CQ

MAY, 1947

The Radio Amateurs' Journal

35¢

Published by RADIO MAGAZINES, INC. Subscription $2.50 a year

Now Available – the new . . .

VHF 152 converter

FOR 2, 6 and 10 METERS

ACTIVITY ON VHF BANDS MOUNTING RAPIDLY

Extend the present range of your receiver to include the two, six and ten-meter bands with the new VHF 152. Even if your present receiver goes to ten meters, enjoy better reception on that band by the complete absence of images.

Activity on the two and six-meter bands is mounting steadily with a new high predicted for summer operation. With the VHF 152, you, too, can take part in this rapidly expanding field of amateur activity. What's more, you'll do the job on these frequencies more efficiently and more economically than is possible with a higher priced, specifically designed VHF receiver.

TUNING MECHANISM

An all-gear, planetary drive. The three bands are calibrated to cover the full sweep of a seven-inch diameter scale, calibrated in mc.

MINIATURE TUBES

New miniature tubes are used for sensitivity, stability and extremely low VHF circuit noises. A Built in power supply includes voltage regulator tube.

SENSITIVITY AND IMAGE REJECTION

Order of two microvolts on all bands. Image rejection ratio of approximately 54 db eliminates images.

ANTENNA CONNECTIONS

Provision made for use of four separate antenna connections.

OTHER FEATURES INCLUDE

Shielded output cable, sturdy construction, antenna change-over switch, band selector, tuning control, line switch.

Illustrated Folder On Request

TIME WILL TELL

RME

FINE COMMUNICATIONS EQUIPMENT

RADIO MFG. ENGINEERS, INC.

Peoria 6, Illinois U. S. A.

GRID MILS tell the story!

On 10 and 20 fone... PR's put out more DRIVING POWER!

On the higher frequency fone bands DRIVE is the problem! Plenty of grid mils to the final means top efficiency ... full modulation capability ... longer life for the big bottles ... more watts in the antenna. Drive begins with your crystal stage! That's why rugged PR Precision Crystals are designed to deliver high power output under gruelling amateur conditions ... negligible drift over wide temperature range ... amazing activity ... sealed against contamination and moisture ... accurately calibrated. Yes, low cost PRs deliver MORE POWER! Available from your jobber for all bands, including ten and eleven! Every crystal unconditionally guaranteed! — Manufactured by PETERSEN RADIO CO., INC., 2800 WEST BROADWAY, COUNCIL BLUFFS, IOWA. (Telephone 2760.)

SINCE 1934

PR Precision CRYSTALS

10 METERS PR Type Z-5.	Harmonic oscillator. Ideal for "straight through" mobile operation. High activity. Heavy drive without damage in our special circuit $5.00
20 METERS PR Type Z-3.	Harmonic oscillator. Low drift. High activity. Can be keyed in most circuits. High power output. Just as stable as fundamental oscillators $3.50
40 & 80 METERS PR Type Z-2.	Rugged, low drift fundamental oscillators. High activity and power output with maximum crystal currents. Accurate calibration $2.65

CQ

The Radio Amateur's Journal

Published monthly at 28 Renne Ave., Pittsfield, Mass. by RADIO MAGAZINES, INC. Executive and Editorial Offices: 342 Madison Ave., New York 17, N. Y. Telephone: MUrray Hill 2-1346. Entered as Second Class Matter March 28, 1946 at the Post Office, Pittsfield, Mass.

Vol. 3. MAY, 1947 No. 5

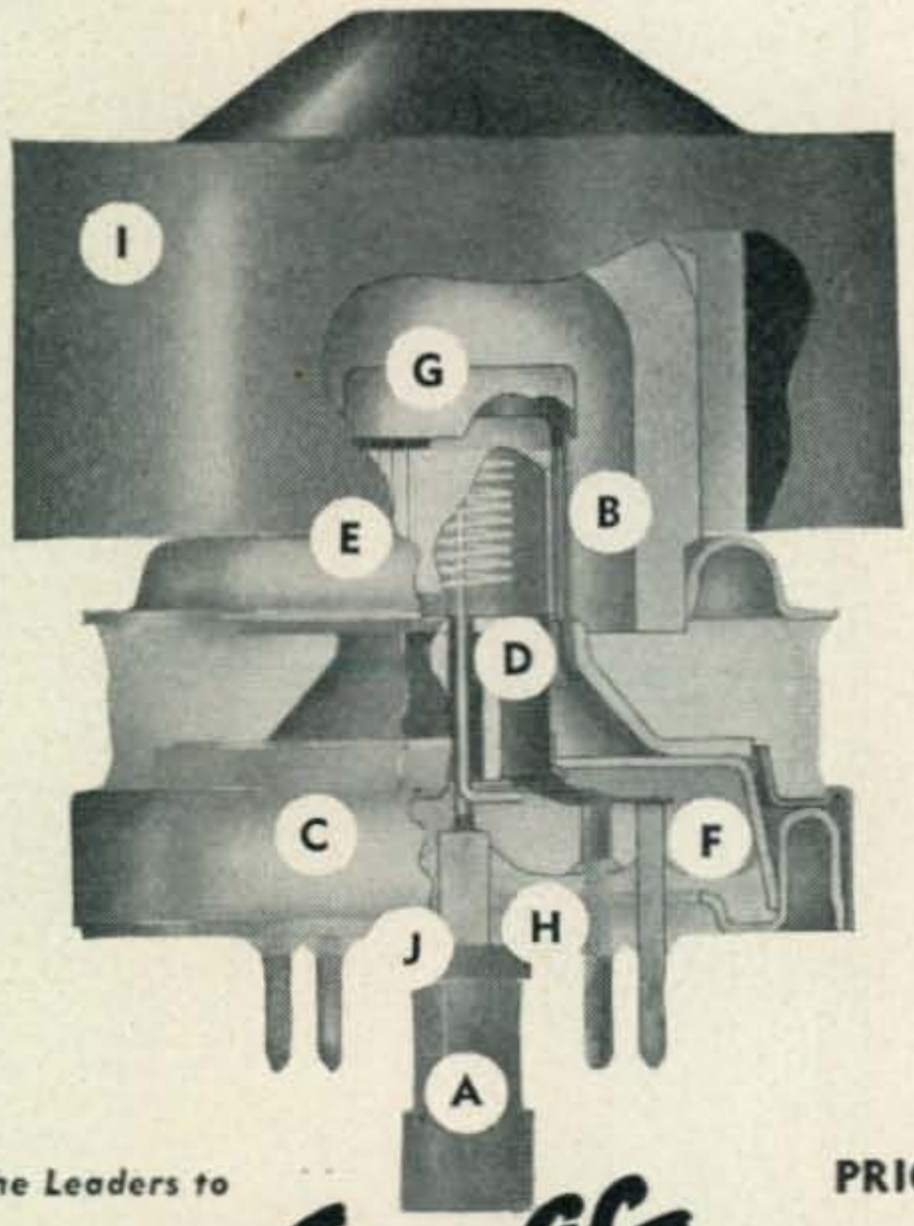
In This Issue

COVER

W2RPZ looking over his new W.A.Z. map and wondering how long it will take to work the other 37 Zones. *Photo by W2DTE.*

UHF tetrode

Eimac 4X150A Power Tetrode		
Electrical Characteristics		
Heater voltage	6.0	volts
Heater Current	2.7	amps.
Grid-screen amplification factor (approximate)	4.	
Direct interelectrode capacitance (typical)		
Grid-Plate	0.02	μμf
Input	12.0	μμf
Output	4.6	μμf
Maximum Ratings		
DC Plate voltage	1000	volts
DC Plate current	200	ma.
Plate dissipation	150	watts
DC Screen voltage	300	volts



The 4X150A, a new Eimac tetrode, extremely versatile—diminutive in size, will fill the bill in all types of application and at all frequencies up to 500 mc. Performance characteristics include — high transconductance, low plate voltage operation, low grid drive, high plate dissipation, and traditional Eimac-tetrode-stability. Physical features include:

A Low inductance grid lead.

B Close element spacing for UHF and high transconductance.

C Screen grid, mounting, and ring connector design effectively isolates input and output circuits.

D Heater isolated from cathode.

E Indirectly heated cathode.

F Low inductance cathode terminals, (four separate paralleled pins).

G Controlled primary and secondary grid emission, by specially processed grids.

H New molded glass header, precision pin alignment.

I Forced air cooled (vertical finned).

J Simple installation, adaptable to standard loctal socket.

You will find the 4X150A suited to your requirements, whether for wide-band low-efficiency service such as television video and audio or conventional application. For further information on this new, versatile, Eimac tetrode, type 4X150A, write to:

EITEL-McCULLOUGH, INC.
1456 San Mateo Avenue
San Bruno, California

Follow the Leaders to **Eimac** REG. U.S. PAT. OFF. **TUBES**

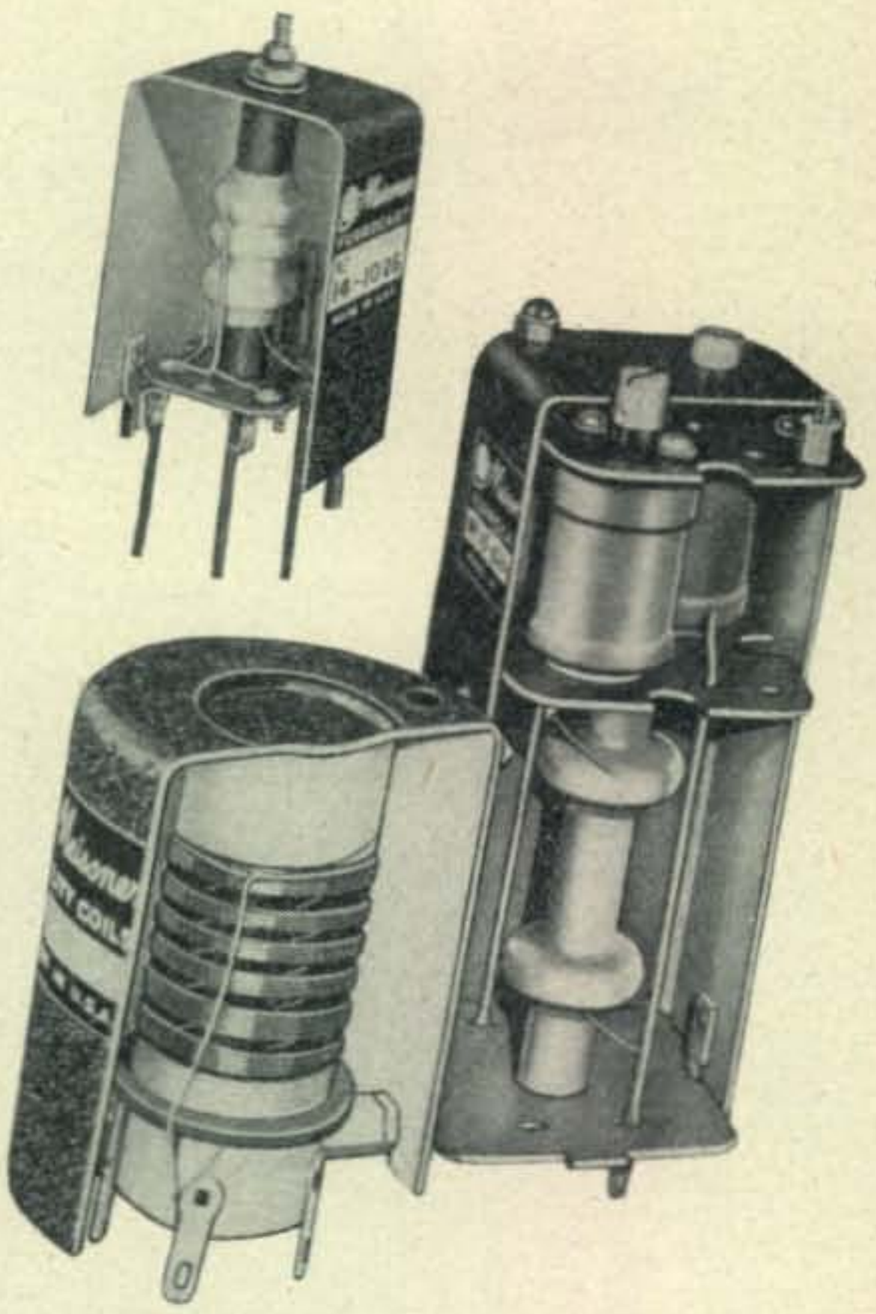
The Power for R-F

PRICE, $31.00

EXPORT AGENTS: FRAZAR & HANSEN, 301 CLAY ST., SAN FRANCISCO 11, CALIFORNIA, U.S.A.

MEISSNER

FOR TWENTY-FIVE YEARS
THE STANDARD OF COIL QUALITY



For over a quarter century the name Meissner has stood for the finest in electronic equipment. Founded in 1922 by the late William O. Meissner (famous for his outstandingly successful inventions in communications and electronics) this company has been the source of many new developments in the radio field.

First to build a complete line of jobber coils; first to design and build plastic IFs and to introduce Ferrous IFs, Meissner has long led in the development of fine coil equipment for every application. A pioneer in FM (holding the second license issued in this country) Meissner was also the first to manufacture radio receiver kits. The Meissner Signal Shifter is still the Number 1 requirement for the complete ham shack and the Meissner Analyst has saved thousands of man-hours for servicemen everywhere.

Today Meissner's original policy of aggressive research and development remains unchanged. Strengthened by 25 years of electronic manufacturing experience it is your guarantee of product quality . . . an assurance of perfect performance under all conditions.

MEISSNER MOUNT CARMEL, ILLINOIS

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INDUSTRIAL SALES DEPARTMENT
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• • Letters • •

What's In A Name?

1440 Floribuna, Burlingame, Calif.

Editor, *CQ:*

. . . Private pilots are not called "ham" pilots. Couldn't the title "Private Radio Operator" help raise the prestige of our growing group? It may be a big change in our radio slang, but I'll bet the idea is accepted by the fraternity.

A. R. Kanaga, W6BAA

W6BAA has a point. It often is necessary to explain the accepted meaning of "Ham" to the uninitiated, but this "name" question is frequently raised, and perhaps just now isn't of major importance. Private Radio Operator or something else, there may be a more acceptable word floating through the dictionary. Of course common usage will finally decide whether Ham is to be replaced by some other synonym for radio amateur. Ideas on the subject are certainly welcome. .Ed.

V.F.O. Frequency Indicator

1056-34th St. N.E., Cedar Rapids, Iowa

Editor, *CQ:*

In February S & W the item titled "V.F.O. Frequency Indicator" raises an important question. How does the "grounded plate" crystal oscillator oscillate? The answer is it doesn't oscillate!

The indicator will work satisfactorily, but the operation would best be explained as follows. A crystal acts in a manner similar to an inductive and capacitive combination. At one frequency it operates as a series resonant circuit and presents a low resistive impedance. At a second frequency the crystal will behave as an anti-resonant (parallel) circuit, thus presenting a high resistive impedance. These two frequencies are very close together. At all other frequencies the impedance of the crystal will, in general, be low and capacitive. The operation of the circuit of the indicator can now be explained.

When the frequency of the v.f.o. does not coincide with the anti-resonant frequency of the crystal, most of the r-f signal from the pick-up loop will be lost in the 10k resistor. Therefore, there will be little or no effect on the operation of the "eye". At the anti-resonant frequency most of the pickup voltage will appear across the high impedance presented by the crystal and thus to the grid of the 6E5. Rectification will occur and a d-c voltage will be developed across the 10k resistor. This bias will cause the "eye" to close, thus indicating the v.f.o. is at the crystal frequency.

Robert R. Bigler

Amateur Cooperation

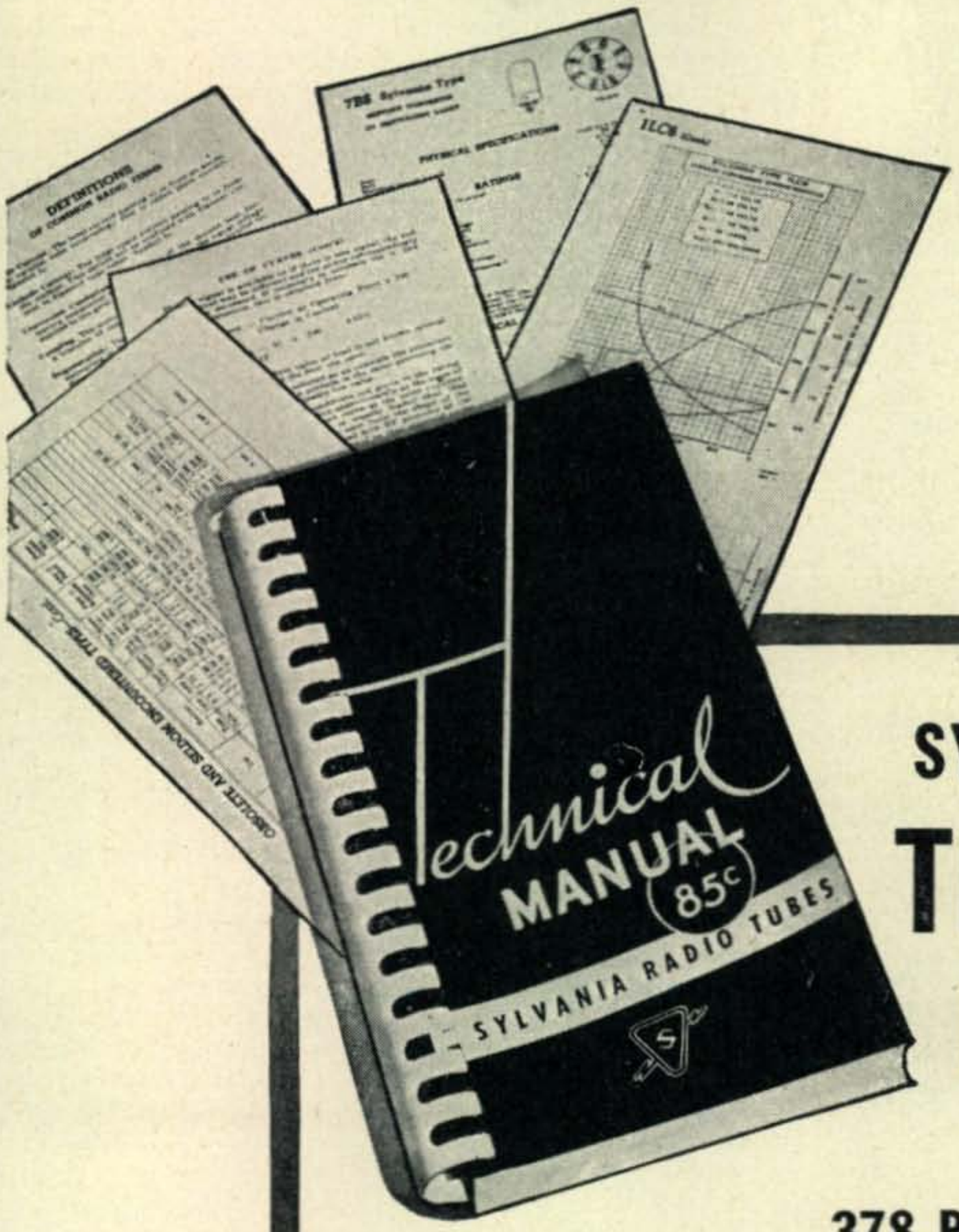
145 East 49th St., New York City

Editor, *CQ:*

It is gratifying to see the amateur press such as yourself, preaching unity among radio amateurs at a time when a strong organization is most essential to our well being. A vigilant and informed press can do our hobby as much good as it has done our democratic form of government.

Robert L. Rod, W2KVY

GET YOURS NOW!



SYLVANIA'S NEW TECHNICAL MANUAL

DESCRIBING 378 RADIO RECEIVING TUBES

Bigger, better-than-ever—the new Sylvania Technical Manual is available now.

The large number of tube types listed (old and new) — almost four hundred — has been made available as a result of the solution of extensive and elaborate tube engineering problems.

Contents of this descriptive manual include: Fundamental Properties of Vacuum Tubes; The Characteristic Curves; General Tube and Circuit Information; Typical Radio Receiver and Amplifier Circuits; Interchangeable Tube Chart — and many more.

We urge you to get a copy right away — because we know you'll find this volume chock-full of invaluable information.

Available from your Sylvania Tube Distributor or direct from Radio Tube Division, Emporium, Pa.

SYLVANIA ELECTRIC

MAKERS OF RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES; FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES; ELECTRIC LIGHT BULBS

Results

1014 Browning Ave., Knoxville, Tenn.

Editor, *CQ:*

Just wanted to tell *CQ* readers if they aren't satisfied with the performance of the present antenna to try W8LO's beam in January *CQ*.

I put two of them up at a total cost of less than $5.00 and promptly worked over 50 countries in all continents. Average c-w report was S-7 and average phone report better than S-8.

Believe me . . . the thing really works . . . but they'll bring down the wrath of the XYL, a million questions from the neighbors, and give your property a slight resemblance to a lunatic asylum!

Terry Beeler, W4FUI

Better Service

607 Court "C", Bristol Terr., Bristol, Pa.

Editor, *CQ:*

CQ has been arriving quite late. I am wondering if it couldn't be sent out earlier or something done so that I could get my copy earlier?

Raymond P. Bilger, W3LGN

Everything is being done to push up the mailing date. Unfortunately present day shortages in paper have prevented us from keeping a carefully laid out schedule. But things are looking up and we feel confident that with this issue your copies will arrive earlier.—Ed.

Learning the Code

1707 Nashville Ave., New Orleans, La.

Editor, *CQ:*

Referring to F. J. Stephens' letter in the March issue regarding his trials and tribulations in learning the code, may I make a suggestion to him and others struggling with this frustrating study. Up to a speed of from seven to ten words per minute it is quite possible to write down each letter and numeral immediately as it is sent. This is copying in step with the transmission, so to speak. However, above ten words per minute it is essential to learn to copy behind.

This does not come naturally with practice and at first requires a constant concious effort to learn to "hold back" the copy. To obtain perfect copy up to fifteen words per minute for amateur examinations, it is only necessary to learn to copy one letter behind. That is, while listening to the letter being sent, the student should then be writing down the letter previously sent. He is then copying behind and not trying to stay in step with the transmission. This will markedly relieve the strain and sense of urgency but is an essential point often overlooked by the student.

William J. Wright, W5KYK

For a top-notch article on learning the code don't miss the article by W9EGQ in the July issue. - Ed.

Letters is our readers forum. We'd like to publish opinions and information which would be of interest to CQ readers. Correspondence will not be altered, except for an occasional shortening of a letter, however the editors reserve the right to select material published. Naturally CQ doesn't necessarily endorse all the views expressed in this column. We'd like to hear all your pros and cons though, so come on gang, write in.

New 5514 ECONOMICAL TUBE TO GROW WITH!

STANDARDIZED FOR ECONOMY

The 5514 supplants the HY30Z, HY40, HY40Z, HY51A, HY51B, and HY51Z. Concentration on this one 65-watt triode gives you a better tube for much less – only $3.95. Two 5514's take 525 watts input in class C; deliver 400 watts output in class B audio – at CCS (continuous commercial service) ratings.

EFFICIENT AT ALL PLATE POTENTIALS

Low internal tube drop of the 5514 permits excellent efficiency over a wide range of plate potentials. In class C, two 5514's give plate power outputs of 60 watts at 400 volts, 400 watts at 1500 volts. Furthermore, associated components are economical and still usable as power is increased. Truly the 5514 is a tube to grow with.

READILY INTERCHANGEABLE

The 5514 has a standard 4-pin medium base, conventional overall dimensions, a 7.5-volt filament, and a high mu (145). Dependent upon the triode it replaces, the 5514 may require slight readjustment of filament voltage and/or grid voltage and driving power. Chances are you will need no new parts.

ALL-PURPOSE ZERO-BIAS TYPE

In either modulator or r-f amplifier, performance of the 5514 is exceptional. One HY69 or 807 can overdrive at maximum input two 5514's in class C. You need no costly fixed bias for protection. Economical, efficient, interchangeable, versatile – the 5514 was designed for you. See it at your jobber's.

HYTRON TYPE 5514

High-Mu All-Purpose Transmitting Power Triode

GENERAL CHARACTERISTICS

Filament	thoriated tungsten
Potential	7.5 ± 5% volts
Current	3. amperes
Grid-plate capacitance	7.9 μμf
Grid-filament capacitance	7.8 μμf
Plate-filament capacitance	1. μμf
Max overall length	6-9/16 inches
Max diameter	2-7/16 inches
Bulb	ST-19
Base	low-loss 4-pin medium

ABSOLUTE MAXIMUM CCS RATINGS—CLASS C

Characteristic	*Mod.†*	*Unmod.*	
D-c plate potential	1250	1500	v
D-c plate current	175	175	ma
D-c plate power input	175	262	w
D-c grid potential	-200	-200	v
D-c grid current	60	60	ma
Plate dissipation	43	65	w
Frequency (max ratings)	60	60	mc

PLATE POWER OUTPUT (CCS)
TYPICAL OPERATION*

Service	*Plate Potential 400*	*750*	*1250*	*1500*	
Class B audio #	50	150	330	400	w
Class C unmod.	30	70	165	200	w
Class C mod.	30	70	135	- - -	w

† Carrier condition with a max modulation percentage of 100. *To determine useful power output to load, subtract circuit and direct radiation losses from plate power output. #For 2 tubes.

5514 FEATURES

- Zirconium-coated Speer graphite anode
- Grid leads to both pins two and three
- Plate cap has ceramic insulating bushing
- Dual low-resistance plate connections
- Low-loss synthetic lava insulators
- Convenient low-loss 4-pin medium base
- Elements firmly supported by dome micas
- Efficient at low or high plate potentials
- Only 13 w drive for 262 w input class C

SPECIALISTS IN RADIO RECEIVING TUBES SINCE 1921

HYTRON
RADIO AND ELECTRONICS CORP.

MAIN OFFICE: SALEM, MASSACHUSETTS

"USEFUL INFORMATION FOR THE DX MAN

DX

An indispensable operating aid, CQ DX is a comprehensive HANDBOOK profusely illustrated with full page charts and maps, containing over 15 chapters covering the following basic subjects: The Technique of Working DX—DX Predictions—QSL Cards—QSL Bureaus of the World—International Letter Postage and Airmail Rates—Standard Time Tick and Frequency Services—Worked All Zones DX System—World Zone Boundaries Defined—The United States—International Time—World Country Lists cross-indexed three different ways—International Amateur Codes—Useful Information for the DXers—etc.

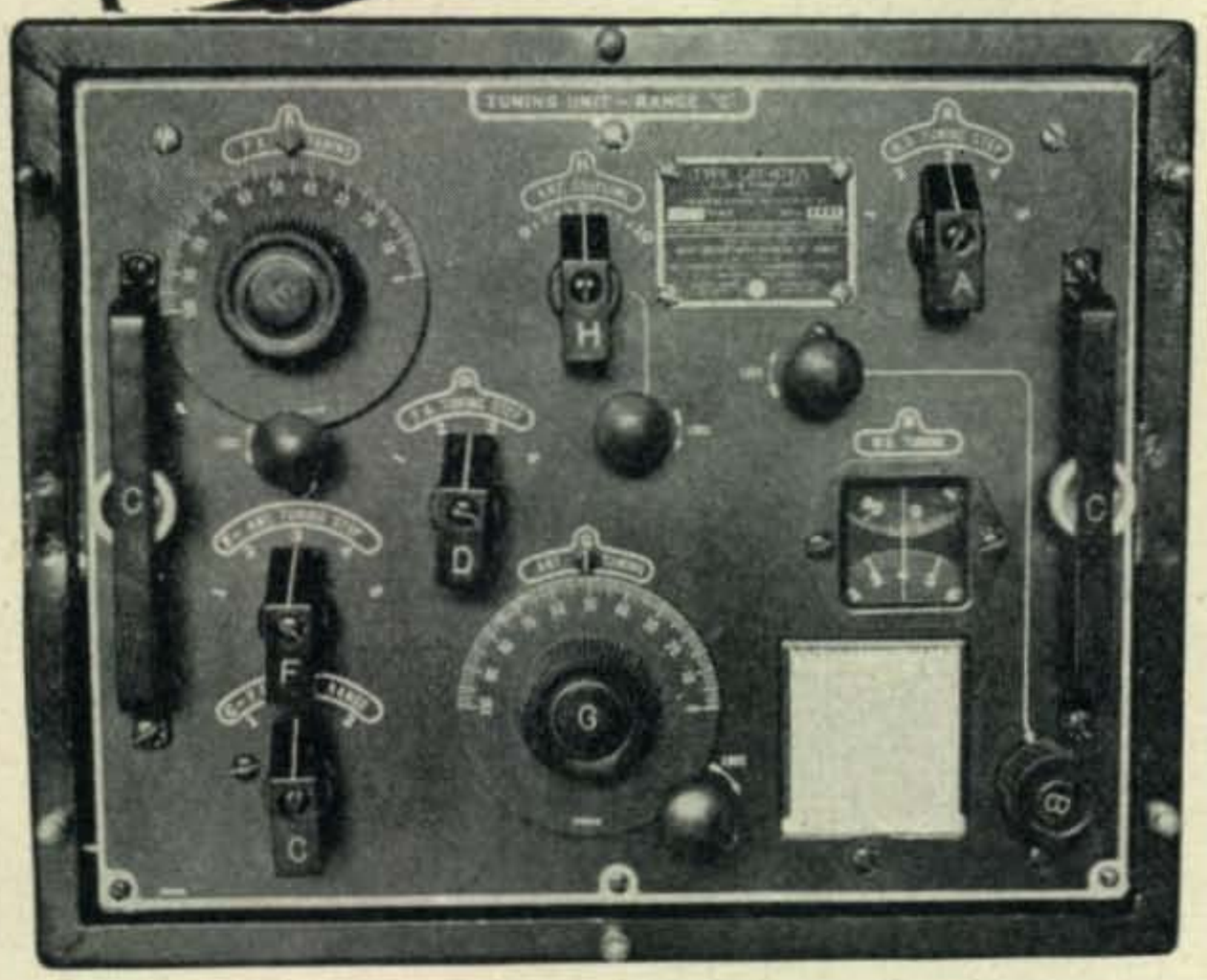
Make DXing easier, extracting the QSLs, simpler. CQ DX, the HANDBOOK for the DX man, is available from your local amateur radio supply house. Order your copy now. Price 50 cents.

CQ

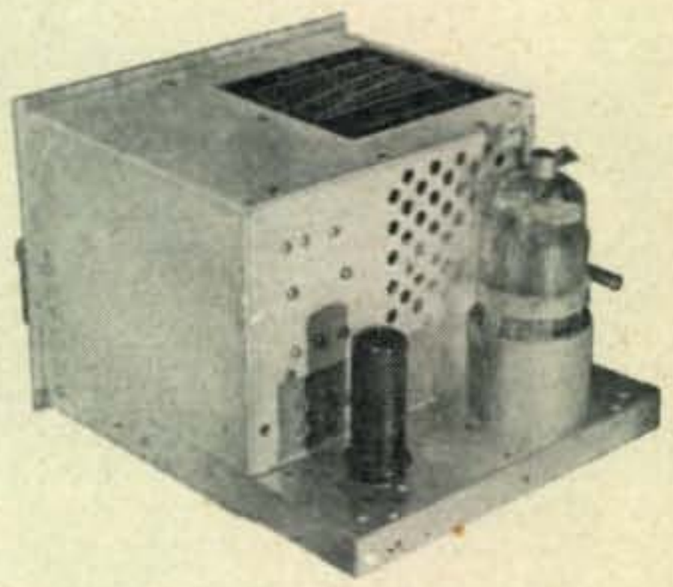
PUBLISHED by RADIO MAGAZINES, INC.

342 Madison Av., New York 17, N. Y.

Build Your New Transmitter Around This Tuning Unit!



This Westinghouse tuner is one of the best values we have seen. It is a complete precision tuning unit for M.O.P.A. operation either as a transmitter up to 250 watts or a driver for bigger rigs. Calibrated controls tune the oscillator, amplifier and antenna circuits. Diagram and instructions for easily mounting M.O. and P.A. tubes as shown in photo, supplied with each unit. With a very small additional investment in tubes and power supply, you will be operating a top quality, dependable transmitter. These items may be found in our new Amateur Catalog H200A at a fraction of their normal cost.



The Westinghouse Tuning Unit is available in 6 ranges:

Range A—350 to 800 KC	D—3000 to 4525 KC
B—800 to 1500 KC	E—4525 to 6500 KC
C—1500 to 3000 KC	F—6200 to 9050 KC

(May be modified for higher frequencies by removing coil turns).

When ordering, specify range. Shipped complete with attractive dust proof, steel carrying case for only..... **$12.50** F.O.B Chicago

10 Meter Whip Antenna

Beautiful quality, 2 section 8′ antenna for ¼ wave on 10 meters. Mobile or fixed. 4″ ceramic insulator and rubber moulded spring mounting. 72 ohm coax termination. Complete with connectors — only..... **$5.25** each.

Look for the Wells Display at Your Jobbers

Twinax 2 Conductor Coax Cable

95 ohm nominal impedance Suitable for any power up to 1 KW. **18c** Per Ft.

Come and See One of the World's Largest Displays of Radio-Electric Equipment

In our new convenient location, just north of Chicago's loop, you'll find thousands of types of radio-electric parts and equipment. Tom Kosti (W9OPU) head of our Amateur Division, invites Chicago and out of town Amateurs to visit his "serve-yourself" department. It is loaded with popular Ham items priced far below what you'd normally expect. Many of these values are listed in our Amateur Radio Catalog H200A. Send for your copy today.

WELLS SALES, INC.

WELLS SALES, INC.

320 N. LA SALLE ST., DEPT. C-5, CHICAGO 10, ILLINOIS

WINNING PERFORMANCE NATURALLY with National Equipment

High scorer for his section in the recent sweepstakes of the American Radio Relay League was Frank Glennon of Canton, Mass., W1KQN, with an unofficial 26,624 score.

Basic units in W1KQN's enviable layout are the National NC-2-40D receiver and the National NTX-30 Exciter. In addition, many National components were used in his transmitter. Around them has been built the station with which W1KQN rang up his record.

Working DX that wasn't hearing enough W stations to know there was a sweepstakes contest, W1KQN operated for only 32 of the possible 40 hours and still racked up the top score.

Year after year, in thousands of ham shacks around the world, National equipment keeps delivering the kind of performance that wins.

National
EST. 1914
MALDEN, MASS.

NATIONAL
COMPANY, INCORPORATED

MAKERS OF LIFETIME RADIO PRODUCTS

. . . Zero Bias . . .

Television Interference

BROADCAST LISTENER INTERFERENCE has always been a sore spot among amateurs. The fact that in many instances the ham is not at fault doesn't mitigate in our favor—a complaint is a complaint. With the number of hams on the air rapidly increasing, broadcast listener complaints are on the rise. Even more serious, in large cities television interference is becoming a major problem with no readily apparent solution.

Old timers will recall the difficulties they had with the cheap a.c.-d.c. midget broadcast sets that were the vogue during depression days. A good many of the television sets sold are in this class, and cleaning up the interference is considerably more difficult. Even the good sets, because of inherent design weaknesses are highly subject to interference from certain of our channels. It is well to recognize the magnitude and seriousness of the problem now, before it gets out of hand.

People who purchase television sets generally make a substantial investment in entertainment. Having invested a large sum of money, they are determined to use these sets—notwithstanding that they may be the victims of poor design or inferior merchandise. When the television set is of good design except for an unfortunate similarity between television frequencies and amateur harmonics our position is even more embarassing. Hams must realize that the citizens with enough money to invest in a television set are generally the more prominent in a community. The more prominent the local denizens the more vocal. So to head off a lot of unjustified criticism of the ham we must tackle television interference for all it's worth. We have several people working on the problem, but we invite anyone who has had experience along these lines to make himself heard. It is high time.

The amateur, when it comes to BCI, is immediately on the defensive. To add to the seriousness of the situation is the fact that there are just as many non-amateur radio servicemen as those with licenses. The non-amateur serviceman had the disconcerting habit of blaming all interference of questionable origin on the ham, especially if he knows one to be in the neighborhood. With television the servicemen has a big investment at stake and he is far more likely to look for an excuse. Typical is the case of a local we know who had erected a rather prominent rotary on his home. Within a short while an irate television fan bluntly told him that his serviceman had pointed out "that rotary washline" as the offender. The rotary wasn't the offender at all, but the nasty scene that ensued didn't do ham radio any good.

In dealing with the broadcast listener it behooves the ham to be tactful. By his conduct the entire hobby stands to make a friend or an enemy. Curing the interference is the way to guarantee friendship but unfortunately there are today some television interference cases that are almost hopeless. Amateur research may supply the answer and television BCI may be as effectively eliminated as that on standard broadcast bands. It is a goal to shoot at. In the interim, should you receive complaints of BCI, be tactful and do your best to cooperate. Don't give anyone a poor impression of amateur radio or its participants.

6 Meters

IT IS PRETTY DIFFICULT to keep up with the outstanding work of 6-meter DX men. Last month we reported two outstanding feats. Two-way reception between W7ACS/KH6 and VK4HR and two-way communications between W4GJO, W4IUJ, and OA4AE. In addition to this work, on March 24th the 50-mc automatic transmissions of PAØUN were logged by ZS1P, ZS1T, ZS1DJ, and ZS1AX, a distance of over 6000 miles. In all these instances the Monthly DX Predictions have accurately forecast the openings and in one case Perry Ferrell was supplying W4GJO with additional ionosphere data that culminated in the outstanding contact between W4GJO, W4IUJ and OA4AE.

We hope that these spectacular achievements will encourage more participation on this too-little used band. It is going to be our editorial policy to encourage participation on this band as much as possible. New transmitters designed for the beginner will have their range extended to cover 6 meters whenever practical. It is the ideal band for short haul work and offers promise of more consistent DX with greater activity. See you on 6!

W2IOP

WØHBG selects Collins again

BY DIRECT WIRE FROM

WESTERN UNION

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

R. B. WHITE
PRESIDENT

CLASS OF SERVICE

This is a full-rate Telegram or Cable-gram unless its deferred character is indicated by a suitable sign above or preceding the address.

SIGNS
DL = Day Letter

The filing time as shown in the date line on full-rate telegrams and day letters, and the time of receipt

WUC 22 NL PD= WUX CLINTCN IOWA JAN 17 1947

ARTHUR COLLINS= COLLINS RADIO CO=

AFTER TEN DAYS ON THE AIR AND BEING SUBJECTED TO JUST ABOUT EVERY POSSIBLE OPERATING ABUSE, THE NEW COLLINS 30- K HAS PROVEN ITSELF TC BE THE TRANSMITTER THAT AMATEURS HAVE DREAMED ABOUT. THE THIRD CONTACT WAS OUT OF THE COUNTRY. EVERY QSC HAS RESULTED IN COMPLIMENTS ON THE QUALITY OF THE 30-K SIGNALS. ITS EASE AND SPEED OF HANDLING IS ALMOST UNBELIEVABLE. FOR EXAMPLE THE TRANSMITTER WAS SET FOR 40 METER C.W. WHEN I HAPPENED TO HEAR A CUBAN CALLING CQ ON 20 METER PHONE. BEFORE HE HAD FINISHED HIS CALL, I WAS ABLE TO BAND SWITCH THE TRANSMITTER TC 20 METERS AND TUNE IT UP IN PLENTY OF TIME TO CALL THE CUBAN WHEN HE STOOD BY, AND GOT HIM. I WANT TC TAKE THIS WAY OF CONGRATULATING THE STAFF, TECHNICIANS, AND PRODUCTION WORKERS WHO MADE THE 30-K WHAT IT IS-- THE FINEST TRANSMITTER THAT HAS EVER BEEN OFFERED TO US AMATEURS=

CLYDE H HENDRIX WCHBG BREEZY POINT
CLINTCN IOWA

Clyde Hendrix, President of Pillsbury Mills' Feed and Soy Division, owned one of the earliest Collins amateur transmitters. Here he is shown taking delivery of his new Collins equipment.

The 30K-1 is *engineered for satisfaction*. Get the details from your nearest dealer (See February, 1947, issue) or write to us.

"Hundreds of dollars in hundreds of prizes at the Tall Corn Hamfest, May 24-25 at Cedar Rapids. Sponsored by Iowa City and Cedar Rapids amateurs. Don't miss it."

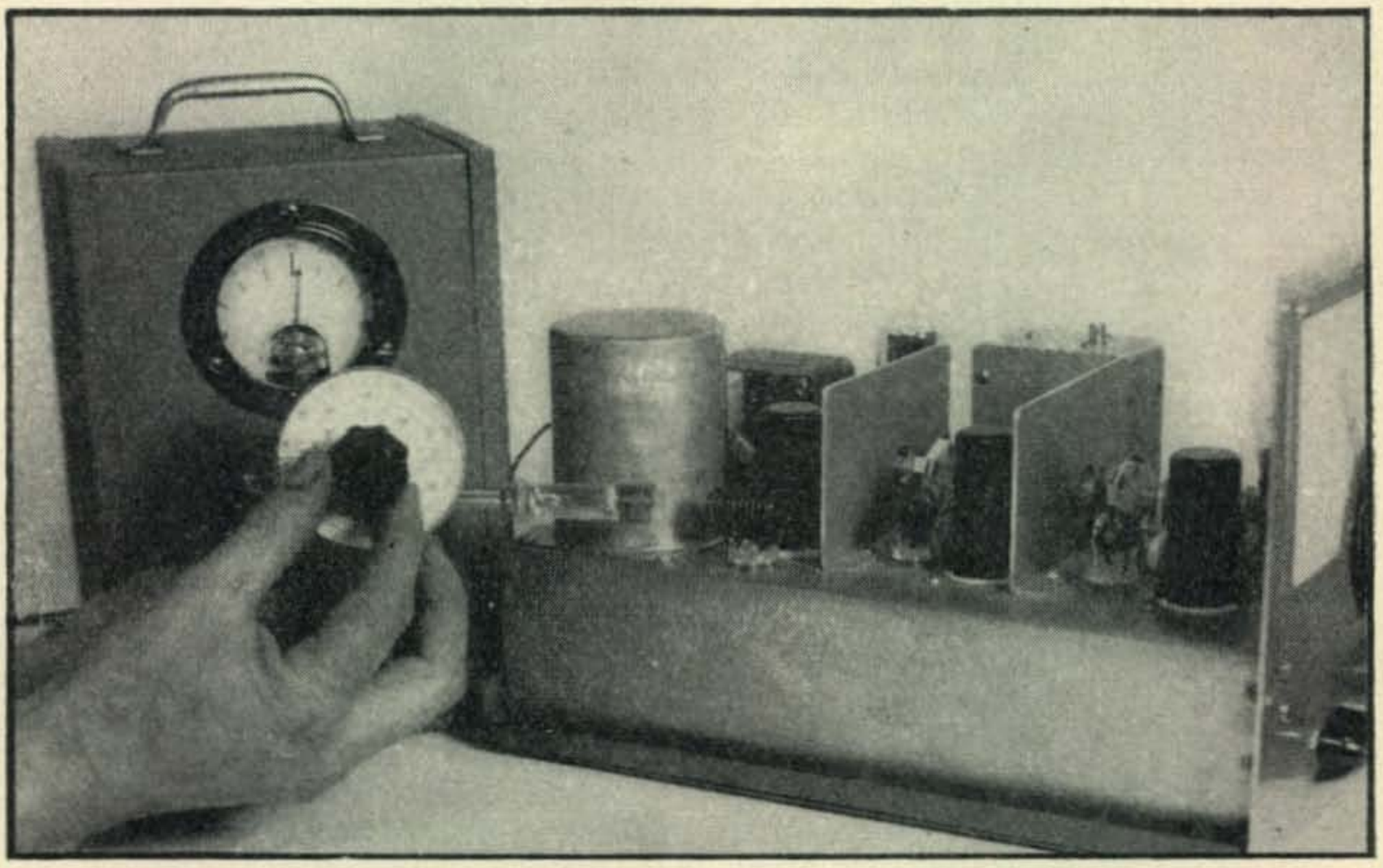
FOR BEST RESULTS IN AMATEUR RADIO, IT'S . . .

COLLINS

COLLINS RADIO COMPANY, Cedar Rapids, Iowa

11 West 42nd Street, New York 18, N. Y. **458 South Spring Street, Los Angeles 13, California**

THE DIPPER



The Dipper being used to check the r-f coil in a ten-meter converter. The cabinet behind the grid-dip oscillator houses the power supply and the grid current meter.

W. M. SCHERER, W2AEF*

Another version of the indispensable grid-dip oscillator

SUCH INTENSE INTEREST has been displayed by every amateur who has witnessed demonstrations of several commercial models of the *Dipper*, designed by the writer, that it was decided to design a simple *Dipper* which could be easily constructed by the radio amateur.

The *Dipper* is, actually, the grid-dip meter which, for many years, has lain neglected on the shelf of most radio shacks. The first postwar reference in amateur literature appeared in March *CQ*[1]. The grid-dip meter is simply an r-f oscillator with a milliammeter connected in the grid circuit to show relative grid current. When the oscillator is coupled to a resonant circuit, power is taken from the oscillator tank circuit and is so indicated by a decrease in the grid current meter reading.

The grid-dip meter, therefore, may be employed to check the resonant frequency of a circuit, without the application of power to the circuit in question, simply by loosely coupling it to the inductive portion of the circuit and tuning the *Dipper* to the point at which its grid meter shows a marked dip, the resonant frequency being read directly from the calibrated scale. Its use in this manner results in the saving of considerable time when coils are wound and tuned circuits set up for transmitters, receivers, wave traps, absorption-type frequency meters, etc., so that when they are placed in actual service, they will be lined up to the point where only minor tuning adjustments will be required. Many of the cut and try methods are then eliminated and a definite certainty is established pertaining to the tuned circuit components of a piece of newly constructed equipment in the event it fails to operate properly due to errors or failures in other portions of its circuit.

