurements 0–600 ohms. The circuit uses a 100 microampere Simpson meter as a sensitive null indicator. Shielded aluminum light weight cabinet. Strong self supporting antenna terminals.

HEATH COMPANY

BENTON HARBOR 12, MICHIGAN

[*from page 6*]

saying he have to put down pipe casing if wanting to having hole. Pipe keeping sand from filling in hole, he explaining. So, he driving off to getting casing pipe. Scratchi not wasting any time, so while waiting I going back to shack and start filling out qsl cards. Putting R5 S9, R5 S9, etc. on eleventeen cards when well-digger frend coming back.

Hackensake—you should seeing pipes he having. Every wun are fifty feets long if they an inch. I asking him how-comes such long pipes, and he saying he not having any shorter, but not to worrying, as he digging holes deeper for me. Are peechy-fine with me if he wanting to putting fifty-foots long pipes in ground, as long as my Hon. Masts are fitting inside pipes. I measuring, and sure enuf, everything fit reel neet-like.

So, away we go on drilling. The old drill bit sinking down into Mother Earth, pipe going along to, and first thing you knowing, we having fifty-foots pipe in ground and neet hole. So, on to next hole. Chugg-chugg and drill-drill and next hole are done. Ditto sameway and next hole done. Pretty soon having ate neet holes in ground, all reddy to putting in rombic masts.

In fackly, are just time before dark, so good old fast-thinker old buddy well-digger frend helping me sticking masts in pipes. Of course, wanting masts in only ten feets, so having to putting stops on wooden masts so they not distapeering in ground. Everything going like greesed clockwork, and by dark all ate masts sitting up reel nice, self-supporting.

Following day Scratchi all set with wire, insulators and terminating resistors. Going out to masts, and Sacremento!! No masts!! Where were having masts nite before, now looking and seeing masts lying on ground next to holes. Sum jellus dee-x man are sneeking in under cover of nite and taking down my ate masts!! Are looking for clews, but all I seaing are sum dark substance neer each hole.

By gollies, Scratchi wasting no time. He quick-like putting masts back in ground, wun by wun. Are just getting last mast in hole when looking back at first mast—it are falling over out of hole! Rushing to another mast, and, Hon. Ed., this you never buleeving, but the mast are rising out of ground. Just like it growing, only it aren't growing. Just slowly rising up from ground. Sumthing pushing masts out of ground. Sum dark messy substance seeming to ooze up from hole.

Nothing daunted, Scratchi rushing to nouse, getting guy wire, putting dead-man guy wire ankors in ground, and putting up mast again—being surely to guying it reel tite. Standing back and watching. Sure enuf, mast still pushing up from ground. Slowly, slowly, guy wire titening, titening, titening . . . ZING . . . ZANG . . . WHOOSH. Three guy wires flying all over place.

How you liking that!! Scratchi being sabotaged!! Still not giving up, not old geenyus Scratchi. Going

[*Continued on page 58*]

New Heathkit VFO KIT



MODEL VF-1

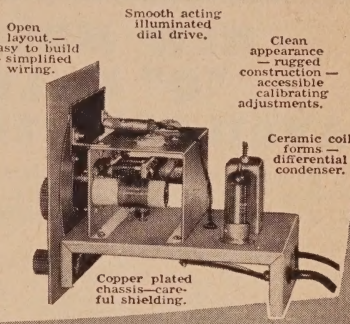
$19.50

Ship. Wt. 7 lbs.

- Smooth acting illuminated and precalibrated dial.
- 6AU6 electron coupled Clapp oscillator and OA2 voltage regulator.
- 10 Volt average output on fundamental frequencies.
- 7 Band calibration, 160 through 10 meters, from 3 basic oscillator frequencies.

Here is the new Heathkit VFO you have been waiting for. The perfect companion to the Heathkit Model AT-1 Transmitter. It has sufficient output to drive any multi-stage transmitter of modern design. A terrific combination of outstanding features at a low kit price. Good mechanical and electrical design insures operating stability. Coils are wound on heavy duty ceramic forms, using Litz or double cellulose wire coated with polystyrene cement. Variable capacitor is of differential type construction, especially designed for maximum bandspread and features ceramic insulation and double bearings.

This kit is furnished with a carefully precalibrated dial which provides well over two feet of calibrated dial scale. Smooth acting vernier reduction drive insures easy tuning and zero beating. Power requirements 6.3 volts AC at .45 amperes and 250 volts DC at 15 mills. Just plug it into the power receptacle provided on the rear of the AT-1 Transmitter Kit. The VFO coaxial output cable terminates in plastic plug to fit standard ½" crystal holder. Construction is simple and wiring is easy.



Heathkit AMATEUR TRANSMITTER KIT



MODEL AT-1

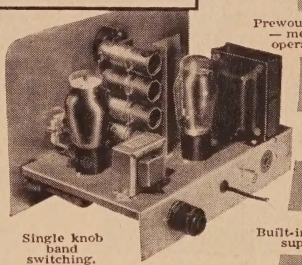
$29.50

Ship. Wt. 16 lbs.

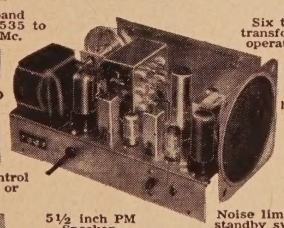
SPECIFICATIONS:

Range 80, 40, 20, 15, 11, 10 meters.
6AG7 .....Oscillator-multiplier.
6L6 .....Amplifier-doubler
5U4G ..... Rectifier.
105-125 Volt A.C. 50-60 cycles 100 watts. Size: 8¼ inch high x 13⅛ inch wide x 7 inch deep.

Here is a major Heathkit addition to the Ham radio field, the AT-1 Transmitter Kit, incorporaring many desirable design features at the lowest possible dollar-per-watts price. Panel mounted crystal socket, stand-by switch, key click filter, A. C. line filtering, good shielding, etc. VFO or crystal excitation—up to 35 watts input. Built-in power supply provides 425 volts at 100 MA. Amazingly low kit price includes all circuit components, tubes, cabinet, punched chassis, and detailed construction manual.

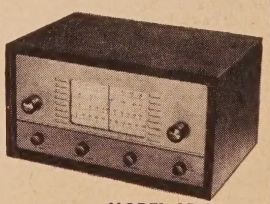


Heathkit COMMUNICATIONS RECEIVER KIT



SPECIFICATIONS:

Range..... 535 Kc to 35 Mc
12BE6 .....Mixer-oscillator
12BA6 .....I. F. Amplifier
12AV6 Detector—AVC—audio
12BA6 ....B. F. O. oscillator
12A6.....Beam power output
5Y3GT .....Rectifier
105-125 volts A.C. 50-60 cycles, 45 watts.



MODEL AR-2

$25.50

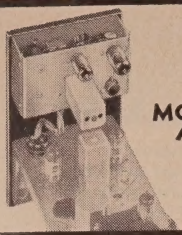
Ship. Wt. 12 lbs.

A new Heathkit AR-2 communications receiver. The ideal companion piece for the AT-1 Transmitter. Electrical bandspread scale for tuning and logging convenience. High gain miniature tubes and IF transformers for high sensitivity and good signal to noise ratio. Construct your own Communications Receiver at a very substantial saving. Supplied with all tubes, punched and formed sheet metal parts, speaker, circuit components, and detailed step-by-step construction manual.

CABINET:

Proxylin impregnated fabric covered plywood cabinet. Shipg. weight 5 lbs. Number 91-10, $4.50.

HEATH COMPANY
BENTON HARBOR 12, MICHIGAN



MODEL AQ



MODEL DQ

MODEL B SLICER



NEW MULTIPHASE "Q" MULTIPLIER AVAILABLE THREE WAYS

1. It's built-in the new Model B Sideband Slicer.
2. Plug it into your present Model A Slicer.
3. Attractive Desk Model, for installation directly into receiver.

The new Multiphase "Q" MULTIPLIER is a tunable IF electronic filter that provides tremendous receiver selectivity for peaking or rejecting a signal on AM, CW or SSB. It employs a new two tube circuit* with a special very high "Q" pot core inductor. Continuously variable selectivity from 60 cps to normal IF pass-band. Nulls out interfering heterodynes without affecting speech intelligibility. Peak the desired signal; interfering carriers are attenuated up to 50 db.

*PATENT PENDING

MODELS

MODEL AQ

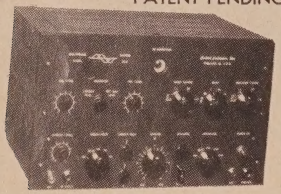
"Q" MULTIPLIER for installation in Model A Slicer. Includes new front panel. Power-IF cable plugs into accessory socket.
Wired . . . $29.50 Kit . . . $22.50

MODEL DQ

Desk Model "Q" MULTIPLIER for use with any receiver having 450 to 500 KC IF. In attractive case 5½" W, 4" H, 5" D, with connecting power-IF cable. Power requirements, 225 to 300 VDC at 12 ma., 6.3 V at .6 amps, can be secured from receiver. Can provide added selectivity and BFO for mobile SSB or CW reception.
Wired . . . $29.50 Kit . . . $22.50

MODEL B

Sideband Slicer, same as Model A Slicer but includes built-in "Q" MULTIPLIER. AP-1 not needed.
Wired $99.50
Kit $69.50



MODEL 20A

- **20 Watts Peak Envelope Output SSB, AM, PM and CW**
- **Completely Bandswitched 160 thru 10 Meters**
- **Magic Eye Carrier Null and Peak Modulation Indicator**

Choice of grey table model, grey or black wrinkle finish rack model.
Wired and tested **$249.50**
Complete kit **$199.50**

458 CONVERSION KIT

Basic 458 Conversion Parts Kit, 15 to 160 meters, with dial, etc. $15.00
458 Deluxe Case and Panel Kit, matches size and appearance of Slicer. . . $10.00

NEW — FOR 10 METERS

MODEL 458-10 xtal controlled converter package to extend 458 VFO into 10 meter band. For use with above 458 Conversion Kits.
Wired $37.50
Kit $27.50

Check These Features
NOW IN BOTH MODELS

- **Perfected Voice-Controlled Break-in on SSB, AM, PM.**
- **Upper or Lower Sideband** at the flip of a switch.
- **New Carrier Level Control.** Insert any amount of carrier without disturbing carrier suppression adjustments.
- **New Calibrate Circuit.** Simply talk yourself exactly on frequency as you set your VFO. Calibrate signal level adjustable from zero to full output.
- **New AF Input Jack.** For oscillator or phone patch.
- **CW Break-in Operation.**
- **New Gold Contact Voice Control Relay.** Extra contacts for muting receiver, operating relays, etc.
- **Accessory Power Socket.** Furnishes blocking bias for linear amplifier and voltage for optional VFO (Modified BC458 makes an excellent multiband VFO.)
- **40 DB or More Suppression** of unwanted sideband.



SIDEBAND SLICER

MODEL A IMPROVES ANY RECEIVER

Upper or lower sideband reception of SSB, AM, PM and CW at the flip of a switch. Cuts QRM in half. Exalted carrier method eliminates distortion caused by selective fading. Easily connected into any receiver having 450-500 KC IF. Built-in power supply. Reduces or eliminates interference from 15 KC TV receiver sweep harmonics.
Wired and tested **$74.50**
Complete kit **$49.50**

AP-1 ADAPTER

Plug-in IF stage — used with Slicer, allows receiver to be switched back to normal.
Wired and tested, with tube **$8.50**

NEW AP-2 ADAPTER

Combined AP-1 and xtal mixer. Allows Slicer to be used with receivers having 50, 85, 100, 915 KC and other IF systems. One xtal suffices for most receivers. **$17.50**



MODEL 10B

SUCCESSOR TO THE POPULAR MODEL 10A

- **10 Watts Peak Envelope Output SSB, AM, PM and CW**
- **Multiband Operation** using plug-in coils.

Choice of grey table model, grey or black wrinkle finish rack model. With coils for one band.
Wired and tested **$179.50**
Complete kit **$129.50**

QT-1 ANTI-TRIP UNIT

Perfected Voice Operated Break-in with loudspeaker. Prevents loud signals, heterodynes and static from tripping the voice break-in circuit. All electronic — no relays. Plugs into socket inside 20A or 10B Exciter.
Wired and tested, with tube **$12.50**

WRITE FOR LITERATURE

See Trade Publications on Multiphase "REJUVA-TUBE" — A New CRT REJUVENATOR

MULTIPHASE EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave. Chicago 13, Illinois

de W2NSD...

I have, with GREAT restraint, refrained from running any highly technical, but bogus articles in this issue. Thus you can read CQ with no more than your normal amount of wariness and not suspect that each article or column may be a clever April Fools trap. With the exception of Scratchi, naturally.

VHF Column

One of the most consistent suggestions received so far is for the inclusion of a VHF Column in CQ. As a long time resident of the two and six meter bands I wholeheartedly concur (I agree). So . . . the next step is to select the ill fated person to be saddled with the thankless chore. Perhaps I should phrase that a bit more attractively and say that the lucky VHF Editor of CQ will naturally be plunged into the limelight and get worldwide acclaim (plus $$$, well . . . $$).

Prerequisites for the position of VHF Editor are only those that are obvious . . . ability to write (in English, preferably), experience in VHF operation and exprimentation, and the ability to meet a deadline. Do you have any idea on who might fit the bill? Volunteers and recommendations cheerfully accepted. All but one will be graciously turned down. Won't you try for one of our lovely rejection slips?

Articles

While on the subject (momentarily) of rejection slips it is probably a good idea to mention that all of the articles in this magazine are written by people, usually hams, and that if you happen to come under this classification you too may be able to carry around an issue of CQ with your article prominently showing from your hip pocket. Just about everyone has some sort of article fermenting within them. Bring it to a boil bub. For further details I suggest a quick perusal of the article. "Author. Author" in the October 1952 CQ. Reprints of this article are available from me if your library doesn't go back that far. I also have a copy of the official CQ style sheet available for you; this should be in hand before you make the final draft of your article since it tells you what words to capitalize, etc.

QSL Card Contest

The printing of my QSL card in the February editorial has resulted in several letters suggesting a contest of sorts in which we have a "QSL-of-the-Month" published. I have, I believe, one of the largest QSL-sample collections in the world, with samples from over 60 printers. The reason for this was not that I had a passion for collecting such samples, but a combination of two factors . . . one that I was looking for something really original for my own cards, and the other that I have a collecting instinct which has left me unable to throw **anything** away (you should see my cellar, attic, and garage). The bulk of these samples are terribly standard. This is, I believe, not because the printers involved have no imagination, but because this is what the amateur has been demanding.

By pointing a finger at QSL's perhaps we can put more attention to them and bring about a general improvement in QSL's. I certainly hope so. At any rate, if you have a card which your friends agree (without threat of physical force) is outstanding, then send it in to our impartial QSL of the Month Department where it will be carefully judged by our panel of impartial judges (me). Cards will be judged on the basis of originality and attractiveness.

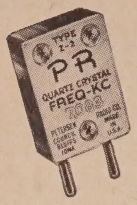
Commercial Equipment

Although CQ will continue to run as many construction articles as possible, the importance of commercial transmitters and other equipmen cannot be ignored. In each issue we will attempt to bring you a brief writeup of some new piece of commercial gear. In every possible instance I will try to have the equipment tested by one of our staff so that we will not be in the position of merely reprinting the published specs on something. What would you most like to read about?

T3 T3 T3 T3 T3 T3 T3

There's a PR for every Service!

AMATEUR



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

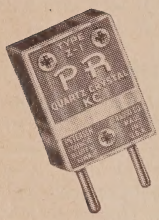
Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, permanently sealed.....**$2.95 Net**



20 Meters, PR Type Z-3

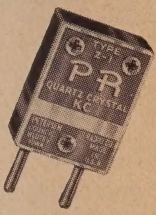
Harmonic oscillator. Low drift. High activity. Can be keyed in most circuits. Stable as fundamental oscillators. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation.....**$3.95 Net**

COMMERCIAL



COMMERCIAL, PR Type Z-1

Designed for rigors of all types of commercial service. Calibrated .005 per cent of specified frequency. Weight less than ¾ ounce. Sealed against moisture and contamination. Meets FCC requirements for all types of service.



SPECIAL TYPES

Type Z-1, AIRCRAFT

3023.5 Kc., .005%.....**$3.95 Net**

Type Z-1, MARS and CAP

Official assigned transmitter frequencies in the range. Calibrated to .005%. 1500 to 10000 Kc. **$3.95 Net**

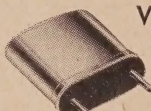


Type 2XP

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

1600 to 12000 Kc. (Fund.) ±5 Kc. . . . **$3.95 Net**

12001 to 25000 Kc. (3d Mode) ±10 Kc. . . . **4.95 Net**



VHF Type Z-9A

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

Each . . . . . **$6.95 Net**

Type Z-9A

RADIO CONTROLLED OBJECTS

No license required for power up to 5 watts input.

27.255 Mc., .04% . . . **$3.95 Net**



Type Z-1 TV Marker Crystals

Channels 2 through 13 . . . . . **$6.95 Net**

4.5 Mc. Intercarrier, .01% . . . **3.95 Net**

5.0 Mc. Sig. Generator, .01% **3.95 Net**

10.7 Mc. FM, IF, .01% . . . **3.95 Net**

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

PR Crystals

Since 1934

USE PR AND KNOW WHERE YOU ARE

PETERSEN RADIO COMPANY, INC.
2800 W. BROADWAY • COUNCIL BLUFFS, IOWA

EXPORT SALES: Royal National Company, Inc., 75 West Street, New York 6, N. Y., U. S. A.



AUTOMATIC CODE

John Williams, W2BFD
Technical Editor

The next step beyond the bug . . .

AUTOMATIC CODE SENDER 5 to 200 WPM

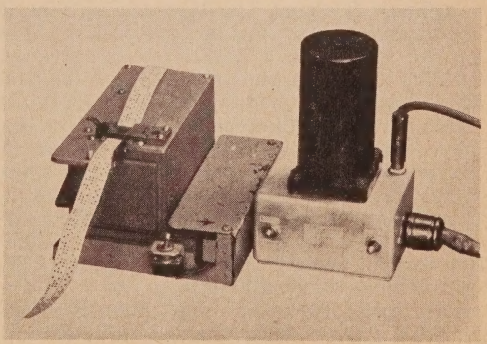
This article describes how, using standard RTTY tape equipment, regular Morse code may be sent automatically. While of interest to the TT amateur, this article is primarily aimed at the traffic man who really needs some way to store messages on tape ready to be sent at schedule time and those operators who want to send perfect c.w. for code practice purposes. All of the tape equipment necessary for this can be purchased for as little as $69.50.

Let us admit at the outset that the contrivance to be described was not prompted by any great desire on the part of the writer to do a large amount of CW operating. Rather it stems from the FCC regulation requiring radioteletype amateur stations to periodially identify themselves in international morse code. Be that as it may, it makes possible for the first time, at a reasonable expenditure, for CW traffic to be prepared in advance and run off with that commercial precision and exactness characteristic of the Kleinschmidt wheatstone tape perforator and Boehme "Head" combination which costs many hundreds of dollars and is generally beyond the reach of the average amateur.

There are many pros and cons as to the value of automatic sending gear but one of the greatest advantages, and in this radioteletype is outstanding, is the ability to prepare and store up the traffic when you have the time and to edit it for errors, etc. so that none of these are transmitted. No electronic key, even with a skilled operator behind it, can hope to maintain the flow of messages over any great interval of time without occasional errors and interruptions. If the receiving operator requires a message to be repeated, the tape can be rerun as often as desired, making it possible to get through under conditions that would wear down the patience of a key-sending operator. The accuracy of the Kleinschmidt wheatstone tape method of sending is far greater than the ink-tape-photocell-scanned systems and is very positive in operation. The official broadcasts from W1AW are typical of "Klein" sending.

For the amateur RTTY operator arrangement diagrammed here permits him to run in his "Morse" identification, required by law, at the end of all his teleprinter transmissions. An innovation includes an automatic "change over" signal in the same tape bearing the Morse and Teletype messages making it unnecessary for the operator to stick close to the equipment when running tapes containing both codes. The automatic changeover, of course, is optional. An additional feature, benefiting both the CW and the RTTY operator is the ability to store two completely independent CW messages, side-by-side, on the same paper strip. This is mainly of value for paper economy and, since the tape is relatively cheap, may not interest all amateurs. The two "channels" are possible with the W2BFD system because, while standard "Klein" tape contains two positions for code-hole punching, teletype tape contains five positions. Standardization being very worthwhile, code-hole positions 1 and 5 were decided upon for channel 1 and positions 3 and 4 for channel 2. Hole position Number 2 is employed for the "Morse"-to-teletype change-over function (if used).

It has always been standard commercial and amateur procedure to begin all teletype mes-



Teletype tape transmitter (left) with Western Electric polar relay and adapter unit. The transmitter is essentially a sensing unit which "feels" the five punched holes in the tape and translates them into electrical impulses.

sage tapes with several depressions of the "unshift" key on the keyboard (marked "LTRS"). The code for this consists of all five hole positions perforated. As this includes hole number two, it will operate the automatic changeover if the equipment has been sending Morse. The teletype to "Morse" changeover signal consists of several depressions of the "Blank" key on

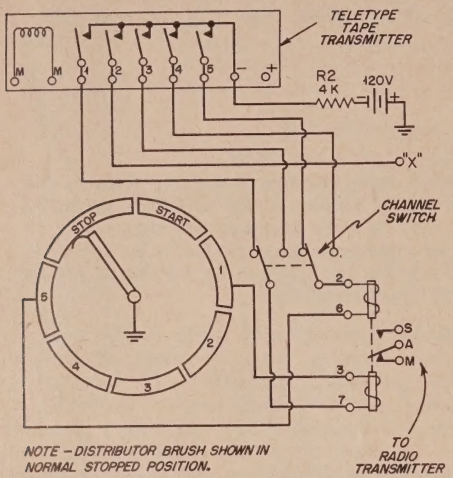
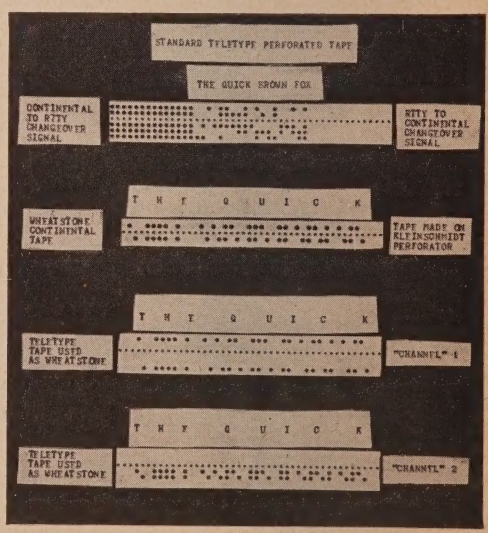


Fig. 1. Equipment arranged for Teletype sending, distributor brush shown in stopped position. Short R3 if automatic changeover is not installed.

the keyboard, which on most machines has no useful function or else merely rings the signal bell on the distant printer. If the blank is used for bell it means that the distant teletype operator hears several tinkles of the bell when the CW message is about to begin. The distant printer can be wired so that reception of the "Blank" impulse will shut down his printer until the "Morse" is finished.

Figure one will be familiar to RTTY amateurs as a conventional tape transmitter and distributor hookup.[1] The tape-sending pins in the transmitter unit close or leave open the bank or five single-pole double-throw contacts, according to the character punched into the tape. The distributor is merely a motor-driven brush wiping over the "Faceplate" which is a segmented commutator-like disc. Five of the adjacent segments are connected to the tape transmitter contacts and the remaining two send the "start" and "stop" pulses which are needed in teletype operation to maintain unison between the transmitting and receiving equipment. The "start" pulse is always spacing (no wire connected to it) while the "stop" pulse is always marking (passes current whenever the brush contacts it). A "Tape-Advance" contact on the faceplate furnishes local "battery" to the magnet in the transmitter once in each revolution of the brush when it is traversing the first ¾ of the "stop" segment. Energizing the tape-advance magnet retracts all five pins and advances the tape one tenth of an inch (teletype characters are punched ten to the inch which will give some idea of the economy derived from teletype operation as compared to continental code). This current is turned off for the balance of the time that the brush travels across the "stop" segment and the pins are allowed to rise again during the "start" interval, thus allowing sufficient time for the contacts to stop bouncing by the time the brush reaches the number one code segment. The make-and-break current secured from this lashup can be fed directly to a teletype printer but it is more common to use a relay to key the telegraph line from the distributor impulses. A common relay of reasonably high-speed design can be used (the writer has had a great deal of success with the sigma 4F midget relay), but the best performance is derived from a biased polarized relay. Figure one shows such an arrangement with the relay normally held to the spacing contact by 30 M.A. flowing through the "Bias" winding. The distributor sends 60 ma. impulses to the "operating" winding which impel the armature to marking contact. Transit time of the armature with this method is a small fraction of a milli-second. In addition to dropping the voltage for the relay windings, the series resistors are needed to reduce the effect of the winding inductance.

Figure two illustrates the simplicity of the connections for sending CW. No additional components are required and only a few leads are used making a fairly simple changeover switch possible. It is very important, with polar relays, to insure that current flows through the



Comparison of RTTY tape perforations, Kleinschmidt perforations, and the use of Teletype tape for Morse sending.

1. Wayne Green, "Teletype," *CQ*, April 1952, p. 35.

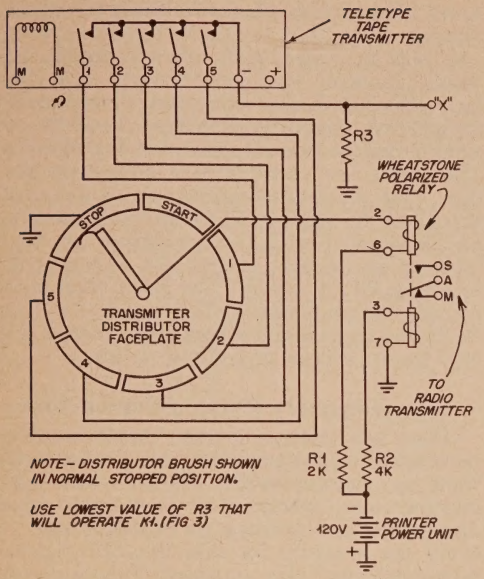
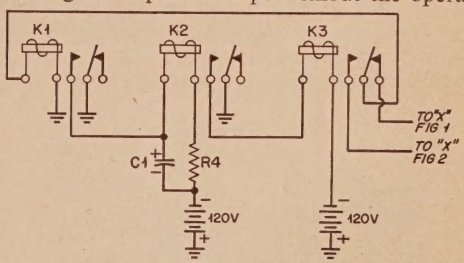


Fig. 3. Optional automatic changeover circuit for Teletype and Continental Code. Note . . K3 contains additional contacts (not shown) for modifying the circuit of Fig. 1 to that of Fig. 2.

two windings in the correct relative directions. Reversing both windings does no harm since this merely reverses the mark and space direction of relay armature travel and the contacts may be wired accordingly. In this circuit the wheatstone relay is preferable to others as it is easiest to give the correct initial adjustment. The relay armature, having no restoring spring, will remain on whichever contact it was last moved to and is held there by the permanent magnet built into the relay. If the Kleinschmidt wheatstone perforation standards are employed the upper hole in the tape moves the relay armature to marking, when the distributor brush strikes the correct segment, and the lower hole passes current to the relay in the reverse direction causing the relay to transit to the spacing or open condition. If the distributor motor speed is left at the RPM used for RTTY operation, this will make the Dot-length 88 milliseconds. Because the "stop" segment is elongated with respect to the others, the space between two dots or a dot and a dash is 75 milliseconds. Dashes are 163 milliseconds long. This is fairly close to the ideal ratio of mark-to-space weight in continental code and is about as good as keying heads can be adjusted for Kleinschmidt tape in normal operation. For the "Purists," a second relay can follow the first one, adjusted for heavier or lighter dot-to-space ratio, but let us hasten to assure you that you will not hear the slight difference. The "Morse" speed is about 18 words per minute if the motor is permitted to run at teletype rpm which is standard for 61 WPM teletype sending. This has not been scientifically calculated but just a reasonable guess on the part of the writer.

While on the subject of speed it should be noted that most teletype sending distributors employ governed motors of either the AC or DC variety since the distributors at both ends of the circuit must be kept in step with one another. By disconnecting one wire from the governor contacts and substituting a small wire-wound rheostat, it is possible to send continental code at any speed from about 5 to 60 wpm. This rheostat should be wired to the changeover switch or relay so that governor control is resumed for RTTY operation. The rheostat knob can be given an approximate wpm calibration.

Perforation of tape is easily accomplished, using a teletype perforator, by punching the letter "Z" on the keyboard for a dot and the letters "ET" for a dash. A single blank is fed out for space between letters and two blanks for space between words. More blanks may be used for code-practice tapes where greater spacing may be desired. Quite a bit of dexterity has been developed by W2BFD in poking these tapes and they can now be made as fast as continental can be sent with a key. A perforator for wheatstone tape which could be cheaply constructed by the amateur was described in a back issue of "QST" magazine.* By modifying the dimensions of the tape guide this perforator could also be used for teletype-continental tape. An arrangement is also being schemed up whereby the teletype reperforator may be keyed by a local telegraph key or an incoming C-W signal to put out tape without the operator's timing errors. This would probably be of more interest to strictly CW men. Messages may be punched in channel 2 by punching "space" and "carriage-return" for a Morse dash and the letter "N" for a dot.



