

QST



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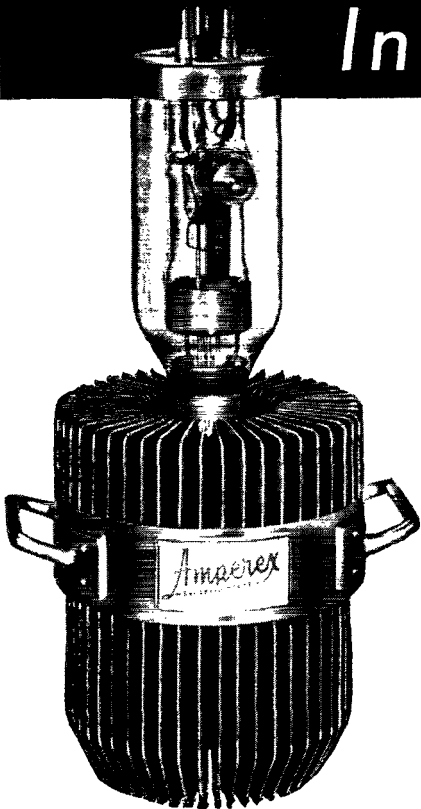


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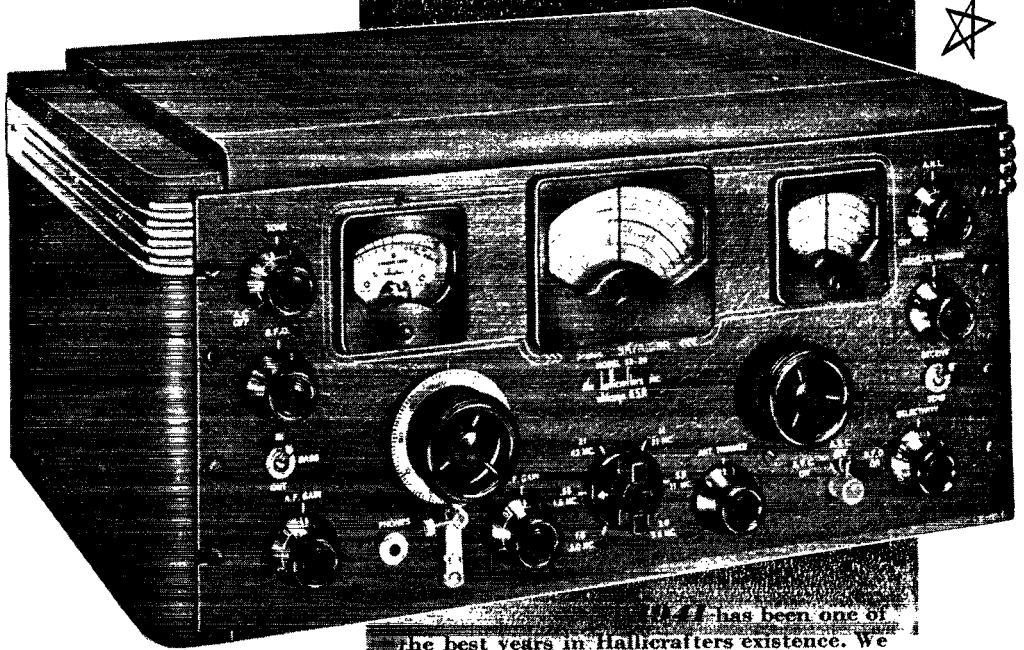
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JANUARY 1942

VOLUME XXVI

NUMBER 1



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Subscription rate in United States and Possessions, \$2.50 per year, postpaid; all other countries, \$3.00 per year, postpaid. Single copies, 25 cents. Foreign remittances should be by international postal or express money order or bank draft negotiable in the U. S. and for an equivalent amount in U. S. funds.

Entered as second-class matter May 29, 1919, at the post office at Hartford, Connecticut, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized September 9, 1922. Additional entry at Concord, N. H., authorized February 21, 1929, under the Act of February 28, 1925. Additional second-class entries to cover sectional editions authorized March 20, 1935.

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QST

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AMATEUR RADIO

PUBLISHED, MONTHLY, AS ITS OFFICIAL ORGAN, BY THE AMERICAN RADIO RELAY LEAGUE, INC., AT WEST HARTFORD, CONN., U. S. A.; OFFICIAL ORGAN OF THE INTERNATIONAL AMATEUR RADIO UNION



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"IT SEEMS TO US —"



INTERIM REPORT

THERE will be an official plan coming up soon providing for the employment of u.h.f. amateur radio in civilian-protection work under the Office of Civilian Defense. That much we can say pretty positively. Nothing has been drawn up in final form yet and all plans will have to run the gauntlet of DCB; but OCD has started reducing its communication intentions to black and white, there seems to be general agreement on principles, and we expect that we shall soon be able to tell you just what the task assignments are and how to go about discharging them. First plans will deal only with local shows on u.h.f.; the second phase will examine statewide nets on lower frequencies, concerning which it's still too early to say much of anything definite.

Some day we may have our own amateur manual of civilian protection. In the meanwhile the information is where you find it, but a few principles begin to emerge. Under OCD's plan for local organization, each community will have what is called a volunteer office, at which citizens enroll for assignment to the various ARP services, depending upon their qualifications. Some will be wardens; doctors will be assigned to emergency medical services, huskies to rescue squads, and so on. There is as yet no recognized place in this scheme for radio amateurs but one is presently being carved out and we'll let you know when you can enroll and be assured of a radio assignment. That is why we are asking our members to register meanwhile with the ARRL emergency coordinators, who in turn have been asked to provide temporarily the needed liaison between the amateur body and the local CD commander or coordinator. The citizens who make up the many ARP services are members of what is now called the Citizens' Defense Corps, with a commander at the control center. Under OCD plans he will have a competent communications man as one of his aides, charged with planning and managing the varied communications plans of the community. It is he to whom our gang will report and from whom we'll get assignments. Primary reliance is going to be on the major wire systems, the telephone and telegraph.

Beyond that there will be a secondary system made up of all local facilities in sight, including amateur radio. Under flexible guides, each community will erect its own communication plans, depending upon its needs and its facilities. It will be a teamwork job. Naturally we shall not be permitted to go off on our own, set up circuits of our own choosing, drum up traffic. Obviously we must be a disciplined part of a community whole, under a local leader who has responsibility for all communications and who shifts his forces as the situation requires. But our skill and experience will be valuable contributions and we can be sure of being used for many important links in the auxiliary system and of receiving quite a few primary assignments where mobility enters into consideration.

The OCD work won't all be $2\frac{1}{2}$ meters. That will be the standard — for the gear that is to be available in quantities for average needs. But there is a place for 5-meter stations, too. Not necessarily superior in average range over flat country, they may be better in hilly country because they suffer less from shadows. Regulations have made 5-meter apparatus a different breed of cat but we'll need all available gear and no existing 5-meter self-powered stations should go to waste. As they are generally more complicated and less portable, it seems to us that the best place for them will be in fairly permanent locations, where gas-engine supplies could be made available, and perhaps using them for the higher-quality circuits, including those to nearby towns. Similarly, while we emphasize 112 Mc. for new construction because it can be simple with inexpensive tubes, a place should be made in local plans for all existing $1\frac{1}{4}$ -meter stuff. We should mention, too, that a job is foreseen for the $2\frac{1}{2}$ sets that are permanently installed in cars, although we advise the replaceable-unit scheme for new construction. Finally, walkie-talkies will be found definitely useful. This covers about everything except home stations, but we imagine that a warden who expects to lose his wires will have made a mental cataloging of even the fixed ham stations in his beat, just in case.

Many of you fellows haven't any u.h.f. equipment and have never operated on 5

meters or below. You probably think we're mildly crooked on the subject, the way we keep preaching u.h.f. not only for OCD jobs but for home-station equipment in general. One reason we've been doing so recently is that it is possible to visualize certain circumstances under which we'd still be operating u.h.f. when we couldn't on any other frequencies. We think every amateur ought to build himself sufficient of a u.h.f. station to ensure his enjoyment of amateur radio on 5 and below. Now — while there's leisure to study up and do a good job. Now — while parts are still available. It's a fascinating field, the future of which hasn't been scratched. It is certain that most of the new art will center there. Amazing things are going on right now. When you read of a "secret device" it's almost certain to be u.h.f. These developments offer us assurance of astonishing increases in the working ranges of very short waves when this war

ends, if not before. We already know two hams, one on each side of the Atlantic, who are planning just how they're going to bridge the pond in two-way ultrahigh, and we know just enough about the new techniques to be entirely confident that they'll succeed. As far as that goes, have you noticed the remarkable ranges that are being regularly attained by the new f.m. broadcasting stations and some of the other services that are using f.m.? They're good, better than you'd ever think for u.h.f. We hams haven't yet got into f.m. and given ourselves a real treat, but the basis for that too is u.h.f.

Everything points at u.h.f. — fun, future, community service, the new art. Regardless of what has been your major interest in amateur radio, we again urge you to establish yourself somewhere in the u.h.f. ham picture.

K. B. W.

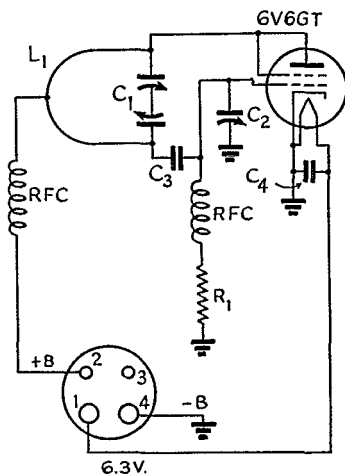
A Correction — and the Answer to a Question

A POPULAR ham indoor sport just now is to call our attention to the fact that the diagram and text in the article "A 112-Mc. Emergency Transmitter" in December *QST* disagree as to how the screen grid in the 6V6GT is connected. The text is right; the screen and plate are connected together. We're sorry, fellows; it was one of those too-obvious things that occasionally slip by in spite of careful checking. The circuit will oscillate with the screen and control grid tied together, but the plate current will be too low.

A number of the gang have been curious about the possibilities of exciting an 815 from the oscillator to make a stabilized m.o.p.a. transmitter. On paper it looks OK, since the oscillator output is at least six times the theoretical driving power taken by the 815 under ICAS plate-modulated conditions. However, dielectric and other losses run pretty high at 112 Mc., and in an ordinary link-coupled circuit it has not been found possible to obtain sufficient grid current under load to drive the 815 at full ratings. The 815 can be used at reduced input — we found that it would modulate satisfactorily with a plate input of 300 volts at 85 to 90 ma., or around 25 watts, which gives a carrier output of approximately 15 watts. The grid current under these conditions was between 1.5 and 2 milliamperes. Possibly a more efficient grid coupling system would improve the picture, but time has not permitted further experimental work.

Whether or not an improvement in frequency stability is obtained by the m.o.p.a. arrangement is entirely a matter of adjustment. The grid load changes considerably during the modulation

cycle, and when the load on the oscillator shifts its frequency also shifts. The magnitude of this effect is of the same order as and may be even greater than the frequency shift caused by changing the oscillator plate voltage to give equivalent modulation. The only answer to this is to use loose coupling between the oscillator and modulated amplifier. With careful adjustment, it is possible to reduce frequency modulation appreciably below that of the modulated oscillator alone, so that the overall stability is improved.



Even though the 815 has to be run at reduced input, the 15-watt carrier represents an increase of 11 or 12 db. in signal strength over the oscillator alone, which sounds worth while. And the 815 will last longer with lower input!

— G. G.

Power Supply for Emergency Equipment

Building Vibrator-Type Supplies for 300-volt 100-ma. Output

BY GEORGE GRAMMER,* WIDE

IN THE emergency equipment design considerations outlined last month emphasis was placed on the necessity for providing for the use of either 115 volts a.c. or 6 volts d.c. as the source of power.¹ The a.c. supply presents no design problems. Our troubles, if any, are likely to arise in equipping ourselves with storage-battery operated supplies of adequate rating.

Some investigation of the vibrator-supply situation showed that the picture is about like this: Complete 300-volt, 100-ma. units such as the VP-552 Vibrapack are available in limited quantity — better, perhaps, than we had hoped for earlier — but when the existing supply is exhausted no more can be made available without priorities. At the moment amateurs have no priority rating. On individual components, we should be able to get all the vibrators we need, and the same is true of other components which need most frequent replacement in auto radio sets such as rectifier tubes and buffer condensers. The catch is in the transformer situation; in the replacement line there is nothing really suitable, since the average auto receiver seems to require no more than 250 volts at 60 ma. or so, an output which is considerably below the power level we want. Even if the lower power were tolerable, it is general opinion that only small quantities of replacement transformers are to be found on dealers' shelves, since it seems that transformers stand up so well that replacements are infrequent. The special transformers for vibrator-type transmitting supplies carried in the lines of several manufacturers have never been big-quantity items and the existing number is probably rather small. There is a reasonable possibility that more of these can be manufactured to meet the demand as it arises, but at the same time copper and steel are daily getting more "critical."

The question, then, is whether or not satisfactory substitutes can be found should the normal sources of components dry up, or be unable to take care of our needs with the speed with which we need to equip ourselves. This involves something more than just assembling components already designed for the purpose; it will be necessary to modify parts, particularly transformers, salvaged from the junk box or discarded apparatus, or purchased solely with alterations in mind. Our own experience has shown that this scheme is perfectly practical, and as things stand now there does not appear to be any lack of means of making up entirely suitable vibrator-type supplies. In fact, even the excuse of cost is hardly valid; most of the essential parts can be taken from obsolete broadcast receivers which can be picked up at almost any dealer's for a couple of dollars at most, while the special components such as the vibrator, rectifier, and buffer condenser which probably will have to be purchased new should not run over three or four dollars.

A.C. Supplies

For the benefit of those who want a circuit diagram, Fig. 1 shows a representative power supply for a.c. only. It has the standard output cable connections, but is conventional in every other respect. The power transformer should have a high-voltage secondary rated at 350 to 375 volts (a.c.) each side of the center tap and should be capable of delivering a rectified current of 100 ma. through the usual condenser-input filter. To take care of heaters in receiver, modulator and transmitter, the 6.3-volt filament winding should be rated at 3.5 to 4 amperes; should a combination transformer having this filament rating not be readily available a separate filament transformer can be incorporated in the power supply unit.

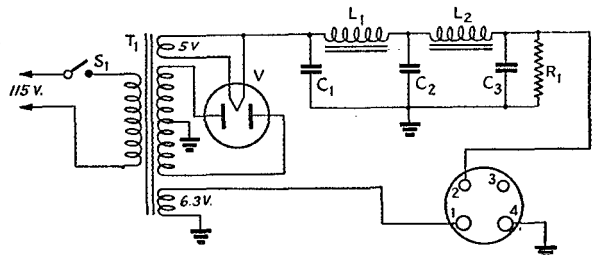
A two-section filter such as that shown will reduce hum to a minimum in the receiver, but by

* Technical Editor, *QST*.

¹ Grammer, "112-Megacycle Emergency Gear," *QST*, December, 1941.

Fig. 1 — Typical a.c. power supply.

- C₁, C₂ — 8- μ fd. electrolytic, 450 volts.
- C₃ — 16- μ fd. electrolytic, 450 volts.
- R₁ — 50,000 ohms, 10 watts.
- T₁ — 350 to 375 volts each side center tap, 100 ma.; 5 volts, 3 amp.; 6.3 volts, 3.5 to 4 amp.
- L₁, L₂ — 10-12 henrys, 100 ma.
- S₁ — S.p.s.t. toggle.
- V — 80, 5Z3, 83V, etc., depending upon permissible voltage drop.



using large filter capacities in a single-section filter it is possible to bring the hum down to a satisfactory level. Since the output voltage should

rated battery supply, which means duplication of a considerable number of parts and hence the least economical system, overall.

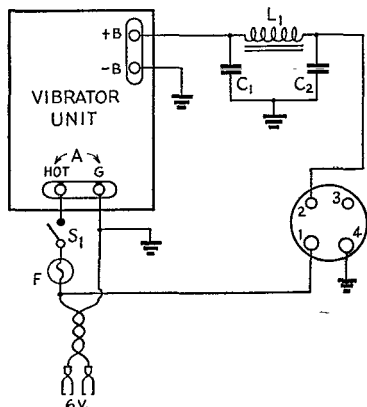


Fig. 2 — Battery supply using made-up vibrator unit.

- C₁ — 8- μ fd. electrolytic, 450 volts.
- C₂ — 32- μ fd. electrolytic, 450 volts.
- L₁ — 10–12 henrys, 100 ma., not over 100 ohms (Stancor C-2303 or equivalent)
- S₁ — Heavy-duty toggle (10–12 amp. rating)
- F — 15-amp. fuse.

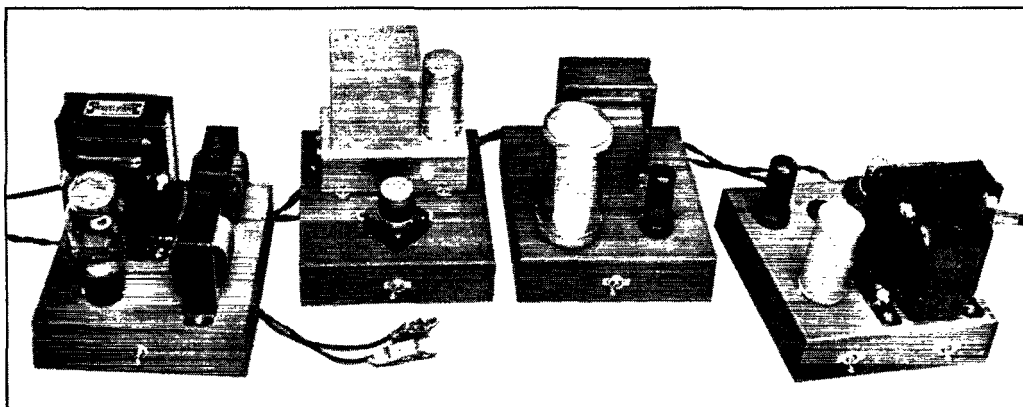
be 300 at a load of 100 ma. it may be necessary to drop the voltage in the supply itself should the transformer used give more than the desired voltage. This usually can be accomplished by choice of a suitable rectifier tube; the 80 will give most drop, the 5Z3 an intermediate value and the 83-V the least. Use a 3000-ohm resistor (preferably 25-watt size or larger) as a test load; the supply is giving the standard output when the voltage across the resistor measures 300.