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[1] *"About Grid Dip Oscillators," C.F. Bane, W6WB, CQ, March, 1947*

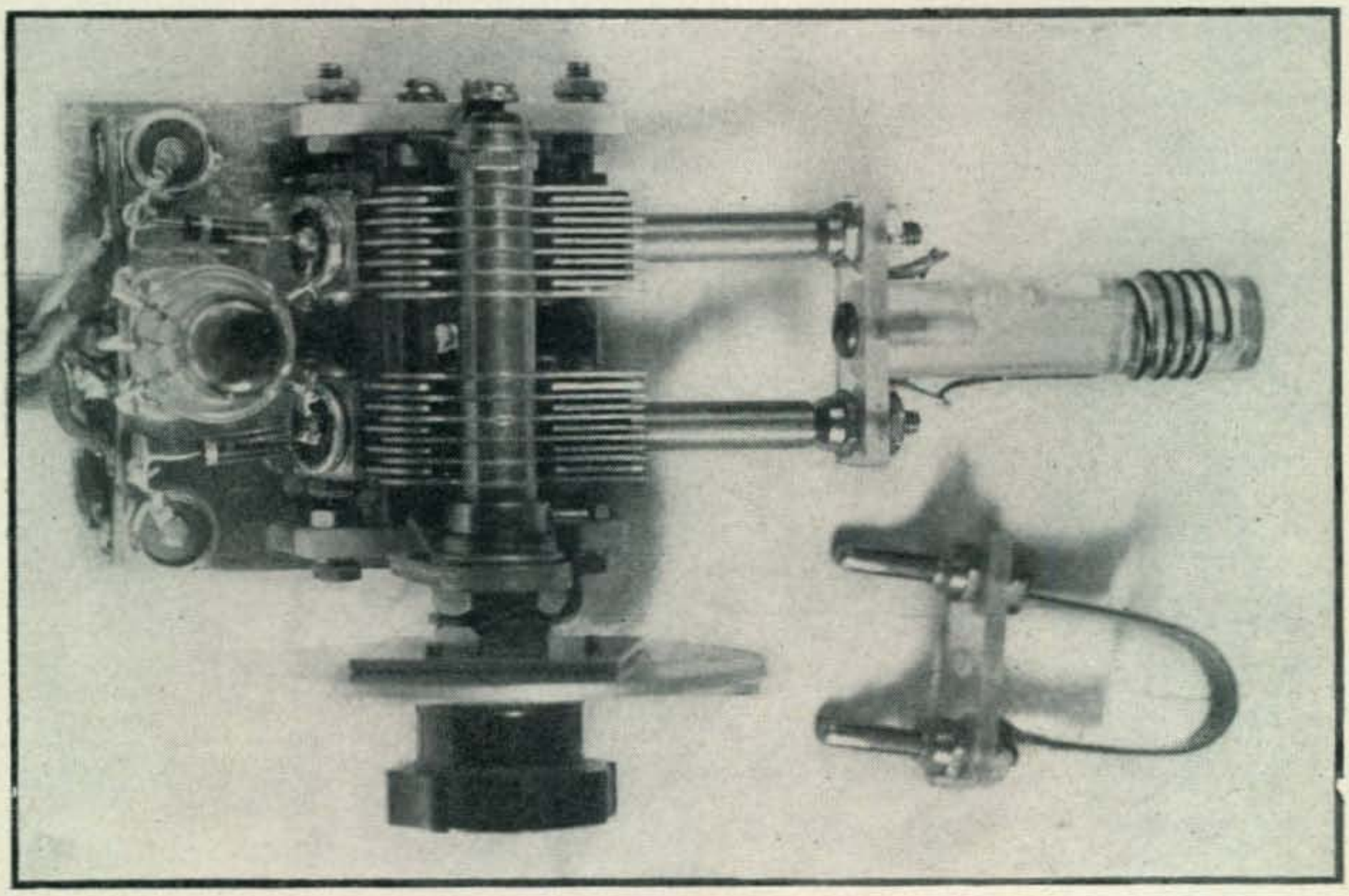
**Cliff Trail, Fayson Lake, P. O. Butler, N. J.*

Applications of the Dipper

A 27-30 mc converter was constructed having one r-f stage, detector and oscillator, and a fixed output circuit for operation into a communications receiver tuned to 4.2 mc. This then meant that the r-f and detector coils each had to tune from 27 to 30 mc, and, to produce the 4.2-mc beat necessary to feed the communications receiver used as the high frequency i-f channel, the oscillator coil had to cover either 22.8 to 25.8 mc or 31.2 to 34.2 mc. For our purpose, the latter was chosen. The oscillator coil was then wound with an approximate number of turns, and, by loosely coupling the *Dipper* to the coil connected in the oscillator circuit (no plate voltage applied to the converter), it was found that the highest frequency attainable was 32 mc. The coil was then cut down accordingly. The r-f and detector coils were then made up and adjusted, in the same manner, to cover 27 to 30 mc and to track with the oscillator. Finally, the fixed output circuit was similarly tuned to 4.2 mc. Being certain the remainder of the circuit elements were correctly wired, it was only necessary to connect the converter input to an antenna, the output to the communications receiver (tuned to 4.2 mc), apply plate voltage to the converter, and listen to the ten and eleven-meter signals come rolling in. Very little final adjustment was required after placing the set in operation, the only exception being in the r-f stage where the trimmer would not peak up the signal. Upon investigation with the *Dipper*, it was found that the frequency range of the r-f coil had shifted somewhat due to the tight coupling of the antenna which had not been connected during the original adjustment procedure, so the *Dipper* was again employed under this new condition and the necessary corrections made. For the final alignment, the *Dipper*, being an r-f oscillator, was then used as a signal generator by setting it to the desired frequency and tuning it in on the converter.

On one occasion, a local amateur brought in a receiver which he could not make work. All the voltages checked satisfactorily, the receiver was correctly wired, and the continuity checked correctly with an ohmmeter. It was ascertained that the trouble was in the front end of the set, so the *Dipper* was called upon to see what was happening in the tuned r-f circuits. In no time, it showed that the detector was okay with the tuning condenser at minimum, but, as soon as the condenser was rotated a few degrees toward maximum, it was impossible to find any resonant point in the detector circuit. This called for a close scrutiny of the tuning condenser where it was found that a small piece of solder had wedged itself in an obscure corner in such a way to short circuit the condenser after it had been rotated a few degrees from minimum setting.

Many transmitters have been built where the coils for each stage, thru the use of the *Dipper*, have been made and tuned while connected in the circuit and without the application of plate voltage. This resulted in not only a considerable saving of time, but also afforded personal safety from high voltages as well as protection of transmitting tubes from unresonated plate tanks. In the case of frequency multiplier stages there is the further



Top view of the Dipper, showing the 55-120 mc coil in the socket and the 120-250 mc coil in the lower righthand corner. Coil details are shown in Fig. 2.

assurance of operating at the correct harmonic.

The resonant frequency of an antenna may be checked by coupling it to the *Dipper* coil thru a small condenser or coupling loop. The calibration will be shifted slightly, so the true frequency must be determined by tuning in the *Dipper* signal on a receiver. Antennas within physical reach, such as those used on v.h.f.s., may be checked by placing the *Dipper* coil alongside of the antenna itself. The best dip will be obtained at the current nodes and may be found along different portions of the antenna depending upon its relative length—half wave, full wave, etc. The *Dipper* may be used to find the resonant frequency of r-f chokes and thereby determine whether their reactance will be inductive or capacitive at the frequency of the circuit in which they are to be of service.

Capacitance up to about 1,000 $\mu\mu$f may be conveniently measured in the following manner. Connect a calibrated variable condenser, set at its maximum, across a small coil. Resonate the *Dipper* with this circuit. Then connect the unknown condenser in parallel with the variable condenser and, with the *Dipper* setting unchanged, bring the circuit again to resonance by decreasing the capacitance of the variable condenser. The difference between the first and last settings of this condenser is then the value of the unknown.

The condition of condensers in service may be checked without their removal from the equipment. The equipment power is turned off and a small piece of wire is clipped across the terminals of the doubtful condenser so as to form a half turn loop of small diameter (see *Fig. 3*). Resonance is then checked with the *Dipper*, but if there is no indication of resonance, most likely the condenser is either open or shorted. This check is satisfactory for condensers up to about .001 μf, using the *Dipper* here described as its low frequency limit is 3 mc and higher values of capacitance will resonate at a lower frequency.

By inserting a pair of phones in the ground lead of the grid milliammeter, the *Dipper* may be used as an oscillating detector. An audible beat will be heard at the fundamental and harmonic frequencies of a source of r-f power. Its sensitivity, used in this manner, is quite high so care must be exercised in making certain that the beat heard is that of the desired power source and not that of some other nearby source, such as other r-f stages in a transmitter.

With the plate voltage removed the *Dipper* becomes a tuned r-f diode voltmeter. The milliammeter then, being in the diode load circuit, will read upward when the *Dipper* is resonated to a source of r.f. Thus it may be used as an absorption-type frequency meter or as a field strength

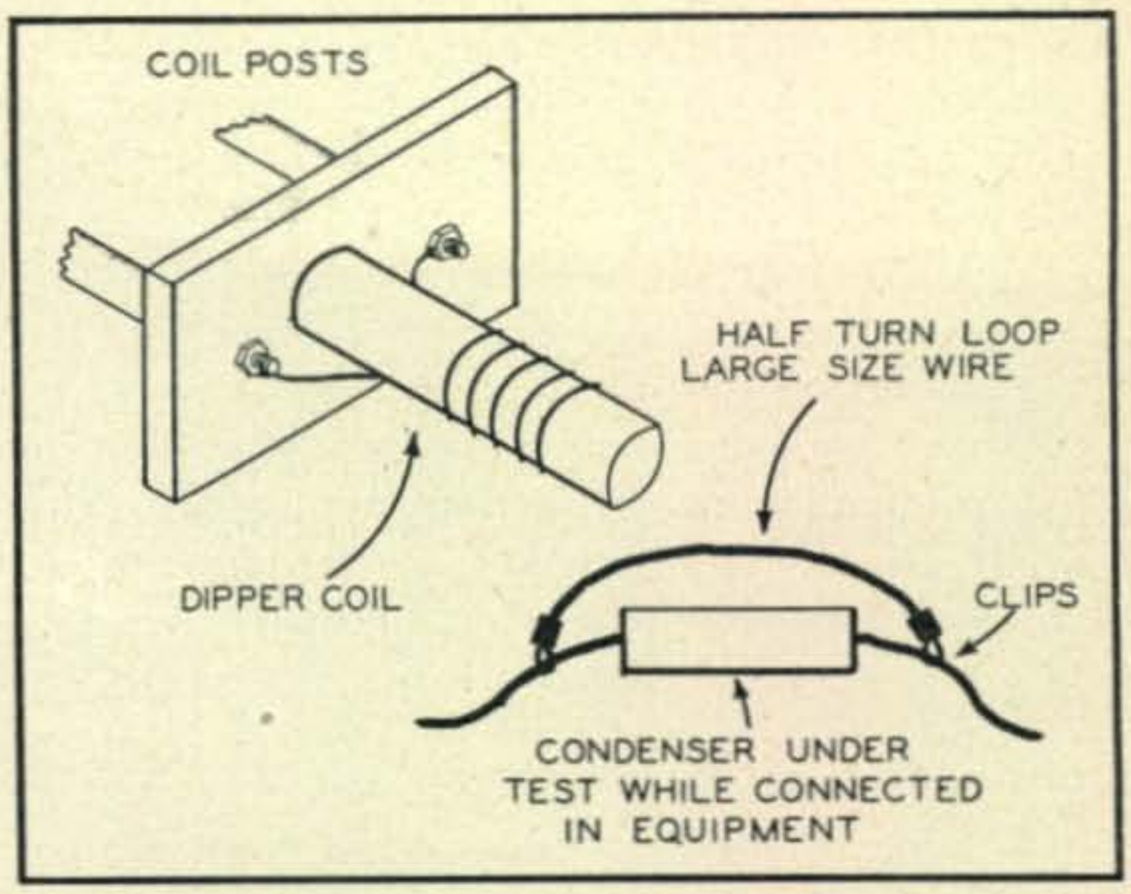


Fig. 3. Condensers may be tested in the circuit by connecting a loop of wire across the condenser and checking the resonant point of the LC circuit.

meter. As the latter it is especially helpful in tuning up antenna systems and in checking harmonic radiation. All that is required is filament power and a few feet of antenna connected thru a small condenser to one of the coil mounting posts.

In one case, where a certain transmitter had bad parasitic oscillations, the *Dipper* was employed as an absorption-type frequency meter and showed the parasitic frequency to be 200 mc. Then, after removing the plate power from the transmitter, the *Dipper* was used as the grid-dip meter and, as such, traced the cause of the unwanted oscillations to the wiring of the r-f amplifier plate and grid circuits which resonated at 200 mc!

As mentioned previously, the *Dipper* may be used as an r-f signal generator. In this manner it may be utilized for many purposes other than receiver alignment. One of these is the measurement of circuit *Q*. To do this, a vacuum tube voltmeter is connected across the circuit and the voltage and frequency is noted when the *Dipper* is resonated with the circuit. The *Dipper* frequency is then shifted each side of resonance to a point where the voltmeter reading drops to 70.7% of that at resonance. The frequencies of these two points is noted and the circuit *Q* calculated from $Q=\frac{f_r}{\Delta f}$ where f_r is the resonant frequency and Δf is the difference between the "off resonance" frequencies just found. The coupling of the *Dipper* to the circuit should remain fixed for all of the above procedure. When the circuit *Q* is fairly high it may be necessary to check the *Dipper* frequency with a receiver as the "off resonance" frequencies will occur too closely together for accurate reading on the scale.

With a little experience, relative circuit *Q* may be noted when using the *Dipper* as the grid-dip

meter by observing the broadness of the grid dip. The sharper dip indicates higher *Q*.

Summarizing, the *Dipper* is practically a laboratory in itself, having as its primary uses those of:

1. An oscillating frequency meter for determining the resonant frequency of de-energized circuits.
2. An oscillating or non-oscillating detector or frequency meter for determining the presence of r-f power at the fundamental or harmonic frequencies of energized circuits.
3. An r-f signal generator.

Construction of The Dipper

The *Dipper* circuit is that of the conventional Colpitts oscillator (*Fig. 1.*) using a 955 acorn tube. The items of particular importance are the variable tuning condenser and the oscillator tube.

Satisfactory performance above 200 mc is dictated by the minimum capacitance of the condenser plus the internal capacitance of the tube. (The lead inductance of the tube must also be small). The condenser chosen for this model (National STD 50) has a minimum capacitance of 5 $\mu\mu$f per section. Its top value per section is 50 $\mu\mu$f. With the capacitance of the 955 across the condenser, it is then possible to tune each coil over slightly better than a 2 to 1 range, thus giving continuous coverage from 3 to 250 mc using six coils. (The *Dipper* can be made to reach 400 mc, but the limit was set at 250 mc as the extended coverage is of relatively little value to the amateur). The condenser plates are shaped so that each scale is not cramped at its high frequency end, as would be the case with straight line capitance plates. This condenser has one bad feature for our purpose, namely, the front bearing is insulated from the rotor making the inductance formed by the frame, together with the capacitance at this bearing, resonant at 210 mc. This situation is eliminated by removing the insulated washer between the rotor and the bearing and substituting a brass washer of the same size.

The 955 acorn was selected not only for its low internal capacitance, but also for its low lead inductance. The 955 also lends itself quite nicely to directly soldering it in place, thus eliminating socket inductance as well as reducing the physical space required. With reasonable care, no trouble will be encountered in soldering the tube prongs. They must be first cleaned and then tinned with a small iron. The heat should be applied at the extreme ends of the prongs and only long enough for tinning. If too much heat penetrates the prongs toward the tube, the glass is liable to crack. When the tube is installed in the instrument, the heat should be applied to the tinned lugs used for mountings.

The coils are connected to the *Dipper* by banana plugs which are inserted into two posts mounted on brackets at the right end of each stator section of the variable condenser. Dimensions are given in *Fig. 2.* The d-c blocking con-

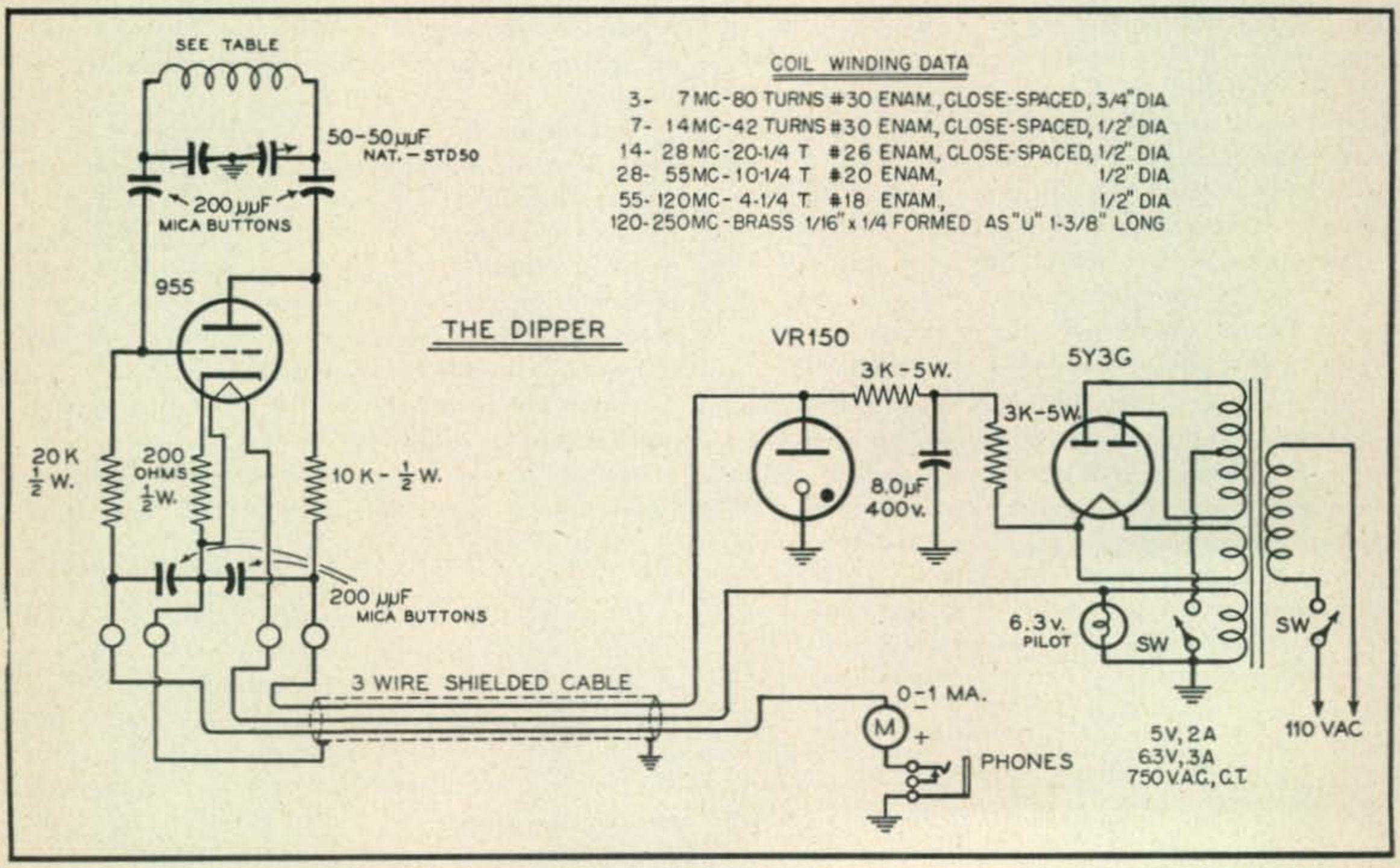


Fig. 1. Schematic of the complete grid-dip oscillator. The coils for 55-120 mc and 120-250 mc should be space-wound and double-space-wound respectively.

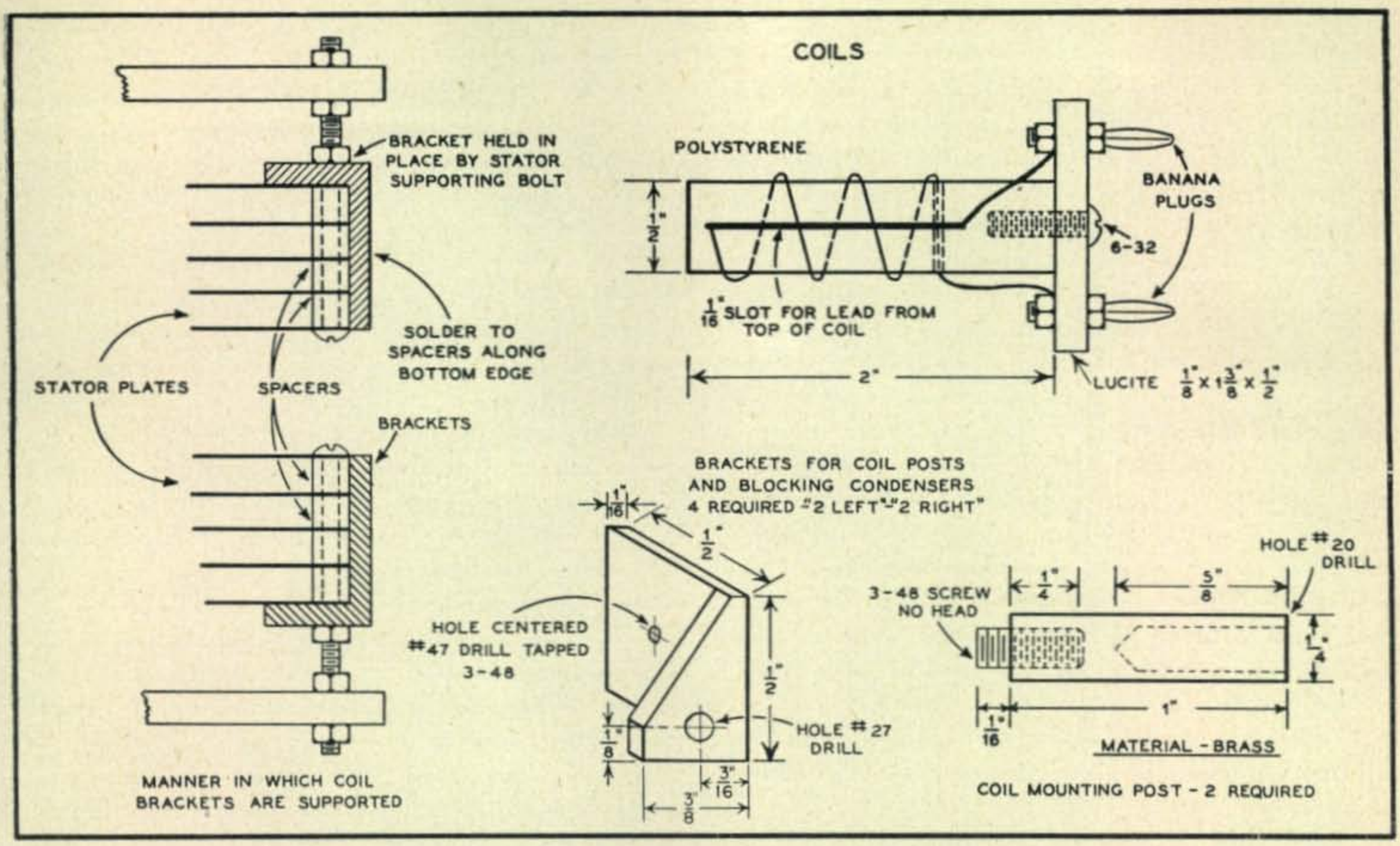


Fig. 2. Construction details of the acorn tube oscillator coils.

densers, *C1* and *C2*, are mounted on similar brackets at the opposite ends of each stator. It is necessary to disassemble the condenser in order to mount the brackets which are held in place by the long bolts supporting the stator plates. The plating on the brass spacers separating each stator plate must be filed off to permit soldering the bottom edge of each bracket to the spacers. This will prevent the brackets from shifting if any leverage happens to be applied to the coil posts. (While the condenser is disassembled, don't forget to replace the insulated washer at the front bearing). The coil posts are mounted to the center of their brackets with a 3-48 screw. They could be soldered to the brackets, but the use of the screw locates the post more accurately and makes a neater and relatively easier job.

C1 and *C2* are the small button type and are soldered to their brackets. These condensers have little inductance and their "hot" terminals serve as rigid mountings to which the 955 grid and plate leads may be soldered.

The split-stator variable condenser is mounted on a piece of 1/16" aluminum 2 3/8" x 2 3/4." Along the rear of this plate a four terminal tie strip is mounted 7/8" from the "hot" terminals of *C1* and *C2* so that, when the acorn grid and plate leads are soldered to these terminals, the acorn filament leads may be soldered to the two center lugs of the tie strip. The cathode lead will fall between the center lugs, and to it a 200-ohm resistor should be soldered in a vertical position so that its bottom end may be grounded to the mounting plate. One of the filament lugs is also grounded to the same point.

Before soldering the tube, the grid and plate resistors should be connected between the "hot" terminals of *C1* and *C2* and the two outside lugs of the tie strip. These lugs then become the terminals for the B plus and grid meter power supply leads. The plate and grid bypass condensers are mounted next to these lugs on the aluminum plate, their "hot" leads soldered to the lugs.

A pistol type grip is made of wood and mounted as shown in the photos. A 1/4" hole is drilled down the center of the grip and thru it is inserted a three-wire shielded cable. Connections for the cable are indicated in *Fig. 1*.

A 2 1/2" diameter aluminum disc is mounted on the front of the variable condenser and white paper is glued to it for marking the six calibrated scales—three at the top and three at the bottom. The travelling indicator is cut from a piece of 1/16" lucite and thru its center a line is scribed lengthwise. This line is then filled with India ink and the indicator is attached to the knob by two small screws.

Dimensions for the coil mountings are given in *Fig. 2*. The spacing of the holes for the banana plugs is not indicated as it must be accurate, depending upon the constructor's exact location of the mounting posts attached to the condenser. The highest frequency coil is soldered directly to the lugs on the banana plugs. The next four coils are each wound on polystyrene rod. At the top of each rod a hole is drilled thru its diameter. A slot

is then cut, with a hacksaw, 1/16" deep from this hole lengthwise down the side of the rod, making it possible to bring the lead from the top of the coil thru the hole and down under the coil to one of the banana plugs. The other lead from the coil is then fed thru a hole drilled at the bottom edge of the coil and at right angles to the top hole. The lowest frequency coil is wound on 3/4" polystyrene tubing which is cemented to the banana plug strip. Coil winding data is given in *Fig. 1*. Each coil is given a coating of coil dope.

The power supply is not discussed in detail, as any unit delivering 6.3 volts and a regulated voltage of 150 volts will be satisfactory. There should be a switch for removing the B plus when desired. Also, the grid meter should be mounted with the power supply. The unit for this model is mounted in a metal case with sufficient room for housing the *Dipper* and its coils. This is done to eliminate dust and to enhance the portability of the instrument.

Calibration may be made using either an absorption-type frequency meter or a calibrated receiver.

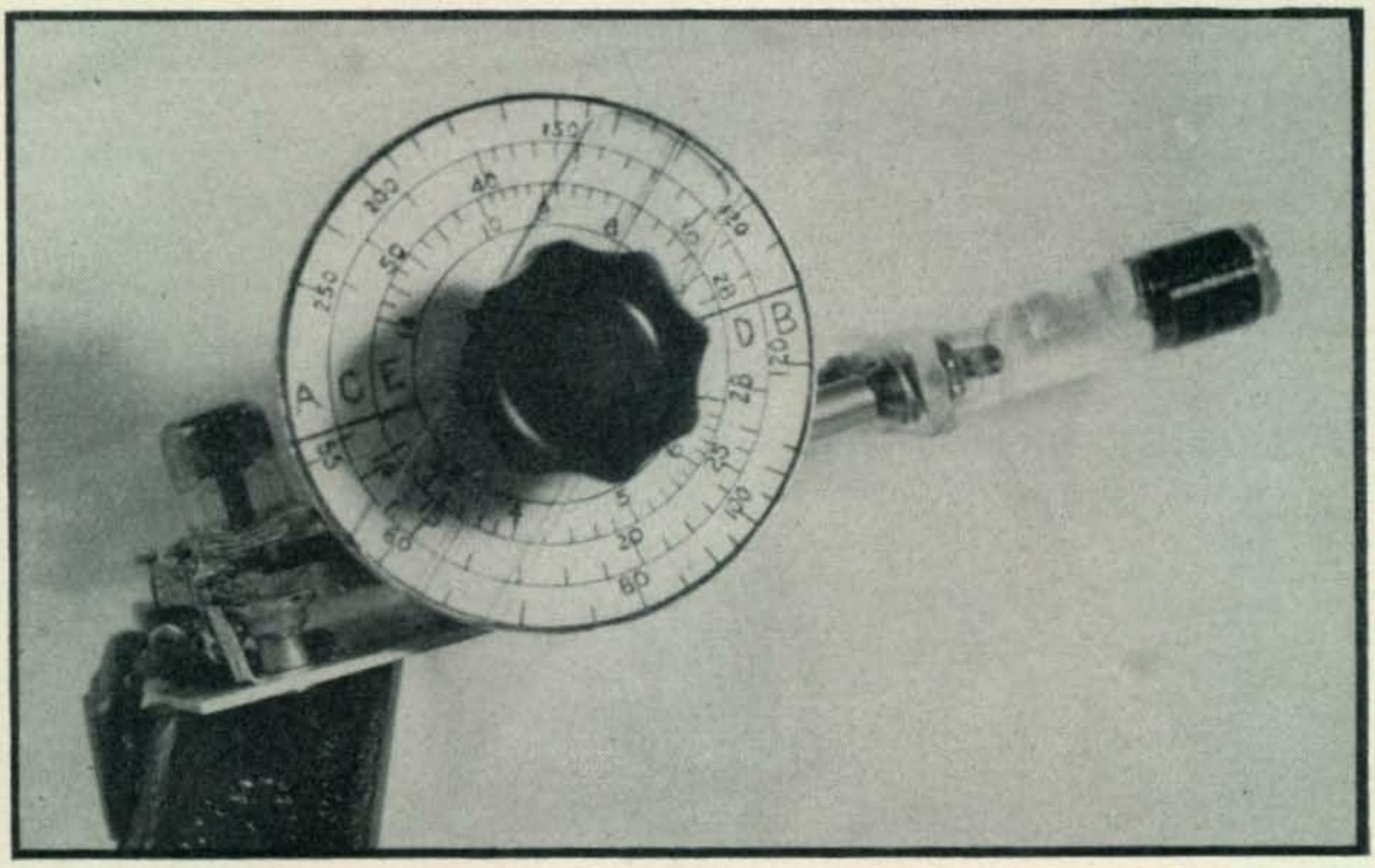
The following method is employed with the absorption meter. First, to check the range of each coil, set the *Dipper* condenser at minimum capacitance and, with the absorption meter loosely coupled to the *Dipper* coil, adjust the absorption meter to the point where the *Dipper's* meter shows a marked dip. This then indicates the highest frequency attainable with the particular coil in use. The same procedure is followed for checking the low frequency end of the coil with the *Dipper* condenser set at maximum. Then, for point to point calibration, the absorption meter is set at the desired frequency and the *Dipper* condenser rotated until the grid meter shows the dip. The scale should then be marked accordingly. It will be noticed that the grid meter will vary somewhat over each range, however, resonance is indicated only at the point at which a marked dip occurs.

When calibrating with a receiver it is merely necessary to turn on the receiver beat oscillator and tune in the *Dipper* signal. Care must be taken so as not to become confused with harmonics or images. Calibration points are marked according to the *Dipper* beat heard on the receiver, instead of observing the grid dip.

The instrument may be checked in the following manner: Set the *Dipper* at 3.5 mc and tune in the second harmonic at 7 mc. Then, with the receiver left tuned at this point, set the *Dipper* at 7 mc as indicated on its scale. The signal should then be heard on the receiver without any further tuning. This then should be repeated at 14 mc, etc., right down the line.

If either an absorption meter or calibrated receiver is not available for use at the higher frequencies, lecher wires may be set up and the same procedure followed as with the absorption meter.

It must be remembered that the accuracy of the *Dipper* cannot be any greater than that of the calibration source and also depends upon the care taken during the calibrating process. When employing the *Dipper*, greatest accuracy is realized when the oscillator coil is placed as far away as possible from other metal objects and when the coupling to circuits is as small as possible for the dip indication.



Side view of the Dipper showing the scale and indicator mounting. The 7-14 mc coil is in place. Power leads are fed through the pistol grip and out to the external power supply.

A Cathode Modulated

812 TRANSMITTER

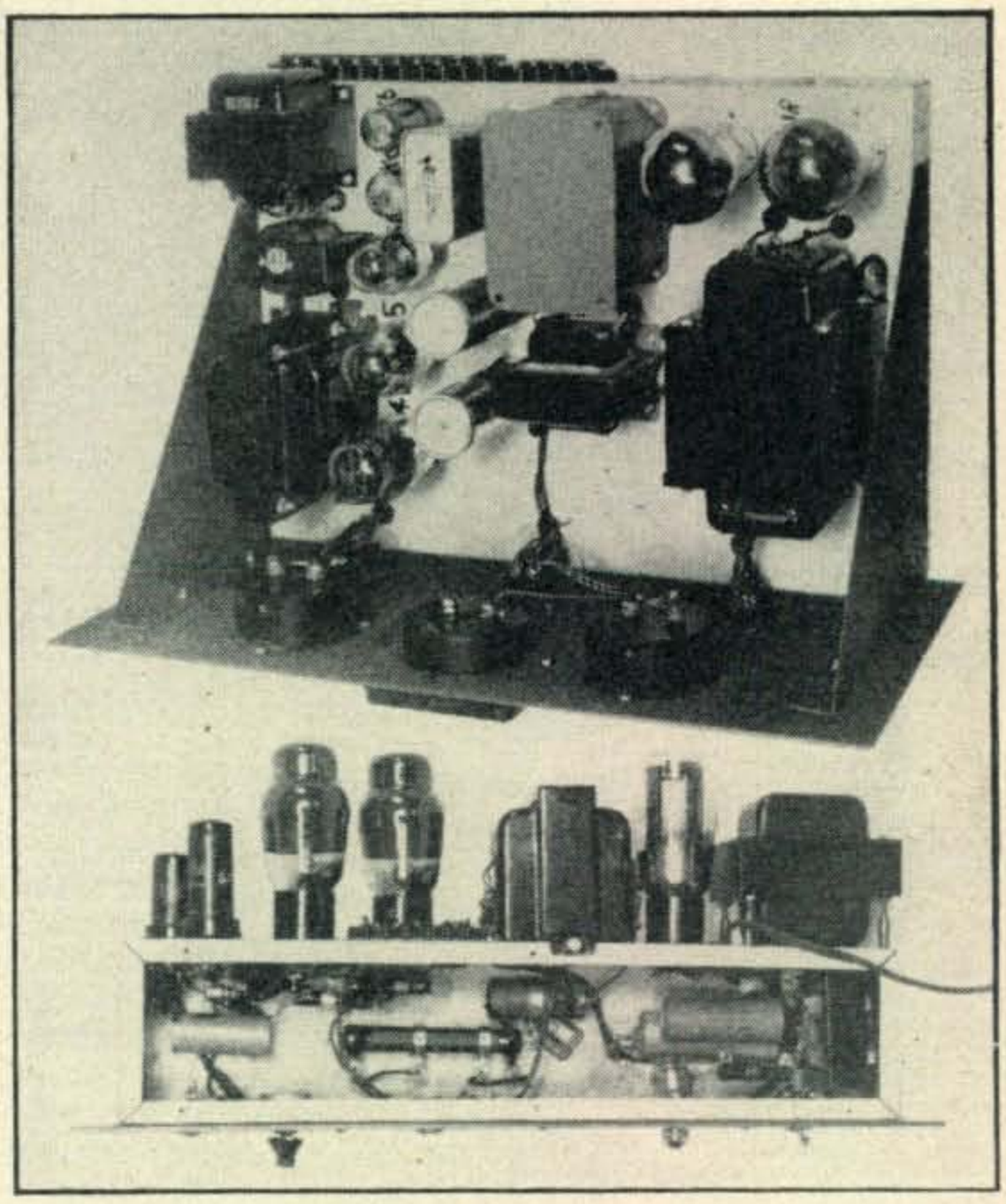
FRANK C. JONES, W6AJF*

A low cost phone - c.w. transmitter for all-band operation

CATHODE MODULATION is a compromise between grid or efficiency modulation and plate or power modulation. It requires more audio power than grid modulation but permits obtaining higher r-f output and efficiency. Its main advantage is that a relatively small power supply and a pair of 6L6 tubes will supply enough audio peak power to modulate nearly any kind of class C r-f amplifier. Plate modulation usually requires an additional high-voltage power supply and a class B power modulator with attendant high a-f and r-f peak voltages. These higher values sometimes cause unusual types of parasitic oscillations with sideband splatter which may be difficult to cure.

Cathode modulation is easy to adjust if the audio peak power is over 20% of the r-f amplifier d-c power input. For lower peak values, the amount of grid modulation is higher and the r-f amplifier adjustments, for good modulation characteristics, are more difficult.

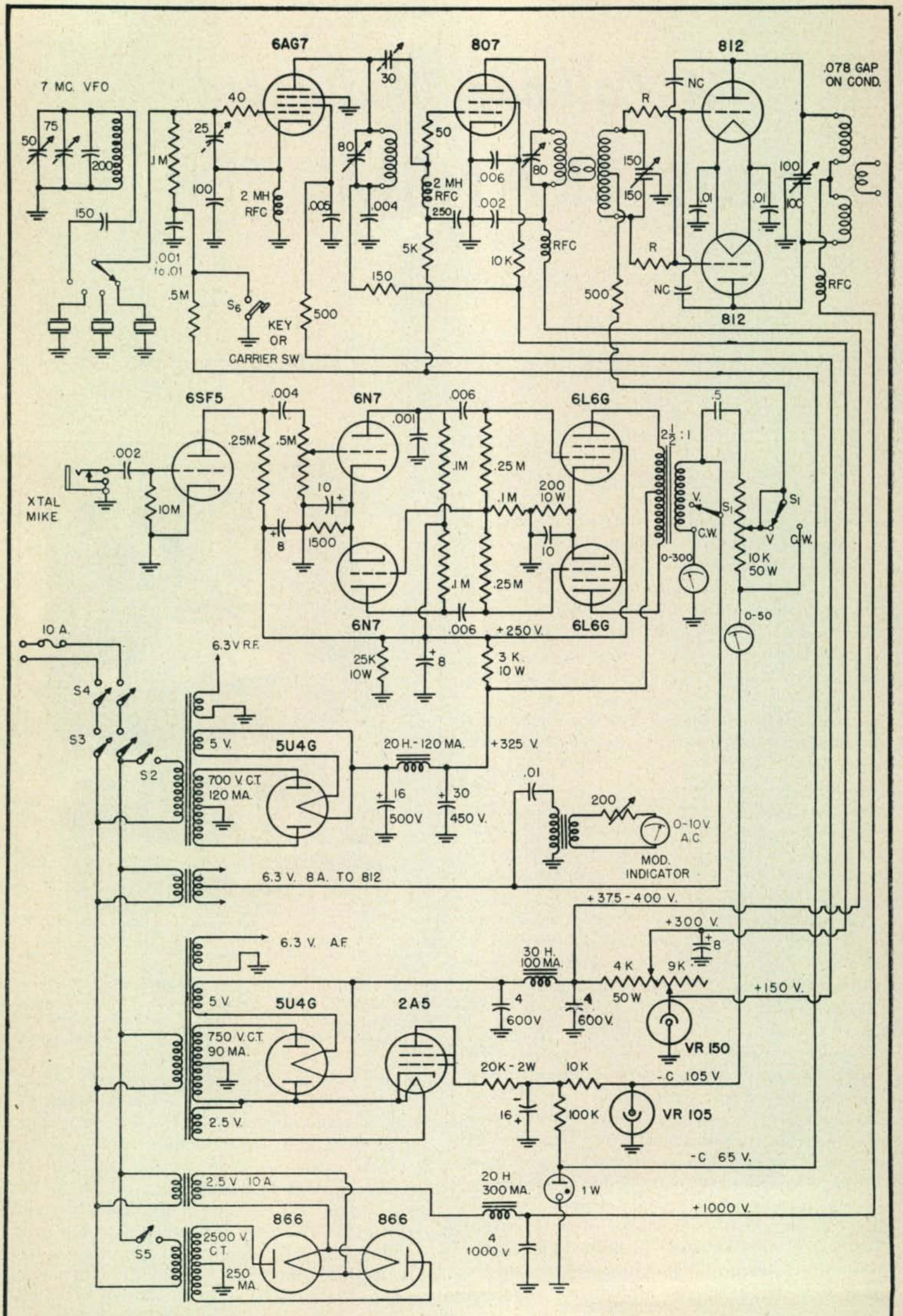
The push-pull 812 tubes in the transmitter shown are operated at 1000 volts and 200 ma or 200 watts input normally. The required 40 watts peak a.f. is obtained from a pair of 6L6 tubes. The latter are capable of furnishing about 50 watts of peak power in class AB1. For speech service, the average power is about one-fourth the peak power so the modulator load impedance can be set up for a peak power capability of from 40 to 50 watts for an average power of 10 to 15 watts on speech. In class B modulators this is done by increasing the peak grid drive and the peak plate current. Lowering the plate load impedance permits an increase of peak plate current. Tetrode tubes in class AB1 provide more peak output power when working into a higher load resistance since the grid circuit is not driven positive and the internal plate resistance is extremely high, so lowering the plate load resistance doesn't help.



Power supplies, voltage regulators and meters are mounted on common chassis and panel. Center meter indicates relative modulation. Cathode modulator on the small chassis occupies 3½" of panel space.

The 812 cathode current of at least 200 ma d.c. if fully modulated, would have a peak a-c component of 200 ma. If the modulator could supply a peak power of 40 watts at 200 ma peak current, the peak cathode voltage would be 40/.2=200 volts, and the cathode impedance would be about 1,000 ohms. This value of 200 volts would overmodulate the grid, so the grid is tapped across only a portion of the cathode circuit. The modulation transformer can be of any design which will carry the 200 ma of d.c. in the secondary and

**2037 Durant Ave., Berkeley 4, Calif.*


6AG7
807
812
.078 GAP ON COND.
7 MC. VFO
50
75
200
150
40
25
100
.1 M
.001 to .01
.5M
S6
KEY OR CARRIER SW
30
80
.004
2 MH RFC
.005
500
150
50
2 MH RFC
250
.006
.002
80
5K
10K
RFC
R
NC
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RFC
500
812
6SF5
6N7
6L6G
.004
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.001
.25M
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.002
XTAL MIKE
10M
10
+
8
1500
.1M
.25 M
200 10 W
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10
.1 M
.25M
2½ : 1
.5
V.
S1
C.W.
0-300
10 K 50 W
0-50
10 A.
6.3 V R.F.
6N7
6L6G
.006
+250 V.
25K 10W
8
3 K 10 W
S4
S3
S2
6.3 V A.F.
5 V.
5U4G
20 H.- 120 MA.
+325 V.
700 V C.T. 120 MA.
16 500V
30 450 V.
.01
200
0-10V A.C
MOD. INDICATOR
6.3 V. 8 A. TO 812
+375 - 400 V.
+300 V.
30 H. 100 MA.
4 K
9K
50W
+150 V.
4 600V
4 600V.
VR 150
5 V
5U4G
2A5
750 V.C.T. 90 MA.
2.5 V.
20K - 2W
10 K
-C 105 V
16
100K
VR 105
-C 65 V.
2.5 V 10 A.
866
866
20 H 300 MA.
1 W
+1000 V.
S5
2500 V C.T.
250 MA.
4 1000 V

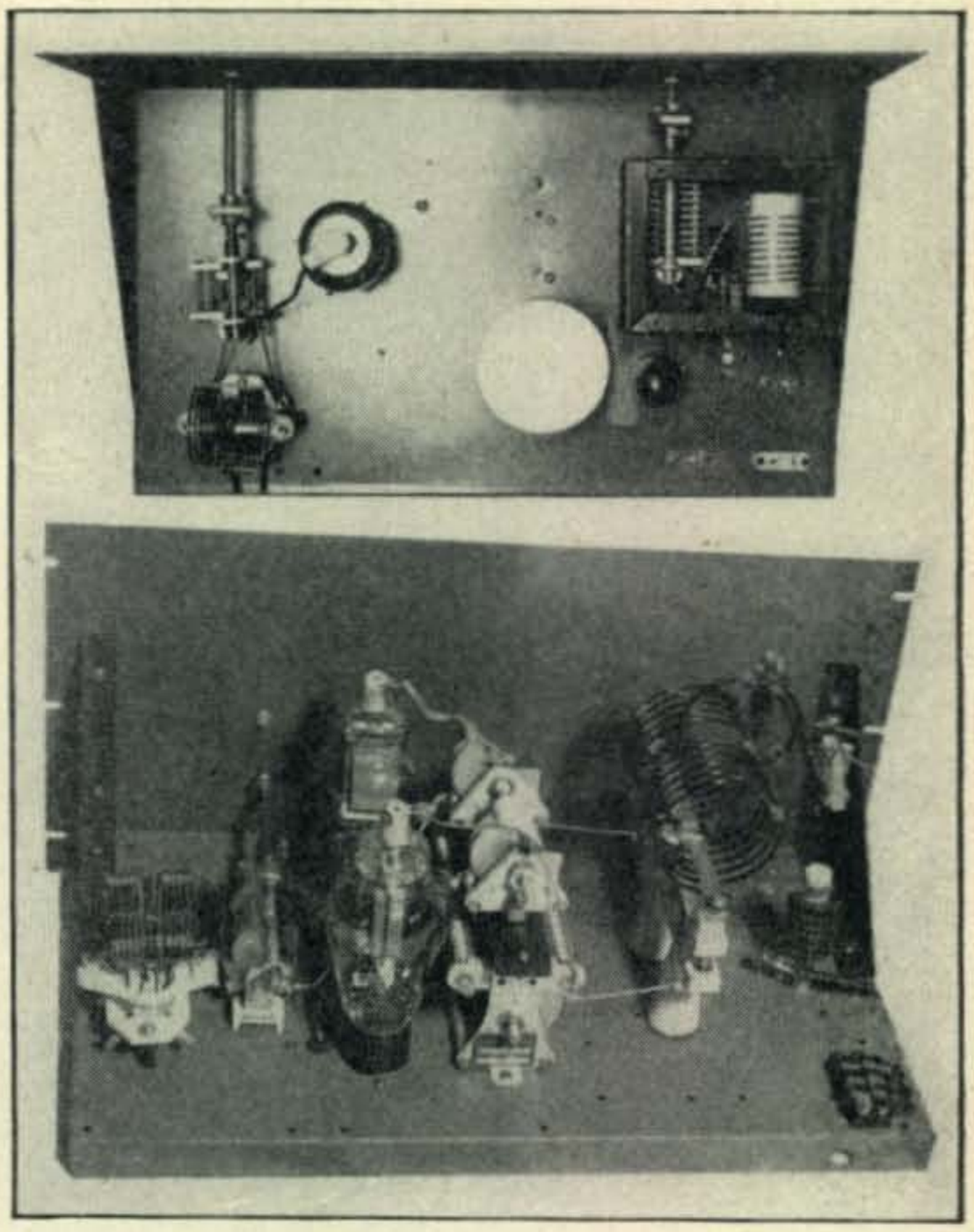
handle a peak power of 40 to 50 watts. The usual cathode modulation transformer of 30 watts (average power) rating will be satisfactory. The 6L6 tubes should work into a load of between 6000 and 8000 ohms, which can be obtained by having a 2½ to 1 turns ratio.