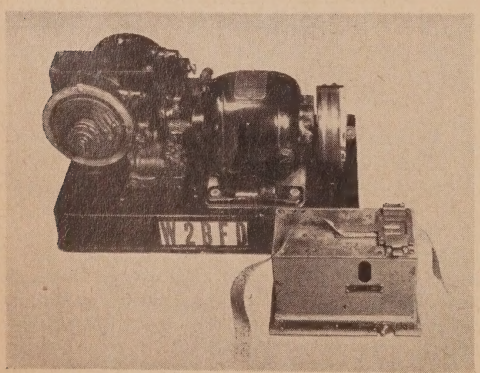
NOTE - RELAY K3 CONTAINS ADDITIONAL CONTACTS NOT SHOWN FOR MODIFYING CIRCUIT OF FIG. 1 TO THAT OF FIG. 2. RELAYS SHOWN IN CONTINENTAL CODE POSITION.

Fig. 2. Wiring revision for sending Continental Code.

The optional automatic changeover relay circuit is shown in figure 3 and will be understood if you will consider that point "X" connects with the corresponding point in *Figs. 1* and *2*. With the distributor at rest the brush is always

* *QST*, June 1943.

on the "stop" segment and relays K-1, K-2 and K-3 are all de-energized. Relay K-3 is a multi-contact relay whose contacts are wired to the distributor, tape transmitter and polarized relay in such manner to convert the circuit of figure one to that of figure two when the relay receives current. When no sending is in progress the circuit is set up for "Morse." At the beginning of a teletype tape, hole Number Two, which is not used in the Morse transmission, appears and current flows through contact Number Two associated with the pin sensing this perforation. This current energizes relay K-1 which in turn instantly operates K-2 and K-3 (whose contacts convert the circuit to RTTY). Condenser C-1 converts K-2 into a slow-release relay that will hold in during the keying of K-1; now connected to operate from voltage developed across R-3 *(Fig. 1)*. If blank tape passes through the transmitter head K-1 will receive no current and, after a short interval, K-2 will also drop out changing the circuit back to the CW condition. The size of the condenser should be chosen so that changeover does not take place unless at least 3 or more "blanks" have been transmitted so that changeover will not occur accidently if the operator happens to strike the blank key unintentionally. The 120-volt supply represented by the battery symbol is, in actuality, the teletype power supply, generally a selenium rectifier of sufficient output to furnish the various relay currents plus the tape advance current for the transmitter. Only about 30 ma average current is drawn by the advance magnet since it draws approximately ¼ ampere in very short pulses each revolution of the distributor. The output condenser of the power supply furnishes the high current while the drain on the rectifier is only the 30 ma averaged current. Most of these details are for the benefit of the CW readers as RTTY amateurs will undoubtedly already be familiar with them.



Motor driven distributor with the tape transmitter. Visible is the segmented transmitting faceplate. One set of brushes contacts the code-sending segments, the other pair energize the tape-advance magnet in the tape transmitter.

It will be immediately obvious to the advanced amateur that the polarized relay can be replaced with electronic equivalents but the explanation has been simplified here by assuming that mechanical relays will be employed. The writer has constructed a double installation. One is all mechanical, as diagrammed here, and the other is all electronic, employing an electronic distributor for Morse or Teletype, of an original design, also arranged for receiving RTTY signals. The polar relay is replaced with an Eccles-Jordan circuit. This all-electronic setup is still a breadboard layout and may be the subject of a future article.

The Teletype-to-Morse Adaptor Unit

Those radioteletype amateurs newly installing perforated tape equipment will undoubtedly want to incorporate the "Morse" idea right into the circuit whereas few of us would enjoy dismantling and rewiring an existing setup. To avoid the necessity for this, the "Teletype-to-Morse Adaptor" was conceived. This comprises nothing more than a small box containing input and output receptacles, Polar relay socket and a couple of toggle switches.

Practically all of the tape equipment now in ham hands is wired according to VHF Teletype Society Blueprints ARTT-5, ARTT-6A and ARTT-7. In this arrangement an eleven-wire cable runs to the tape-transmitter and "tite-tape" switch. Many of the "gang" have mounted a male 11-pin Amphenol chassis receptacle on the rear "apron" of the jackbase into which the tape transmitter plugs. This receptacle can be easily added if not already present in your equipment.

Removing the cable and plugging it, instead, into the "adaptor" and plugging the adaptor into the jackbase where the cable originally connected is all that is required to convert from teletype to morse.

Because a polarized relay is employed the "sense" of the morse output depends on the polarity of the "battery" furnishing the tape equipment (generally a selenium supply). By incorporating a "sense" switch in the adaptor it is possible to send right-side-up signals when using the adaptor with anyone's tape equipment.

The lads with the double-type tape-sending distributors, recently available through the Society, can employ one of the tape transmitters for teletype sending and the other one switchable from teletype to morse. The second unit can be normally left switched to morse so that identification, as required by F.C.C., can be easily accomplished.

The radioteletype group has grown to over 2000 members since its start in 1946. Practically all of the equipment for these installa-

[*Continued on page 51*]

all band, untuned

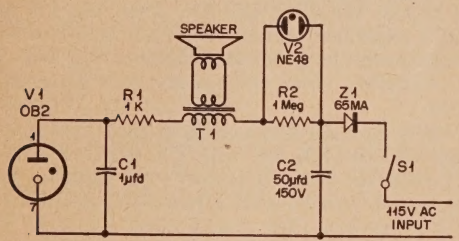
C. W. Monitor

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310 South Dr., Paramus, New Jersey

There is little need to expound upon the desirability of a CW monitor to a CW man. But the little monitor described has a few virtues which make it quite interesting. Foremost of which is its utter simplicity. It can be built up in the shape described in certainly less than an hour, thus making it an ideal spare time project for the Ham whose main desire is simply to do some operating.

Perhaps the main feature of the monitor is that it requires no coil changing or tuning of any kind—regardless of what band you may choose to be operating now or in the future. The audio volume provided by the monitor is just right for monitoring—not too loud, but on the other hand loud enough to be plainly heard against the usual background noise existing in the typical Ham Shack.

Basically the device is a gas tube relaxation oscillator that is keyed by means of an r-f ignited neon lamp which is placed in the r.f. field of the transmitter. The oscillator portions consist of the one thousand-ohm resistor R1, the one-microfarad capacitor, *C1*, and an OB2



C1—1 μfd, 200 v.
C2—50 μfd. 150 v. electrolytic
R1—1000 ohm, ½w.
R2—1 megohm, ½w.
T1—Any plate to voice coil output xfmr.
S1—SPST switch
V1—OB2 tube
V2—NE48 neon lamp
Z1—65 ma. selenium rectifier

Schematic diagram of CW Monitor

voltage regulator tube. An OB2 regulator tube was used in preference to another neon lamp because of the OB2's higher breakdown voltage. An OB2 has a DC starting voltage of approximately 115 volts while the usual neon lamp is in the order of 85 volts. This higher starting or igniting voltage means that the capacitor *C1* will charge up to a higher voltage before discharging through the OB2. This in turn means that the audio current variations in the circuit will be greater—and this, after all, is what determines the loudness of the keyed signal out of the monitor.

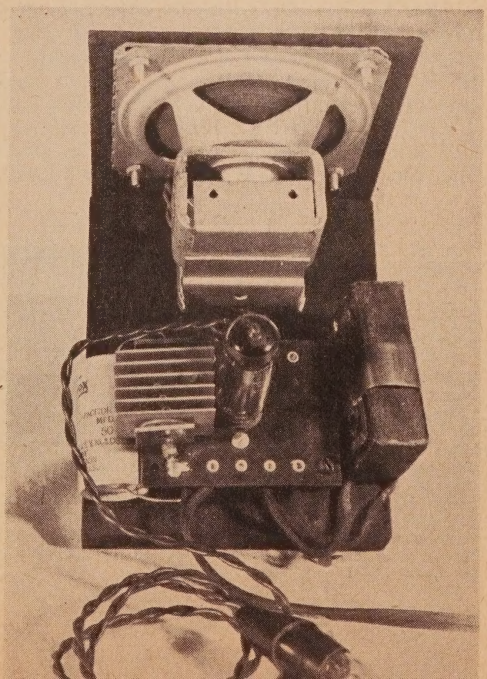
The frequency of the audio note heard from the monitor is about 400 cycles. If a higher or lower note is desired, it can be best achieved by experimentally varying the values of *R1* and *C1*. Increasing the values of either *R1* or *C1* will lower the note and, conversely, decreasing

[*Continued on page 52*]



Front panel view of CW Monitor

Below, top view of the unit, showing power supply, OB2, and output transformer.



ABSEM

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The amateur fraternity has always been proud of its many abbreviations and signs that are used both on the air and in general conversation. After being on one of the more popular CW bands for a while, one discovers a whole new set of meanings for these abbreviations. A journalist might call it "Reading between the lines," but for ham purposes we shall call it "ABSEM." The word "ABSEM" stands for "Apparent But Seldom Explained Meaning."

An ABSEM can be best explained by following its use in a typical contact. The contact starts out like this:

CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ . . . repeated any number of times from ten to infinity.

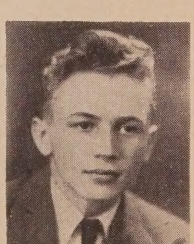
ABSEM: *"I have a machine that sends CQ's automatically. I like the sound of that magic word 'CQ.'"*

CQ CQ CQ DE DE W1XXX

ABSEM: *Two DE's indicate either, "I am a novice," or, "I recently was a novice."*

W1XXX W1XXX W 1 X X X (very slowly so all can understand. This is the time to send your call correctly.) W 1 X X X AR K

ABSEM: *The AR K? Why be only half safe with just one ending? Two are twice as good.* This concludes the first operators general call.



Tom was first licensed while in high school as WØWET in 1949. During two years in the Army he used the calls W4SAL and DL4FF. Returning to Zeroland the FCC remembered his "WET" call and gave it back to him. Now has the Extra-Class license and holds certificates for WAS, RCC, CPC 35, ROWH and hit BPL twice. Likes designing and construction best, but spends a lot of time on 40 meter CW. Has a mobile rig in the works. Active on 40 meter RTTY. Member Minneapolis Radio Club, President of the University Radio Amateur Society of the University of Minnesota. Tom is now in his third year at the University working for an EE degree.

This is the clue for the second operator to answer him.

W1XXX W1XXX W1XXX . . . repeated as many times as he sent CQ's if you are zero beat; two times as many for every kc. you are off his frequency.

W1XXX W1XXX DE DE (meaning of two DE's explained above). W8XXX W8XXX (repeated until he gets sick of sending it.) K K K.

ABSEM: *Three endings are even better than two.*

It is now the first operators turn. He sends: W8XXX W8XX DE W1XXX W1XXX

ABSEM: *Must be getting your signals pretty well, only had to send it twice this time.*

GE OM TNX FER CALL

ABSEM: *Pick up your pencil and get ready to copy.*

If the operator were real daring, he could say BUZZ instead of CALL.

UR SIGS RST 579 RST 579

ABSEM: *This is the standard report for all contests and ninety percent of all QSO's.*

HR IN PODUNK MASS IMI PODUNK MASS

ABSEM: *Get this in your log.*

PODUNK MASS BT

ABSEM: *I'm going to send my name next. Don't you come back calling me Podunk instead of Bill." This sign* BT *is more effectively sent as* TEEET.

NAME HR IS BILL BILL

ABSEM: *"You can say OK Bill instead of OK OM on your next transmission."*

SO BACK TO YOU OM

ABSEM: *"I am or recently was a novice; I have a receiver that receives phone and I have heard the phone boys say it. What is good enough for the phone boys is good enough for me."*

W8XXX DE W1XXX K

Now it is the second operators clue. He starts out like this:

R R R W1XXX W1XXX DE W8XXX

W8XXX R R R FB FB SOLID COPY OM SOLID COPY BUT MISSED UR NAME.

ABSEM: *"Boy the QRM was bad that time;" PSE QRS, OM. These R's, meaning "received" are more effectively sent as ETE ETE provide the proper Missouri Valley swing is used with the key.*

TNX FER REPT

ABSEM: *I am good on numbers. Got that ok. Of course I knew the first number had to be a five and the last number had to be a nine.*

UR SIGS RST 579 579 HR

ABSEM: *An eye for an eye and a tooth for a tooth.*

QTH HR IS HAM HOLLOW, WEST VIRGINIA IMI HAM HOLLOW WEST VIRGINIA BT TEEET

ABSEM: *Get this!*

NAME HR IS BOB BOB

ABSEM: *Not Bobbob but just plain Bob.* Bob is the second most common operator name.

OK ON UR QTH

ABSEM: *You are listed in my call book. Noticed your first name is William. Next time I shall come back and say "OK BILL."*

RIG HR IS RUNNING 180 WATTS

ABSEM: *All this power and you only gave me a 579.*

SO HW NW?

ABSEM: *It is shorter than saying HW NW BRWN COW.* Then after more of the same procedure with all the AR K's and R R R ETE ETE etc, the first operator comes back.

R R R FB BOB.

ABSEM: *In the call book your first name is listed as Robert.*

ABSEM: *My half gallon doesn't get out very well.*

WX IS COOL AND CLEAR

ABSEM: *You may now say "OK UR WX."*

Then the first operator turns it back to the second who comes back:

R R SOLID COPY BILL FB ES TNK REPT

ABSEM: *After all, I'm running 180 watts.*

UR 10 WATTS DOING FB HR

ABSEM: *This is standard, regardless of his power, it is doing an FB job.*

HAVE TO RUN NOW XYL SAYS TIME TO EAT TNX FOR VY FB QSO

ABSEM: *I'm all talked out; want to find someone else. I ate two hours ago.*

SO FOR NOW WILL SAY 73 73

ABSEM: *73 means, "I am getting rid of you."* It is very improper to say "73" without saying "FOR NOW."

BEST OF LUCK AND CU AGN 73

ABSEM: *This 73 has to be said at least three times during the sign off or the other fellow will feel hurt.*

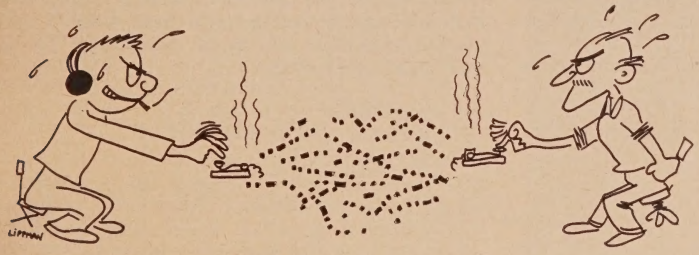
Now it is the other operator's turn to repeat all the FB QSO's and 73's. He then sighs AR, SK, and GN a half dozen or so times. Then he gives the magic sign that keeps the QSO going for another ten minutes. It goes like this: DIT DITDAHDIT DIT

The other operator comes back:

DIT DIT (Pause) DIT DITDAHDIT DIT

This is where the CW operators have something over the phone operators. To date I haven't heard any phone operators dit dah ditting to "shave and a haircut."

First operator: DIT DIT (Pause) . . . . . .



". . . a contest to see who can dit dit dah dit the longest. The first one to fail to respond with a dit dit is declared the loser. This might also indicate that he has the higher mentality."

TNX FER REPT

ABSEM: *I didn't have to copy that, knew what it would be.*

UR SIGS WENT UP THAT TIME TO RST 589 589

ABSEM: *I'm sorry. I didn't know you were running so much power; I need your state for WAS. Please QSL.*

NAME HR AGN IS BILL BILL

ABSEM: *You came back "OK OM" instead of "OK BILL."*

OK ON UR 180 WATTS

ABSEM: *Boy, I'm on the ball.*

RIG HR IS RUNNING 10 WATTS ES ANTENNA IS DRAIN PIPE.

DIT DITDAHDIT DIT.

This now becomes a contest to see who can dit dit dah dit dit the longest. The first one to fail to respond with a dit dit is declared the loser. This also might indicate that he has the higher mentality. I understand that two WØ's currently hold the world's record of two hours and thirty-six minutes of dit dit dah ditting without missing a single dit dit. They would have continued longer except that one operator broke his key with his emphatic dit dits. It seems his fist got tired so he hit the key with his head. Alas, the key wasn't built to withstand such punishment.

[*Continued on page 71*]

a table-top KILOWATT

Gene Senti, WØROW
Collins Radio Co., Cedar Rapids, Iowa

Over the past few years the radio amateur has become accustomed to bandswitching, variable frequency oscillators and good dial calibration in his communications equipment. Convenience and simplicity of operation appear to be paramount in the minds of most amateurs because it permits the good operator to multiply his dx and other contacts to derive a greater enjoyment from his hobby. In the design of any new transmitting equipment specifically intended for the amateur, features previously enjoyed must be preserved. In addition, new technical features made possible by the advancement of the radio art should be included consistent with economy of production and reasonable selling price.

In connection with the advbancement of the radio art, one of the most decided trends in recent years appears to be the shift toward single sideband transmission. This is merited by its many advantages in the improved communicating ability of this mode of transmission. The importance of this movement can be readily recognized by observing the rapid spread of single sideband signals on the amateur bands.

In the design of the Collins KWS-1, all the features formerly available in well-built amateur and communication transmitters were preserved and in addition, particular emphasis was placed on high grade single sideband performance. There are several features which are included which particularly tend toward improved operation on single sideband. These include the following:

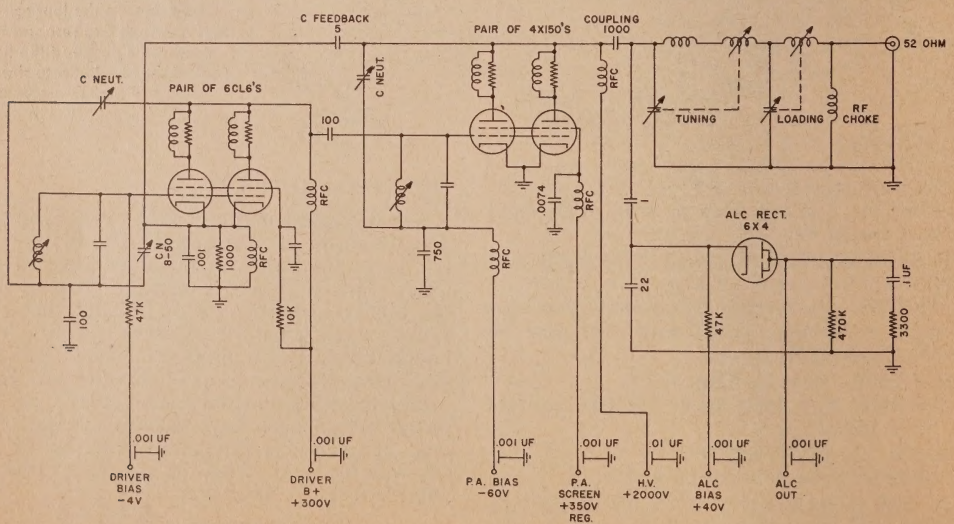


Fig. 2. The simplified schematic of the r-f feedback arrangement used in the KWS-1.

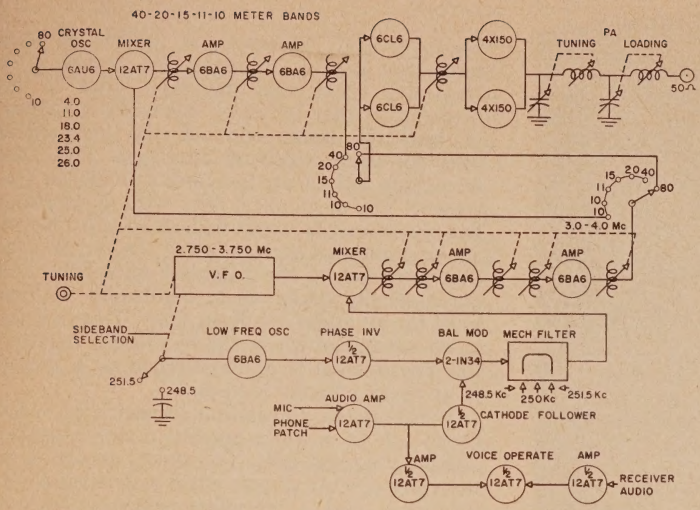


Fig. 1. Block diagram of the KWS-1. In the interest of simplicity, all bandswitching in the exciter has been omitted, except for the switches associated with signal flow and crystal selection.

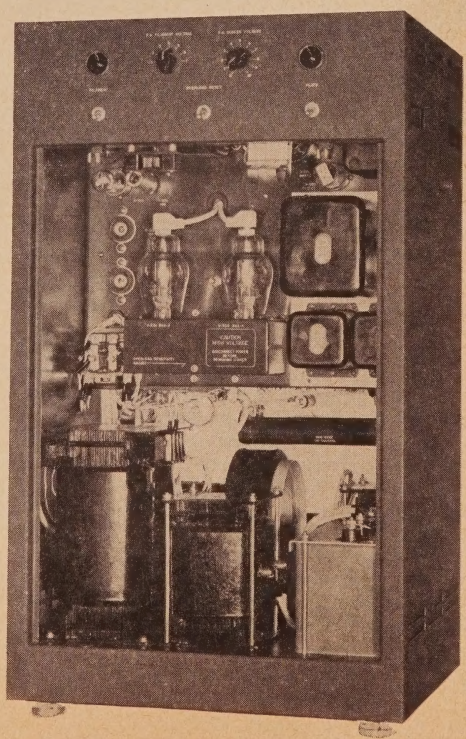
1. Additional tuned circuits for spurious rejection.
2. Careful design of linear amplifiers.
3. R-F feedback.
4. Automatic load control.
5. Voice operate.
6. Good frequency stability.

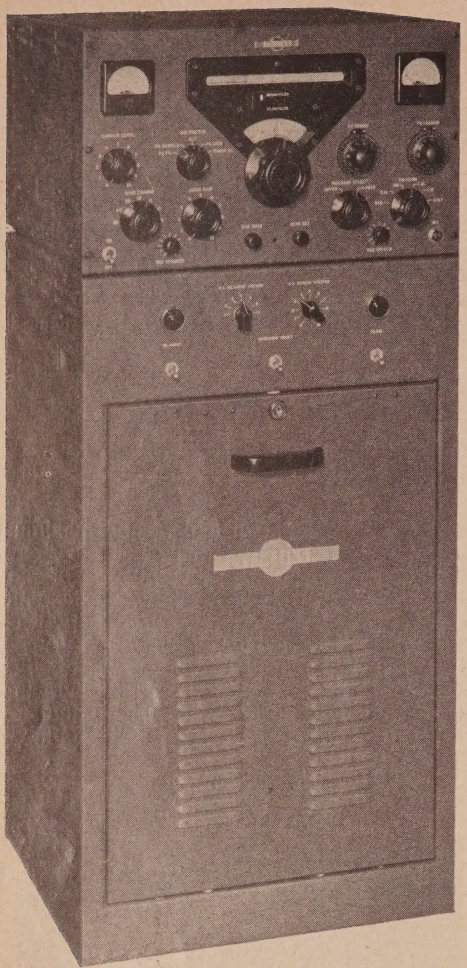
The various features of the equipment will be described in greater detail through reference to the block diagram of *Fig. 1.*

In the block diagram, a balanced modulator at 250 kc. receives injection voltage from a low frequency oscillator as well as from the speech input. Audio input can be from either a microphone or from an auxiliary audio input for phone patch or similar applications. In the balanced modulator, a double sideband signal without carrier is generated with very low distortion. The mechanical filter then selects either the upper or the lower sideband as desired to feed into the first mixer. A permeability tuned hermetically sealed variable frequency oscillator in the range 2.75 to 3.75 Mc. feeds into the first mixer to generate an output signal in the 80-meter band. Sufficient tuned circuits and r-f amplifiers are used to eliminate undesired mixer products generated in the first mixer. For operation on the 80-meter band, this output is fed directly to the driver stage through bandswitches and then to the power amplifier. When operation is desired on the high frequency bands, a crystal oscillator feeding a second mixer together with the output from the 80-meter strip provides the desired output on 10, 11, 15, 20 and 40-meter bands. Again sufficient amplification and tuned circuits are provided to fully excite the driver grid circuit while eliminating spurious mixer products.

The power amplifier consists of a pair of 4X150A tubes with 2000 volts applied to the plate. This tube type was selected because of its excellent linear amplifier characteristics, its high efficiency and small physical size. A continuous tuning pi-L output network is provided for ease of antenna matching, and maximum harmonic attenuation consistent with a simple tuning arrangement. In the interest of simplicity, all bandswitching in the exciter is omitted in the block diagram except for the switches associated with signal flow and crystal selection. No bandswitch is needed in the power amplifier because continuous tuning is possible by ganging the input capacitor with the pi inductor and the loading capacitor with the inductor

The power supply, showing low voltage, screen and 2000-volt plate supply.





The KWS-1 transmitter, shown placed on top of power supply cabinet, placing operating controls at a convenient height. Transmitter unit may be installed on the operating table if desired.

feeding the output coaxial fitting.

Either upper or lower sideband can be selected by means of a mechanical linkage between the low frequency oscillator switch and the variable frequency oscillator switch. A 3-kc shift of the variable frequency oscillator is accomplished very simply by rotating the oscillator case through a small arc. Since a mixer system is used throughout the exciter, a shift in the low frequency oscillator of a given number of cycles must be accompanied by a like shift in the variable frequency oscillator to maintain constant carrier output frequency. The low frequency oscillator actually does not shift continuously but operates on either of two frequency settings to inject the carrier at a frequency either near the upper edge of the mechanical filter for lower sideband operation, or near the lower edge of the mechanical filter for upper sideband operation. Thus, the frequency dial always indicates true carrier frequency. The mechanical filter with its excellent flat top selectivity curve with steep sided slopes allows additional attenuation of the carrier over that provided by the balanced modulator and automatically limits voice bandwidth without need for an audio bandpass filter. This is a decided advantage where the bandwidth required for transmission is of importance as it should be in every amateur station.

Voice-operate transmitter control is provided by means of a voice-operate audio amplifier and relay control tube. To prevent actuation of the voice-operate circuit when a receiver loudspeaker is used, a cancelling voltage is derived from the receiver audio output terminals and fed through a speaker audio amplifier. This cancelling voltage places a bucking voltage on the relay control tube equal to the voltage caused by acoustic microphone pick-up from the loudspeaker. Suitable controls are provided in the equipment to realize this balancing action in any station arrangement. Voice-operate then eliminates the necessity for a push-to-talk circuit on the microphone although this type of operation may be used if desired.

The use of a crystal controlled high frequency injection greatly improves the exciter frequency stability over that of an oscillator-multiplier type of exciter. The stability of this transmitter is then equivalent to that found in 75A type double conversation receivers. In fact, many of the techniques employed in this single sideband exciter resemble those used in a receiver. Low distortion stages operating at low level are needed, many tuned circuits are required to eliminate spurious signals, mixers must be used to convert to output frequency, and double conversion provides improvement alike in single sideband exciters and in receivers.

Figure 2 shows the simplified schematic for the r-f feedback arrangement used in the KWS-1. This r-f feedback circuit is analogous to the feedback used in audio amplifiers. An output voltage is taken from the plate of the power amplifier and fed back to the cathode of the driver stage resulting in degenerative feedback. As in an audio amplifier, this feedback tends to greatly reduce the distortion products normally present in amplifying systems. Because of the emphasis placed on linear amplifier design and the feedback circuits, distortion products are held to approximately 35 db. below either tone in a two-tone intermodulation test. Intermodulation distortion ratings may be unfamiliar to many amateurs. The intermodulation test used in r-f amplifiers has a vague resemblance to the tests run by high fidelity enthusi-

asts in audio amplifiers. Good commercial practice dictates that the intermodulation distortion is less than –30 db. in single sideband transmitters. R-f feedback of 12 db. has been found to reduce intermodulation products by up to 10 db.

A bridge neutralizing circuit is used to stablize both the power amplifier and driver stages[1]. Extremely low grid reaction with plate tuning is required in the amplifier stages to permit linear operation with low distortion.

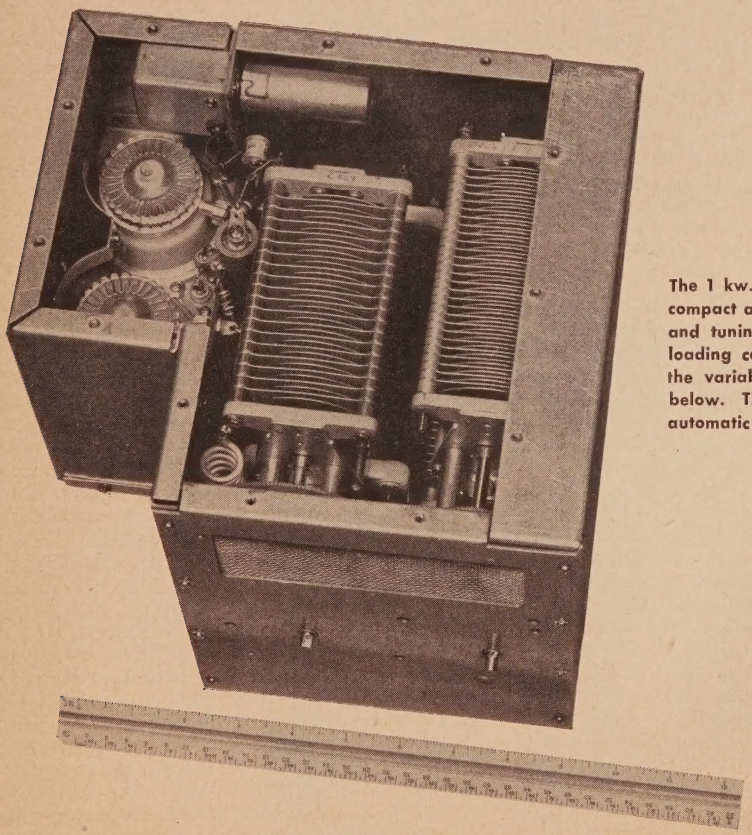
Automatic load control is similar to automatic volume control in a receiver. A rectified voltage from the power amplifier plate circuit produces a d-c control potential which is applied to the 80-meter amplifiers. Thus when high peak r-f voltages are encountered in the power amplifier which would tend to cause overloading and distortion, the control loop reduces the overall gain of the system rapidly to return the r-f voltages to predetermined values. The only valid criterion for safe operating levels in the power amplifier is peak r-f voltage. This means that audio compressors or peak clippers even though followed by low pass filters are not acceptable for use in single sideband transmitters. The automatic load control circuit provides the desired higher modulating level to give the effect of audio compression without introducing undesired sideband distortion products.