A straight a.c. supply is a very useful thing to have but must be accompanied by a similarly-

Battery Supplies

Undoubtedly the simplest and least troublesome way to secure a battery supply is to purchase a ready-made unit having our 300-volt, 100-ma. standard rating, such as the VP-552 already mentioned. Since these come complete with hash filtering and shielding, as well as coordinated design to give efficient operation, the headaches have been borne by the manufacturer and there is little to do except assemble the unit with a suitable smoothing filter and the necessary controls. A circuit diagram based on such a unit is shown in Fig. 2. Ready-made fully-shielded smoothing filters also can be bought as separate units designed to go with the Vibrapack, and can replace the filter assembly shown in the diagram. In this circuit provision is made for cutting the "A" supply to the vibrator unit, leaving the heaters in operation to keep the station ready for operation during periods when it does not have to be actually on the air with either the receiver or transmitter. While a separate switch could be provided for the heater circuits, it is just about as convenient to take off one battery clip for this purpose.

A supply of this type is shown in the group photograph. It should give no hash trouble if the battery leads are twisted together for their entire length. A separate pair of twisted leads can be used for the heater supply if desired; this is advantageous if two batteries are available, one for the heaters and the other for the plate supply. The leads should be at least No. 14 and preferably No. 12; flexible rubber-covered wire of the type sold for lead-ins or ground wires is very good for the purpose since it lends itself readily to even



A group of power supplies, including a.c., storage battery, and combination types. All are built on 7-by-7-inch steel chassis. Left to right, a straight a.c. supply, circuit diagram for which is given in Fig. 1; Vibrapack supply (Fig. 2); vibrator supply using rewind transformer (Fig. 5); and combination a.c.-battery supply (Fig. 3).

few spots of solder which easily can be softened. The more compact type having a narrow metal can crimped around a bakelite base can be pried apart with some effort, but it is pretty difficult to get it back together again in presentable shape. Aside from the size, we prefer the larger type anyhow because the larger amount of sponge rubber inside the can helps reduce the mechanical noise.

When the system is operating properly there should be practically no sparking at the vibrator contacts. There may be an intermittent spark of small amplitude, barely visible in daylight, but nothing resembling a continuous arc. A further check on the operation can be secured with an oscilloscope having a linear sweep circuit which can be synchronized with the vibrator. The vertical plates should be connected across the outside ends of the transformer primary winding to show the input voltage waveshape. Fig. 4 shows an idealized trace of the optimum waveform,³ when the buffer capacity is adjusted to give proper operation throughout the life of the vibrator. The horizontal lines in the trace represent the voltage during the time the vibrator contacts are closed, which should be approximately 90% of the total time. When the contacts are open the trace should be partly tilted and partly vertical, the tilted part being 60% of the total connecting trace. The oscilloscope will show readily the effect of the buffer capacity on the percentage of tilt. In actual patterns the horizontal sections are likely to droop somewhat because of the characteristics of the vertical amplifier in the scope and also because of the resistance drop in the leads to the battery as the current builds up through the primary inductance.

The 5000-ohm resistor in series with the buffer condenser in the diagram has no noticeable effect on the operation, being there simply to limit the secondary current in case the condenser should fail.

R.f. filters for reducing hash are incorporated in both the primary and secondary circuits. The secondary filter consists simply of a 0.01- μ fd. paper condenser directly across the rectifier output, with a 2.5-mh. r.f. choke in series ahead of the

³ *Mallory Radio Service Encyclopedia*. This volume has a great deal of useful information on vibrator power supplies and their adjustment.

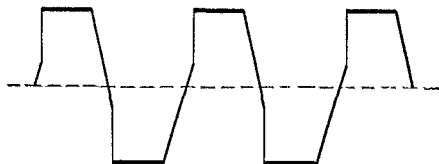


Fig. 4—Proper operation of the vibrator supply is indicated when an oscillogram such as shown above is obtained with the vertical plates of the oscilloscope connected across the total primary winding. The dashed center line will not be shown on the screen; it is for reference only.

smoothing filter. In the primary circuit a low-inductance choke and high-capacity condenser are needed because of the low impedance of the circuit. A choke of the specifications given seems adequate, but if there is trouble with hash it might be beneficial to experiment with other sizes. In any event the wire should be large—No. 12 preferably and No. 14 as a minimum. Manufactured chokes such as the Mallory RF583 are more compact and give higher inductance for a given resistance because they are bank wound, but this type of winding is not very practical to make by hand. The by-pass condenser, C_1 , should be at least 0.5 μ fd.; even more capacity may help in bad cases of hash.

The power supply should be built on a metal chassis, with all unshielded parts underneath. A bottom plate to complete the shielding is advisable. The transformer case, vibrator case, and metal shell of the tube all should be grounded to the chassis. If a glass tube is used it should be enclosed in a tube shield. As mentioned before, the battery leads should be evenly twisted; in our experience these leads are more likely to radiate hash than any other part of a reasonably well-shielded supply, and a little care in this respect is more productive than experimenting with different values in the hash filters. Such experimenting should come *after* it has been found that radiation from the leads has been reduced to an absolute minimum. We did not find that shielding the leads was particularly helpful, and since shielding was a nuisance as well as an expense it was omitted from the supplies shown. However, others may find shielding worth while, if other means fail.

The 100- μ fd. mica condenser, C_6 , connected from the positive output lead to the "hot" side of the "A" battery, is helpful in reducing hash in certain power supplies. In some cases its use gives no observable improvement, so a trial is necessary to see whether or not it should be installed. It should be mounted right on the output socket.

Testing for methods of eliminating hash should be carried out with the supply operating a receiver. A transmitter is pretty tolerant in this respect, and hash which goes unnoticed on a transmitted carrier can make all kinds of QRM in reception. Since the interference is usually picked up on the receiver antenna leads by radiation from the supply itself and the battery leads, it is always advisable to keep the supply and battery as far from the receiver as the connecting cables will permit. Three or four feet should be ample. The microphone cord likewise should be kept away from the supply and the battery leads.

The smoothing filter for battery operation can be a single-section affair. However, there will be some hum (readily distinguishable from hash because of its deeper pitch) unless the filter capacity is fairly large. We found it necessary to use a 32- μ fd. output condenser to eliminate this hum

when the supply is used on a receiver, even with a poorly baffled speaker such as the units ordinarily put in small metal boxes to go with receivers.

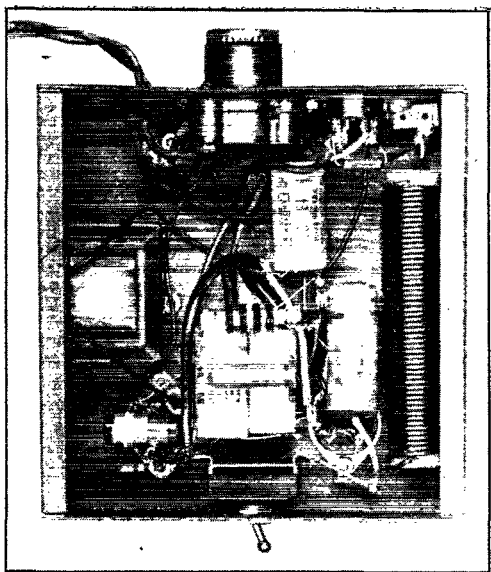
Rewinding Transformers

Those who can't get either complete vibrator assemblies or special transformers, or who want to assemble a vibrator supply at the least possible expense, certainly should be able to find the makings in the old broadcast receivers which are gathering cobwebs in the cellars of most radio dealers' establishments. Receivers built before the midget craze started are the best bet — go back ten years or more when the average receiver had something like a pair of 45's in the output stage. What is wanted is a power transformer with at least a 100-milliampere secondary; the voltage rating should be 350 or so with any transformer of this type, but the exact value does not matter too much. The high-voltage secondary must be in good shape, of course. Pick out a transformer with a case — the "fully shielded" type — but not one which is immersed in pitch, unless you have unlimited patience. When you acquire such a receiver you'll also get a filter choke or two and the accompanying filter condensers, all of which may be in perfectly usable condition, plus an assortment of other parts which undoubtedly will be useful.

Before dismantling the transformer, check up on the output voltages of the various windings, if they are not already known. This will require a multi-range a.c. voltmeter, which is part of every service test kit, and it shouldn't be difficult to get the measurement made by a friendly serviceman or at the local parts store. These voltages must be known if the transformer is to be rewound to give the desired output voltage.

Next take the transformer apart, being careful to avoid damaging the windings or bending the core pieces. The filament secondaries are practically always on the outside of the coil assembly, so remove the outer layers of paper to expose the uppermost filament winding. Count the number of turns and divide this figure by the output voltage of the winding to find the number of turns per volt. Most small transformers of this vintage have about three turns per volt. Jot down the exact figure so it won't be forgotten and then remove the remaining filament secondaries, leaving only the primary and high-voltage secondary.

When this has been done, slide one of the core pieces inside the coil and see how much space has been made available by removing the low-voltage secondaries. The primary to be put on will not have many turns, but the wire should be large to keep the losses low, so generally two layers will be required. The current to be carried will be in the vicinity of 8 amperes at full load, but since the primary is to be center-tapped each half of the winding carries current only half the time. Thus



A below-chassis view of the battery supply using re-wound transformer, circuit for which is given in Fig. 5. The various components can easily be recognized in this view.

the heating effect is equivalent to 4 amperes. We used No. 12 wire in the transformers we rewound, but this is probably more conservative than is necessary; No. 14 certainly will not get too warm and the losses should not be appreciably greater. It would not be advisable, however, to use smaller wire than No. 16, and that size only when a larger size will not fit the space. Some room is taken up by insulation; friction tape is convenient to use but is a little bulky. If the space is too small, there is no alternative but to remove the 115-volt primary; in some half-dozen transformers we rewound, taking off all windings except the high-voltage secondary left ample room for a new primary of No. 12 wire, but in no case was it possible to get in such a new primary without removing the old one.

If the normal transformer output was 300 volts at 100 milliamperes through an ordinary filter (this should be ascertained before taking the transformer apart, by hooking up a power supply and making a d.c. measurement) it is certainly good sense to save the old primary if possible, since such a transformer can be used for a combination a.c.-battery supply. However, it does not pay to skimp unduly on the size of the 6-volt primary wire; the efficiency and regulation will be better with larger wire sizes. Separate transformers readily can be built into a single supply which uses the same filter, thereby at least approaching the economy and convenience of a single-transformer unit.

Whether the old primary is inside or outside

the high-voltage secondary is a matter of luck; we have encountered both types. If the old primary is on the inside and it is necessary to remove it, the job can be done readily enough by pulling the outermost layer through the side of the assembly, after which the rest can easily be unwound. One

turns per volt, the total number of secondary turns is 750×3 , or 2250. Dividing 2250 by 70 gives 32 (dropping the fraction) as the total number of primary turns, so there will be 16 each side of the center tap.

The new windings should be sufficiently well insulated so that there is no possibility of a short-circuit to the core or secondary, but otherwise no special precautions are necessary since the voltage is low. Reassemble the transformer, interleaving the laminations. It is advisable to use no more than two laminations on a side before interleaving from the other side, but it is not necessary to interleave them singly. With careful packing it should be possible to get back all the core pieces that came out.

Once the transformer is rebuilt the remainder of the supply is constructed and adjusted as previously described. If the job has been done properly the efficiency should be about normal for vibrator supplies. Individual transformers we rewound varied somewhat, in that for the standard d.c. output the battery current ranged from 7.5 to 9 amperes with the different units. This does not include the current taken by the rectifier heater. Because of this current and the power loss in the plate-cathode circuit of the rectifier tube, the overall efficiency of the tube rectifier type of supply is not quite as high as with the synchronous vibrator, but the parts are cheaper. With no load on the supply the battery current is about 1.5 amp., and under these conditions the output voltage is 425. The regulation is therefore considerably better than with an a.c. supply having a condenser input filter.

Replacement Transformers

The same alterations can be applied to universal replacement transformers as to units salvaged from old broadcast receivers. Suitable units can be picked from the various manufacturers' catalogs, and these transformers should be fairly easy to get since they are made in large quantities. The types having 5-, 2.5- and 6.3-volt filament windings offer the possibility of operation without alteration at all, since the 5-volt winding and one-half of the 2.5-volt winding can be connected in series to give 6.25 volts and used as one half of the battery primary winding, with the regular 6.3-volt winding as the other half. These windings are a little light for the purpose if operated at ratings, since 3 amperes is about the normal limit for the lowest-current winding. This would hold the battery current down to about 6 amperes, or an input of 36 watts. At an efficiency of 60% or so the output would be slightly over 20 watts. Transformers used in this way work very well, but generally deliver lower voltage than is wanted. As an example, a transformer which on

(Continued on page 64)

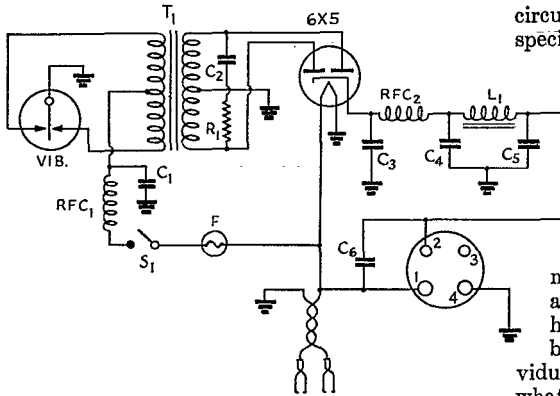


Fig. 5—Vibrator supply assembled from separate components. Except for T_1 and T_2 , components are identical with those of Fig. 3. T_1 is a home-altered transformer as described in the text.

half of the new primary should be wound directly on the insulating sleeve into which the core fits, then the high-voltage secondary slipped over it, and finally the second half of the new primary wound on top. Both halves should be wound in the same direction so that the end of the first half can be connected to the beginning of the second to give a center tap with the proper polarities. If separate leads are brought out from each half (this is usually the most convenient method) it is easy to check the polarities after the transformer is reassembled. Connect two leads together for trial, then apply 115 volts across the high-voltage winding. If the voltage across the outer ends of the new winding is twice that of each half, the polarity is correct. A filament voltmeter can be used for this check since the voltage will be low.

To obtain 300 volts at the rated current of 100 ma. from the supply, through a 6X5 rectifier and a filter having a choke with a resistance of about 100 ohms, it has been found by trial that the secondary/primary turn ratio should be 70:1, assuming an even 6 volts from the storage battery. All the transformers we revamped were wound to this ratio and the outputs were practically identical. This is where the turns-per-volt figure comes into play. Multiply the original a.c. output voltage of the high-voltage secondary by the number of turns per volt to find the total number of turns, then divide the product by 70 and you have the proper number of turns for the primary. For example, if the output voltage was known or measured to be 750 volts a.c. (375 each side of center-tap) and the transformer had three

U. S. A. CALLING

"RADAR" IN THE NAVY

THE Navy is going in for radiolocation in a big way and needs 5000 men as technicians and Radar maintenance men. To obtain applicants with radio experience who can be trained in the secret new work in the shortest possible time, the Navy wants amateurs! Naval recruiting officers have the details.

Applicants must be high-school graduates; must hold or have held an Amateur Class A or B license; or, if no ham experience, must be engaged in radio repair work or have had experience of h.f. communication. Enlistment is as radioman second class, USNR, with immediate orders to active duty for the purpose of receiving six to eight months schooling in the new technique. A new Radio Material School for this purpose will soon be opened on Treasure Island in San Francisco Bay. Until it is completed, students will go to the naval radio training school at either Los Angeles or Noroton, Conn. Upon successful completion of the course, men will be candidates for promotion up to and including chief radioman, depending upon qualifications.

These high ratings and the creation of the special schooling indicate the great importance of this service and give point to the Navy's desire for skilled amateurs to man it. It is a field in which you'll meet many ham buddies.

WAR DEPARTMENT OPERATORS

THERE is a continuing and urgent need for high-speed radio-equipment operators in the fixed service of the War Department. Over 200 positions paying \$1620 a year are now open at various Army posts throughout the United States and territories. These are Civil Service jobs called Junior Communications Operator, High-Speed Radio Equipment, and are covered by Announcement No. 20 and an amendment thereto. Particulars and forms may be had from major post offices or the Civil Service district offices: see page 28 of November *QST*.

The requirements for JCO have just been relaxed. Applicants must be citizens not over 48 years old; must have had at least one year of experience as radiotelegraph operator in commercial or government systems, which must have included at least three months' experience in the operation of high-speed equipment. Training at a service school may be substituted month-for-month for the operator experience except the three months required in the high-speed field. Candidates must be capable of reading, and transcribing to typewriter, syphon-recorder tape



Many American civilians are serving as noncombatant technical experts with the British as members of the Civilian Technical Corps, the radio portion of which work is concerned principally with the maintenance of secret locator gear. Here is an official British Ministry of Information photo just received in this country by air, showing some American hams of the CTC who are now receiving instruction at an RAF radio school "somewhere in England." Left to right, front row: Campbell, W6TOQ; Lessard, W1FFL; Baker, W5CBZ; Tallman, W1JTI; Gould, ex-W1BVF. Back row: Davis, W9VWV; Turner, W9OIR; Ingraham, ex-W8CGE; Fario, W4FOK; Wright, W9UYA. Pretty snazzy art for a government photo, too.