Class AB1 requires no grid current and may be resistance-coupled from the speech amplifier. A 6SF5, or preferably a higher gain 6SJ7 and a 6N7 phase inverter will supply enough grid drive to the push-pull 6L6 tubes. The complete audio system was built into a 3 x 4 x 17-inch chassis and mounted on a 3½ x 19-inch front panel as illustrated in the photographs.

The other power supplies for the r-f units were built into a single chassis. Either 866 Jr., 816 or 866 rectifier tubes may be used in the high voltage supply. The set was built with a pair of 6V6 grid bias regulators originally, but was changed over to a VR regulator tube system as shown in the circuit diagram. The C bias regulation between carrier "on" and "off" conditions was better when using the gaseous type of regulator tubes. A type 2A5 connected as a diode was used as a C bias rectifier because of an extra 2½-volt heater winding on the low-voltage transformer. Any tube can be used as a rectifier since the d-c load is less than 10 ma, being only enough to keep the 1-watt neon and the VR-105 tubes glowing when no d-c grid current is flowing through them.

The low voltage supply has a VR-150 to regulate the plate supply to the v-f-o exciter unit. The latter has a 7-mc Colpitts oscillator, primarily for 28 and 14-mc variable frequency control. This variable frequency control unit was built into a 3 x 4 x 5-inch can, the coil consisting of thin copper 1/16-inch wide strip wound (9 turns) to cover a length of 1½ inches on an isolantite form 1¼" in diameter. The frequency stability was remarkably good for such a simple form of v.f.o. and the c-w keying characteristic was reasonably good with blocked-grid bias keying of this oscillator tube. A high-gain 6AG7 tube was chosen for the oscillator and a ceramic insulated switch selects either crystal or v-f-o control. With crystal control, 3½ or 4-mc crystals permit operation in that band. The 7-mc v.f.o. can be used in the higher frequency bands.

The plate circuit of the 6AG7 can be tuned to the fundamental frequency or the second or third harmonics in order to drive the 807 as a buffer amplifier or doubler. The 6AG7 plate coils were wound on 1¼" diameter plug-in forms which are shielded by a 3-inch diameter aluminum plug-in coil shield. All coils were wound to a length of 1 inch. Three coils were made to cover the desired frequency range, 32 turns, 18 turns and 10 turns of No. 22 wire. The 807 can furnish output in the 28-mc band as a doubler with enough drive for



6AG7 which can be crystal controlled or used as v.f.o. and 807 driver are constructed on one chassis. V-F-O unit is shown with cover removed. The 812 final amplifier deck follows conventional layout.

cathode modulation of the 812 tubes. The latter require about 10 to 15 ma of grid current for the pair with the available amount of audio power for modulation.

Standard variable link 50-watt plug-in coils were used in the 807 plate circuit and 812 grid circuit. The 812 plate circuit likewise uses standard 500-watt type plug-in coils variable link coupling to the antenna or to an antenna matching circuit. The 812 plate condenser has an air gap of .078 inches in each section and the ganged neutralizing condensers were mounted on top of it on a piece of of bakelite strip. The amplifier requires a slight readjustment of neutralizing capacity for 28-mc operation due to the inductive unbalance of leads at the higher frequencies.

In order to give a visual indication of relative modulation, an old a-c filament voltmeter was connected across the voice coil of a midget output transformer connected to the audio output transformer. A .01-μf series coupling condenser reduces the sensitivity toward the normal 60-cycle meter maximum sensitivity, so results with average voice frequencies were satisfactory.

Constructional details are shown in the photographs. The complete set was mounted in a 3-foot rack cabinet having 35 inches of panel space. Due to present scarcity of rack panels and chassis in the writer's vicinity, some odd-sized units were used.

A. DAVID MIDDELTON, W1CA*

CHARLET AND I arrived at Fresno, California, practically rolling in on a heat wave and nothing short of a rotary beam atop a house on Madison Av. could divert us from our mad dash to a "cool" spot. But we couldn't just pass by that neat sky-piece of Joe Forestiere, W6PXP, and got a hearty welcome despite the heat.

Looks like the famous ham spirit is still thriving even tho' that prime-mover, Gene Abbott, W6MHZ, whisked himself off to San Rafael. At the Marin hamfest we met Gene after first spotting an enormous yellow badge with W6MHZ emblazoned thereon.

Also had a visit with another of the old group, Ed Andres, W6KUT. Ed is now president of the San Joaquin Valley Radio Club. You can expect to hear 6KUT blasting away as enthusiastically as ever at DX.

After fighting our way past miles of those dare-devil California drivers, not to mention the huge Diesel "trains" they operate out there, we arrived inside the bonafide limits of greater Los Angeles. Had a regular midwestern hamchew at the shack of a former resident of Chicago, Bud Schultz, W6UWQ, ex-W9CSB.

*23 River Glen, Farmington, Conn.
ex-W1OJH, W2OEN, W9AOB

A "plumber's delight" was under construction for the ten-meter band. But it was much too hot to pound brass, and anyway, there was no DX coming through, so we just sat around, fired up our hods and talked ham radio. Both the W6 and W9 variety was covered thoroughly, until the W6UWQ shack looked and sounded like meeting night at the old South Town club in Chicago.

Charlet and I also got together with Forrest and Ruth Bartlett, W6OWP and W6SXG of Boulder, Colorado. Forrest, ex-W9FYK and until recently KA1ABH, is the w. k. electronic key addict and expert, always working on some new gadget for code. He had just returned from Manila where as one of the Prewi crowd he got into Manila when the bullets were still flying, to send back press news to the States.

Chuck Bailey, W6BXL, an old pal of ours, now lives in Eagle Rock, having given the Pasadena DX men a break by transferring operations during the war. Chuck and I knocked off Europeans while the girls were discussing the food situation upstairs. I'll admit that to a W1, Europeans may sometimes be just added QRM on the band, but when sitting in a W6 shack, even a W1 will have to admit that raising

Europeans on a short call is plenty of fun and good sport.

Several attempts were made to raise that DX columnist, Herb Becker, W6QD, but he proved as elusive as AC4YN. I was going to tell Herb that ex-W9AOB was on the line just to see if he still kicks up his heels at hearing W9s.

Out in Alhambra, the two-meter gear was set up and put on the air. W1OJH/6 CQs did not reach out as far as desired, and none of the world's records were endangered, nevertheless, several good QSOs were carried on with stations around the LA area.

A number of excellent stable 2-meter signals were heard, and one night an interesting disaster net was in operation. There must be quite a lot of serious 2-meter work around LA altho really good locations seem to be scarce due to the terrain. Had a fine QSO with W6TNQ while he was on a long cross-town drive one Sunday.

There wasn't too much time for any radio operation around LA what with sight-seeing, eating chicken at Knotts Berry Farm, visiting hams, and taking in the broadcasts out at Glamour Corner, in Hollywood. At the BC studios we saw a lot of greats, near greats and even the fabulous Dusty Rhodes. In fact, we were in the T & C audience the night that the Waves carried Dusty onto the platform, live snake and all, and he announced in a firm voice that he wanted to take a taxi ride to his home town, Brooklyn. He made it, too!

After reluctantly passing up a hearty invitation from W6OIN in San Diego, we turned our backs on the promising 2-meter activity down south of Los Angeles and headed the Olds east.

I guess we were properly impressed by Boulder Dam. That forest of high line towers crowding each other all over the place, and the maze of transmission lines leading the juice off in all directions really makes a sight.

When we left the Grand Canyon region we turned north-east up into the famed Monument Valley section of Arizona. Spent a night at Tuba City and then headed for the Four Corners country over one of the least-travelled roads in the entire U.S.A.

After a forenoon's ride through wild desert land we put in at the village of Kayenta for gasoline. There was a small trading post near the road, but when no one appeared at the gas pump we drove on a few hundred yards to the main part of the settlement. During a brief lull in our bouncing ride over the very rough road, we spied a three-element rotary beam and a horizontal 10-meter Johnson Q above the main building in the town. We were amazed to find a ham layout 'way out there in the Navajo country! We pulled up to the gas pump in front of a long low stone building and got out of the car.

Several Navajos were standing around watching a red-haired white man put gas into a pick-up truck. When there was a suitable break in the activities I inquired, "Who is the ham around here"?

I received a prompt reply from the man with the gas hose, as he said, "I guess I'm the only one for a long ways!" Then he grinned and added, "I'm Bennett Hyde, W7TLY."

Thus we met the only ham in that whole section of Arizona and the owner-proprietor of the trading post as well as the Kayenta postmaster, all in one! A busy fellow, this W7TLY, and a most interesting one, too.

Western hospitality being more than just a rumor, it took only a few seconds to establish a good QSO and then Charlet and I were ushered through the store (full of Indians) into the Hyde living quarters. After dropping Charlet off with Mavis, Mrs. W7TLY, Bennett and I retired to the shack. Where else would two hams go, even in Kayenta? To my delight, I found W7TLY was an active station! There sat a BC-610E all ready to go on 10 fone at the flip of a switch. It was an unexpected pleasure to find such a layout in that remote corner of the country.

While I was catching my breath from the surprise of finding W7TLY, Bennett Hyde told me something about the country around us. We were in a village located some score or more miles south of the Utah border, and about 125 miles due north of Holbrook. Kayenta is on the Navajo reservation covering a tremendous area in north-eastern Arizona, and Hyde owns and operates one of the trading posts established out there to supply the Navajos and the few whites living in the vicinity.

Kayenta has two distinctions, I learned. It is said to be the most remotely-located postoffice in these United States, that is—remote from a railroad station, and it has the only amateur radio station in the Navajo reservation. It is located deep in the heart of one of the most beautiful regions in the United States. This Four Corners country has long been noted as a place of mystery and scenic beauty.

Kayenta may be the most remotely located American postoffice and W7TLY is surely a long way from any place, but the Hydes have all the comforts of a city home, what with their trading-post quarters and a cozy hamshack, and a goodly stock of the old ham spirit. Hyde has his gear located in a room on the east end of the rambling building that is the store and home of the Hydes and their four youngsters. My view from the windows at W7TLY took in a magnificent desert panorama of red and brown rock formation, and miles and miles of open desert stretching out to the horizon. What a location! And what a place for a multiple set of

rhombics, in tandem! And no QRM either, that is not from neighboring amateurs!

The Hyde home is decorated with authentic Indian rugs and artifacts and is as colorful as a Santa Fe museum. On the walls hang enlargements of a few of Ben's photographs of the Indian country. Ben and Mavis have made their desert home a delightful place to live, and have their own water system, a 15-kw light plant, with another for emergency, and all the other things needed to make a home comfortable.

We worked a few fellows, took some pictures and chewed the fat in between the times when Bennett dashed out to the store. Then we shoved off after Bennett and I decided that the light was just perfect for some late afternoon pictures. But Kayenta weather proved as unpredictable as the ten-meter band.

We had only driven about five miles or so over the narrow sand-floored road when a sudden and terrific storm came up. The wind howled and the rain and sand cut like a knife. With nothing to hamper its stride, a storm can really move swiftly in the desert. We hesitated to go on east as the sky was growing blacker by the minute in that direction, and there was no lodging of any kind for many miles ahead. So we chose to return to Kayenta.

The annual rainfall out on the Arizona desert does not amount to much in the way of inches of water, but it is my belief that most the year's supply fell on us in that one afternoon. The water came down in buckets-full The peak power of an Arizona storm is tremendous! We made our way slowly back over the rugged washed-out road and by the time we reached Kayenta the storm had subsided enough so that we could almost see through the windshield. When we turned up in front of the trading post, I don't think the Hydes were surprised, but rather relieved. After seeing the road to the east, the next day, we were mighty thankful that we *had* turned back. The Hydes made us welcome and we settled down for a real visit, and some hamming. Bennett and I fired up the BC-610E and the NC2-40D receiver. Bennett had to keep on the jump between the store and the shack but he managed to get in a little operating between Navajo customers. The results of that afternoon's work on the air were really gratifying. A sizable output, a sensitive receiver, and a well-matched antenna made a combination that really clicked. Sure, it was on phone. But even this dyed-in-the wool c-w hound likes to bend a tonsil once in a while and I surely did get results from the calls. The rotary was not in use but the Q was doing its stuff and the boys really came back to W7-TLY! And how!

I didn't go after any DX but kicked around over the states, mostly in the east and middle west, and got some real startling reports. The most interesting QSO of the afternoon was with W9OMD, Muncie, Indiana, who had been stationed in Douglas, Arizona, during his tour of duty as an Air Corps medico. "Doc" handled some traffic for me to a cousin in Muncie, and arranged for a subsequent visit to Muncie, at which time Charlet and I had the pleasure of meeting W9OMD in person.

We were at Kayenta during "Squash Blossom" time (similar to our Easter) when the squaws dressed in their best finery, complete with all types of brilliant colored dresses, velveteen jackets and plenty of trimmings. The men were colorfully dressed in Levis, buckskin and heaps of silver jewelry.

"My Darling Clementine" was filmed not far up the road from Kayenta. The Hydes had an important role in the actual production of the picture, as they furnished several of the authentic props used. The radio link between the movie set and the movie company's Hollywood office was set up, for a while, at the Hydes.

Bennett told us that the town the movie folks created looked like the real thing. We did not realize just how right he was until we drove out that way, and having forgotten about the movie set, turned into a desert road to a town we saw lying "over yonder" only to find ourselves in the midst of a large movie-set resembling the town of Tombstone, Arizona, back in the '80s. Of course, I was never in Tombstone in those days, but I would take their word that the layout was authentic. There were plenty of saloons, a hotel, a livery stable, but no gas pumps, and the Wells Fargo office was closed as was the stagecoach depot. That is one place that not even Kilroy had visited!

W7TLY does not get on the air much in the daytime. Tending store and doing the hundreds of odd jobs that continually pop up around a large establishment like his, leave little time for a fellow to operate. However, with his sizable 400-watt power, Bennett gets out in fine style on either 28,576 or 28,722 kc. I can promise you an interesting QSO if you snag him one of these days or nights. He QSLs too!

I tried to convey some of my impressions of Kayenta to the boys I worked from W7TLY, and although I may have sounded like a commentator on a travelogue I could only tell a portion of the story of what was going on around me. Kayenta has to be seen to be appreciated.

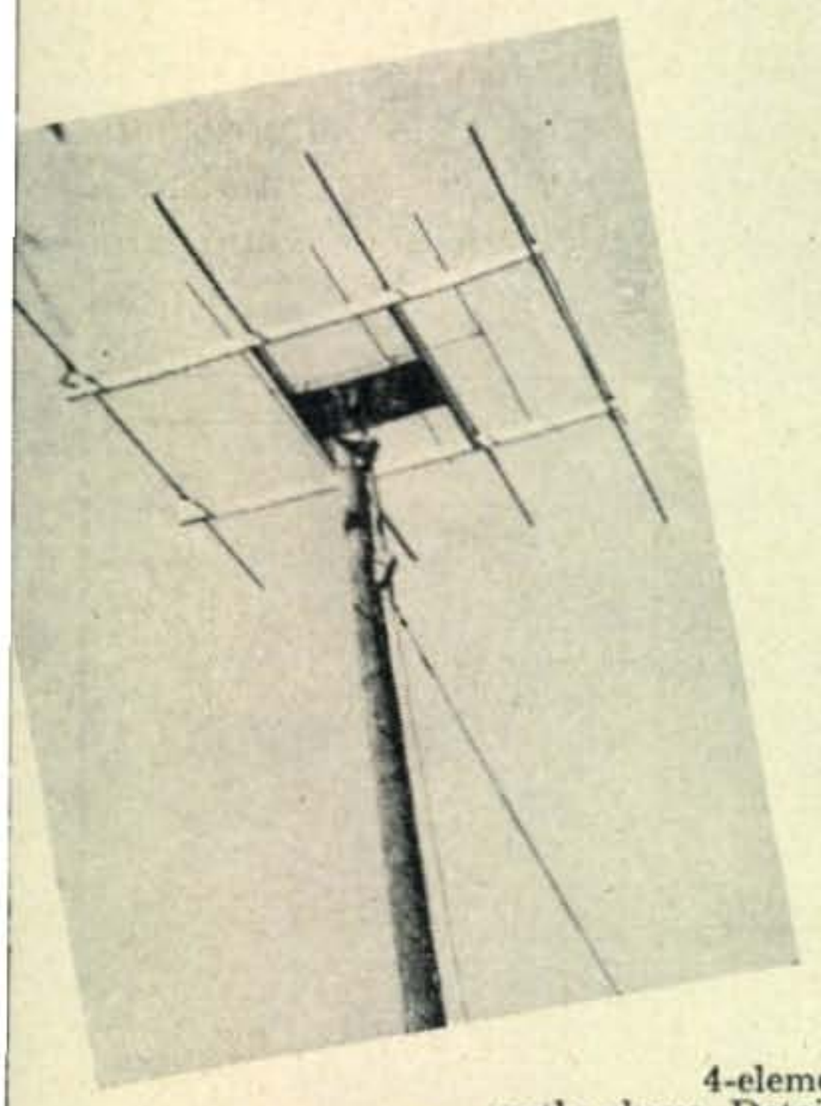
"And so, my friends, we say farewell to the Bennett Hydes and to their Indian friends and customers. Perhaps we shall see them again in their desert home—"

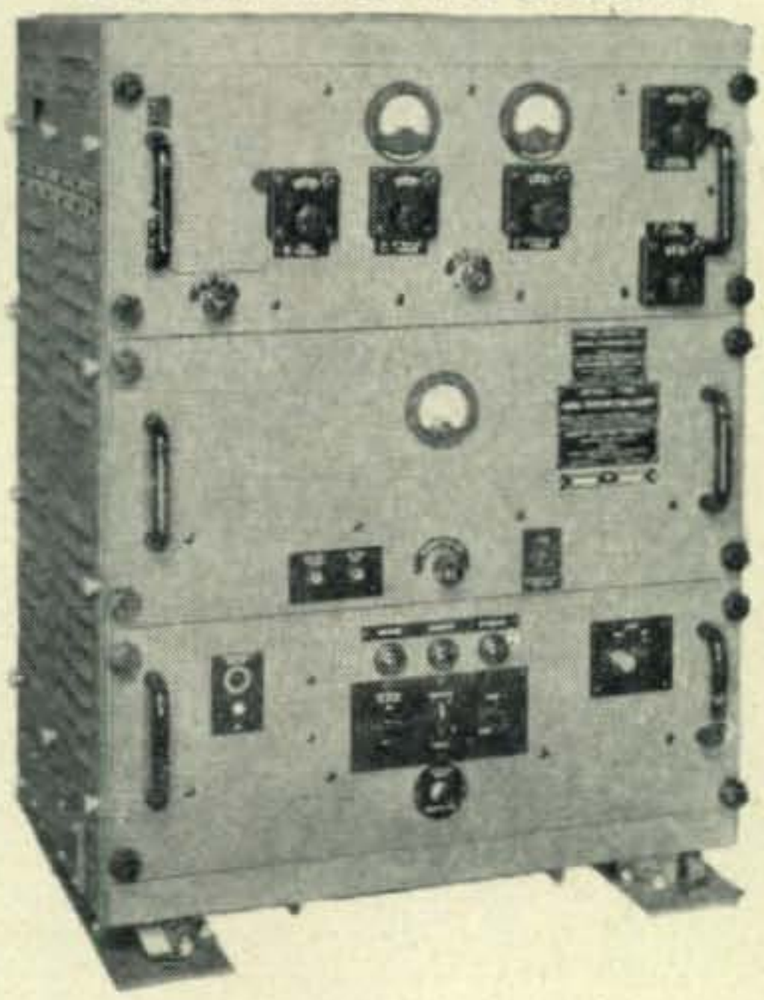
Okay, Burton! That's enough! But in the meantime, take a listen for a walloping signal signing W7TLY, Kaytena, Arizona.

The station at KH6DD. Reading from left to right, the final amplifiers for 14, 28 and 50 mc bands with power supplies. The Millen Exciter for the 14 and 28 mc finals. A BC610 driven by the AN/ART13 on the 20, 40 and 75 meter bands. A Super Pro receiver and modulation oscilloscope, an S36 receiver which is used as a converter for the Super Pro. The frequency meter and the standby receiver. The crank for rotating the beam is to left of the speech amplifier.

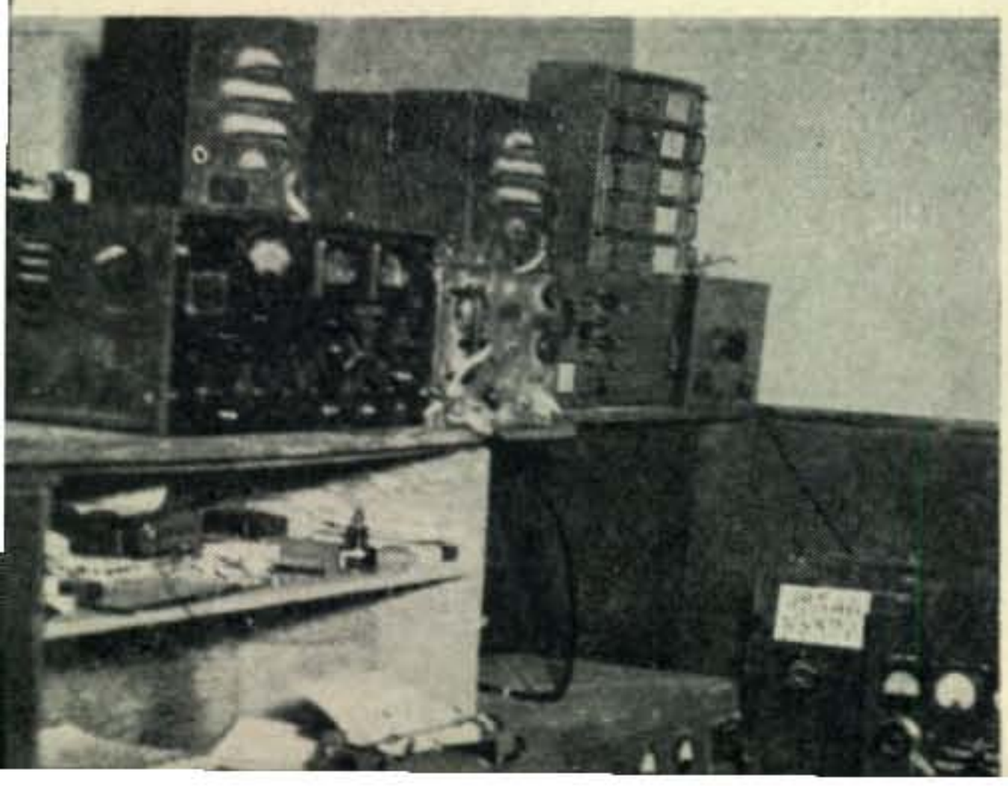
Behind the 6-Meter DX Record

Equipment at KH6DD, J9AAK, and W7ACS/KH6, which set the 4700 mile, 6-meter DX record between Hawaii and Okinawa.





(Left) The antenna at J9AAK comprises a 4-element, 10-meter array with a 4-element, 6-meter beam directly above. Details were given last month. (Center) At J9AAK, the transmitter is a converted Navy TDQ. Lower section houses power supplies, middle section the speech input equipment with a db meter, and top compartment the r-f section using 829Bs (with 50 to 80 watts input).(Right) Gene Piety, W7ACS/KH6 with the converted SCR 640 transmitter. Power supplies and control relays are in the four lower compartments, speech section is behind the fifth, oscillator and doublers in the sixth, and the 24G push-pull final is in the top section.



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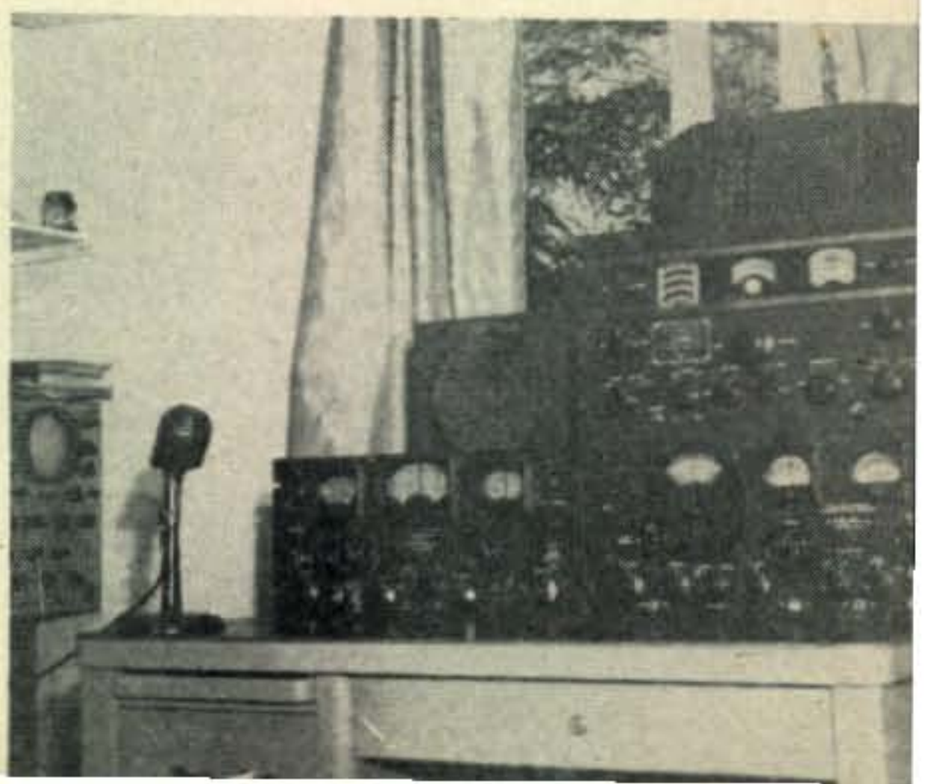
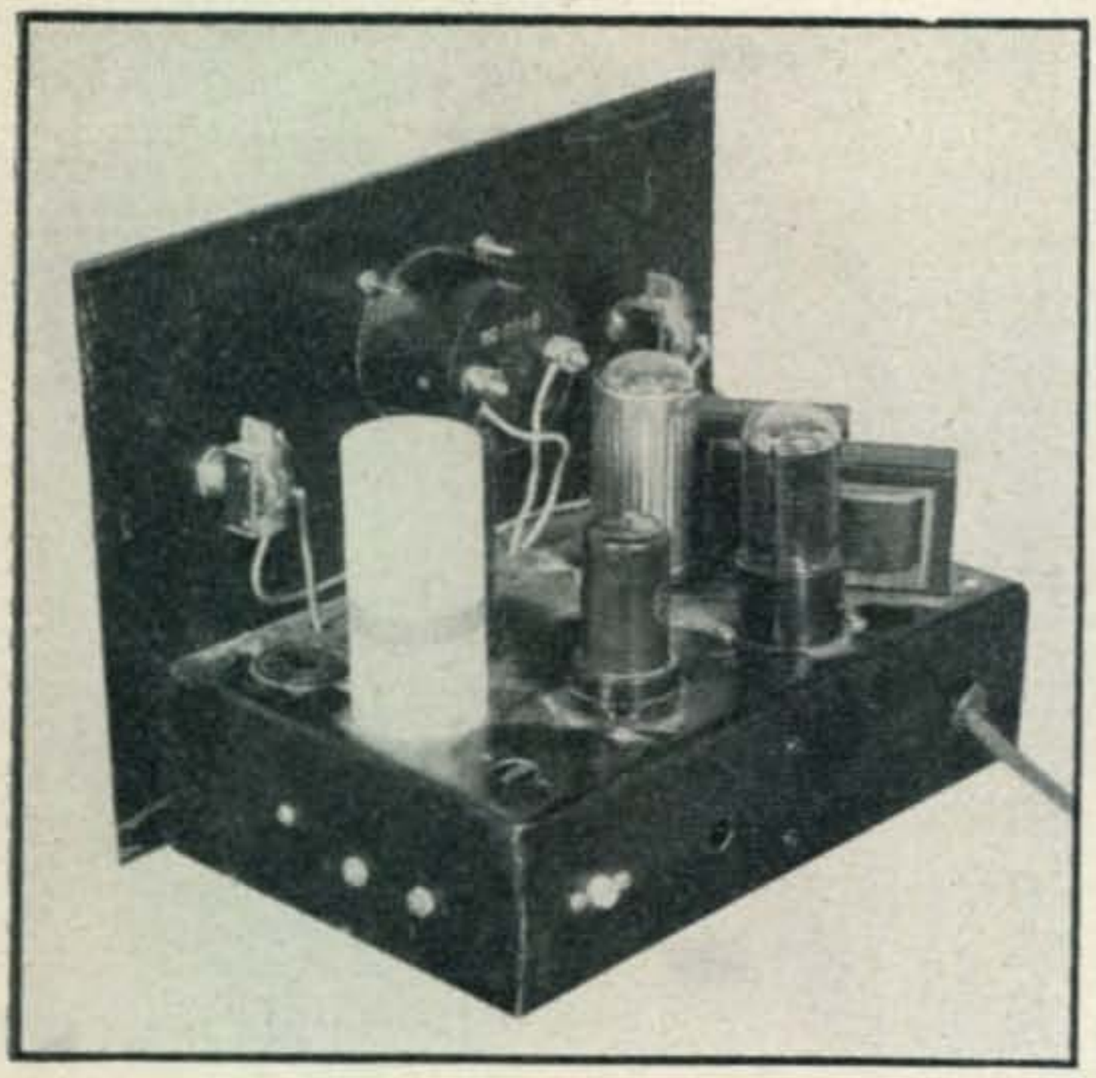
(Left) The receiving and transmitting set-up at J9AAK. The receivers are war-weary models of the S-36 and ARR-5. AnHRO and the BC-610 are used on 10 meters, while the Navy TDQ is used on 6. (Right) Receiving set-up at W7ACS/KH6 consists of an AR-88 and an S-27 acting as a converter to the 2, 6, and 10-meter bands for the AR-88.





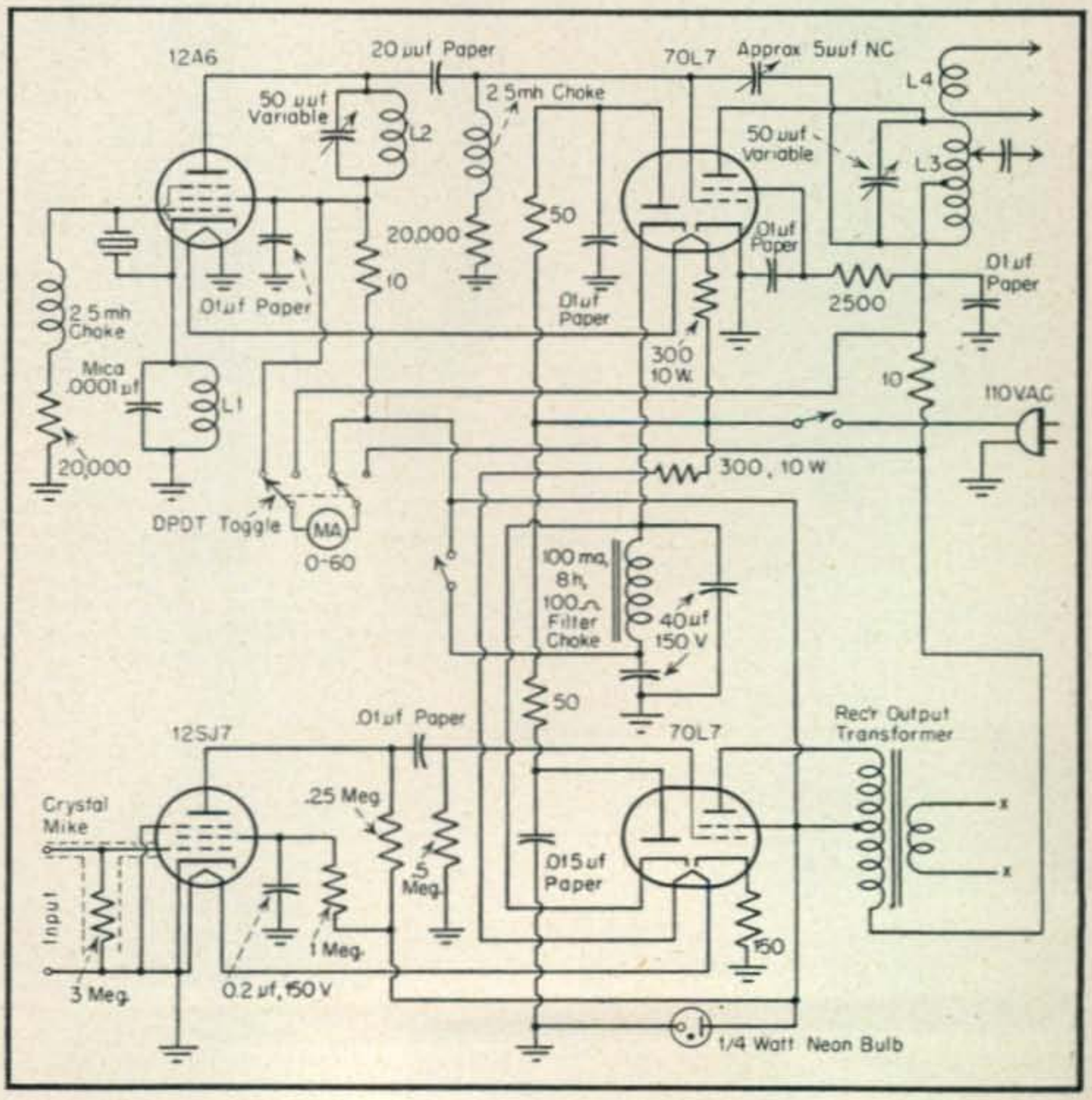
Made almost entirely of junk-box parts the two-watt output 10-meter transmitter uses two 70L7s, a 12A6 and a 12SJ7. The 70L7 final stage is shielded. In the foreground is the speech amplifier and behind the coil form is the 12A6 tri-tet oscillator. The crystal is plugged into the socket at the extreme left.

2 WATTS ON TEN

NORMAN ENNIS, WØRQN* and CHARLES W. BOEGEL, Jr., WØCVU*

QUITE OFTEN the need for a small—and we do mean small—inexpensive transmitter for local QSOs on 10 meters can be solved by emptying the junk-box into one of these 4-tube a.c.-d.c. two-watters. A phone transmitter of these proportions might also appeal to the newcomer, because the over-all cost is less than $10 and the whole unit can be wired in one afternoon.

The wiring diagram shown is almost entirely self-explanatory. A 12A6 is operated as a tri-tet oscillator using a 40-meter crystal and the output tuned to 10 meters. A 70L7 is used



Schematic diagram of the 2-watt a.c.-d.c. transmitter.

Coil data is as follows:

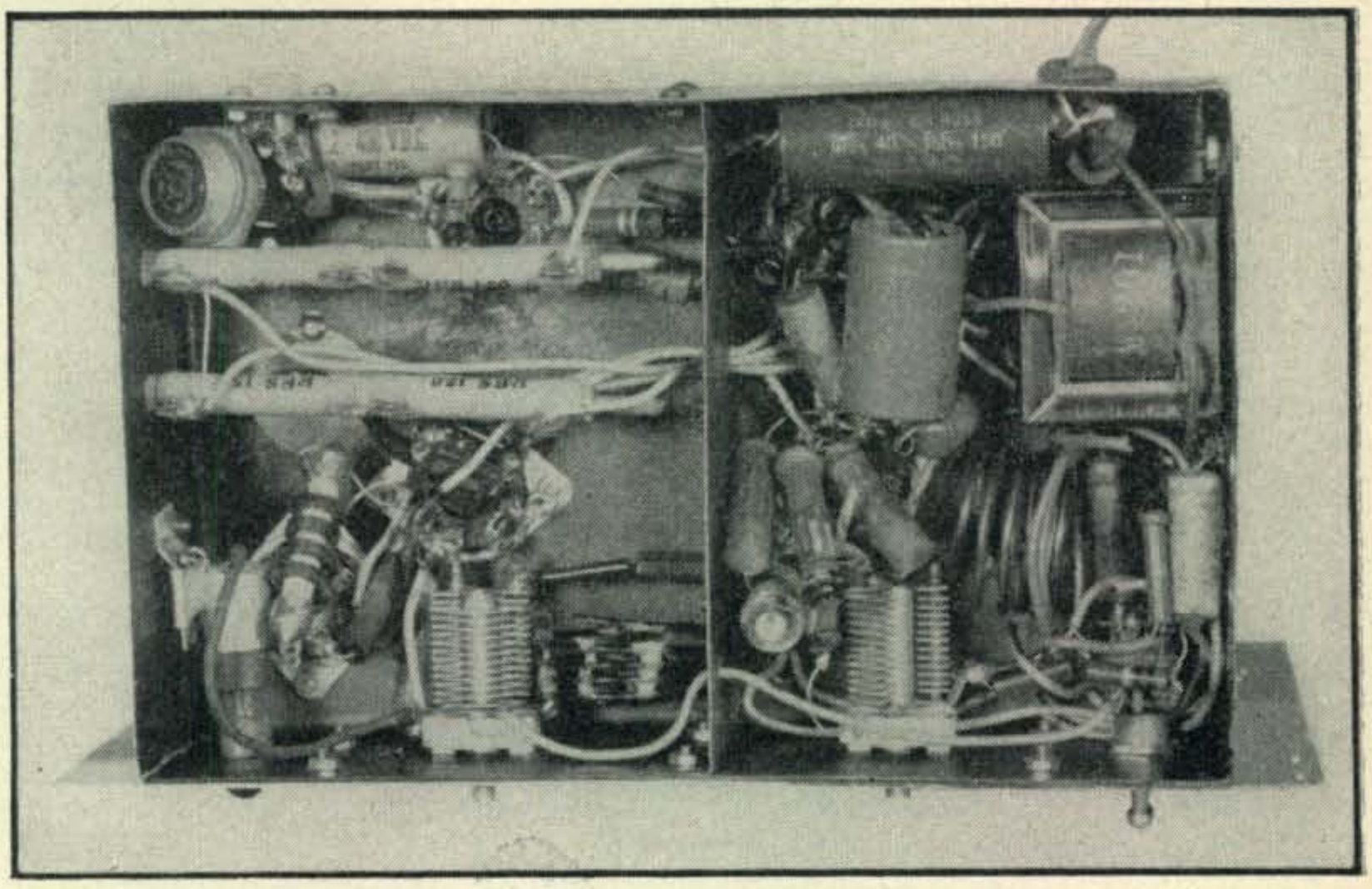
L1—6½ turns on 1½" isolantite form

L2—4 turns on 1" air-glued

L3—4 turns on 1" air-glued

L4—2 turns on 1" air-glued

*Collins Radio Co., Cedar Rapids, Iowa



Bottom view of the two watter. The ten-meter coils are visible in the oscillator section in the left hand compartment and the final stage in the right hand compartment. The diode sections of the 70L7s are used as rectifiers with the filter condensers also visible in the right hand section.

in the final. The tetrode portion will need to be neutralized as shown in the schematic of the two watter. Neutralization was accomplished by the coupling of two twisted insulated wires about 1½ inches in length. This amounts to less than 5 $\mu\mu$f. A second 70L7 is used as a modulator with a 12SJ7 as a speech amplifier.

A mike input level of about – 45 db is necessary to fully modulate the final. The modulator choke is one of the common push-pull speaker output transformer with the secondary open. The diode sections of the 70L7s are used as a rectifier and supply 100 volts at about 60 ma.

The wiring was simplicity itself. No r-f pickup was found in the speech or modulator stage, although a shield is necessary between the oscillator and the final. The 50-ma meter is switched between oscillator plate and final plate reading of about 15 ma on the former and 30 ma for the latter when operating fully loaded. No attempt was made to pretty up the transmitter, but it would appear that the original placement of parts as shown in the accompanying photographs seem to give the least amount of trouble. To the new ham who does not want to spend a lot of money, this simple rig should offer a maximum amount of experience and many hours of pleasant QSOing.

United States Naval Reserve

Non-veterans between the ages of 17 to 18½ years and 30 through 39 years are now eligible to join the volunteer reserve of the Navy and those with vocational training can join the organized reserve. The Navy has inaugurated an extensive recruiting program in an effort to bring the reserve up to its maximum peacetime enlisted strength.

Enlistment or reenlistment in Class V-6 (Volunteer Reserve) of the U. S. Naval Reserve will be for a period of 4 years except in the case of 17 year olds who will serve for minority only. Volunteers must be native born or naturalized U. S. Citizens and must fall into one of the following five categories.

1. Veterans of the Navy, Marine Corps, Coast Guard, Army, and National Guard who served on active duty in their respective branch of the armed services during World War II.

2. Former members of the armed forces who served on active duty, or in an inactive status, in their respective branch of the armed services during World War II, but who had insufficient active wartime duty to make them ineligible for induction under the selective service and training act of 1940 as amended, and who are 17 and under 18½ years.

3. Former members of the armed forces who have had no active or inactive duty in any branch of the services on or after December 8, 1941, and who are 30 and under 40 years of age.

4. Men between the ages of 17 and 18½ who have had no previous military service in any branch of the armed forces.

5. And, men between the ages of 30 and 40, who have had no previous military service.

Men eligible for selective service may join the Naval Reserve but will not become exempt from current draft regulations by enlistment. They will be discharged from the reserve at least one month in advance of induction.

It is planned to enlist about 30,000 students and graduates of vocational schools in the organized reserve by 1948, when that program will be in full swing. The trained non-veterans will be rated according to his specialty and commensurate with his training and ability. Vocational training similar to that required for specific Navy ratings is considered acceptable for the purposes of this plan.

A special feature of the Vocational program not offered to other volunteers permits members of draft age to apply for assignment to active duty in the event their draft numbers are called. Should a national emergency arise members would be called to active duty in the highest rating attained during enlistment in the organized reserve. Members of the organized reserve will be given one night of instruction weekly in their specialty and two weeks of intensified training afloat each summer with pay.

The Cavity Resonator

BY THE CQ STAFF

On the microwave frequencies resonant cavities replace the conventional tank circuit. Cavity dimensions are worked out for six microwave bands and further simplified by conversion directly into inches

To most amateurs the *cavity resonator* still is a strange, new device. However, upon examination it does not appear complex. In its simpler shapes, the cavity resonator resembles an empty metallic can, cube, or sphere. Some resonators have more irregular shapes than these three simpler forms, even resembling doughnuts, spheres with one or two "dimples," or two cans joined together by a pipe.

The importance of the cavity resonator lies in the fact that this apparently hollow can becomes a high-Q resonant tank at ultra-high and super-high frequencies. Its behavior is far superior to that of coil and capacitor tank circuits or of the parallel or concentric line tanks used in pre-war u-h-f amateur gear.

The cavity resonator operates like a completely enclosed room or barrel in which a noise is made—or a tank or drum into which one whistles. In the room or barrel, sound waves bounce back and forth between the walls or between the floor and ceiling, and if the pitch of the sound is varied, a resonant frequency may be found (evidenced by great intensification of the sound). "Bathroom" singers have observed this resonance many times. Rooms of different sizes will be found to have different resonant frequencies. Also, it will be discovered that in a given room secondary resonances may be found.

So it is with a cavity resonator. If radio-frequency energy is injected into its empty chamber, electromagnetic and electrostatic waves will be reflected successively by the inner walls. At the natural resonant frequency of the cavity, pronounced intensification of the waves will occur, since entering waves and reflected waves are in phase and accordingly reinforce each other. In addition to this fundamental *mode* of operation, however, the cavity may be found to have other *modes* corresponding to frequencies other than the first resonant value.