To extend the usefulness of the KWS-1, provisions are included for low level amplitude modulation. No high level modulator is needed and audio circuits are very simple. While the amplitude modulation is not of the conventional double sideband type, it cannot be distinguished from normal AM on the air or in the receiver. The output signal consists of carrier plus one sideband. In operation, the carrier is reinserted to yield the desired carrier power and the sideband level is adjusted to provide the AM envelope.

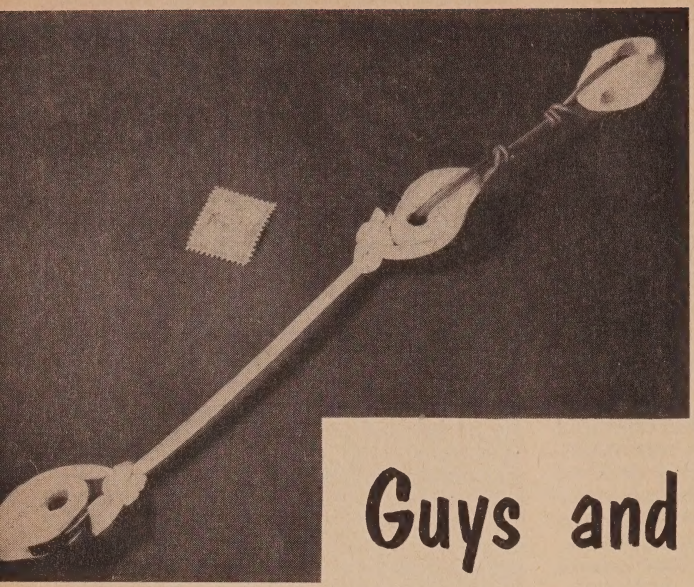
Care must be exercised to prevent overmodulation as with conventional double sideband AM, however, the alc can be adjusted to protect the final amplifier. For the same peak envelope power as in single sideband operation, the transmitter "talks" as loud as a 250-watt AM rig. The current trend toward single sideband reception of AM with a 3-kc receiver bandwidth actually results in a received signal equivalent to the one produced by the KWS-1.

[*Continued on page 50*]

1. "How to Neutralize Your Single-Ended Tetrode Final." W. B. Breuene, August, 1950, CQ.



The 1 kw. linear amplifier. Note the compact arrangement of 4X150A tubes and tuning elements. Tuning and loading capacitors are shown with the variable inductors hidden below. The miniature tube is the automatic load control rectifier.



The new main insulator at W3UCT. The Glas-Line is between the two egg insulators running to the lower left. The copper link between the center egg insulator and the upper right egg insulator is for the dead-end feeder of a Zepp antenna.

Guys and Halyards

Nelson M Griggs., W3UCT
10419 Julep Ave., Wheaton, Va.

Introducing a new insulator with unusual properties that will attract considerable interest

One who has had the distressing experience of watching a glass insulator suddenly part in mid-career for no apparent reason, can be understandingly skeptical of glass and ceramic products loaded in tension. So, when a friend at the National Bureau of Standards casually mentioned a new plastic-covered clothes line with a fiberglass core, we decided to investigate.

Inquiry at practically every store in Washington, D. C., and suburbs brought forth the universal reply: "Never heard of it." Accordingly, we decided to go to the source and wrote to *Corning* in New York. Almost immediately we received a very nice letter from the manufacturer stating that the product was called "Glas-Line," and, outside of *Macy's* and *Gimbel's*, he was the only one who could sell it to me. Nothing daunted, we bought a one-hundred-foot hank for $1.89, plus postage.

There are many different types of plastic-covered clothes lines currently on the market. Some are nothing more or less than the conventional cotton cord with a plastic covering, while others feature such innovations as a nylon core or a cotton core reinforced with iron wire, etc. As far as the housewife is concerned, one of these is as good as another, but for Ham use, none of them are suitable for r.f. work. *Glas-Line* may be just another clothes line as far as the housewife and the manufacturer are concerned, but this product is the perfect *flexible insulator* for antenna and other such construction work where strength in tension is required; as such, it renders obsolete heavy insulators of glass and ceramic materials.

The manufacturer's claims for *Glas-Line* are that the product cannot rot, will not shrink, will not stretch or sag. In addition, high tensile strength of over 500 pounds is claimed.

While we are not in a position to subject *Glas-Line* to an exhaustive scientific test program, we recently redesigned and rebuilt our entire antenna system around *Glas-Line,* using it for both guys and insulators. As this is written, our system has stood the test for over three months in all kinds of weather: hot spells, dry spells, gales and driving thunderstorms, and the *Glas-Line* seems unaffected. Only the upcoming



View of an open thimble and eye bolt for coupling the Glas-Line guy wire to a tree.

winter period will tell how encrustations of ice and snow affect its performance.

We are particularly pleased with *Glas-Line* when used as an insulator in the heart of an antenna system. We have always been unhappy about the main insulating system at the "home" end of a long line antenna. Inexpensive insulators are short and poorly made, whereas long, good ceramic or glass insulators not only run up into the bucks, but are bulky and heavy, and tend to sag the system out of shape and out of line.

We considered a six-inch insulator to be sufficient for our needs, and it was a simple matter to cut and tie one from *Glas-Line*. All the requirements were met by this insulator with the addition of extremely light weight and low cost. As erected, there is an added short link of copper wire for soldered termination of the dead-end feeder, plus another length of *Glas-Line* terminating at the mast.

Non-inductive, non-conducting, non-absorbing, *Glas-Line* is ideal for the complete isolation of any system such as directional arrays, rhombics, or situations where support must be obtained from metallic objects such as water-towers, windmills, etc.

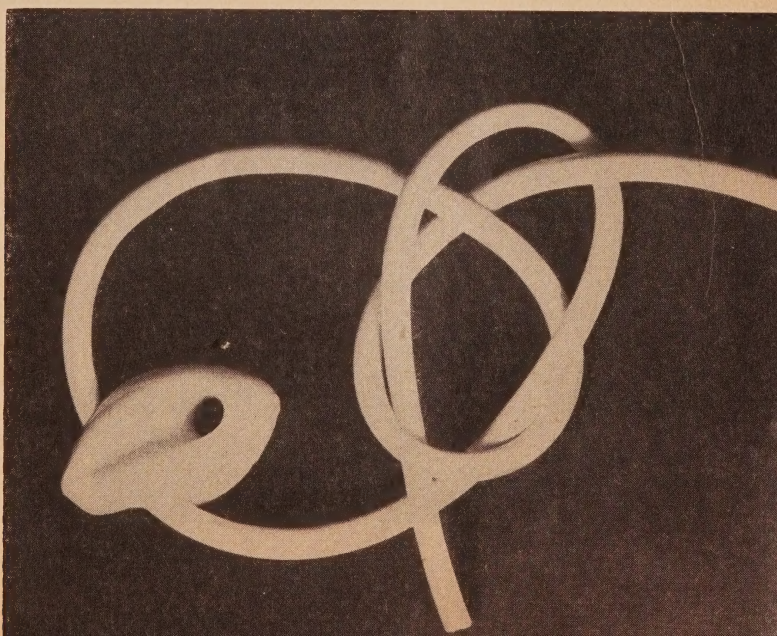
Glas-Line has two disadvantages that you won't find too annoying. First, it is *not* wire, and cannot be treated as such. You cannot pull it through and twist it around itself for a solid joint; it must be *knotted* firmly in place. Second. *Glas-Line* cannot stand abrasion or tight turns. Constant rubbing will wear both the plastic and the fiberglass, causing it to fray and part. However, the same is true of wire. Sharp bends can be avoided by the use of coupling devices.

Construction practice is simple. First you will find it convenient to arm yourself with a pocket full of nickel-apiece egg insulators, the compression-loaded type. Then learn to tie a bowline. So that you won't have to make an unnecessary trip to the library, an illustration is included in the photos; but make *sure* to learn to tie this knot correctly; tied incorrectly, it will give you trouble.

The egg insulators are used not for their insulating properties, but merely as inexpensive coupling devices to form the *Glas-Line* into relatively large loops and avoid sharp bends. An open thimble should be used to couple the *Glas-Line* to an eye-bolt at mast or tree.

Small assemblies should be made on the ground; you'll find this practice easier than sweating out a series of bowlines at the top of a ladder. Loose knot ends can be secured with a piece of plastic electrical tape.

Antenna construction with *Glas-Line* is neat, easy, light and inexpensive, and in actual operation just as efficient as other systems of insulation herewith rendered downright oldfashioned. As far as we're concerned, *Glas-Line* is just another one of those many new products of this modern age that make life just a little easier and better for everybody.



This is an exploded view of a sailor's bowline knot. It should be used with the Glas-Line since this line cannot be "wrapped and twisted" like wire. See text for details.

more on the Q multiplier

Part II

W. M. Scherer, W2AEF
Contributing Editor

Q: Why not ground the rotor of *C3* so that it is across only one of the feedback capacitors *C4* or *C5*?

A: Smoother operation and better balance is obtained with *C3* connected across both ends of *L2*. In this method only the frequency is shifted while the feedback ratio remains more constant as *C3* is tuned.

Q: Can *C3* be omitted, and the slug of *L2* be used for tuning?

A: Yes. *L2* may be provided with a knob to vary the position of its slug. *L2* may then be mounted on the front panel in place of *C3*. For the sake of stability it will be best to cement the coil form tightly to the mounting clip, and it also will be better to use a heavier bearing for the slug screw.

Q: Using the values specified, a point of oscillation cannot be obtained within the range of *R7* when the *Peak* position is used, and a complete null cannot be realized over the range of *R8* for this function. Why?

A: A point of oscillation is not absolutely necessary except to indicate the position at which maximum selectivity can be had, this being just below the point of oscillation. If this point cannot be found, the trouble may be due to a lowering of the circuit *Q*, either due to a deterioration of *L2 Q* by improper mounting of the coil too near other metal components, or due to low *Q* or poor power factor capacitors at *C4* and *C5*. If the lowering of the overall *Q* is not too great, a reduction in the size of *R4* will aid in obtaining the correct points within the range of *R7* or *R8*. It is best not to reduce the size of *R4* any more than absolutely necessary. Low B plus, or a bad tube also may be responsible for the condition mentioned in the question.

Q: When the unit is set for *Peak*, it is impossible to get the circuit out of oscillation. What is wrong?

A: If *L2* has been mounted with more clearance around it than shown in the models, its *Q* will rise, and the above condition may occur. The size of *R4* should then be increased as needed. If lower values are used for *C4* and *C5*, the circuit impedance will rise, and this will contribute to the above condition. In some cases this condition may be due to inherent instability in the i-f

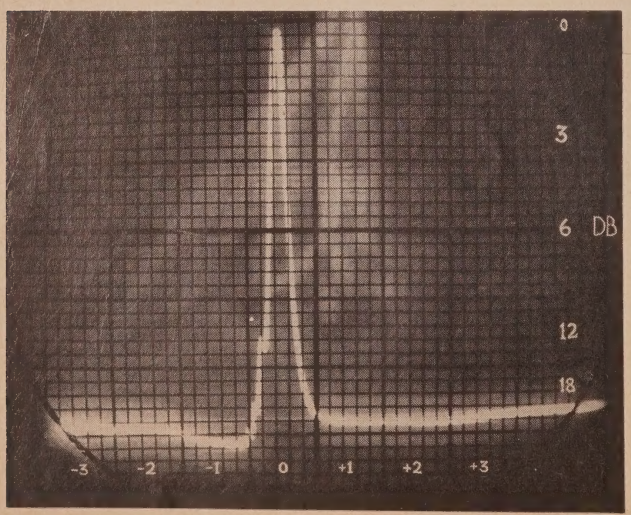


Fig. 1. Q Multiplier *peak* response characteristic, centered on 455 kc. Tendency toward "ringing" is indicated by jagged edges at lower left of trace. Note that vertical db. scale is not linear. Horizontal scale indicates kc. off resonance. Bandwidth at the 6 db. points is about 300 cycles.

amplifier. Some receivers may be found to have been purposely misaligned in the i-f stages to prevent self oscillation. When the *Q Multiplier* is used, the circuit across which it is connected will be peaked up, and the i-f amplifier itself may then oscillate. This may be remedied by detuning another transformer in the i-f chain, or by neutralization of the i-f amplifier tube. A 1 or 2 thousand ohm resistor, inserted in the grid lead directly at the i-f amplifier tube socket, will often stabilize the amplifier but with a sacrifice in overall gain.

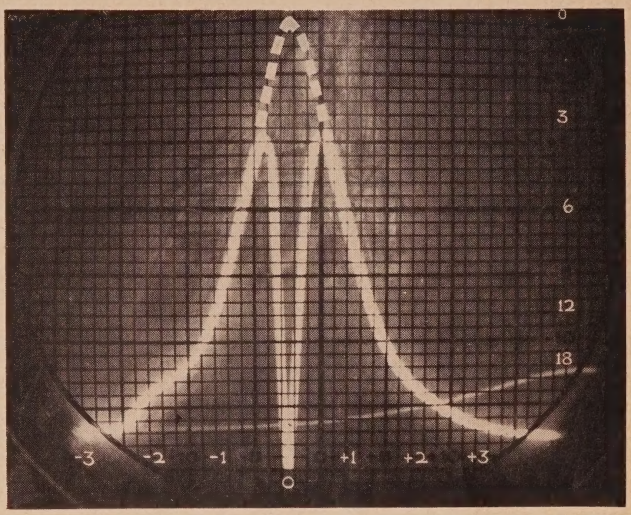


Fig. 2. Q Multiplier *Null* response with notch centered in passband. The dotted line indicates the response before the notch is inserted. Curve is plotted in kc. off resonance horizontally and db vertically. Bandwidth at the 6-db points (original peak) is about 550 cycles, and is about 300 cycles with the resulting maximum response.

Q: If the i-f amplifier is misaligned, what will be the effects on the response characteristics of the *Q Multiplier?*

A: When the *Peak* position is used, the response characteristic of the *Q Multiplier* will take over, the only detriment of the misaligned i-f amplifier being a loss in overall gain. When the *Null* position is used, the normal response of the i-f amplifier will prevail, except for the notch created by the *Q Multiplier*. If the i-f amplifier misalignment produces a lopsided response characteristic, the notch at one side of the center frequency may appear to take out a wider spectrum at the top of the notch with an attendant drop in overall level. Misalignment of *L1* also can cause a lopsided notch.

Q: In *Fig. 2,* the response curve, showing the maximum selectivity, is extremely sharp. Is this always obtainable?

A: This response actually has been measured point by point by point; however, the average installation may find the 6 db. point to widen to between 200 and 500 cycles.

Q: When the curves of *Figure 3* are checked it appears as if the notch is too wide at the top. Is this correct?

A: The curves of *Fig. 3* were the results of measurements made with a low Q coil for *L2*. The coil *Q* has more bearing on the *Null* function than it has for the *Peak*. Sharp response curves for peaking may be obtained with relatively low *Q* coils at *L2,* but a high *Q* coil for notching will show a marked improvement over one of lower *Q*. Since the Q of the coils used in the models is over 200, the *Null* response characteristics are better than those shown in Figure 3. With the notch in the center of the passband, the width of the former at the 6 db point should be near 500 cycles. A slightly sharper notch can be obtained with a high *Q* 10 mh. choke connected between B Plus and *Pin 6* of *V2*.

Q: What is the cause of drift when the *Q Multiplier* is used for Peaking?

A: Assuming that the frequency of the incoming signal is constant, the drift is most likely due to that of the h-f oscillator of the receiver itself. The high C circuit of the *Q Multiplier* will usually assure excellent stability in this unit, unless poor quality components have been used. High power factor or low *Q* capacitors at *C3, C4* or *C5* can cause drift. *L2* must be secured tightly in its mounting clip also. A little cement here will steady it.

Q: What is the cause of drift when the *Q Multiplier* is used for a *Null?*

A: The same reasons as set forth in the above answer. A poor quality component for *R8* also may be responsible. A shift in plate supply potential also may cause a noticeable shift in the null. When the receiver's b.f.o. is used, the null position setting of *C3* will

[*Continued on page 49*]

an inexpensive

500-kc Marker

M. A. Ellis, W4LTV/4
62 Blanchard Place
Nashville 10, Tenn.

Once you have this receiver calibrator in use you will wonder why you waited so long to build one.

It is generally agreed that every ham should own a reliable frequency standard or a band edge marker of some type. Unfortunately there weren't enough surplus BC-221 meters to go around and most of us can't afford a modern, super-duper receiver with built-in frequency marker. This operator, realizing a real need for at least a band-edge marker, decided to build his own. Requirements to be met were: the unit must be compact, inexpensive, reasonably stable and all parts easily obtainable. The $4.98 frequency marker satisfies all of the above and does it for less than five dollars, even if all components are purchased especially for the job.

As for size, the unit in use here is built on an "L" bracket and displaces about fourteen cubic inches but could be made much smaller if necessary. It fits into the crystal filter compartment of the ancient RME-70 receiver. The crystal filter was long ago removed when the Q'5er was placed in operation.

The standard Pierce oscillator circuit for low frequency crystal markers was discarded in favor of the modified Pierce circuit shown in *Fig. 1*. The latter circuit makes a much better oscillator with low activity crystals and is stable enough for all practical purposes. Crystals ranging in frequency from 200 to 8000 kc. have been used in this circuit with excellent results.

Stability of the oscillator is good enough for all band-marking purposes. When zeroed to exact frequency by beating a harmonic against WWV, the frequency will hold within a few cycles for a reasonable length of time. Very few receivers, or VFO's either for that matter, can be set closely enough to frequency to fully realize the accuracy of the unit.

The heart of any band spotter is of course the crystal. This unit utilizes one of the plated variety mounted in the FT241A holders. These 500 kc. crystals are readily available on the surplus market and some are selling for as little as seventy-five cents each.

Chances are the frequency of the crystal won't be exactly 500 kc. but will run high, possibly as much as 100 cycles. A simple procedure for moving the frequency down to 500 kc. will be described. First, the oscillator should be constructed and operating voltages applied to the 6AU6. Incidentally, the plate and screen currents will run about one mil and the filament requirements are also meager so this power may be furnished by the receiver without complications. Next, couple the output lead to the antenna input terminal of the receiver. If a few turns twisted tightly around the antenna lead won't suffice, then connect it directly to the antenna post. Now set *C1* at half capacity and plug in the crystal. Allow a few minutes for the unit to warm up then check the proper harmonic against WWV to determine how far the crystal frequency must be moved. Remember, a one-half kc. error at 2500 kc. will require the crystal to be moved only 100 cycles. Since these are plated crystals, the method used to lower the resonant frequency slightly is to add more plating. Take off the bakelite crystal cover and remove the base with the crystal attached, taking care not to break the mounting wires. Rest the crystal base on a flat surface and steady the crystal itself with tweezers while a few strokes from a soft lead pencil are applied to one or both plates, depending upon how far the frequency is to be moved. Plug the crystal back in and check the unit against WWV and if more plating is needed, repeat the procedure until crystal frequency is exactly 500 kc. When this is accomplished, *C1*, the zero control, can be used to raise or lower the oscillator frequency to compensate for crystal aging or component changes.

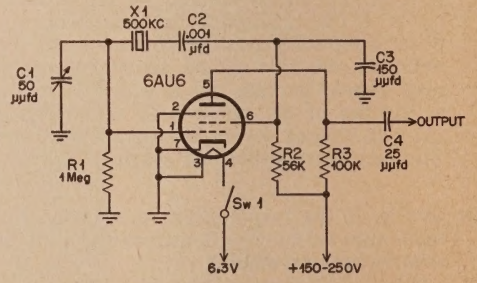


Fig. 1. Circuit diagram of the 500 kc. Marker.

In these days of high prices and expensive equipment, the $4.98 frequency marker may fill a real need in the average ham's shack.

the VK1EG story

Roth Jones, VK3BG

Ordinarily, in the world of amateur radio good deeds are done every day as enthusiasts of the great hobby extend a helping hand to the less fortunate or help their brother "hams." Here's the brief story of how one VK spent a month building a complete 6 meter setup so that Australian scientists who spend 12 months on Macquarie Island, 1000 miles south of Hobart, Tasmania can add the VHF's to their hobby, described by the leader of the Australian National Antarctic Research Expedition (Mr. Phillip Law) as "the greatest morale builder in Antarctica."

Few Australians have been as active in the VHF's in the past decade than Fred Bail, VK3YS, a member of the Federal Executive of the Wireless Institute of Australia. He has written a number of articles and has encouraged many newcomers to the VHF's.

Since Australia first sent its scientists to Heard and Macquarie Island (see "The VK1 story CQ") in 1947, Fred Bail has been in regular contact with the Antarctic outposts on the high frequency bands. With DX as rare as it was once plentiful, the conversations in the last 12 months have turned to six metres.

Officers and members of the Wireless Institute of Australia farewell the 1955 party to Macquarie Island on the wharf of Melbourne a few minutes before the party left in the Danish polar ship, Kista Dan (background). Left to right: Squadron-Leader Colin Harvey (VK3UO) who flew in the Australian-New Zealand air race in 1953; Bernie Shaw (VK1ZM); Dave Callow (VK1DC); Roth Jones (VK3BG); Harry Hicks (VK1HH); Gordon Dennis (VK3TF), president Victorian Division, Wireless Institute of Australia; Fred Bail (VK3YS) member of Federal Executive, Wireless Institute of Australia; and Hans Albrecht (VK3AHH), DX editor of Amateur Radio.





Fred Bail (VK3YS) second from left who built the special radio equipment for 6 meter work on Macquarie Island farewells the three men who will work it (left to right) Messrs Dave Callow (VK1DC) radio physicist; Bernie Shaw (VK1ZM), op.; and Harry Hicks (VK1HH) radio supervisor.

Backed by the advice of top radio physicists who were members of the two parties, Fred Bail was so convinced communication would be possible between Macquarie Island and the Australian mainland in 1955 he spent the latter part of 1954 building up a complete station for six metres which he has given to the Australian National Antarctic Research Expedition for use at Macquarie Island indefinitely.

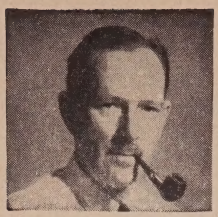
The whole station, complete with a three element beam was handed over to the present VK1's on Macquarie Island, Messrs Harry Hicks (VK1HH), Dave Callow (VK1DC) and Bernie Shaw (VK1ZM) when they left for the south a few days before Christmas, 1954.

The 6 metre converter, which will be used in conjunction with the normal communication receivers on Macquarie Island is a three tube disposals job, imported to Australia from England by Fred Bail and converted for the six metre band. The transmitter is a three stage orthodox transmitter of about 30 watts input.

Messrs Callow, Shaw and Hicks hope to start up on six metres early in January and concentrate there when the sporadic E skip to Australia is at its best during the southern hemisphere summer months. Once contact with Australia is made, the VK1's intend turning their beams east to, first, New Zealand then to Hawaii and America.

Macquarie Island is a separate country, the operators all hold commercial tickets and have taken with them each, an attractive QSL card, a coveted prize to any VHF man, lucky enough to work them. Whether Fred Bail will be the first to work VK1 on six meters only time will tell. He certainly deserves the honor.

DX and Overseas News



Gathered and reported by
R. C. "Dick" Spenceley, KV4AA
Box 403, St. Thomas, Virgin Islands

BRUNEI, VS5NW: We hear that ST2NW arrived in Sarawak in January and will be heard on the air as VS5NW with, we suppose, good possibilities that he may operate from Sarawak sometime as VS4NW.

TORTOLA, BRITISH VIRGIN ISLANDS, FP8AK/VP2: Doc Evans, W2BBK/FP8AK, paid a three-day visit to this island, in the Leeward group, and was on the air from 2230 GMT, February 2nd, until 0530 GMT, February 4th, on 7 and 3.5 Mcs. CW. Some 150 contacts were made with 15 countries and all continents except Asia. The first three contacts with W3RYX, W3MDO and W3VOS respectively. "Firsts" in each W district were: W1DDF, K2DCJ, W4YZC, W5BNO, W6TI, W7PQE, W8PQQ (3.5), W9BXI and WØQDF (3.5). Transmitter was a VIKING I to a Windom antenna while a HALLICRAFTERS S-72 handled the receiving end. Upon his return to W2BBK, three days later, Doc found 75 QSL's waiting for him which seems to prove that VP2 is a popular item. Thanks go to Ivan, VP2VA, who, as Commissioner of Communications on the island, OK'ed the operation.

SAINT MARTIN, DUTCH WEST INDIES, PJ2MA: George, PJ2AA, planned operation from this QTH from March 10th to March 24th using call of PJ2MA. All-band phone and CW activity was anticipated. This island is half Dutch and half French and PJ2AA will endeavor to also operate from the French side with the possible call of FG7MA. Present "straws-in-the-wind" indicate that this QTH will be looked on favorably for separate country status and such is being requested by the DWI VERONA Club. This will also have the probable sanction of the Curacao government. PJ2AA advises that outside hams can obtain a license to operate from St. Martins upon request and any so desiring should write him and include a copy of their FCC license. VP9BM planned to accompany PJ2AA but couldn't make it. (See notes re St. Martin November CQ 1954.)

The Marianas Amateur Radio Club is sponsoring the first Far East Amateur Radio Convention which will take place on Guam, April 16th and 17th. This will have the cooperation of all military units on Guam and air transportation will be provided for all military personnel. Prizes will be awarded based on proficiency in subjects related to Amateur Radio. The primary purpose of this convention is to coordinate the activities of far east hams in regard to operating procedures, technical matters, interference, traffic handling and general cooperation. Attendance is expected from Japan, Okinawa, Kwajalein, Philippines, Trust Territories, Hawaii and many others. Arrangements are being made to provide food and housing for civilians and dependents upon arrival. If you are passing by—drop in!

TI9MHB left Cocos on February 21st and wishes to thank the Radio Club of Costa Rica which made his operation possible. Among those keying with John on 160, Feb. 20th, were W8PQQ and W8ANO. W4BRB went to 115 on 3.5 Mc with TI9MHB . . . Activity from ZD8AA continues on 14050 (also reported on 14003) . . .W1CWX overhead a QSO between ZD3DDE and W7SFA, 7035, 0100 GMT . . Buck W4VDF, advises that FD8AA may be found on 14172, A3 . . . YN stations have been considering ways and means for an expedition to Corn Island. This island, only some sixty miles off the coast from Bluefields, Nicaragua, would probably qualify as a separate country and, as such, be in great demand. Push it, boys! . . . VQ6LQ should resume his activities this month . . . W6MUR has received 2500 cards from VR3A. They will go out via bureaus . . . Via the West Gulf Bulletin we are advised as follows: VP5BD will soon be on again from the Caymans. ZB2O is new in Gibraltar. QSL's 100%. VQ8AR did not go to Rodrigues Island as rumored. A 2 element vest pocket Moseley beam is being dispatched to PX1YR via air-express as per contributions to the W6DXC. AC3PT, 14100, and AC3SQ, 14190, are on daily. Also VQ8CB, Chagos Islands 14150 1240 GMT. Various incidents have kept FE8AE off the air but he should be on by now. Marcel runs 100 watts, uses a "bug" and will be on 7, 14 and 28 Mcs. ZL1BY has been working KS6AB on 3.5 and is trying to chase him down to 14 Mcs again. Eva, CN8MM, was scheduled to leave for a visit to the USA on March 14th, returning at the end of April. She will go via South America and should be in New York around the middle of April.



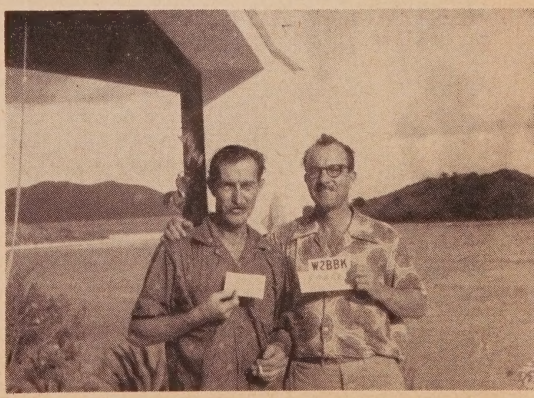
Celebrities recently visiting W4KFC's shack were Bob Eshelman, W4QCW/KC4AB, W4AMZ and Bob Denniston, WØNWX/FO8AJ.



Beverly Isenberg, KP4YX, of Fort Buchanan, Puerto Rico, emcee's the Antilles Net on 3865 kc. Her daily transmission of weather reports to the San Juan Weather Bureau have proved invaluable in plotting the course of last year's hurricanes and daily Caribbean weather. Triggered by recent contacts with TI9MHB, OE13USA and other points, Bev, should soon be seen on the CW DX lists. Photo: U. S. Army.



A view of MARS Station OE13USA, located in Camp Roeder, Salzburg, Austria. Operators: (l to r) Marty Gooen, K21XD, M/Sgt "Mac" McKenna and Doug Murray, W6HVN. OE13USA handles a large amount of phone patch traffic and other traffic. Over 700 QSO's were handled during the Xmas season. A BC-610 runs 500 watts on phone and CW and a remotely operated KW to a pair of 833's. Receivers: a Collins 51-J and a revised 75-A-2. Three element beams are mounted on an eighty foot tower. OE13USA may be found on or near 14180 or 14315 from 0700 GMT to 1700 GMT and then swings down to about 14035 for CW. Photo: U. S. Army.