Enrollments in CTC are still open. See August *QST*, page 36. Particulars and forms may be had from CTC, c/o British Consulate General, 25 Broadway, New York, or from the nearest British Consulate.

at a sustained speed of 40 w.p.m.; operate perforators at 40; copy audio English to typewriter at 30 and code groups at 20; be capable of "touch" typing at a sustained speed of 50. Unassembled examination, open until further notice.

RADIO MECHANIC-TECHNICIANS

ON PAGE 28 of our November issue, we gave some details of the Civil Service's solicitation of radio mechanic-technicians now needed in large number for a variety of positions in numerous government agencies, as per Announcement No. 134. At that time the offer was open only until November 6th, but an inadequate number of applications were received and the closing date has been removed — applications will now be accepted until further notice.

Originally in five pay grades from \$1440 to \$2300, a new grade of Chief Radio Mechanic-Technician has been added at \$2600. At the same time, the experience requirements have been modified somewhat downward, and education may be substituted for part of the required experience. Details may be found at your post office or local Civil Service office. Ask to see both Announcement 134 and its amendment.

(Continued on page 54)

★ WHAT THE LEAGUE IS DOING ★

PHOTOCOPYING

SOME amateurs report to us the unwillingness of photostat houses to make copies of amateur station licenses, apparently in the suspicion that some sort of monkey-business is being attempted. While the original of the operator license is always required in one's possession when operating, FCC regulations contemplate the copying of the station license, and this is in fact essential when communication is to be established between one's portable and one's home station, as is explained in more detail in the *License Manual*. We believe that any photocopyer's doubts in the matter can be resolved by showing him Sec. 12.67 of the FCC regulations on the posting of station license, which state that "The original of each station license or a facsimile thereof shall be posted by the licensee in a conspicuous place in the room in which the transmitter is located or kept in the personal possession of the operator on duty. . . ."

MISCELLANY

IT IS to be expected that FCC Order 77, waiving proof-of-use of licenses until the end of the year, will receive a husky extension.

Does Order 72 forbid communication with Cuba? It does. FCC advises us that some amateurs cited for violation of 72 have professed ignorance of the fact that Cuba is a foreign country and have alleged that they were under the impression that Cuba is a territory or possession of this country. With apologies to the CM/CO gang, we point out that Cuba is a sister republic.

The AARS is handling some message traffic from service personnel in the Caribbean defense command, confined to urgent personal messages. The traffic is handled over War Department circuits from the various bases to San Juan and is there picked up by WLM and fed through the AARS. As the messages originate in "foreign countries," amateurs are inquiring whether it is OK for them to be handled. The answer is yes. The amateurs are not working foreign countries, which is what is prohibited, and the traffic is American.

FINANCIAL STATEMENT

THE third quarter of the year regularly shows a loss in the business affairs of the League, because it is the time of least activity and income, while expenses continue. This year, however, because of better income and reduced expenses, the loss was less than usual, a little under \$2000. At the instructions of the Board, the operating figures are here presented for your information:

STATEMENT OF REVENUE AND EXPENSES, EXCLUSIVE OF EXPENDITURES CHARGED TO APPROPRIATIONS, FOR THE THREE MONTHS ENDED SEPTEMBER 30, 1941

REVENUES	
Membership dues	\$15,133.17
Advertising sales, <i>QST</i>	18,337.78
Advertising sales, booklets	920.00
Newsdealer sales, <i>QST</i>	9,001.50
Handbook sales	7,490.61
Spanish edition Handbook revenues	90.70
Booklet sales	3,114.86
Calculator sales	471.67
Membership supplies sales	1,996.23
Interest earned	615.92
Cash discounts received	253.92
Profit on sale of bonds	209.00
Profit on sale of capital asset	10.00
	\$57,645.36
 <i>Deduct:</i>	
Returns and allowances	\$ 2,943.95
Cash discounts allowed	435.99
Exchange and collection charges	88.66
	3,468.60
Less: decrease in reserve for newsdealer returns of <i>QST</i>	183.22
	3,285.38
Net Revenues	\$54,359.98

EXPENSES	
Publication expenses, <i>QST</i>	\$13,506.53
Publication expenses, Handbook	5,853.95
Publication expenses, booklets	1,268.35
Publication expenses, calculators	341.52
Spanish edition Handbook expenses	156.21
Salaries	22,624.27
President's defense expenses	131.94
Membership supplies expenses	1,227.97
Postage	1,684.67
Office supplies and printing	2,900.95
Travel expenses, business	921.51
Travel expenses, contact	666.10
<i>QST</i> forwarding expenses	931.39
Telephone and telegraph	569.32
General expenses	764.99
Insurance	213.75
Rent, light and heat	1,119.60
General Counsel expenses	250.00
Communications Dept. field expenses	175.23
Headquarters Station expenses	525.27
Alterations and repairs expenses	12.00
Provision for depreciation of:	
Furniture and equipment	273.88
Headquarters Station	108.96
	\$56,226.36
Total Expenses	\$56,226.36
Net Loss before expenditures against appropriations	\$ 1,866.38

TICKLER

WE GIVE you three memory-joggers: If you are available for a job in defense radio, fill out immediately the registration form appear-

ing on page 27 of last month's *QST* and file it with us.

If you are in the military service in communications work, please report the fact for the ARRL roster. See page 34, November *QST*.

Voting membership in the League is confined to licensed amateurs residing in ARRL divisions. To permit properly classifying you, please show whether you have an amateur license (either station or operator) when joining the League or renewing membership. Since these data do not customarily accompany applications received via magazine subscription agencies, licensed amateurs should send their applications or renewals direct to ARRL headquarters.

ELECTION NOTICE

To all members of the Southeastern Division:

You are hereby advised that no eligible candidate for Southeastern Division alternate director has been nominated under the recent call. By-Law 21 provides that if no eligible nom-

inee be named, the procedure of soliciting and nominating is to be repeated. Pursuant to that by-law, you are again solicited to name a member of the Southeastern Division as a candidate for alternate director. See the original solicitation published at page 30 of September *QST* and page 21 of October *QST*, which remains in full effect except as to dates mentioned therein: nominating petitions must now be filed at the headquarters office of the League in West Hartford, Conn., by noon E.S.T. of the 20th day of January, 1942. Voting will take place between February 1 and March 20, 1942, on ballots to be mailed from the headquarters office the first week of February. The new alternate will take office as quickly as the result of the election can be determined after February 20, 1942, and will serve for the remainder of the 1942-1943 term.

You are urged to take the initiative and file nominating petitions.

For the Board of Directors:

K. B. WARNER,
Secretary

November 3, 1941

Lock-in Tubes for the Ultra-High Frequencies

New Special Tubes for the Range Above 200 Mc.

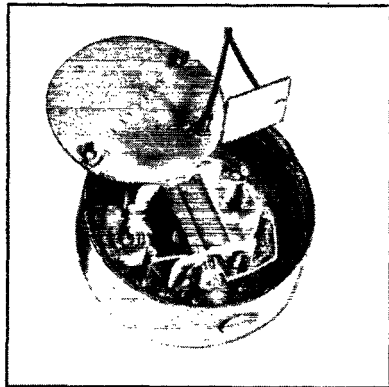
A NEW series of tubes recently announced by Hygrade Sylvania should prove to be of considerable interest to the u.h.f. experimenter because of their application to u.h.f. receiving and low-power transmission problems. A novel departure from past special tube construction is the use of an ordinary-sized lock-in envelope and base to house the miniature tubes, so that a receiver using the tubes might *look* like it had the more standard types of lock-in tubes. However, the elements are only slightly larger than those of the "acorn" tubes and they are mounted at the very bottom of the envelope, supported by the wires sealed in the base of the tube that are used as pins. The short lead length results in minimum lead inductance and enables the triode types to be operated as oscillators up to as high as from 600 to 750 Mc. Multiple cathode leads are used in some of the cathode types, and in the cathode-type triode the pin connections are designed to work into a double-ended transmission line with the tube in the center of the line. Incidentally, this pin arrangement does away with the difficulties encountered with many tubes of not being able to get perfect symmetry in a push-pull arrangement.

In the new series, a triode, diode and r.f. pentode are being made with indirectly-heated cathodes (6.3-volt heaters), and a triode and double triode with 1.4-volt filaments. An indirectly-

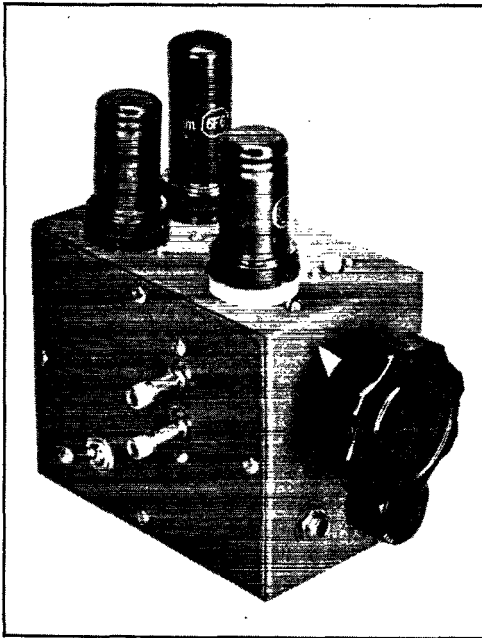
heated cathode diode is listed for 1.4-volt operation.

The 6.3-volt triode will deliver useful output as an oscillator at 600 Mc. and has been made to oscillate as high as 750 Mc. The diodes will operate as detectors up to 600 Mc. and are also useful in discriminator circuits where maintenance of capacity stability is important. The r.f. pentode will operate as high as 250 Mc., and three cathode leads are brought out the base for reducing de-

(Continued on page 64)



Breaking the glass envelope of the new 1201 lock-in tube reveals the tube structure located in the base of the tube. This new u.h.f. triode is good up to from 600 to 750 Mc. Photo is actual size.



Receivers for 112-Mc. Emergency Work

Superregenerative and Superheterodyne Receivers With Standard Tubes

BY BYRON GOODMAN,* WIJPE

The compact 112-Mc. receiver is built in a 3- by 4- by 5-inch metal box. Note the detector trimming condenser adjustment to the right of the 6J5 detector (front tube). The tuning control, headphone jack and regeneration control are on the front panel, the on-off switch and antenna binding posts are on the side.

THE receivers to be described in this article represent suggested units which comply with the requirements for the standardized 112-Mc. design mentioned last month.¹ They are not to be considered as representing something that must be rigidly adhered to, but rather as starting points for best utilization of parts and tubes that are available. Ideas from one receiver can be utilized in another, and the ingenuity of each constructor can be given full play while following the general principles.

There are three general avenues of approach to the problem of a 112-Mc. receiver which will satisfy the requirements demanded last month; a conventional superregenerative receiver designed to minimize (not eliminate) radiation, a superregenerative receiver with a stage of r.f. amplification ahead of it, and a superheterodyne receiver capable of handling the broad signals that may be encountered on 112 Mc. Regardless of the optimism and claims of some experimenters, to date the only known way to minimize radiation from a superregenerative receiver is to keep the input to the detector as low as possible, thus reducing the amount of power available to be radiated. Trick circuits which are claimed to "eliminate" radiation simply reduce it by operating normally at a low plate voltage. Most tubes that can be made to operate as 112-Mc. superregenerative detectors show *approximately* the same

sensitivity, but there is little question that the tubes designed for the u.h.f. range will operate properly at an input low enough to give practically no interference to other receivers in the vicinity. Such tubes as the 955, 9002, HY-615 and the new 1201 can all be used in conventional superregenerative receivers without much trouble from radiation. Our particular problem is to use the more conventional tubes that can be found in any radio store, but we heartily recommend to anyone that he build his receiver around one of the special u.h.f. tubes, *providing* he lays in a supply of spares that will prevent his being caught with no tube replacements if and when the time comes for him to furnish a receiver for extended periods of operation.

The t.r.f. receiver has no radiation, but here we are up against the problem of a suitable tube for the r.f. amplifier. None of the tubes that are likely to be found in any radio store show anything but a loss at 112 Mc. and, for this reason, the idea of trying to build a good t.r.f. from standard tubes was discarded from the start. On the other hand, excellent t.r.f. receivers can be built using the special u.h.f. tubes (954, 956, 9001, 9003, 1204, and possibly the new 7W7), but here again we advise not to build one unless you plan to lay in at least one or two spare tubes.

In the superheterodyne field, the logical arrangement is a simplified version of the receiver described last month by W6OVK.² The use of a

* Assistant Technical Editor, *QST*.

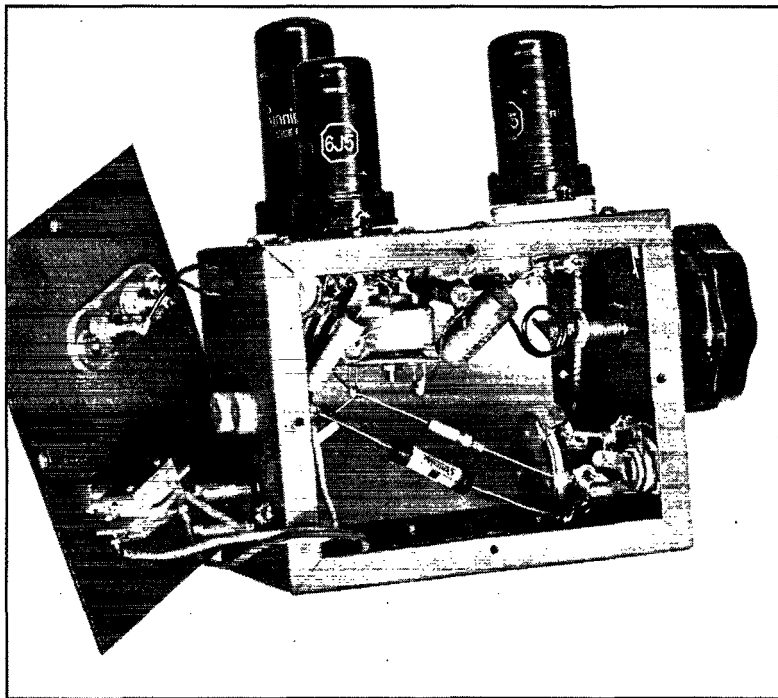
¹ Grammer, "112-Mc. Emergency Gear," *QST*, Dec., 1941.

² Brannin, "An Experimental 112-Mc. Receiver," *QST*, Dec., 1941.

converter feeding into a superregenerative detector tuned to around 20 Mc. results in a non-radiating receiver that is capable of receiving the better modulated oscillators used on 112 Mc. However, here again we meet up with the old tube bogie plus the fact that our receiving system begins to run into more tubes than the simple superregenerative type. The bare minimum of tubes would be three—combination oscillator and mixer, superregenerative second detector and high-gain audio—and this in no way eliminates the need for tuned circuits with their consequent coils and variable condensers. Further, none of the combination oscillator-mixer tubes is worth a hoot at 112 Mc., and the receiver will have a high noise level and consequent poor sensitivity. Using separate tubes for the oscillator and mixer, the outlook isn't so bad, and a superheterodyne can be made that will give sensitivity comparable to that obtained with the simple superregenerative receiver plus somewhat better selectivity and no radiation. The 6SJ7 can be used for the mixer, but it doesn't begin to compare with the 6AC7/1852 type of tube. The 6AC7/1852 is not a particularly common tube, and it isn't inexpensive, but the amateur interested in preparedness wouldn't let this detail stop him. The new 7W7 may work out to be a better mixer than the 6AC7, but at the time of writing none is available for experiment.

Here are several companion receivers for the 112-Mc. emergency transmitter described last month. Two of the receivers are superregenerative jobs using standard receiving tubes, and the third is a 5-tube superheterodyne with one non-standard tube (a 6AC7/1852) in it. If you have already completed the construction of the transmitter described last month, you can finish your emergency station with one of these receivers and a power supply described elsewhere in this issue. If you haven't started on the transmitter or anything, get out your December issue of *QST* and find out what the thing is all about.

Three receivers are described in this article and, as mentioned before, they are not to be taken as anything ultimate but simply examples, using more-or-less standard tubes, of what will work and be satisfactory. One is a compact superregenerative receiver using a 6J5 detector and inductive tuning (to eliminate one tuning condenser). Another uses a 7A4 (a slightly better but less common tube) for the detector and has a built-in loud speaker. The third receiver is a superheterodyne, using a 6AC7 mixer and a



The left-hand side of the small receiver shows the tuning-loop assembly and the placement of some of the parts. Note the power-supply plug and the speaker binding posts at the rear of the chassis.

built-in loud speaker. All of the receivers use resistance-coupled audio amplifiers to eliminate coupling transformers, and they all include an on-off switch that can be used to control the transmitter as well, as outlined in the previous article.¹ They are designed to operate at 300 volts (the standardized value) but they will also work at lower voltages with little or no change.

We have tried to hold down the cost of the units, by eliminating components considered to be unnecessary, and some may criticize the use of air padding and trimming condensers when the small mica compression type might have been used. If one is content to reset the trimmers every day or so he can get away with using mica trimmers, but it would seem to be more important to have a receiver which will hold its calibration more closely than is possible with the mica type of trimming condenser. Trimmers and padders are necessary to obtain adequate bandspread and to avoid too-close trimming of the coils.

The 6J5-Detector Superregenerative Receiver

A list of the tubes most likely to be found in every store handling radio tubes shows the 6J5 to be the only triode suitable for a 112-Mc. superregenerative detector, and consequently the most fundamental design is built around this tube as the detector. The 6F6 and 6V6 are also found in the list and are logical choices for the output tube, with the 6F6 the favorite because the screen voltage can be the same as the plate

voltage at high values, thus eliminating a dropping resistor and by-pass condenser. The 6J5 also makes a good first audio stage for headphone output.