Different modes of operation will be a new subject to amateurs who did not have war-time experience with extremely high radio frequencies. This is because the mechanical dimensions of the tank circuits to which they have been accustomed are such that only one type of oscillation normally can take place. The small dimensions of super-high-frequency components (comparable to a wavelength), on the other hand make it possible for oscillation (or resonance) to occur along more than one set of dimensions. The simple absorption wavemeter used at low frequencies, for example, will, under proper conditions of use, respond only to the frequency determined by its lumped inductance and capacitance. Other circuit properties and dimensions are insignificant by comparison. But the cavity resonator (which

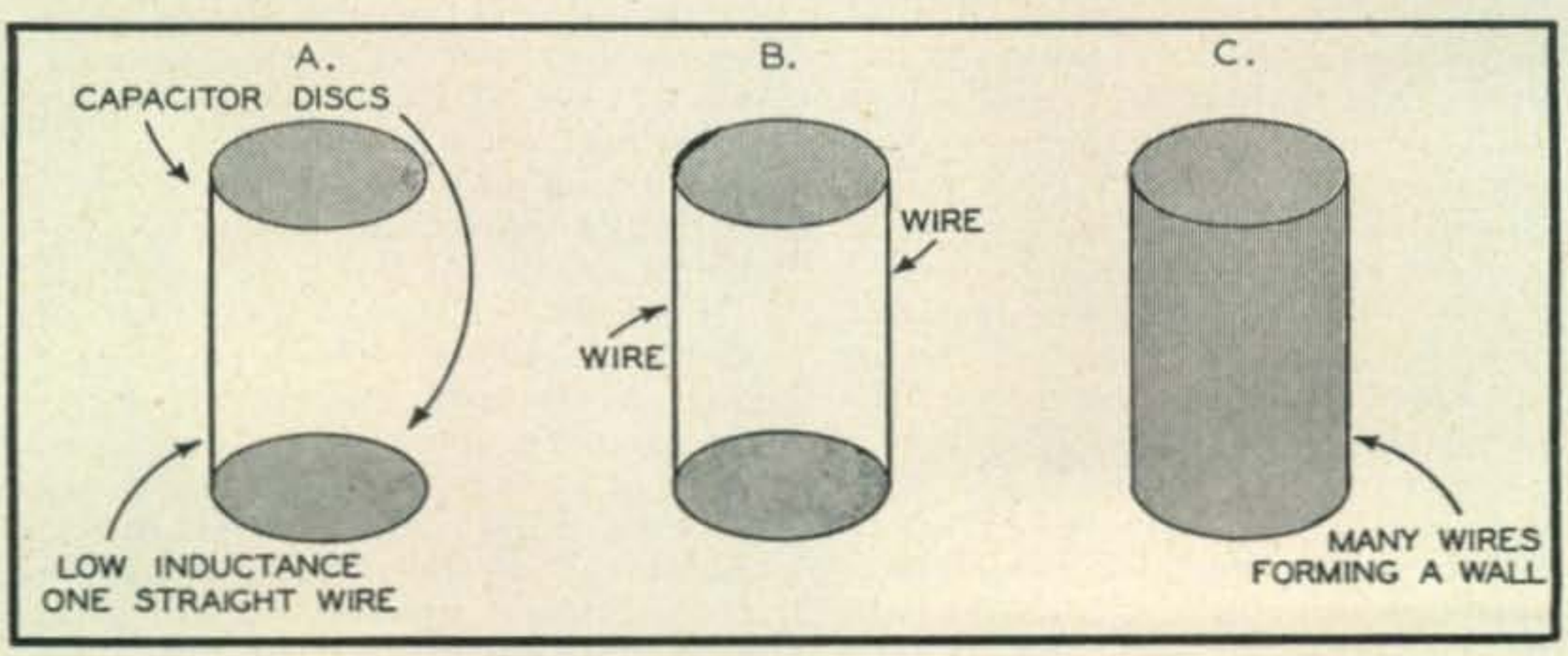


Fig. 1. The mechanics of forming the cavity resonator.

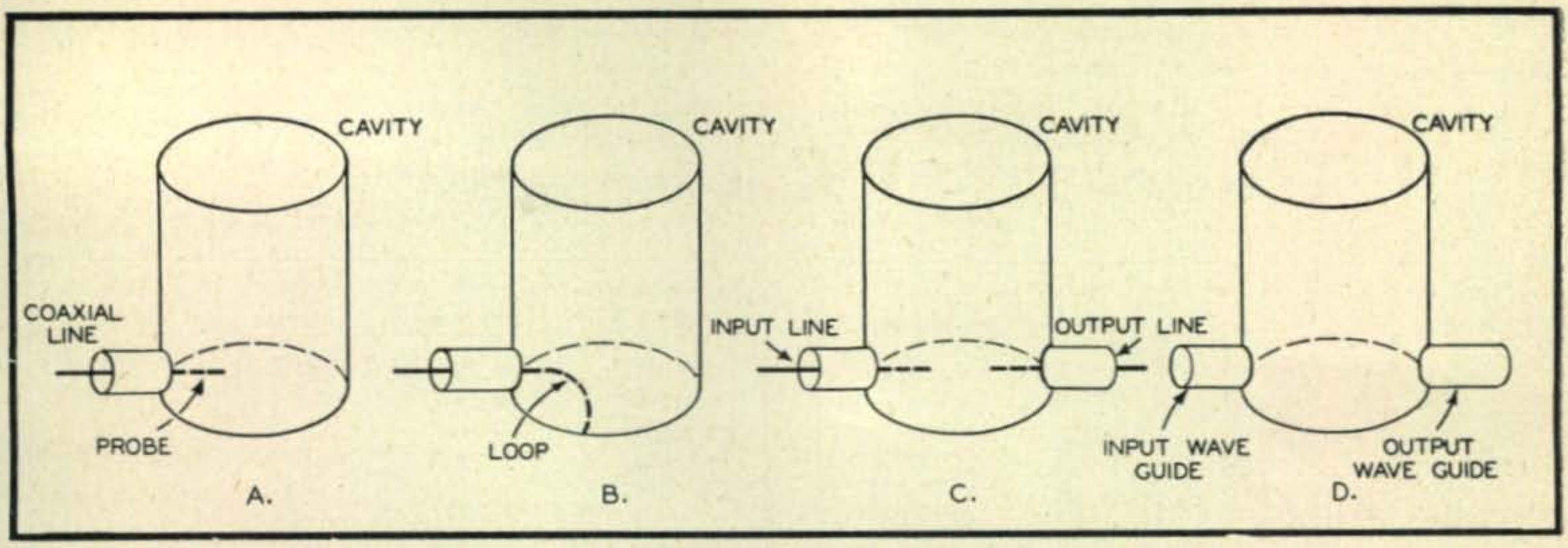


Fig. 2. Cavity resonators may be coupled to external circuits by the above methods. In A. a form of electrostatic coupling with a small probe. In B. a form of magnetic coupling with a loop. C. and D. show methods of coupling two or more circuits.

also acts as an absorption wavemeter in an s-h-f radio field) may respond to any of several frequencies, depending upon how it is excited and how the reflected waves are arranged inside its chamber. An exact understanding of these phenomena can be gained only by rigorous mathematical inspection beyond the scope of this article.

A simple mechanical picture showing something of the relationship between the cavity resonator and better-known coil and capacitor circuits has appeared in several u-h-f textbooks and articles. This concept is shown in *Fig. 1*. The highest-frequency coil-capacitor circuit is represented by *Fig. 1A*, where the capacitor consists of two small discs and the inductor is a short, straight wire connecting them. If another identical wire is added, as shown at *1B*, the inductance in the circuit is decreased and therefore the resonant frequency of the combination is increased. If the process is carried out indefinitely, so that innumerable straight wires are connected from disc to disc, the resonant frequency will be raised many times. And if the wires are so closely spaced as to be in contact with each other, they will form a solid wall—the result being a can (cylinder closed at each end), and we have a cylindrical cavity resonator, as illustrated in *Fig. 1C*.

The same line of development may be applied to two square discs connected together by straight wires. The final result in this case will be a cubical cavity resonator.

Radio-frequency energy may be coupled into cavities in several ways. A coaxial line may be employed, as shown in *Fig. 2A*; or a wave guide may be used, as shown in *2D*. Energy likewise may be removed from the cavity by either of these two means, as shown in *2C* and *2D*. For one mode of oscillation, we introduce energy into the cavity electrostatically. This is accomplished by means of a small antenna-like "probe" on the end of the coaxial line and inserted into the chamber (See *Fig. 2A*). The probe intersects electrostatic lines of force in the cavity. For another mode of oscillation, we excite the cavity electromagnetically, and for this purpose employ a small loop on the end of the coaxial line. (See *Fig. 2B*). The loop intersects the electromagnetic field component within the chamber. Generally, loops or probes, as the case may be, are employed together (not mixed) for excitation and for output coupling.

In the engineering field cavity resonators are usually defined by their various modes. Generally, if the electric field is found to lie in a series of planes across the cavity, the mode is referred to as the, *transverse electric mode*, or TE. When the magnetic field is the only crosswise component it is called the *transverse magnetic mode*, or TM. The series of three subscript numbers following the TE or TM classification refer to the three or possibly two pertinent dimensions. A zero value indicates that the electric and magnetic fields are constant in that particular dimension.

Cavity Dimensions

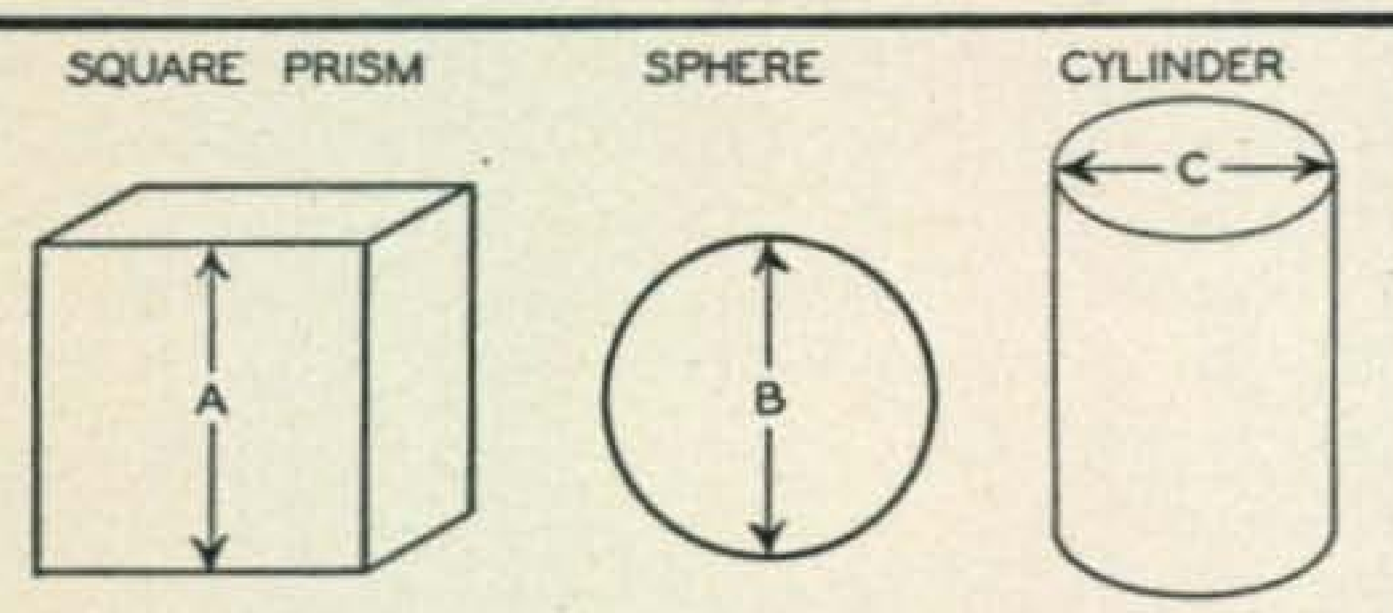
Radio amateurs as a group do not take kindly to calculations. Nobody blames them for this because ham radio is a hobby and should be kept pleasant—monotonous figuring is work to most people. Especially forbidding is the large amount of calculations introduced by the new ultra-high and super-high frequencies. In order to aid amateurs and others who would like to explore these microwaves but who would rather not go into involved calculations of component dimensions, we will present from time to time data sheets on which the dimensions have already been figured out.

Such a table accompanies this article. Here are given the sizes which cavity resonators must have at frequencies in amateur bands. The dimensions given are for cavities of cubical (square prism),

spherical, and cylindrical shapes. It does not seem likely that most amateurs will build cavities having more complex shapes. The dimensions given in the table correspond to the fundamental mode of operation. Higher modes, of course, can exist in the same cavities.

AMATEUR CAVITY RESONATOR DIMENSIONS

Frequency (Mc)	(a) inches	(b) inches	(c) inches
1215	3.435	4.263	3.724
1220	3.421	4.246	3.709
1225	3.407	4.229	3.694
1230	3.393	4.211	3.679
1235	3.379	4.194	3.664
1240	3.366	4.177	3.649
1245	3.352	4.161	3.634
1250	3.338	4.144	3.620
1255	3.325	4.127	3.605
1260	3.309	4.111	3.591
1265	3.299	4.095	3.577
1270	3.286	4.079	3.563
1275	3.273	4.063	3.549
1280	3.260	4.047	3.535
1285	3.247	4.031	3.521
1290	3.235	4.016	3.508
1295	3.222	3.983	3.495
2300	1.815	2.252	1.967
2310	1.806	2.242	1.959
2320	1.800	2.231	1.950
2330	1.790	2.223	1.942
2340	1.785	2.213	1.934
2350	1.775	2.204	1.926
2360	1.770	2.195	1.917
2370	1.760	2.186	1.909
2380	1.755	2.176	1.901
2390	1,747	2.167	1.893
2400	1.740	2.158	1.885
2410	1.732	2.149	1.878
2420	1.725	2.140	1.870
2430	1.719	2.132	1.859
2440	1.711	2.123	1.854
2450	1.704	2.114	1.847
3300	1.265	1.570	1.371
3320	1.257	1.560	1.363
3340	1.249	1.551	1.355
3360	1.242	1.542	1.347
3380	1.235	1.533	1.339
3400	1.227	1.523	1.331
3420	1.220	1.515	1.323
3440	1.213	1.506	1.315
3460	1.206	1.497	1.308
3480	1.199	1.488	1.300
3500	1.192	1.480	1.293



$A_{IN.} = \frac{4173.4}{F_{MC}}$ $B_{IN.} = \frac{5180.3}{F_{MC}}$ $C_{IN.} = \frac{4525.3}{F_{MC}}$

Frequency (Mc.)	(a) inches	(b) inches	(c) inches
5650	0.7386	0.9168	0.8009
5660	0.7373	0.9152	0.7995
5670	0.7360	0.9136	0.7981
5680	0.7347	0.9120	0.7967
5690	0.7334	0.9104	0.7953
5700	0.7321	0.9087	0.7939
5720	0.7295	0.9056	0.7911
5740	0.7270	0.9024	0.7883
5760	0.7245	0.8993	0.7856
5780	0.7220	0.8962	0.7829
5800	0.7195	0.8931	0.7802
5810	0.7182	0.8915	0.7788
5820	0.7170	0.8900	0.7775
5830	0.7158	0.8885	0.7762
5840	0.7145	0.8870	0.7748
5850	0.7133	0.8855	0.7735
10,000	0.4173	0.5180	0.4525
10,050	0.4152	0.5154	0.4503
10,100	0.4132	0.5130	0.4480
10,150	0.4111	0.5103	0.4458
10,200	0.4091	0.5078	0.4436
10,250	0.4066	0.5054	0.4415
10,300	0.4051	0.5029	0.4393
10,350	0.4032	0.5005	0.4372
10,400	0.4013	0.4981	0.4351
10,450	0.3984	0.4957	0.4330
10,500	0.3974	0.4933	0.4309
21,000	0.1987	0.2466	0.2155
21,050	0.1982	0.2460	0.2150
21,100	0.1978	0.2455	0.2144
21,150	0.1973	0.2448	0.2140
21,200	0.1968	0.2444	0.2134
21,250	0.1964	0.2437	0.2129
21,300	0.1959	0.2432	0.2124
21,350	0.1954	0.2427	0.2119
21,400	0.1950	0.2421	0.2114
21,450	0.1945	0.2415	0.2110
21,500	0.1941	0.2409	0.2105
21,550	0.1936	0.2403	0.2100
21,600	0.1932	0.2398	0.2095
21,650	0.1927	0.2393	0.2090
21,700	0.1923	0.2387	0.2085
21,750	0.1919	0.2382	0.2080
21,800	0.1914	0.2376	0.2076
21,850	0.1910	0.2371	0.2071
21,900	0.1905	0.2365	0.2066
21,950	0.1902	0.2360	0.2062
22,000	0.1897	0.2355	0.2057

Appendix

According to Terman, the frequency-determining dimension is the length of either side of the cube, the diameter of the cylinder, and the diameter of the sphere. Height of the cylinder or square prism has no effect on frequency. The determining dimensions

[*Continued on page 79*]

COMMENTARIES • • •

A Department of Technical Discussions

IN THE COURSE of preparing the text for each issue of *CQ* the Editors often find material that has insufficient length to be a feature story and which likely as not is far too long to be placed in the *Shack & Workshop Department*. Much of this material is so specialized as to be of interest only to a limited group. The question of exactly what the Editors should do with these short articles has been a matter for consideration for some time.

Beginning this issue, the Editors of *CQ* proffer a workable solution in the form of a new department which we are calling *Commentaries*. In this department we will publish certain short articles which concern the personal experiences of well-known amateurs in such varied fields as r-f amplifiers, receivers, v-h-f techniques, antennas, modulators and many other subjects. Our secondary objective in this department is to allow the average amateur with a good idea the opportunity to have his views published without the necessity of elaborate text material or extensive drawings. All published material will be paid for and in this manner we feel that those amateurs who have something of interest in a special field will be amply rewarded for their time and effort.

In this issue the subject is "V" beam antennas and the comments and experiences are from two well-known users of the V beam, W8BKP and W1QV.

Notes on the "V" Beam

THE V beam has long been recognized as one of the most effective of the bi-directional antennas and while the larger types require considerable space, the installation of the V beam is an almost certain guarantee of excellent results in both transmission and reception.

Contrary to popular opinions, we have found that the length of the wire in each leg is not critical as long as the length in each leg is effectively equal. The correct balance in the lengths may be checked with an r-f ammeter in the feed line or stub. Equal currents are generally sufficient indication of a correct balance. Should one leg run fairly close to a large object it may be necessary to considerably shorten that leg to maintain a correct balance.

The length of the legs in a V beam may be any multiple of a quarter wave of the operating frequency. When an odd number of quarter waves is used the beam must be current fed. With an even number of quarter waves a method of voltage feed is required. Our personal preference is a current fed beam with a resonant line. The line is made an even multiple of half waves long which places a low voltage point at the apex of the beam and at the transmitter. By using the tuned line any V beam may be operated on several bands.

For our own experimental use we have condensed all the pertinent data concerning the V beam into a convenient chart. This chart is illustrated in *Fig. 1*. It will be noted that the vertical angle of radiation is

V BEAM DESIGN TABLE FOR 14.20 MC.

NO. WAVES LEG	ANGLE BETWEEN LEGS	LENGTH OF EACH LEG	METHOD OF FEED AT APEX	DISTANCE ACROSS END	VERTICAL WAVE ANGLE	APPROX. POWER GAIN
1	90°	68'	VOLTAGE	96'	31°	2.5
1¾	80°	120'	CURRENT	154'	29°	3.6
2	75°	137'	VOLTAGE	167'	27°	4.0
2½	70°	172'	VOLTAGE	197'	25°	5.0
3	60°	206'	VOLTAGE	206'	23°	6.3
3½	58°	241'	VOLTAGE	234'	22°	7.5
4¼	52°	293'	CURRENT	257'	21°	9.0
4¾	50°	328'	CURRENT	277'	19°	10.0
5	48°	345'	VOLTAGE	281'	18°	11.0
5¾	42°	397'	CURRENT	284'	17°	16.0
7½	40°	518'	VOLTAGE	354'	15°	25.0
8	39°	553'	VOLTAGE	369'	14°	40.0

Fig. 1. V beam design table for 14.20 mc.

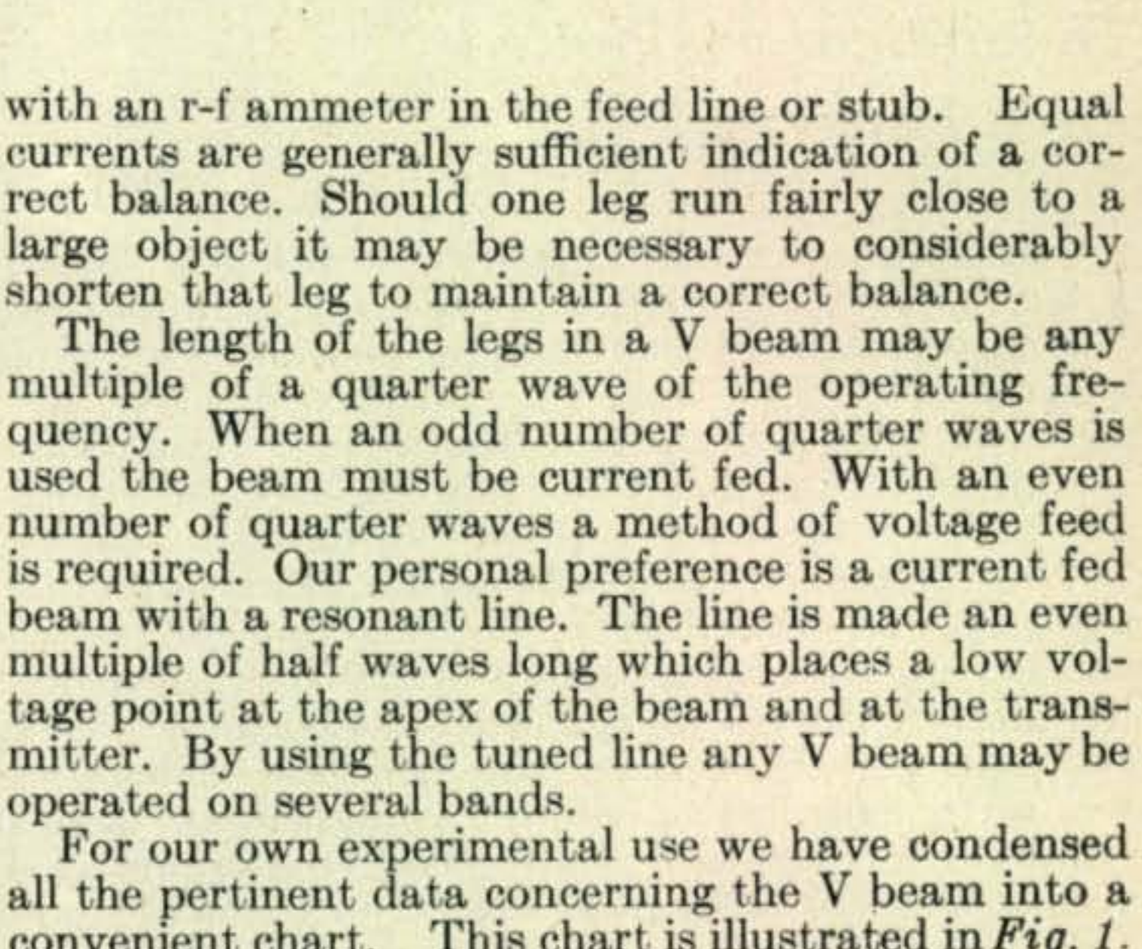


Fig. 2. Design of the V beam in use at W8BKP

controlled by the angle between the legs as well as their length. Also, by having the apex of the V beam at a greater height than the open ends a further lowering of the vertical angle may be obtained. This should not be carried to the extreme or else there will be tendency towards a reverse effect with a raising of the vertical angle of radiation.

It has been our experience at W8BKP that the V beam performance is a direct ratio to the length of each leg. The longer lengths giving a proportionally greater gain, lower angles of radiation and better all-round coverage. Contrary to popular belief it has been found that the longer V beams are not so sharp in their horizontal directivity as most published ground plane patterns would indicate, since in addition to a tremendous power gain on the main lobes, there are many minor lobes radiating a 5 to 6 db gain over the simple half-wave antenna.

Fig. 2 shows the V beam that has been in use at W8BKP for several months and which has produced astounding results. As a sample of our results, from a V beam that is lined up on Singapore in the Malay States and Valparaiso, Chile we have worked such DX as: PK6TC, KA1AK, W6JIM/C1, VS1BX, VK4OS, PK1RW, VU2DY, UAØKAA, UA9CB and VS7ES. From the minor lobes we have worked EQ4DC,

W6VKV/I6, and VS9AN. On a direct comparison basis with a two section 8JK beam the V beam has shown as much as 5 S-points better signal with a consistent average around 3 S-points.

George W. Morrow, W8BKP
Washingtonville, Ohio

Theoretical vs. Plotted Field Patterns

It is interesting and oft-times valuable at a later date for the amateur with a V beam to correlate the theoretical and the actual field patterns. At W1QV, we have particularly strived for this objective in view of the fact that we have been using a multiple V antenna which may be switched from within the radio shack to give us all-round coverage.

The antenna in question consists of three separate legs each 127 feet in length. One leg runs due north, another leg runs on an azimuth of 070 degrees and the third leg runs on an azimuth of 140 degrees. This system is fed with a three wire open line feeder system forty eight feet in length. A unique part of the system is the four inch equally spaced feeder line. To accomplish this we made separators of lucite, triangular in shape with the corners drilled to accommodate number twelve wire. Seven spreaders were used with a spacing between five and six feet on the line.

With an antenna changeover relay we may use the north wire and the east northeast wire as an independent V beam with a separation angle of about 70 degrees, or the south southeast wire and the north northeast wire as another independent V beam. The north and the south southeast wires are used as long wire antennas. The length of each leg and the separation angle has been determined by the clipping method and may differ from the standard tables.

Shortly after the beam was installed and tested a great-circle map was obtained. On this map each contact was pin-pointed. After one year of logging our contacts in this method we have mapped out the horizontal lobe patterns as shown in *Fig. 3*. It can now be seen how closely the actual patterns follow the theoretical patterns for two V beams and a long wire antenna.

Otherwise, our experience has shown that the major lobe of the V beam is equivalent to the gain obtained with a four element parasitic beam. Most rotary beam users are limited to one band. This is not the case with the V beam, which may be used on other bands. For example, our system is often used on 10 meters with the only noticeable effect being a sharpening of the main lobe pattern. On 40 meters the pattern is somewhat broader and on 80 meters it is quite broad.

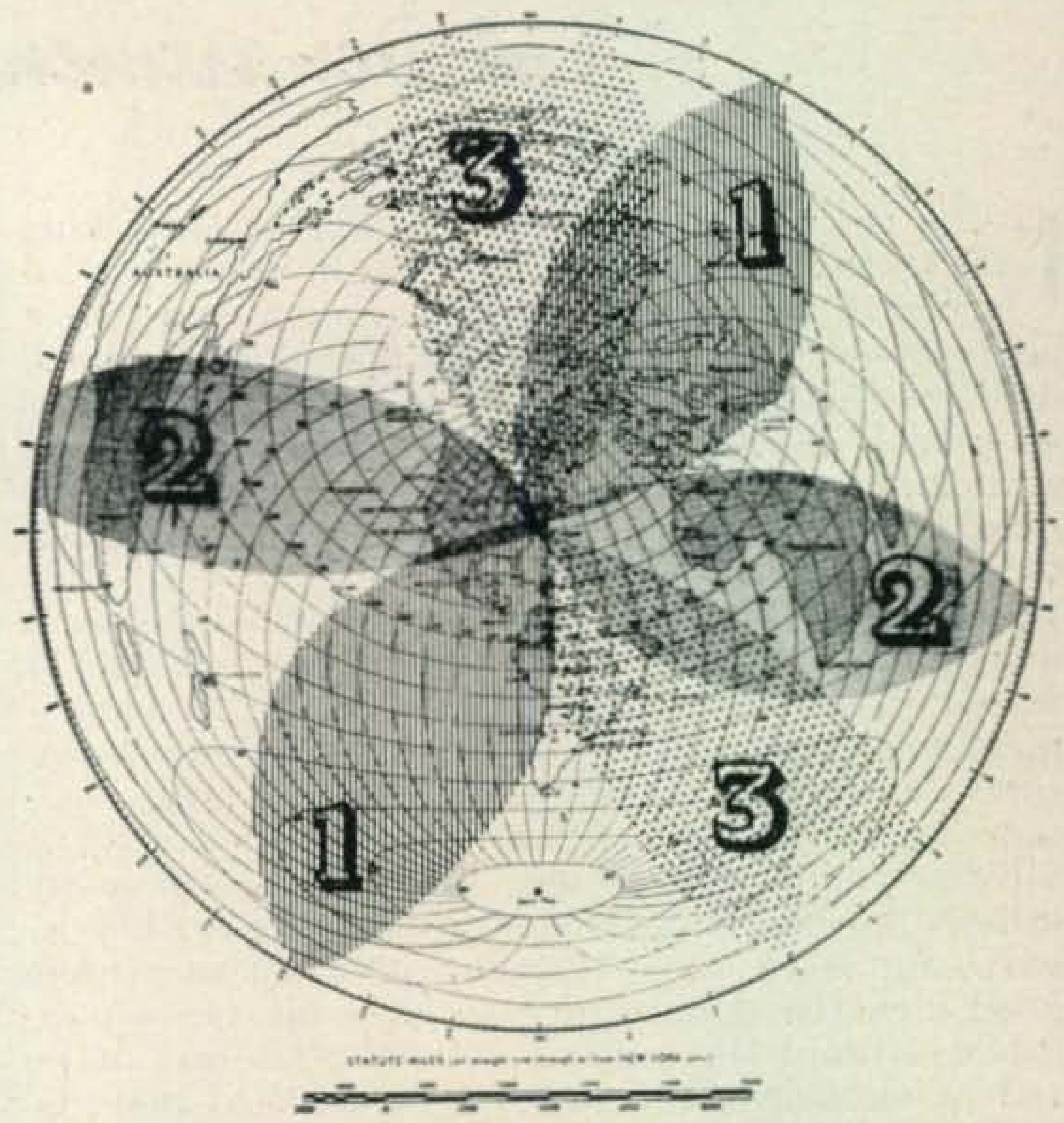


Fig. 3. Horizontal lobe pattern of the twin V antenna at W1QV. The number one lobes and the number two lobes are from the V beams. The number three lobes are from the V beam legs when used as long wire antennas.

Robert Y. Chapman, W1QV
Poquonock, Conn.

Pulse Detection Noise Limiter

Several months ago there was demonstrated a new device in noise limiting and c-w detection. This development is currently being released by Electronic Laboratories, Inc., of Indianapolis, Indiana. It operates on a principle of *pulse detection* which removes all noise including tube hiss and man-made static. When a c-w signal is detected it actuates an internal audio oscillator, the output of which is heard in the speaker without the noise of the receiver.

The inventor of this system of noise elimination is Don Lewes Hings, Director of Research of the Electronic Laboratories. The *pulse detector*, as it is now commonly known, is an electronic device which may be attached to the second detector circuit of any communications receiver. The principle of operation used in the pulse detection method is somewhat inverse to the usual circuit of the second detector. The noise elimination detector circuit is limited by a low impedance gating, which dissipates the energy during the short circuiting interval. As a result, the load of the detector receives the lower amplitude caused by decaying waves which are at the low gating level. Thus no appreciable wave form exists on the detector load during the c-w interval.

The wave form of the decaying waves which may be developed from static or first r-f stage and conversion noise is then amplified, limited and then rectified. This produces a relatively constant d-c component which unless interrupted by a continuous wave at the detector, is used to bias off a balanced amplifier that follows an internal audio oscillator. In operation, it is possible to balance the amplifier for either the marker or spacer intervals of automatic equipment, or on good communication receivers the gating may be set for about one microvolt input sensitivity. Anything higher than this input value is not detrimental to the circuit, therefore this circuit also acts as an automatic volume control,

[*Continued on page 77*]

A Narrow-Band

FM MODULATOR FOR THE V.F.O.

HOWARD A. BOWMAN, W6QIR*

A simple reactance tube modulator for the v.f.o.

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Fig. 1. When the modulator for the v.f.o. is completed the only visible sign of a modulator is the small metal case mounted on the side of the Signal Shifter.

SOME MONTHS ago we completed and placed in operation a new transmitter for use on 10 meters. It enabled us to for see the .time when we might be able to run about 250 watts to the final amplifier, but for the present we had to be content with a power input of about 100 watts. The reason for our inability to run the final at greater power input was a simple one and one which has confronted many Hams desiring to increase power in this day and age. It was that the available modulator power was considerably less than would be needed for the higher class C power.

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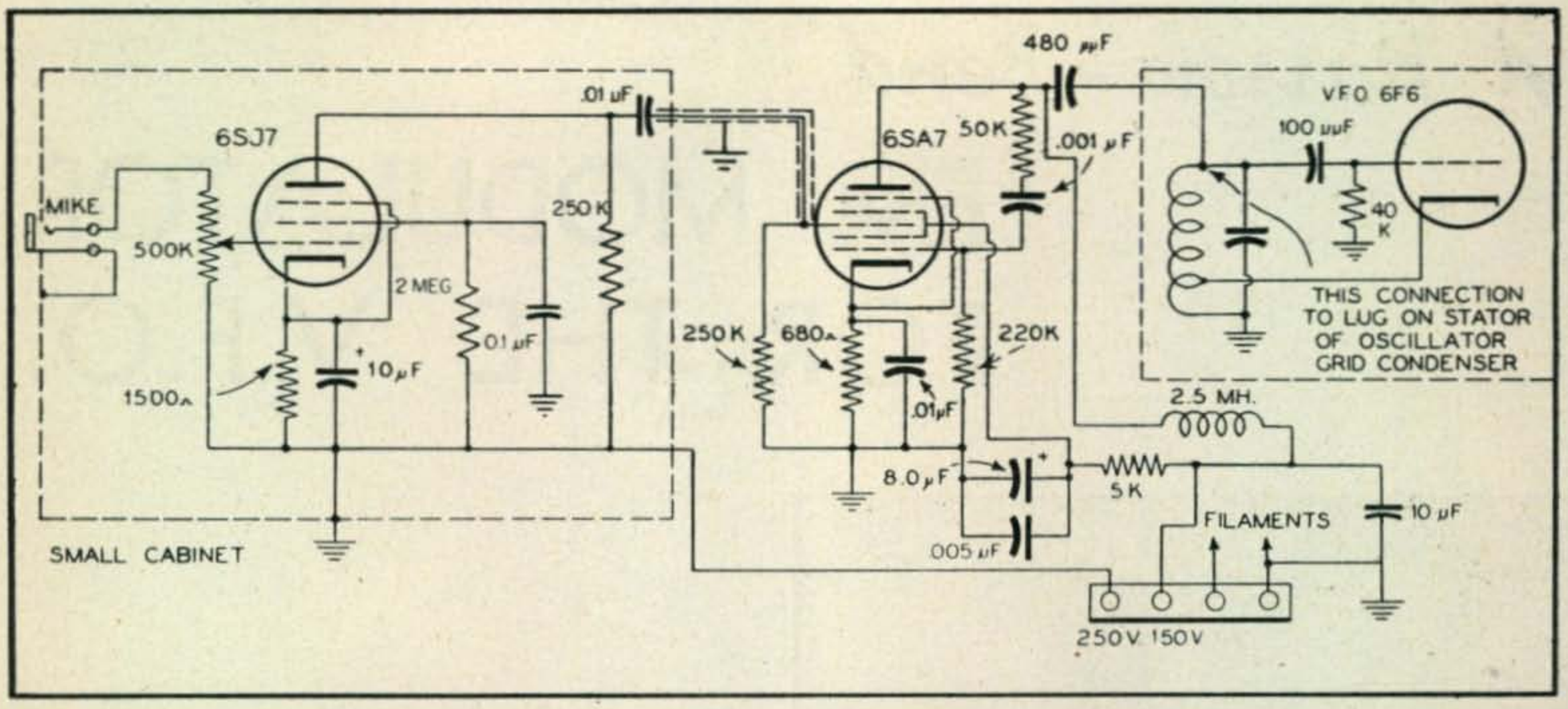
To be more precise, the r-f section looked like this: a Meissner Signal Shifter on 20 meters, a 6V6 doubling to 10 meters, an 807 as a 10-meter buffer driving TZ40s in push-pull. The final power supply was good for 1100 volts at 500 ma. This made it obvious that we had more than enough excitation and power supply capacity for 250 watts input. The audio section was a different story. The modulators were a pair of 6L6s in class AB1, capable of about 30 watts of audio. Any attempt at raising the input to the final resulted in a very unsatisfactory modulation percentage.

The obvious remedy was, of course, to build a



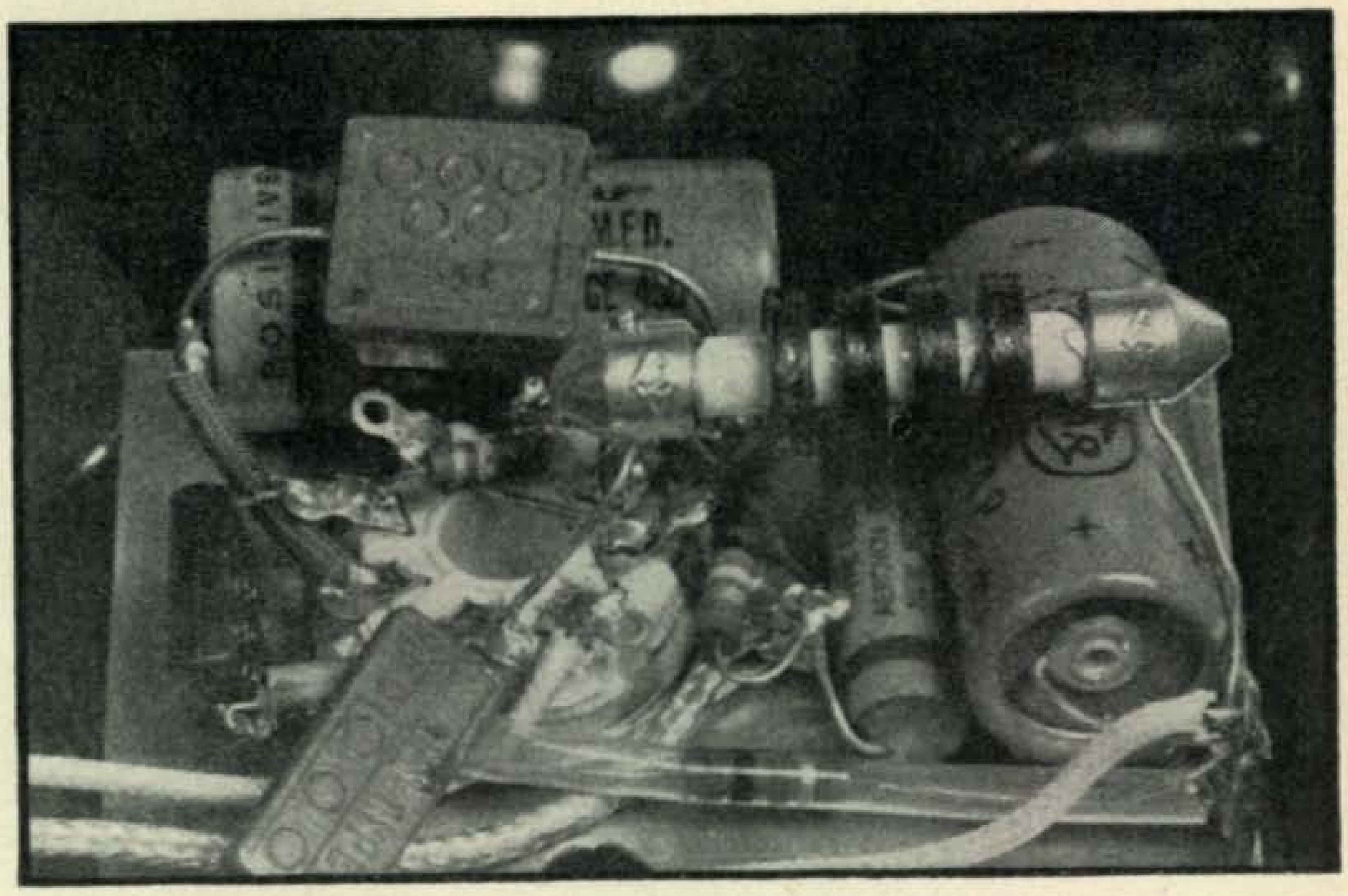
Schematic Diagram of the two tube reactance modulator. The 6SJ7 speech amplifier is mounted in the metal can visible in the photos. The lead from this amplifier to the grid of the 6SA7 must be shielded and fairly short. The output of the reactance modulator is fed through a 480 μμf ceramic condenser to the top lug on the oscillator tuning condenser in the Signal Shifter.

new modulator. But remedies of this nature seldom coincide with the current status quo of the pocketbook. It was about this time that our neighbor W6VNL succumbed to 10-meter frequency modulation and demonstrated a device that was ultra-simple and which fitted well with the equipment we had at hand. We immediately decided to reactance modulate the oscillator grid section of our Signal Shifter.

There is nothing too radical in this proposal. The Shifter is a very stable v.f.o. and there is no reason why this signal source may not be frequency modulated, provided suitable precautions are taken to limit the frequency deviation. The chief problem, however, is mechanical as the reactance modulator must be mounted and shielded to make all leads as short as possible. Inspection of the Shifter revealed that the modulator could be mounted in a rigid accessible spot atop the main tuning gang condensers. The three sections of the condenser are separated by vertical metal baffles which extend above the frame of the condenser and best of all, there are holes in the frame suitable for mounting screws.

Our method of mounting the modulator is shown in *Fig. 2*. This proved to be the simplest and consists of a bracket which rises vertically from the condenser frame and is attached to the frame by a single self-tapping screw as close as possible to the baffle shield between the oscillator grid and oscillator plate sections of the condenser. The tube socket is mounted with the pin terminals toward the oscillator section near the front of the Shifter cabinet. The components are wired in directly to the socket terminals and any tie points are held by the screws which hold the socket to the bracket. The coupling condenser between the modulator and oscillator connects from the 6SA7 plate to the lug atop the tuning condenser. This lead must be very short. At one time an attempt was made to build the modulator and audio amplifier into one separate cabinet mounted outboard of the Shifter. When the unit was connected and turned on, we discovered that we had no excitation to the doubler stage, nor could we locate the correct harmonic of the v.f.o. Investigation proved that we could hear a *ninth* harmonic of the oscillator on 3260 kc in the low end of the 10 meter band, while our correct operating frequency should have been the *eighth* harmonic of 3670 kc. The trouble was found in the relativity long lead from the modulator to the oscillator grid. With the connections shown in *Fig. 2* the Shifter will go off about 37 kc at the fundamental frequency compared to 400 kc in the outboard mounting experiment. With this comparatively small change it's possible to retune the doubler stages and they will track excellently across the entire band.

The power supply requirements of the modulator are relatively small and may be easily met by the power supply built into the Signal Shifter. Many Hams will recall that the Shifter is already designed to power an auxiliary crystal control unit known as the Signal Spotter, hence already has an oversize power transformer. The supply voltages are brought up to a small terminal strip on the side of the cabinet. The location and the mounting are also visible in *Fig. 2*. Leads are run from the terminal strip to a point near the VR150 voltage regulator tube. Then a 3/8" hole is drilled in the chassis and a grommet inserted. One lead goes to ground, one to the plus filament terminal on the 6L6 or 6F6, another to the plus



Component parts for the 6SA7 are mounted on the back of the tube mounting plate. The speech amplifier is in the small box fastened to the side of the Shifter.

side of the VR150 and one to the plus side of the VR105 for the 255 volts. The leads are then cabled together with cord. To prevent any a-c hum pickup we have used shielded wire for the 150-volt load as well as the audio lead.

The speech amplifier for the reactance modulator is a single 6SJ7. It is mounted in a 3-inch square aluminum box we obtained at a war surplus sale. The box is attached to the right hand side of the Shifter cabinet on the upper forward corner. Two machine screws through the perforations in the cabinet being used for this purpose. The front panel of the box has the audio gain control, filament switch and microphone jack mounted upon it. This arrangement is viewed in *Fig. 1*.

The wiring of the audio amplifier and the reactance modualtor needs no explanation. If any hum modulation is present when the carrier is first placed on the air, it may be cured by tying in a 10 μf electrolytic condenser across the 150-volt lead to the 6SA7. If the deviation of the modulator is greater than desired, it may be adjusted by varying the .001 μf condenser between the 6SA7 plate and signal grid. It is feasible to substitute a high capacity mica trimmer, or two such trimmers in parallel to achieve some degree of deviation control. The audio gain control also has effect on the deviation.