Ivan, VP2VA (left) and Doc, W2BBK, are seen here during Doc's visit as FP8AK/VP2. (Yep—it's nice and warm, boys!)

NAURU ISLAND, VLØRO: We hear now that Bob, G2RO, actually did get to Nauru island so here's the story in his own words: "My ship from the Gilberts to Australia called in at Nauru but stayed off the island for several days because of bad weather. When she eventually did go in toward the island very briefly I jumped on a shore-going cargo-lighter with my little "G2RO suitcase," tracked down an aerial, power supply and a receiver and was able to go on the air for forty minutes before throwing the gear haphazard back into the suitcase and nipping nervously down to the shore in a jeep just in time to catch the last launch and rejoin the ship before she sailed! In Australia, earlier, I had been given loose permission to operate from Nauru if the chance occurred but call-sign was not discussed. When the chance arose I discovered that Nauru is not on the ARRL or any other list so, after some discussion I picked VLØRO. There is no history of amateur transmission from Nauru except an unlicensed and non-QSL'ing station which briefly used a VK; call. There is no doubt at all in my mind that Nauru must count as a new DXCC "country." It is not part of any political group in the Pacific. It is a Trust Territory under VK, ZL and G jointly but in fact administered by VK. Its importance is that it is a phosphate island, slowly being dug away for fertilizer. There is frequent ship traffic to VK and a large VK staff, with their families, work for the British Phosphate Commission there. Some VK ham ought to be able to arrange for it to go regularly on the air. Under the unfamiliar conditions I had time for only eight contacts, all on 14 Mc. They were: W7SGN, VK3JE, JA8AQ, KH6AXD, KH6AVU, W6LDF, VK2PX and PY6FI!!". (These contacts are presumed to have taken place about January 29th) Here is a resume of Bob's activity at other spots. VR2RO, Suva, Fiji, operated from the second floor of the Grand Pacific Hotel using a dipole antenna. 150 contacts were made with the first being VS6CQ. Other "firsts" from VR2RO were VK3AHH, HB9J, ZL1MT, W6SWZ, W7AMX, PY1ANR, W2OBX, VQ6LQ, W8ERA, W9HUZ, UB4KAF (!), F8AC, OE1ER and LU6DJX. Last contact was VK2AGT. From VR4RO Bob was only on the air for three brief occasions for a total of 70 contacts. First contact from Honiara was our ever-alert W9NDA. Other "firsts" JA1AQ, W6MBA, VK5JT, LU3DC, ZL3BB. VR4RO QRT'd after raising PY3BB. After trying several antenna combinations a 300 foot 60 foot high wire was used at VR1RO, Tarawa, in the Gilbert Islands. 250 QSO's were made with VK2QL leading the pack. Other firsts: ZL2FA, W6GIZ, LU6DJX, JA1CO, W5KBU, WØJVA, W2HQL, W7PB, W4VZQ, W1HX, W3HEC, W9OIJ and W8JGU. Last under the wire was YL KH6ACD. About one third of all W contacts were on 7 Mc. Moving to Ocean Island, in the Gilbert group, Bob went on the air, strictly haywire, for 40 contacts. No. 1 was VK4YP and other "firsts" ZL4CK, W6NTR, W5QKZ, W4LZF, W9HUZ and

[*Continued on page 58*]

Alaskan DX Certificate (ADXC)

The **Anchorage Amateur Radio Club, KL7AA,** is sponsoring this award. The applicant must comply with the following points:

1. Submit QSL confirmations for a total of **ten Alaskan, KL7,** contacts made **AFTER** January 1st 1955.
2. Of these QSO's there must be at least one from the following areas of Alaska:
   - Southeastern—That portion of Alaska bounded by British Columbia.
   - Northern—That area north of the Arctic Circle.
   - Aleutian—The Aleutian Islands including Kodiak Island
   - Central—The remainder of Alaska.
3. Of the ten contacts required, four must be with members of the Anchorage Radio Club.
4. Alaskan Amateurs are not eligible for this award.
5. Contacts may be phone or CW on any band. Notation in the form of stickers will be made for single band awards.

The **ADXC** award will be an appropriately engraved certificate depicting typical Alaskan scenes. Applications should be sent to the **Anchorage Amateur Radio Club, Box 211, Anchorage, Alaska.** Return postage in the form of stamps or IRC coupons should accompany QSL's.

Flash

ZD8AA, Ascension Island, was heard calling CQ at 2150 GMT, February 16th, for what we believe was the first time. If so **KV4AA** was the first contact followed by **W2JT** and **W8NBK** (Then the roof fell in). Tom had a fine signal on 14050 kc peaking 589 at W8NBK. Credit should go to **W2AH** who was instrumental in persuading Tom to appear on the ham bands and who contacts him via commercial circuit. We only hope that ZD8AA's operation perseveres in face of the thousands of calls that will be thrown at him from all angles.

Honor Roll Endorsements

(To Feb. 14th 1955)

CW/PHONE

W6VFR	40-256	W6NTR	40-201	W2GVZ	38-189
PY2CK	40-253	W6LDD	40-199	W9VP	38-177
W6AM	40-252	W6LRU	40-191	W4LQN	38-164
W2AGW	40-248	W6BIL	40-150	W2ZVS	36-172
W6MX	40-247	W5ASG	39-247	W8YIN	35-181
W6VE	40-233	W2QHH	39-227	PHONE ONLY	
W6TI	40-227	W3KDP	39-207	PY2CK	39-234
ZL1BY	40-223	W1ZL	39-207	W6DI	39-201
WELA	40-220	W4RBQ	39-203	G8IG	39-189
W6EFM	40-220	W1HA	38-214	W6VFR	39-184
W6DI	40-214	W8UAS	38-214	W5ASG	36-179
G8IG	40-213	WTKX	38-189	W9BVX	36-160

Last complete HONOR ROLL appeared in the January issue.

Next complete HONOR ROLL is due to appear in the May issue.

the Novice Shack



Conducted by

Herbert "Herb" S. Brier, W9EGQ

385 Johnson Street, Gary 3, Indiana

Besides reducing its grid-to-plate capacity (*Novice Shack*, February, 1955), the screen grid in a tetrode increases its amplification factor, compared to that of a triode. Referring to *Fig. 1*, the positive screen voltage exerts a powerful attraction on the electrons emitted by the cathode, because the screen is so close to the cathode. But only a few of them actually strike the screen wires. The rest zip between them and reach the plate.

Separately varying the plate and screen voltages, while measuring the plate current, will show that the screen voltage has far more control over plate current than does the plate voltage itself. In fact, with a constant screen voltage, a large variation in plate voltage has little effect on plate current, as long as the voltage is higher than the screen voltage. However, a small change in control-grid voltage produces a large change in plate current.

As the amplification factor of a tube is the ratio of the control over plate current exercised by the plate and the control grid, respectively, a tetrode obviously has a high amplification factor.

A review of how a tube amplifies will show the value of having its plate current independent of its plate voltage. Still referring to *Fig. 1*, the following arbitrary values have been assigned: plate-supply voltage, 300; screen voltage, 100; static (no-signal) plate current, two milliamperes. This current flows through *R1*, which has an arbitrary value of 50,000 ohms. From Ohm's Law, the voltage drop across it is 100 volts, making the voltage at the plate terminal of the tube 200 volts. These are static values.

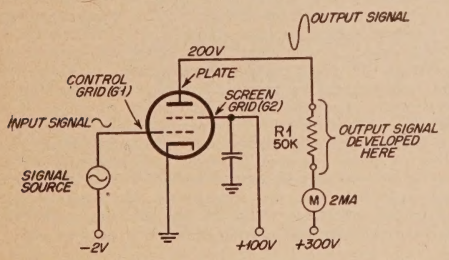


Fig. 1. This circuit illustrates several facts of vacuum-tube operation discussed in the accompanying text. The tube shown is a tetrode. A pentode would have a third grid, positioned between G2 and the plate and connected to the cathode. A triode would have only a single grid, G1.

If a signal, which swings the plate current between the limits of one and three milliamperes, is applied to the control grid, the voltage across *R1* must vary between 50 and 150 volts, or a swing of 100 volts. This voltage is an amplified replica of the grid signal. And the ratio between the two is a measure of the signal amplification through the tube.

Obviously, as the voltage across *R1* varies, the plate voltage on the tube varies in the opposite direction by exactly the same amount. In a triode, this action reduces effective amplification to about two-thirds of its theoretical value, because it partially cancels the swing in plate current produced by the grid signal. In a tetrode, however, the cancelling effect is much reduced, since its plate voltage has only a minor effect on its plate current, if the screen voltage remains unchanged.

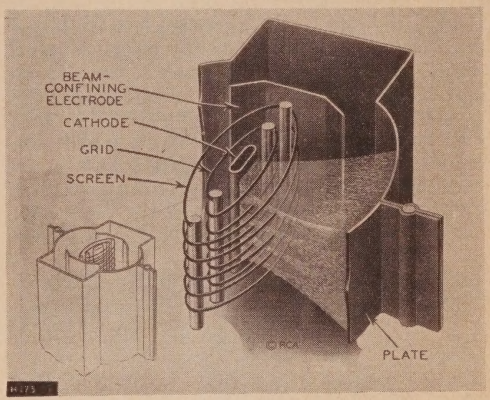


Fig. 2. A functional drawing of a typical beam-power tetrode. Operation is described in the accompanying text.

Note that the tube does not manufacture signals from nothing. It merely acts as a valve (the English name for a vacuum tube, incidentally) to control the power furnished by the power supply as dictated by the control-grid signal.

Earlier, I stressed that the plate voltage in a screen-grid tube should exceed the screen voltage. Otherwise, the tube will distort as it amplifies. The cause is *secondary emission*.

The electrons emitted by its cathode pick up speed rapidly from being accelerated by the positive voltages on the screen grid and the plate. In fact, they may approach a speed of 20,000 miles per second when they hit the plate! If you have ever been hit on the back of the neck by a spitball

in school, you know how much energy can be stored in a small, rapidly-moving object. It is called *kinetic energy*.

The kinetic energy in the high-speed electrons crashing into the plate is sufficient to jar loose other electrons from it. This is *secondary emission*, so called because it is caused by the action of other (primary) electrons. Each arriving electron may release several secondary ones.

Secondary emission does no particular damage in a triode. Its plate is the only positively-charged element in it; therefore, the secondary electrons that are bounced off of it are pulled right back. In a tetrode, however, the positive screen complicates things. When the plate voltage dips down near the screen voltage, more and more of them escape from the plate and reach the screen.

With the plate simultaneously gaining and losing electrons, the net plate current is obviously less than it would be if secondary emissions were absent. Furthermore, if the plate voltage dips low enough, the plate may lose more electrons than it gains from the cathode, and the plate meter will show an actual reversal of current flow. At the same time, screen current will be abnormally high.

When a tetrode is plagued with secondary emission, its control grid does not have complete control of plate current; therefore, it is easy to see why the result is distortion. Two methods, both comparatively inefficient, are available for eliminating its ill effects. Signals handled may be limited



Today's short wave listener is often tomorrow's amateur. Gerald Osborne, Camborne, Ontario, Canada, has heard 89 different countries with his S-38C receiver.

in strength or plate voltage may be greatly increased. But the tube engineers came up with a better idea. They stuck another element into the tube.

Pentodes

In a *pentode* (five-element tube), a third grid, called the *suppressor grid* is placed between the plate and the screen grid. It is connected to the cathode of the tube, often internally.

The suppressor grid has little effect upon the primary electrons travelling towards the plate, because of their high speed. But it drives the secondary electrons emitted by the plate back to it before they pick up speed, even when the plate voltage is much less than the screen voltage. It does this, because it is just as negative as they are, being connected to the cathode. (Remember, all electrons are negative, no matter where they were born, and like charges repel each other.)

All modern, receiving-type, radio-frequency amplifier tubes designed for use on frequencies up to at least 50 Mc., are pentodes. They are characterized by very high amplification factors, low grid-to-plate capacity (.005 $\mu\mu$fd. or so), and low power-handling capabilities. Among them are the 1S5, 6AK5, and the 6SK7. On the other hand, audio pentodes designed to operate a loud speaker, such as the 6F6, deliver several watts of output power; however, as self oscillation is not normally a factor at audio frequencies, their grid-to-plate capacities may approach a micromicrofarad.

Beam Power Tetrodes

Having developed the pentode, the tube engineers next pulled the trick of the year. They removed the suppressor grid but made the electrons think that it was still there! *Fig. 2* shows how they accomplished this trick.

First, they slightly increased the spacing between *G2* (the screen grid) and the plate. Then, they inserted *beam-forming plates* between the ends of *G2* and the plate and connected them to the cathode. Next, they aligned the wires in *G1* (the control grid) and *G2;* so that each wire in *G1* was in front of a wire in *G2*.

In operation, the beam-forming plates confine the electrons from the cathode to the space between them. In addition, the precise positioning of the grid wires aligns the electrons in flat sheets as they travel through the grids. Then, as they pass *G2*, its positive voltage tries to hold back the electrons, after having urged them onward to this point. It does not succeed, but it does slow them down.

Of course, the electrons coming along behind travel at high speed, until they too are slowed down just beyond *G2*. The result is a traffic jam of electrons between the screen and the plate. This mass of electrons acts like an electronic suppressor grid, which prevents the secondary electrons bounced off the plate from reaching the screen.

As their name implies, beam-power tubes are designed for applications in which a fair amount of power output is required. They range in size from the 3Q5GT, which will deliver a few tenths of a watt, up to others rated in terms of kilowatts of output. Among those encountered in amateur equipment are the 6V6, 6L6, 807, 6146, 813, 4-250A. In all, a very small input signal will control large quantities of plate power. Incidentally, a beam-power tube may contain an actual suppressor grid, making it a beam-power pentode. The best-known of them is the 4E27A/5125B, a 500-watt transmitting tube.

All these multi-grid tubes are making it difficult for a triode to make a living. It seems that anything a triode can do, they can do as well or better. This does not mean that one type can be substituted for another indiscriminately. Modern tubes fit the circuits with which they are used as her bathing suit fits a modern girl.

News For And About Novices

In Docket No. 11263, the Federal Communication Commission proposes to make the 7-Mc. Novice band extend between 7.15 and 7.2 Mc., instead of the present 7.175 to 7.2-Mc. limits. Interested parties may file written data, views or arguments in favor of or opposed to this proposal. They have until April 15, 1955, to do so.

There seems to be no valid reason for anyone to be against this needed change; therefore, we can hope that, within a reasonable time after April 15, Novices will have a little more room in which to dodge foreign broadcast stations on 7 Mc.

[*Continued on page 36*]

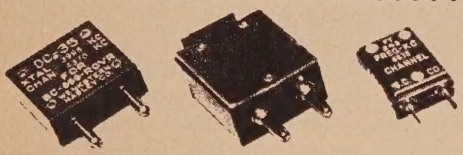
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Shipping Weight 14 lbs. Used, clean condition. Ea. $4.95

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6-9 MC. with tubes. Used, good cond. Wt. 10 lbs. Ea. $4.95

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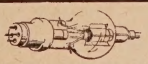
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PAGE 113, MARCH, 1955 RADIO & TV NEWS
PAGE 42, MARCH, 1955 C.Q. MAGAZINE

U. S. CRYSTALS, INC. DEPT. C

805 S. UNION AVE. LOS ANGELES 17, CALIF.

John Gohndrone, WN9IRH, 135 East 103 Place, Chicago 28, Ill., leads off the letters this month. He writes, "I have been on the air for four months and have worked 44 states and VE1, VE2, VE3 (Canada), all on 80 meters. You are 100 per cent right about the amount of listening and Call-Book thumbing that must be done to work new states. I think that anyone who really reads the January, 1955, *Novice Shack* can work a few more states, if he follows the procedures outline there.

"I would like to arrange schedules with stations in Vermont, Nevada, North Dakota, and Colorado on 3.7 Mc. Also, I will be glad to schedule anyone needing Illinois. 80 meters only.

"My station consists of a TBS-50, running 50 watts, a 135-foot 'long-wire' antenna, and an S-76 receiver. 73."

Tom Nicholas, KN2IHU, 1001 E. 37th St., Brooklyn 10, N. Y., says, "I just passed my General Class examination; so my days as a Novice are numbered. For the past two months, I have been on with a *Millen* 90801 transmitter, running 75 watts on the 3.7-Mc. Novice band exclusively. My old rig ran 20 watts. My antenna is only 33 feet long, fed with 52-ohm coaxial cable and a loading coil, and my receiver is an S-38C. With this combination, I have worked 20 states. Best DX to the south is Alabama and to the west, Wisconsin.

"You certainly were right about getting extra states after passing a certain point. You have to do a lot of listening to pick up an extra state, 'specially on 80. 73."

Tracy Levy, Jr., W4FRO, and Tracy Levy, Sr., W4HOS, 2254 Madison Ave., Memphis 4, Tenn., have been keeping the Novice bands hot in Memphis. W4FRO reports, "I have been a Novice for nine months. I have worked 45 states, Canada, and Puerto Rico, with 40 states and Canada confirmed. My transmitter is a souped-up TR-75TV, and the receiver is an NC-98.

"Dad, W4HOS, has passed his General test and received his license. I passed, but I am still waiting for mine. If anyone is having trouble with their equipment, do not hesitate to write to us. 73."

Dave Colfer, WN1BPC, 31 Grove St., Newport, Maine, writes "It was through the 'Help Wanted' section of the *Novice Shack* that the Teen Age Radio Correspondence Club got started. It is now fairly well established with twenty-five members in thirteen states. It is open to any teen-age ham, SWL or would-be ham. Any member will gladly help any young ham get started. Information may be obtained from me, address above, or Jack Perkins, 423 Bentley Ave., Beverly, New Jersey.

"By the way, Herb, I am following your suggestions for getting more states for WAS. As I am on 3728 Kc. with only 30 watts; so it makes the distant ones tough. If I can drag myself out of bed at 0300, I may do some business, hi. 73."

Charles Bostian, WN3ZXP, writes, "Thanks for putting my letter in the February *Novice Shack*. I have only one regret. There was a missprint, and my call was given as WN3ZYP, instead of WN3ZXP. I received several letters about it, some from friends, who recognized my name, and one from the real WN3ZYP. 73."

Melvin Ohara, WH6BIF, 157 Alae St., Hilo, Hawaii, fills a void. "I am writing, because I hardly ever see letters from Hawaii in the *Novice Shack*. I have had my ticket for about four months and have had some 50 contacts. Best DX is California. I am on almost daily around



Bob Vogel, WØUBD, Maple Lake, Minnesota, has worked forty states, Puerto Rico, Canada in eight months as a Novice and two as a "general." An S-38C and thirty watts to an AT-1 do the receiving and transmitting through a 125-foot doublet.

1700 H.S.T., and I hope you stateside boys will look for me in the 7.2-Mc band and give me a new contact.

"I am running 25 watts to an AT-1 transmitter, feeding a 65-foot zepp antenna. The receiver is an S-38C, but I am hoping to get an NC-98 soon. 73."

Joe T. Kuickenden R-M 912-39-25 (KN2IYV), O-2-R Division, USS Coral Sea (CVA 54), Care Fleet Postoffice, New York, says, "I got my ticket last August and have not been on the air once with it. I do my operating for the US Navy aboard the *Coral Sea*. I don't get any chance to study for my General here, but I just got into transmitters. I set them up on different frequencies.

"This week, I go up for 3 Class Radioman. It is a lot tougher than the General; so if I make it, start looking for K2IYV, instead of KN2IYV. I can copy 25 wpm (using a typewriter), but I can't copy even one word right with a stick!

"Keep up the *Novice Shack*. I like to read what is going on in the Novice world. I live at West Hampton Beach, L. I., N. Y. 73."

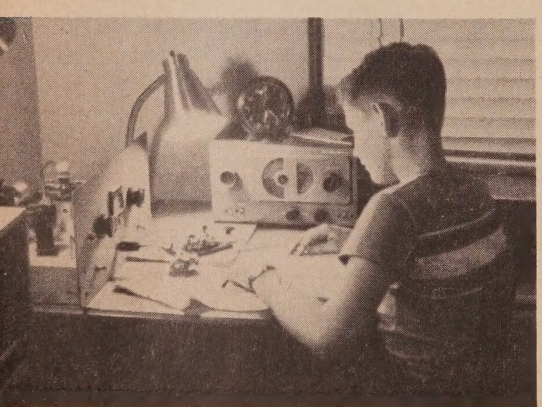
Doug Westover, W7UYE, 4838 East Helen St., Tucson, Ariz., writes to dispel a misconception held by some amateurs and prospective amateurs. He points out that one does not have to be 21 years old to be eligible to act as a volunteer code examiner for prospective Novice, Technician, or Conditional Class Licensees.

To be eligible to give the code test, one must hold an Extra Class, Advanced Class, or General Class Amateur Operator license or shall have held within the five years prior to the date of the examination, a Commercial Radiotelegraph Operator license issued by the FCC, or, within that time, shall have been employed in the service of the United States as the operator of a manually operated radiotelegraph station. However, to witness the written examinaion, one must be at least 21, but that witness need not possess a license. Thus, if necessary, you can have a young ham give the code test and his father or mother witness the written examination.

Doug further reports, "I am 16 and a Junior in Tucson High School. My transmitter is a modified AT-1, and my receiver is an NC-98. On weekends, I can usually be found in the 21-Mc. Novice band; so anyone needing Arizona might keep his ears open.

"In the year and a half I have been at this location (I am ex-KN2CHN and WØQFD), I have worked all states and 25 countries with a power input never exceed-

[*Continued on page 55*]



"Les," WN5FKW, Texarkana, Texas. In 6½ months of operation Les has worked 34 states, running sixty watts to an 807 on forty meters. Receiver is an S-38C.



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Top-notch value! Now, for the first time, a crystal filter, an S-meter, electrical bandspread, a large, easy-to-read slide rule dial, an RF stage and 2 IF stages — only a few of its many fine features.

National NC



CASH PRICE: $149.95

National NC



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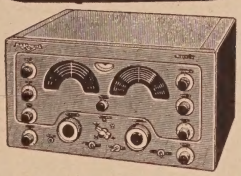
The NC-88
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Built-in speaker, advanced AC superhet circuit, tuned RF stage, 2 IF stages, 2 hi-fi audio stages with phono input. Separate hi-frequency oscillator. Many, many other features. Ask us for complete specs.

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Designed for maximum sensitivity and selectivity. Dual conversion added to IF system with 1720 kc. first conversion frequency. Special push-pull, high fidelity audio system incorporated. Includes all time-tested features of the NC line.

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Rush me the Following Information Immediately. Also Quote me the Trade-In Value On Your:

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For My: _____ (Present Equipment)

	I want full information on National's NC-98.
	I'm interested in the NC-88.
	Send Details on the NC-183D.
	I'd like a copy of your 1955 catalog Send me your latest free list of reconditioned equipment with the 90 day factory new guarantee. I'm interested in saving up to 50%.
	I'd like your giant size (3'x4') wall type radio map of the U.S.A. I'm enclosing 25c in cash.
	Send full details on your 65 watt, completely bandswitching Globe Scout Transmitter.
	Send full details on your 500 watt completely bandswitching Globe King Transmitter.
	Tell me about your E-Z Pay Plan where I need only 10% down on any equipment I wish to buy.
	I'm interested in your Novice Kits. Please forward all details.
	Include info on the National HRO-60.
	Include info on National's SW-54.
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ALL TIMES IN E S T

EASTERN USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Northern & Central Europe	NIL	0700-1000 (1-2) 1000-1500 (3) 1500-1730 (1-2)	1700-2300 (3-4) 2300-0300 (1-2)	1800-0100 (3)
Southern Europe & North Africa	0900-1500 (0-1)	0600-1100 (2-3) 1100-1700 (3-4) 1700-1830 (1-2)	1800-2200 (3-4) 2200-0130 (1-2)	1900-0100 (3)
Near & Middle East	0900-1500 (0-1)	1100-1600 (1-2)	1800-2200 (2-3)	2000-2300 (1-2)
Central & South Africa	1100-1700 (1-2)	0700-1230 (0-1) 1230-1900 (3-4) 1900-2000 (1-2)	1800-0000 (2-3)	1900-2300 (1-2)
South America	1200-1600 (1) * 1000-1600 (2-3) 1600-1800 (3-4) 1800-1900 (1-2)	0600-0900 (3) 0900-1630 (2) 1630-2030 (3-4) 2030-0100 (1)	1800-0300 (3-4) 0300-0600 (2)	1900-0400 (2-3)
South East Asia	NIL	0700-0900 (0-1) 1600-1900 (0-1)	0200-0730 (0-1)	NIL
Australasia	1700-2030 (1)	0700-0930 (2-3) 0930-2200 (1)	0000-0600 (1-2) 0600-0830 (2-3)	0100-0730 (2-3)
Guam & Pacific	NIL	0730-1030 (1-2) 1600-2000 (1)	2300-0730 (3)	0030-0630 (2-3)
Japan & Far East	NIL	0700-0900 (1) 1700-2000 (1)	0200-0800 (1)	0300-0700 (0-1)

ALL TIMES IN C S T

CENTRAL USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Western & Central Europe	NIL	0600-1100 (1-2) 1100-1600 (2-3)	1700-1900 (2-3) 1900-0130 (1)	1830-0030 (2)
Southern Europe & North Africa	0930-1430 (0-1)	0600-1130 (2-3) 1130-1600 (3-4) 1600-1730 (1)	1700-2300 (3)	1800-0000 (2)
Central & South Africa	1200-1600 (1)	0700-1200 (0-1) 1200-1800 (3-4) 1800-1900 (1-2)	1800-2300 (3)	1900-2200 (2)
Central America & Northern So. America	1200-1600 (1) * 0900-1400 (2-3) 1400-1630 (4) 1630-1730 (1-2)	0600-0900 (3-4) 0900-1500 (2-3) 1500-1900 (4) 1900-2030 (1-2)	1800-0430 (4) 0430-0700 (2-3)	1900-0400 (2-3)
South America	1200-1600 (1-2) * 0900-1500 (2-3) 1500-1800 (3-4)	0600-0800 (3) 0800-1500 (2) 1500-1900 (3-4) 1900-0200 (1-2)	1800-0400 (3-4)	1900-0300 (2-3)
Japan & Far East	NIL	0700-0900 (1) 1600-2000 (2)	0100-0800 (2)	0200-0630 (1)
South East Asia	NIL	0730-1030 (1) 1700-2000 (1)	0130-0530 (0-1) 0530-0800 (1)	0300-0600 (0-1)

ALL TIMES IN C S T

CENTRAL USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Hawaii	1600-2000 (1)	1000-1900 (2-3) 1900-2200 (3-4)	2200-0200 (3-4) 0200-0900 (1)	0000-0700 (3)
Australasia	1600-2000 (1)	0700-0930 (2-3) 0930-1900 (1) 1900-2200 (2)	2230-0400 (3) 0400-0800 (2-3)	0000-0600 (2-3)

ALL TIMES IN P S T

WESTERN USA TO:	15 Meters	20 Meters	40 Meters	80 Meters
Europe & North Africa	NIL	0700-1300 (1)	1900-0100 (1)	2000-2300 (0-1)
Central & South Africa	1200-1600 (0-1)	0830-1500 (0-1) 1500-1800 (2)	1800-0000 (2)	1930-2200 (1-2)
South America	1200-1500 (1) * 0900-1800 (3)	0600-1400 (2-3) 1400-1900 (4) 1900-0000 (1-2)	1800-0300 (3-4)	1900-0200 (2-3)
Guam & Mariana Islands	1600-2100 (2-3)	0700-0900 (1-2) 1200-1900 (2) 1900-2200 (3)	0100-0700 (3-4)	0200-0600 (3)
Australasia	1400-1930 (1-2)* 1100-1900 (2-3) 1900-2100 (3)	0700-1800 (1-2) 1800-2200 (3)	2100-0600 (3)	2330-0530 (3)
Japan, Okinawa & Far East	1500-2100 (2)	0730-0900 (1) 1200-1830 (2-3) 1830-2230 (3-4) 2230-0030 (1-2)	0000-0600 (3)	0100-0500 (2-3)
Philippine Islands & East Indies	1500-2100 (1-2)	0700-1030 (2-3) 1300-2000 (1) 2000-2330 (1-2)	0300-0500 (1-2)	0300-0500 (0-1)
Malaya & South East Asia	1600-2100 (0-1)	0800-1030 (1-2) 1600-2200 (1)	0400-0700 (1)	0500-0700 (0-1)
Hong Kong, Macao & Formosa	1600-2000 (1-2)	1300-2000 (2) 2000-2300 (3)	0200-0630 (2-3)	0300-0500 (1-2)

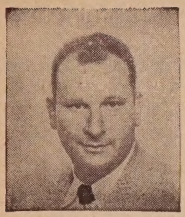
Symbols for Expected Percentage of Days of Month Path Open:

(0) None (1) 10% (2) 25% (3) 50% (4) 70% (5) 85% or more.

* Indicates time of possible ten-meter openings.

The CQ Propagation Charts are based upon a CW radiated power of 150 watts and are centered on Washington, D.C., St. Louis, Missouri and Sacramento, California. These forecasts are, for the most part, calculated from basic ionospheric data published by the CRPL of the National Bureau of Standards, and are valid through May 15th, 1955.

Ionospheric Propagation Conditions



Forecasts by
George Jacobs W2PAJ/W3ASK
607 Beacon Road, Silver Spring, Md.

A Review Of Shortwave Propagation Conditions

In response to a considerable number of requests this month we begin a review of the fundamentals of shortwave radio propagation and the prediction of shortwave conditions. This review will be continued each month for the next few months.