As can be seen from the wiring diagram in Fig. 1, the basic design consists of a 6J5 superregenerative detector followed by resistance-coupled 6J5 and 6F6 audio stages. The only unconventional thing about the circuit is the inductive tuning of the detector and possibly the resistance coupling throughout. Inductive tuning of the detector was used to eliminate one condenser and to reduce crowding in the small box into which the receiver is built. If the thought of using inductive tuning frightens anyone because of its possible complications, we hasten to assure him that the complications consist only of cutting a piece of insulating rod at a 45-degree angle and cementing a small copper washer to the cut face of the rod. But more about that later.

The receiver is built in a 3- by 4- by 5-inch metal box, with a 3- by 4-inch face serving as the panel. The panel controls are the tuning knob and the regeneration control, and the headphone jack is also mounted on the panel for convenience and symmetry. The power cable plug is mounted at the rear of the box, as are the speaker terminals. The on-off switch and the antenna terminals are mounted on the left-hand side of the box.

The detector trimmer condenser, C_1 , is fastened to the upper face of the box and can be adjusted from the top of the receiver. The quench-frequency r.f. choke, RFC_2 , is supported off the

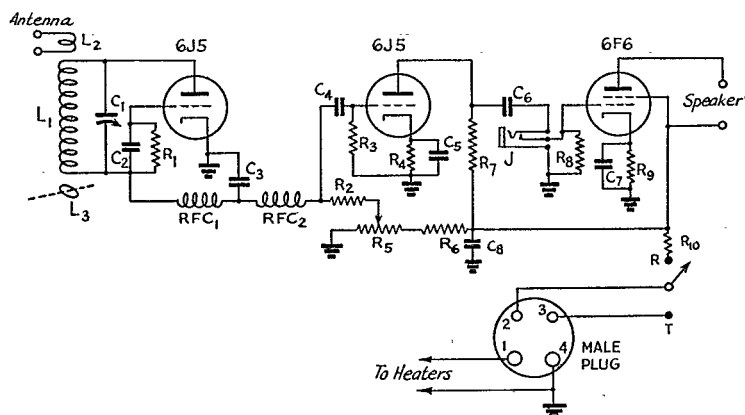


Fig. 1 — Circuit diagram of the compact 112-Mc. receiver.

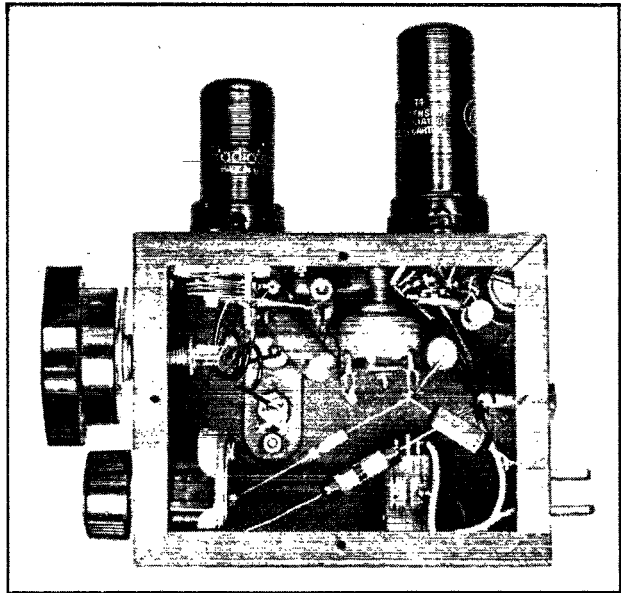
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|--|--|--|
| C_1 — 25- μ fd. air trimmer (Hammarlund AFC-25). | R_4 — 1500 ohms, $\frac{1}{2}$ watt. | L_1 — $1\frac{3}{8}$ turns No. 14 enam., $\frac{1}{2}$ -inch inside diam., spaced $\frac{3}{8}$ wire diam. |
| C_2 — 50- μ fd. midget mica. | R_5 — 50,000-ohm wire-wound potentiometer. | L_2 — $\frac{3}{4}$ turn No. 14 enam., $\frac{1}{2}$ -inch inside diam. |
| C_3, C_4, C_6 — 0.01- μ fd. paper, 600 volts. | R_6, R_7 — 50,000 ohms, 1 watt. | L_3 — Tuning loop. See text. |
| C_5, C_7 — 10- μ fd. electrolytic, 25 volts. | R_8 — 0.1 megohms, $\frac{1}{2}$ watt. | RFC_1 — U.h.f. r.f. choke (Ohmite Z-1). |
| C_8 — 8- μ fd. electrolytic, 450 volts. | R_9 — 500 ohms, 1 watt. | RFC_2 — 80-mh. r.f. choke (Meissner 19-2709). |
| R_1 — 5 megohms, $\frac{1}{2}$ watt. | R_{10} — 2000 ohms, 10-watt wire-wound, or higher. See text. | |
| R_2 — 25,000 ohms, $\frac{1}{2}$ watt. | J — Closed-circuit jack. | |
| R_3 — 0.25 megohms, $\frac{1}{2}$ watt. | S_1 — S.p.d.t. toggle. | |

under side of the upper face of the box by a long screw, with a brass sleeve over the screw furnishing sufficient spacing from the box. Incidentally, this r.f. choke is rather important in all of the receivers in this article because the resistance-coupled amplifiers show but slight attenuation of the quench frequency, and the quench voltage can get through and overload the output audio tube long before the signal has overloaded it. When transformer coupling is used between detector and first audio stage the transformer keeps most of the quench out of the following stages and consequently the quench-frequency choke is not always necessary.

The wiring of the unit is quite conventional and requires only brief mention. A soldering lug at each socket furnishes a convenient ground for the components of that stage. All condensers and resistors are mounted by fastening directly to the sockets and other terminals, with the exception of one side of the coupling condenser C_6 , one side of which must be run down to the headphone jack through an extra length of wire. The wires running to the toggle switch should be made of extra-length flexible wire so that the side of the box can be removed without unsoldering the wires to the switch. All of the wiring should be completed before the coils L_1 and L_2 are put in place, for convenience.

The detector coil is made by winding the wire around a $\frac{1}{2}$ -inch diameter drill or dowel for a former. The coil is then removed and the ends trimmed and bent until the coil can be soldered in place in proper alignment with the panel bushing used to support the tuning loop shaft. In our particular version we connected the plate lead of the tube socket to the rotor of the trimmer condenser by means of a short length of wire, and the coil L_1 was connected to the center of this wire and to the stator connection of the condenser. A length of $\frac{1}{4}$ -inch shaft pushed through the shaft bearing served as a guide in soldering the coil in place, and the axis of the coil should make an angle of 45 degrees with the shaft.

The inductive tuning consists of a small copper washer cemented to the end of a $\frac{1}{4}$ -inch shaft of insulating material (Lucite or bakelite). The end of the shaft is cut at an angle of 45 degrees to mount the washer at 45 degrees with respect to the axis of the shaft and, consequently, 180-degree rotation of the shaft turns the copper washer from a position coaxial with the coil to one at right angles to it. The copper washer, acting as a single shorted turn, decreases the effective inductance of the coil as it becomes more closely coupled and

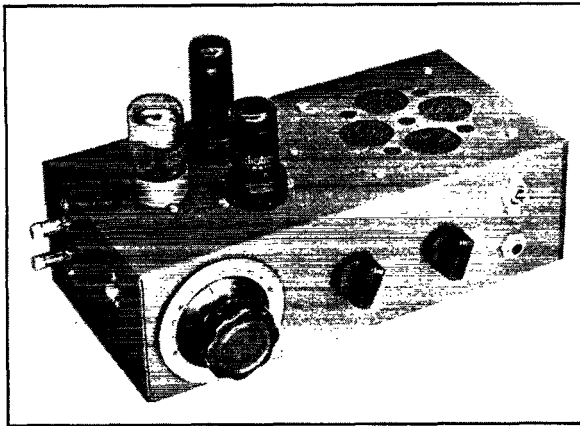


A view from the right-hand side of the compact receiver.

consequently tunes the system. The copper washer is made by drilling a $\frac{1}{8}$ -inch or so hole in a small piece of sheet copper and then cutting around the hole to form a washer of 7/16-inch outside diameter. The washer is fastened to the angled face of the shaft by Duco cement. Because the copper washer is larger than the shaft, the shaft must be pushed through the panel bearing from the inside of the box, but this can be done easily by loosening the panel bearing while sliding the shaft through. A fiber washer should be placed on the shaft before it is pushed through the panel bearing — the washer is later cemented to the shaft to serve as a collar to prevent the shaft's pulling through the bearing.

It is easier to check the performance of the receiver before the tuning loop is added, and with the large trimmer condenser used one should have no trouble hitting the 112-Mc. band after one or two tries. The trimmer will be set at about two-thirds capacity if the coil is right. The detector should go into the hiss condition when the regeneration control is advanced not more than two-thirds of its travel. It is well to try different values of capacity at C_3 , using the one which allows the detector to be worked at the minimum setting of the regeneration control without bypassing too much of the audio.

When the receiver is working and the tuning loop installed, the tuning range of the loop can be adjusted by moving the shaft in the panel bearing so that the loop is nearer to or farther from the coil. Moving the loop closer will increase the tuning range. It will be found that the tuning rate is slow when the loop is at right angles to



The 7A4 superregenerative receiver with built-in speaker has the detector trimming condenser mounted on the side. The audio gain control is mounted next to the tuning control (extreme left) and the regeneration control is between the volume control and the 'phones jack and on-off switch.

the coil and becomes faster as the loop and coil become more nearly coaxial. It is therefore advisable to set the band and bandspread so that the receiver tunes from about 111.5 to 119 Mc., since this will spread the amateur band over the main portion of the dial. When the shaft position has been found that will give the proper band-

spread, the fiber washer can be fastened to the shaft with Duco cement. When this is dry, the dial or knob can be attached to the outside end of the shaft. Unless you are lucky, there will be some play of the shaft in the bearing, resulting in a "sloppy" feeling to the tuning control. This can be cured by slipping two metal washers and a half-slice of rubber grommet on the shaft before the dial is slipped on. The dial set screw should be tightened when the shaft is being pushed out from the inside — the spring of the rubber grommet will then hold the collar (fiber washer) tightly against the inside of the panel bearing and will result in a tuning control that is firm without being sticky and which will stay put in any position. Fortunately, a common size of rubber grommet has a $\frac{1}{4}$ -inch hole so that the whole thing works out nicely. Don't put the grommet between the two washers — put the washers on first and the grommet next to the dial. If desired, a paper scale can be glued to the box and the megacycle and half megacycle points marked on it, for ease in spotting other stations and for convenient resetting.

The antenna coupling should be adjusted with the antenna connected, and it should be made as

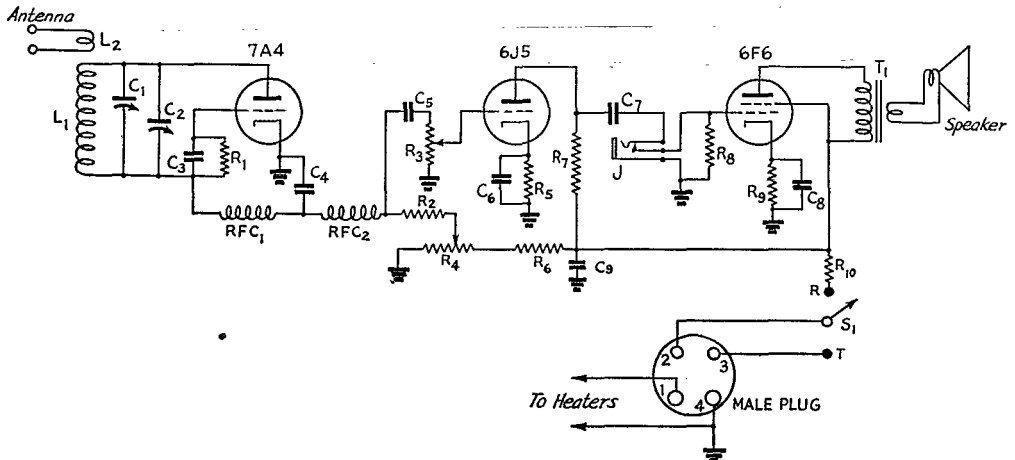


Fig. 2 — Wiring diagram of the 7A4 superregenerative receiver.

- | | | |
|--|---|---|
| C ₁ — 25- μ fd. air trimmer (Hammarlund APC-25). | R ₁ — 5 megohms, $\frac{1}{2}$ watt. | RFC ₁ — U.h.f. r.f. choke (Ohmite Z-1). |
| C ₂ — 5- μ fd. tuning condenser (National UM-15 with 2 stator plates and 2 rotor plates removed). | R ₂ , R ₇ — 25,000 ohms, 1 watt. | RFC ₂ — 80-mh. r.f. choke (Meisner 19-2709). |
| C ₃ — 50- μ fd. midget mica. | R ₃ — 0.5-megohm volume control. | S ₁ — S.p.d.t. toggle. |
| C ₄ — 0.006- μ fd. mica. | R ₄ — 50,000-ohm wire-wound potentiometer. | T ₁ — Output matching transformer. |
| C ₅ , C ₇ — 0.01- μ fd. paper, 600 volts. | R ₅ — 1500 ohms, $\frac{1}{2}$ watt. | Speaker — 4-inch p.m. speaker. |
| C ₆ , C ₈ — 10- μ fd. electrolytic, 25 volts. | R ₆ , R ₇ — 50,000 ohms, 1 watt. | L ₁ — $1\frac{1}{4}$ turns No. 14 enam., $\frac{1}{2}$ -inch inside diam., spaced diam. of wire. |
| C ₉ — 8- μ fd. electrolytic, 450 volts. | R ₈ — 0.1 megohm, $\frac{1}{2}$ watt. | L ₂ — $\frac{7}{8}$ turns No. 14 enam., $\frac{1}{2}$ -inch inside diam. |
| | R ₉ — 500 ohms, 1 watt. | |
| | R ₁₀ — 2000 ohms, 10-watt wire-wound, or higher. See text. | |
| | J — Closed-circuit jack. | |

tight as possible consistent with some reserve in the regeneration control, to take care of low voltages and other variables. As a final touch, several different detector tubes can be tried — the one which operates with the minimum setting of the regeneration control will be the best and will give the least radiation. New tubes of one make don't vary much, but old tubes and tubes of different manufacture will vary somewhat.

Our particular rig gave somewhat smoother regeneration by the addition of a 0.002- μ fd. condenser from the audio side of RFC_2 to ground, but this may not be necessary in every case and so wasn't shown in the diagram.

A 7A4 Superregenerative Receiver With Built-In Speaker

The second receiver, shown in the photographs and in Fig. 2, is a slightly more elaborate affair which differs from the first receiver mainly in the inclusion of an audio volume control and a built-in loud speaker. Minor differences include the use of a 7A4 detector (a slightly better but less common tube than the 6J5) and condenser instead of inductive tuning.

The receiver is built in a 10- by 5- by 3-inch chassis, with the tubes and speaker mounted on the 5- by 10-inch face. One side is used for a panel and the opposite side is left clean, in case one wishes to operate with the receiver resting on this side. The antenna terminals and the detector padding condenser are mounted on the left-hand side, and the four-prong power plug is mounted on the right-hand side. The only care necessary in laying out the chassis is to mount the tuning condenser and the padding condenser in such positions that their respective terminals come close together, to make the leads as short as

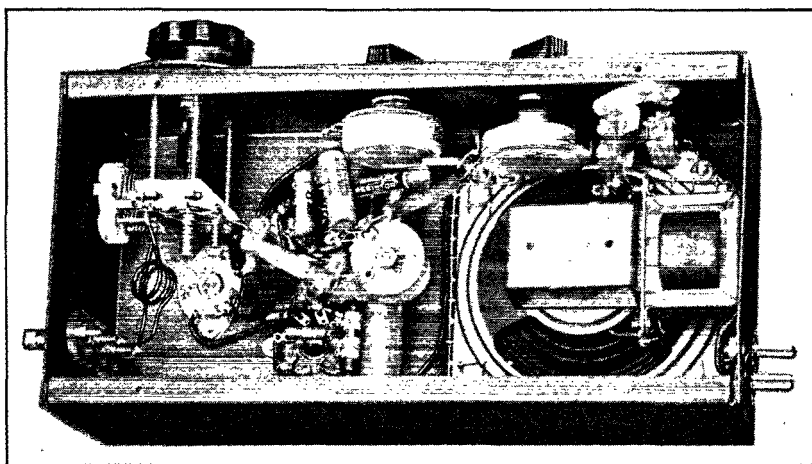
possible. The tuning condenser, C_2 , is supported back of the panel on long ($1\frac{3}{4}$ -inch) 6-32 screws, and the padding condenser is mounted directly on the side of the chassis. A bakelite shaft extension is fastened to the tuning condenser shaft and brought out through a panel bearing. The quench r.f. choke, RFC_2 , is supported between the two audio tube sockets on a $\frac{1}{2}$ -inch pillar.

Holes for the speaker can be arranged in any design that suits the aesthetic taste of the builder — the main thing is to provide enough opening for the speaker to work through. In both of the receivers described here with built-in speakers the grille cloth is backed up by $\frac{1}{4}$ -inch mesh wire screen to reduce the chances of damage to the speaker cone.