When both the audio amplifier and the modulator have been completely wired and installed, the Signal Shifter should be turned on and the frequency calibrated. There will be some frequency shift and it is necessary to recalibrate the Shifter to compensate for this. The microphone

[*Continued on page 77*]

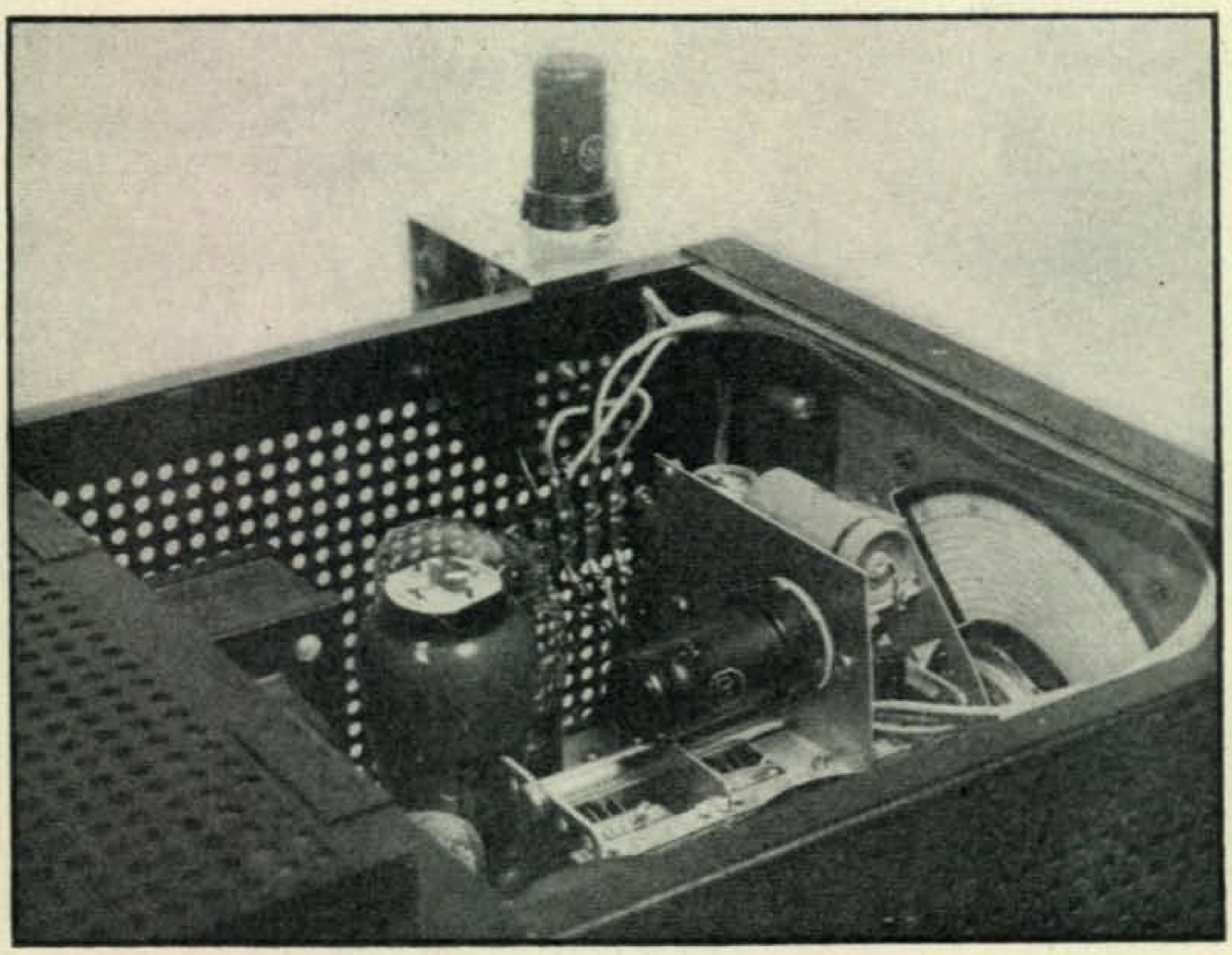


Fig. 2. Showing the mounting plate for the 6SA7 reactance modulator and the method of assembling inside the Signal Shifter. The single stage speech amplifier is mounted outside the cabinet in the upper right hand corner

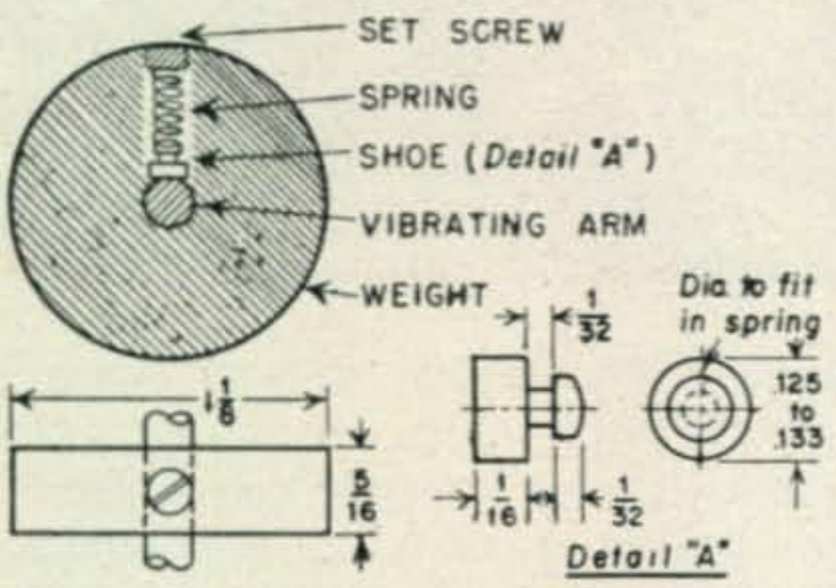
Inside the SHACK AND WORKSHOP

Conducted by A. DAVID MIDDELTON, W1CA*

A "Bug" Weight With a Purpose

Years ago I became disgusted with loose weights on semi-automatic transmitting keys ("bugs" to most of us) and after considerable experimentation I arrived at a solution to the problem in a self-locking weight that can be made in a ham workshop.

The weight shown below has been satisfac-



tory with "bugs" using an average spring tension on the vibrating arm. After the weight was turned down as shown in *a* a hole was drilled from one edge to the center with a No. 29 drill. Then the top of the hole was tapped for an 8-32 setscrew so that the screw will be flush with the periphery of the weight when turned in firmly.

The shoe, or the device which bears on the vibrating arm of the bug, is turned down or filed (from brass stock or from a bit of 1/8th-inch welding rod) as shown in *Detail A*. The small knob fits inside a small spring taken from an old cigarette lighter or other device. The spring is adjusted so that it is about 1/4th.-inch long or just long enough to cause the shoe to press firmly against the bar. A cutaway view of the assembled weight is also shown.

The device is placed on the bar, the shoe and spring assembly inserted and the setscrew put into place. Then, loose weights are a thing of the past and this weight may instantly be adjusted for various speeds and, when adjusted, will maintain its position until changed manually.

QSOs are more pleasant as the dots are firm rather than splattered as they are with loose weights.

A. W. Rose, Jr., WØAWB.

Mounting for Fixed-Crystals

Since the war there have been many ideas suggested for the utilization of those handy little fixed crystals such as the 1N21, 23, 27, and of late, the Sylvania 1N34 with its pig-tails.

The pig-tail-less type of crystal seems to be plentiful and inexpensive, since they are surplus, but they present a mounting problem, That is, they did until I figured out a simple way to mount one of these little gadgets that look like a .22 calibre shell.

I made a mounting from a Litelfuse extractor-type holder by stretching out the crystal with an extension shaft made from a bit of volume control shaft. I drilled a 7/64th inch hole in one end of a 5/8ths-inch length of shaft. This hole accepts the small tip on the end of the crystal.

The crystal is inserted with the *flange end* first, as shown in the figure with the brass extension shaft following. This makes the device the proper length for the fuse holder. The cap is then placed in position.

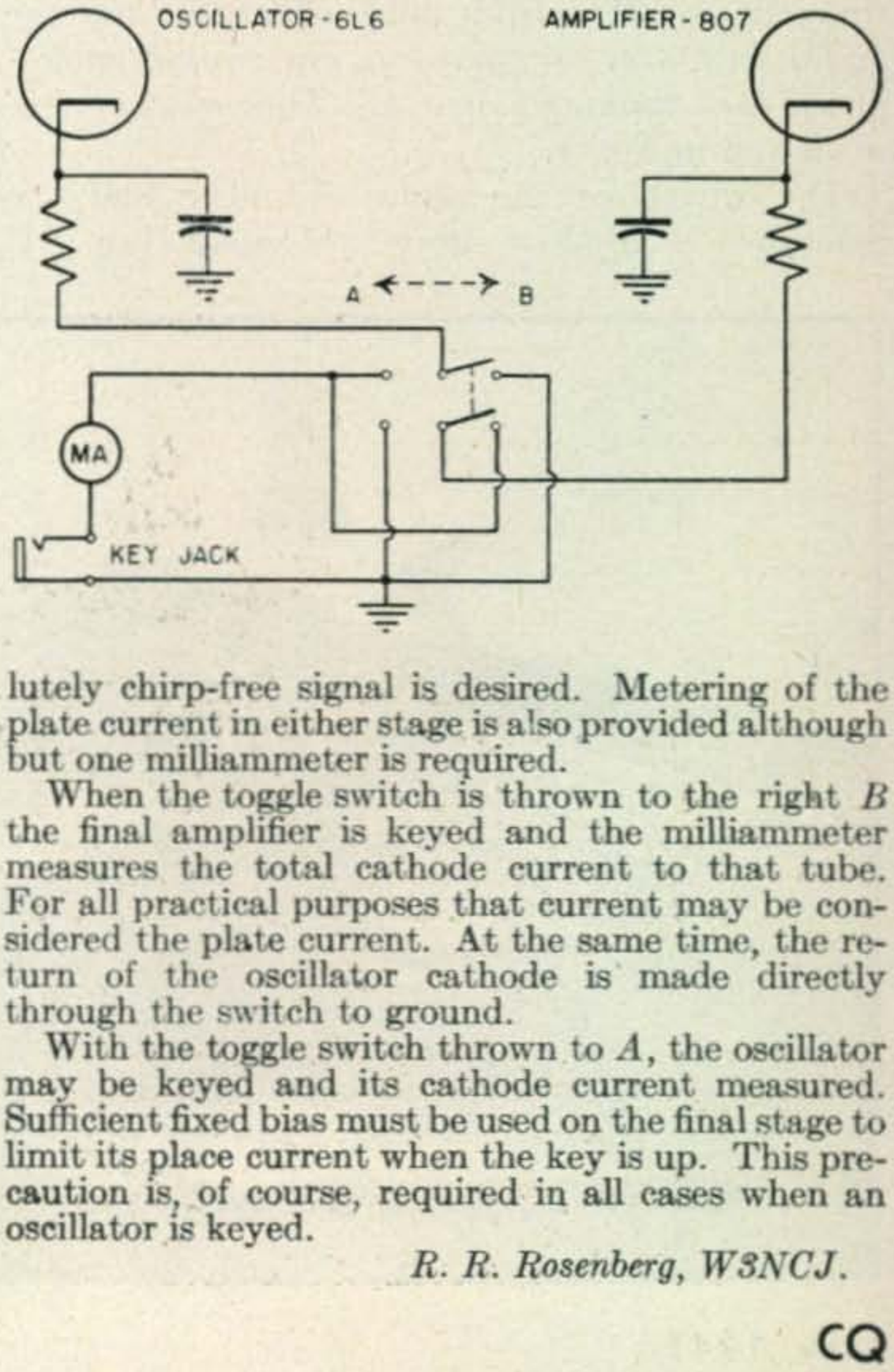
The mounting is placed in any convenient place on the panel or chassis or it may be connected directly into the circuit using the normal connections on the rear and side of the holder.

Felix W. Mullings, W5BVF.

Oscillator of Amplifier Keying Circuit

It is sometimes desirable to have a switching circuit available to permit either oscillator or amplifier keying. Such an arrangement is shown below where the addition of a DPDT toggle switch provides such flexibility.

Oscillator keying may be employed for working break-in or the amplifier may be keyed if an absolutely chirp-free signal is desired. Metering of the plate current in either stage is also provided although but one milliammeter is required.



When the toggle switch is thrown to the right *B* the final amplifier is keyed and the milliammeter measures the total cathode current to that tube. For all practical purposes that current may be considered the plate current. At the same time, the return of the oscillator cathode is made directly through the switch to ground.

With the toggle switch thrown to *A*, the oscillator may be keyed and its cathode current measured. Sufficient fixed bias must be used on the final stage to limit its place current when the key is up. This precaution is, of course, required in all cases when an oscillator is keyed.

R. R. Rosenberg, W3NCJ.

Address all contributions to: S & W Department % CQ, 342 Madison Ave., N. Y. 17, New York.

Monthly DX Predictions - - - MAY

OLIVER PERRY FERRELL

THE QUESTION often arises in 10- and 11-meter band operation of why do we get out better on the low end than the high end of the band. The question itself has been debated until several of the basic elements of radio wave propagation have been forgotten. Most important of these is the rate of change of the skip distance from the low to the high frequency end of the 10-meter band. For an average winter day when the maximum usable frequency was approximately 45.0 mc the conditions of skip distance-vs-frequency as illustrated in *Fig. 1* would be observed. It will be noted that the variation in skip distance from 28.0 mc to 29.7 mc is about 30 miles and from the 11 meter band at 27.35 mc to the middle of the 10-meter phone band at 29.2 mc the variation is about 80 miles. Although these figures do not appear to be of very large proportions—they are nevertheless—important when considered in their relationship to the 950-1200 mile skip prevalant at these frequencies. Thus, skip distance places our largest amateur populated areas on the edges of the 29.0 mc minimum skip of about 1000 miles. Therefore, in the mid-west not only are more signals heard on the lower edge of the 10-meter band because of the spatial distribution of radio amateurs, but these signals appear more consistent since they more closely approach the *optimum working frequency* for the distance.

When the transmission is beyond 1500 miles

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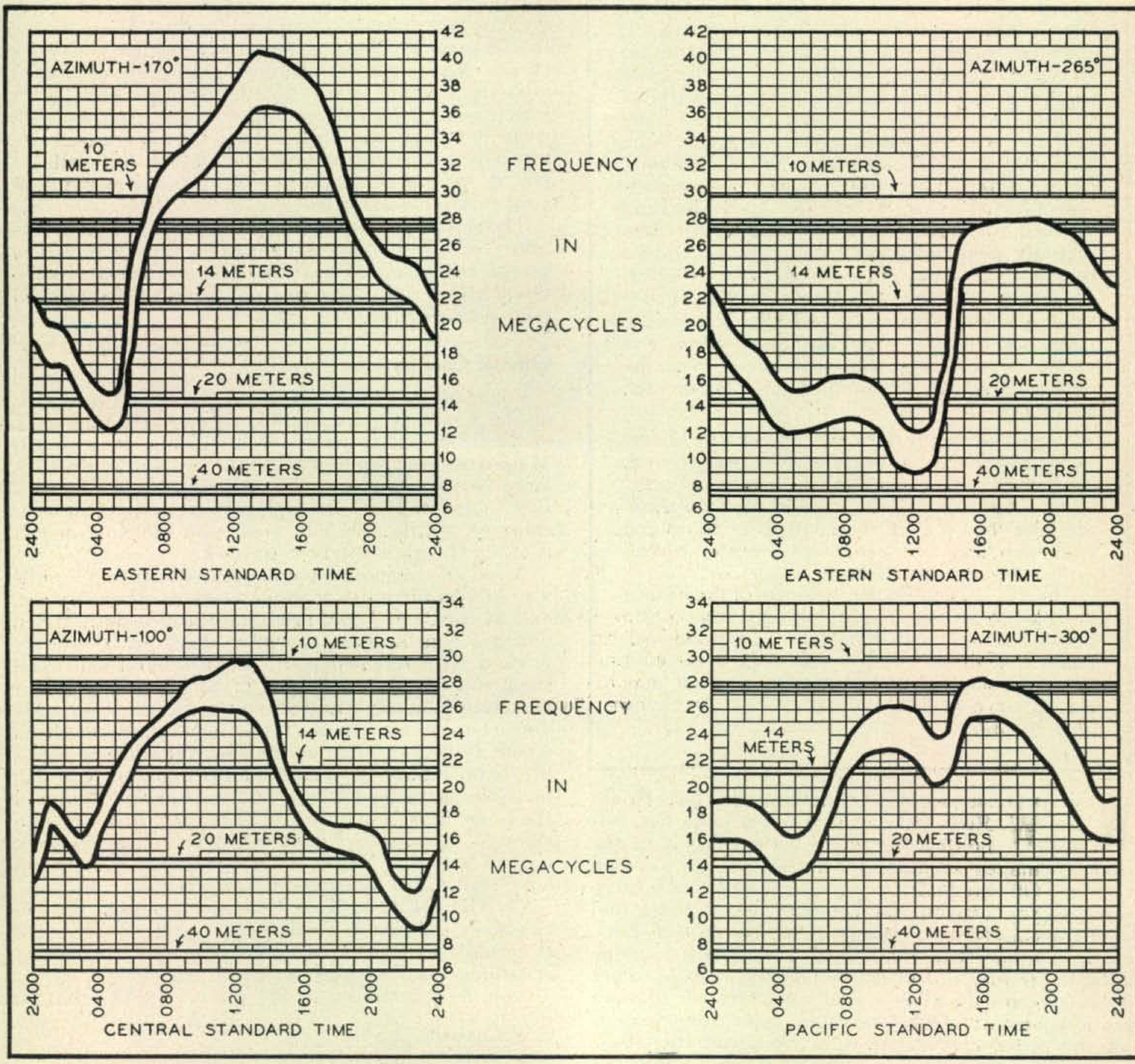


May 1947 average propagation conditions. Fig. 2. (top, left). Eastern United States to South America. Fig. 3. (top, right). Eastern half of the United States to Australasia. Fig. 4. (bottom, left). Central United States to South Africa. Fig. 5. (bottom, right). Western half of the United States to Malay States, Southern China, Burma and Eastern India.

CQ DX

By HERB BECKER, W6QD

[Send all contributions to Herb Becker, 1406 South Grand Ave., Los Angeles 15, Calif.]

Zone and Country Honor Roll

To enter the Honor Roll, it is necessary to submit a list of Zones and Countries worked. We are not asking you to send in your confirmations, but suggest you do not count any Zone or Country until you are sure the station is genuine. We reserve the right to exclude any stations on your lists which are known to be pirates. Confirmations are required from those who are eligible for the W.A.Z. certificate.

Here's how to make your list. In order to facilitate our handling of the Zone and Country lists, we would like them to be somewhat standard in form, and, where possible, typewritten. The information we require on the Country list: (1) Name of country, in alphabetical order, in accordance with the new postwar Official Country List, (2) Call of station worked, (3) Date, (4) Time. Zone list: Use separate page, number zones 1 to 40, down the page. After Zone worked: (1) Call letters of station, (2) Date, (3) Time. These lists will serve as master lists in our file; and once your totals are entered, when additional zones and countries are worked, submit information on the new ones at one time, and by the 15th of each month.

Sequence in the Honor Roll will be determined by the number of postwar Zones worked. After the zone total will be the number of postwar countries worked. We will then show, on the same line, the "all-time" totals of zones and countries. No one can enter the Honor Roll with "pre-war" totals only.

The "C.W. and Phone" portion of the Honor Roll will contain the totals of those who operate both, while the "Phone" column will contain totals of "Phone-to-Phone" only contacts. Be sure your lists denote whether they are to be classified as C.W.-Phone or Phone only.

WITH THIS ISSUE, we are reviving the DX Honor Roll. As you will see, it is not a large list, but neither was it large when we started it in the magazine *Radio*, years ago. Now that we have an Official Country List, there's only about one excuse you can use for not sending in a list of zones and countries . . . that excuse is, you haven't a Zone map. There was a small Zone map printed in the January issue, from which you should be able to get a pretty good idea as to the zone number of each station worked. Our large four color zone map is off the press, and by the time you read this stuff, most of you should have one of these. That's, of course, unless you can't find a buck with which to pay for it.

I think this would be a good spot to ask you fellows who are going to send in your zone and country lists to read the instructions in the box at the head of this column. Especially look at the paragraph outlining the form we would like to have followed in listing your zones and countries. In previous issues, we have suggested that you list the call letters of the station worked, first, and the country second, etc., etc. After checking a number of the lists already submitted, our committee has decided, it would be just as easy for you fellows to list your countries in alphabetical order, this to be *followed* by the call of the station worked. As you can easily see, this will greatly facilitate our checking against the country list, as well as filling in new countries as you work them. Now then, on your zone list, the answer is obvious; number from 1 to 40, down the page, after which comes the call letters of the station worked, with the date and time. Then as new zones are worked and submitted by you, it will be a simple matter for our committee to fill in the new zones on your original master list.

Those who send in their all time totals; it will certainly not be necessary to make a completely new list of zones and countries. Merely list the additional zones and countries not already included in your post-war list.

Official Country List

For those of you who have not received a reprint of the Country List published in February *CQ*, one will be sent to you, if you will just write to *CQ* Magazine, and enclose a stamped, self-addressed, large No. 10 envelope. This reprint of the Country List is printed on one side of the paper, in four columns, so that you can tack it on the wall, or put it under the glass top of your desk.

A few of the gang have suggested a rather simple way of keeping a list of countries worked up to date, and at the same time, in alphabetical order. When you get one of these reprints, check each country worked with red pencil on the left hand side, and then you can put the total of each column at the bottom of the page, and as you work new countries, you can change these totals accordingly. From where I sit, it is obvious that as you add the totals at the bottom of the four columns together, you will have the number of the countries worked. Some of the boys, who dote on confirmations, put a check on the right hand side of each country from which they receive a QSL. Those of you who are CPAs will have no trouble figuring out this system, I am sure.

CORRECTION: The Zone and Country List in February *CQ* shows Tunisia as being in Zone 35. It actually is in Zone 33, so will you change your list accordingly? Tnx, OM, a lot.

Now let's get more to the point . . . DX, that is.

C-W Chatter

A letter from *D2CD* tells us that he is a licensed Ham in the British zone, and located in Hamburg. Sgt. George Smith is the name. On 10 meters, he is running 70 watts input to some German made tubes. The antenna is a 3-element beam co-ax fed.

W.A.Z. HONOR ROLL

	POST WAR		ALL TIME	
C.W.—PHONE				
W6VFR	39	138		
W6ITA	39	137	39	148
W8HYC	39	121		
W6SAI	39	107		
W6ENV	38	123	39	147
WØGKS	38	92	38	123
W3IYE	37	104		
W6ANN	37	95		
W6WKU	37	94		
W3JNN	36	119		
W8CVU	36	99		
W6VBY	36	95		
W6LER	36	76	37	98
W2IOP	35	102	37	135
WØYXO	35	69	37	91
W3KDP	33	75		
W6UZX	33	69		
W8NBK	32	96		
W9RBI	32	73		
W7FNK	32	50	35	68
W6QD	29	57		
W2PUD	28	68		
W9WEN	28	51	28	62
KP4KD	27	67	31	104
WØAZT	27	66		
W6JFJ	26	47		
W5EWZ	26	41		
W9KMN	25	45		
W1LQQ	24	51		
W6ZZ	23	44		
W2GVZ	19	38	39	125
W8PCS	19	29	22	43
PHONE				
W1MCW	35	102		
W6DI	35	95	36	121
W9HB	34	86		
W4CYU	33	104	34	106
W5LWV	31	70		
W9RBI	28	58		
W6ITA	25	62		

On 20 meters, the rig consists of a pair of 807s, with 100 watts input: some type of antenna is used on 20. He needs South Dakota and New Mexico for WAS. D2CD says there are some 80 D2 Hams in the British zone, and a couple of the regulars to listen for are, *D2KW* and *D2CK*. D2KW is President of the new Hamburg Radio Club, while D2VB is Scribe. They had their first W visitor when W4KCA/MM dropped in. He operates 10 meters Mobile Marine on the S. S. BENJAMIN HUNTINGTON.

W5LCZ says that a few VKs are a little irked, because they are not getting QSL cards from the Ws.

Speaking of *ZM6AC*, he is really giving the boys a ride. His name is Pat Erwin; he is running 30 watts, and, by his own admission, is using a two tube Super. Another nice one to pick off is *VR5PL*, 7085 kc, on Tonga Island in the Friendly group. W6ITA says quite a number of the W6s have snagged him, thus far, including himself, of course.

W6LKF has a letter from *ZS2F*, who says that his new QSL cards will be available shortly, so if you need his, just be a little patient. ZS2F would like to have the v-f-o gang lay off his frequency. His power is 10 watts.

It's good to hear from *GI6TK*. Frank would like to have it known that there is now a GI5TK, and it might be just a bit confusing to some of the old timers, who have been used to hearing GI6TK pounding through. Frank says the Radio Club in Belfast is now very active 14,112 kc, using the call GI6YM. A few of the operators include GI5UR, GI3AV, GI3AIT, as well as GI6TK. Frank is doing quite a lot of flying, these days, as he is chief radio and radar inspector for a company in Belfast. GI6TK says that they would like to arrange schedules with some of the many visitors they had during the war, and their Club can be reached as follows:

City of Belfast, Y.M.C.A.
Radio Club, Wellington Place, Belfast, N. I.

W6UZX, located in the San Francisco bay area, is quite a versatile guy. He has worked 28Z and 58C, while on phone, it is 20Z and 39C. Due to his boss making him do all the work at KPDA (police radio), he doesn't have very much time to get on the air . . . his boss is probably on the air working the stuff, instead.

Once again, we do a little grabbing from Art Milne's column. The following are excerpts: *ZC1A N* is genuine; *UI8AA* is 14,050, location is Tashkent; *ZB1AD* is ex-G8AB; and, *FF8WN* is on 14,060. If you hear *PIPZ* on 14 c.w., it is the call of a Whale Oil Refinery ship WILLEM BARENDEZ, now in Antarctic waters. G2HOJ is VQ6HOJ; VK8 and VK9 no longer exist, the former is VK5, the latter VK4 . . . but don't ask why! *FU8AA* is on Pentacost Isle, New Hebrides; *HZ1AB*, of course, is W4JMQ. *RAEM* mentions that all Russian stations, with a K in the prefix, are club stations. According to G6PJ, *HZ4EA* is in Ineka, Saudi Arabia, 14,010 kc. G3AUP heard *ET2C* tell someone he was a pirate in Switzerland, so this will probably disappoint a few. *XACO* is in Libya, and *XACY* in Trieste. *LZ1XX* is still active in Sofia, but *LZ1AK* and *1AB* are phoneys. *UAØKAA* is on Dickson Island, Jenissei Bay, Siberia, not in Spitzbergen. *XADZ* is still in Italy, but is now G3AXU: he'll handle QSL cards for XA stations. His QTH is: Captain P. G. Keller, British Army, A. 5, GHQ. CMF, Italy. *SU1KE* is on his way home, presumably, England; and, *EP2L* is O. K. and QSLs. All of the above is from *G2MI's* DX column in the R.S.G.B. bulletin.

Do you want to work Antarctica? W6PQV just phoned to say he worked *AYZH*, which is the Chilean Antarctic expedition, located at Margarite Bay, Antarctica. AYZH is on 12,480 kc c.w., and at this writing, they say they will listen for Hams in the 14-mc band, between 0400 and 2000 GMT. The operator on the job, at the time, was "Kel" Kelsey. W6PQV also has been knocking off some good European contacts.

W3AQT wants to know what a California kw is. How would I know? He says he has a very bad location when it comes to working West and North, as he is located below the crest of a dam. In other words, when he works West, it is about the same as transmitting from under water. He seems to have a

"pipeline" into Europe, Africa, and South America, however. W3DPA has worked *LI2JC*, *GC2CNC*, *PK6AX*, *OIX7*, this one on 10 phone, and the other three on 20 c.w.

KP4KD, in addition to finding Tunisia in the wrong zone, doesn't like the idea of basing pre-war countries by the new post-war list. Don't worry, Ev, the combined committees of *QST*, *RSGB*, and *CQ* thought of this one too. It was finally decided that for comparative purposes, it would be much more simple for the DX man to compare post-war and pre-war totals, if we only had one list of countries to use as a yardstick. A couple of others have brought up this point, and we think it is about as broad as it is long, but in the final analysis, decided on sticking by the post-war list. If any of the pre-war DX hounds want to be recognized as having worked some of the deleted countries, such as Danzig, Tasmania, etc., we will gladly put it in print, but we won't count it as a country in the DX Honor Roll.

While the thought is in my mind, I would like to have you fellows know that our DX committee is really pitching in on some of the details, relative to the DX column. For example, W6ENV has used up one bottle of Alka-Seltzer in trying to figure out some of the zone and country lists sent in, thus far, while W6DI is concentrating on rounding up a little phone DX news.

W6VBY is up to 101C; some of his latest being, *ZM6AC*, *ZC1A N*, *HP4Q*, and *HR1MB*. W6VBY is running 800 watts to a pair of 4-125As, while the receiver is a home built job, using miniature tubes. He is using an X-H antenna for Europe, and a folded dipole for Asia and South America.

The other day, ZS2AG said he was expecting a

AR1PC	Box 463, Damascus
C1DK	Box 409, Shanghai, China
C3LT	Box 163, Canton, China
CN8MZ	Robert Cornbois, Rue de Quency, Ne 38, Rabat
CT2XA	APO 406, % Postmaster N. Y. City
FA8FU	Box 38, Algiers
FF8WN	W. T. Moore, Pan American Airways, Dakar, Senegal
GC2CNC	Lorraine Guest House, 5 Ave des Pas, Jersey, Channel Islands
GC4LI	The School House, St. Mary, Jersey, Channel Islands
HA4EA	QSL via A. R. R. L.
HI8NET	Norm Tilden, Apartado III, Ciudad Trujillo, Dominican Republic
HR1BD	Bill Rogers, United Fruit Co., Cortes, Honduras
HZ1AB	J. P. Anderson, APO 816, % Postmaster, New York City
HZ4EA	Ineka, Saudi Arabia via A. R. R. L.
J4AAP	CSO Branch, HQ. BCOF, Japan
J9ABX	Bill Baxter, APO 1050, % P. M. San Francisco, Calif.
KA6FA	Box 392, Iloilo, P. I.
KG6PU	% FPO Guam
KP6AA	% Postmaster Honolulu, T. H.
KV4AA	P. O. Box 403, St. Thomas, Virgin Islds.
LI2JC	Signals RAF, El Adem, Libya, North Africa, MEF #7
LZ1XX	QSL via HB9CE
MX3KP	Mukden, Box 10, Navy 3090, FPO San Francisco, Calif.
NY4CM	U. S. Naval Base, Box 55, Guantanamo, Cuba
OE9AA	Klamenfurt, Austria, APO S/565
OIX7	Radio OIX7, % Finnish Broadcasting Co., Helsinki, Finland
OX1Z	APO 858, New York City
OX3GE	APO 55, Postmaster, New York City
PK2DL	Lt. Dick DeLee UBDA, Tiger Brigade, Surawang, Java
PK4DG	J. Van Eysbergen, % U. S. Rubber Co., 1230 6th Ave. NYC
PK4KS	Pangkalan Pinang, Banka Island, N. E. I.
PK6AX	Bert Kryghman, Cantin Lann, 10 Mahashar, Celebes
PK6EE	Box 76, Macasser, Celebes, N. E. I.
PK6HA	Biak, Netherlands East Indies
PK6VR	Biak Island, Netherlands East Indies (Airmail only)
PZ1AL	Box 226, Paramaribo, Surinam
PZ1OY	Box 679, Paramaribo, Surinam
ST2AM	Amateur Radio Club, R.A.F. Khartoum, Sudan
T1NS	Signals Officer, R.A.F. Castelbenito, M.E.F. 1
TR1P	E. L. Keener, 101 Lincoln Street, Grafton, West Virginia
VK4BX	Neil Bonney, % Civil Aviation, Port Moresby, Papua
VK4OS	C. Rowles, Dept. of Civil Aviation, Jackson Airfield, Port Moresby, Papua
VO2M	Cape Bonavista, Newfoundland
VO6U	Goose Airport, Labrador
VP5AL	P. O. Box 85, Kingston, Jamaica, B.W.I.
VP9T	APO 856, % P. M. New York City
VQ6HOJ	14737362 Cpl. J. R. Endall, R.E.M.E., 407 (E.A.) R. T. Workshops, E.A.E.M.F., British Somaliland (Via Aden)
VR5PL	N. Mortensen, Civil Airways, Tonga Island
VS1AK (ex-VS2AK)	% General Electric Co., Singapore
VS1AR	4 SWR, SEAC, Sinagpore
VS6AA	QSL via R.S.G.B.
VS6AC	367 Signal Unit, R.A.F., Hongkong, China
VU2GB	G. A. W. Ballantine, Dongri Police Station, Bombay 9, India
VU2PB	R.A.F. Signal Section, Port Blair, Andaman Island, Bay of Bengal
VU2WS	W. Stark, 12 Balbedie Terrace, Lochore, Fife, Scotland
W6FMZ/CB	George Riddle, USN, Chinese Naval Training Center Tsingao, China. Navy 3913, FPO San Fancisco
XU1YY	Arland V. Page, 448 S. Main St., Baldwin Park, Calif.
YR5J	QSL via HB9AG
ZB1AB	Port Radar Center, H.M.S. Dock Yard, Malta
ZB1AD	R.A.F. Station, LUQA, Malta
ZB2A	% CSO, R.A.F. Gibraltar
ZC1AN	QSL via R. S. G. B.
ZD2G	Posts and Telegraph Dept., Lagos, Nigeria
ZD4AB	T. F. Hall, Box 100, Koforidua, Gold Coast
ZM6AC	Pat Irwin, Apia, W. Samoa
D5FF	QSL via HB9AG
CN8BK	M. Lacaze, Rue Lebrun 57, Casablanca
EK1AA	British G.P.O. 57, Tangier
EP1C	R. Houseworth, W9SAJ/3, 5751 Winahickan Ave., Philadelphia, Pa.
VP4TX	Edgar Borde, 52 Mucurapo Rd., Port-of-Spain, Trinidad, B.W.I.

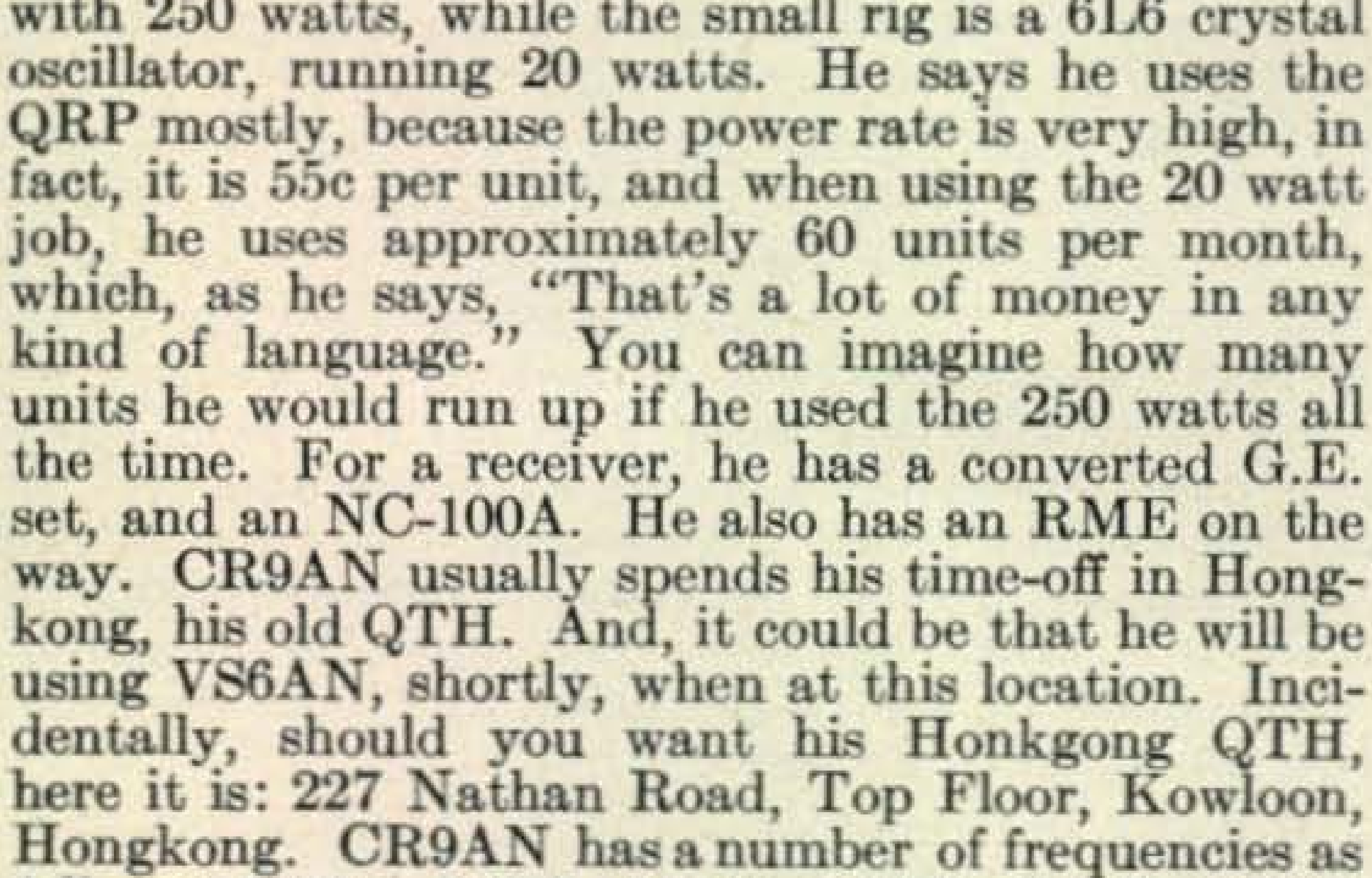
new batch of QSL cards to arrive, and he would hop on it to get them mailed to all of you fellows who are expecting a card from him. Incidentally, ZS2AG is living in a district with 220 v-d-c mains, just what he is using on the plate of his tube.

W1APU grabbed a new one in *CR4AA*, and says he thinks he ought to get credit for working *VE8AI* in the Yukon. I would certainly like to oblige him, but doggone it, I know the rest of you fellows wouldn't approve of it, so we'll just have to have him try something else. W1APU has been trying to figure out what he has worked in the new Russian prefixes, but says he never was much good at geography. I know exactly what he means.

W3AYS says he is a little baffled at the present DX stuff. He says that sometimes he knocks them off on the first call, and other times, he calls and calls, getting no answer. Just like the guy who was looking for Chloe. W3AYS echos the feeling of a lot of the boys, when he says *XU6GRL* was one of the loudest stations on 10, 20, and 40. Good ole Doc . . . that should make him smile. Incidentally, Doc Stuart, during the contest, said he got a bang out of being a DX station, instead of the guy going after a DX station. He just sat and let them pile up, 15 or 20 deep, peeling them off, one at a time.

CR9AN, Adrian Rossario

We have a couple of letters from Adrian, one sent to WØLAE who very kindly sent it along to us. He has a couple of transmitters . . . one using an 813 with 250 watts, while the small rig is a 6L6 crystal oscillator, running 20 watts. He says he uses the QRP mostly, because the power rate is very high, in fact, it is 55c per unit, and when using the 20 watt job, he uses approximately 60 units per month, which, as he says, "That's a lot of money in any kind of language." You can imagine how many units he would run up if he used the 250 watts all the time. For a receiver, he has a converted G.E. set, and an NC-100A. He also has an RME on the way. CR9AN usually spends his time-off in Hongkong, his old QTH. And, it could be that he will be using VS6AN, shortly, when at this location. Incidentally, should you want his Honkgong QTH, here it is: 227 Nathan Road, Top Floor, Kowloon, Hongkong. CR9AN has a number of frequencies as follows: 14010, 14015, 14020, 14050, 14070, 14090, 14095, and 14100. These are 7-mc rocks, and in addition to these, he has two 14-mc crystals; 14105 and 14117. Since his rig has crystal switching, you might find him on any one of these, although, he says he uses 14105 the greater part of the time. Adrian has had over 500 QSOs with Ws in 39 states. He says he is a confirmed QRP Ham, and



One of the most consistent Asians heard in the U. S., the compact station of Adrian Rossario, CR9AN.

prefers his 20 watts to the 250. Of course, he doesn't have the competition that some of the Ws seem to be having, which is a selling point for QRP. He does say that when the going gets tough, the 250 watts comes in mighty handy.

CR9AG, John J. Alvarez

John says that conditions in the evening are quite erratic, but during December, the east coast stations came through fine at 1200 G.M.T., peaking at 1400. He also hears a few Ws at 2300, but he is unable to get through to them until around 2400. They have been troubled with QRM from some Chinese commercials in the 14-mc band. He thinks one of them is an undercover station, and before long, they hope to be able to find out who it is. He says they have captured about five of these undercover stations, and some of them use a single 6L6 in a Hartley circuit with a cigar box for a chassis. CR9AG is in charge of all radio communications there, and as I said before, CR9AN is with him. If any other Ham stations pop up in Macao, they are operating with a special license. John worked *CR7VAL* in Lourenco Marques, and he is also operating with a special license. He is chief operator of radio station

John J. Alvarez, CR9AG.

CRS. CR7VAL is around 14050, but not crystal controlled. A short time ago, John heard from VS6DG who said the Hongkong boys will be on as soon as their licenses are brought in line with those of England. At present, the fellows in Hongkong are VS6DG, 6AE, 6AF, and 6AO. 6DG is using an HRO for a receiver but complains of bad regulation in his a-c lines. 6AF is using a GI model Super-Pro.

CR9AG is using one of Woody Smith's signal squirters, but is thinking of changing it to a two section 8JK beam. This is for 14 mc. For 28 mc, he is using a bi-square. At the time of writing this letter. John said 28 mc was red hot after 2300 G.M.T., that is for W stations . . . Europeans come in around 1000 G.M.T. He is going to crank his rig up on 28-mc phone and will use 28,150 kc—on c.w., it's 28,020 and 28,075. For 14 mc, his frequencies used are 14,010, 14,039, 14,070, and 14,075.

More C-W Chatter

W8CVU is up to 36Z and 99C, and is somewhat puzzled as to the exact location of UAØKAA. He is located in Zone 18 on Dickson Island, as mentioned previously. Other new ones for Walt include *VQ3HJP*, *ZK1AH*, *FP8A*. He also worked *OI2KAL*,

[*Continued on page 70*]

V.H.F.-U.H.F.

by Vince Dawson, Jr., WØZJB*

May, the merry month of spring, is now with us and with it commences the 50-mc *sporadic-E* skip season usually lasting until October or later. Those of you who have, or are thinking of joining the fun of working 50-mc DX, watch the 28-mc band for short skip between 400-1000 miles, and when it occurs get on 6 and call some CQs. Anything can happen and usually does!

This summer promises to be the best yet for 50-mc DX, as activity is sky-high in the East and lots of the fellows have gotten on in states where there was no activity last year. It is of scientific importance we log all days the band is open in any part of the U. S., and we as amateurs can supply that information in order to make future predictions of the ionosphere.

Again we mention for you to listen and make use of the high end of the band, tunning from the high end down brings dividends lots of times for that elusive state. Also make your calls short and use good operating precedure, 50-mc opens briefly and good operating counts!

W4IUJ-W4GJO Work OA4AE on 50 mc

Sunday, March 23rd, at 1450 EST W4IUJ, Glenn Harman in W. Palm Beach, Fla. called CQ on an apparently dead 50-mc band, and to his great surprise and delight, was answered by OA4AE, in Lima, Peru a distance of 2800 miles. The contact lasted for 20 minutes until 1510, signals hitting S-3-4 peaks. At 1513 EST, Grid, W4GJO, in Orlando, Fla. raised OA4AE, his contact lasting until 1540 when the fade out came.

W4IUJ was running 100 watts to a 35TG, feeding a 4-element "W1HDQ" beam. Glenn says without a doubt this was his greatest thrill in ham radio, inasmuch as they had not contacted on 28 mc and arranged the 50-mc test. This is W4IUJ's second taste of long skip on 50 mc, as he contacted W6FPV in Van Nuys, Calif. the same day W1HDQ was getting into England, on November 24th, 1946. Unfortunately Glenn could not monitor the spectrum between 30-50 mc, but he did notice a decided flutter on 28-mc signals, which led him to try the CQ on 6 meters.

This contact with OA4AE qualifies W4IUJ for the cup award offered by the Milwaukee Radio Amateurs' Club to the first W-station contacting a station in another Continent on 50 mc, in excess of 2000 miles. Congratulations Glenn, you are the envy of every 50-mc man in the country.

A great deal of credit is due to OA4AE in getting on 6 meters as he had to wind coils for a converter, get it going, fix the rig on 6, grind a crystal, build and erect a 6-meter antenna and arrange to cancel all his 10-meter schedules on week-ends. In addition, Buz, OA4AE is very busy with his duties at Pan-American Grace Airways. OA4AE runs 42 watts to an 807 doubler, with a 3-element horizontal beam (2 directors). The converter has an untuned 6AK5 r.f., 6SA7 det osc. Well done Buz, and no doubt more of the 50-mc gang will be looking for you when condx are right.

W4GJO, in Orlando gives us more info on his contact with OA4AE. Grid has been running skeds with him for the last couple of months, getting his predictions from Perry Ferrell, Propagation Editor of *CQ*. On Sunday, the 23rd, Grid was hearing signals on the old FM band near Paxton's and Chicago's frequencies, with a slight touch of aurora. Finally around 1500 EST he started hearing signals on the low end of 6 meters, none identifiable on phone. The lower of the three, on 50-mc flat finally turned out to be what Grid had spent so much time the past several months looking for, OA4AE. The signal finally came up during the contact with W4IUJ. Grid could barely read Buz, altho Grid was R-4, S-4 down there. When Buz faded the other signals between 50 and 50.2 mc went out at the same time.

Grid also mentions that the signals from OA4AE had an unusual quality about them, similar to the signals he was hearing on the old FM band, although not so pronounced, they still appeared to have aurora on them. The signal was somewhat broad and garbled. Seems it took the black-out we were having here in the middle west, to put the signal across to South America.

During the same period that W4IUJ and W4GJO were working OA4AE, W9ALU was hearing the BC harmonic of HCJB, Quito, Ecuador on 49.9 mc, hitting S-5 peaks from 1400 to 1430 CST. Another

50-MC DX HONOR ROLL

Calls	States	Districts	Other
W1LLL	29	10	
W9ZHB	28	10	VE3
WØZJB	27	10	VE3-4
W1HDQ	26	9	G5-6*
W9PK	26	9	
W1PFJ	25	9	
WØYUQ	22	10	VE3
W4GJO	21	9	VE3-OA4
W8QYD	21	9	VE4
WØDZM	20	10	VE3
WØSV	19	9	
W2IDZ	17	7	
W3RUE	16	9	
W4HVV	16	9	
W8SLU	14	10	
W5FRD	14	9	
WØJCQ	13	10	
W6NAW	13	8	VE7
W4WMI	13	5	
W1JLK	12	5	
W9AB	11	5	
W8NKJ	9	7	
W9ALU	7	6	
W5WX	7	5	
W7ERA	5	3	
W7HEA	4	3	
WØPKD	4	3	
W7JPA	3	2	
W6WNN	3	2	
WØYSJ	3	2	
W7BOC	2	2	
W7CTY	1	1	

*Cross-band.

V.H.F.—U.H.F. RECORDS		
Call	Distance Miles	Date
50 MC		
J9AAK-KH6DD, W7ACS/KH6	4700	1/25/47
144 MC		
W3HWN-W1MNF	410	11/19/46
235 MC		
W6OVK-W9OAW/6	186	
420 MC		
W6FZA/6-W6UID/6	170	9/28/46

No other record reports received for other bands.

A1 carrier modulated at intervals, with a tone, was heard on 49.5 mc with best signal when his beam was in a southernly direction. Evidently just a little too far from OA4AE to receive him, but conclusive evidence that with more activity in South America some nice 50-mc contacts could be made when conditions are right.

International 50-mc Notes

As mentioned above we here in the middle-west were having another of those black-outs on 28 mc. All that was audible were S. A. and Mexico. Earlier in the morning D4ADT on 28-mc phone was heard to say, while in contact with a W4 in Tenn; that signals were best when his antenna was pointed north over the pole instead of in the normal direction. In fact at 1100 CST went on 50 mc and called several CQs as the flutter indicated something should happen. It did—three hours later, when W4IUJ made the first inter-continent 50 mc QSO.

As mentioned in last months flash, W7ACS/KH6 heard VK4HR on 50 mc, March 2nd, at 1528 PM HST. Gene, W7ACS got VK4HR's call sign and a Roger, altho Gene was not heard in VK then. The prior 3 days VK4HR had heard W7ACS/KH6 but still not well enough for a definite QSO. J9AAK was again heard in KH6 by KH6DW for about 30 seconds at 1630 HST on Wednesday, Feb. 26th.