The Ionosphere

Long distance radio communication is possible only because of a region that exists in the upper atmosphere. This region is known as the **ionosphere.** It is the ionesphere that acts as a mirror reflecting high-frequency, or shortwave, radio waves over great distances.

The higher regions of the earth's atmosphere are composed of various gases, mainly oxygen, nitrogen, hydrogen and helium. Ultra-violet radiation from the sun sweeping across this region causes these gases to break up into little bits of charged electricity, usually called **ions.** This phenomenon is termed **ionization,** and the ionosphere consists of these cloudlike layers formed by the "ionized gases." **Figure 1** shows these layers as they exist at various heights above the surface of the earth. During the daytime the lowest layer is the D-layer, followed by the E-layer, then the F-1 and F-2 layers in that ascending order. During the night or hours of darkness, when the sun is not present and ultra-violet radiation received by the ionosphere is at a minimum, all the layers with the exception of the F2 layer generally disappear. This nighttime F2 layer is usually between heights of 150 to 250 miles above the surface of the earth.

Actually, when a radio wave reaches the layers of the ionosphere, it will either be reflected back to earth or penetrate through and be lost in outer space, depending upon the frequency of the radio wave, the angle at which it strikes the ionosphere and the degree of ionization of the ionosphere itself. Srongtly ionized layers will reflect higher frequencies than will weakly ionized layers. The degree of ionization is dependent upon the ultra-violet radiation received from the sun. As we know simply from observing seasonal weather changes, the sun's activity is anything but constant.

Next month this review will discuss the daily and seasonal variations of solar activity and its effect upon shortwave propagation conditions.

Flash

A moderate ionospheric disturbance is forecast for April 9-12. A period of unstable short wave radio conditions is expected April 22-24.

General Propagation Conditions—April

6 Meters: A few short-skip openings between 1100-1300 miles expected as a result of a slight increase in sporadic-E propagation.

10 Meters: Occasional DX on some long north-south paths. An increase in short-skip openings between 900-1300 miles expected as a result of sporadic-E propagation.

15 Meters: DX on this band not as good as during the winter months but some openings expected, especially on north-south paths. Regular F2 layer short-skip openings between 1800-2400 miles predicted from approximately 10 AM to 7 PM LOCAL TIME. Sporadic-E layer

[*Continued on page 54*]

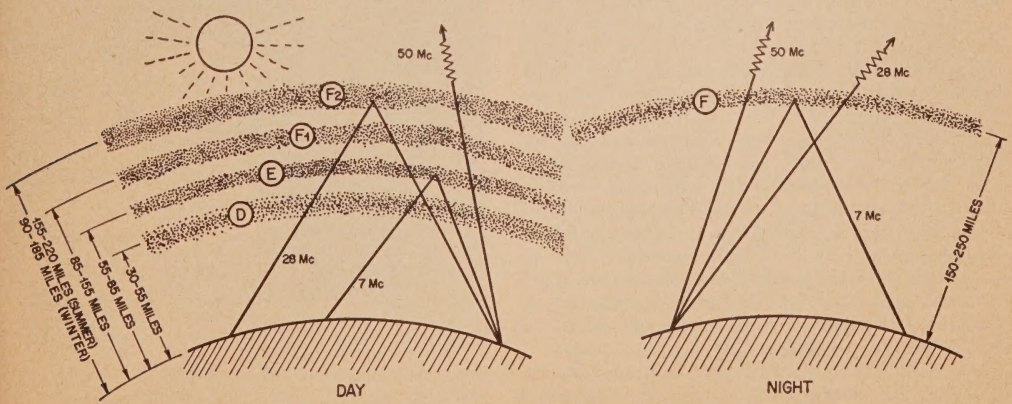


Fig. 1. Ionospheric layers and radio propagation.

the YL's Frequency



Monitored by

Louisa B. Sando, W5RZJ

Jicarilla Apache School, Dulce, New Mexico

Are any of you OMs discouraged because the XYL doesn't respond to your tender urgings to go after her Ham ticket? If so, maybe you should try this approach, one that brought results in a couple of cases at least. Both W8KLZ, Betty West, of Flint, Mich. and W5WZZ, Nell Blakely, of Greenville, Miss. owe their Ham tickets to the fact that their OMs suggested perhaps they, the XYLs, "weren't smart enough" to make the grade! That



W8KLZ, Betty West, operates 40 and 80 phone and CW from Flint, Mich.

was just enough to arouse their fighting spirit and the girls settled down to study in earnest.

Betty says her OM, W8JAX, tried everything in the book to convince her she should try to get a license. When he told her he didn't think she could do it, she got busy and after just three weeks study on code and theory she tagged along when Ken went to Detroit for his General. Consequently her Novice ticket arrived in May '52. She says she thoroughly enjoyed her Novice operating and with 35 watts worked about 27 states. During this time her OM taught her theory for the General exam and she got a 15 WPM CPC, but she says it took her three more trips before she passed the code exam.

Betty's call, W8KLZ, was received June 5, '53, just three days before the tornado struck Flint. She and her OM were able to help out as a phone outlet via 2 meters for the local club station at Red Cross Hq. W8KLZ-W8JAX use a Harvey Wells Bandmaster and an HQ129-X receiver. They operate 80 and 40 meters CW and phone, but Betty says she prefers CW. Betty has been secretary of the local radio club. They have a 4-yr. old jr. op, and a baby boy born Nov. 20.

After Nell Blakely's OM prodded her with the jibe that she wasn't smart enough, she too settled down to study and she and Blake took the exams together. In Oct. '52 they received Novice and Technician licenses, both having overestimated their code prowess. After five months with 75 watts to a command transmitter on the Novice bands, Nell passed the code and put the big rig on 75 meters. W5WZY-W5WZZ run about 300 watts to a single 813, modulated by a pair of 211s, home designed and home built by Blake. They use a center-fed dipole antenna. Receiver is an HRO-50. They have worked all states on 75 phone and also like to handle traffic, checking into MARS regularly. They pitched in during the Waco and San Angelo disasters, the Vicksburg tornado and did some relaying during the first hours after the Anderson tornado.

There also is another Ham in the Blakely family. Ellen, their 12-year old daughter, received her Novice ticket last April, and is WN5DRS—"Down Right Sassy." Her rig is a war surplus TRC-10 running 50 watts on CW. Ellen is in the 7th grade and is interested in horses, art and music besides Ham radio.

Blake and Nell are both photographers and they have their own studio, very appropriately named



When she became the XYL of W9ODS, it brought to five the number of Hams in the family of June, W9OTM.

"Blackenell" studio. It is at their home where Nell can keep a weather eye out for their four harmonics—all of whom are girls, the fourth only a few months old. Nell also is a journalism graduate from LSU.

It was while we were in Phoenix, Ariz. a year ago visiting W7KOY, Gert, that we heard about Nell. Seems Gert's and Ken's oldest daughter and her family are in Greenville, Miss. also. A long way from home, but the many miles are spanned frequently with personal QSOs via W5 "Willie Zig Zag" to W7KOY.

Results YLRL Anniversary Party

Congratulations to the winners of YLRL's 15th Anniversary contest. In the phone section, held last Dec. 4-5, W3OQF, Barbie Houston, using her OM's station W3MAX, placed first with a score of 22,320. W8HWX, Lillian Richards, came in second with 17,100 points. W4YYJ, Lois Ann Crane, was third with 16,528.5 points. In the CW section, held Dec. 11-12, W4YYJ, Lois Ann, made first place with a score of 6,612.5. W4HLF, Arlie Hager, and W1FTJ, Dot Evans, tied for second place with 6,375 points each. W1WPX, Evelyn Chase, was in third place with 5,362.5 points.

W3OQF (for write-up on Barbie see "YL's Frequency" CQ, Sept. and Oct. '48) will now receive the cup for Phone won by W1FTJ in the '53 Anniversary Party. W4YYJ (for photo and activities of Lois Ann see "The Powder Puff Derby" CQ, Oct. '54) takes the CW cup won by W4RLG in the '53 A.P. Top scorers in each call area will receive certificates.

These girls sent in logs for verification only in the Phone section: W1FTJ, K6ELI, W6NAZ, W7QJH. Calls of well over a hundred YLs, other than those who sent in scores, appeared on the contestants' logs, so obviously many more enjoyed the Party than might appear from the number of scores listed below.

PHONE				CW	
W1VOS	11,542.5	W6CEE	1,500	W1YYM	2,187.5
W1MCW	6,580	W6GQZ	1,200	W1RLQ	1,625
W1WPX	5,445	W6PCA	1,155	W1VOS	1,125
W1RLQ	2,700	K6ANG	900	W1YNI	438
W1UZR	1,815	W6WRT	858		
W1QON	1,072.5	W6KER	375	K2DXD	1,218.75
W1RYS	367.5	W6QYL	60	K2CUQ	500
				K2IWO	120
K2IWO	11,857.5	W7WYM	15,400		
W2EEO	1,040	W7ULK	7,837.5	W3QPJ	3,656.25
K2DSL	675	W7OOY	6,660	W3TYC	2,450
W2OWL	472.5	W7TGG	5,940	W3MAX	
W3TYC	607.5	W7RVM	5,160	(OQF)	1,100
		W7SNP	1,755	W3CDQ	45
W4HLF	15,840	W7VYG	1,620	W4RIG	2,250
W4KYI	13,125	W7HHH	1,250	W4BLR	1,340
W4RIG	10,335				
W4SGD	6,250	W8HUX	4,320	W5WXY	240
W4CWV	1,137.5	W8ATB	2,600		
W4BLR	420	W8DNF	1,920	W6PCA	1,487.5
		W9AQB	10,920	W6EHA	481.25
W5SPV	3,885	W9LOY	3,375		
W5RYX	3,697.5			W7SYF	187.5
W5WUX	1,620	WØOMM	11,962	W7VYJ	156.25
W5RZJ	1,275	WØBFW	6,037.5		
W5TTU	125	WØFVE	3,277	W8HWX	4,250
W5WXY	50	WØERR	2,625	W8OTK	600
		WØJWJ	1,260		
W6QGX	7,455	WØZWL	675	WØFVE	2,600
W6QOG	4,600	WØMJR	495		
W6UHA	2,400			VE3AJR	5,040
W6EHA	1,861.25	VE3AJR	5,400	VE3DDA	400
				VE5DZ	605

YL Get-togethers

April 23 will be the occasion of the 5th Annual Spring Luncheon for the New England YLs (and any others who may wish to attend), to be held at the Sheraton Plaza Hotel in Boston. A get-acquainted session will be held at 12 noon, followed by the luncheon at 1 p.m. Price for the luncheon will be $3.50 or $4.50 (depending on menu). Send reservations to W1TRE, Barbara Harrington, Haverhill Rd., Topsfield, Mass.

1st International YLRL Convention

Date: June 24-27, 1955
Place: Miramar Hotel, Santa Monica, Calif.
Sponsors: Los Angeles YL Radio Club
Chairman: W6UHA, Maxine Willis
Housing Chairmen: W6JZA, Elsa Wheeler, and K6ANG, Billie Blakesley. Write to either of these YLs if you want help in securing hotel reservations, or wish to stay in a YL's home. **Other chairman: Sunday picnic:** W6WSV, Carol, with W6WRT, Ruby, and K6EIA, Ellen, assisting. **Finance:** W6NZP, Evelyn. **Ways and means:** W6KYZ, Ann, with W6KER, Gilda, helping. **YLRL souvenirs:** W6QYL, Martha. The souvenirs will be handcrafted copper bracelets with YL insignia. Martha is directing this committee from her hospital bed: K6EJE, Frances; KN6GMX, Jayne; W6DXI, Gladys; W6QGX, Harryette. **Decorations:** W6MFP, Agnes. **Program:** W6QGX, Harryette.

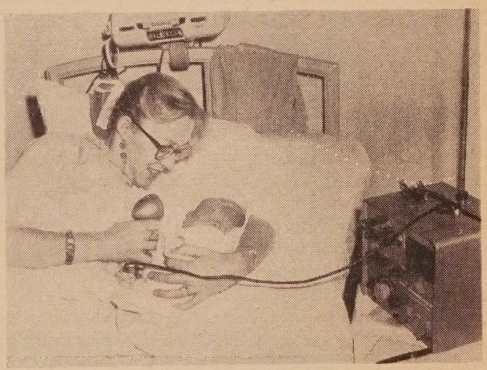
Next YL get-together will be the 5th annual Mid-west YL Convention to be held May 20-22 at the Allerton Hotel in Chicago. Registration will start Friday a.m. There will be a trip through one of the radio factories, followed by a dinner Friday evening served by members of LARK. Saturday noon there will be a luncheon and business meeting, with YL-OM banquet in the evening. Registration fee is $2, which should be sent to W9SJR, Bernice Schmidt, 3849 N. Kedvale Ave., Chicago, Ill.

YL Nets

Although the YLs of Dallas, Texas, did not succeed in organizing a YL club, they did get together over the air and their Texas YL Round-Up Net is very successful. It meets each Thursday at 9:30 a.m. CST on 3880 kc. W5WXY, Bernice, is net control, with W5ZTB, Cindy, as alternate. About 25 YLs check in, including ones in Okla. and Ark.

The YLs in Montana have been meeting in a round-

[*Continued on page* 52]



KN6HRP, Laura Lee Townsend, of Santa Barbara introduced 10-hr. old son Peter to OM KN6ELR at home via 2-meter rig at her hospital bedside. In all, they had about 20 QSOs and Laura Lee rag-chewed with the 2-meter gang as far away as San Diego (200 miles). Now both K6ELR and HRP are active on 2-meter Mission Trail Net, work all bands 160 to 10 phone and CW, and also operate mobile on 10. Peter's pediatrician is K6CRJ. Photo courtesy SBRC president K6ATX.

prints for pennies

C. L. Buchanan, W3DZZ
4671 Lacy Ave., S.E., Washington, D.C.

How would you like to reproduce your favorite circuit diagrams or drawings for less than two cents each, and with an initial outlay of only three or four dollars? Well, it can be done, and the resulting reproductions are of "professional" quality and appearance.

The two things required in any reproduction process are a means of exposing the printmaking paper, and a means of developing it. Most of the readers will have a familiarity with photographic reproduction; printmaking is quite similar.

The method of exposing the print is the same as is used in contact printing of a photographic negative. The tracing is laid on a glass plate and the printing paper is laid over the tracing. A soft, flat surfaced plate is then placed over both the tracing and the printing paper to press them together tightly. The print is exposed by permitting light to shine through the tracing and onto the surface of the printing paper. This paper is of the type usually referred to as positive paper—that is—it will be dark (when developed) in the places where light was not permitted to fall, and white where the light was permitted to fall.

A suitable printer can be as inexpensive as your pocketbook requires. If the ultimate in economy is desired, a sheet of ordinary window glass can be used by laying the printing paper on a flat surface, such as a workbench or table, on which has been placed a few layers of newspaper. The drawing to be reproduced is laid over the printing paper and the glass plate over the top. Enough pressure should be applied to the glass to hold the drawing and the printing paper securely against the glass. The exposure can be made with a portable lamp or even the rays of the sun.

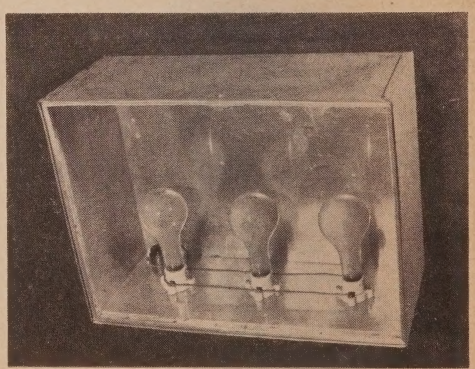
Of course, a more suitable arrangement is to build a box with a number of lights inside and a switch on the front. The author built such a box from aluminum sheets purchased at a junk yard for 40c, and a 15″ x 20″ piece of double strength window glass which cost 98c. The box was built 20 inches long, 15 inches wide and 8 inches deep. A piece of soft edging such as is used for counter edges was screwed to the inside of the box to support the glass top. Sockets were installed for three #2 photoflood bulbs and a suitable line cord provided. Since I had a switch-controlled wall receptacle, no switch was included in the printing box itself. The cost of the three photoflood bulbs was $1.05. Ordinary incandescent bulbs could have been used but a very long exposure time would have been required.

There are a great many different printmaking processes using a great variety of chemicals. The most widely used processes are the old standard blueprint (which turns out negative prints) and the ammonia vapor types (which make positive prints). The latter system is much superior since it is a "dry" process, and the expense and trouble of drying the prints after developing is avoided.

A third process, and the one chosen by the author due to its simplicity, is known as the Directo Process, and the necessary paper and developer can be obtained from stores handling Dietzgen products. The positive printing paper costs about 1-1/3¢ per sheet in packages of 250, and a can of developer powder (which makes a pint of developer) costs about 35¢.

With this process the exposed printing paper can be brushed with a soft cloth dampened in the developing solution to obtain the developing action. The cloth need not be very damp, and the print will be dry enough to handle immediately. It is best to lay down some newspapers on which to develop the prints to avoid getting the chemical developer on the bench or table. I am not aware of the chemical composition of the developer but it is odorless, colorless, and does not seem to affect the skin in any

[*Continued on page 48*]



Homemade printing box with three #2 photoflood bulbs.

NOW HENRY DARES TO GIVE YOU THIS GUARANTEE

100% SATISFACTION
or Your Money Back at end of 10 day Trial



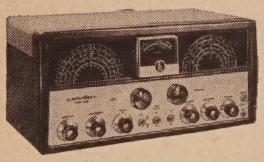
Bob Henry, WØARA Butler, Mo.



Ted Henry, WØUOU Los Angeles

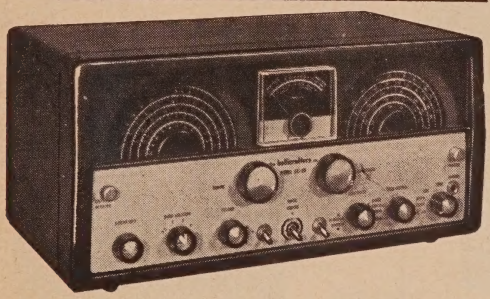
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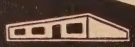
MODEL	CASH DOWN	20 MONTHLY PAYMENTS	CASH PRICE
S38D	$ 5.00	$ 2.45	$ 49.50
S94	6.00	2.97	59.95
S95	6.00	2.97	59.95
S85	12.00	5.94	119.95
S93	10.00	4.95	99.95
SX96	25.00	12.37	249.95
SX62A	35.00	17.32	349.95
SX88	67.50	33.41	675.00

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ESSE SPRING SPECIALS!



BATTERIES

3-TA5-9B—Manufactured by Exide Battery Co. for aircraft. Size 5" x 5" x 9" overall. Shipping weight 15 lbs. New dry charged. Fill with 1.265 sp.g. sulphuric acid. Price .....ea. **$4.95**

DELCO MODEL 6TN23 12 V. 70 AH

Brand new dry charged 12 V. 70 AH storage battery in hard rubber case size 10½" x 10" x 9" h. Ideal for boat use or auto. Keep one around the shop for your experimenting or service work. Wt. 72 lbs.

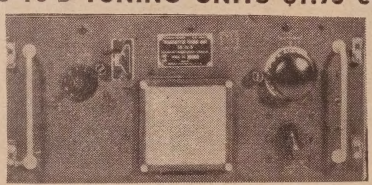
Price—$10.00

BRAND NEW 12 V. DYNAMOTORS



DM-40 Input: 12-14 V. 3.4 A. Output: 172 V. -138 MA. Here is an ideal dynamotor to adapt to mobile uses on the new 12 V. cars. Don't pass up this buy even if your intended uses are not immediate. Size 6¾" L x 3½" dia. 4" lead with 6 pin Jones plug. Shipping weight 7½ lbs.
New Price.....ea. **$2.75**

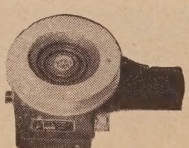
TU-10-B TUNING UNITS $1.95 ea.



Used in the BC-375 transmitter, but the most favorable and acceptable piece of surplus gear for obtaining good cheap useable parts. The TU-10-B contains three double spaced transmitting type variable condensers of 16, 27 and 7 plate varieties, 3 mica transmitting type micas, 2 isolantite shaft couplings, antenna coupling switch, two precision vernier dials, chokes, inductances and other useful parts. Better order plenty before supply is exhausted again. TU-7, and TU-26 also in stock, same price. Ship wt. 13 lbs., size 7⅝" x 16½" x 7½".

Used — $1.95 ea.
New — $2.50 ea.

RL-42-B ANTENNA REEL/Motor — $1.95



Used originally for remote controlling of automatic trailing wire antenna. Motor is ⅛ H.P. 24 V. D.C. with oil-less sleeve bearings. The gear train, breaking and disconnect mechanism, reversible and variable speed motor makes this an ideal unit for conversion to coil winders, etc. Ship wgt. approx. 5 lbs.

Good Used Condition — $1.95
Brand New — $2.75

BRAND NEW R-1/ARR-1 RECEIVER — $2.95



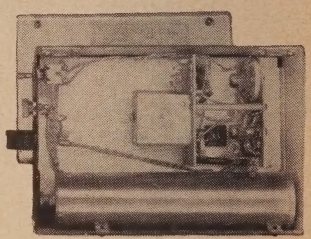
Described in "Radio TV News" Jan. 1949 for use as 220 Mc. converter. Essentially a two stage RF acorn tube superhet converter as it now stands. Small enough for mobile only 3½"W x 3"H x 10"D. Rugged Aluminum construction. Uses four 954 acorn tubes included. Filaments now operate on 12 or 24 volts by merely throwing switch in unit or very easily modified for 6 V. operation. Dial is calibrated in range of 234-258 Mc. Operation can be changed for use from 50 to possibly 300 Mc. Also, the ARR-1 could be used for a preselector. Wgt. of unit 4 lbs. Cover not shown but included. Complete with conversion as written in above mag. Brand new demilitarized units.

Price, Brand New — $2.95

ARR-1 Antennas for above receiver and frequencies—NEW **$1.25 ea.**

Co-axial antenna relay for use with above or other transmitter-receiver combinations—NEW **$1.25 ea.**

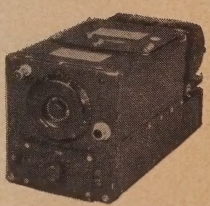
ARR-1 TEST OSCILLATOR — $4.95



Operates in range of 234-258 mc. using goldplated cavity. Adapt this unit for a transmitter for companion to receiver listed this page. Circuit uses two type 955 acorn type tubes included. For battery operation using two 45 V. B and one 6 V. A batteries (not incl.). Houses in alum. cabinet size 6¾" x 7" x 9¾". Wt. 5½ lbs. Circuit diagram pasted to back of cabinet.

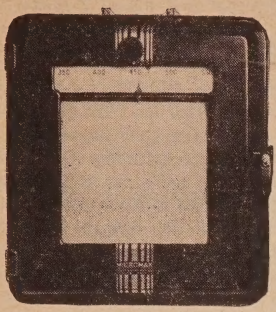
Good used, price..... **$4.95**
Brand New **$6.95**

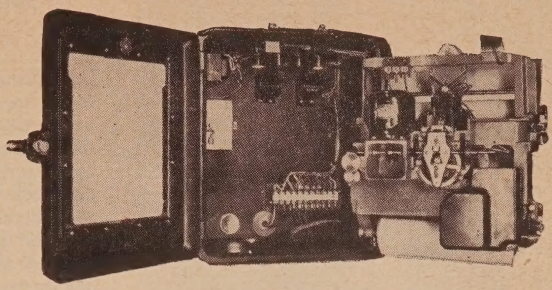
BC-455-B RECEIVER—$5.75



Ideal receiver for mobile or fixed operation. Excellent sensitivity and frequency stability are found in these receivers. New surplus release order—new supply will not last long at this price. Complete with tubes and guaranteed. Less dynamotor.

Brand New — $7.50
Good Used — $5.75





LEEDS & NORTHRUP MICROMAX RECORDERS

These are the strip type recorders used for controlling and recording a wide variety of processes. Used originally for temp. range of 350-550 degrees C. but may be changed for other applications. Operates on Wheatstone bridge principle using AC galvanometer movement. Original cost was several times our price. These units were removed from demilitarized equipment which in many cases was new; however, all instruments sold as used but guaranteed, or money back if not satisfied.

PRICE — $139.50

New FACSIMILE SET
Complete—$350.00

Brand New RC-58-B facsimile set complete with BC-908-B amplifier & mounting. BC-918-B Recorder-Scanner with mounting, MC-308-B writing stand, spare parts chest, covers, and cords ready to operate on your 12 V. DC source. Wire or radio may be used as transmitting medium. Messages may be transmitted at the same time as one is being received. Ideal for ham, bank, or business use. Wt. packed 200 lbs. approx.

Brand New orig. pack. price $350

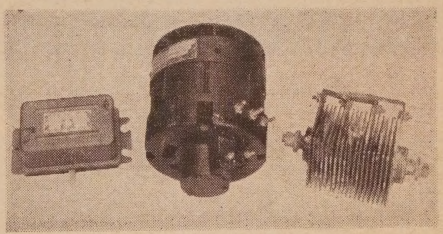
1625 TUBE 12 V. 807

These tubes are 807's with a 12 V. filament making them ideal for new 12 V. car mobile transmitters.



New JAN boxed, guaranteed.....ea. **59c**
Lots of 10 or more.....ea. **49c**

Just a Few Left...
100 AMP. L-N ALTERNATOR—$69.50



Originally sells for $216.95—See Jan. CQ for full description. Complete with newer model 5058-G3 alternator than our 5024-G3 advertised in Jan., rectifier and 3082-R3 regulator.

Used but guaranteed—$69.50

BC-AS-230 TRANSMITTER — $3.95

Brand new transmitters made to operate on 12 V. dc. Ideal for mobile use in new cars with 12 V. system. Contains four tubes with power output of approx. 25 watts. 0-1.5 amp. RF ammeter alone worth the price. Freq. range 195-13,975 kc. with full set of plug-in coils (one only picked at random packed with transmitter & included) Wt. approx. 13 lbs. Shock mt. included.

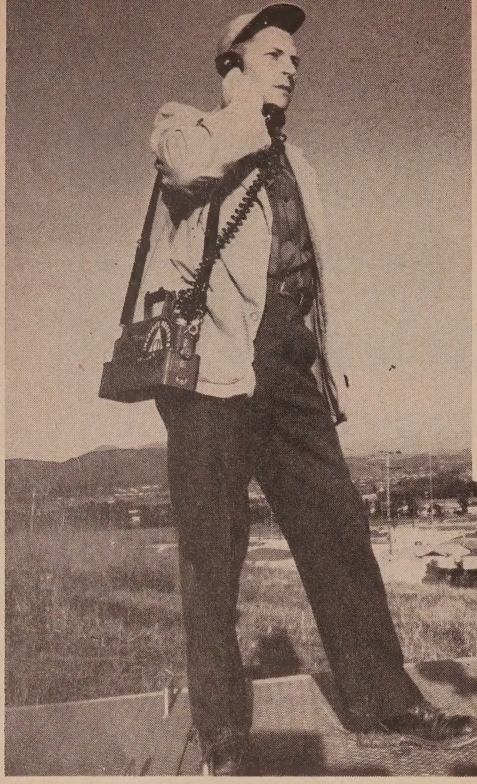
Brand New Price $3.95

No Orders Less Than Five Dollars. Due to large influx of small orders and time necessary to handle we cannot accept orders for less than $5.00 We hope this arrangement will allow more rapid handling of your order.

REMIT SHIPPING CHARGE AND INSTRUCTIONS WITH ALL ORDERS, OTHERWISE ORDER WILL BE SHIPPED EXPRESS COLLECT. ALL ITEMS GUARANTEED TO YOUR SATISFACTION OR MONEY REFUNDED IF RETURNED PREPAID WITHIN 10 DAYS OF RECEIPT.

ESSE RADIO CO.

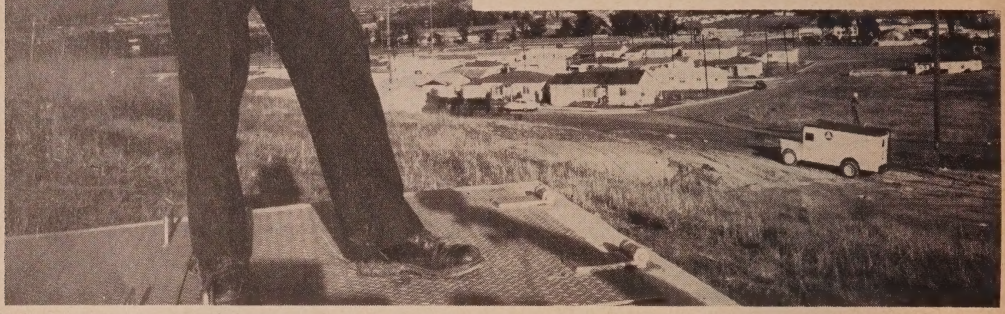
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W6VFT—Outstanding Amateur of the Year

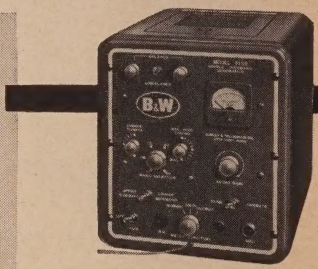
1954 Edison Award

Benjamin S. Hamilton, W6VFT, La Mesa, California was recently awarded the 1954 Edison Award by the General Electric Company for providing San Diego County with "an outstanding Civil Defense and disaster emergency radio network." Hamilton organized a 200 man civil defense group, planned the networks, specified the equipment, designed and laid out the required facilities, and installed much of the equipment by himself. He has trained the personnel to man the equipment. His radio networks now link together 36 of the 44 communities in the 70 by 60 mile county.