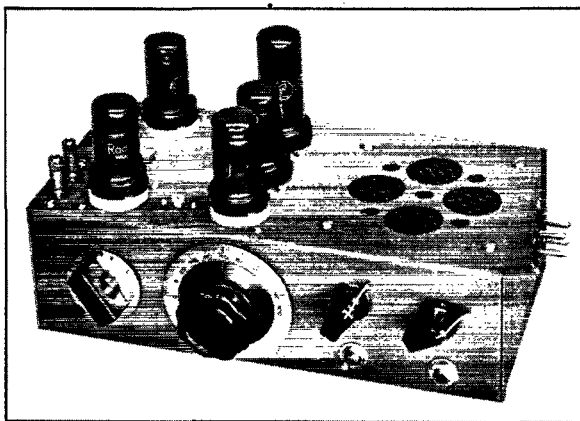
The same rules for wiring are followed in this receiver as in the first one described — each socket has a soldering lug placed under one screw, and all of the grounds for that particular stage are made to the lug. Most of the resistors and condensers can be mounted directly on tube or variable resistor terminals, and the entire wiring is sturdy, with the possible exception of the long speaker-transformer leads.

The coil, L_1 , can be trimmed slightly by squeezing the turns together or pulling them apart until the desired amount of bandspread is obtained, but aside from this and the adjustment of the antenna coupling there should be no need for any work on the rig. The antenna adjustment is made by moving the antenna coil, L_2 , closer to L_1 until the regeneration control must be set at about $\frac{2}{3}$ on for "supering" to start. This adjustment is of course made with the antenna connected.

For the experimentally inclined, different values of C_4 can be tried, in an effort to bring the regeneration point down to as low a setting as possible on the control. As pointed out before,



The underside of the 7A4 receiver shows the loud speaker mounted at one end of the 5- by 10- by 3-inch chassis. Note the power-supply plug at the corner near the speaker.



A five-tube superheterodyne receiver for 112-Mc. The large dial controls the main tuning condenser and the small dial is for adjustment of the mixer input tuning. The tube just above the mixer tuning control is the 6AC7 mixer—the i.f. tuning adjustment and the 6J5 second detector can be seen in back of it. The tube directly above the main tuning dial is the 6J5 high-frequency oscillator—to its left can be seen the oscillator padding condenser control. The two small knobs control volume (left) and regeneration.

the lower the input to the detector, the less will be the radiation from the receiver.

A Superheterodyne for 112 Mc.

The superheterodyne shown in the photographs and in Fig. 3 is somewhat more complicated and expensive than the receivers just described, but it is entirely free from radiation (in the 112-Mc.

band) and it has more selectivity than a simple superregenerative receiver. Its sensitivity is comparable to that of either of the other receivers, and its only possible drawback, aside from its expense and slight complication, is the fact that it uses a 6AC7/1852, a more expensive tube than any of the others and one that is not to be found in every radio store. More common tubes were tried as the

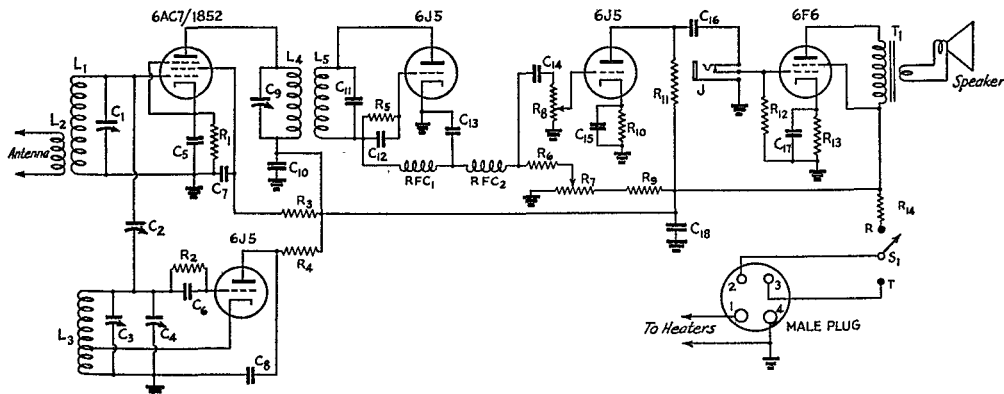


Fig. 3 — Wiring diagram of the 112-Mc. superheterodyne receiver.

- C₁ — 15- μ fd. midget variable (Hammarlund HF-15).
- C₂ — 30- μ fd. variable mica trimmer (Hammarlund MEX or equivalent).
- C₃ — 10- μ fd. midget variable (Hammarlund HF-15 with one stator and one rotor plate removed).
- C₄ — 25- μ fd. air padding condenser (Hammarlund APC-25).
- C₅, C₇, C₁₀ — 0.005- μ fd. midget mica.
- C₆, C₁₂ — 50- μ fd. midget mica.
- C₈ — 500- μ fd. midget mica.
- C₉ — 75- μ fd. air trimmer (Hammarlund APC-75).
- C₁₁ — 25- μ fd. low-drift mica.
- C₁₃ — 0.006- μ fd. midget mica.

- C₁₄, C₁₆ — 0.01- μ fd. paper, 600 volts.
- C₁₅, C₁₇ — 10- μ fd. electrolytic, 25 volts.
- C₁₈ — 8- μ fd. electrolytic, 450 volts.
- R₁ — 300 ohms, $\frac{1}{2}$ watt.
- R₂ — 10,000 ohms, $\frac{1}{2}$ watt.
- R₃, R₆, R₉, R₁₁ — 0.1 megohms, 1 watt.
- R₄ — 10,000 ohms, 1 watt.
- R₅ — 4 megohms, $\frac{1}{2}$ watt.
- R₇ — 50,000-ohm wire-wound potentiometer.
- R₈ — 0.5-megohm volume control.
- R₁₀ — 1500 ohms, $\frac{1}{2}$ watt.
- R₁₂ — 0.5 megohms, $\frac{1}{2}$ watt.
- R₁₃ — 500 ohms, 1 watt.
- R₁₄ — 750 ohms, 10-watt wire-wound, or higher. See text.

- T₁ — Output matching transformer.
 - Speaker — 4-inch p.m. speaker.
 - RFC₁ — 2.5-mh. r.f. choke (National R-100).
 - RFC₂ — 80-mh. (Meissner I9-2709).
 - L₁ — 2 turns No. 14, $\frac{3}{8}$ -inch inside diam., $\frac{3}{8}$ -inch long.
 - L₂ — 2 turns No. 18 enam. interwound with L₁ at ground end.
 - L₃ — Same as L₁; cathode tap $\frac{3}{4}$ -turn from ground end.
 - L₄ — 8 turns No. 18 d.c.c. close-wound.
 - L₅ — 12 turns No. 18 d.c.c. close-wound.
- L₄ and L₅ are wound on $\frac{3}{8}$ -inch diam. polystyrene form (National PRE-3) and are spaced $\frac{3}{8}$ -inch apart. See text.

mixer but the performance was so inferior that it could not be accepted. However, the receiver is highly recommended to any group which expects to be working at real close quarters where receiver QRM might be a problem. The improvement in selectivity is quite noticeable when the receiver is compared with a straight superregenerative receiver having similar bandspread, and the superheterodyne would be well worth considering by groups in large population centers because of the possibility of many nets working on different frequencies at the same time.

As can be seen from Fig. 3, the mixer is a 6AC7/1852, tuned to the 112-Mc. band by C_1 , and the oscillator is a 6J5 tuned approximately 20 Mc. lower. The difference signal is coupled to the second detector (a superregenerative 6J5) through the transformer L_4-L_5 . It will be noted that this i.f. transformer uses one fixed condenser and one variable condenser for tuning, since it doesn't much matter what the i.f. works out to be within rather wide limits. The primary is simply resonated to whatever frequency the secondary coil/condenser combination happens to hit. The 6J5 second detector then works into a two-stage resistance-coupled amplifier as in the other receivers.

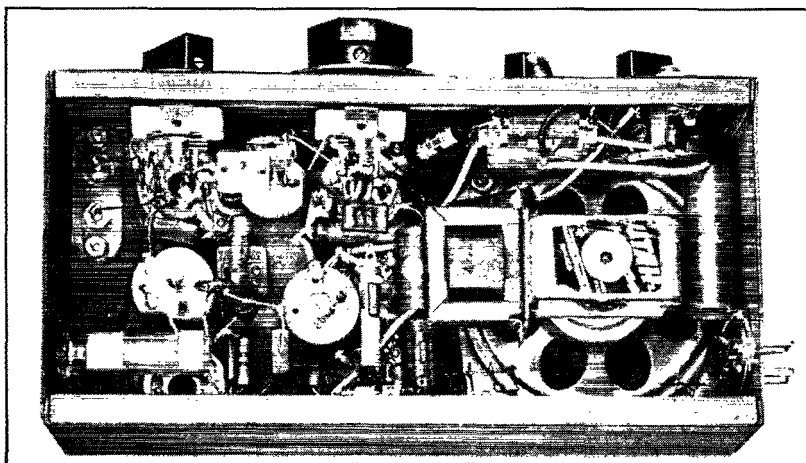
The receiver is built on a 5- by 10- by 3-inch chassis. A good idea of the arrangement of parts can be obtained from the photographs, and only a few points need mentioning. The oscillator coupling condenser, C_2 , is supported between the mixer tuning condenser and the oscillator handset condenser. The i.f. transformer is fastened to the side of the chassis. Its coils are wound on the polystyrene form and held in place by cement, the ends of the coils not being run through holes in the form as is usually the case. It is a simple

matter to wind the coils with extra wire at either end and bring these ends away from the coil, and then the coil proper can be fastened with cement or dope. The quench choke is supported on a brass pillar as in the other receivers.

Lining up the receiver is a relatively easy affair and shouldn't frighten even the newest amateur strange to the ways of the superheterodyne. The 6J5 oscillator tube should be removed from its socket during the first trials and no antenna need be connected. As the regeneration control is advanced, the detector should start to work as any conventional superregenerative detector, and a hiss will be heard. Tuning the primary condenser of the i.f. transformer, C_3 , it will be found that the hiss stops and that the regeneration control will have to be advanced further. Juggling the two controls, the setting of C_3 should be used that requires the maximum advance of the regeneration control, since as the primary is brought into resonance the voltage will have to be increased on the detector to make it "super." If the coupling is too tight between L_4 and L_5 , a setting of C_3 will be found at which it will be impossible to make the detector "super," and C_3 should be set a little to one side or the other of this setting, at a point where the regeneration control must be well advanced. If one makes the primary (L_4) capable of being slid along the form (as we did), the coupling can be varied until the proper coupling is obtained, but if one follows the dimensions in Fig. 3 no trouble should be experienced. If one has an absorption-type wavemeter or an all-wave receiver he can check the frequency of the second detector — if it is around 18–22 Mc. it will be satisfactory.

Once the second detector is lined up as de-

(Continued on page 80)



A view underneath the chassis of the 112-Mc. superheterodyne gives an idea of the arrangement of parts. Note the i.f. transformer in the lower left-hand corner. The tuning condensers mounted on the panel are insulated from the panel by fiber washers and ground only at the tube sockets.

Fort Monmouth's Own Ham Station

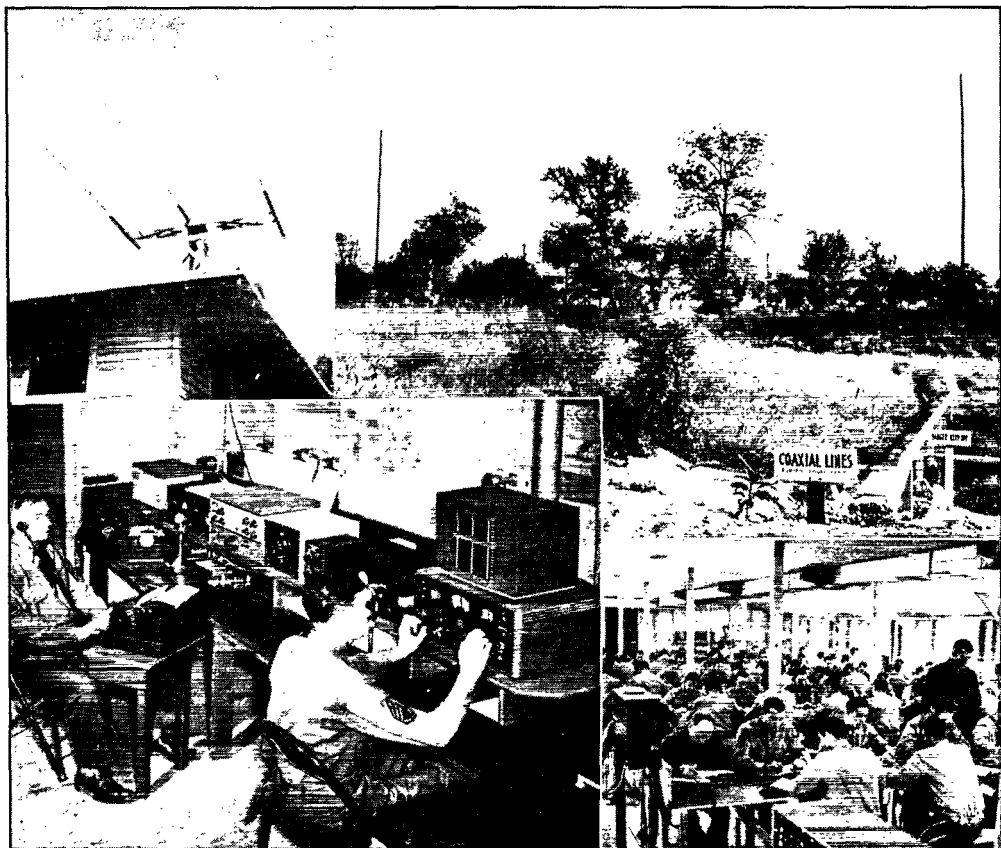
W2OEC Operated at Signal Corps Radio School by Soldier Hams

BY S. GORDON TAYLOR, W2JCR*

THE hundreds of amateurs who have contacted W2OEC and the many hundreds of others who are likely to do so in months to come may be interested to learn something of this unusual station and its mission in life.

W2OEC is located at the Radio School of the Signal Corps Replacement Training Center at Fort Monmouth, N. J. It is entirely government equipped and owned, yet is strictly a ham station in every sense of the word. It contacts only other ham stations, operates only on the ham bands, and is even licensed under the name of the in-

*2505 Aqueduct Ave., New York City.



Upper right—The antenna site at W2OEC is a swampy area several hundred feet from the shack. Two of the four 70-foot poles which support doublets for the 20, 40, 75, 80 and 160 meter-bands may be seen. The wood runways in the foreground carry the concentric lines out over the swamp from the point where they emerge from the ground.

Upper left—The rotary beam used for 20 meters has been elevated on a 65-foot pole since this picture was taken.

Lower left—General view of the two operating positions at W2OEC. In the foreground Staff Sgt. M. L. Fisher is scanning the ether at the controls of the SX-28 while Tech. Sgt. Foster types incoming and relay traffic at the NC-200 position. The black cabinets in each position are the HT-5 preamplifiers.

Lower right—A code class at Fort Monmouth. There are five such classes of 120 men each. These are graded for different code speeds, and trainees progress from one to another as their speed warrants.

dividual officer in charge — himself an old-time ham. It is likewise operated entirely by licensed amateurs drawn from the rookies in training at the Radio School and other schools of the Replacement Center, and from the Radio School's staff.

Its major variance from the typical ham layout is found in the completeness of the equipment, the flexibility of operation and in the efficient planning of everything pertaining to the station. Its purpose, too, is a little unusual in that it was established primarily to handle messages, via amateur radio, between the thousands of men in training at Fort Monmouth and their homes. Its secondary purpose is to provide operating practice and recreation for trainees who are licensed hams. These can assist in handling traffic, carry on personal rag-chews or participate in relay work, and are at liberty to operate the station during their leisure hours.

To insure effective facilities for traffic handling, W2OEC has two completely equipped operating positions, each with its own communications receiver and 450-watt transmitter. These transmitters are equipped for operation on all ham bands from 10 to 160 meters. Thus the two operating positions are entirely independent of one another so that two separate QSO's can be carried on at the same time, providing normal precautions are taken so far as frequency separation is concerned.

One group of antennas is located several hundred feet from the shack and includes half-wave doublets for 20, 40, 75, 80 and 160 meters. These are suspended from four 72-foot wood poles arranged in a great diamond. They are fed by individual concentric lines extending underground from the shack to the antenna site where they match into low-impedance cables. Near the shack is a Mim's 20-meter rotary beam. This is mounted atop a 65-foot wood pole and is rotated electrically from the operating table, where a coupled direction indicator dial shows the precise position at all times.

All feeders run to a terminal board in the shack. This accommodates terminal fixtures, relays, and the air filters and pumps by means of which the concentric lines are maintained automatically at an internal pressure of 50 lbs., dry air.

The station is under the supervision of 1st Lt. Preston W. Simms (W9DTF-W2KWH-W2OEC) and is in the direct charge of Tech. Sgt. A. L. Foster (K7BAQ-W7BAQ). The latter, after 27 years in Alaska as an operator in the Signal Corps and a ham of 13 years standing, still gets a real kick out of ham radio. The only drawback is that his code speed is getting slightly rusty — having tapered off to something in the vicinity of 50 w.p.m.!

W2OEC dispatches messages from the men at Fort Monmouth, accepts incoming messages for



Lt. P. W. Simms, Officer in Charge of W2OEC, at the mike. The standard Hallicrafters HT-4 transmitter, which is duplicated in the other operating position, is shown at the extreme right. This operates on five bands and puts out 450 watts on c.w.; 325 watts on 'phone. At the extreme left is a Meissner de luxe Signal Shifter (only partly showing) and next to it a multiple frequency standard for e.c.o. frequency checking. Note the convenient layout, with a place for everything and everything in its place.

them, and is always ready to cooperate in general relay work. It also maintains schedules in both the Washington and New Jersey AARS nets.

To hams who are worried lest amateur radio be closed down during these troublesome times, the fact that the Signal Corps has established its own amateur station at this time should be encouraging. It certainly would seem to indicate that ham radio is to remain a going concern, at least so far as the Army is able to see ahead.