The above info was sent in by Bob Mitchell, KH6DD, who was just taking off for China. Bob has been playing with his SX-36 and now has a concentric line 13″ long, 3″ in diameter, with an inner conductor of #12 wire in the r-f stage. Checks have shown it brings the signals up 20 db with no increase in signal-noise ratio.

Bill Harvey, KL7GO, ex-WØGZI, in Anchorage, Alaska is now on 6 meters with 250 watts and a 36A receiver. The antenna is a 2-element beam mounted above the 28-mc job. The last few weeks in Feb. he heard the FM stations in the states very good during the morning. However one day (date not mentioned), Bill heard two W1s in Mass on 50 mc, but was unable to get their calls. Next day he contacted the town on 28 mc and is awaiting an answer to his messages. He will let us know as soon as they are verified. Ten can be worked from there 24 hours a day, no short skip has been noticed, but plenty of DX.

Tex Brewer, J9AAK on Okinawa says he is still listening and calling on 50 mc but so far nothing has occurred since the contact with the boys in Hawaii. Tex expects to be in the states by fall and is coming through Kansas City for a gab-fest.

VE1QY in Yarmouth, N. S. has his beam up and says that the skip on ten meters is rapidly changing from east-west to south, which should produce some band openings soon. (See 50-mc opening for list stations Jerry heard on the aurora skip).

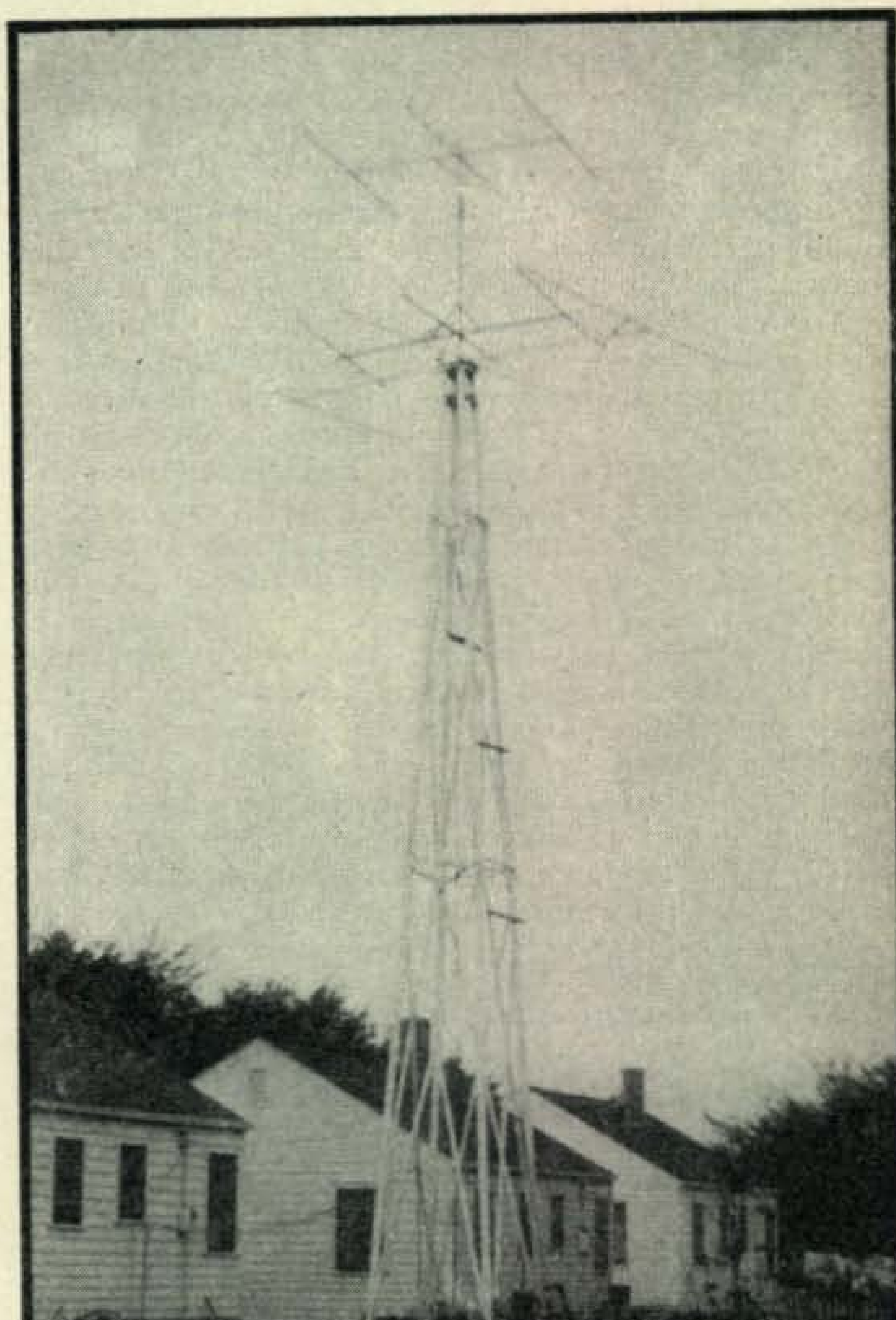
G6FO, of the British *Short Wave Magazine*, says that G2IQ and G5BY now hold the inter-G, 5-meter record, of 245 miles. Also on March 8th the Gs joined in on the aurora opening, with the gang having nice contacts with their beams in a northerly direction instead of direct path. There are over 300 Gs more or less regularly active in the 58.5-60-mc band, all of whom are using stabilized rigs, beam antennas, converters and superhets.

Many of you have reported the aircraft beacon stations in the region between 30-50 mc, altho they are still the property of the RAF and can not be located exactly, here is a list of their call signs and frequencies, all of them in Great Britain. HN-33.6 mc, FD-34.2 mc, WA-34.6 mc, BK-34.8 mc, PI-36.2 mc, LA-36.4 mc, GN-37.2 mc, FU-37.6 mc, CA-38.8 mc and LT-39.6 mc.

New 235-mc Record

The boys on the west coast are taking advantage of their mountains to set some nice v-h-f records, the newest one being on 235 mc.

[*Continued on page 58*]



Composite 3-element, 28-mc and 6-element 50-mc beam at WØYUQ. First WACA on 50 mc. The photo, incidentally, was taken during a dust storm.

parts & products

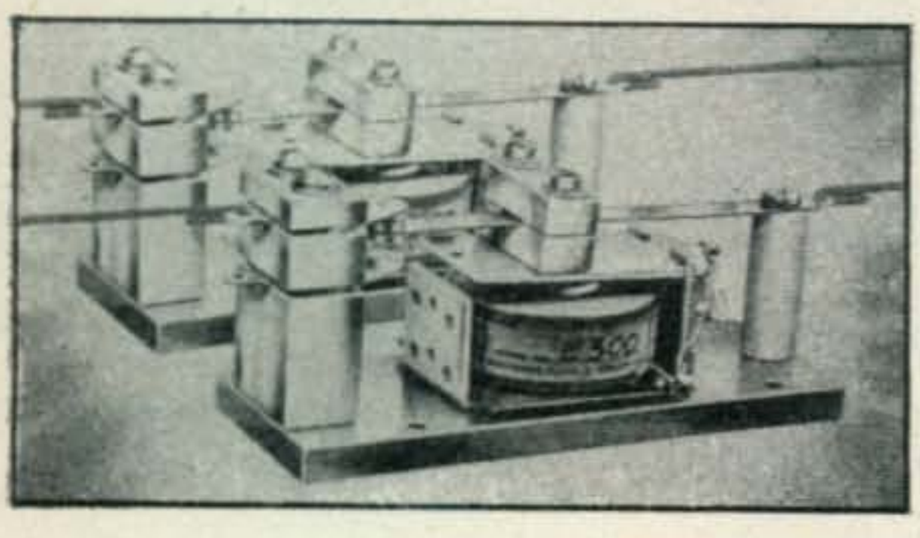
Antenna Matching Preamplifier

The new Millen No. 92101 is an electronic impedance matching device and a broad-band preamplifier combined into a single unit, which is the result of the combined engineering efforts of the General Electric Company and the James Millen

Manufacturing Company. Coils are available for the 6, 10 and 20 meter bands. The gain which can be achieved by this amplifier depends upon how well the antenna is matched to the receiver, the gain being greater where the mismatch is most serious. The amount of gain varies, with makes of receivers and types of antennas. With most receivers, this occurs at the 20, 10 and 6 meter bands and in most cases is considerably above 30 decibels. This gain comes about in two ways. The No. 92101, once it is tuned, automatically matches your receiving antenna to your receiver. This problem is very important on the 6 and 10 meter bands, as at these frequencies the input impedance of any receiver may vary widely from that desired. Tests show that the average gain experienced, merely by properly matching the receiving antenna, is from several db to as high as 30 db! In addition to this gain, the 6AK5 miniature tube serves as a broad-band r-f amplifier, giving an additional gain in the order of 30 decibels. The 6AK5 has a transconductance of 5000 microhms, which means that a voltage gain of approximately 35 can be achieved with a plate load of 7000 ohms, as used in the 92101. This amount of gain has been available with former tubes only on very narrow band widths and with higher noise levels.

Antenna Switching Relay

A new type of antenna switching relay is being manufactured by the Advance Electric and Relay Company of 1260 W. 2nd Street, Los Angeles 26, California. To facilitate switching of two wire open lines, twin relays are offered that can be spaced the same distance as the transmission line—thus minimizing discontinuities in line spacing and line impedance. Any spacing down to two inches is possible.



100 kc Crystal

The James Knights Co., Sandwich, Ill., is now manufacturing an economical 100-kc crystal, designed specifically for the amateur. It can be used to excellent advantage when building a secondary frequency standard to mark the edge of the bands and check points throughout all bands. The crystal has low drift at normal operating temperature and the finest techniques known to the industry today are employed in its construction.

The electrodes are pure silver and mounting wires are soldered directly to the silver plating, making an exceedingly rugged unit that will stand substantial

vibration without changing frequency. It will neither age nor increase frquency over long periods of use. The holder is completely sealed against moisture and dust. Pin spacing is the standard ¾".

Crystal Microphone and Desk Stand

The BA-106 Acousticel microphone is the latest addition to the line of crystal mikes manufactured by The Brush Development Company of Cleveland, Ohio. Brush Model BA-106 uses the newly developed Acousticel incorporating sintered bronze damping.

The design of this microphone offers an attractive combination of black molded plastic and satin chrome finish. It is supplied complete with eight foot cable, plug and removable base, which converts this desk-type microphone to a convenient hand

Mono-Sequence Tuning in the

FOUR·20
TRANSMITTER

With MONO-SEQUENCE tuning you can tune four circuits to four different frequencies WITH ONE CONTROL. It's a patented Hammarlund invention which gives you highly efficient tuning and ease of control. The Four-20 is a complete CW rig for 80, 40, 20, or 10 meters. Plug in a crystal and a key and you're ON THE AIR.

FOUR·11
MODULATOR

For years the name HAMMARLUND has stood for the finest in communications receivers. The same engineering skill and precision methods which produced the Super-Pro and the HQ-129-X, now bring you an entirely new transmitter. Combine the Four-11 Modulator with the Four-20 and you have a complete phone transmitter ready to go on any band. When you build that high power final, the Four-20 will make a perfect exciter and the Four-11 a fine speech amplifier.

write for
Descriptive Booklet

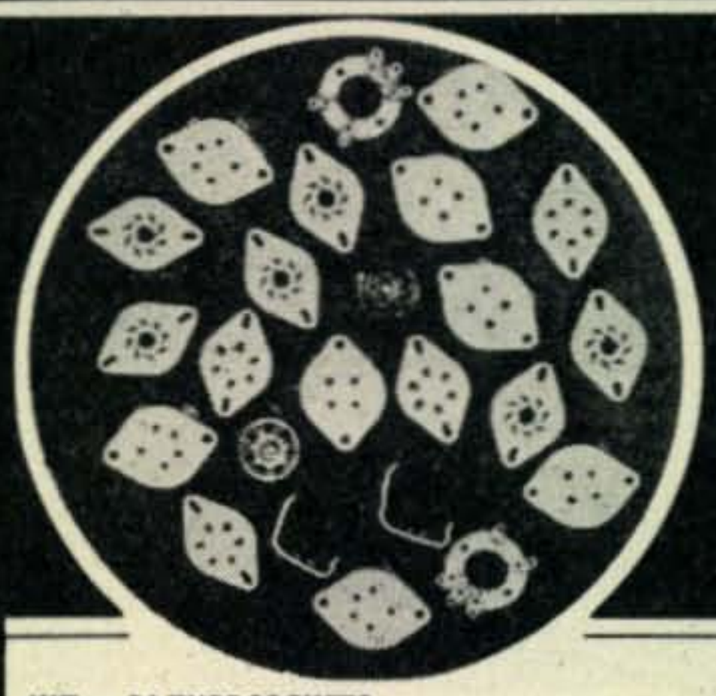
THE SIGN OF QUALITY

BACKED BY 37 YEARS OF KNOW-HOW

HAMMARLUND

THE HAMMARLUND MFG. CO., INC., 460 W. 34TH ST., NEW YORK 1, N.Y.
MANUFACTURERS OF PRECISION COMMUNICATIONS EQUIPMENT

ESSE Specials!



KIT — 24 TUBE SOCKETS

Containing the following new Ceramic lo-loss sockets: 2-Acorn, 6 octal Amphenol, 4-6 prong Millen, 4-5 prong wafer, 4-4 prong wafer, 2 molded bakelite, 2 octal female plugs and 2-7 prong tube tester sockets with center socket for checking pilot lamps.

Price, complete kit $1.95

MC ELROY CODE EQUIPMENT
BRAND NEW

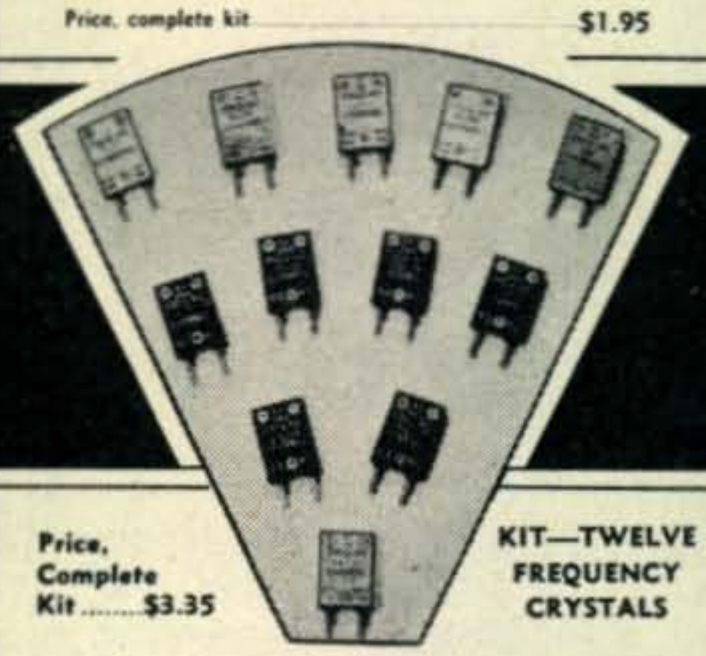
A proud addition to any Ham Shack. Use it to ink paper tape for high speed sending or receiving, or convert to other uses. Original price several times this low price. Shipped as shown in individual wood carrying case. Tubes used: 1-1117Z6; 2-117P7—not included.

Price for both ..... New $50.00
Used $35.00

SIGNAL CORPS TIME INTERVAL UNIT ML-138

This unit is housed in a sturdy metal case, 7½"x6"x5¼" with hinged top. Includes necessary adjustment tools. Powerful clock mechanism runs several days. Audio Tone, controlled by relay, is emitted for several seconds once every few minutes. Two flashlight cells needed. Has many possibilities for Radiomen or Model Makers. Parts alone are worth more than our price.

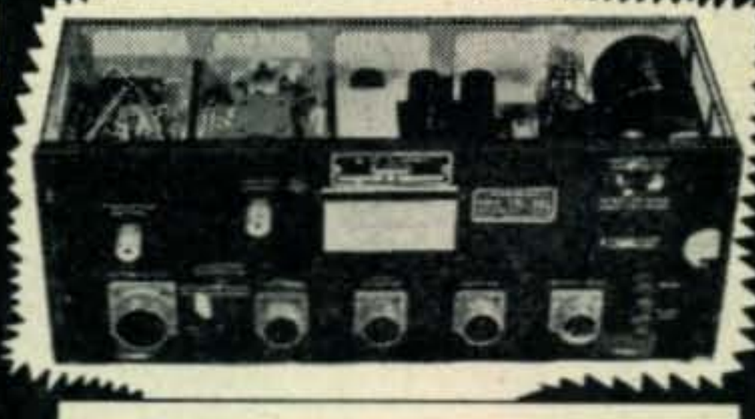
Price ..... $4.95 ea.



Price, Complete Kit $3.35

KIT—TWELVE FREQUENCY CRYSTALS

Contains assorted frequencies between 3,000 Kc. and 8,000 Kc. in FT 243 crystal holders. We pick at random from mixed supply and cannot select frequencies.



BC-348 POWER SUPPLY

To convert the BC-348 receiver for 110 V. AC operation. Constructed especially for the Esse Radio Company by a leading transformer company.

These power supplies have gained great popularity due to quality, price and simplicity in conversion. Filament supply 24V. Rectifier tube used: 6x5 (not included).

Price ..... $8.95 ea.

INTERPHONE AMPLIFIER AM-26/AIC

Convert to high fidelity phone amp. or speech amp. Case size 9¾"x4¾"x5½". Tubes used and included: 2—125J5GT, 2—12A6. Complete with dynamotor as shown, for 24 V. DC operation.

Price ..... $4.85 ea.

RADIO ALTIMETER APN/1

A complete 460 mc. radio receiver and transmitter which can be converted for ham or commercial use. Tubes used and included: 4-125H7, 3-125J7, 2-6H6, 1-VR150, 2-955, 2-9004. Other components such as relays, 24V. dynamotor, transformers, pots, condensers, etc. make this a buy on which you can not go wrong. Complete as shown in aluminum case 18"x7"x7¼".

Price $14.95

On orders less than $10.00 allow additional charge of 25¢ to cover handling.

Unless otherwise noted this merchandise was removed from surplus aircraft and is sold as used.

ESSE Radio Company

130 W. New York St. · Indianapolis 4, Ind.

ESSE Specials!

Attention Prospectors, Miners, Oil companies, Plumbers, etc. Below is the finest metal detecting mine detector ever built.

SCR-625 MINE DETECTOR – BRAND NEW
Metallic Objects Only

Used by the Army to detect buried metallic mines. Its private use suggests the location of underground or underwater pipes, cables and ore bearing rock, the location of metallic fragments in scrap materials, logs, etc. and the screening of personnel in plants for carrying of metallic objects.

The unit consists of a balanced inductance bridge, a two-tube amp. and a 1,000 cycle oscillator. The presence of metal disturbs the bridge balance, resulting in a volume change of the 1,000 cycle tone. The tubes used are low battery drain types such as 1G6 and 1N5. The circuit may be modified for control of warning signals, stopping of machinery etc. when metal is detected. Operates from two flash light batteries and 103 V. "B". However, a power supply operating from 110 V. may be used. Comes complete with spare tubes, spare resonator and instruction manual — in wooden chest 8¼" x 28¼" x 16". Weight in operation is 15 lbs. New, complete in original overseas packing container. Originally sold by War Assets for $166.00.

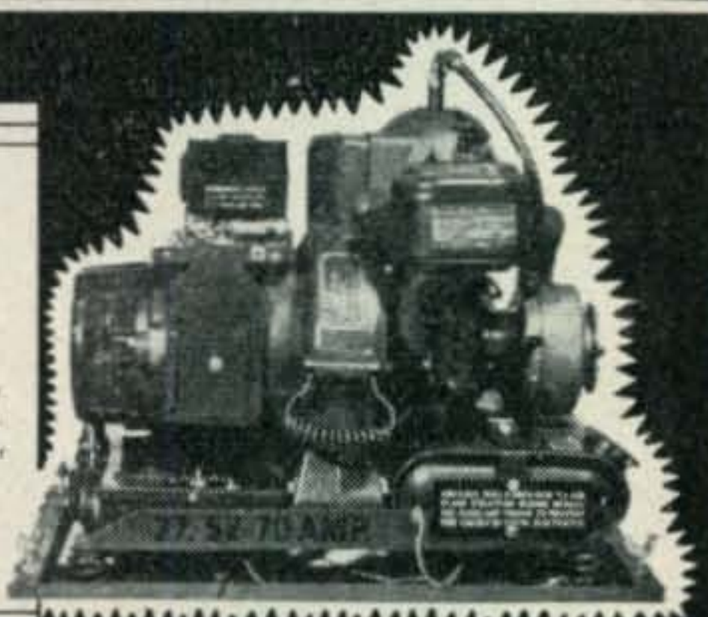
The U. S. Forestry Service has recommended procedure for using the SCR-625 Mine Detector to find concealed metal in tree logs and other timber products.

Price ..... $79.50 ea.

GASOLINE GENERATOR—
27.5 V. DC — 70 AMP.

Electrical starting when connected to 24 V. battery. Ideal for power for emergency, cabins, aircraft, welding etc. These units were used for auxiliary power on bombers.

Price ..... used $72.50



MOTOROLA POLICE TRANSMITTER AND RECEIVER—AM

An ideal unit to convert from its original 9 meter freq. to the 10 meter amateur band for mobile work. Complete with antenna relay, high voltage vibrator supply for both receiver and transmitter and most all tubes. These units were used by Army Military Police and are sold as received. Condition is good except for occasional missing tubes.

Price, Complete as shown $65.00

LINK FM POLICE TRANSMITTER AND RECEIVER (Not Shown)

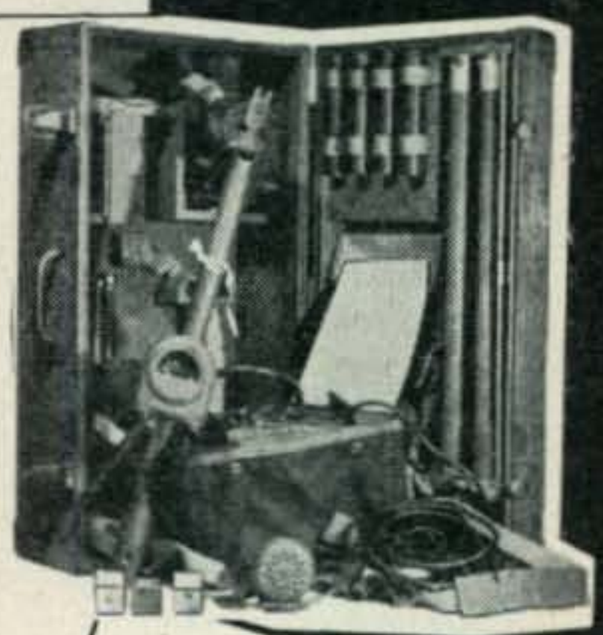
Received in same purchase as above equipment. For 27-38 mc. operation. Complete ready to operate.

Price per set ..... used $65.00

MINE DETECTOR AN/PRS-1
BRAND NEW

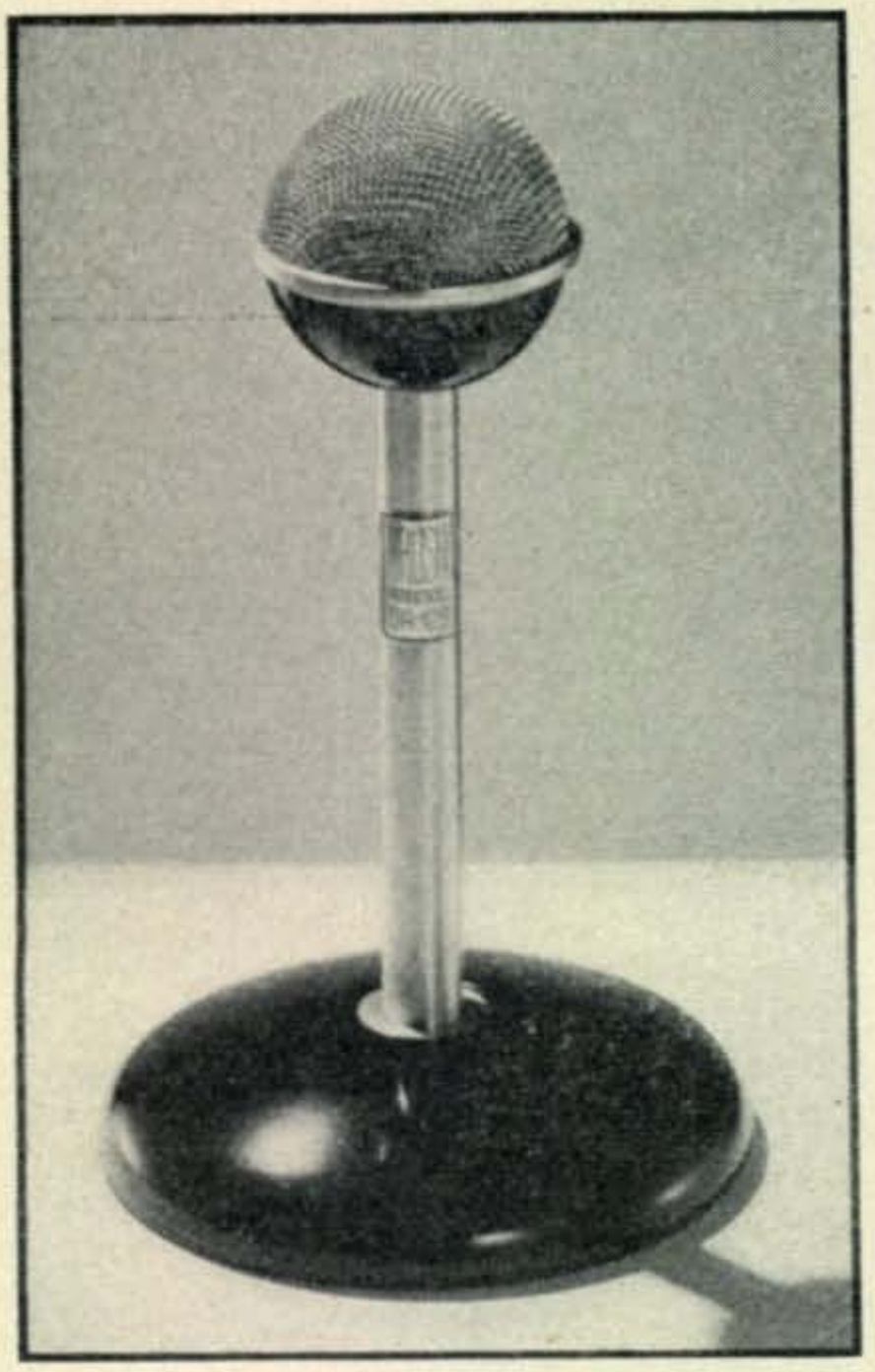
For detection of metallic and non-metallic objects. Used to locate buried pipe, cables, sewer tile etc. The unit is a UHF transmitter and indicates objects by deflection of the microammeter either to left or right depending upon whether metallic or non-metallic. Audio indication is also given by a change in volume of 1,000 cycle tone. Ready to operate with addition of 1-6 V. and 3-45 V. batteries. Comes complete with spare tubes, antennae, reflectors and instruction book — in wooden chest 9½" x 28¼" x 15½". Weight, in operation 22 lbs. Shipped new in original overseas moisture proof container.

Price ..... $14.95 ea.



TERMS:
CASH with ORDER or 25%
BALANCE C.O.D.
All Items Shipped Collect

ESSE Radio Company
130 W. New York St. - Indianapolis 4, Ind.



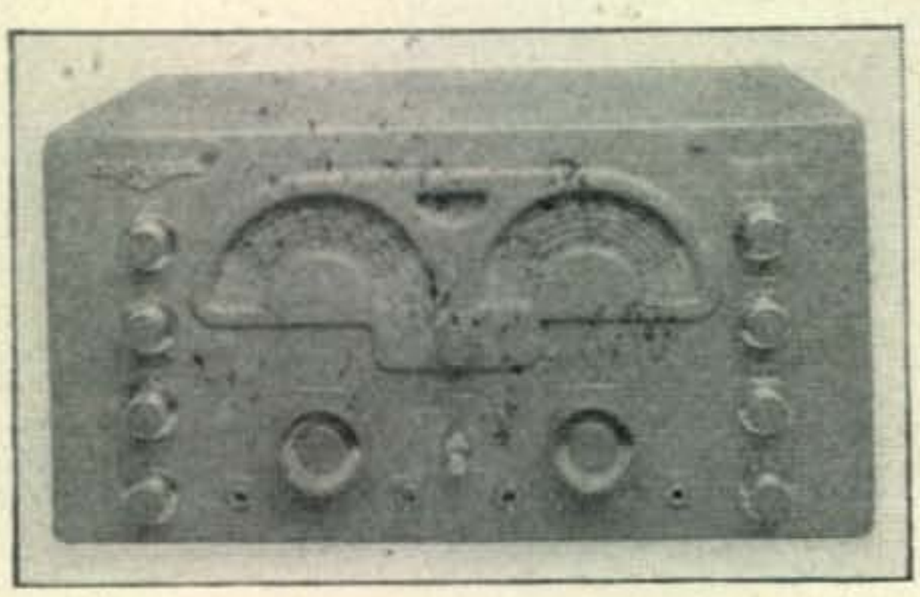
mike. This high impedance microphone provides essentially flat response from 40 to 6,000 cps with high output. Output level is 50 db below 1 volt dyne/cm^2 open circuit.

Communications Receiver

The National Company, Inc. of Malden, Mass., has announced the new NC-173, a 13-tube superheterodyne model with a calibrated band spread covering the 6, 10-11, 20, 40 and 80-meter amateur bands. Its frequency range extends from 540 to 31,000 and from 48,000 to 56,000 kc for both AM phone and code reception.

Outstanding among the special features of the new National receiver is the automatic volume control, which is operative for both phone and c-w reception. Unlike most receivers it is not necessary to turn the AVC off on this set when listening to c.w. at normal keying speeds. In addition the S-meter on the NC-173 will also work on both phone and c.w. A relative indication of the signal strength of 2 stations can be secured by reducing the sensitivity.

Voltage regulated circuits give the NC-173 a minimum of drift and the pitch of code characters does not change appreciably over extended periods of listening time. An additional feature is a new adjustable threshold noise limiter for phone and code use. In operation this latter approaches the noise limiting achieved in FM reception, utilizing the fact that the noise limiter time constant is very small in the NC-173.



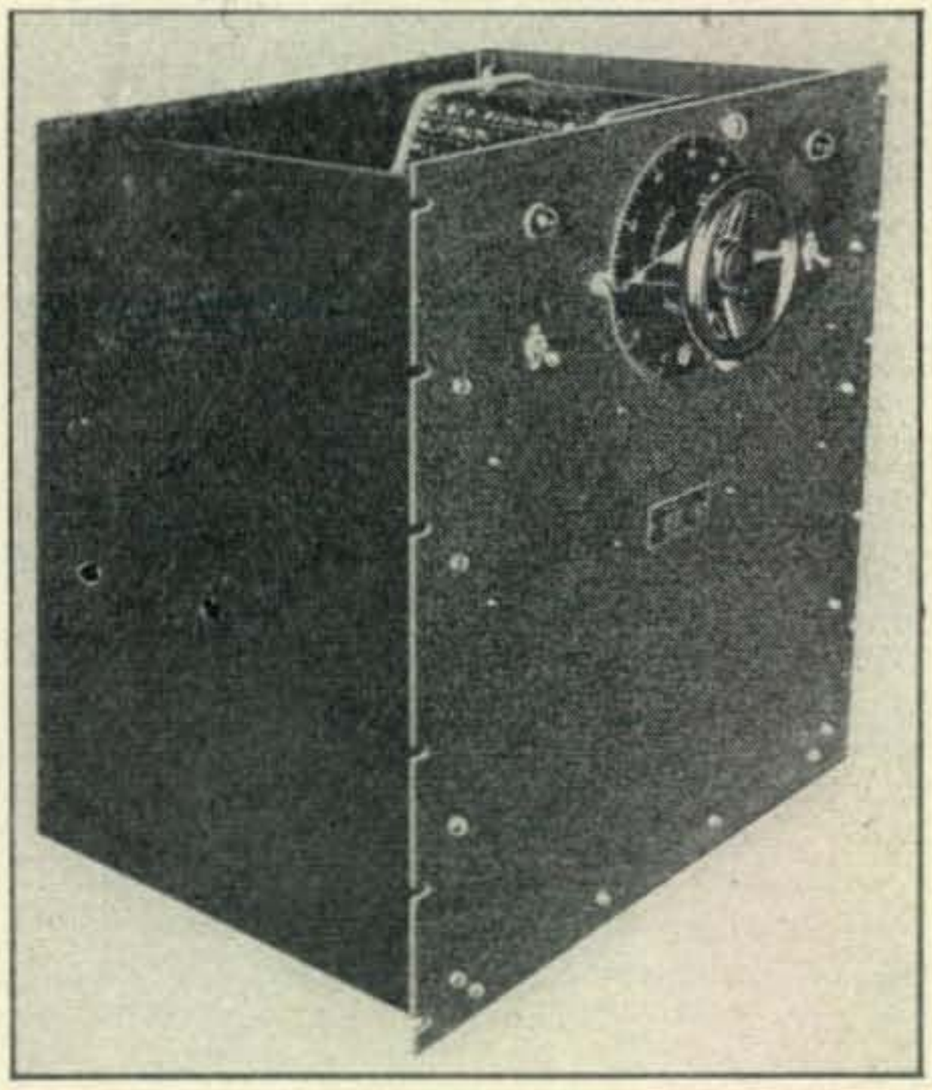
Marking a radical departure from the customary National styling, the NC-173 is a completely modern, streamlined set in a grey finished cabinet with smooth surface and rounded corners. Speaker employed matches the color of the parent receiver.

Circuit employed on all bands consists of one stage of radio frequency amplification, a first detector and separate stabilized high frequency oscillator, 2 intermediate frequency amplification stages, a diode-type 2d detector, an audio limiter, a high gain audio stage and an audio output stage. The remainder of the receiver includes automatic volume control, beat frequency oscillator, voltage regulator and rectifier circuits. The crystal filter is connected between the 1st diode detector and the first i-f stages.

The new National NC-173 operates from a.c. or battery or other separate source. Power requirements are 110 to 120 volts or 220 to 240 volts, 50 to 60 cycles, and phonograph, microphone pick-up or headphones can all be plugged in to a special jack. An r-f trimmer panel control, conveniently located, is provided on the NC-173 so that any sort of antenna can be employed.

3000-Volt Power Supply

The Superior Electric Co., Bristol, Conn. is now manufacturing a 0-3000 volt d-c power supply designed for continuous duty, small regulation and easily adjusted output voltage. The maximum d-c



output current is .5 amperes. It operates from a 115 volt, single phase, 50/60 cycle source.

The power supply uses a full wave bridge rectifier consisting of four type 866/866A tubes. A time delay relay is provided which allows the filaments to be adequately heated before high voltage is applied. Line fuses are incorporated for protection against possible overload conditions. All major components are either potted in metal enclosures or are hermetically sealed.

The Seco d-c power supply is supplied for mounting in a standard 19-inch relay rack panel. An external metering panel is available. Three controls and two indicator lamps are mounted on the power supply panel. These are the a-c line switch with indicator lamp; high voltage primary switch with indicator lamp; and the powerstat variable transformer control. Further information can be secured by writing The Superior Electric Company, 110 Church St., Bristol, Conn.

The YL's Frequency

by Amelia Black, W1NVP - W2OLB

W2OLB at the moment is not collecting W4 or W2 QSLs, but is on tour of W6 and W7 land. Not only is it QSO-able, but very beautiful too.

In fabulous Reno, Nevada, we meet its total YL population— W7KBZ, Carol McGee, and W7QJH, Wilma Sowle, our current YL of the month.

Formerly W8UCY of Cleveland, Ohio, Carol's W7 call is only a month old, as her Nevada residence is still a new thing. So new, in fact, that her ham activities at the moment are more in the planning than in the doing stage.

Carol McGee, W7KBZ.

Her 100-watt rig is on the way from Cleveland; then she'll get to work on antennae for ten, forty, and eighty meters.

Like so many of the hams licensed in the past seven or eight years, Carol's hamming has necessarily been sporadic. First licensed in '39, her ham activities were interrupted by a nurse's training course; then, of course, Pearl Harbor forced her off the air. Both she and the OM were in service until March'46, —she as a Navy nurse and John as a Marine pilot.

Primarily a rag-chewer and a forty-meter gal, Carol can hardly wait to get back, says her interest in phone is mainly to talk to her folks back home in Cleveland. She shouldn't have any problem there, as her brother is W8TLQ.

The N. Y. C. YLRL club has just completed its 1947 elections. President Sophie Lash, W2QGK, was re-elected, as was Secretary Lillian Ruocco, W2PMA. New officers are W2QWL, Mignon Rosenfeld, as vice-president, and Helen Zuparn (SWL) as treasurer. Helen's an accountant, so guess NYC's books will be in order all right.

Jerry, W2PBI, of N. Y. C., is still happy with her new four-element semi-wide beam for ten fone, reports solid QSO with the Baffin Islands, Greenland.

Liz Zandonini, W3CDQ, of Washington, D. C., one of the few women members of the Institute of Radio Engineers, came to New York for the recent annual IRE convention. Liz and family have just bought a new house and report new QTH: 3614 Morrison, N.W., Washington, D. C.

A new YL at the New York election meeting was Hope Plummer, W2RTZ of N. Y. C. Hope, who's only twenty now, says she's been licensed since fifteen, that her family had never heard of ham radio before and still thinks she's a freak. Never mind, Hope, you've got plenty of company. Right now she's active on 20 c.w.

Another new YL—this time in the San Fernando Valley—is W6YRL, "Sandy," who just received that wonderful call about six weeks ago. She's the XYL of W6AOR.

Formerly W2RBU, Ellen White, reports the new call of W6YYM, plus receipt of a first class telephone ticket. She's also holder of a second class telegraph license. No doubt Ellen's glad enough to be out of New York City. After months of housing problems there, the Whites finally landed an apartment, built a kilowatt rig, and put up a twenty-meter antenna. No sooner done, than the landlord insisted that they remove both rig and antenna.

Now the Whites are happy to be back on the air and with plenty of space. New QTH: 4062 Goldfinch Street, San Diego, 3, California. Ellen's interested in organizing a YL club in San Diego and wants any YLs in the vicinity to contact her.

Many YLs are having the pleasure of meeting in person ZS6GH, Diana Tuck, of Johannesburg, South Africa, who is on a six months tour of this country and Canada. When last heard from, Diana was in Victoria, B. C., meeting pen pals (her second hobby) and hams whom she's QSO'd. Says it's some consolation to meet DX personally even if difficult from the home QTH.

Since her arrival on this continent, Diana's been spending most of her time visiting hams in British Columbia. From the station at VE7MQ she recently contacted ZS1T in Capetown. Quite a lucky break as ZSs are rarely heard in B. C. Diana was able to send messages home, and also spoke to an American ham, W6NSQ, who was visiting the ZS, so three countries were represented in this QSO.

[*Continued on page 68*]

Wilma Sowle, W7QJH, YL of the month.

"Communications" GUARANTEE TO HAMS!

Every item advertised in this ad is brand New!

Unless otherwise stated

FOR YOUR POWER SUPPLY

Transformers

3200 volts. AC 150 M.A. 115 volt, primary, 60 cycles. Designed for half wave operation with 150 M.A. output each, two transformers hooked up with secondaries in series and primaries in parallel will give 3,000 volts, output at 300 M.A. from a full wave rectifier. These are conservative, continuous commercial ratings.....**$7.25**

Power supply transformer. Made by Sub Sig. Pri. 115/60 cps: 750 vct-113MA: 6.3vct-5a; Sec. 3:5v-3a. 2500 TV specially priced at..... **5.95**

Filament Transformer

Prim. 115V./60c. Sec. 6v.—250 MA G. E. No. CG30871. A special buy at.....**$1.19**

GE autotransformer 115v./60c. in 78 v/. 3 amp out.....**$1.19**

An Experimenter's Dream. 400 cycle transformers. Ideal for pulse or audio work. At this prce you can figure out your uses for them. Most sizes at 50 cents each. Send us your voltage requirements.

60 cycle transformers for plate and filament 470 V ct. 60 ma—5 and 6.3v. black metal case. 115V input... **$1.50**

6 henry choke—60 ma. to match above..... **$.65**

Low Voltage Power Suppy for AN/APS-10 include 3 6X5s, 1 9006, 6 chokes, 1 power transformer and filter condensers.....**$4.50**

Hook into your house supply

110 Volt AC input, 12 volt DC output, handles 250 watts. Clean new factory construction. Gray ventilated Metal Cabinet..... **$34.00**

Chokes

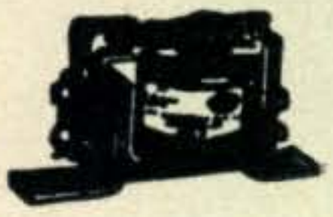
12 hy @ 200 ma. Made by Thordarson.....**$1.95**

59 hy @ 100 ma 850 ohms D CR made by Jefferson.....**$2.00**

Dual Choke 2 H. @ 100 ma. each **$1.05**

Utah Blocking Oscillator 3 winding transformer No. 9280 each..... **.75**

RELAYS



Leach DPST 115v/ac. Type 1355 **$1.39**

DPST Telephone 2p.type; 1cl; 1open cont. rating 5a at 50v, coil rating 3.5 ma (at 12K ohms), 1000 vac.....**1.05**

6 V. Dunco AC DPDT..... **1.50**

DPST 115V/DC (Advance)..... **.69**

Leach 4-12V DPDT..... **1.35**

24-28 Volt Relay Grab Bag Bargains

Leach-Kurman, Advance, Etc.

SPST .....Ea. **$.50**

DPDT.....Ea. **.60**

TPTT .....Ea. **.70**

Play Safe With Your High Voltage Rectifiers Time Delay Relays

Cramer 115V/60c two minute clockwork delay, 10amp rating. Special **$2.95**

Edison tube type sealed thermal relay. 45 to 60 second delay. 4 prong base. 115VAC/DC $10.00 value.....**$2.95**

TECHNICAL MANUALS

BC 191 (same as 375)..... **.50**

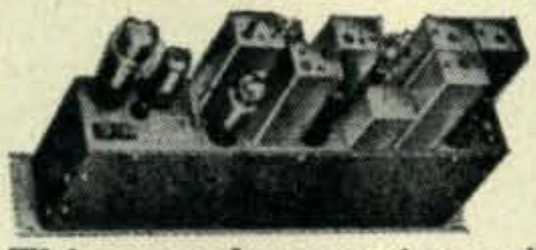
SCR 193 (combines 312) RCVR and 191 TXmtr..... **.50**

SCR 528..... **.50**

SCR 508..... **.50**

SCR 538..... **.50**

ZA-1 Landing equipments..... **.50**



CW-3 Relay Rack Rcvr

This superhet receiver will operate on any fixed frequency from 1900kc to 16,500 kc. Uses 7 tubes. Operating frequency is determined by xtal. With coil set for 9.4 to 16MC and crystal **$19.50**

Additional coil set 5.6 to 10 Mc. extra

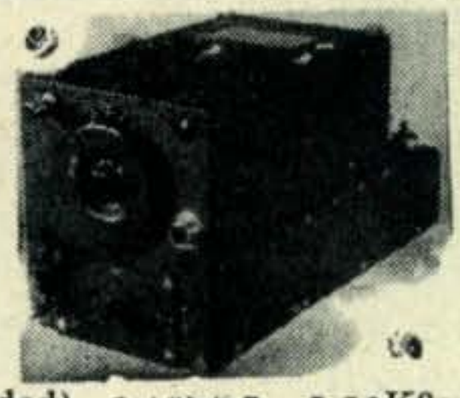
New—In Original Crates **$3.00**

Remote Control Units

Line Terminating Devices to control transmitters. RM-29B—RM 7—RM-21B—RM-13—RM-14. Any one remote control unit.....**$14.95**

ARC-5 Superhet Receivers

New! In Original Cartons



Tubes (included) 3-12SK7, 1-12K8; 1-12SR7; 1-12AG. Ranges (Specify freq. desired) 3-6 Mc; 6-9.1 Mc. new, only.....**$12.00**

Extra—to go with ARC-5 Dynamotor.....**$1.95**

Control Box..... **1.00**

Drive Cable..... **1.50**

Mounts..... **1.00**

New ARC-5 Transmitters; 25 watts CW; 15 watts phone. Tubes (included): 2-1625; 1-1629; 1-16261; crystal. Ranges. (Specify frequency desired): .5-8 Mc; .8-1.3 Mc; 1.3-2.1 Mc; 4-5.3 Mc; 5.3-7 Mc; Power: 24-28 VDC.**12.00**

Modulator Unit (with tubes) 1-1625; 1-vR150; 1-12J5.....**14.00**

These Units Are Brand New—Shipped in Their Original Sealed Cartons

Sonar Sound Detection Unit!

Here's fun for water sports. Couple this sound detector to an audio amplifier. You can hear a school of fish in a 15 mile area. The Rochelle Salt crystal used in this unit is 1,000 times more sensitive than quartz. 60 feet of cable supplied. You may have your own special use for this underwater detector.....**$6.95**

Microwave Tubes

Magnetrons—720, (3cm).....**$20.00**

2J32 (10cm).....**$25.00**

Magnets for Magnetrons.....**$12.00**

Klystrons—2K25/723 AB (3cm) **$7.75**

707B (10cm).....**$9.95**

Cavity for 707B.....**$3.50**

All tubes are brand new.

10cm wave guide 16' length per ft **$2.00**

3 cm wave guide 5' lengths. per ft. **$1.95**

We have a warehouse full of microwave parts—send for our flyer

MICROWAVE ANTENNAS

If you're riding the microwaves, these antennas will take you exactly where you want to go.