Now...SSB for all 3

- B&W MODEL 5100
- COLLINS 32V, 32V2, 32V3
- JOHNSON VIKING I & II



PRICE: $279.50
Amateur Net

Factory wired and tested, complete with tubes

If you own any one of these transmitters, you too can now enjoy the wonderful advantages of single-sideband transmission . . . plus all the features your transmitter already gives you. B&W's new Model 51SB Single Sideband Generator is completely self-contained . . . furnished with complete instructions that show you how to modify your transmitter easily . . . how to be transmitting on SSB in less than an evening's time with —

- Complete bandswitching from 80 to 10 meters
- Output frequency control which is presently in your transmitter
- Voice control operation on SSB
- Speaker deactivating circuit

See it at your distributor's today, or write for Bulletin 51SB.

B&W BARKER & WILLIAMSON, INC.
237 Fairfield Avenue • Upper Darby, Pennsylvania

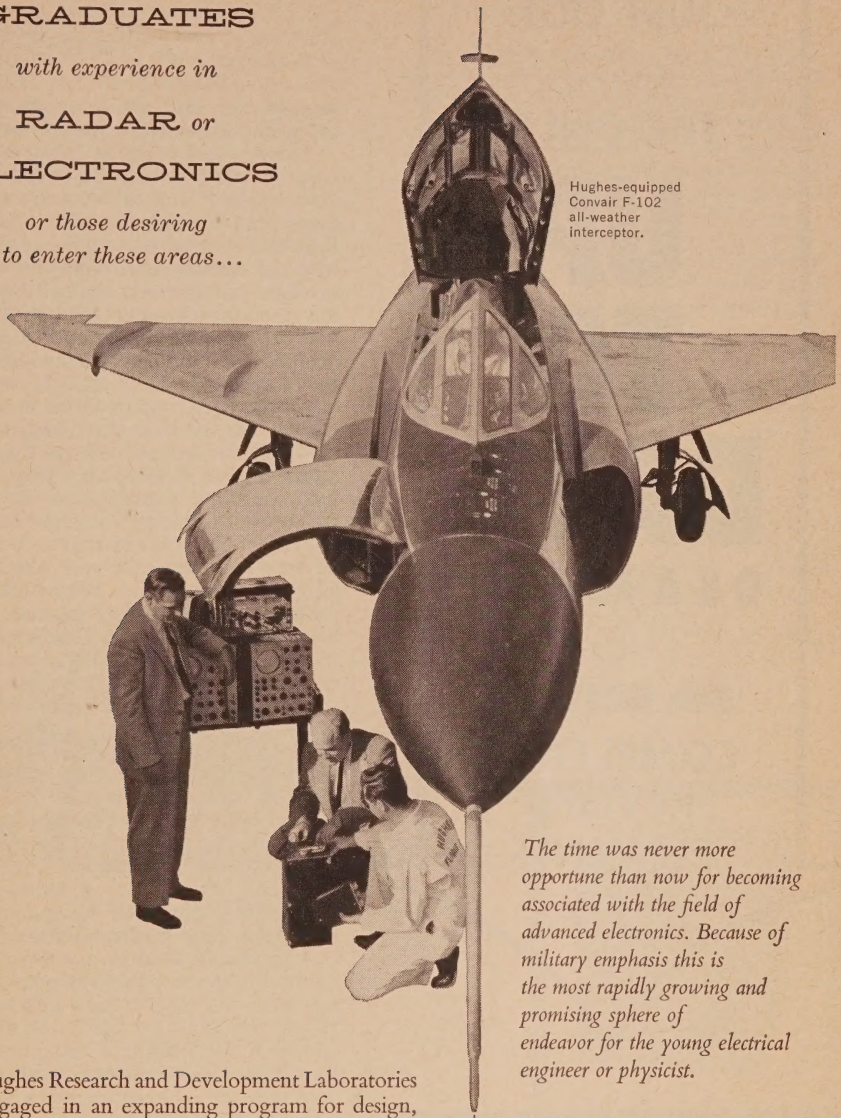
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RADAR *or*

ELECTRONICS

or those desiring to enter these areas...



Hughes-equipped Convair F-102 all-weather interceptor.

The time was never more opportune than now for becoming associated with the field of advanced electronics. Because of military emphasis this is the most rapidly growing and promising sphere of endeavor for the young electrical engineer or physicist.

Since 1948 Hughes Research and Development Laboratories have been engaged in an expanding program for design, development and manufacture of highly complex radar fire control systems for fighter and interceptor aircraft. This requires Hughes technical advisors in the field to serve companies and military agencies employing the equipment.

As one of these field engineers *you will become familiar with the entire systems* involved, including the most advanced electronic computers. With this advantage you will be ideally situated to broaden your experience and learning more quickly for future application to advanced electronics activity in either the military or the commercial field.

Positions are available in the continental United States for married and single men under 35 years of age. Overseas assignments are open to single men only.

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PRINTS FOR PENNIES

[*from page 42*]

way. My ten year old son exposes and develops my prints, three for a nickel—it's that easy!

Before attempting to make a print, take a strip of the printing paper and expose it in your "printer" as follows: insert the printing paper into a magazine with about two inches extending out of the magazine. Fold this over with the sensitive side (the yellow side) toward the light and press it against the glass. Expose this section of paper for about ten seconds, and then pull the paper out so that four inches extends out of the magazine. Expose this part for ten seconds (note that the first half of this has now been exposed for twenty seconds). Repeat this so that you have a strip exposed for each ten second interval from zero to one minute. Now develop this strip by stroking it with the cloth dampened in the developer. If you use the same lights as the author, you will find that the end which was not exposed will be very black and the end which was exposed longest will be white. Somewhere in between, probably at about thirty seconds, the paper will be perfectly white as will all exposures greater than this, while the twenty second exposure will be gray. At any rate, use the least exposure time which results in complete bleaching of the paper. It is best to insert a piece of the tracing paper you expect to use between the glass and the test strip, since slightly more time will be required when a tracing is reproduced. Prints can be made of an ordinary letter, typewritten on standard paper, but considerably more time will be required in exposure, and the fibers in the paper may cause a mottled appearance. Thin typing paper or tracing paper will give the best prints. If the ultimate is required the tracing should be drawn in ink. A second best method is to use carbon paper behind the tracing with the carbon side next to the tracing. When you draw on the front, the carbon will adhere to the back and make a very dark tracing which can be reproduced with ease. Pencil tracings can be reproduced if a little care is taken and a fairly heavy pencil used. A #2H pencil is about the hardest that is likely to be clearly seen in a reproduction.

The materials required are:

Dietzgen #259-1 Developing Powder

Dietzgen #251 Speed S Black Line Positive Print Paper

A simple printer such as has been described is all the equipment necessary to provide adequate prints for a small business or hobby. It is very convenient to use a reproduction rather than the original at the workbench, because notes can be jotted down on the print and yet the original is kept clean. Also you can loan a circuit diagram to a friend without the inconvenience of being without it until it is returned.

Single Sideband Adapter Tested

One of the new Lakeshore Industries sideband adapters has recently been put into use at W2NSD. Wow! The difference is amazing. Naturally I expected it to be good on SSB signals (and was not disappointed), but the thing which really sent me was the way it works on pulling in AM signals with QRM on them. Since most AM signals come complete with a carrier and two sidebands (except that from the new Collins KWS-1, which has a carrier and *one* sideband) the sideband adapter gives you twice as much of a chance of being able to read a signal that is down in the QRM. You can tune to a signal with your receiver and then when the QRM comes on switch in the adapter, trying out the upper and lower sidebands to see which has the least interference on it. On several occasions I was able to keep in contact with a DX station that the rest of the gang couldn't copy due to the adjacent channel interference, and this "gang" included some pretty well equipped DX men.

I haven't gotten my SSB rig going yet, but when I do the adapter will really be in its environment. Sure, you can copy SSB with the receiver BFO, but no where near as well as you can with an adapter.

It should also be noted that the Lakeshore adapter uses a printed circuit type construction, a move which I hope will be seriously considered by other manufacturers.

Trenton Old Timer's Nite

The tenth annual Old Timer's Night and Round-Up will be held Saturday evening, April 23rd, 1955 in the Grand Ballroom of the Stacy-Trent Hotel, West State Street at Willow, in downtown Trenton. As in the past the party will be Stag. The turkey dinner will be served promptly at 6:30 P.M. Awards for the oldest amateur and commercial licenses. Tickets are by reservation only and may be obtained by writing Ed G. Raser, W2ZI, 315 Beechwood Avenue, Trenton 8, New Jersey, before April 18th and sending $5.00 per man. Late comers will be assessed $6.00. Bring yourself, guests, and even Novices to enjoy the fun.

Q Multiplier

[*from page 27*]

have to be changed as, and if, the receiver's h-f oscillator drifts, but a drift of the b.f.o. will not require a change in the null setting. It will change the beat frequency only.

Q: What is the difference between the *Q Multiplier* and the regenerative i-f amplifiers

[*Continued on next page*]

Attention

OWNERS OF JOHNSON VIKING II TRANSMITTERS

NOW you too can have sparkling single sideband performance from this fine transmitter. Add the B&W 51SB Single Sideband Generator to your Viking II, and you'll enjoy all the operating characteristics you now get *plus* the superior effectiveness of SSB transmission. Here are just a few of the features of the B&W 51SB:

• Complete bandswitching from 80 to 10 meters • Operates with either crystal control or VFO of your Viking • Voice control operation on SSB • Speaker deactivating circuit

The 51SB comes to you ready for hook-up to your Viking. Complete instructions and necessary modification kit are of course included.

Construction of the 51SB is completely unitized. The equipment can easily be removed in three major subassemblies: R-F Unit, Audio Unit, and Main Chassis Unit. It's entirely self-contained except for microphone.

GET THE FACTS! Write B&W now for Bulletin 51SB, or see this new SSB generator at your distributors'.

B&W

BARKER & WILLIAMSON, INC.
237 Fairfield Avenue • Upper Darby, Pennsylvania



PRICE: $279.50
Amateur Net

Factory wired and tested. Complete with tubes, instructions, modification kit.

Watch for News

Information on application of 51SB to other communication transmitters will follow soon!

[from preceding page]

which were used years ago?

A: There is no basic difference, since both arrangements depend upon Q Multiplication to obtain selectivity; however, the present Q Multiplier setup has several distinct advantages over the old method. The unit may be installed as an outboard device in conjunction with any existing receiver, only one r-f connection being required, and no realignment of the receiver is necessary; the unit is conveniently tunable and can be easily controlled; the i-f amplifier a-v-c system is not disturbed, and its function will be normal; far greater stability is obtainable, and detuning effects will not be experienced at various signal levels; and it will provide a variety of functions which make it a flexible device of great versatility.

Q: What is the best way to combine several units for dual functions?

A: When two units are connected to the same i-f transformer winding, interlocking or pulling may occur. For this reason it will usually be found best to connect one unit to the first i-f transformer primary winding, the other across its secondary. This will give satisfactory isolation between two units. In some cases, especially where one of the functions of the unit is to be that of an exalted carrier, it will be better to connect the unit, used for the latter, to the 2nd i-f transformer.

Q: May a bandpass characteristic be obtained using two *Q Multipliers* in their *Peak* positions?

A: Yes. The development of several working models, with bandpass characteristics, is nearing completion. Details will appear in *CQ* at an early date.

TABLE-TOP KILOWATT

[from page 23]

When only one of two sidebands is used in reception, as is required frequently on the ham bands, a signal of the character described above will produce as much audio level in a receiver as a 1000-watt AM transmitter. This means that in effective communicating ability the KWS-1 still produces rather potent signal on AM even though specifically designed for single sideband operation.

For cw operation, the linear amplifier design makes possible excellent keying characteristics. In class "C" amplifiers normally used in c-w transmitters, wave shaping is extremely difficult because the class "C" amplifier tends to square

POWER

TRANSITRON "500" LINEAR AMPLIFIER

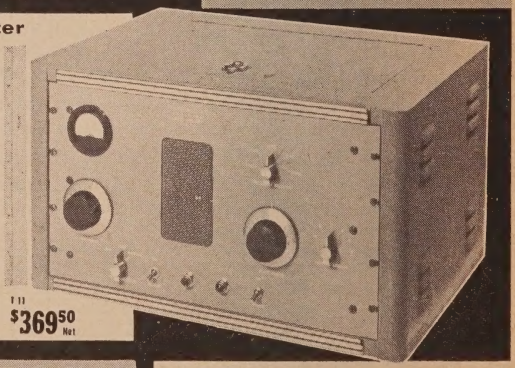
Power Output: Single Side-Band 500 Watts Peak
C.W.—300 Watts
A.M.—200-250 Watts Carrier

Designed By Hams — To Serve Hams Better

HERE is an "honest to goodness" power-laden linear amplifier that comes right out of the design facilities of Transitron, Inc. So easy to operate, the Transitron 500 is a compact, fully shielded unit, *ideally suited for single side-band operation.*

IT HAS *no plug-in coils*, and features a minimum number of tuning adjustments. Field tests have proven the "500" to be of *low harmonic output*, free from parasitics, and with excellent stability on all bands.

- Single Side-Band Operation
- No Plug-In Coils
- Low Harmonic Output
- Continuous tuning from 3.5 to 30 MC
- Driving Power Required: 5 watts



$369.50 Net

T-R SWITCH Model TR-1000

The most practical and efficient answer to operation of amateur and commercial transmitters and receivers from a common antenna. Requires no tuning adjustments of any kind and has a power handling capacity of 1000 watts.

$9.95

See the Transitron Line at your local parts distributor, or for more complete technical information write

TRANSITRON, INC.
154 Spring Street New York 12, N.Y.

up any wave shaping provided in the low level stages. In this transmitter, the wave shaping made possible by grid blocked keying of two of the low level stages is preserved and a very clean CW keying wave is generated without key clicks.

Operation of the transmitter is quite simple on all types of emission. For CW operation, it is identical in control to previous transmitters. For single sideband, a fairly simple procedure as follows should be observed. The carrier is reinserted with adequate grid current provided in the power amplifier so that loading and resonating of the pi network is entirely normal [2]. An incidental action of rf feedback is to reduce the grid drive as resonance is approached and this tends toward a more pronounced plate current dip than is normal in many tetrode type power amplifiers. After the power amplifier is tuned and loaded to 500 ma. plate current (1 kw input at 2000 volts) the grid current is readjusted until it is at a level barely perceptible on the grid current meter. The tuning and loading is then retouched to return to the 500-ma. level and the emission control is switched to single sideband. While speaking at normal voice levels, the audio gain is adjusted to just show grid current at the peak of speech wave form and the automatic load control is adjusted to prevent peaks from exceeding this level. The transmitter is then ready for single sideband QSO's with a constant monitor of speech level either by automatic load control indication or power amplifier grid current.

The KWS-1 provides a compact and versatile transmitting package for all amateur applications in the high frequency bands. Its greatly improved performance on single sideband transmission should provide an impetus to the growth of single sideband operation in amateur circles. Its convenience and effectiveness on a-m should interest even the most die-hard AM man.

2. "Pi Network Design Curves," E. W. Pappenfus, K. L. Klippel, September, 1950, May, 1951, CQ.

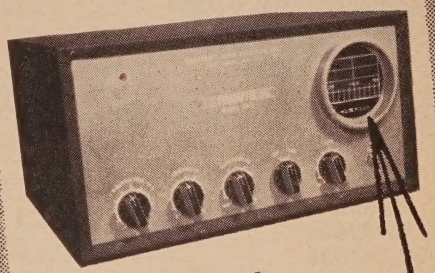
Automatic Code

[*from page 16*]

tions has been obtained through agreements between the Radioteletype Society and most of the major communications companies in the country. The apparatus is obtained for Bona-fide radio amateurs on a non-profit basis providing the amateur signs a "waiver of commercial intent." A complete printer installation can be secured for less than the cost of an inexpensive ham-band receiver by this method. Information regarding teletypewriter equipment can be had by writing to the Radioteletype Society's secretary, W2BFD, at 38-06 61st St., Woodside, L. I., N. Y.

we can deliver from stock

the new PANADAPTOR MODEL **PR-1**



the eyes of your modern receiver

The new smart-looking PR-1 has sufficient compensation available to provide wide-view Panoramic reception with modern receivers featuring high selectivity. Operates with receivers having an IF of 450 kc-470 kc or 500 kc.

The PR-1 offers visual monitoring over a band of frequencies up to 200 kc, let's you "see" . . . everything from the other fellow's frequencies in three-way or round robin QSO's to replies to your CQ's. You see it all on a 3-inch CR Tube which also simplifies frequency setting and station monitoring, facilitates network operations, assists in making adjustments of transmitters and antenna, enables identification and interpretation of transmitter signal characteristics (your own and others), selects QRM-free spots for sending and listening.

Features • Visual displays up to 200 kc. wide • 3-inch Cathode Ray Tube • Phone output for use of PR-1 as a second unisignal aural receiver • Cathode Ray Tube connection for use as external 'scope.

ONLY $199.75 Net

When ordering specify model of your receiver and I.F.

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CW Monitor

[*from page 17*]

the values of *R1* or *C1* will increase the frequency of the note.

The lamp, *V2*, is a neon type NE48 lamp and serves as the "keyer" tube for the oscillator. This lamp is remote from the monitor and is placed in the RF field of the coil in a keyed stage of the transmitter. It is placed in such a position that the RF field ignites the lamp and is held in this position by a simple bracket that can be best designed by the builder to suit his particular rig.

The power supply consists of a selenium rectifier, *Z1*, and the filter capacitor, *C2*, as shown. However, if the constructor desires, the 160 volts needed for the monitor can be "stolen" from the transmitter itself. The current required is negligible, being in the order of 4 milliamperes.

The output transformer shown, *T1*, is not at all critical with regard to its impedance ratio. For this reason no special specification was given in the parts list. Any output transformer the builder might have in the junk box or in an old BC radio will do.

The components for the monitor were mounted on a terminal board which best provides the number of tie points required by this circuit. A ⅝ hole for a miniature socket was punched in the middle of the bakelite terminal board for the OB2. The terminal board, with all its components wired in place, was then screwed to a 5 x 4 inch piece of wood. A masonite panel with a hole cut for a 3-inch speaker was fastened to the wood base. A coat of flat black paint completed the job. The results—an unobtrusive piece of shack gear that will serve you well for a long time to come.

YL's Frequency

[*from page 41*]

table also on Thursday mornings, on 3900 or 3910 kc.

The 75-meter phone net meeting Wednesdays on 3900 kc with W1VOS as NCS was erroneously listed as 7 a.m.—it should be 8 a.m. EST.

With the Clubs

The YLRC/SF elected officers in Dec. for '55. W6QMO, Jeri, serves again as president, and W6PCN, Peggy, continues as secretary-treasurer. New board of governors include: KN6GDC, Elvi; KN6HIW, Kay; K6CUV, Lee. The club held its first anniversary dinner on Jan. 15 with OMs and jr. ops included.

LARK has issued ten certificates to Hams working ten members of the club. LARK members active on the air are: W9LOY, BCB, MYC, KQC, YBC, RUJ, SJR, YWH, AYX, TMZ, YXK, LDK, WN9KFC, WN9IWP, W4DEV, W4ZMV, W5ZUD., Anyone wishing to apply for a certificate should send a list of members worked to W9MYC, Gladys, giving date, time and frequency. No QSLs are required.

The Long Island YL club held elections in Jan. KN2EBU, Min, is president; K2CFF, Joyce, is vice president; W2JZX, Vi, is publicity chairman. The club is offering code and theory lessons to anyone interested, with sessions each Wednesday afternoon.

The Los Angeles YLRC held its 3rd annual YL-OM

Valentine dinner on Feb. 12. W6KER, Gilda, was chairman and planned many attractive decorations. The club has now grown to 55 members. Its 2-meter net has close to 20 active members. Five members of the L.A. YL club were invited to apply for the Groucho Marx radio and TV shows of Feb. 16-17. W6LBO, Mary, was chosen by the audience and was teamed with Howard Hill, famous archer and big game hunter. They missed the



Blake and Nell Blakely, W5WZY-W5WZZ, in their Ham shack at Greenville, Miss. Third Ham in the family is 12-year old daughter Ellen, WN5DRS.

jack-pot question, but won the most money of the couples chosen. Mary was able to get in a plug for YLRL and the coming convention.

Here and There

A note from W1ULE tells us his XYL, W1ULF, "Tweet," is now on SSB on the high end of 75, the only YL op in the New England area to be on SSB, he believes. Formerly of Worcester, Mass., the Hines family is soon to have a new QTH at Ansonia, Conn.

Congratulations to W9OTM, June, and W9ODS, Denny, who were married Dec. 28. This now makes five Hams in the Battin family: OM W9OWD, XYL W9OTO, Edith; son W9MEM; daughter June, W9OTM, and son-in-law W9ODS. June's QTH is 1218 W. Hadley St., Milwaukee, Wis. . . . Congratulations also to W9QMA, Dot, on the arrival of a new jr. op, Frederick William, on Dec. 16. . . . From W1QON comes news that W1UPZ, Helen Wright, became a Silent Key in January.

Jenny Luckenbill, formerly WØYHD, now is K6JCL. . . . W6WSV, Carol, has a new home; her QTH: 6852 Claire Ave., Reseda, Calif. . . . W6UHA, Maxine, had FO8AD from Tahiti as a recent visitor.

WN1BHS, Sue, sailed in Dec. for a trip to Egypt and the Holy Land. . . . W1UET, Martha, is operating portable from Florida, where she expects to be until June. . . . W9YWH, Evelyn, has been visiting YLs around Los Angeles . . . W1YLP, Dell, ex-KH6TI, is looking forward to a W5 call. W5DRA, Teev, tells us Dell's OM has accepted a job with Bendix at White Sands Proving Grounds and after his training in Indiana the Johnsons will be settling in New Mexico. . . . Teev also tells us W6KXT, Rene, ex-W5PTI, is awaiting a W7 call. Her QTH: 2740 W. Glenrosa Dr., Phoenix, Ariz. For three years the Kings were in Lima, Peru, where Rene worked 15 meters under her OM's call OA4N.

The forthcoming YL callbook is to be known as the *YLRL Directory*. Available in April, it will sell for $1, and will list all members of YLRL in good standing as of Feb. 15. For your copy write to W6DXI, Gladys Eastman, 735 Glen Ave., Glendale 6, Calif.

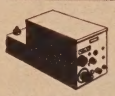
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11 tube UHF tuneable receiver for operation on 1¼ meter band. 6AK5 RF cascade, broad band detector, low frequency preselection, and audio stages. Six preset frequency channels and variable tuning. Other purposes double modulation on the transmitter to eliminate QRM and effect confidential communications; remote control applications; preselector on 50 MC, 144 MC or 220 MC and TV signal booster. With tubes, schematic, less dynamotor. **$7.95**

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Frequency modulation unit with a permanent magnetic field and a moving coil mechanism driving a metal diaphragm supported at its rim. This diaphragm acts as a moving plate of the frequency modulator capacitor. With schematic. (See Dec. Radio TV News for data.) **$2.75**

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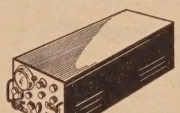
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PROPAGATION

[from page 39]

short-skip openings between 600-1300 miles predicted on many days, especially towards the end of April and during early May.

20 Meters: Band will remain open for world-wide DX later in the day and early evening than during the winter months. As a result of seasonally lower daytime MUF's however, the band is not expected to open as often as during the winter months. Regular F2 layer short-skip is expected to begin about 6 AM local time with the skip out about 2000 miles. By 2 PM the skip-distance will decrease to about 1000 miles and then increase again to over 2000 miles by 9 PM when the band is expected to fade out for F2 layer short-skip propagation. Sporadic-E short-skip, at distances of 400-1200 miles should be possible on a good many days.

40 Meters: Seasonal ionospheric absorption and atmospheric noise level increasing, but generally fair to good early evening and nighttime DX expected on this band during April and early May. Regular layer F-2 short-skip should be possible around the clock with the skip distance about 1000 miles near midnight. During the daytime hours propagation extends from about 100 miles from the transmitter out to about 700 miles or so.

80 Meters: Generally fair nighttime DX to many areas of the world, but noticeably higher static level. During daylight hours ionospheric absorption will limit progagation to about 250 miles from the transmitter.

160 Meters: Seasonally higher noise levels and increased ionospheric absorption associated with the longer hours of daylight will not allow much DX on this band until next fall. During the nighttime hours short-skip propagation out to about 2200 miles should be possible. During the daylight hours groundwave propagation limits coverage to a few miles from the transmitter.

This overall picture of band conditions is intended to indicate qualitative changes in each amateur band from month to month. For specific times of band openings for a particular circuit refer to the **CQ Propagation Charts** on the opposite page.

Sunspot Cycle

This month's **Charts** are based upon predicted smoothed sunspot number of 13, centered on April, 1955. The monthly Zurich sunspot number reported for January, 1955 was 20 resulting in a provisional Zurich 13-month running smoothed sunspot number of 5.4 centered on July, 1954. This indicates an **increase** of almost 2 numbers since the minimum of the sunspot cycle which occurred during May, 1954.

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FOURTH ANNUAL VERMONT QSO PARTY

Need Vermont for WAS? Like contests? Party runs from 6 PM EST Saturday April 9th to 6 PM Sunday April 10th with no limitations as to operating hours or power used. Call "CQ, VT," (Vermont stations will call "CQ de VT.") or on phone, Vermont stations will say "This is Vermont calling." Vermont stations must give the QSO number, RST and county. Other stations should give QSO number, RST, and state, province, or country. Scoring: for outside stations, 5 points per Vermont contact multiplied by the number of counties worked (same station may be worked on different bands and be scored as a new contact). Send logs and scores (before May 10th) to Ray Flood, W1FPS, 2 Marlboro Ave., Brattleboro, Vermont. Certificates will be awarded to the highest scoring station in each state, U.S. possession, Canadian province and foreign country. Vermonters will receive a certificate for the highest score in each county. W-VT Certificates will be sent to anyone working 13 out of the 14 Vermont counties. The contest is sponsored by the Tri-County Amateur Radio Club of Brattleboro. Hint: watch 3520, 3740, 3860, 7050, 14,100, 14,250, 21,000, 28,100 and 28,800 kc.

Novice Shack

[*from page 36*]

ing 40 watts. Although I have *worked* the 48 states, I have never received a QSL card from Maine. This is exceedingly discouraging, but I have not given up as yet, hi. 73."

Howard M. Felperin, KN2KVG, 202 North High St., Mount Vernon, N.Y. reports, "I have had my Novice license for three weeks and have worked six states. I use my brother's (W2FSJ) SX-28 receiver and I have just finished building a Viking "Adventurer" kit. My first QSO was quite ironic, since it was with Alabama, one of the few states my brother has not worked. I have since received the QSL. 73."

Elliott Bloch, K6ELX, 1818 North Beachwood Drive, Hollywood 28, Calif., is happy. "Last week, I went down to the FCC office and took my General Class examination. I am proud to say that I made it. I don't know if I made it with flying colors, but I made it.

"I was a Novice for nine month. I have 42 states worked and confirmed, plus five other countries, all worked on 7 Mc. My transmitter is a Viking II, and my receiver is an SX-43. Besides 7 Mc., I work 21 Mc., and I have ¼-wave verticals for both bands.

"I'd like very much to work the state of Wyoming, either by schedule or by accident. 73."

Donald Klein, KN2IJZ, 65-26 Parsons Island, Flushing 65, L. I., N. Y., apparently knows how to make an antenna behave. He writes, "Just put up my new 80-meter antenna. My first night on, I worked F7ER (France) and WP4ABT (Puerto Rico, and I hope I deciphered that call correctly—Herb.) Both gave me RST 589 reports. I also worked three Canadian stations.

"The antenna is 120 feet long, end fed from a Viking Ranger. My receiver is an SX-71.

"I'd like a schedule with a W6 or a W7. Will one please write? 73."

Fred Jensen, K6DGW, 9321 Kauffman Ave., South Gate, Calif., closes the door this month. "Recently, Louise, W3WRE, wrote about cast-iron pencils for taking the examination. I found, after three tries for my "General," it was best just to sit for the first minute or so and get into the feel of the sending. I know this is hard to do when your time is running out, but if you take a little time, you are bound to do better.

"Don't you think that the *Novice Shack* should get a little more room? It always seems you are cramped for

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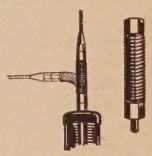
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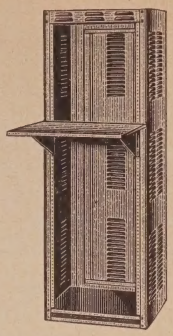
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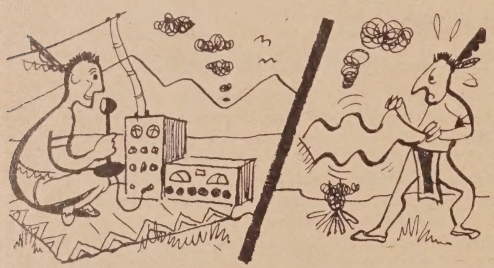
Besides being low in cost, an outstanding feature is that no panel is needed for support. Two supporting brackets slide into tracks welded to the shelf. These brackets are punched to fit standard panel mounting strips. However, the shelf may be attached over a rack panel if so desired.

The shelf is 20" deep and 22" wide, formed from 16 gauge steel, flanged on four sides for greater strength and rigidity. The supporting brackets are made from ⅛" steel, capable of supporting any reasonable load. Over-all height of assembly is 7". Furnished complete with necessary mounting screws.

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[*from preceding page*]

Help Wanted

Mr. Elias Baumgarten, KN6IXY, 4023 176th St., **Torrence, Calif.** (Needs help with theory and code to obtain his General Class license; would like to know if there is any radio school near him.)