CHRISTMAS

Greetings

TO ALL HAMS

*from the Crew
at Headquarters*

BOUND VOLUME XXV OF 'QST'

WE have a limited number of Bound Volume XXV of *QST*. This volume is made up in two sections, each containing six issues of 1941 *QST*. Handsomely bound and gold imprinted the complete volume is priced at \$7.50, postpaid.

P.O.W.

IT is reported that the following amateurs are being held as prisoners of war:

F. Lt. F. H. Babcock, G8LI, Kingswood, Surrey A.C. 1 M. R. Campbell, VK3MR, West Coburg, Australia.

R. M. Garrett, G3BP, London, England.



THANKS to the Carolinas' amateurs on 75 'phone who cleared the bands for us upon our recent 'invasion,' " says Dan Hamilton, op of the 68th Armored Regt., Ft. Benning, "especially the gentleman in Columbia who moved even though his QRM was causing us little trouble." Nice spirit, that. The War Department could chase us hams out if it wanted, you know.

Of course, from a practical standpoint it seems to us the presence of amateurs in channels being used by military forces is good training. It provides Army ops a bit of a struggle to copy through QRM — the kind of test they'd get in actual service. When the Army is on maneuvers no one builds their bridges for them, nor are their messengers let go unmolested by the opposing forces — and the radiocommunications work shouldn't be all picnic, either.

Speaking of the maneuvers, Pvt. Bent, 1JPK, was operating for the 57th Sig. Bn. of Ft. Bragg, when his superior filed a message to a nearby station concerning an attack of "enemy" troops coming his way. OM Bent sent the message through terrific atmospherics, but the only portion of the acknowledgment he could copy through the X was, "I'm going to ZGR for chow." Seems as if the lad believed Napoleon's statement that any Army marches on its stomach!

Congratulations to Fred H. Schnell, W9UZ, promoted to the rank of Commander, USNR!

SIGNAL CORPS

THREE more of the boys going to England in the new electronics battalion are: Lts. Dowd, 6JUL; Watts, 7ANR and Bukowski, 8NIC. Lt. Sullivan, 4DTS, has duties in the post signal office at Ft. Benning, Ga. At Ft. Monmouth we find Lt. Holcombe, 9SDP; Pvts. Choate, 6PJR; Schoonover, 9UFI; Bunce, 8IKA; West, 3CHK and Cpl. Odom, 5IRF, in the various signal schools. Pvt. Osborne, 8VHL, operates with the 854th Sig. Svc. Co., Okla-

In the Navy Department's report of personnel lost on the *Reuben James*, a destroyer recently sunk up Iceland way, was the name of J. F. Baurer, Chester, Pa. Om Baurer was a CRM, USNR, and W3ATK, a member of the Chester NCR unit called to active duty in December, 1940. So far as we know, he is the first Navy ham to be lost in the current emergency.

We regret also to report the death on November 17th of Major R. E. Pirtle, K6OAY and ex-W9SZ, as a result of a bomber crash near Salt Lake City.

homa City, while Cpl. White, 2BCE, has wire telephone duties with the 621st Ordnance Co., Proving Ground, Ill. In various signal work we find Pvt. Street, 4HCF, at Ragley, La.; Lt. Armstrong, 8MTL, at Ft. Meade, Md.; Capt. Snouffer, 2LLS, Ft. Richardson, Alaska; Pvt. Paup, 6TRD, Camp San Luis Obispo, Calif.; Lt. Saibara, 5FLR, Ft. Houston, Texas; Pfc. Nielsen, 2KYT, U. S. Engineers, Bermuda; Pfc. Dempster, 2GSD, Benedict Field, V. I.; Lt. Blett, 6SZI, Ft. Lewis, Wash.

NAVY

IN THE services, hams can't get away from radio, apparently. RM3c Haas, 9JXA, was hospitalized at San Diego off the *New Mexico*; it wasn't long before he was placed in charge of the hospital radio installation with its 650 sets of headphone lines to the various rooms! At the Naval Training School in San Diego, S1c Ross, 8UGJ, Vacovelli, 1IKB, and Schmidt, 5JYE, are studying communications subjects. At the Los Angeles school we find Lt. (jg) Brooks, 6CHU; Ens. Baranger, 6MCO; RM3c Tucker, 9UXN; Spargo, 6HKX; Seamen Witzl, 9VSL; Balsley, 6ACM; Wilson, 9LWT; Blatchford, 6TZG; Boyte, 6UAS; Perkins, 6UAJ; McClellan, 9KDV; Morrison; Baker, 7IHB; Russell, 6TFT; Stowe, 9VWS; and Worthey, 5JPZ. Enrolled in special work at M. I. T. are Ensigns Headrick, 5CPB, and Conte, 3JRL. Students at the Naval Materiel School, Washington, include Sgt. Wade, 6SHX (Marine Corps); RM1c Revillec, 1MVO; West, 9PVZ; RM2c Weiting, 9YDZ; and White, 7HPV. New arrivals at Noroton, Conn., are CRM Sowers, 2BYL; RM3c Reittinger, 8QXB; Seamen HONEYCUTT, 4IBF; Asher, 2NXB; Stangel, 2JZH; and Roulland, 1MQD.

Reunion

Noticing the stray in November *QST* concerning William *Low Watt* Webster, W4HJQ, R. B. Murphy, W4IP, of Miami, began wondering if he could be a 1922 Navy buddy of the same name. He called "Doc" Kane, W4KK, to see if he chanced to know W4HJQ and was amazed to discover that "Doc" had a daily schedule with him. When W4KK referred to Webster as the "red-head," OM Murphy knew he was on the right track, and he was at W4KK's that very evening to work his old buddy on the schedule — a get-together for the first time since 1922 when they parted company in Canton, China.

Which reminds us that one evening recently, a conscientious amateur observer overheard W4HJQ talking about war matters, mentioning the location of battleships, telling of the transfer of Admiral ——— to the Pacific fleet, and so forth. We were aghast to learn upon receiving the observer's report that a Navy CRM would be discussing such subjects over the air and immediately wrote "Low Watt" please to discontinue that sort of conversation so's not to get the military departments peeved at us. Imagine our embarrassment to learn from Webster's reply that he was speaking of events in World War I, that the mentioned boats were since out of commission or under different names, and that Admiral ——— has been dead for fourteen years!

After attending the radio engineering school at Bowdoin College, Brunswick, Maine, these officers went to the Naval Radio Laboratories at Anacostia, D. C., for further duty: Lt. (jg) Chace, 6BBW; Ensigns Baluta, 2BMM; Mayer, 3FND; Rankin, 4EPU; Harlow, 5CVO; Spencer, 5INL; Bisby, 6NCO; Bookman, 6NIW; Heaps, 9SRP; and Burda, 9TUZ. Ens. Hanson, 8UNP-9RLL, is a new arrival at Bowdoin. Lt. (jg) Cheek, 4ADN, is Asst. D.C.O. in San Juan, P. R. CRM Stein, 3CL, awaits completion of the Cape May radio station, whose operation he is to supervise. Lt. (jg)

(Continued on page 68)

Predicted Distance Ranges for Amateur Radio Communication in January, February, and March, 1942

NATIONAL BUREAU OF STANDARDS, WASHINGTON, D. C

THESSE predictions are for distance ranges in four amateur frequency bands, regularly useful for long-distance sky-wave transmission during January, February, and March, 1942. They are based on long-distance reception observations at various places and on ionosphere and field-intensity measurements at Washington. They apply specifically to paths traversing the latitudes of continental United States, but can also be used to indicate roughly conditions over somewhat wider latitudes. For information on radio-wave transmission see pamphlets obtainable from National Bureau of Standards, Washington, D. C., "Radio

transmission and the ionosphere," and "Distance ranges of radio waves."

The graphs show both the upper limits of useful distance and the skip distances. The dotted-line graphs represent the upper limits of useful distance. In general, for greater distances the wave energy is so much absorbed that transmission is not good.

The solid lines on the graphs for 7 and 14 Mc. show the skip region; the horizontal solid lines shown at distances of a few miles indicate the upper limit of distance covered by ground wave only, and the remainder of the solid-line graphs

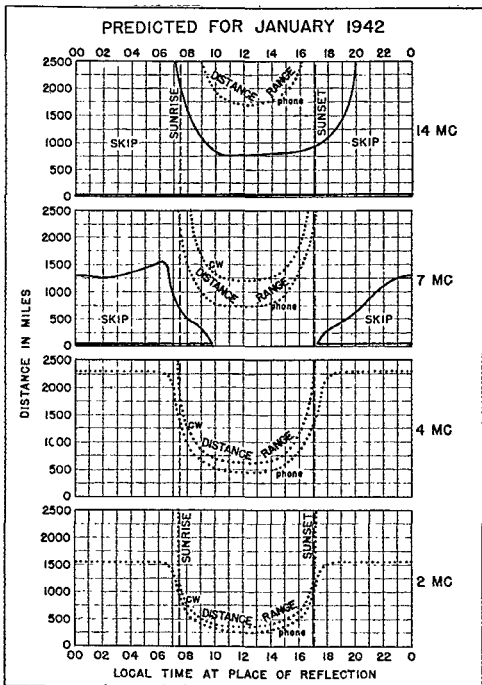


Fig. 1. Distance ranges for radio wave propagation via the regular layers of the ionosphere, predicted for January 1942. The solid-line graphs show the skip region; the dotted-line graphs show the upper limits of useful distance. The 28- and 56-Mc. bands will be useful only for local transmission (optical and quasi-optical paths).

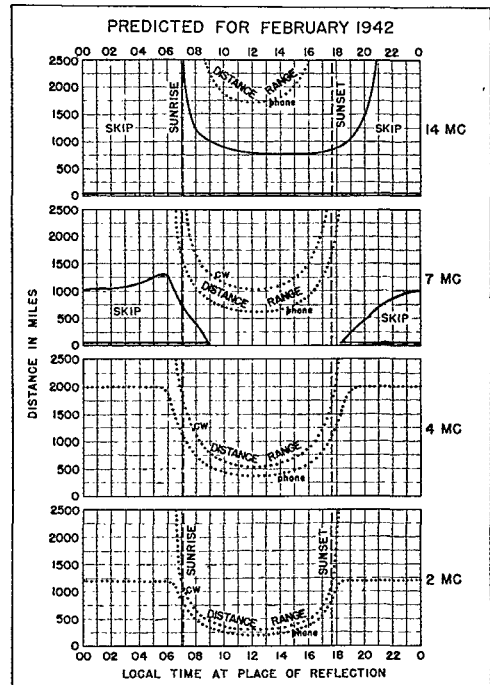


Fig. 2. Distance ranges for radio-wave propagation via the regular layers of the ionosphere, predicted for February 1942. The solid-line graphs show the skip region; the dotted-line graphs show the upper limits of useful distance. The 28- and 56-Mc. bands will be useful only for local transmission (optical and quasi-optical paths).

indicates the skip distance. Good transmission is not regularly possible within this region, which is marked "skip" on the graphs, but sporadic and weak fluttery ("scattered") transmission is at times achieved there.

The dotted-line graphs are labeled "phone" and "c.w." They differ because a greater field intensity is needed for 'phone reception than for c.w. reception. These curves are based on 100 watts radiated power, both for 'phone and c.w. Higher-power transmitters can transmit to distances greater than shown by the graphs; lower-power transmitters to distances not so great. For example, in order to produce a good c.w. signal at the distance shown for 'phone, a power of but 2 watts would be necessary; to produce a good 'phone signal at the distances shown for c.w., a power of about 8 kilowatts would be required.

The graphs of upper limit of useful distance are shown as definite lines but they are merely averages of conditions which vary widely. Variations at the receiving station, of "static," type of receiver, antenna directivity, and other conditions may cause the distance ranges to vary by a factor of two or more. These graphs are for ionospherically quiet days; on days of ionosphere storms the distance ranges may be considerably less.

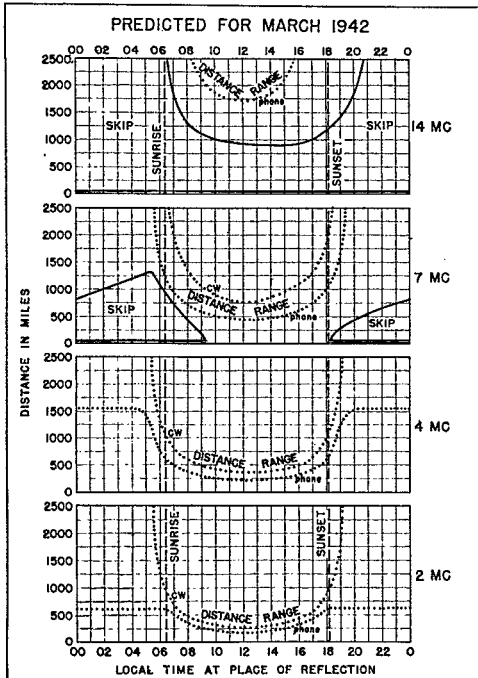


Fig. 3. Distance ranges for radio wave propagation via the regular layers of the ionosphere, predicted for March 1942. The solid-line graphs show the skip region; the dotted-line graphs show the upper limits of useful distance. The 28- and 56-Mc. bands will be useful only for local transmission (optical and quasi-optical paths).

The skip-distance graphs are also averages for ionospherically quiet days, and may vary from day to day as much as 25% from the values shown. For example, at 6 P.M. on a day in March, 1942, the average skip distance on 14 Mc. will be 1200 miles; the skip distance will almost always be greater than 900 miles and almost never greater than 1500 miles. These variations are caused by changes in the ionosphere, and not by conditions at the receiving station. On ionosphere-storm days the skip distances will be considerably greater than the average.

As an example of the use of the graphs, let us consider the 7-Mc. band at 0800 in February, 1942. Ground-wave transmission will be regularly useful out to about 50 miles. From here out to 400 miles, transmission by the regular layers will not be possible because of skip. In the range from 400 to 1100 miles 'phone transmission will be good, and in the range from 400 to 1700 miles c.w. transmission will be good. The intensity decreases gradually with distance in this range, and beyond 400 miles for 100-watt 'phone and 1700 miles for 100-watt c.w., the intensity becomes too small, because of absorption, to be useful.

In using the graphs, the time to be used is the local time at the midpoint of the path. For example, a station in Nebraska wishing to transmit to Washington, D. C., at 0800 CST (about 0730 Nebraska local time and 0900 Washington local time) would have to consult the distance-range curves for 0815, while if he wished to transmit to San Francisco at the same time (0600 San Francisco local time) he would have to consult the curves for 0645. It should be noted, however, that transmission conditions are the same in opposite directions over the same path at the same time. Provided receiving conditions and apparatus are not widely different at the two ends of the path, if a station can be heard it can be worked.

Winter-type transmission conditions will prevail during January, February, and part of March; these include greater distance ranges because of low absorption and low "static," and skip distances short during the day and great at night, for transmission via the regular layers. No regular 28-Mc. transmission will occur, and indeed no more such transmission may now be expected for several years, because of the relatively low solar activity associated with the approaching sunspot minimum. The month of March will mark the beginning of a transition from winter to summer conditions, characterized by smaller distance ranges because of greater absorption and greater "static," and lengthening of the daytime skip distance and shortening of the night skip distance. In March, also, there may be expected an increase in ionospheric storminess, which is usually small during the winter; this causes both longer skip distances and shorter distance ranges, and thus decreases the distances over which good transmission is possible.

Soldiers & Sailors and Amateur Radio

BY EMIL H. FRANK *

Perspective: There are to be more than 400 USO units over the nation, each near an Army camp or Navy base. Responsibility for their operation is apportioned amongst the agencies which constitute USO: YMCA, NCCS, Salvation Army, Jewish Welfare Board and YWCA — with National Travelers Aid Assn. collaborating. The facilities of all centers are available to any member of the military forces. NCCS has been the first agency to get going with amateur stations at the centers assigned to it. Some of the other agencies plan a similar course and are already utilizing amateur radio operators and facilities for establishing contacts between service men and their families. This article reports the NCCS program and the opening of its first station.

AMATEUR radio is playing a vital part in the program of those United Service Organization clubs which are operated by the National Catholic Community Service. Early in November, the first USO amateur radio station in the nation was dedicated in the USO club operated by the NCCS at New London, Conn. With the approval of the chairman of FCC and the general staffs of the Army and Navy, NCCS has entered the field of amateur radio both as an adjunct to its wide educational program and as a service to the men of the armed forces. Its rapid progress is accounted for by a brief glance at its personnel. Dr. Franklin Dunham, its executive director, is on leave of absence from the educational directorship of the National Broadcasting System. Working with him in administering the nationwide radio project is Martin H. Work, NCCS radio consultant on leave from Hollywood writing-producing duties.

The American public officially began hearing about the program with the nationwide broadcast of the dedicatory ceremonies of the first USO amateur station at New London, November 10th. Warmly received by army and navy officials, the station was assigned the call W1NTV. During the Mutual Broadcasting System broadcast of the ceremonies, Major General Dawson Olmstead, chief of the Army Signal Corps, spoke via a special hook-up from the studios of WOL in Washington. His message was given in connection with the thirteenth annual Armistice Day message contest as transmitted from the AARS

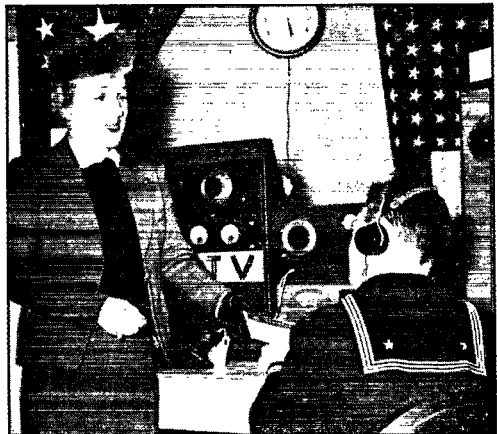
*Dept. of Public Relations, National Catholic Community Service, Washington.

net control station WLM-W3USA. Others on the broadcast were Rear Admiral Clark H. Woodward, attached to the Office of Civilian Defense; W. Spencer Robertson, chairman of the executive committee of USO; and Miss Carol Bruce, screen and stage star. The station was blessed with the liturgical ceremony used last by Pope Pius XI in dedicating the Vatican radio station HVJ.