1. Type TDY. Radiates a circularly polarized beam with a pattern of about 25 degrees in the horizontal plane and 33 degrees in the vertical plane. Antenna assembly consists of ① drive mechanism of: a synchro motor, a gear train and a mechanically coupled bearing-transmitting synchro; ② radiating system comprising a gear train driven reflector, an RF assembly composed of a horn and a polarizing section coupled to a wave-guide type input; ③ a hood of fibreglass mounted on the base and supporting the reflector and drive mechanism mounted on its top. For ten centimeter operation. Ideal for experimental purposes. New..**$100.00**

2. Type SO. For ten centimeter operation Radiation concentrated and reflected by a parabolic reflector in a narrow beam which forms a 12 degree angle in both the horizontal and vertical planes. Antenna assembly consists of ① drive mechanism including a drive motor and gear train; ② a synchro system including a synchro generator and gear train; ③ a rotating radiating system including a dipole radiator, a small disk reflector, a large paraboloidal reflector app. 24 in. diameter, rf fittings for coupling the rotating reflector to stationary waveguide, and a small pickup dipole for a resonance chamber; ④ a supporting pedestal, base pan and turret hood. Adaptable for experimental and line of sight work. Available either new or in good used condition.

New—**$90.00** Used—**$45.00**

3. Parabolic Reflector, slatted. For operation in 3000-4000 Mc range. Dipole not included but available from our stocks. Lightweight aluminum construction fabricated by "BUDD". Has mounting neck for insertion into steel piping. Dimensions app. 2½ x 5'. Ideally suited for **microwave relay setups,** laboratory experimental work and demonstration purposes. New—**$85.00**

Dipole for above.....new—**$5.00**

Our All Frequencies Values!

Headphones, leather covered band. 8,000 impedance, with 6 ft. cord and detachable rubber cushions, new **$1.95**

Used in good condition..... **1.00**

B-29 computer amplifier. Contains 8 6SN7s, 6X5, 5 neons, 8 relays, completely wired with all components and new.....**$9.95**

Chokes 12 hy @ 165 ma. Made by Thordarson.....**$1.95**

59 hy @ 100 ma 850 ohms D CR made by Jefferson.....**$2.00**

Condensers .1-.1 mfd. 7,000 VDC G.E. pyr. condenser.....**$2.00**

In lots of 50..... **1.75**

10-10-10 mfd. G. E. Synchro capacitor 90 V. 60 Cycles. **$2.50**

Broadcast band push-button tuning units. Inductive type..... **1.98**

Feed-through glass insulators 7½" long. Beehive outside section... **1.10**

Whip antenna—2 sections fasten together—Ideal for 10 meters.... **1.25**

The heart of a Signal Generator 3 gang Variable cond.—worm gear driven. Calibrated metal dial—Rigid expensive construction.....**$3.95**

All merchandise guaranteed. Mail orders promptly filled. All prices F.O.B. New York City. Send Money Order or Check. Shipping charges sent C.O.D.

COMMUNICATIONS EQUIPMENT CO.

131 - Q Liberty St., WH 4-7658, New York City 7, N. Y.

Postscripts

TALL CORN (IOWA) HAMFEST

One of the biggest events of its kind ever to be held in the midwest, the Tall Corn Hamfest will be held Saturday and Sunday, May 24th and 25th at Hawkeye Downs, Cedar Rapids, the home of the Iowa State Fair.

The program includes technical talks, conducted tours, hidden transmitter hunt, picnic lunch, and of course the banquet and dancing.

All requests for tickets should be addressed to D. D. Morgan, 430-35th St., N. E., Cedar Rapids, and should be accompanied by check or money order, $5.50 for those who wish to attend both Saturday and Sunday events, and $4.50 for those who are able to come Sunday only. Advance registration prizes.

NORTHWEST (WASHINGTON) HAMFEST

The Cascade Radio Club of Everett, Washington is sponsoring a Northwest Hamfest on Sunday, May 25th, to be held in the new Sons of Norway Lodge Building. Seating capacity is limited to 700. For advance registration contact Leo Loken, Secretary, Cascade Radio Club of Snohomish County, 2806 Rockefeller Ave., Everett, Washington.

DETROIT AMATEUR RADIO ASSOCIATION

The annual Hamfest sponsored by the Detroit Amateur Radio Association is one of the big events in the Michigan area. The 1947 Hamfest is being held on Sunday, May 18th, at the National Guard Armory, Ypsilanti, Michigan. Ypsilanti is about 30 miles west of Detroit on the through route to Chicago. There will be prizes, short talks, meetings of traffic groups, etc., as well as activities and special prizes for the YFs and YLs. Registration fee is $1.00 for hams. The Ladies Association is charging 35c for YFs.

HUDSON DIVISION A.R.R.L. CONVENTION

The Hudson Division A.R.R.L. Convention will be held at Asbury Park, New Jersey on September 26th, 27th, and 28th. Demonstrations, talks, contests and dealer's display of latest equipment will be held in Convention Hall. A banquet, dancing and parties will be in the Berkeley-Carteret Hotel. Details of the Convention sponsored by Jersey Shore Amateur Radio Association and Monmouth County Amateur Radio Association may be obtained by writing William Kumpler, Secretary Convention Committee, 1104 A St., Belmar, N. J.

INTERNATIONAL PHILATELIC EXHIBIT (N. Y.)

Amateurs of the metropolitan New York area will operate a special station during the Philatelic Exhibit in Grand Central Palace from May 17th to 25th. Amateurs are cordially invited to drop in and assist in traffic handling for Exhibition visitors. For details contact Gay Milius, W2NJF, 170 Broadway, N. Y. 17 (Rector 2-0630) or visit the station.

KEY CLICKS

The very excellent photograph of W5EHM appearing on the April *CQ* cover was taken by H. R. Dreggors, W5EDW. Amateur photography is a competitive hobby at W5EDW who does equally well at both. We were so awed by the installation in Pat's automobile that we failed to give the proper photo credit.

The Electronic Research Associates ad appearing in March *CQ* gives the output of their narrow-band FM v.f.o.-exciter as 8.2 watts, This should have read 2.8 watts output.

Your NEW ALLIED CATALOG *is Ready!*

Order Your Communications Receiver *from* ALLIED

IMMEDIATE DELIVERY

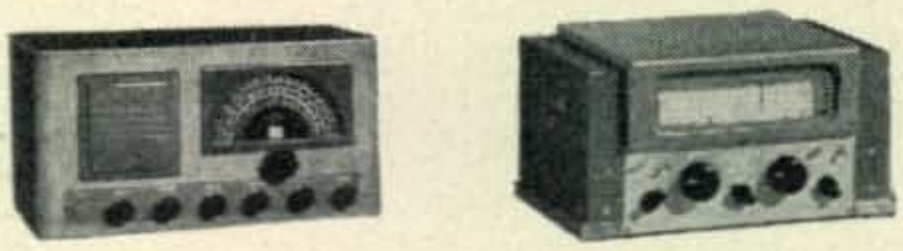
on most models

Time Payments Available

Trade-Ins Accepted

Hallicrafters SX-42	$275.00	Hammarlund HQ-129X	$173.25
Hallicrafters S-38	47.50	RME-45 & Spkr	198.70
Hallicrafters S-40A	89.50	RME-84 & Spkr	98.70
National NC-173	189.50	RME VHF-152 Converter	86.60
National NC-46 & Spkr	107.40	RME DB-20 Preselector	68.20
National NC-2-40D	225.00	Collins 75A-1 Receiver	375.00
National HRO	274.35	Collins 32V-1 Transmitter	475.00
Hammarlund SPC-400X	342.00	Collins 30K Transmitter	1250.00

Net F.O.B. Chicago. Prices subject to possible change.



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Top-Notch Stations Are "Equipped by ALLIED"

Everything you need to put your Ham station in tip-top shape is in this *new* ALLIED catalog. Stocks of nationally recognized, preferred equipment are bulging in our bins—and there's new stuff galore, with plenty more coming—for all your station supply needs. Our amateur staff is at full strength, ready to serve you expertly, quickly.

NOW is your time to get that new station started, to get old rigs up to par, to boost your present power and station performance. Get "equipped by ALLIED"—have the help and wholehearted interest of ALLIED'S hams on your side—get the speedy action and supply "know-how" of a veteran Amateur institution.

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ALLIED RADIO

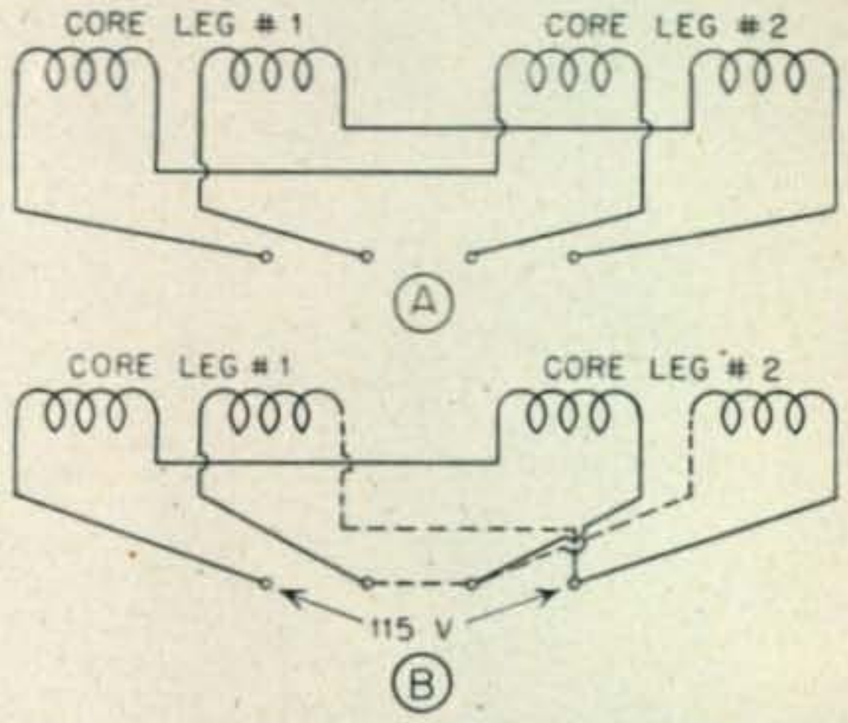
Everything for the HAM

Intermediate Voltage from "Pole Pig"

Since the early days of amateur radio many hams have used discarded "pole pigs" as the basis of an economical power supply for a medium or high power rig. Most amateurs are familiar with the method of bringing out or tapping on a center tap on the high voltage winding when no such regular connection exists. And the method of connecting the low voltage terminals to obtain either half or full voltage when using 115 volts on a transformer designed for 115/230 volt operation is obvious. But few amateurs seem to be aware that it is a simple matter with most transformers having a 115/230 volt low voltage winding to obtain an intermediate voltage of 66 per cent of the maximum high voltage by juggling the various primary wires.

If such a transformer is examined it usually will be found that there are four low voltage wires (representing two separate low voltage windings) *on each leg*, though not all of the wires are connected to terminals. In other words, there actually are four 57½ volt windings on the transformer, and unless the transformer has been "doctored" previously, it will be found that in order to obtain a symmetrical arrangement a 57½ volt winding on one leg is connected in series with a similar winding on the other leg to form a balanced 115 volt winding which is brought out to terminals. The other two windings are likewise connected in series to form a balanced 115 volt winding with its now two terminals *A*.

To obtain the intermediate 66% voltage simply connect any three of the 57½ volt windings in series (all aiding), and then parallel the remaining 57½ volt winding with *either* of the 57½ volt windings *on the opposite leg*, making sure they do not buck. If the transformer uses the conventional terminal arrangement of *A*, the method of conversion is that of *B*, the solid lines are the original wiring and the dotted lines the revised connections.



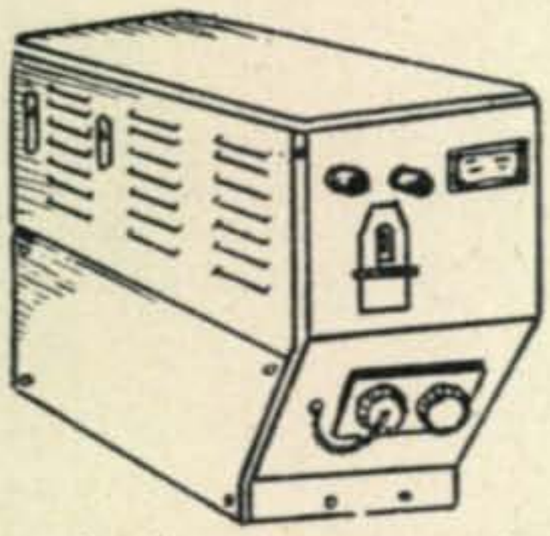
If there is any question regarding polarity, connect 115 volts to the *high* voltage winding and check things on the low voltage side with a low range a-c voltmeter as you go along.

To avoid possible confusion the terms "primary" and "secondary" have not been used, because the power company considers the high voltage side the primary while amateurs use it as the secondary.

W. W. Smith, W6BCX

SURPLUS RADIO for VHF REQUIREMENTS

ARC 5 Transmitter



Best 2 Meter Rig Available Today

- Unit as shipped will cover 144 MC band. Can easily be converted to give 1 frequency in each of 4 bands, 2 frequencies in each of 2 bands, or any other combination desired.
- Remote motor switching of 4 turret coils. Can be adapted for 4 bands.
- 1625 crystal, 1625 Mult, 832A Mult, 832A Final.
- Size 6 x 12 x 8 Wt. 6 lbs. Ideal for mobile or fixed station.

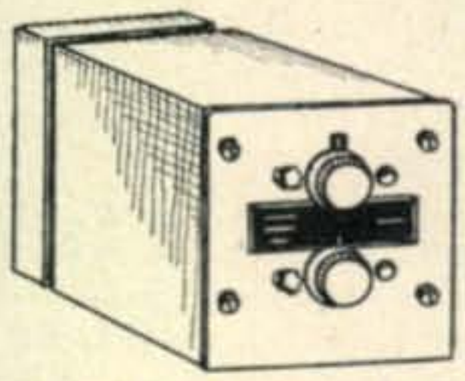
With tubes **$19.95**

Less Tubes **$14.95**

Dynamotor for use in conjunction with the ARC 5:
INPUT: 12 Volts DC.
OUTPUT: 24 Volts DC.
440 Volts @ 200 MA.
225 Volts @ 100 MA.
Housed in black wrinkled finish shell. Dynamotor sold only with purchase of ARC 5 transmitter.

YOUR COST **$14.95**

602A-41 UHF Preselector

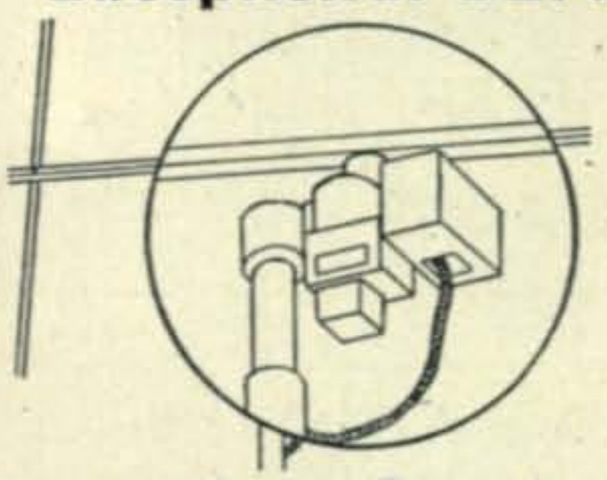


The Highest Gain Preselector Made!

FEATURING TWO GROUNDED-GRID LIGHT HOUSE STAGES

The Most Efficiently Designed unit of its type which has ever been made available to the amateur. We sincerely believe that the results obtained through use of this unit will exceed all expectations. Frequency range—175-200 MC. Complete instructions for converting unit to cover 224 MC-144 MC-54 MC-28 MC bands. **Conversion is extremely simple.** Complete with 3-GL446A Light House tubes, spare parts, cables and sturdy wood carrying case. ALL units brand new. **$39.50**

Exceptional BEAM MOTOR



The most compact, light weight "Power House" ever offered. providing ideal rotation for 2 to 20 meter beams. Two models are available, Type No. MM1 recommended for 2 to 10 meter beams inclusive—Type No. MM2 for 10 and 20 meters. The two types differ only in RPM; Type No. MM1 provides 1.3 RPM; Type No. MM2—3 RPM and if desired can be increased in torque power by a 2 or 3 to one ratio gear, pulley or sprocket reduction. Features:

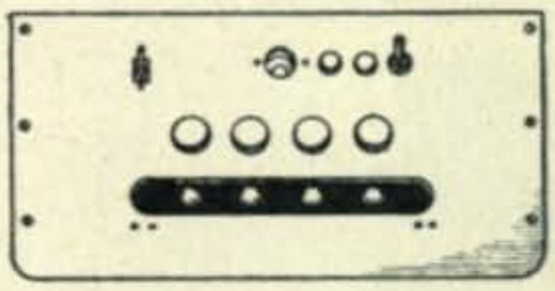
- **TORQUE 75 in. lbs. Type No. MM2 can be doubled or tripled by gear reduction.**
- **SIZE 5" x 5" x 4" overall**
- **WT. 3½ lbs. alum.—black wrinkle Simple mounting—Four ¼" bolts**
- **Self contained relays for motor reversing—also automatic stop cams.**
- **Can be stopped immediately in any position or reversed from any position.**
- **Rotation can be adjusted for any amount to 355°. Slip rings not needed; just hang on the transmission line! Motor stops automatically at completion of travel in each direction.**
- **Large Gear Ratio, 6000 to 1—provides high power and stationary braking to counteract wind and slippage.**
- **Complete and reliable beam reversal by simple SPDT (on-off-on) switch.**
- **Size and ease of mounting permits simple set-up on narrow light weight poles.**

These beam motors are the final answer for that much needed beam for UHF or 20 meters and have amazing power in a small poackage.

- **Operates on 12V @ 1.6 amps DC**

GUARANTEED TO PLEASE YOU AT **$12.95**

1068 UHF Receiver



BC 1068A as described in April CQ article. 150-200 MC, very simple conversion to 144 MC and other frequencies. When used with the 602A-41 preselector this combination will provide the acme of UHF receiving equipment. Write for full description explaining conversion.

- **4 MC wide IF system suitable for television. Simple change for communication use.**
- **2 high gain 6SH7 perm. tuned RF stages.**
- **5 stages of IF; 6AC7, 6AB7, and 6H6 2nd det.**
- **6SH7 video or audio amp., 6E5 tuning indicator.**
- **14 tubes total, 5U4G rect.**
- **Miniature 9006 1st Det.** • **Front panel 16" x 9".**

BC1068A—ONLY **$39.50**

COAXIAL CONNECTORS

Complete line of connectors offered here at rock-bottom prices. Standard manufacturers designation given for each connector.

Type	Any Type
83-1SP	**49c**
83-1J	
83-1AP	
83-1R	
83-1T	

SEND FOR CATALOG D-3

TUBES

815	$2.45	829B	$3.10
HK24G	$1.49	6AK5	$1.50

GL446A Lighthouse Tube **$3.25**

SURPLUS RADIO, INC.
30 MUNSON ST., PORT WASHINGTON, N. Y.

V. H. F. - U. H. F.

[*from page 45*]

On March 2nd, 1200 PST, W6WQN operating mobile atop Mt. Diable contacted mobile W9OAW/6, operating near General Grant Grove, 60 miles east of Fresno, the distance being 180 mi with sigs S-9 both ways, bettering their previous record by 70 miles.

However this latter record had a short life as at 1205, the same day, W9OAW/6 still mobile and at the same location contacted W6OVK operating at his home QTH in Redwood City, below San Francisco, a distance of 186 miles. Signals were R-5 and S-4 both ways. For more details see 235-mc notes.

50-mc Openings

March showed up with some more of those Aurora openings which allows the gang to get in shape for the coming summers DX. Perhaps the most outstanding report to reach us was that from W9PK, in Downers Grove, Ill. Jack jumped from 20 states to 26, and has worked *19* of them in 1947. W1LLL in his, "ordinary city location," in Hartford, Conn. got Va. and Md. to put him on top of the Honor Roll with 29 states. Also these March aurora openings gave WØYSJ, in Fargo, N. Dakota, a new addition to the 50-mc band, his first taste of DX. W9AB in Mishawaka, Ind., worked more states and stations than during all of last summers DX. WØYUQ worked WØBJV in Watertown, S. Dak. for a new state, while WØYKX trying to out-do WØDZM was resting at Mayo Clinic and missed the entire opening.

While most of the contacts were confined in the 250-400 mi range, the March 2nd opening found W9PK working W4FJ in Richmond, Va. and W3CIR/1 in Boston. On the Mar. 3rd opening WØNFM worked W2RLV, and W9ALU in Matemora, Ill. also heard W2RLV. During these openings W4HVV, in Raleigh, N. C. heard W4HEH, Greensboro, N. C. call him, but signals were so bouncy, contact was not made. This is the furthest south report we have.

The majority of the reports show that stations north of Omaha were in the thick of it, while those south found it to be not quite as long an opening. Such was the experience of the Beavers, in Kansas and Missouri, we were content to listen to WØNFM and WØTIO in Iowa about 250 mi north work 'em right and left, their signals staying in for several hours about an S-3 and T6.

Bill Reilly, W2RLV, es-W8PKD in Western, N. Y. at Honeoye Falls, is holding down that part of the state with some very nice work. Bill has worked 16 states and 7 districts in 1947 mostly on the aurora openings. On March 2nd W2RLV worked, W2IDZ, BQK, BYM, GYV, AMJ, W1LLL, HDQ, W3FQZ and W9PK, hearing W3CIR/1, IUN, W2IKD, W8QYD and W9AB. March 3rd Bill worked W1BNS, AF, CLS, W2FFU, W3RUF, W8SFG, NKJ and WØNFM, hearing W1PTR, ATP, W2BYM, W3CIR/1, W9PK, ZHB and WØSV. The same evening he heard VE1QY on ten meters frantically calling the boys he was hearing on 6 meters, Bill called VE1QY but no luck. March 8th W2RLV worked W1BJB, GJZ, W1KMZ/3, W8TDJ, QYD and heard W1LLL, W3CIR/1, W2BYM, GYV, W3RUE and W3LWX. Surely more of you fellows in Western N. Y. will want to join the fun as Bill's list is quite impressive.

March 2nd

W9PK put his set up into high gear and worked; WØHXY,

Another SCOOP

U. S. GOVERNMENT SURPLUS ELECTRON TUBES

Type	Your Cost	Type	Your Cost	Type	Your Cost	Type	Your Cost	Type	Your Cost
3AP1	$2.95	9LP7	$5.95	5U4	$ .59	6B4	$ .49	6SF5	$ .59
3BP1	2.95	12DP7	6.95	78	.49	2x2	.79	6V6GT	.69
5BP1	3.95	304TH	7.95	12A6	.49	6SJ7	.49	12SQ7	.59
5CP1	3.95	829B	3.50	6K7	.49	12SH7	.49	89	.49
5FP7	3.95	837	1.85	5Y3	.43	6SS7	.49	77	.49
7BP7	4.95	6AK5	.95	50L6	.69	6J7	.49	39-44	.49
						6B8	.49	12SL7	.49

RADIO RECEIVERS

BC-454-A:3-6 mc..... $6.95

BC-453-A:190-550 kc..... $8.95

BC-455-A:6-9.1 mc..... $6.95

RADIO TRANSMITTERS

BC-457-A:4-5.3 mc..... $7.95

BC-458-A:5.3-7 mc..... $7.95

MODULATOR UNIT

BC-456-A..... $6.95

REMOTE CONTROL BOX

BC-450-A..... $2.95

RADIO TRANSMITTER and RECEIVER
APS-13

Light weight air-borne radar system, radio transmitter and receiver APS-13; tube complement: 5-6J6; 9-6AG5; 1-VR105; 2-D21; unit is brand new, complete with tubes, the tubes alone are worth more than this LOW PRICE OF ONLY..... $15.00

GLIDE PATH RECEIVER
R-89/ARN-5

Glide Path Receiver used in the Instrument Landing System covering the frequency range 332 to 335 mc; complete with the following tubes: 7-6AJ5; 1-12SR7; 2-12SN7; 1-28D7 and including three crystals 6497KC; 6522KC; 6547KC. . units are in A-1 condition for only.. $6.95

SCR-522 TRANSMITTER and RECEIVER

The standard very-high frequency airborne receiver-transmitter. 100 to 156 megacycles. 4 crystal-controlled channels selected from remote control box. In excellent condition—ONLY..... $19.95

ARMY AIRCRAFT RECEIVER
Model BC-946-B

Broadcast band from 520 to 1500 Kc. Tube complement; 3-12SK7, 1-12SR7, 1-12A6, 1-12K8. Designed for dynamotor operation, but is easily converted to 110 or 32 volt operation. Has two I. F. stages and three gang condenser. Comes packed in sealed carton complete with tubes and instruction manual, but less dynamotor. $12.95

DYNAMOTOR DM 32A

Each..... $1.95

HICKOK 2½" 0-150 Volt AC VOLTMETER

Each..... $2.49

HEADPHONES

Signal Corps, 8000 ohms and 200 ohms, each..... $2.49

2000 ohms, Trimm, each $1.79

EARPHONES, less headband, HS18 high impedance ..... 79¢

POWER TRANSFORMER—NAVY TYPE

159 ma; 6.3V at 6.5 amps; 5V at 3 amps. 110 volt .....each $3.29

RADAR OSCILLOSCOPE

complete with 27 tubes including 5" Cathode Ray tube—excellent condition

each $24.95

RADAR OSCILLOSCOPE

complete with 29 tubes including 3" Cathode Ray tube—excellent condition

each $24.95

FILTER CHOKES

all fully enclosed

15H + 10% @165MA.DC., .5H 60 cycles shielded, 2 stand-off terminals: size 4 1/16" x 4" x 3½", each..... 95¢

Dual, 15H @ 100MA, 400 ohms. DC. Each section 500 VDC insulation test, 3½" x 3" x 6" High: 4 MTG. Studs and 4 terminals, ea.... 79¢

59H. Min. @ 100 MA: 10VRMS 60 cycles: 850 ohms DC. Res. 4 MTG. Studs size 4 5/8" x 3 15/16" x 3 5/8". each..... 79¢

3.7H @ 145MA DC 125 ohms DC Res. 4 MTG. Studs, each..... 95¢

ARMY SURPLUS

Principal components of radio set SCR-274-N; includes 2 transmitters, 3 receivers, 1 modulator, 4 dynamotors, control box, etc.—original cost over $600.00 . . . NOW..... $34.95

OIL FILLED INPUT POWER TRANSFORMER

Mfd. by Western Electric. Navy inspected. H. V. Trans.; Pri. 115V. 60 cycles, 7.4 amps: sec. 2350V. @ .340 amps, metal case oil filled, four stand-off terminals: size overall 7" x 7" x 7¼" each..... $7.95

MARKER BEACON RECEIVER—AIRCRAFT

Complete with 2 tubes and sensitive relay to control external circuits from received signals. The receiver to control models, open doors from a distance, etc. Special..... $4.95

MODEL ARB AIRCRAFT RADIO RECEIVER

The ARB is a six tube, four band, superheterodyne aircraft radio receiver with built-in dynamotor, designed for the reception of MCW (Tone or voice) or CW within the frequency range 195 Kc to 9.05 mc. Similar to BC348. Used. $19.95

All Shipments F. O. B. Chicago—20% Deposit Required On All Orders

DEPT. Q

ARROW SALES, INC.

59 WEST HUBBARD STREET • CHICAGO 10, ILLINOIS

Telephone: SUPERIOR 5575

DZM, ZJB, IIC, YUQ, W8DDO, AZZ, JLQ, QQS, W3CIR/1, W4FJ, and heard W2AMJ, W2BQK.

WØNFM in Solon, Ia., started at 1935 CST and worked WØHCY, JHS, YSJ, QIN, KQO, DZM, IIC, DWU, W9AB, W8QQS, signals being loud and strong lasting until around 2300 CST.

Ted Valpey, W1ATP in Holliston, Mass., near Boston, got in on the aurora for his first taste of it by hooking; W2AMJ, W2BYM and W2BQK. He heard W3WA in Maryland many times but could not make the grade. Ted also heard W2AMJ work W4FJ and W4CYW, but he was unable to hear the W4s. This opening lasted from 1600 EST to 1930, somewhat earlier than in the west.

In Fargo, N. Dak, WØYSJ a new and welcome addition to the band says he really got a morale boost when he was able to at last work stations on 6 meters. On this date March 2nd, John started off with WØDZM, HXY, BJV, KQO, NFM and heard WØIFB. John's frequency is 50.04 mc.

Hod, W9ALU, in Metamora, Ill had a listening spree and heard W8QYD, AZZ, JLQ, W9AB, ICI, ZHL, WØDZM, ZJB, IIC, TIO, QIN, XHY and many others too weak to copy. He did hook W9UNS to add Indiana to his states list.

Up St. Cloud, Minn., way, "Magnetic" McCutchan, WØHXY with his aurora gismo, found an early AM magnetic disturbance going, so he warned the gang to watch for an opening. By 1500 CST he finally got WØYSJ, whom he had been looking for the past months, and by the time it ended at 2300 CST he had made contacts in Ia., Ill., and Indiana.

WØIJK, in Leavenworth, Kansas had just finished his converter and heard W9QUV, WØNFM and ZJB.

W9AB in Mishawaka, Ind., told his XYL the band should open and it did, although when he heard W9QUV at 1540CST he mistook it for a 7th harmonic from 40. He then took the folks for a Sunday drive and returning at 1830 worked these lads, WØHAQ, HXY, NFM, W9UNS, QUV, W8QYD and AZZ. Harry heard W9ZHL, PK, ZHB, W2RLV, W8JLQ, TIU, QQS, WØIFB and WØZJB. T'was more fun than when the smelt ran, says he, but he wishes more of the fellows would populate the band above 50.5 mc as QRM was bad.

WØIIC at White Bear Lake, Minn., also was initiated to 50-mc DX this date by QSOing WØIFB, ZJB, HAQ, NFM, W9QUV and W9PK. The station is a Gon-set converter, a pair of TB-35s with 150 watts input, feeding a 67-foot flat-top antenna.

March 3rd

WØNFM had another nice opening the next day when he raised: WØIFW, QIN, SV, DZM, YFQ, ZJB, ORA, W2RLV, W9ALU, IKI, W8JLQ, AZZ, mentioning the sigs were stronger on Sunday, but beat 28 mc with its QRM.

WØYSJ still being initiated to 6-meter aurora skip got WØDZM, SV, DWU, W9PK and W9QUV, he heard WØJHS.

Jack Woodruff, W9PK drove on to get, W8NKJ, RFW, W9ZHB, IKI, DWU, GGH, WØIGW(?), JHS, SV, YSJ and heard WØBJV, WØKQO.

W8NKJ, Al Furget joined the melee this night by working W2RLV, W3RUE, W9ZHB and W9PK. Al heard W1LLL, CLS, W2RLV, W8QQS, JLQ, W9ZHB, PK, QUV, IKI, WØHAQ, and WØNFM. Altho he needed a-WØ he couldn't raise any of those heard.

W9ALU first noticed the aurora at 1330 CST when he heard WØDZM holding down the band alone. During intervals he heard WØIFW, HXY, YUQ, W2RLV, W8QQS, W9IKI and worked WØNFM for his Iowa contact.

W8RFW was helping W3QWZ get his converter going, and missed the Sunday session but on this date heard WØNFM, W9YFG, YFQ, ZHL, PK, finally he heard and worked W9PK the hard way on bending after the aurora flutter had left around 2115.

W9AB got on a little late for this opening but did work W9ZHL, and heard W8SLU, CYX, RFW before the band folded. Harry adds he is happy that he is "crackpot" enough to be a 6-meter fiend after these fine openings.

Out in Oregon, W7ERA, couldn't hear any of the aurora skip but did get an *Es* opening. At 1930 PST, Walt hooked W6FPV and W6NAW for contacts, later finding that in the scurry to get on 6 meters, he had left the antenna off his converter! He also received a heard card from W6ON who heard him ten minutes before Walt heard his first DX station. Walt reports a quickie on Mar. 7; no sigs were identified.

During this same opening on the west coast, W7JPA got W6AOP and W6YDF, while W7CTY worked W6ANN and W6NAW, reports W7HEA. W7BOC, AWX, CAM and HEA were in there pitching but without much success.

W7ACD Shelley, Idaho heard some W7s on 6 this same nite, but was unable to identify any.

March 8th

This opening appeared to start off with a bang, but soon died out, although the Beavers were again content to listen to WØNFM work 'em for several hours.

W8NKJ in Detroit worked W9ZHL and W8QYD, hearing W8JLQ, W9AB and a W9 working WØZJB.

Harry Miller, W9AB again was in there and got W8TDJ in W. Va. for a new state as well as WØZJB. He also worked W9JMS and W9RGH, and heard W8TIU, W9DWU, AKF,

"TAB"

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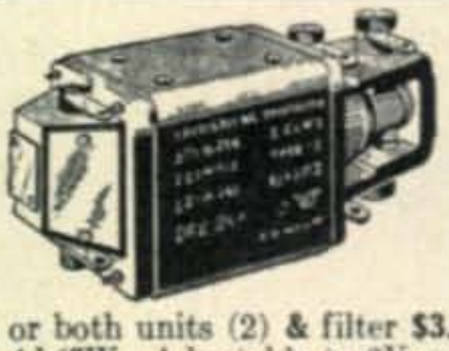

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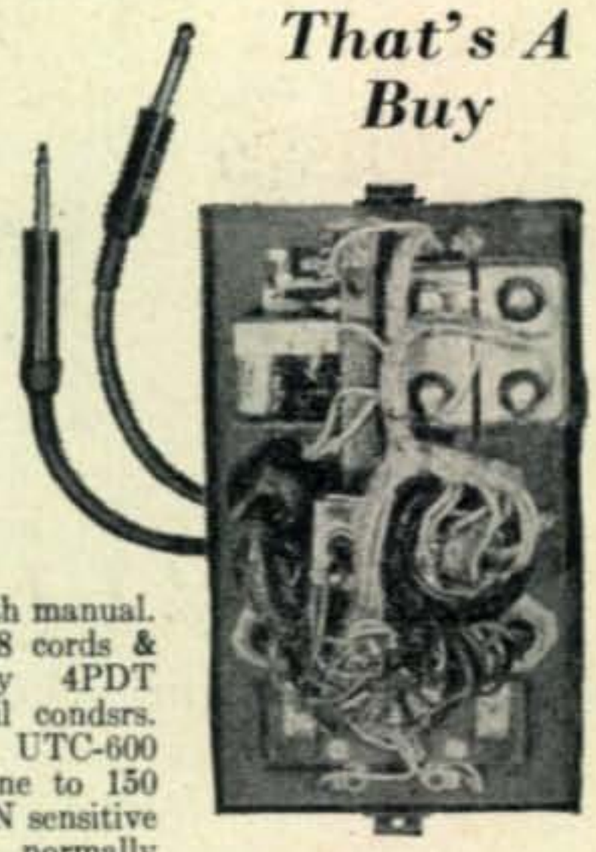

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MBL, W8NKJ. W9PK was really putting a terrific signal at Harry's.

W9ALU heard several Missouri stations, but was only able to identify W9UNS.

Again W9PK was in there working W3RUE, W8QQS, W9QCY, W8TDJ, WØQIN and WØHXY. Jack also mentions that he had an *F-2* opening on March 9th as he heard a station playing music on about 49.7 mc at 0900 CST with his beam SW. At 0910 he worked W2BYM with sigs weak and fading. The beam still had to be SW. Another chance to South America missed it seems.

March 17th

A good *Es* opening was recorded on this date when 28 mc broke open for N. Mexico and W. Texas at 2000 CST. Another section of the country got its first taste of skip when the boys in El Paso, Texas worked into the Beaver Net in Kansas and Missouri.

Joe Addison, WØPKD, in Salina, Kansas raised W5EVJ at 2135, and W5ESZ a few minutes later. W5LZF and W5EGI were also worked. Signals were spotty and QSB bad, but the El Paso gang got a kick out of it as their first 50 mc DX, so did Joe as he was late in getting on the band and missed last summers DX.

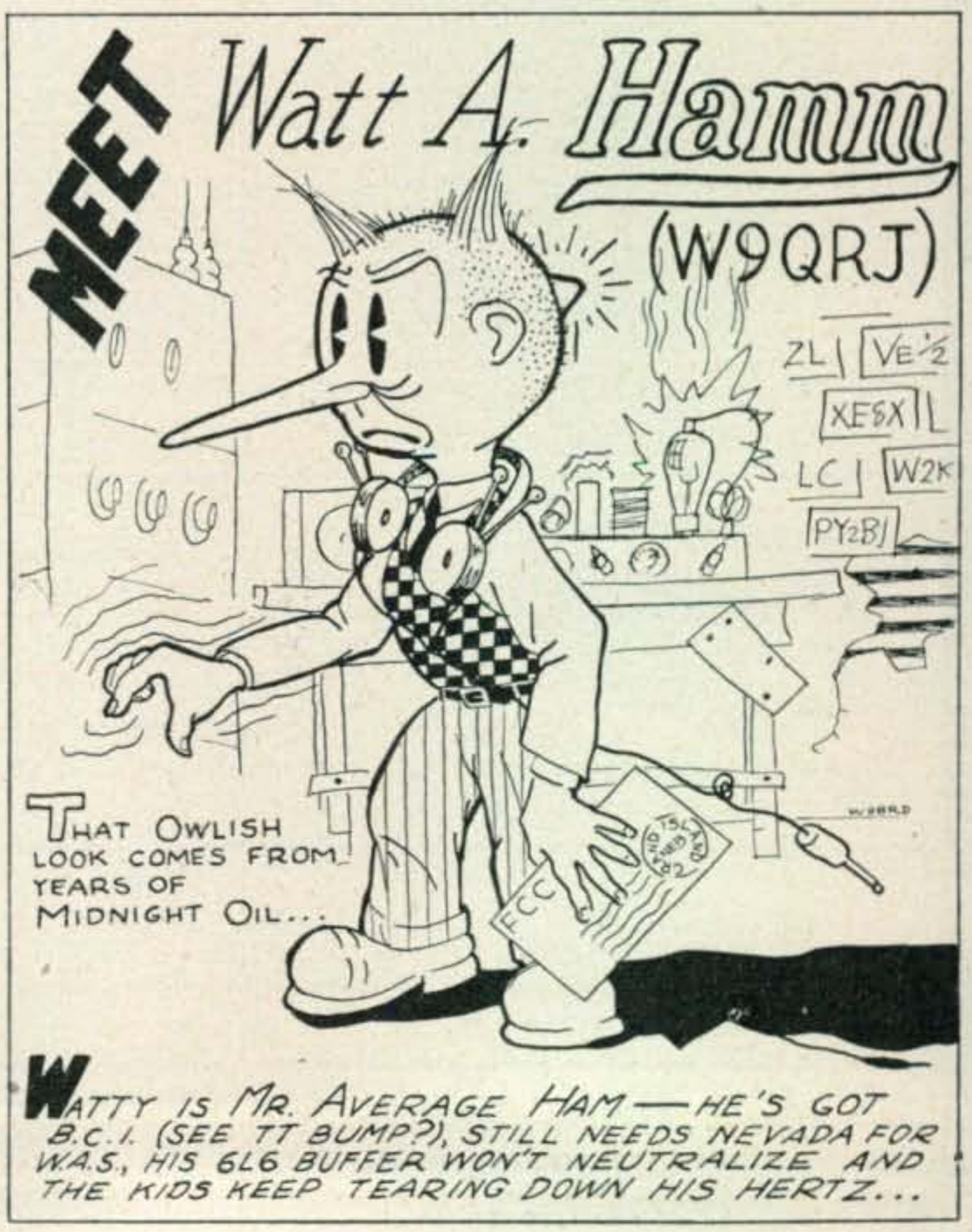
W5EVJ, Otto Kroeger, in El Paso says this opening was the first 50 mc DX to be worked in that area although they have been monitoring the band since June, 1946. An occasional carrier was heard but never identified. Otto worked WØPKD, WØYUQ and WØZJB from 1915-2100 CST. His rig is 100 watts to an 812, into a folded dipole. The converter is a 6AK5 r.f., 6AK5 det. and 6C4 mixer.

A somewhat different condition existed at WØZJB as we were only able to read and work, W5EGI and W5EVJ, both of whom stayed in until 2120. After they faded out, we were surprised to hear W6WNN, La Mesa, Calif. come in on c.w. for a good CQ. Shortly afterward W6ANN, San Pedro, Calif. was heard until 2230 CST, good enough—for a QSO, but in contact with W6WNN. W6NAW was heard later and about 6 other stations, but they were so weak we could not get their calls. These are the only reports received, although there were indications that the boys in Arizona missed a good and long opening.

Here is news that will liven the hearts of some W1s and W2s. Jerry Grant, VE1QY in Yarmouth, N. C. heard these stations on March 2nd from 1930 'til 2030 EST. W2AMJ, W3CIR/1, W1LLL, W1CLS. Monday, March 3rd he heard W1CLS, W1LLL and on Sat., March 8th, W1CLS who is ex-W1PFJ-W8CLS. The outstanding signal was from W1CLS, with W1LLL and W3CIR/1 next in order. Jerry was using a 3-tube converter and one-half of his 28-mc beam. Jerry is now on with 100 watts to PP 807s and a 3-element beam mounted above his 28 mc array.

50-mc Gang

A contact with XE1KE, B. J. Kroger gives us some info we think you will be interested in. BJ is



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an ex-W6 and has held the call X1AY under which he won the 1st RSGB 28-mc contest in the old days. He says that 6 meters has him guessing as he hasn't heard a signal as yet. His rig is 100 watts to an 829-B, feeding a 4-element beam 90′ high. The receiver is an ARR-5 and a Gon-set converter. BJ is licensed to operate an experimental transmitter anywhere from 44 mc to 60 mc. He is contemplating putting a rig on 44 mc as a marker station, as soon as more is known about this we shall let you know.

Walt Manning, W7ERA, now has his new rig going with 7C5 xtal, 7C5 trplr, 829-B into a VT-127A, with 350 watts.

From the Sad Sack Net in Washington, W7HEA says that he will have 600 watts going soon, and that they are still looking for DX, most of them with blood in their eyes.

W8RFW, in Grand Rapids, Mich. has a converter that is quite hot. The usual 6AK5s are in the r.f. and mixer but instead of using fixed padders brings out a polystyrene rod to the front panel, which controls a 8 $\mu\mu$f air trimmer on the r-f and mixer stages. Tracking is then effected by keeping the oscillator on the high side and parallel padding with fixed ceramic condensers. This allows perfect alignment at all times for those weak c-w sigs. He suggests this method for those wanting to get a converter going with ease on the v.h.f's.

WØQIN, near Minneapolis says the latest info around the Upper Miss. Valley Net is WØDZMs new converter employing a push-push square-law detector. We'd like more on that Shorty, how about it? WØQIN is ex-W9HXM of Chicago and was on 56 mc before the war. After the war he moved to Minnesota and WØDZM talked him into trying 50 mc.

W9PK says his ground wave work isn't too good with only nightly contacts to W9ZHB, W8RFW, and occasionally contacts with W9ZWF, W9ELV, W9GUP, W9DXZ and W9AKF. Jack, you should hear our Beaver Net now that WØJCQ has left us, its almost at a standstill until the summer's bending commences.

W5EXO of Corpus Christi reports for the gang there. W5AOK, ex-W6SLO has left their ranks for points west. W5BOY is now on with the Corpus gang and has 100 watts to a beam. W5LOW, W5MDO, W5BOY, W5EXO have been hunting for the Brownsville gang. They may have heard them, but sigs were to weak to copy. The gang there are looking for some one to extend their ground wave range. How about W5VV or W5EHM, it should be a nice hop.

WØGHE in Leavenworth, Kansas is now on with a 3-tube converter and 100 watts to a pair of 807s. His frequency is 50,560 kc and he is looking for DX.

Art Erickson, W1NF says that Tues. nights is round table night when everyone around the Boston area gets on six and chews the fat.

From W8QYD, in Dayton we find that Kentucky is now on six, with W4NRA and W4JBW on, W4JBF who had 800 watts, has roamed to other bands to battle the QRM. Harold says that W9JMS of Cory, Ind. and W9ZHL have been doing a good job in working each other on bending. W8QYD has had good luck in working both these stations just mentioned, with W9JMS 161 mi. and W9ZHL 170 mi. away. Both W8CYE and Harold plan a new 8-element beam collinear stacked beam, at least 60′ high and adds that the gang should hear plenty from W8CYE this summer as he has a good location, bought with 50-mc DX in his mind.

Grid, W4GJO in Orlando now has a companion

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X5B9556—Your Cost..... **$34.95**

on 6 meters in Jacksonville 130 miles to the north. W4EID is on there with 80 watts to a 4-element beam and a VHF-152 converter. Grid says that he has never mentioned the fact his beam is only *9 feet* high, a height he found to be best for skip dx.

WØYKX, in between his trips to Mayo Clinic, says that the 6AS6 is really the best mixer he has tried. The 6AS6 is similar to the 6AK5 except the suppressor is brought out separately, where the osc. is injected without any coupling condensers.

Out in Amarillo, W5WX now has one of WØYUQs ¼-wave spaced beams up and look for his first opening to try it. Bert says that W5HYT and W5HF are also raring to go.

A manuscript from W5AJG says he is busy as a bee sending good DX QSLs to other fellows, now that he is the 5th district QSL Mgr. He has a new rig with more power planned and has an ARR-5 which he thinks is working very good. He rewound the coils with copper strap 1/32" wide, and about ¼" thick. Although he has no means for precise measurement, it has perked it up considerably over the old molded forms used.

A letter from Frank Lester, W2AMJ says they had an aurora opening the 16th of Feb., when his nightly contact with W2GYV showed Jeff to have the characteristic buzz on him. Frank also says the "Knights of the 6-meter Round Table" are having a lobster dinner and get-to-gether with about 50 of the 6-meter gang planning to attend. Frank is another that mentions for the gang to spread out over the band and not hug the low end, which makes it congested when the band opens.