Richard J. Hallameyer, **Harmans, Maryland.**

John Sattenthwaite (15), 2801 Colonial Ave., #6, **Norfolk 7, Va.** Telephone: MA 3-2745. (Needs help on code.)

Ralph Packard, 36 Columbia Ave., **Greenville, Pa.** Phone 463. (In the 8th grade and very interested in amateur radio.)

Michael Rodeheaver (14), North Main St., **Masontown, Penna.**

Jim Alexander, 9102 Mercer Way, **Mercer Island, Washington.** Telephone: AD 1136. (Needs help mostly on code, but a little help on theory will also be appreciated.)

Harold E. Davis, 1851 Del Monte Court, **Walnut Creek, Calif.** Telephone: Yellowstone 4-8458. (He is a seventh-grade teacher in school, who has been "drafted" to teach Radio Fundamentals and Communications to students, with the end goal that they might become Hams. So far he has managed to keep ahead of the class, but is really in need of a helping hand from the Walnut Creek Hams.)

Alice Friedman (18), 2405 Avenue P, **Brooklyn 29, N. Y.** Telephone: Esplanade 7-2311. (Alice is doing pretty well with the code, but needs help with theory.)

James Pletcher (20), 409 Olinger St., **Meyersdale, Penna.** Telephone: 328-W. (Will be in the Armed Forces soon and would like to have his license before he goes. Pen Pals also appreciated.)

John Holzbach (15), 229 Maywood Drive, **Youngstown, Ohio.** Telephone: ST-2-5957.

Jim Brooks (15), 409 West 14th, **Hays, Kansas.** Telephone: 4-3576. (Needs help in code.)

Karl Hick, Jr. (15), 574 Irving, **Blue Island, Ill.** (Needs a little help to push his code over the "hump." Also wants SWL or Novice Pen Pal around West Frankfort, Illinois.

Wayne Erla (15), 70 Woodbury Road, **Burlington, Vermont.** Telephone: 2-5197.

John W. Pawloski (24), 117 Mastick St., **Savannah, Ga.** Telephone: 21225. (Has had some experience in Electronics and code commercially and in the Air Force. Needs a little help in brushing up and in getting started in amateur radio on the right foot.)

M. E. Sandler (40), Sandler's Pastry Shop, 394 Broadway, **Chelsea, Mass.**

Raymond Metiva (15), 112 So. Franklin St. (Milwaukee) **Saginaw, Mich.** Telephone: 39647. (Needs help in code and theory. Would like to hear from Novices.)

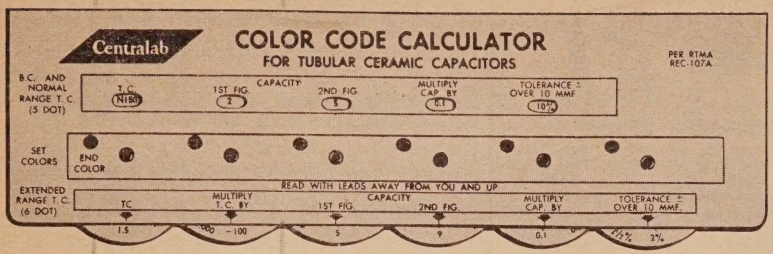
LeRoy Johannesen (12), 434 53 St., **Brooklyn 20, N. Y.**

Fred J. Eberry (50), 157 Newton St., **Newark 3, N. J.**

Each month, CQ lists the names and addresses of prospective amateurs needing help with the code or theory. To have your name listed, address your request to Herb Brier, W9EGQ, 385 Johnson Street, Gary 3, Indiana. Requests received by April 15 will appear in the June issue.

space, and it is always near the end of the magazine. But, I would rather have it where it is than not at all. Much rather! 73."

That does it for this month. 73, Herb, W9EGQ



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Quick way to read the color code on any ceramic capacitor or resistor!

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Match the colors on this calculator with the colors on any ceramic capacitor or resistor coded in accordance with JAN or RETMA requirements. When you do, the information you're looking for shows up on the face of the calculator. There's temperature coefficient, capacity, and tolerance.

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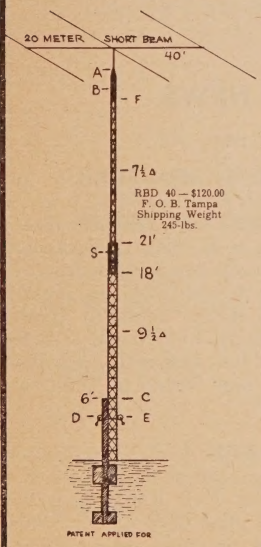
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D-855

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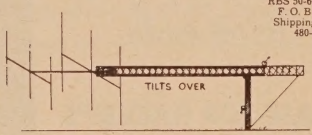
E-Z WAY TOWERS

CRANK UP AND DOWN-TILT OVER

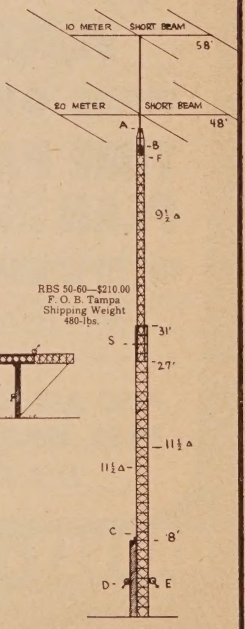


SPECIFICATIONS:
All steel construction. Electric arc welded. Continuous diagonal bracing on two sides and climbable ladder-type horizontal bracing of ⅜" rod on third side. 1038 extra hard steel 7½" △ has legs of ½" rod, diagonals ¼" rod. 9½" △ legs ½" structural pipe, diagonals ¼" rod. 11¼" △ — Legs ¾" structural pipe, diagonals 5/16" rod. Rotor mounting valve drilled for Vee DX VB Rotor.

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B-Thrust Bearing
C-Hinge
D-Crank To Tilt
E-Crank To Raise and Lower
F-Rotor
S-Safety



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D103T—DeLuxe 10m 3-El. T match, $25.95. 1—8' Boom, 1" Alum. Tubing; 3—6' Center Elements, 1" Alum. Tubing; 6—6' End Inserts, ⅞" Alum. Tubing; 1—T Match (4'), Polystyrene Tubing; 1—Beam Mount.

D203T—DeLuxe 20m 3-El, T match, $49.95. 2—12' Booms, 1" Alum. Tubing; 3—12' Center Elements, 1" Alum. Tubing; 6—12' End Inserts, ⅞" Alum. Tubing; 1—T Match (8'), Polystyrene Tubing; 1—Beam Mount.

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JUdson 2-1500

SCRATCHI

[*from page 8*]

to barn and coming back with quarter-inch woven metal hoysting cable. Putting pole in ground, guying it three ways with ten-thousand pound test hoysting cable. Now we see how pole going to coming up. Watching. There it come. One inch, two inches. Cable getting tite. Hah!! Stopping. That fixing it, by gollies, that . . . FLOOP . . . FLOOP . . . FLOOP. Three dead-man ankors just coming out of ground, so guy wires not fastened to anything. Up coming pole, up, up, up . . . over on ground.

Well, that are that, Hon. Ed. How can getting in dee-x contest if can't even keeping antenna poles in ground. Of all the . . . just becaws I wanted to . . . I mean if only I letting frendly old well-digger frend not putting all fifty foots of pipe in ground, but just having him going down ten feets, I having ate nice forty foots poles. But oh no, I had to listen to that meen old dubble-crossing well-digger feller and he putting pipes all way in the ground. Not only that, what are Hon. Brother Itchi going to saying when he seeing all this oil I tracking in house.

Hon. Ed., you knowing this oil are practikally impossible to getting out of carpets. In fackly, this messy old oil . . . O I L !! O I L !! What am I saying? Oil from the ground!! Excoosing me while I thinking, Hon. Ed. OIL! . . . we're rich!! I riting you post-hasty as soon as buying my new Kadilac. No, better first buying new carpet. No, maybe better first counting money. What money!! Hon. Ed., better riting you when coming to senses.

Disgustingly rich yours,
Hashafisti Scratchi

DX NEWS

[*from page 32*]

W6NTR, W5QKL, W4LZF, W9HUZ and W1BIL. As we write this Bob is at VQ8AY, Mauritius, and advises, via QSO with W8NBK, that he only spent three hours at ZC2RO, Cocos-Keeling. It is not known if he made any contacts from that spot. Next stop is Nairobi with VQ6 and, possibly, ZC4 yet to be visited before return to London. Then, barring a possible trip to ZD6 and ZE2, Bob plans to get married in June and sorta settle down like——. Congrats and best wishes to G2RO and XYL from all!

COCOS ISLAND, T19MHB: John, W6MHB, came on the air from this rare spot at 0320 GMT, February 10th, on 7003 kc. First contact was with W1DDF (ex-W2UAE) other early QSO's (with a couple missing) were, in this order, KV4AA,

[*Continued on page 60*]

Next Month . . .
4th Special Mobile Issue!

For the last three years "CQ" has brought out a Special Mobile Issue in line with the popular demand. The sale of our MOBILE HANDBOOK (we still have a few left at $2.00 each in case you haven't gotten around to getting your copy) has also proved the need for "more on Mobile."



You can buy the May issue on the news stands — if they're not sold out. But to make sure of getting *yours,* we recommend a subscription to "CQ" — and let the mailman bring it to your home. You'll save money over the news stand price—and get *every* copy as soon as it is published.

P.S. Just in case you're not mobile-minded, there will be many other features of interest to every active Ham.

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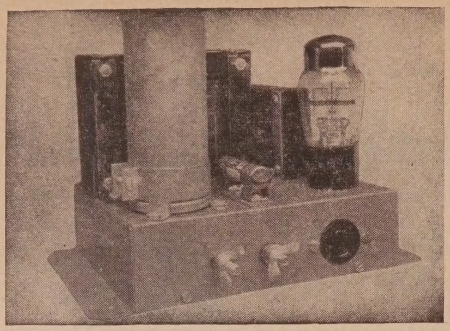
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WILLARD NORTH, W6OR, OWNER

[*from page 58*]

W2BBK, WØELA, W9HUZ, W8GB, W2QJM, W3AXT, W9BEM, W2AQT, W5MSH, W4QCL, W8DLZ, W9LNM, W2CNT, W8KIA, W6YMD, W6VUP, W6CUQ, W9FKC, W3BKI and W5JLU. The gas generator, which was noise free when tested in W6-land, caused a terrifically high noise level, probably due to the tropical dampness at the jungle camp, and limited operation to 7 Mc for the first day. This condition seemed to have been overcome somewhat as TI9MHB was headr on 14004 kc at 2230 GMT, February 11th, and the following contacts were noted: W1WPO, W3JTC, W4RBQ, W2QHH, W8DMD, W6DVK, W4YKO, KZ5BC, W9RMH, W8MPW, W1HA, W9TGY, W5CDP, W4DXL, W3FMC, W2VYX, W1DJX, W1JOJ, W6LW, W1TIN, W1JEL, W8HGW, W5CEC, W4FCB, W5LW, W3JNN, W2EMW, W4FU, W5LXY, W3KDP, WØAIW, W5ADZ, W1TKC, W8NBK, W1KFV, W8JJW, W3FFN and W6MX (to mention a few). John was also on 21 Mc at 1730 GMT February 12th. High surf prevented a renewal of TI9MHB's gasoline supply on February 13th and this kept him QRT during the latter part of that day. The camp site is extremely inconvenient for antennas of 3.5 and 1.8 Mc dimensions and, as we write, operations have been on the higher frequency bands. It is understood that TI9MHB will be on the air for a month's time and, if they are lucky treasure-hunting-wise, he may be there sixty days. In any case Johns DX-know-how and snappy operating procedures, coupled with the potent signals from the VIKING II and the usual favorable propagation attending small island QTH's, will run contacts in the thousands and allow most of the DX fraternity to finally scratch Cocos off their lists. All QSL's should go to: Box 75, Oakland, Calif. (*FLASH—TI9MHB may QRT around Feb. 26th*).

We welcome **Doc, W9VP,** as a newcomer to the HONOR ROLL with a total of **38-177.**

DX'ploits

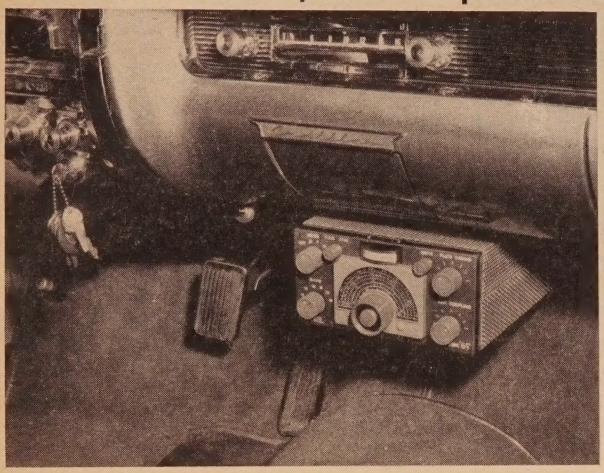
Marv, W6VFR, came up to date with additions of MP4QAH, KC4AB, VS4RO and HKØBX to give him a firm grip on the second place spot with 256 and a phone total of 184. Marv is very pleased with his new final using a 6C21 triode . . . Jayme, PY2CK, adds HKØCV, VS4HK, KC4AB, SWØWK/SV9, VR2BZ/A, HA5BB, FU8AC and VK9RH for a fourth place 253. His 234, on phone, puts him way out in front for countries worked! . . . Don, W6AM, goes to 252 with MP4QAH as Howy, W2AGW adds KC6CG and TI9MHB for 248 . . . Walt, W6MX, ups to 247 with KC4AB, CR5JB and HKØAI as Dewey, W6VE, goes to 233 with TI9MHB . . . Horace W6TI, hits 227 with TI9MHB as Bill, ZL1BY, makes it 223 thanks to VS5RO, EL2X, KC4AB, ZDBX, MP4ABW, SVØWG, EA9DF and VR2BZ/ZM7 . . . A new list from WØELA puts Clyde on 220. Anyone still needing a VS5ELA QSL can write him . . . W6EFM goes to 220 with TI9MHB as

[*Continued on page 62*]

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.0004	2500	19¢	6 for 1.00	.0003	5000	35¢	3 for 1.00
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.006	3500	35¢	3 for 1.00	.002	2500	19¢	6 for 1.00
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.0024	5000	35¢	3 for 1.00	.00025	8000	79¢	2 for 1.50

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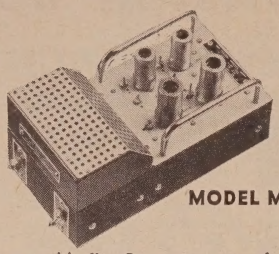
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CQ MAGAZINE

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[*from page 60*]

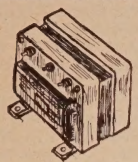
Guy, W6DI, ups to 214 and 201, A3, with such as VQ6LQ, MP4KAC, FB8ZZ, KC4AB and YU1AD . . . Bert, G8IG, rises to 213 and 189, A3, thanks to VP5AE (Turks and Caicos). Bert also received WAA Certificate No. 123 . . . Jack, W6NTR, cracks the 200 barrier as VR2BZ/ZM7, F8FW/FC, KC4AB, FB8ZZ and HZ1HZ put him on 201. . . . Ed, W6LDD, comes up to date with 23 additions to reach 199 . . . 192 is the tally at W6LRU as Don eyes 200 . . . George, W6BIL, goes to 150 with VK9AU, FO8AJ, ST2AC, ZB2A and CT1DJ. He also received "WJDXRC" Certificate No. 47 the first awarded to a W6! . . . Bill, W5ASG, submits new list giving him 247 and 179, A3 and leads the 39 zoners by a good margin . . . Howy, W2QHH, rests on 227 with TI9MHB while W3KDP ups to 207 with ZD9AC and FB8BR . . . Carl, W1ZL, also hits 207 with help from FG7XB . . . TI9MHB eased Buck, W4RBQ up to 203 and also gave Bill, W1HA, his 214 . . . Joe, W8UAS, goes to 214 with ZD6EF and TI9MHB while Bob, WØTKX, adds OD5LJ and KC4AB to hit 189 . . . Pat, W2GVZ, with new beam, added five new ones all in the space of a week when FB8BR, MP4QAJ, ZS7D, LB1LF and TI9MHB were nailed . . . Paul, W4LQN, comes up to date with 11 new ones, which include SVØWK/SV9, F9QV/FC, HI8WA and HKØHY, to reach 164 . . . Dixie, W2ZVS, goes to 172 with ZD6EF while Mickey, W8YIN, ups to 181 with VQ6LQ, VP8AQ, ZD2DCP and UB5KBE . . . Ken, W9BVX, nabbed VQ8AR for a new zone and with 11 others reaches 160 on phone . . . Al, W8PQQ, reaches 92 on 3.5 with KM6AX and HB1MX/HE . . . WØQGI, with 30 watts and new 2 element beam, cracked the 100 mark with CR7CN and CT3AC . . . W6GMF received CEØAD card . . . K2DIX nabbed EL2X, SM4APZ and DL1FF on 3.5 . . . W3MFW hooked UB5KBE and stands at 35-173 . . . John, TI9MHB, was responsible for two new ones at TI2BX when he worked 4S7LB from Teds shack and then worked Ted from Cocos! . . . Joe, W3ADZ, went to 200 with HKØAI . . . Jack, W8EKK, a shut-in who keeps rig by blowing into the mike, went to 173 with B8BR and TI9MHB!! . . . One years' operation at DL4ZC (W4KE) has resulted in 101 countries on phone and 121 on CW . . . VP7NG's latest DX is such as ZD3BFC, EL2X, 3V8AN, CR6AI, YO3RF, HA5KBA and TF5SV. Glen has a 78 total to show for five months operation from the Bahamas and says VP7NT is the only other VP7 active on Grand Bahama Island as VP7NN has returned home and now keys from W3RUZ. VP7NG and NT will be heard for another nine months and the former is active on 14, 7, 3.5 and 160 A3/CW . . . KM6AX and HB1MX/HE brought Vic, W4KFC, up to 99 on 3.5 and TI9MHB will probably get him over the top . . . Sam, W3AXT, sends in a nice list of QSO's this season with include stuff like ZD2DCP, HA5KBA, PJ2AA, FY7YC and LU1ZS on 3.5, TG9AZ, VP8BE, HR1MC and LU1XP (Tierra del Fuego) on 7 and VQ6LQ and ST2GB on 14 Mc . . . G2BW nabbed ZA1FA and got a QSL from him! . . . G2YS reports that I1BEY made WAS in 78 days. This ought to be some sort of a record for a European station! . . . G3TR received his WAB certificate, the first issued to a G and the 54th outside of Brazil. All contacts were on phone!! . . . VE3IG sports first WANE (Worked all New England "counties") to be awarded to a VE3 . . . W2HQL went to 100 with VR1RO, ZS7D, ZD4BM, FP8AK/VP2 and VP5AE . . . HA5KBA was No. 120 for W9UKG.

DX Notes

Fred, SVØWK, is sorry to report that SV1AZ, claiming Crete as his QTH, is not only a phoney but probably not anywhere near Crete. Besides there is no "Box 15" in Candia. They don't use boxes! . . . Only two legal native greek stations are SV1AB and SV1SP. Americans in Greece receive calls in the SVØW—series and presently active are Fred, SVØWK, Lou, SVØWO, Mike, SVØWM, Charlie, SVØWP, Club and MARS Station SVØWS and Norman, SVØWQ. (Thanks West Gulf DX Bulletin). . . . We are advised that DL4CR has been refused permission to operate from Vatican City. Increased efforts will be made to open the way for ham activity there. . . . EA9DF, Rio de Oro, advises of possible operation from Ifni in

[*Continued on page 64*]

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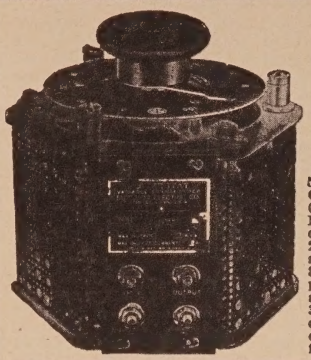
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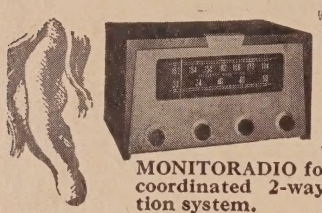
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[*from page 62*]

May. . . . VQ2AB hears MP4QAH again which indicates that Tony has recovered from his recent fire. . . . KZ5EM advises that an op named A. H. Waite is aboard the ice-breaker ATKA, now in south polar waters and he expects to set up station on ice or as /MM, signing A2ZK. . . . W8UAS and W8PP nabbed LB1LF, Jan Mayen, on 14022 kc. . . . W3CRA reports he heard MP4BBL keying with ZC2RO. . . . W8DAW nabbed one ZD7RR on 14052 who went QRT in the middle of a transmission. Beam headings were OK. . . . VK9OK is still on the air from Norfolk Island on 14190 A3 according to W7VY. . . . KS4AW, Swan Island, has recenly been worked on 14240, A3, at 0010 GMT. 4AW has poor modulation due to faulty transformer but should be OK by now. See QTH's. . . . Notes from the West Gulf DX Bulletin state that ZS8I put up a new long wire antenna and so many W's called him on first CQ that he couldn't copy any of them. ZS8I, QRG's are 14100/14340. EL2X hears FL8AI nearly every day on 14150 between 1600 and 1700 GMT. FE8AE has not been on the air yet due to receiver trouble. PJ2AF will be glad to furnish 7 mc phone contacts to anyone needing a PJ2. He is on 7230 every Sunday morning from 0900 to 1100 GMT. W9NDA says HC8GI, Galapagos Islands, is back on 20 most every night (Thats A3 I think). VK9WZ went QRT on Jan. 25th. See QTH's. VP8AO is QRT and VP8AM and VP8BD will carry on from Grahamland. VP8BF will operate from South Shetlands. FY7YE received his new transmitter, in good condition, on February 2nd is quite active. . . . DL2VM is now in Korea and states that the HL1 station reported a while back was genuine but unlicensed. A MARS station operates from there, on 14 and 7 Mc. with the call of AD4ER, the man behind the key being WØDAQ. DL2VM hopes for a three-year stint at VQ6 and will, of course, be on the air. . . . VP8AQ, South Orkneys, reports that call-signs alloted to the various bases are being withdrawn and new calls will be given to individual operators there (it would be nice if the new calls will enable us to distinguish between South Orkneys, South Georgia, South Shetlands and the Continent down there by different prefix or call series Sorting VP8's out has been a major occupation for some time with us!! (This goes for VK1's too.) . . . JZØDN is OK on Biak Island. He is PAØDN. . . . From the North Calif DX'er and RSGB Bulletin we hear that GM3AVO is now VS1GH and he expects to visit Labuan and the Nicobar Islands once per month!! . . . VP1AA has been heard active again, 7003, 0100 GMT. . . . W2EMW received long overdue QSL from VK1VU via VK4FE. . . . Via the Ohio Valley's ETHER WAVES we hear that W4OMW worked G7DW/MM in VP2-land. Danny advised that he was in a small boat sailing around the world single handed! . . . Activities in Ethiopia, via ET3S, is given us by W4KFC as follows: Phil, ET3S, is an electronics expert with the U.N. he expects to be there until July 1955. Phil has held the calls of VE3AWQ, VE8NY and

[*Continued on next page*]



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[*from preceding page*]

VE4NS. ET3PE also works for the U.N. while ET3GB and ET3LF are employees of the Imperial Telecommunications Board of ET3. ET3TRC is a club station and the boys are planning to put it on 3.5 Mc soon. QTH's are: ET3S Box 499, ET3GB Box 621, ET3LF Box 114, ET3TRC Box 1047, all Addis Ababa.

New DX Addresses

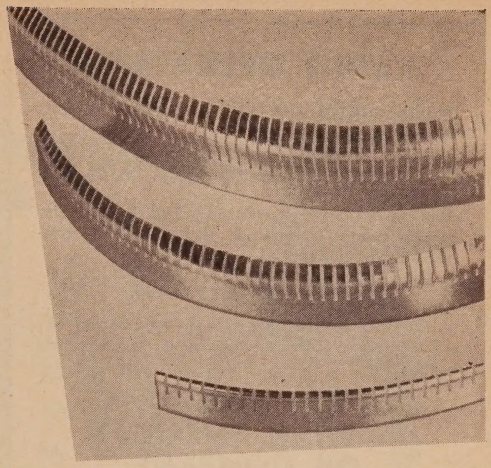
CE7ZU——Via CE3OQ.
CP5EP——Casilla 519, Cochabamba, Bolivia.
CR6CW——Telemaco Pissaro, Box 1400, Luanda, Angola, PWA.
GC5FQ——Pendeen Mont Felard, Island of Jersey, Channel Islands.
HK4BD——Box 2263, Medellin, Colombia.
KS4AW——John Hancock, Swan Island, c/o PM., Tampa, Fla.
KX6AF——1960 AACS SQDN, Box 11, FPO 824, PM., San Francisco, Calif.
M1L——Via M1B.
PJ2MA——Via PJ2AA.
TI9MHB—Box 75, Oakland, Calif.
UB5KBA——Box 74, Odessa, Ukraine, USSR.
ex-VK1VU——Via VK4FE.
ex-VK9WZ——4 Liston St., Parkside, SA., Australia.
VP7NX——Via W6RRG.
VP2BD——Bernard Taylor, FIDS Base, Via Port Stanley, F.I. or via ISWL.
VP8BE——Brian Weeks, 55 Robins Lane, Frome, Somerset, England.
YU2IQ (ex-YU2ADE)——Box 122, Belgrade, Yugoslavia.
ZD3BFC——W. H. C. Wheeler, c/o Int. Aeradio Ltd. Box 285, Bathurst, Gambia.
ZD4BM——Brian A. Wilbraham, Box 260, Takoradi, Gold Coast.
ZM6AS——L. R. Reid, c/o Bank of New Zealand, Apia, Br. Samoa.
9S4AX——Via WPRM for all W/VE contacts. (WPRM replaces W1NWO on this job).

Thanks to W5YLL, W6RW, W5JUF, W5ASG, W3AXT, W3ANK, W8DLZ, W4KVX, The West Gulf DX Bulletin and the North California DX'er.

Here and There

VP5AE takes exception to our statement in the February issue that Turks and Caicos is administered from Jamaica. He clarifies matters by stating that, while the Governor of Jamaica does exercise a measure of supervision over the island (the islands have their own government, legislative body and laws and the head of this government is a Commissioner belonging to the British Foreign service. Turks and Caicos are somewhat removed from Jamaica geographically and issue their own postage stamps. Well. Major, Turks and Caicos, ARE a separate ham country so all is well . . . W6NTR says that VK1EG does not think that FB8ZZ will be very active as none of the new operators speaks English etc. However Bill will pass by Amsterdam Island on his way home and give us the low-down . . . VK9YT visited W8EUR after visiting HV1-land and states there are 24, or more, reasons why hams will not be allowed to operate from HV1 . . . don't sound too good! . . . W5KC seeks card from FN8AD worked 5-10-50 . . . A press release from Pan American Airways reads as follows: (in part) The Franklin Mike and Key Club of Columbus, Ohio and the West Gulf DX Club of Dallas, Texas, along with many other amateur operators launched a drive to buy equipment for Mario de Lepine, FY7YE, Pan American clerk in Cayenne. Enough money was donated to buy spare parts and a small used transmitter, but funds were lacking to ship the equipment to Cayenne. On request the hams received free transportation from two airlines to get the parts to Maimi and from there Pan American provided space aboard a cargo Clipper to Cayenne, FY7YE is now again on the air and is being heard most days between 14115 and 14150, A3, around 2130 GMT. FB!! . . . Dan, K6CIT (ex-W5LVD), QRT's about March 1st and will soon appear

[*Continued on next page*]



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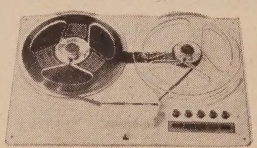
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[from preceding page]

as a W1 . . . KH6YL now keys from W3ABE . . . W3CRA received direct QSL from UB5KBE . . . W1AQI may be heard from the Camp Lejuene station, W4LEV . . . George, KV4BC, was selected as top honor graduate from army radio classes at Camp Gordon, Ga. which numbered over 600 students. George keys from K4WAR but will soon QSY . . . W2AGO is now W6AGO . . . On Jan. 22nd, Clet, W1DIT, completed 25 years of hamming . . . Burt, W4BQY (ex-KG4AF), left Feb. 16th for W6-land where he hopes to get W6EHV back . . . John, T19MHB, contacted Costa Rica on 6990 with the official call of TI9AA . . . W6EPZ QSY'ed from San Diego to Coronado . . . W4CJR, ex-W6FAH, was heard keying from HH3DL, 7007, and advises he cannot get HH license . . . W3MSK was worked as W3MSK/6 in Lajolla. He returns to W3-land in June . . . W6OWD/1, Wes, is with USAF, Limestone, Maine . . . W4QCW (KC4AB) added FB8BR, FO8AB and OY7ML. Bob contemplates another DX jaunt this year and seeks QTH and company . . . KV4AA logged visits from W2BBK, K2BTI, K2BZK and W2GNT . . . New Officers at the Ohio Valley Association are: Pres. W4EPA, VP. W8DQC, Treas. W4JBQ, Sec'y. W8SDJ . . . Our sincere sympathy to Art Milne, G2MI, whose brother, brother's wife and two children were instantly killed in a trailer accident in VK-land . . . VE2AFC is back on again after a three year layoff . . . HB9GJ, Fritz Luthi, Kochstr. 3, Zurich 4, is putting out a world map showing all prefixes, zones, US districts and states. The price is 5 Swiss Francs plus postage—a very handy item to have. Special reductions may be had for quantitative orders . . .