As indicated in a recent issue of *QST*, the USO-NCCS stations will work in conjunction with ARRL nets and the AARS. Using these two networks to relay messages, NCCS installs its specially-constructed stations in its clubs located next to military and naval posts and bases. The equipment is placed at the service of the man in uniform as a means of providing him a message service to his family and friends, and many soldiers have contacted and received answers from their families within a 20-minute interval. The use of the amateur net-works will prove a great aid in maintaining morale, according to Army and Navy officials.

Novel equipment for the USO-NCCS stations is nearing completion at Erco Radio Laboratories (Edward Ruth), Hempstead, L. I. The NCCS expects to install at least 125 of these standard stations throughout the United States and possessions, at a cost of about \$400 each. The new gear houses both transmitter and receiver in one modernistic steel cabinet, compact enough to sit on a standard writing desk with plenty of space

(Continued on page 60)



The first mother to send a message by a USO station. Mrs. Iveagh Lewis of New London files a message for her son, PFC Warren Lewis, USA, with RMIC Henry Kurtz, USN, president of the NCCS amateur radio club at New London.



ON THE ULTRA HIGHS



CONDUCTED BY E. P. TILTON,* W1HDQ

EXCEPT for a brief opening of the five-meter band on the evening of November 1st, the Ninth U.H.F. Roundup was a rather quiet affair. Over most of the country there was little, if any, atmospheric bending, with the result that long relays (except for a few which were completed by snappy work when Five was open) were almost completely lacking.

A message from W9ZHB, Zearing, Ill., addressed to W1HDQ, made the grade when W2BYM worked ZHB. Another, addressed "to any East-Coast station" by W9NFM, Solon, Iowa, was taken by W3AXU and relayed, via your conductor, to W1DJ, Winthrop, Mass. A complete round-trip from W3AXC, South Bound-brook, N. J., to W1MEP/1, Glastenbury Mt., Vermont, and return consumed less than fifteen minutes. Out in Arizona, W6QLZ/6, W9KBM/6, W6PCB/6, and W6OVK had a circuit of nearly 300 miles functioning entirely on 112 Mc. Some very respectable scores were run up on 112 Mc. in the New York, Boston, and Chicago areas, and we even had some reports of 112-Mc. participation by W4's AQ, HAD, FYI, and BYR in Tampa. But on the whole the response was not all that we had hoped for.

These Relays always thaw out quite a bit of extra activity, but very few operators seem to

*329 Central St., Springfield, Mass.

go in for active participation, and even fewer take the trouble to report results. Whether these u.h.f. contests are continued or not will depend upon you — the fellows (and girls, for we have a few u.h.f.-minded YLs now) who work the various u.h.f. bands. Do you want this sort of activity? If so let's have your suggestions — and your reports! The Marathon, thoroughly established as a successful and popular activity, will be continued in 1942 with only minor changes. Rules appear elsewhere in this issue.

Aurora and sporadic-E DX were combined in one evening on Oct. 31st. Distortion of 'phone signals coming over anything but purely visual paths was in evidence most of the time between 7 and 9 p.m., and quite a number of c.w. contacts were made over the usual aurora distances in W1, 2, 3, 8, and 9. In general it was a mild workout in comparison to the splurge of Sept. 18th and activity quieted down by 9:30. Suddenly, around 10:45, Ten began to show some really short skip, and a "CQ-DX" on Five netted your conductor a new state when W9RBK, Newport, Ky., came back. Yes, it appears that band openings can happen anytime! Apparently Five was open for a period of about thirty minutes, but activity was practically nil and no other contacts have been reported, though skip signals were heard by W1LSN and W2BYM at this time.

Realization of the part that u.h.f. operation must play in civilian protection, and a general awakening to the fact that actual real-life use of our services may not be far off, have resulted in some very serious effort directed toward perfecting our local organizations in many parts of the country. Here are scattered progress reports:

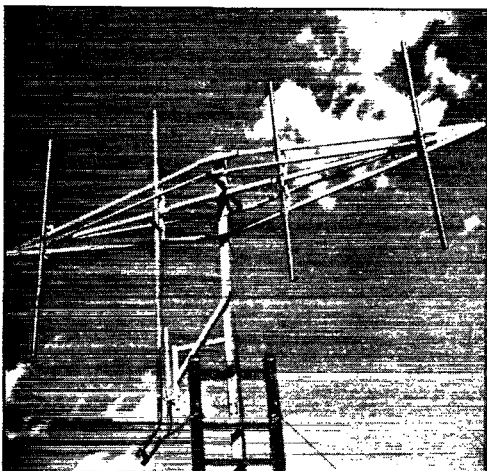
Schenectady, N. Y. — W2HZL, Assistant E. C. for u.h.f., reports 112-Mc. drills each Wednesday night. W2's BRS, BKW, MJT, IOF, KUG, GYV, NAD, KSA, GTC, CYW, MSX, HCV, HZL, W8SFC/2, W8EOP/2, W9SVA/2 and W1MEP, getting practice in handling plain and numbered-text messages. Outlet to New England via W1MEP, Glastenbury Mountain, Vermont.

Malden, Mass. — Mystic Valley Radio Club, W1KAO, directing 112-Mc. Emergency Net with W1's FSN, LEN, JEL, LO, KP8, AOP, HXY, LYH, MZT, GMJ and JIQ enrolled.

New Jersey — ARRS 112-Mc. New Jersey Net meets Mondays at 7:45 following ZCVA and ZCVZ rebroadcast by W2OEN and W3HOH. Ten members at present.

Rochester, N. Y. — W2NNT/8 reports 112-Mc. Net in process of organization. About twelve stations to start, with more soon.

Chicago — W9PNV reports appointment of W9FXB by Mayor Kelly as coordinator of CD communications. Ten fixed and four mobile stations at present taking part in drills, with a great increase in participation expected in the near future.



No close spacing for W2CUZ, Yonkers, N. Y. Radiator is "J" fed, with reflector and two directors 1/4-wave spaced. Elements are two-inch copper pipe. Note bonding wire connecting center of each element for complete grounding.

Waiialua, Hawaii — K6MVV reports that he and K6PIR are equipped for mobile service on 56 Mc. K6PCF and K6EWA have gear for 56 Mc. nearly completed. This group is interested in making connections with stations in and around Honolulu for emergency work on Five.

Springfield, Mass. — 56-Mc. Net demonstrated, in first workout Nov. 6th, that it offers Springfield a reliable auxiliary cruiser-car system. W1KK, operating a 25-watt rig from Municipal Tower, directed mobile stations AZ, NH, DNT, AVK, IOZ, and DYA to spots which are notably difficult for the city's cruiser cars. The boys came through in such convincing fashion as to leave no doubt of their dependability in any emergency which might disrupt the local police radio system. Complete mobilization of all amateur facilities now under way in regular meetings and over-the-air discussions.

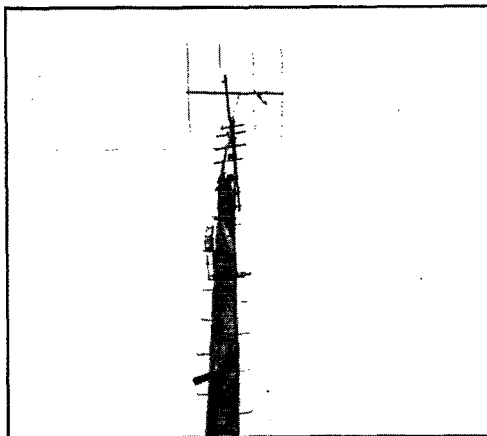
One of the greatest problems we have to face is the lack of suitable emergency power supplies in anything like the quantity we need. One solution lies in the salvaging of the vibrator supplies now lying as junk in the back rooms of countless radio service shops. A worthwhile venture for any radio club would be the searching out of this material and the making of necessary repairs to put it into emergency service. How many old car receivers can you round up? New vibrator packs and genemotors are already hard to get, and soon may be completely unavailable. We shall have to learn to be resourceful in our adaptation of existing gear, once more, as were all hams of old!

HERE AND THERE:

The emphasis placed on working DX on Five in recent years has undoubtedly brought many to the band who would otherwise never have taken the trouble, but it has had one bad effect — it has caused many of us to lose sight of the fact that, after all is said and done, Five is still a local band. DX is swell, but unless we keep our own local circle active the population of the band dwindles to a point where many DX opportunities are missed simply because there are no stations active when the conditions break. And local activity, by itself, is worth some real effort to keep going.

Activity, like charity, begins at home. Such was the idea in back of the organization of "The Horsetraders" as a local five-meter group back in 1935. This nebulous organization, unique in that it has no constitution, no bylaws, no officers, and no treasury, has served well the ideal of good fellowship on Five. It has now grown to include members scattered from Boston to Washington, D. C., with "honorary members" all over the country. It even boasts two British members in G2IS and GM6RG. Each Tuesday night the gang convenes on Five under the guidance of local key stations: W1FLQ in the Connecticut Valley, W2AMJ in the New York-New Jersey section, and W3OR for the W3's. Participation in these roundups is not confined to actual members; the meetings are open to anyone interested in the promotion of activity on Five. Want to renew acquaintances, ask some questions, try out a new antenna, or just enjoy a friendly evening with the gang? Then put that rig on Five next Tuesday at 7:30 and watch for "CQ Horsetraders" from one of the three stations mentioned above. You'll have plenty of company!

Probably the most duplicated directive array in use on Five is the 4-element "W6QLZ Beam." Following its description in *QST* last May this antenna has appeared in all sections of the country. Probably no user has been more successful than W2BYM, Lakehurst, N. J. A glance at Mel's Marathon score, especially the states-worked column, is ample proof of the performance of the antenna. It also proves that here is one of the most on-the-job guys on Five. We doubt if Mel has missed a single band opening this year, and his local coverage is the best of any W2 now active on



The 4-element array of W8CIR, Aliquippa, Pa., is 82 feet above ground. It is of the W6QLZ design.

the band. Those 600 watts to TW-150s, Hallicrafters 8-27 receiver with acorn preselector (a re-vamped National One-Ten), and 8-element vertical array don't do any harm, either!

Other 4-element arrays are seeing service at W3AXU, Trenton, N. J., and W3OR, Essington, Pa. The latter has his rigged up so that it can be used in any position; horizontal, vertical, and points in between. The whole structure weighs 375 pounds and has stood an additional human load of 837 pounds! It is 57 feet off ground.

One of the huskiest 112-Mc. signals from out on Long Island is that of W2GAH, Westhampton Beach. Joe runs about 100 watts to 812s feeding a dipole 80 feet off ground. A beam of some sort is soon to go up to 110 feet. W3HOH, more than 100 miles distant, reports reception of W2GAH consistently. Ken says that numerous crystal rigs of moderate power, many of them using 815 finals, are appearing on 2½; and converters are becoming more popular, particularly on the New Jersey side of the Hudson.

W2OEN, Middletown, N. J., is now using f.m. With about five watts of carrier, excellent reports are being received from stations having f.m. or r.c. superhets. "Mid" notes an increase in the use of m.c.w. on 2½. W9BBD/2 has a 75-watt f.m. rig at Eatontown, N. J. He hails from Fargo, N. D., and is now at the Signal Corps Lab. at Ft. Monmouth.

North Carolina has been one of the few states having no representation on Five in recent times. This condition is now remedied by W4HEH of Greensboro, who got going in the September aurora session to give W9ZHB another state. W2AMJ was heard, but a dinner was scheduled for ARRL's Budlong that night, so Smith could not get in on all the fun. (Note to League officials: Stay out of North Carolina during aurora displays — that's one state we haven't got yet!) Rig at W4HEH ends up with T-40s at 250 watts, feeding a 4-element Ozark-Net array.

U.H.F. RECORDS

Two-way Work

- 56 Mc.: W1EYM-W6DNS, July 22nd, 1938 — 2500 miles.
- 112 Mc.: W2MPY/1-W1JFF, August 21, 1941 — 335 miles.
- 224 Mc.: W6IOJ/6-W6LFN/6, August 18, 1940 — 135 miles.
- 400 Mc.: W6IOJ/6-W6MYJ/6, September 14, 1941 — 60 miles.

U.H.F. MARATHON

Call	Contacts Through November 15th			Score	States 41
	56	112	224		
WIBCT		100		516	3
WIDJ	129	106		1072	12
WIDL	78			626	17
WIEHT				535	16
WIEKT	123			953	16
W1HDQ*	254	146	4	2391	30
WIKLJ	196	159		2867	26
WILFI	30	172		900	7
WILLL	163	117		1982	25
WILMU		108		432	2
WILSN	95			946	14
WIMBS		313		1252	3
WIMEP	52	30		664	10
W2ADW	1	170		1225	6
W2AMJ	191			1680	22
W2BYM	217	56		2262	30
W2COT	120	57		776	6
W2DZA		393	5	1528	6
W2LAL	99			693	9
W2LXO		327		1377	5
W2MGU		210		876	4
W2MIV	56	263		1057	9
W2MQE		120		489	2
W2OEN		194		1073	6
W3ABS	59	1		232	5
W3ACC	103	26		590	15
W3AKC	32	6		167	6
W3AXU	144	20		1214	21
W3BZJ		268		1576	6
W3CGV	99	12		846	16
W3GJU	67	5		339	10
W3HOH	99	396		2211	13
W4FKN	34	12		322	12
W5AJG	152	2		1723	25
W6ANN	63	265		1974	14
W6NCP		205		205	1
W6OVK	78	11		1725	23
W6QKM	4	91	1	366	1
W6QLZ	56	21		1084	16
W8CIR	131	10		2416	26
W8KKD	113	59		1676	21
W8KWL	31			469	15
W8MHM	3	29		243	1
W8QCS	63			848	19
W8RUE	41	19		718	13
W8TDJ	61	2		599	13
W8UUY		10		150	1
W9ARN	89			1296	24
W9BDL	90			1383	23
W9LLM	94	45		1094	16
W9PK	106	1		1052	25
W9PNV		121		736	2
W9YKX	93			1383	26
W9ZHL	74			1052	19

Ninth Period Winner: W1KLJ, 590 Points.
Tenth Period: W3HOH, with four monthly certifi-
cates won to date, is at the top with 174 points.

* Not eligible for award.

W5FYF, Oklahoma City, says that CBS lines were very noisy during the evening of October 31st, going dead at 5:19 and 6:04 CST, and the United Press teletype "looked like a couple of four-year-old kids were playing with it." Yet aurora DX reports are always confined to the North-east and Middle West. Why? Vance reports some 112-Mc. activity in Oklahoma City by W5FRL and W5JHO. FRL has a tuned-filament oscillator using a pair of HF-100s and a mobile job which can be used on either 56 or 112 Mc. by applying filament voltage to either the HY-69, 56-Mc. final stage or to the HY-75 112-Mc. oscillator. JHO has an HY-75 rig on 2½ and a five-meter rig with a 6L6 final.

W6QG, Santa Ana, Cal., says that Five appeared to be open during the evening of November 1st, though no DX contacts were made. Ten-meter skip from Arizona was strong, and a commercial harmonic was heard by both W6QG and W6AVR on 55.25 Mc., signing KGT8/WEL2.

Armistice Day, 1941, had more than its ordinary meaning for W6QLZ and W6OVK, for November 11th marked the completion of one solid year of daily work between Phoenix and Tucson, Ariz., on 56 Mc. The first contact between these two was the result of months of experimentation with

antennas and other gear. In the year of daily contacts well over 500 skeds have been kept, with never a miss due to natural causes. Tests have been conducted at every hour in the day and night, in all kinds of weather. They now feel free to assume that this 107-mile hop can be called consistent! And enough work has been done on 2½ to indicate that this is an any-day-any-time proposition as well. Unlike other sections of the country, in Arizona the winter season produces the best signals, levels averaging about two S-units higher in winter than in summer. Until November 16th, all work had been with horizontal antennas, but on this date a vertically-polarized signal finally made the grade on 112 Mc.; W6QLZ using a coaxial, with W6OVK and W6SLO using vertical extended double Zepps.

It has been weeks since we've received a word from any of the W7's. There must be some activity out there, fellows — how about letting the gang in other sections of the country know about it?

W8RTW, Elmira, N. Y., hasn't had much luck in the U.H.F. Relays. Last summer he called 145 CQS from a portable location without getting an answer, and in the November 1st affair he heard no signs from the home QTH, though skip was short on Ten. Johnnie was just about in the middle of the path between the W2's and W9's, who seemed to have had the Saturday-night opening pretty much to themselves. He was hearing the ten-meter short skip just as well with no antenna on the receiver as with it properly connected! The only signal heard on Five was the f.m. station on 55,750 about which so many have inquired. For those who have listened expectantly for hours, hearing only "This is the National Broadcasting Company . . .," with no signature following, that is the frequency-modulated sound channel of NBC Television, W2XBS, located in the Empire State Building, New York City. With an antenna nearly 1200 feet in the air (and plenty of kilowatts up there, too) this station, now running almost every evening, is a splendid indicator of band conditions. The f.m. broadcast stations are quite reliable barometers, too.

After a promising start, with a successful contact on the first try, the W8PK-W1HDQ skeds or 56 Mc. have been a washout since the favorable inversion conditions of early fall left us. They will be continued each Tuesday and Friday night at 8 P.M., however, with the hope that occasional contacts may be made.