W5LOW says that W5AOK heard W5EHM in San Antonio a distance of 130 miles, and that they are now working on a route to join the Beavers. This is the first attempt for a route in Texas and they would like the rest of the gang in other cities to help out. Skeds are also being worked out with W5BAJ in Brownsville 140 miles from the Corpus Christi, area.

W7KAD who used to occupy the 6-meter band, now is tied up in the radio servicing game and has little time.

Just to show you we have friends, W1HDQ sends us a report that he got Va. on aurora and now has 26 states, with W1LLL getting Va. and Del. while Ed was out in our territory with the boys in Illinois and Iowa.

WØWOW/4 at Greenville, N. C. is another interested in the ARR-5 for 50 mc and says he has his rig just about completed with 400 watts to a pair of 4E27s.

From Ft. Worth comes the news via W5LIU that the Dallas-Ft. Worth 6-meter net has fallen down so far, but W5AJG has promised to be on more, and they are meeting on Saturday nights, with W5HMH and W5AJG on in Dallas, around 2000 CST.

Charley Wright, W4HVV in Raleigh, N. C. says the gang there are primping up for this summer. W4WMI, ex-W9WMI, now has a 3-element ten, and 4-element 6-meter beam on the top of his chimney. W4LLN in Zebulon, N. C. makes a nice ground wave contact. They are pushing W4HSO who promises to desert ten for six. Charley would like any N. C. station interested in 50 mc to write him as they plan a net within the state. These are on now, W4KMZ, Goldsboro, W4LOV, Raleigh., W4LOZ, Apex., and W4FDV, Raleigh.

144-mc Gang

W3LSE, Kenneth Klenk, advises us that the gap from Johnstown, Pa. and Pittsburgh has at last been

spanned on 144 mc. This is 59 miles of very tough and mountainous country. This is what W8UKS has been hoping for the past several months. The first contact was made between W3RUE of Pittsburgh and W3LSE of Johnstown at 1725 EST on Sunday, March 2, 1947 (the same time 50 mc was open for aurora skip). The contact lasted for 20 minutes, and a sked made for 1900. At 1900 contact was again made which was solid for an hour and ten minutes. This has since been repeated on March 6 and 7th, the result of careful planning and some good operating.

W3RUE has a pair of 24Gs running 100 watts to a 6-element *vertical* beam. A 954 receiver is used. W3LSE has an MOPA using 6C4 osc., 6C4 buffer into an 815 final, running 50 watts to a vertical dipole, coax fed. The receiver is a 9002, 6SQ7 and 6V6.

Others on in the Johnstown area are W3EHR, 815 final, W3LPZ with an 832, W3DSV, W3LUO, W3LQC, W3MSO. The last four have modulated oscillators. These boys are usually on nightly from 1830-2000 EST (W8UKS and gang pse note). They have heard W3KWD of Duquesne, Pa. several times but he has not now been worked.

From Western Kansas in Salina, WØPKD says he is on 144.1 mc with a SCR 522, into a 3-element beam, horizontal, and a home brew converter with 6AK5's. WØINM is also using a 522 xmtr and modified 522 receiver, using a dipole at present although a beam is contemplated. They are starting skeds with WØYUQ at 65 miles for this summer.

Lloyd Broderson, W6CLV has a small transceiver in his car and works out well around the Sacramento area. The Sacramento boys, PIV, KME, MIW and MGC are all still active. BVK in N. Sacramento continues to work out nicely down to Redwood City (W6OVK), a distance of 120 miles. W6VQK continues to be the only one on in Salinas. Lloyd wanders down there occasionally and VQK then gets a QSO.

235-mc Gang

As mentioned at the start of the column a new record has been set by W6WQN, W6OVK and W9OAW/6. The set ups at W6WQN and W9OAW/6 are identical, xtal controlled with 832s running 15 watts input, rcvrs superhets, 6-element beams either vertical or horizontal. Horizontal seem to have a slight edge over the vertical as both were tried during the contacts.

After the contact mentioned previously, W6WQN proceeded to Mt. Tamalpias to see if he could contact the other boys from there. A sked was arranged for 1400 with W6OVK acting as a relay stations between WQN and W9OAW/6. Mt. Tamalpias (elevation 2600 feet), is located about 12 miles NW of San Francisco and a distance of 220 miles from Grant Grove. This try was not successful. W9OAW/6 was able to maintain contact with W6OVK on the ground at his home location. W6OVKs signal built up from S-3 to S-8 by 1700. This was apparently some combination of lower atmospheric bending with defraction from what would normally be considered an obstacle, Mt. Hamilton (elevation 4300 ft), located 35 miles from Redwood City and directly between W6OVK-W9OAW/6. The fact that W6OVK is located slightly above sea level and had a gradual building up of signal strength to S-8, while W6WQN located 2600 ft above sea level could no longer be contacted, points strongly to the lower atmosphere shifting to a level which caused strong defraction from Mt.

Hamilton and thus illuminating what would be normally considered the shadowed area, Redwood City. This is food for thought of the v-h-f DX man who wishes to work beyond line of sight.

UHF Gang

Bernie Bates, W1BBM now has contacted W1ARC on 1250 mc a distance of .4 mile. Simple transceivers with 2C40s were employed into a parabolic reflector. Signals were very loud and the boys are working on extending the range.

YL FREQUENCY

[*from page 52*]

W7QJH, Wilma Sowle, boasts membership of that rare genus of American YLs—the exclusive Nevada YL club. It seems that there exist only three such of this selected species. Wilma operates from Reno.

Like so many YLs, Wilma points the incriminating finger at her OM when asked how she got into the ham business. Her only connection with radio prior to meeting her husband, was being secretary in a local radio store where Art, then W6CW, bought equipment. With his help on code practice and theory, Wilma soon became W6QJH, and went on 80 c.w.

After their marriage in 1939, Art operated on 10 phone and Wilma on 80 c.w.; quite often it was vice versa from opposite ends of a long table. Wilma's first QSO a la phone was a humdinger. She hooked up for number one, with K6ROJ—not only Hawaii, but another YL, Ella Christensen.

During the war Wilma joined other Nevada hams in emergency net meetings for the Office of Civilian Defense. A Reno police auxiliary, this was a thoroughly organized group complete with surprise drills, gas masks, helmets, and of course mobile rigs, for which Wilma was given a restricted telephone license,

Lately, W6QJH's operating has slowed down somewhat, due to last year's arrival of Lenore Ann, whom the Sowles describe as a "real radio baby". Wilma's doctor, coincidently W9EID, was unfortunately late for his sked at the crucial moment. Another doctor was hurriedly called, and the delivery performed by W5ITD—"I'm The Doctor"—and he certainly was!

Currently, the proud papa, now W7CX by virtue of Nevada's recent call-letter changeover, and SCM of that area is doing most of the operating.

The Sowle's keen interest in radio is quite obvious. You can't miss the two telephone poles on either side of the house—each a 55-footer, which flank three folded doublets for 20, 40 and 80 meters. Adorning the patio is a three-element, 10-meter beam.

That's the outside of it. Inside, the radio equipment runs the gamut from Wilma's SX-24 and homemade breadboard rig with which she first went on the air, through Art's more elaborate 1-kw rig for all bands, both phone and c.w., with Eimac 4-250As in the final.

Another rig runs 125 watts on 10 through 80, has TZ-40s in the output, and is modulated by 6L6s. *This* one has a history—Art used it in the forestry service, for grazing activities, and during the war, as headquarters ground station for the local CAP's

[*Continued on page 70*]

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search and rescue unit. Receiver is an SX-28. Number four rig is a portable BC-654, for 75-meter phone and 80-c.w.

Don't think these particular W7s have left well enough alone. Latest plans are for a new three-element twin beam for 10 and 20. "Then the trouble will start," predicts Wilma. "I'll want to use the beam on 10, and just as I get it lined up on Guam, Art will hear some choice DX on 20 and want to switch over!"

The problem that some YLs have. . . . .

CQ DX

[from page 43]

who said he was testing the station of the Finnish Solar Eclipse Expedition to Brazil, but was still in Helsinki. This fellow related that some licenses had been granted in Finland, but none had received permission to go on the air.

W5MY really has a dickens of a time trying to stay put. As you know, Doc (officially Colonel Fred B. Westervelt) has been transferred considerably since the war's end. He and his family thought they were pretty well set in Fort Sam Houston, Texas, so the guy gets his station going full blast, and doing right well with his DX, when up pops a transfer to the Surgeon General's office, in Washington, D. C. So, for Doc, it's Pentagon Building, here we come! He'll be back on the air as soon as he can untangle himself from the various corridors, and other puzzle-town features of the building. He'll be either a W3 or a W4, depending on which side of the river he settles.

W1QV and his bunch staged the first DX Round Up held in New England. It seems that W1DX was there, (Why? I'll never know!) as well as W1CH (nice going Joe), and then one of the most modest DX men in the business, W1FH, showed up with proof of all the countries he has been logging. W1QV said the contest sounded more like the "battle of v.f.o's."

W2IOP still likes 40 meters, and grabbed *UG6AB* and *YU7KX*. This brings Larry's post-war total to over 100C. He missed a good one, however, in *EA9AI* on 14190 kc. Others that came through very well on the East Coast, on 40 that is, are *XU6GRL*, *PK2AA*, *CR9AG*, and *J3AAD*. *W3EVW* has some new ones in *PK6EE*, *ZD1KR*, *ZC1AN*, *LZ1XX*, *ZP6AB*, *TF3A*, *GC4LI*, and *CP1AP*. He is still trying to find out in what zone UAØKTU belongs. W6WOT raised *ZL1HM* on 3515 kc, with only 90 watts input.

W6TI, who has more choice DX cards at his place than anyone in this district, (you see, he is QSL manager) tells me that *GW3ZV* wants all the W6s to quit worrying, because he QSLs 100%. W6TI slowed down long enough to raise *ZM6AC*, after which he cut loose and worked *ZC1AN*, *VS9AN*, *VS7ES*, *SM4WZ*, *OK1ZB*, and a number of others, all in a 24 hour period. I'm sure Horace wasn't worth a darn for a week following that mess of DX.

Speaking of *ZM6AC*, there are two others . . . *ZM6AA* and *ZM6AB*. They can be found on about the same frequency, which is pretty close to 14,030. Incidentally, someone heard *ZM6AB* using a bug. W3KNT has worked *EP1AZ*, *I6USA*, who is in Asmara, Eritrea, *FA8IH*, *YI1DD*, but missed *UI8AA*. W3KNT runs only 100 watts and has an HRO for a receiver.

W8HYC worked *UAØAT* located in Sakhalin,

Siberia, and probably is in zone 19. W9RBI has added a few; *PU4US*, *SV1RX*, *UAØUA*, *UN1AO*, *KP6AA*, *UV4AA*, *UI8AA*, and *VQ3HJP*.

W6SZY-W6SA Rhombics and Stuff

Maybe some of you would like to know the story on W6SZY and W6SA. A couple of months ago, Dave Evans, W6SZY (ex-W4DHZ from Atlanta) acquired the old transmitting station of Press Wireless. Since W6SA and W6SZY are closely associated in their work every day, it seemed a natural for Ed to go along with Dave, consequently, both of them moved their stations into this new QTH. What a spot! Press Wireless left a nice building with plenty of 90′ telephone poles scattered around for antennas. This had been the transmitting station for the past five or six years, (W6AM has their old receiving location) it's located on the salt flats, practically on the ocean, specifically, the Playa Del Rey section of Los Angeles. Anyway, these fellows decided to fix the place up, and get in the contest, which meant plenty of work was ahead of them. Unfortunately, the rhombics used by Press Wireless were not headed in the directions to a DX man's liking; for example, they left 12 rhombics directed on four different points. Anyway, for the next six or seven week-ends, Dave and Ed acted more like monkeys, climbing up and down those poles, changing the rhombics around to their own satisfaction.

Ed said he got so used to the altitude, it hurt his ears when he came down off the poles and into the shack to try the new antennas. Well, they wound up with 10 or 12 rhombics, some of them bi-directional. In addition to these, they have one H and three XHs. W6SA's station consists of a pair of 4-250As driven by an 807, and on phone, he modulates with a pair of 4-250As; the receiver is an HRO. On the other side of the room is W6SZY, who is using a couple of 250THs in the final, and his receiver is a Super Pro. These fellows hardly had time to get the bugs out of their stations by the beginning of the contest, in fact, the first week-end of the c-w portion, there was too much interaction in their relay switching device for their rhombics, and a large portion of their efficiency was lost. They worked feverishly to get another switching system in by the next contest period.

Since they both couldn't be on phone and c.w. at the same time, they flipped a coin to see who was going to operate what. As it turned out, W6SZY ran the c-w contest, and W6SA, the phone contest. You can read about the contest scores in *QST*; we won't harp on it here. Well, that's the low down on W6SZY-W6SA, and they are going to continue to have fun at the present QTH. As Dave says, ever since he came to California from Atlanta, he has longed for a super location, and now that he has it, you can look forward to them making the most of it.

Now we will hop over to the other Coast, in fact, West Palm Beach, Florida, and to be specific, W4BRB. Just recently, he knocked off *J3AAD*, on 7160 kc, for that long awaited 40-meter WAC. Other 40-meter stuff includes *W6BWS/KG6*, *ZK1AH*, and *VK7LZ*. BRB's post-war total is 37Z and 101C. (Where's your list, Gene?) Incidentally, he uses a 4 band v.f.o., driving the "Lazy Kilowatt," the receiver being an HQ129X. The antenna set-up consists of a 20-meter rotary, a 275′ long wire for 40 and 80, and a vertical about 70′ high for 10 meters.

If any of you fellows have worked W6OPQ/Mobile Marine, he was operating on the S. S. ALANSON B. HOUGHTON. Of course, he was on 10

meters, and if you worked him, you can send your card to Frank R. Young, 456 14th St., San Francisco. Frank says he has sent out 300 cards, but has only received 8 cards in return. As he puts it, there's no percentage there.

W4AKH has added a few nice ones in *LZ1XX*, *ZB1A*, *EP1AL*, *FF8WN*, *ZK1AB*, *I6USA*, *TF3A*, and *ZP6AB*. He is up to around 85C, and is using a pair of 813s; the antenna being a two-element rotary. W9WEN is running around 300 watts into a pair of 812s; the antenna is a center fed affair with tuned feeders, and long enough to operate on all bands. He has picked up *XU6GRL*, *VQ2GW*, *OZ9Q*, *VP9K*, and *FA8IH*. W9WEN says he notices a little unusual feature about 10 c.w. over 20 c.w., and that is, practically all the DX stations like to rag chew, and you don't feel like somebody is waiting to pounce on you on each exchange. He might have something there.

W6EAK really went to town, the night of February 19, working 14 Europeans, all on 20, of course. He said it seemed like there was a direct pipe line between California and Europe. Some of his newest and best include *VU2PB*, *VU2WS*, *EL3A*, *ZP6AB*, *HI8NET*, *TF3A*, *FA8IH*, *CT2XA*, and *OI2KAL*. W5EWZ is gradually climbing up, and now has 26Z and 41C, with an all time total of 30Z and 54C. Harry never runs more than 100 watts, and the antenna is a halfwave 80 meter Zepp.

XU1YY

No doubt, a lot of you fellows have worked *XU1YY*, some months ago, and you may be wondering if you will ever receive a QSL card. Well, the answer is definitely, YES, and I wouldn't be a bit surprised that some of you will begin getting them about the time you are reading this. XU1YY is W6PUU of Baldwin Park, California, and when in China, he worked over 300 W stations. When he left China for home, it was impossible to take his 3000 brand new QSL cards, as well as his log books, so his personal belongings, and all of this, are following along via freight. He will definitely QSL 100%, as soon as he gets his cards and logs. Arland says these cards cost him about 25c apiece in American money, and took almost five months to get them printed, due to the paper shortage in China. His station there consisted of a pair of 250THs with 3 kw. input (that's what he said), while the antenna was a 3-element plumber's delight. Send your QSL to Arland V. Page, XU1YY/W6PUU, 448 S. Main Street, Baldwin Park, California.

You fellows who have been counting *OY3G*, had better do a little discounting because he is ng and is being deleted from the lists now being sent in. If any of you fellows have any later information abou the authenticity of *LZ1AK*, we would like to know about this too. The latest word found in G2MI's column, indicates the LZ as being a pirate. The following have been coming through recently on 20 c.w.: *FU8AA* 14,110, *CN8MZ* 14,143, and *FF8WN*, who is about ready to shove off, and may have left by the time you read this. Another one to look for is *HS1AL*, who says he is with the CNAC in Foochow, China. Then, for you guys who worked *W6FMZ/CB*, he is ex-W7FTL, and is at the Chinese Naval Training Center in Tsingtao.

Phone Gossip

First off, we have a letter from *J9ABX*, Bill Baxter, who is Secretary-Treasurer of the Okinawa J-9'ers. *J9AAD*, one of their new stations, worked Greenland on 20 phone, while *J9AAI* is using NBFM, and has worked into Uruguay with good reports. Bill says quite a few of the boys are working

the States, the long way around, and *J9AJR* is tipping off the boys to the MUF predictions. Incidentally, he works for the Ionosphere Laboratories. They have about thirty J9'ers in their club now, and they have agreed to go above 28,500 at night in order to rag chew and work the Europeans, while they stay below 28,500 in the mornings, while working the States. They also have agreed to limit their power to 500 watts or under, at all times. Several of them will be on 11 meters shortly, so lend an ear. J9ABX works into Europe and Africa very well, and is 5 States short of WAS.

W9RBI has a few new ones: *YN1LB*, *YR5V*, and *NY4ED*. This gets him to around 30Z and 70C post-war. W3DPA informs us that *VU2GB* is on 10-meter phone, and is anxious to work *Ws*. He is running about 25 watts to an 807, which doubles to 10-meters. The antenna is a 67′ Windham. W3DPA has around 35Z and 89C, at the present time. The antennas in use are a 3-element rotary for 20, a 4-element rotary on 10, and long wire antennas on 40 and 80. He runs a kw into a pair of 250THs, modulated by a pair of 805s, and the receiver is an HRO with a Gon-Set converter hooked onto it.

G3LB has done quite a bit of work on 10-meter phone and 20 c.w. He says, so far, he can only claim 46C, mostly due to a decision he made to keep Ham radio as a part time hobby, and not a complete obsession. I'm not sure, but I think I know what he means. Previously, he had a half-wave dipole for 10 meters on the roof of his house, but this was changed to a ¼ wave spaced 3-element beam being fed with an 80-ohm line. This antenna works very well for Ws and VE.

W6ITA worked *YS3PL* and *VR4AA* on 20 phone, the latter being on Guadalcanal. W8LO/2 has worked 33Z and 100C . . . some of his latest include: *VK4NK* in Papua 14,316, *CR9AG* 28,160, *VU2AV* 28,348, *TR1P* 14,396, *KP6AA* 14,256, *YI7G* 28,200, *HI6O*; 28,286, and *OIX7* 28,424. W9NLP's latest on 20 phone are *ZB1AB*, *UA1AB*, *YR5V*, *LX1BG*, *J2ROC*, *XU6GRL*, *SM3JG*, *J2ARB*, *ZK1AA*, *EL5B*, and *D4ARN*. W1MCW, Lou Littlefield, is out to show the OMs that she, too, can work a little DX. She has 35Z and 102C, all on 10 phone. Incidentally, Lou's OM is W1CRU, being located in Cape Elizabeth, Maine.

W6DI said he at least got something out of the contest, and that was, working a *VS9AB* on 10-meter phone. Apparently, he was the first W6 VS9AB had heard or worked. W6DI also says two old timers have shown up recently. One is ex-VS2AK, Tom Dineen, formerly of Kuala Lumpur, Malaya, who is now in Singapore with the call of *VS1AK*. His address is: % General Electric Company, Singapore. Tom was one of the real DX'ers on c.w. and phone, and he would like to hear from some of his old friends. The other is *PK4DG* of Kisaran, Sumatra. Van was a prisoner of the Japs for several years, and he lost everything. He is now in New York City, temporarily before returning to Holland, where he hopes to get on the air. Van used to fool the boys by simultaneously operating two phone transmitters about 15 kc apart on 20. This was a great help in combating QRM, as you could take your choice. Van's present address is: J. Van Eysbergen, % U. S. Rubber Company, 1230 Sixth Avenue, New York 20, New York. He also would appreciate hearing from his friends.

W6DI (ex-W6NNR), during March, has increased his zones and countries contacted on phone to 35Z and 95C, and 36Z and 121C, by working the following tough ones (tough by W6 standards):

CR7AD, CR9AG, OI X7 Finland, OK4IDT, TR1P Tripoli, Libya, *UA1AB, VK4NK* Papua Territory, *VQ3EDD, VQ4ERR, VS7ES, VS9AB,* Aden Arabia, *VU2KB, VU2LK, XACP* Sardinia, *XZ2AJ, YR5V,* and *ZD6DT.*

This just clears the decks of the chit-chat from the c-w and phone boys. Once again, I am going to ask you fellows to please read the instructions relative to entering the DX Honor Roll. If some of you have submitted your list of zones and countries, and you do not find the totals in the DX Honor Roll, it's missing either because it arrived too late for this issue, or the countries were not in alphabetical order, nor the zones in numerical order. We want to get this thing started off on the right foot, and if there are two separate lists sent in, one showing the zones, numbered down the page from one to 40, and, the other showing the countries in alphabetical order, it will save us more time than you can imagine, and will, likewise, install your list as the master, to which we will add future zones and countries. Please do not copy your countries out of your log in the order they were worked, because, I am sure this would *not* put them in alphabetical order. When you work additional zones and countries, it will, likewise, help me, if you send them in all at one crack, to arrive at my office by the 15th of each month. This will be much better than dribbling them through, one or two every few days. The fifteenth of the month will allow ample time for us to check them, and get them registered.

Now for the low down at W6QD. My post-war countries total some place in 2 figures. Seriously, though, everything is looking up. My kilowatt seems to be doing pretty fair, or should I say the 3-element rotary, or shall we just charge it to luck? It was swell chewing the rag the other evening with *PAØCE,* whom many of you will remember as one of the real old-time PAØs—No doubt, there were plenty of W6s ready to climb my frame for hanging on to him, but it had been just about 8 years to the month since our last QSO. He mentioned PAØLL and PAØXF were trying to get back on the air, themselves. Oh, yes, I couldn't overlook the 9th district; this time my first K9, in fact, K9AAD. From now on, it's W9s and K9s! That's about it. 73.

DX PREDICTIONS

[*from page 39*]

there are some distances which will be slightly affected by the so-called second skip zone. These distance ranges seem less predominant as the frequency is lowered. As the distance range increases a tertiary effect is encountered which sometimes will afford better signals on the high frequency end of the 10-meter band. This is the problem of signal absorption in the ionosphere. At certain times of the day (in relation to the path of the signal) there is a tendency towards more signal absorption near the lowest frequencies. At most times this condition is relatively minor. However, a particular manifestation has been observed by G6DH, who has heard 44.0 mc signals when the 27.0-30.0 mc band has been dead.

DX conditions during the month of May will be very good to the South and Central Americas from all sections of the United States. The average predicted conditions from W1—W2—W3—W4—W8 to South America are illustrated in *Fig. 2.* The top or outer variable line indicates the maximum usable

[*Continued on page 76*]

frequency (MUF) over this path for the hours indicated along the bottom scale. The lower or bottom curve which runs approximately 3 mc below the MUF is the indicated optimum working frequency (OWF). The latter curve may be used as a basis in establishing schedules, while the MUF curve indicates the possibility of DX contacts. In general the 10- and 11-meter bands are expected to open around 0630 hours EST, and conditions will

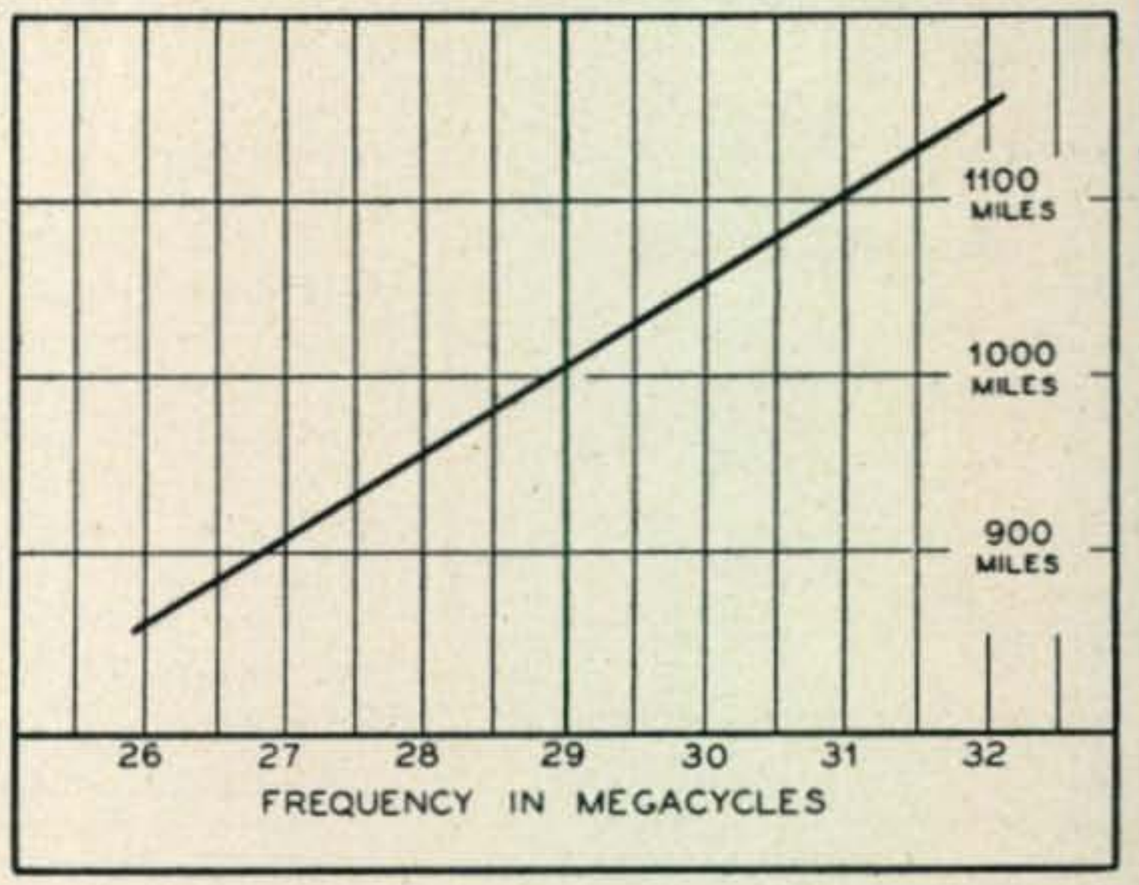

Fig. 1. The variation in the skip distance in the frequency range of the ten- and eleven-meter bands for a normal winter day.

remain good with a peak around 1430 hours. The 10-meter band is expected to close around 1900 hours EST after which time conditions on 20-meters will be good until about 0200 hours EST the following day.

In *Fig. 3* the average DX conditions from the east coast areas to Australasia are shown. The mid-morning 20-meter opening is now rather poor, although it is expected that some signals will be heard and worked from about 0600 hours to 1000 hours EST. There are no positive 10-meter openings predicted, although it is expected that signals will be heard erratically from about 1700 hours until 1900 hours EST. There is considerable signal absorption

Comments and Problems

Comments from the users of the Band Predictions are invited and are of interest to CQ and to the CRPL. If you have some transmission problem directly involving conditions for DX-ing or want to know what would be the best average hours for working a certain city from your location you are invited to write to the Propagation Editor, CQ Magazine, 342 Madison Ave., New York 17, N. Y. Allow 7 to 10 days for reply.

over this path at this time of the year and the best 20-meter band conditions may occur after 2100 hours EST until 0200 hours the following day

In *Fig. 4* the average conditions for the path from Central United States to South Africa are illustrated. An early morning 20-meter opening is expected around 0100 hours CST. This opening will be fair to poor, although good 40-meter conditions may prevail during this period. After 0400 hours CST conditions on 20 meters will improve slightly until 0700

hours when sub-solar absorption will be experienced along this path. An erratic 10-meter opening is expected around 1000 to 1200 hours CST. Signals on this band should be fairly strong when heard, but the individual openings are unpredictable. Fair 20-meter conditions are again expected after 1700 hours until 1930 hours CST. By 2100 hours this path will be completely dead on 20 meters.

DX conditions from the far eastern areas in the vicinity of the Malay States to the west coast of the United States are shown in *Fig. 5*. Over this path 20 meters may remain open until 0330 hours PST, although best conditions are expected around 0800 to 0900 hours PST. There is some possibility of 10-meter signals being heard around 1530 to 1600 hours, although conditions should be very erratic for this time of the year. The MUF from the west coast to the east coast is not expected to exceed 28.5 mc during the average day. This would indicate that the 11-meter band may be open from W6—W7 to W1—W2—W3 and W4 districts. The W5—W8—W9 and WØ districts will depend upon sporadic-E short skip to work any 10-meter stations other than Central and South Americans.

The data for the predictions graphs are drawn from the *Basic Radio Propagation Predictions . . . Three Months in Advance* as issued by the Central Radio Propagation Laboratory of the National Bureau of Standards. These booklets are available on a subscription basis from the Superintendent of Documents, Washington 25, D. C.

NOISE LIMITER

[*from page 34*]

noise limiter and beat frequency oscillator. C-W signals when received have equal audio amplitudes regardless of the input level and a completely noise-free background.

It is obvious that this is a new conception in noise limiting. In the past most efforts have been to devise a limiter capable of removing the noise from the signal. This circuit, logically enough removes the signal from the noise. The demonstration tests were very good. Weak code signals could be pulled out of an unbelievable background of noise. It is understood that the Hings' pulse detector is in use by the Vancouver, B. C. Canadian Police Department. Operators on their point-to-point c-w circuit were unable to believe that the noise-free tones were actually the result of the in-coming noise bound c-w signals.

FM MODULATOR

[*from page 37*]

may then be plugged in and the audio amplifier switched on. The frequency modulated signal may then be monitored on the receiver. The transmitter proper needs little alteration. The regular speech and modulator channel is disconnected or turned off and a jumper is placed across the modulation transformer terminals to prevent the final plate current from flowing through the winding.

The services of a neighborhood Ham should be enlisted when first trying the modulator on the air. Actually the results obtained by our method

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Advertising in this section must pertain to amateur radio activities. Rates: 25c per word per insertion for commercial advertisments; 5c per word for non-commercial advertisements by bona fide amateurs. Remittance in full must accompany copy. No agency or term or cash discounts allowed. No display or special typographical ad setups allowed. "CQ" does not guarantee any product or service advertised in the Classified Section. Closing date for ads is the 1st of the month preceding publication date.

SELENIUM RECTIFIERS, half wave 5 ampere $4.25, 2¼A $2.25, 1½A $1.85. Full wave 1A $2.50. ½A $1.85. McMurdo Silver amateur and test equipment stocked. Catalog free. Bursma Radio, R5, Grand Rapids 4, Mich.

ATTENTION operators using speed keys: special pad prevents any bug from walking on any tabletop. Long-lasting, endorsed by many enthusiastic users. Two postpaid for fifty cents. Howard Severeid, 2924 Station Street, Indianapolis 18, Ind.

QSL s . . . Samples for Stamp . . . Henry L. Carter, Jr. . . . W2RSW, 747 S. Plymouth, Rochester 8, N. Y.

AMATEUR radio licenses. Complete code and theory preparations for passing amateur radio examinations. Home study courses. American Radio Institute, 101 West 63rd Street, New York City.

ARMY SUPER-PRO, complete with power supply, rack mounting, perfect condition, factory alignment, less speaker—$195; BC348, AC converted—$70. W2OXR, 71 Crosshill Street, Staten Island, N. Y.

CRYSTAL KIT: Includes 4 finished, highly active "BT" crystals; state preferred frequencies in 3.5 to 8.4 megacycle range; 2 holders, abrasive, instructions, treatise, $1.00. Breon Laboratories, Williamsport, Penna.

LATEST MODEL NC240D with speaker for sale or trade at best offer. Also new Thordarson T11M78 500 watt modulation transformer; DB20; new HRO-W; 750 watt push-pull 813 final stage. R. Yeager, 4423 Sheridan Road, Chicago, Ill.

SELL HQ120 in excellent condition, original packing—$110.00 f.o.b. or offer. Howland (W2JOC), Maple Terrace, Rahway, N. J.

SIGNAL SHIFTER: For sale Meissner DeLuxe with nine sets of coils covering 2040 to 8870 Kc plus four sets special band spread coils for 80-40-20-10 meter ham bands. Voltage regulated with unmarked translucent dial for calibrating. Practically new and in perfect condition. $50.00. Will ship COD express collect to first ham replying. R. M. Haskins, W4DRZ, Fort Lauderdale, Florida.

FOR TRANSMISSION OR TELEVISION lines, it's ¼" RG59/U—73 ohm coaxial cable, special @ 7c/ft. 832 @ $3.50. 3E29 (829B) @ $4.00. Write for information about the completely reconverted SCR-522. Complete line of SCR-522 and other electronic parts. Send your list to Castle Radio Supply, 677 Euclid Avenue, Brooklyn 8, N. Y.

PHOTO-FLASH triggering transformers can be used with OA5 trigger tube or alone. Schematic supplied, $2.50 each postpaid. Write for quotations on quantity lots. General Laboratory Associates, Guilford, N. Y.

FOR SALE: WϕKWY complete. HRO and 600 watt fone on 75 with separate RF panel for 10 and 20 at 300 watts. Write Dysart, Iowa.

TOTALLY DISABLED VETERAN desires to learn amateur radio and needs a receiver. Will trade round, gold Swiss 7 jewel wrist watch and gold expansion band costing $45 for any usable receiver. Prefer BC-342 or BC-348. Write Box 87 % CQ, 342 Madison Avenue, New York 17, N. Y.

SELL: Several vibrating reed frequency meters. 48-62 cycles, 10 reeds, 125 volts, perfect condition. Want $2.50 each or miniature and transmitting tubes. W6PZV, 15709A Brighton Ave., Gardena, Calif.

SELL BC 348Q receiver—$55; NC-100 receiver—$65. W2HFM, Merrick, N. Y.

BEAUTIFUL, inexpensive QSLs. Robert Timmers, Gmeiner Road, Appleton, Wisc.

SELL HOWARD 460 nine tube communications receiver; .540 to 42 mcs; built-in frequency meter; S meter; xtal filter; noise limiter; external speaker in matching cabinet; excellent condition. Joe Herrmann, 101-42 120th St., Richmond Hill, N. Y. C.

QSLs? SWLs? Samples 20c. Sackers, W8DED, Holland, Mich.

HQ120X. Just factory checked. Excellent condition. Less speaker. Best offer over $110. Don Edwards, W5KCP, 332 West Hall, Lubbock, Texas.

QSLs on kromekote cards. W1KMP, P. O. Box 219, Cambridge, Mass.

ALUMINUM CHASSES, all sizes and shapes. Write for list. John H. Heim, 713 West Third Street, Williamsport, Pa.

FOR SALE: Hallicrafters SX-28, used, reasonably good condition, excellent buy at $125. W2SHA, 158 N. Walnut St., East Orange, N. J.

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BEST OFFER takes any or all of the following items: 1 Triplett Model 1503 tube tester; 1 Triplett Model 1295 modulation monitor; 1 de luxe model MacKey speed key serial No. 348; 1 HRO National receiver with complete set of coils and coil rack, power supply, loudspeaker, rack mounting; 1 wireless set No. 19—Mk II—2.0 to 8.0 Mcs.; 1 radio transmitter set AN/ART-13A, 200-1500 Kc, 2000-18,100 Kc; 1 Tobe bridge analyzer; 1 Piezo-Electric calibrator (100 Kc and 1000 Kc) RCA Type TMV-133-A; 1 Hickok OS-10 RF oscillator; 1 Lafayette record player. Please address replies to: Mrs. Charlotte Bouck, Middleburgh, N. Y.

RME-69, completely overhauled—$95.00. W2SYG, 375 Oak Place, Mineola, N. Y.

SX28A with speaker and manual. Perfect condition—$175. Ward Lantis, W4LEB, 2228 Sherwood Road, Kingsport, Tenn.

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of frequency modulating the v.f.o. indicate it to be comparable to the results anticipated with our higher powered final. It is probable that even under the best of control the v.f.o. when frequency modulated produces a signal which has a somewhat greater deviation than if the signal were crystal controlled. The difference, however, is very slight and the reports from the stations we have worked in 41 states and numerous countries were unanimous as to the excellence of the signal quality.

CAVITY RESONATOR

[*from page 32*]

are the ones listed in the table. The cube dimension is designated a, the sphere diameter b, and the cylinder diameter c.

Terman gives the following formulae for cavity resonators: For the sphere, wavelength = 2.28 a; for the cylinder, wavelength = 2.61 a; and for the square prism, wavelength = 2.83 a. The term a is the sphere diameter, cylinder diameter, or prism side, as the case may be. Wavelengths and a dimensions are in centimeters.

Taking the square prism (cube) as an example, we show how we derived our own working formulae with wavelength in *megacycles* and cavity dimensions in *inches*.

For the cube:

(1) $\lambda_{cm} = 2.83\ a_{cm}$

From which:

$a_{cm} = \lambda_{cm} / 2.83$

(2) $a_{in} = \dfrac{\lambda_{cm.}\ (0.3937)}{2.83}$

But $\lambda_{cm} = 30{,}000 / f_{mc}$, so:

(3) $a_{in.} = \dfrac{\frac{30{,}000}{f_{mc}}(0.3937)}{2.83} = \dfrac{30{,}000\ (0.3937)}{2.83\ f_{mc}} = \dfrac{11{,}811}{2.83\ f_{mc}}$

From which

(4) $a_{in.} = 4173.4\ f_{mc}$

The equations for the sphere and cylinder were derived according to the same steps. The three working equations are:

(5) Cube (Square Prism) $a_{in} = 4173.4 / f_{mc}$

(6) Sphere $b_{in} = 5180.3 / f_{mc}$

(7) Cylinder $c_{in} = 4525.3 / f_{mc}$

Readers desiring to know cavity dimensions for frequencies not listed in the accompanying table may employ equation 5, 6, or 7, whichever applies.

Bibliogrpahy

Terman, F. E. *Radio Engineer's Handbook.* (McGraw-Hill). 1st Edition. pp. 264-273.

Smith, et al. *Radio Handbook* (Editors & Engineers, Ltd.) 10 Edition. pp. 386-388.

Hoag, J. B. *Basic Radio.* (Van Nostrand). 6th Printing. pp. 328, 332.

Aerovox Research Worker (Aerovox Corporation). June 1946, September 1946.

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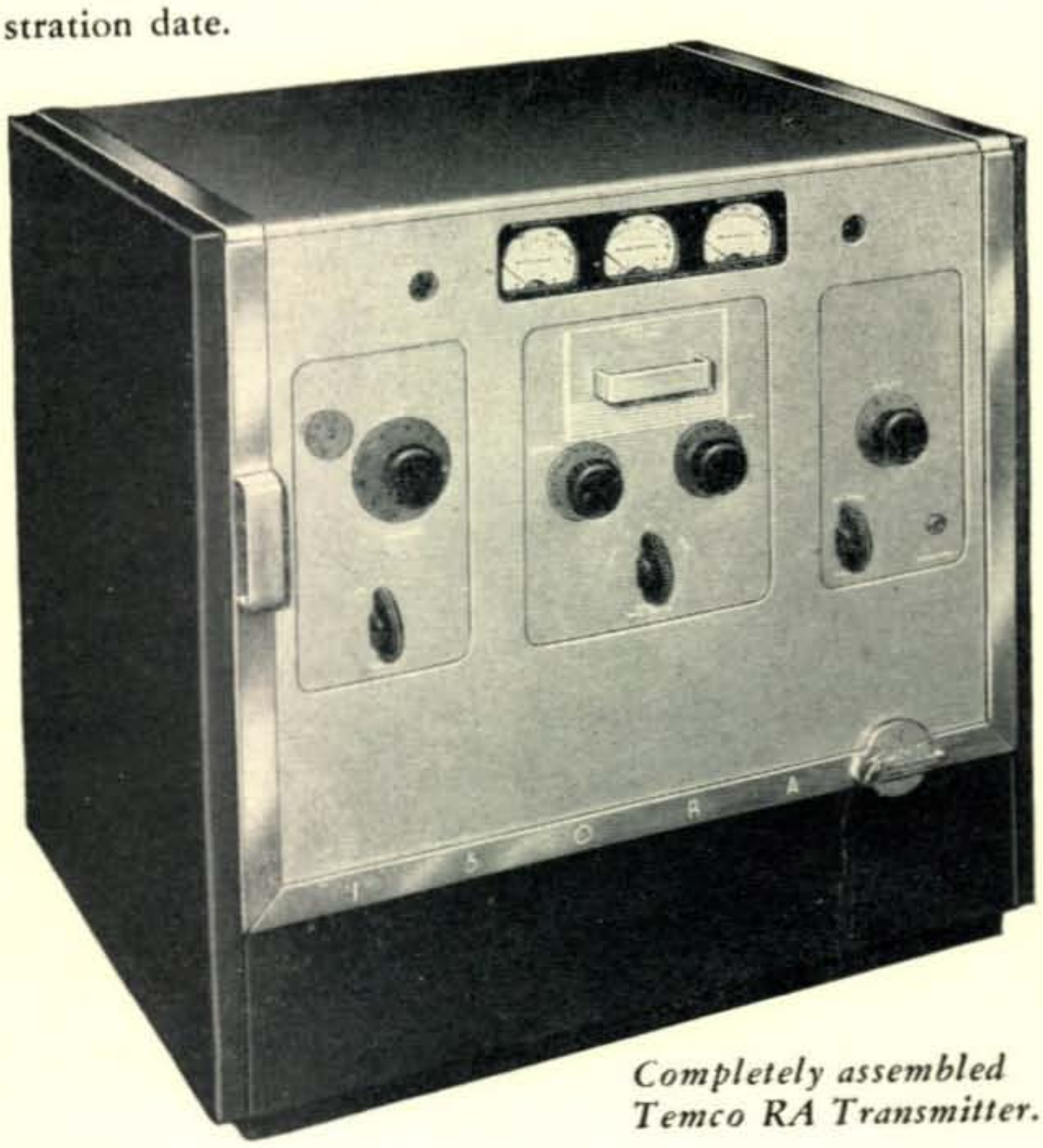

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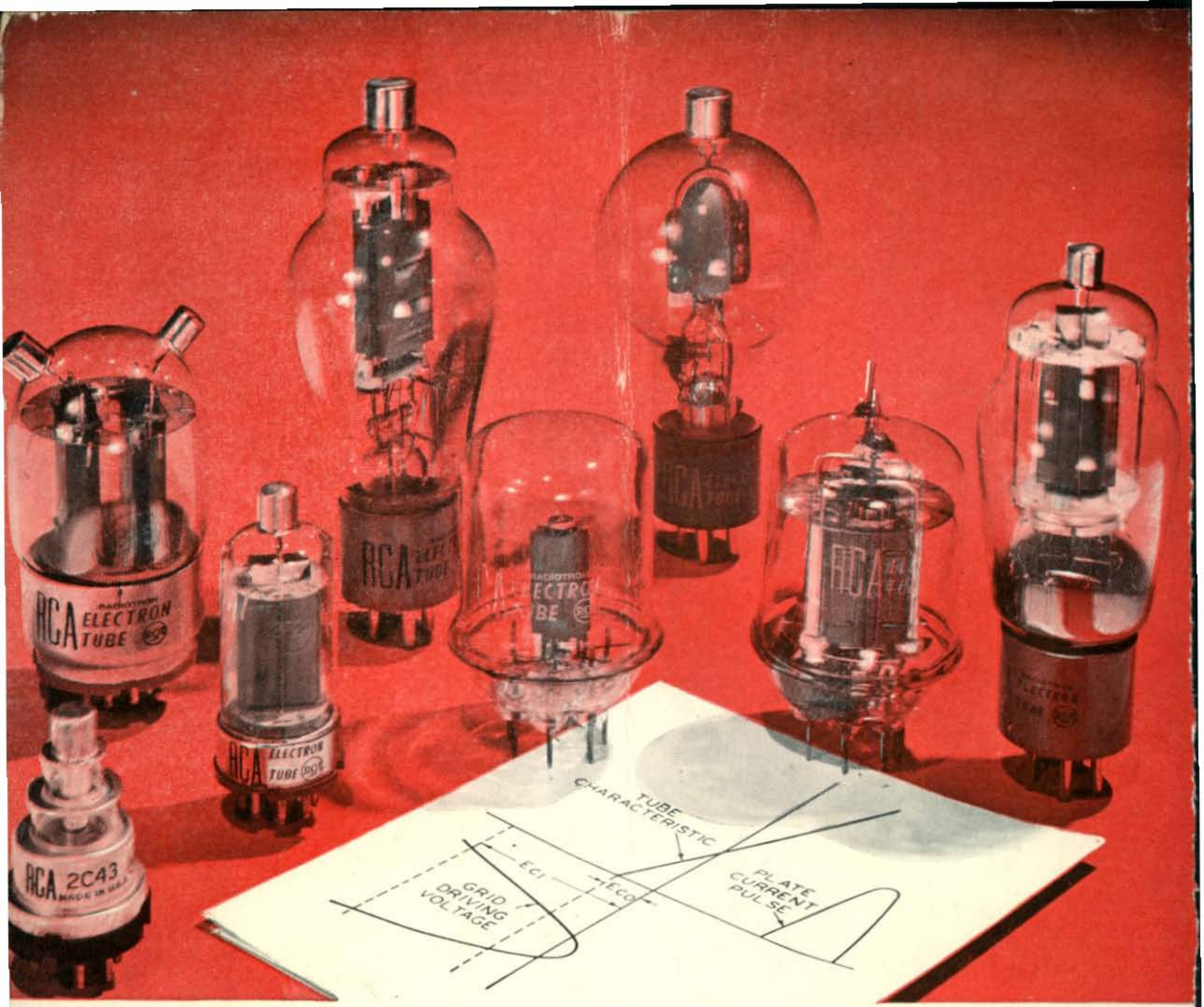

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808	triode	30.0	75*
811	triode	25.2	55*
815	beam	5.0	25*
826	triode	30.0	75*
829-B	beam	14.2	45*

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