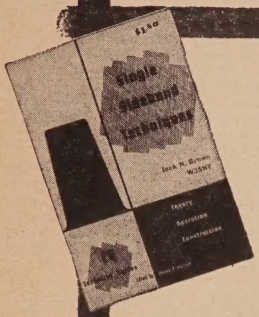
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The Commission has advised certain amateur radio licensees that portable or mobile operation from any United States island possessions in the Caribbean, South and West of Jamaica, would be in accordance with the portable or mobile procedures in Rules Paragraphs 12.91(a) and 12.82(b) or 12.82(c) using the Swan Island prefix KS4 following the licensees' regular call signs.

160 METERS

This season sixth transatlantic test, February 13th, started out with promises of good DX but conditions didn't hold and all signals were at a lower level than January 30th at east coast points. DX stations coming through were HB9CM, OK1HI, OK3DG, EI9J, G3PU, G5JU, G3ERN, G3JEA and YU1GM. YV5DE and TI2BX were also in attendance. In the Caribbean area conditions seemed normal, or above normal, with most of the above coming through in fine style. EI9J, HB9CM and OK3DG, along with many W's were worked by KV4AA who finally got the GLOBE KING loading nicely. YU1GM, on 1870, was called several times but no luck. He peaked 559 for a couple of hours . . . W4KFC nabbed ZL1BY for country No. 18 on January 30th while Howy, W2QHH, complete his 160 WAS by snagging W7TSN and W7ANR in Nevada . . . W8GDQ completed a phone WAS at the same time with W7ANR. This may be the first phone WAS on 160. FB! . . . Japanese stations are applying for a special 160 license for next season and, optimistically, JA1CR is having a 160 rig built . . . W1LYV claims W4KVM/VO6 as a "first". He worked him just before W3RGQ on Nov. 16th (0401 GMT) . . . Via W3RGO we hear that VR3A is not licensed to operate on 160. HK4DP will be on 1870 or 1890 when set up in new QTH and HR1LW is on 1803 or 1899 Tuesday and Saturday mornings from 1000 to 1100 GMT. Shely's OK1HI ocntact raised him to 22 countries.

Vy 73's, Dick

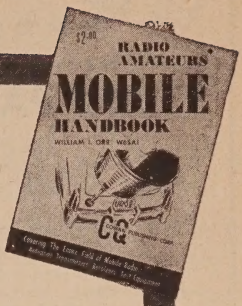


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The AMECO low pass filter suppresses the radiation of all spurious signals above 40 Mc. from the transmitter. The filter uses a Constant K Circuit, and is designed for Coaxial cable (52 to 72 ohms).



OTHER FEATURES INCLUDE: • Negligible Insertion Loss • 35 Db and more attenuation of harmonic and spurious frequencies above 50 Mc • Will handle up to 200 watts of RF power • Each unit complete with bracket, and instructions.

At the amazingly LOW, LOW price of **$1.95** Amateur net

HIGH PASS FILTER

The AMECO high pass filter is placed in series with the TV receiver's antenna to prevent the transmitter's signal from entering the receiver. All frequencies above 45 Mc. are passed through without loss. The AMECO high pass filter is designed for use with the common 300 ohm twin line.



Model HP-45

OTHER FEATURES INCLUDE:

- 40 db and more attenuation at 14 Mc. and below; 20 db attenuation at 10 meters.
- Negligible insertion loss
- Filter uses balanced constant K circuit

at the amazing low, low price of **89c** Amateur Net

Available at leading Ham equipment distributors, or wholesalers

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Write for Free 1955 New Air-Mail Handy-Order Blank.

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GENERAL ELECTRIC MODEL DW52 RF AMMETERS $3.95

2½" ROUND—0-5.0 AMPS R.F. Built in Thermocouple .....

SUPER SPECIAL! 3000 Volts DC—330 Ma.

BASIC COMPONENT BRIDGE KW POWER SUPPLY KIT

Contains:

- Pwr Xfmr—Primary 115 V 60 cycle. Sec. 3500 V AC @ 400 ma.
- Matched Smoothing choke—400 MA.
- 115 Volts Primary Bridge Filament for Four 866-A's.

Complete with Schematic only **$39.95**

3,000 VOLT POCKET MULTITESTER

AC: 0-15, 150, 750, 3000 volts.
DC: 0-15, .75, 300, 750, 3000 volts.
DC MA: 0-15, 150, 750 ma.
Resistance: 0-10,000, 100,000 ohms.
Complete with battery, test leads. Only 3½" W x 4¼" H x 1¾" deep. Brand New @ only $9.95.

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24 VDC—HERMETICALLY SEALED
Type 650-3060—2 second delay $4.50
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FOR SALE

SURPLUS—RG-8/U cable, 100 ft., $5.95. 250 ft., $13.25. 500 ft., $25.00. Connectors—PL-259 or SO-239, 5 for $2.00. Postage extra. Free catalog. Lectronic Research, 717 Arch St., Philadelphia, Pa.

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MOBILE transmitter 80-40 m. xtal. With Carter dyn. 400 v @ 300 ma. ATR inverter RSB input 6v, output 110 ac, 85 w intermittent, $12.00. FOB. Johnston, Box 6703, San Antonio 9, Texas.

SACRIFICE—Leece Neville, 5058-GA3, 6 volt, 100 amp., Alternator, regulator and rectifier. Used 6 months. Latest model. $60.00. (Not obsolete 5024-G3 Alternator). Herbert A. Zimmermann, Jr., 89 Clark St., Brooklyn 2, N.Y. ULster 2-6944.

FREE LIST! New and reconditioned receivers, transmitters, etc. One hundred big bargains every month. Highest trade-in allowance. Write today! Dossett, W9BHV, 855 Burlington, Frankfort, Indiana

BUY surplus radio receivers, transmitters, etc, from government. List, $1.00. Box AT 169, East Hartford 8, Conn.

CRYSTALS: FT-243's—3500 to 8700 KC ± 2KC, $1.00 each, .01% setting, $2.00 each. Hundley Crystal Co., 2951 North 36th, Kansas City 4, Kansas.

FOR SALE: Collins 310C-2 PTO/80M exciter with power supply. Used, new condition, $100.00. Bob Seely, 430 Lewis, Moscow, Idaho.

MOBILE TRANSMITTERS and Receivers, Hi-Fi gear. We also give trade ins, Spera, 3710 33 St., Long Island City, New York.

BARGAINS: WITH NEW GUARANTEE: R-9-er, $12.50; S-72, $59.50; SW-54, $35.00; S-38C, $35.00; S-40B, $79.00; Lysco 600S, $139.00; S-27, $99.00; SX-43, $129.00; S-76, $149.00; SX-71, $179.00; SR-75 Novice transceiver, $49.50; SX-42, $189.00; HRO-50, $275.00; Heath AT-1, $27.50; HT-17, $32.50; EX Shifter, $49.00; Globe Trotter, $49.50; Harvey Wells Deluxe, $79.00; Viking I, $209.50; Viking II, $259.00; New SS-75, $189.00; early HT-9, $139.00; Globe King 400B, $359.00; 32V1, $395.00; 32V2, $450.00; 32V3, $550.00. Free trial. Terms financed by Leo, WØGFQ. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

COLLINS 32V2 transmitter, first class condition—with BC348 receiver and 10-meter converter, ST-30 mike and key, $400. FOB W. O. Sarette, Conrad, Montana.

2 METER BEAMS: 6 element, horizontal or vertical, all seamless aluminum, $6.95 prepaid. Wholesale Supply Co., Lunenburg 1, Mass.

ANTENNA WIRE #18 high strength Copperweld 1000', $4.60; 2500', $9.75 postage paid. R. J. Buchan Company, Bricelyn, Minnesota.

LAPEL PINS—Neat and professional looking—only 35¢. Your call engraved in white on black, black on white or white on red background, plastic, ⅜" x 1". W2SPV, 4309 Willis Ave., Merchantville, N.J.

FOR SALE: FB phone patch with complete instructions. Price, $10.00 W2GJP/1, 81 Summit Road, Riverside, Conn.

Classified ADS

SELL: Tubes—Two 4D32 and sockets, $10 ea; four 814, $2.50 ea; two TB-35, $5 ea.; two 2E25, $3 ea; two HY-69, $3 ea; two 807, $1.50 ea; two 802, $1 ea; two 809, $2.50 ea. All new, never used. UTC PA-124 10V, 10A, fil. transf., $5. Three 100 ma, two 300 ma, one 200 ma, one 0-10 vac 3½" Triplett meters, all new, $3.50 ea. Eimac 50 mmfd, 32 kv, vacuum capacitor, $5. Two PR-Z-2 160 m xtals, new, 1987.7, 1992.5 kc, $2 ea. Collins plate transformer, 1400 vct 212 ma, $5. Dual pwr. supply: 600-750 VDC, 300 ma: 500 VDC, 175 ma, two 6.3 V fil, $60. Speech amp., mod: 6SJ7, 6C5, PP-6L6, 50 W, pwr. supply, all top-grade, new, never used, $55. Details, Carl Fastje, WØREG, Denison, Iowa.

FOR SALE: HQ129X and HT-9 TVI suppressed, Coils for 10, 20, 40, and 80, $300. Henry A. Martin, 1323 Spruce Street, Denver 8, Colorado.

FOR SALE: Collins 32V2, like new condition, $430; HQ129X receiver (less speaker) in A-#1 condition, $115; Gonset VFO for use with communicator in original carton, $45. Bill Harper, W9BWM, 4037 Eddy Street, Chicago 41, Illinois.

75 WATT CW bandswitching (160-10) transmitter kit, $59.95; 25 watter, $19.95. Details free. Hart Industries, 467 Park Ave., Birmingham, Michigan.

FOR SALE: VHF-152A, like new, $35. Cabinet 22" x 48", black crackle finish, $3. W5RZJ, Dulce, New Mexico.

FOR SALE: Complete 1 Kw transmitter, built to commercial standards in closed rack. Remote Collins 310B-1 drives PP 813's. Coils for 80, 20 and 10. D104 mike, self-contained speech amplifier and self-contained PP 805's modulator. Best cash offer as unit. W9DGM, 1636 So. Baltimore St., Indianapolis, Indiana.

SELL: New and used Gonset mobile equipment. Also two-meter and six-meter communicators, etc. R. T. Graham, W1KTJ, Box 23, Stoneham, Mass.

FOR SALE: National HRO-60 recvr., coil sets A, B, C, D, E, F and AC included. Freq. range: .5-30 mcs. B. S. coverage for 80, 40, 20, 15, 11 and 10 mtrs. Was purchased new, Nov. '54. Is still in perfectly new cond. inside and out. Less than 4 mos. use. Guaranteed for 3 mos. Will ship prepaid insured anywhere within U.S. Postal money order, Telegraphic money order, check or monthly payments accepted. All inquiries answered promptly. Write, wire or fone: Ronald L. Cummings, W5YMB Communications Div., U.S.S. Northampton (CLC-1) c/o Naval Operating Base, Norfolk, Va.

SELL: Viking II and VFO for $260. Charles Williams, W5ZBY, Piggott, Arkansas.

10, 15 & 20 METER BEAMS, aluminum tubing, etc. Perforated aluminum sheet for shielding. Radcliff's, Fostoria, Ohio.

FOR SALE: Hallicrafters S76, matching speaker, $120.00. FOB. 60 Watt, VFO, PI tank Xmtr, $50.00 FOB. Ship either, express collect on $15.00 deposit. C. Hockett, W7RXB, Ronan, Montana.

FOR SALE: BC459 converted with 30 Watt power supply, $17.50; T23-ARC5, $17.50; 800 issues of CQ, QST and Radio, 10¢ per issue. Prices FOB. Henry Mohr, 1005 Wyoming, Allentown, Pa.

SP-44 PANADAPTOR: best offer. S-53, $50; Hallicrafters 5-10, $25; Howard FM Tuner, $25; BC-459, $10; BC-696, $18; Harvey-Wells TBS-50 D, $85; Elmac A-54, $100; Motorola 7 in. television, $25; Corona Clipper Port typewriter, $55; BC-221-F, best offer; new 6V dynamotor, 425 V-275 ma output, $22.50; Westinghouse 500 ma 40 Hy choke, $8.75. All FOB. R. F. Wolfe, W3HDT, 2506 E. Hoffman St., Baltimore 13, Md.

KWickPatch the one band fone patch now in use from coast to coast. If your jobber does not stock, send card for literature. Same old price, $14.95. Erv Rasmussen, Box 612, Redwood City, California.

FOR SALE: Two complete Eldico Private Tutor, novice courses. New, never used. Write for good prices. David Maxwell, Box 175, Lexington, Ga.

EXPERIENCE is still the best teacher. A good antenna will get more & better contacts than high power on any band. Open wire line antennas in kit or built to frequency. "Antenna Joe" Gibbons, K2EF, 18 Liberty St., Port Jervis, N. Y.

SACRIFICE: Super Pro, covers ten meters. Johnson Viking I fully shielded. Mike, key, extras, including full set tubes for Pro, $250.00. Herb Spingeld, 35-50 78th St., Jackson Heights, N.Y., HA 9-5479.

SELL: 35 Watt transmitter, antenna tuner, modulator, $50. S-38C receiver, $35. K2ENN, 198 Anstice St., Oyster Bay, N.Y. Oy 6-2879-R.

MILITARY DUTIES intefere with amateur activity. Will sell 500 w xmtr pair 813's final, three power supplies exciter, plus portable equipment. Many other items. Send for list: W2JE, 1417 Stonybrook Ave., Mamaroneck, N.Y.

SELL: Teletype equipment, 12,000 DPDT relays, RAK, RAX receivers, $95 each; NC-100, $85; NC-100A, $100; TG-7-B #15 teletype, TS-34, $145; Dumont #241 scope, $245; TS-174. Want BC-610, ART-13, ARN-7, ARC-1, APR-4, TN-19, TN-54. Tom Howard, W1AFN, 46 Mt. Vernon St., Boston 8, Mass., Richmond 2-0916.

FREE LIST: Book bargains, Radio, Electronics, How-to-do. Cleaning house. W6ODD, Box 776, Camarillo, Calif.

INSTRUCTION

PORT ARTHUR COLLEGE, Port Arthur, Texas, provides training in Radio, Radar, Television necessary to pass FCC examinations for Phone and Tel licenses. 12 to 14 months. Advanced TV 6 months. Start at any level. Progress at own rate. Work toward standard. Low tuition. Board & Room at cost in dormitory Advanced students receive on-the-job training at KPAC, 5000 watt radio station, owned & operated by the college. New courses start every 5 weeks. Approved for Veterans. Write Registrar for catalog & information.

INCREASE CODE SPEED. New method. Free particulars. D. H. Rogers, Gough Ave., Ivyland, Pa.

CODE LEARNING made easy by my simplified system. Complete instructions and everything needed to learn only $2.50. John Kinsey, W2SUF, Box 61, Oneonta, New York.

Pass amateur theory exams. Check yourself with sample FCC-type questions & novice & general class examinations. All for only 50¢ American Electronics, 1203 Bryant Ave., New York 59, N. Y.

MISCELLANEOUS

TEST EQUIPMENT repaired and calibrated by factory staff. All makes: Hickok, Simpson, Triplett, Heath, etc. Prompt service. Low factory prices. Our nineteenth year. Douglas Instrument Laboratory, Norfolk Avenue & Shetland, Boston 19, Mass.

CALL LETTERS: two inch, weatherproof red Scotchlite. Apply to auto bumpers, signs, chassis, 60¢ set. No stamps. R. Boyce, 201 Concord Road, Bedford, Mass.

PE-101-C DYNAMOTOR
Unused — Good Condition
6 or 12 v conversion unit is easily adapted to supply 625 v at 152 ma and 325 v at 125 ma or 300 v at 90 ma and 160 v at 110 ma.
Write for complete information or send check or money order. **$4.95** plus postage
PIONEER SURPLUS CO.
331 Canal St., New York 13, N. Y.

MOBILE DYNAMOTORS

Made by PIONEER GEN-E-MOTOR

Compact, efficient, dynamotors designed for commercial services. Filter boxes attached to bottom of dynamotors contain A and B filters, oil condensers and RF filters. Dynamotors have internal cooling fans. Ideal for taxi, aircraft, marine and amateur services. Fully guaranteed.

5.5 TO 6 VOLT DC INPUT

Output	ICAS*	CCS*	Filter	Price
400 VDC	300 ma	175 ma	with	$19.97
500 VDC	325 ma	200 ma	with	22.97
500 VDC	300 ma	200 ma	less	19.97
250 VDC	100 ma	65 ma	with	11.97

11.5 TO 12 VOLT DC INPUT

400 VDC	300 ma	175 ma	with	17.97
500 VDC	325 ma	200 ma	with	21.97
500 VDC	300 ma	200 ma	less	18.97
400 VDC	175 ma	——	less	9.97
210 VDC	——	40 ma	less	4.97

*ICAS—Inter Duty *CCS—Cont. Duty

MOBILE RELAY

6 VDC Coil SPST, 30 amp contact for Dynamotor starting plus extra contacts for silencing receiver, SPST normally closed. Made by Struthers Dunn. Specially priced at..... **87¢** ea.

OIL CONDENSER SPECIALS

Brand New. Ceramic Ins.

1 MFD 3000 VDC $1.87
6 MFD 1500 VDC 2.27
2 MFD 2000 VDC 1.57
10 MFD 600 VDC **$1.17** [6 for $5.97]

PANEL METERS

GOV'T SURPLUS, G.E., WESTINGHOUSE, WESTERN ELECTRIC, SIMPSON, ETC.

2" METERS

0-4 amp RF $2.97
0-15 ma DC 2.97
0-10 amps RF 2.97
0-10 amps DC 2.97
100-0-100 microamps 4.97

3" METERS

0-200 Microamps $6.97
0-500 Microamps 5.97
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3" METERS

0-500 Microamps $5.97
0-50 Mill. 3.97
0-80 Mill. 4.57
0-150 Volts AC 4.97
0-15 Volts DC 4.97
0-1.5 Mill. 3.97
0-1 amp RF 4.97
0-10 VDC 4.97
0-50 amps DC 4.57
0-10 Mills DC 3.97
50-0-50 amps DC 3.97
0-15 amps DC 3.97

Min. Order $3.00—25% with Order—F.O.B. New York.

PEAK ELECTRONICS CO.

66 WEST BROADWAY, NEW YORK 7, N. Y.
PHONE WORTH 2-5439

LO-PASS FILTERS HI-PASS

Eliminate TVI





Prevents radiation of spurious signals over 40 mc. Designed for 52-72 ohm coax. Negligible insertion loss. Over 40 db. attenuation. Handles above 200 watts RF power. Complete **$1.50** POST PAID

Cuts out all interference below 40 mc on 300 ohm balanced line. Signals over 54 mc pass through filter without loss. **Completely shielded in metal can.** Complete, full instructions **98¢** POST PAID

Send check or money order. (Both for $2.25 PPD)

Complete line of more than 75 filters and wavetraps. Send for free literature. Money back guarantee.

CAPCON, INC.

25D WILLETT ST. NEW YORK 2, N.Y.

WANTED: TUNING UNITS

FOR RECEIVER AN/APR-4, and AN/APR-9

ENGINEERING ASSOCIATES

434 Patterson Road **Dayton 9, Ohio**

14 MC SHORTENED BEAM

Plumber delight type construction. VSWR 1.1; band width 200 kc. Feed RGS/U; 61ST aluminum. Gain 6 db-3 el, 4½ db-2 el. 3 el-11½ lb., 2 el-7 lb., boom 7' & 13'. Price complete: 3 el $52.00, 2 el $40.00. Write for literature.

ARVY ANTENNA, W3LYP,
Raubsville, Penna.

SWAP OR SELL

MEDICAL HAMS—Trade portable Raytheon microtherm in new condition; want 75A-3 in same condition. C. R. Faulkner, M.D., Somerset, Ky.

TRADE: bandsaw-lathe-sander-jointer; all for a good used or new communications receiver. E. Walter Sauermann, 348 West 119th Street, Los Angeles 61, California.

WANTED: Used amateur or war surplus receivers, transmitters, test equipment in trade for new Johnson Viking, Ranger, Barker & Williamson, Hallicrafters, Hammarlund, National, Elmac, Gonset, Morrow, Telrex, Central Electronics, etc. Especially want ART-13, APR-4, APR-5, ARN-7, ARC-1, BC-610, BC-614, BC-939, DY-12, CU-25, BC-221, BC-348, BC-342, BC-312, 75A, 32V, teletype printers, perforators, reperforators, TS-173, TS-175, TDQ, APQ-13. Alltronics, Box 19, Boston 1, Mass Richmond 2-0048. (Stores: 44 Canal St., Boston; 60 Spring St., Newport, Rhode Island.)

WANTED

WE WANT your used gear. Highest trade-in allowance on National, Hallicrafters, RME, Hammarlund, Gonset, Morrow, Johnson, etc. Write or call: C&G Radio Supply Company, 2502-6 Jefferson Avenue, Tacoma 2, Washington. Br. 3181.

AN/APR-4 receivers and tuning units urgently needed! Engineering Associates, 434 Patterson Road, Dayton 9, O.

WANT Johnson Rotator. Sell television receiver, $80. W4API, South Randolph, Arlington, Virginia.

KILOWATT modulation transformer needed. Prefer multi-match. Box 35W, CQ Magazine, 67 West 44th Street, New York 36, N. Y.

WANTED: Cannibalized BC-453-B Q5'er receiver. I.F. transformers and tubes can be missing but remainder must be in like-new condition. What have you to offer and for what price? Frank Tooker, Box T, Lakehurst, New Jersey.

WANTED: Code practise tapes for TG-34-A code keyer. Philip Will, W8HPB, Canal Winchester, Ohio.

WANTED: Gonset communicator. State price and condition. W8RMH, 21620 Frazer, Detroit 19, Michigan.

QSL'S

QSL's—America's finest! ! ! Samples, 10¢. C. Fritz, 1213 Briargate, Joliet, Illinois.

FINE QSL's—100, $2.75; additional 100s, $1.00. Craig Print, Newark, Arkansas.

QSL's. Nice designs. Samples. Ted Besesparis, W3QCC, Frackville, Pa.

QSL's—"Brownie" W3CJI, 3110 Lehigh, Allentown, Pa. Samples, 10¢, with catalogue, 25¢.

QSL's: samples free. WØLDY, Winston's Print Shop, 607 So. Oakland, Webb City, Missouri.

QSL's: Largest variety; samples, 25¢ (refunded). Sackers, W8DED, Holland, Michigan.

QSL's: two colors, $2.00 hundred. Samples for stamps. Rosedale Press, Box 164 Asher Station, Little Rock, Arkansas.

QSL SAMPLES: dime, refunded. Gale, W1BD, Waterford, Conn.

QSL's: Samples, ten cents. Printer, Corwith, Iowa.

QSL's—SWL's: vari-colored, personalized, complimentary samples, 10¢. W9HIU, 113 Harrison, Jeffersonville, Indiana

QUALITY QSL's: Samples, 10¢. Lee, W5CZA, Box 7171, Oklahoma City, Oklahoma.

QSL's: Modern and futuristic designs! Samples, 10¢. Tooker Press, Lakehurst, New Jersey.

QSL SAMPLES: 10¢; catalog, 25¢. World Printing, 166 Barcley Avenue, Clifton, N.J.

ABSEM

[*from page 19*]

This is by no means the limit to the number of ABSEM's that are used as the occasion arises. Should, on another occasion, W8XXX call W1XXX, the W1 would come back like this:

R R R (pause to look up the call in log book) GE BILL GLD TO HR YOU AGAIN BT TEEET

ABSEM: *Man, you goofed, we've talked before. What'll we talk about this time?*

On other occasions an operator might say: NEED UR STATE OM PSE QSL QTH HR IS 1234 MAIN STREET

ABSEM: *I don't have any QSL cards myself, but I sure like to receive them; please send me your Walter Ashe.*

WILL QSL OM

ABSEM: *Don't hold your breath until you get one.*

UR SIGS RST 459

ABSEM: *Boy, you are really down in the mud. A 459 is the lowest report that can be given one amateur by another.*

THE QRM WAS BAD THAT TIME

ABSEM: *Please send slower next time.*

Up until this time I have had the decency not to mention the following signal. It is most effectively sent if one zeros his signal on a contact in progress. It goes:

CQ DX

ABSEM: *I don't feel like talking to anyone today, just want to exercise my fist; I am running more than five hundred watts; Once every fifty-two times that I send this call I receive a reply from outside the continental limits of the United States.*

SORRY BUT SOME LOCAL QRM GOT YOU THAT TIME

ABSEM: *I knew I shouldn't have given you such a nice report but I need your state for WAS.*

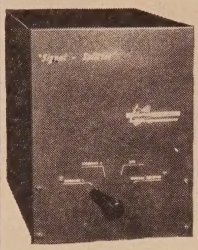
This does not conclude the number of ABSEM's that are used by the amateur fraternity but I have to run along now. So for now I will say 73 and CUAGN SN. 73 AR SK Dit DitDahDit Dit.

To the alert this coupon is good for two free words in any non-commercial classified advertisement in CQ submitted during 1955. Here is your chance to turn that unused equipment into something a bit more portable, like money.

now first with the

"Signal-Splitter"

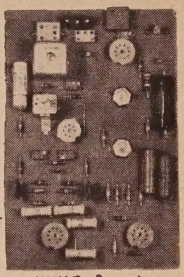
the famous GE Signal Slicer circuit in a new form . . PRINTED CIRCUIT



Wired & Tested with tubes **$72.50**

Kit with tubes **$64.50**

PA-1 power supply. **$12.95**



XXXP Board

Check these features

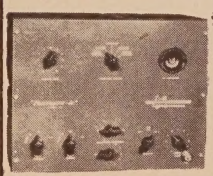
- ✓ kit requires ONLY 70 minutes wiring time
- ✓ for 455 KC receiver IF — provisions crystal controlling "SIGNAL — SPLITTER"
- ✓ plug in adaptor available for 50, 85, 100 and 915 KC receiver IF frequencies
- ✓ switch positions — SIDEBAND 1, SIDEBAND 2, BFO and NORMAL RECEIVER
- ✓ NORMAL RECEIVER switch position gives the original receiver conditions without adaptors
- ✓ 40 DB or more suppression on suppressed sideband
- ✓ requires 18 MA at 200-250 V and 1.2 A at 6.3 V from receiver
- ✓ plug in power supply available fits inside cabinet
- ✓ size 7" x 9" x 13" in gray hammertone and crackle cabinet
- ✓ connecting cables terminate in an octal plug

going PORTABLE or MOBILE SSB ???

then you need the new

"Phasemaster-Jr."

(MODEL-C)



Wired & Tested with tubes **$174.50**

Kit with tubes **$147.50**

- same features as De Luxe "PHASEMASTER-JR" less power supply
- 60 watts peak envelope input SSB also AM, PM, and CW

Clubs write for open dates on interesting program "UNDERSTANDING SINGLE SIDEBAND TRANSMISSION"

Write for complete catalog

Lakeshore INDUSTRIES

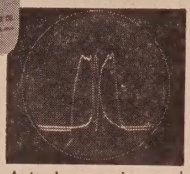
408 COMMERCIAL STREET MANITOWOC, WISCONSIN

MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT

Improve the selectivity of your present receiver with this improved Q-Multiplier

R. L. DRAKE's Q-X'er





Actual superimposed photos of HQ-129 passband with mechanical filter and DRAKE Q-X'er.

All the advantages of a crystal filter without the disadvantage of poor speech quality.

The R. L. Drake Model 583 is an improved Q-Multiplier which provides complete flexibility in use to provide either a sharply peaked IF curve or a deep rejection notch. Results are so superior that some communications set manufacturers are planning to substitute this type of unit for the usual crystal filter. And, with the R. L. Drake Q-X'er you can have these advantages with your present receiver.

Controls:

- **Selector Switch**
- **Notch Adjust Potentiometer** — Provides elimination of unwanted carrier and its heterodyne with no audible change in speech quality.
- **Peak Adjust Potentiometer**—True single signal reception for cw provides sharp peak and minimum passband.
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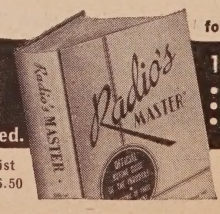
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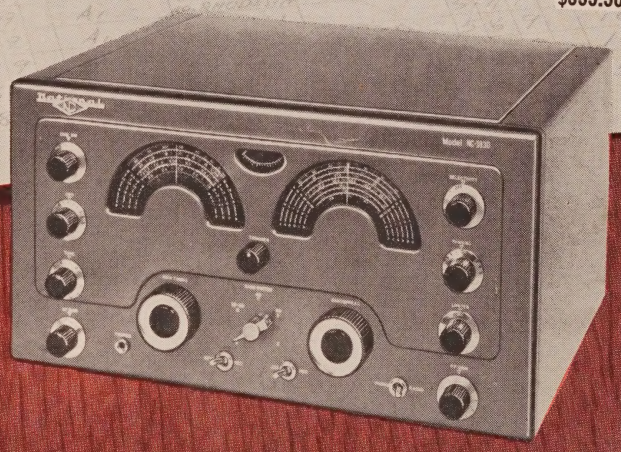
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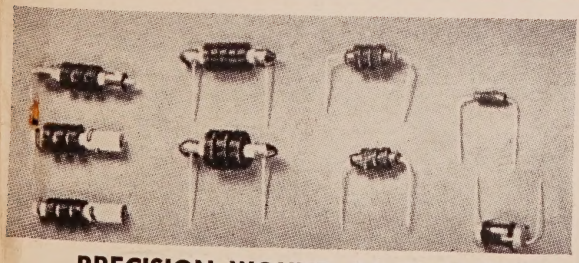
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