A contact on 112 Mc. between W8HNN, Niagara Falls, N. Y., and W2NNT/8 of Rochester on October 20th served as a stimulus to activity in both cities and in the surrounding country. W8HNN runs crystal-controlled HK-24s, while the rig at W2NNT/8 is an 815 s.e.o. at 60 watts. Now active on 2½ in Rochester and vicinity are W8's PK, JIC, VOX, OGC, NOL, WME, WIL, MYT, TNR, UIB, and AFQ. The 75-mile work of W2NNT/8, the result of efficient gear and antennas at each end, has helped to bring many of the gang beyond the transceiver stage, with some real effort being directed toward the erection of effective antenna systems to replace the all-too-popular indoor contraptions. W8PK is the only crystal-controlled station in this group to date.

Another station just converted to crystal control is W9LLM, who is running 25 watts to a 35T. Think it'll stand it, Frank? He asks what sort of antennas the boys in the East use for 2½. Too many curtain rods, fishpoles, and other haywire, we blush to admit; but here and there "H" beams are doing good work, both with and without parasitic elements. Your conductor's 8-halfwaves-in-phase arrangement (see May QST) is popular. The extended double Zepp is widely successful, and a few of the gang who work both 56 and 112 Mc. (with room for but one antenna) are working five-meter "Q" antennas as two halfwaves in phase for 2½, with good results. The folded doublet (see December QST, page 13) is a good bet in non-directional systems.

W8KWL, Morgantown, W. Va., heard 23 stations on Five during the September aurora session and worked seven of them. On October 31st his heard-list included W1LLL, W2BYM, W8's CIR, RUE, KQC, FGV, JLQ, W9's IOD, and NFM. The last three were worked.

W9PNV, Riverside, Ill., finds that, for gain without directivity, four extended halfwaves, vertically stacked,

(Continued on page 82)



ARMY-AMATEUR RADIO SYSTEM ACTIVITIES



War Department, Office of the Chief Signal Officer, Washington, D. C.

AMATEUR STATIONS FOR CIVILIAN DEFENSE

COMMENTS recently received from the Commanding Generals of the various Army units and from Corps Area commanders indicate that all are in general agreement on the value of the amateur for civilian defense purposes. The particular part that amateurs will play in the civilian defense picture is still under study by the Office of Civilian Defense and the Defense Communications Board.

It is suggested that Army-Amateurs turn their attention to using u.h.f. equipment, particularly on the 2½-meter band. Local 112-Mc. AARS nets should be organized to tie in with the existing 160-, 80- and 40-meter c.w. nets as well as with the 160- and 75-meter 'phone nets. This will provide for state-wide coverage for civilian defense usage and, in addition, will serve as a connecting link with the Army and Corps Area nets of the AARS. In this connection, it is essential that the net control stations of these 2½-meter AARS nets also be able to operate on the lower frequencies assigned to their respective 160 or 80 meter State nets.

U.S.O. AMATEUR STATION DEDICATION

THE first station in a network of United Service Organization amateur stations, to be installed at army posts and camps and naval stations, was dedicated at the USO club house of the New London, Conn., naval base on November 10th. Major General Dawson Olmstead, the Chief Signal Officer, participated in the dedication ceremonies, which were broadcast over the Mutual Broadcasting System, delivering a short address from the MBS studios in Washington. These USO stations, to be operated by the National Catholic Community Service, will be affiliated with the Army-Amateur Radio System to serve as another link for civilian defense as well as to handle messages for the service men.

ANNUAL CODE-SPEED CONTEST

THE annual AARS Code-Speed Contest is scheduled for Monday night, January 5th. Army-Amateur Net Control Station WLM/W3USA, Washington, will make automatic tape transmissions simultaneously on 3497.5 kc. and 6990 kc., starting at 10:00 P.M. EST. These transmissions will begin at 20 words per minute, increasing 5 w.p.m. about every five

minutes to 65 w.p.m. Similar transmissions, using a different text, will be made by WLV, Ninth Corps Area NCS, San Francisco, starting at 10:00 P.M. PST on 3497.6 kc., so that all interested amateurs in the United States will have equal opportunity to participate.

This competition is open to all amateur operators. Solid copy for one minute is necessary to qualify at any speed. Send your received copy to your Corps Area Signal Officer for scoring before January 10th.

The Veteran Wireless Operators Association, the national fraternal organization of professional radio operators, has indicated that it will again present a Marconi Memorial Award for Code Proficiency to the winner of this contest. Amateurs who by profession are government or commercial radio operators are not eligible.

ANNUAL ARMISTICE-DAY MESSAGE

THE 13th annual Armistice-Day message from the Chief Signal Officer was broadcast from WLM/W3USA on November 10th at 7:00 and 10:00 P.M. for the attention of all Army-Amateurs. The 3497.5, 6990 and 3680 kc. frequencies were used. All amateurs were requested to copy and mail to their respective Corps Area Signal Officers for scoring. Following is the text:

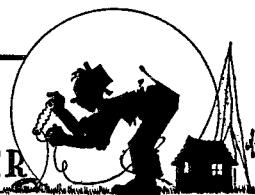
(Continued on page 62)



Major General Dawson Olmstead, the Chief Signal Officer, with Colonel O. K. Sadtler, Chief of Operations Branch, OCSigO (right), and ARRL President George W. Bailey, during broadcast over MBS on November 10th of the ceremonies dedicating the first USO amateur station at New London.



HINTS AND KINKS FOR THE EXPERIMENTER



BIAS SUPPLY FOR "ZERO BIAS" MODULATORS

BATTERIES proved to be noisy nuisances when used for grid bias on my Class-B 805s which require about 15 volts. The solution to the problem turned up a novel use for a mercury-vapor rectifier as a regulator in conjunction with my regular a.c.-operated bias pack furnishing voltage to the grids of the r.f. amplifiers. Except for supplying the mercury tube with filament power, the action is the same as that of the well known 874, or its more-modern version, the VR-105/30. In this case, however, the output voltage is about 15 volts because of the mercury vapor tube's constant voltage drop of that value.

The circuit diagram of the combination bias supply is shown in Fig. 1. Resistor R_1 should be of such value that the mercury vapor tube draws only enough current to glow dimly, but reliably, with the biased stage not drawing grid current (about 20 ma. in the case of an 83 tube). The rectifier tube to be used will depend on this resting current plus the peak grid current of the biased stage. The sum of these currents should not exceed the maximum d.c. output current rating of the tube.

Using an 83 tube to regulate a circuit in which the grid current varies from 0 to 40 ma., the voltage is held steady to within 0.1 volt or so, which is better than the batteries used to do. Substitution of an 866 brought the variation to an even lower value, but this refinement is certainly not needed.

Bias for the r.f. tubes is taken in the usual manner from the output voltage divider.

— Charles Affelder, W8HLM.

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B.C. INTERFERENCE IN THE HAM BANDS

FOR the past six months, the writer has been troubled with steadily-increasing interference in

the amateur bands from commercial broadcasting and c.w. stations. The interference finally reached a point where the 160- and 80-meter 'phone bands were almost useless, and even 40- and 20-meter c.w. was difficult to receive. At times, as many as three local b.c. stations and one local commercial c.w. station could be received at the same time on any one of dozens of different frequencies throughout the high-frequency spectrum. Just imagine trying to work anything but your next door neighbor through interference like that and you can readily see what I was up against. Disconnecting most of the antenna from the receiver caused most of the interference to disappear, but it caused most of the desired higher-frequency signals to disappear also.

The receiver in use here (S-16 Skyrider) has one stage of preselection. It has always had good selectivity. Until about six months ago, no interference in the way of commercial harmonics or images was encountered at this location with exactly the same antenna arrangement. Even when the interference was at its height, moving the receiver to a new location with a different antenna cleared up the trouble immediately. It hardly seemed likely, therefore, that the receiver itself was responsible for the trouble.

The next step, then, was to investigate the difference in the two receiving locations and antenna systems. An entirely new receiving antenna was installed at the permanent location, and the interference disappeared. This was an undesirable solution, however, for a number of reasons. The trouble rocked along until it dawned on the writer that the antenna which was causing the trouble was connected to the receiver through an a.c. change-over relay which was always closed when interference was noticed, while neither of the other two antennas had been connected to this relay. This relay is a d.p.d.t. relay which is normally open (transmitting position) and is closed in order to switch the antenna to the receiver. A

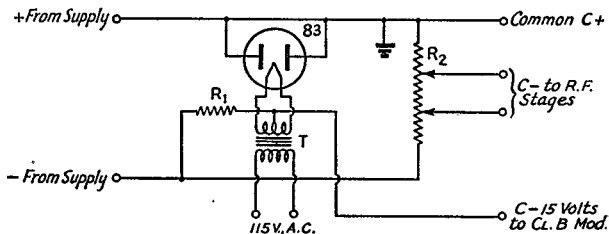


Fig. 1 — Circuit diagram of the combination bias supply described by W8HLM. The branch with the 83 rectifier supplies a regulated voltage of 15 for Class-B modulator tubes.

shunt was promptly placed across the relay contacts and the receiving troubles just as promptly disappeared. Turning the relay off and on had no effect on the received signals when the shunt was in place, but, with the relay closed, the instant the shunt was removed the interference returned. Furthermore, moving one contact around over the other caused the interference to vary suddenly and markedly in intensity, in exactly the same way that the output of a crystal detector varies as the cat-whisker is moved around over the crystal.

Thorough cleaning of the relay contacts with steel wool cleared up the trouble.

From the above findings the author has derived the following explanation for the difficulties:

The receiver is located in the vicinity of a large petroleum refinery, where the air contains considerable quantities of hydrogen sulfide and sulfur dioxide. The relay contacts are of silver alloy, and the receiving position contacts are almost continuously exposed to the action of the sulfur-laden atmosphere. The layer of silver sulfide, which formed on these contacts, apparently had rectifying properties similar to those of the ordinary lead-sulfide (galena) detectors, and was thus feeding the receiver rectified but untuned signals. Either the r.f. and i.f. sections of the receiver exhibited very-low impedance to these rectified signals, thus letting the strongest ones through on many frequencies, or the strongest signals were able to by-pass the r.f. and push right through to the audio section. In other words, dirty or corroded relay contacts may sometimes be responsible for peculiar "bugs," and it is hoped that this article may help some fellow-sufferers clear up their troubles.

— Nugent F. Chamberlain, W5AUE.

“FREQUENCY-HALVING” WITH THE GRID-PLATE OSCILLATOR

IN THE September, 1941 issue of *QST*, the writer suggested a simple method of obtaining increased harmonic output from a 6L6 “grid-plate” oscillator. Further experiments have demonstrated that this extremely versatile “grid-plate” circuit will also function as a “frequency-halving” oscillator, thus permitting 160-meter operation from 80-meter crystals. The necessary modification of the original circuit to permit this type of operation is shown in Fig. 2. It will be noted that the only change is the connecting of a tuned circuit between the crystal and ground. This tuned circuit is made to resonate at half the frequency of the crystal with a capacity of approximately 150 μfd . With this capacity, a coil con-

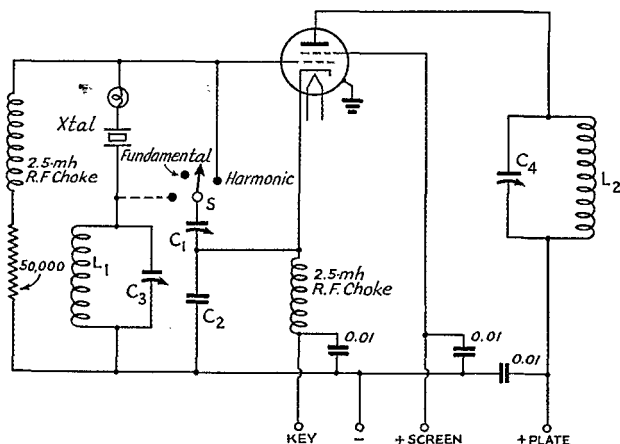


Fig. 2 — Circuit for “frequency halving” with the “grid-plate” crystal oscillator suggested by W8CSE. Values for the “frequency-halving” tank circuit are given in the text. Other values are usual. The plate tank circuit is tuned to half the crystal frequency.

sisting of 45 turns No. 22 enameled wire, close-wound on a $1\frac{1}{2}$ -inch diameter form will be required for the 160-meter band. One corner of a rotor plate of C_3 may be bent over to short out the tuned circuit when fundamental or harmonic operation is desired. It may be of interest to note that if an 80-meter coil is substituted for the 160-meter coil in this circuit, variable frequency operation may be obtained as described by W3GHR in April, 1940, *QST*.

Although it was not found necessary in the test transmitter, an additional connection between the switch and the crystal side of the tuned circuit, as shown by the dotted line, might prove worth while with some crystals.

In operation the switch is set on the “harmonic” side. Adjusting is done by setting the monitor, or receiver, at half the crystal frequency and adjusting C_3 until the crystal is heard to “lock in.” C_1 is adjusted until the crystal exercises the greatest control over the output frequency. Additional instruction on adjustment will be found in the excellent articles on “frequency-halving” oscillators in September, 1941, *QST*. As a warning, remember that all “frequency-halving” oscillators are capable of “self-excited” operation and great care must be taken to see that they are properly adjusted before putting a signal on the air.

— Ed Preston, W8CSE.

STATION DATA FILE

AROUND the station a considerable quantity of loose diagrams and data accumulates and is usually filed away, hither and yon, only to evade our fingertips just at the time we need some particular item. In order to have all avail-

able information at my fingertips, several inexpensive items have been of considerable value.

For filing away loose information, I find a letter-size utility expanding file of invaluable aid. This cardboard accordion-folded file of 21 lettered compartments will expand to approximately 2 feet in length if necessary. Space is also provided for insertion of your own subject titles. I find two of these files of invaluable aid; one is used for filing manufacturers' data sheets and catalogs and the other for filing tube-data sheets and other miscellaneous information which we all acquire. This latter I have indexed similarly to the yearly index of *QST* which serves as the key for proper filing. These files, available at most local stationery stores, cost approximately fifty cents each.

Several months after a change has been made in our rigs, we usually have to crane our necks to determine what circuit is being used. One simple means of recording wiring circuits is on three-inch by five-inch library cards filed alphabetically by subject matter. Two cards are made out for each stage, one with circuit diagram, showing values and voltages, and the other listing the manufacturer's catalog number and nameplate data. Two years from now this file will determine for you whether that bias transformer you installed was a 70- or a 100-ma. job and whether the green-yellow wire was filament- or a high-voltage lead. These files may be obtained in the dime store and should not cost more than twenty cents, including 100 cards.

Phone operators always make notes while most c.w. operators copy down what they are receiving. This means reams of paper lying around at your fingertips. Available to-day are these "miracle blackboards" that can be scribbled all over and the upper sheet lifted and dropped and you can start all over. Recently I purchased two of these eight-inch by ten-inch re-usable pads at a cost of ten cents each. Now it isn't necessary to jump in the waste-paper basket while trying to pick up the scrap paper that has fallen out of the already-full basket.

Most of us have limited facilities for our stations. The above items I have found extremely helpful from time, space and "find-what-I want" angles. — *C. Deane Kent, W2JFA.*



THE January, 1917, issue of *QST* crows over much recent increase in the average range of stations and says the League now has several hundred that can work 1000 miles, whereas only a year ago there was a mere handful that could work 500. Ships in the Gulf report amateur signals at distances over 1000 miles, and the organiza-

tion of trunklines has progressed to the point where messages could now be handled from Atlantic to Pacific over ARRL routes. Now comes the big news that the League is planning a transcontinental relay, details to be announced soon.

The formation of the League three years ago has greatly facilitated the interchange of technical information amongst amateurs, and that is one reason why ranges are increasing. There is growing consciousness of the importance of the ground connection. 2LK describes his complicated earth system and maps the improvement it has made in his results. "Dr. Radio," in Part II of his current article, also discusses ground, leads and antennas. The leading article by Charles S. (now C. Stuart) Ballantine, "The Measurement of High Frequency Currents," deals with errors in hot-wire ammeters and their correction, a subject which the editor says is a very important one. He announces with much regret that he is omitting the mathematics "as the majority of readers assume an injured air if they discover any mathematics higher than arithmetic" — which expression might have been written in 1941!

The great trouble is the intense QRM. It is the only difficulty in the way of the success of the transcontinental relay. Everybody is plagued with it. To escape it, the eastern trunkline manager proposes getting up early and clearing the hook before breakfast. Some of it comes from "small boys" with spark coils, but much of it is plain unnecessary conversation. Since this is intolerable with apparatus which permits only one station in a town to operate at a time, the editor suggests that the League do something to make it bad form to engage in long conversations, proposing the use of boycotting if necessary. Even The Old Man devotes himself to that topic in one of his most famous stories, "Rotten QRM," the yarn which first introduced to us the wouff hong, the rettysnitch, the ugerumf and the biirgrmph (which reminds us that to this day we have never seen an authentic specimen of a biirgrmph. T.O.M.'s story, by the way, was reprinted on page 25 of our December, 1940, issue).

Thousands of amateurs within a hundred miles of New York recently heard the wireless telephone concert sent on 800 meters from the experimental laboratories of Lee deForest at Highbridge. The entertainment lasted for more than half an hour and consisted of phonographic records of operatic selections and popular music. Notice was sent out several days in advance so that amateurs were waiting with receivers on their ears. The tests will continue and reports are solicited. Indeed, it is the plan of Lee deForest to establish a sort of wireless newspaper, to which every amateur with an instrument can subscribe. In this way, news can be telephoned and the interesting happenings of the day can be sent to listening ears "hot off the wire."

Ninth A.R.R.L. Field Day Results

THE criterion of success in any amateur operating activity is a simple figure representing the number of participants. When that figure runs into four digits we really have something to rave about! The Ninth Annual ARRL Field Day, held last June 7th and 8th, was by far the biggest single contest activity ever to be held in these good old United States! A total of at least 2180 individuals (This represents a minimum figure, since all logs do not list the exact number of operators and helpers. — J. A. M.) journeyed afield for a week-end of enjoyment in this yearly testing of self-powered portable-emergency radio equipment. Reports were received from 163 clubs and 119 non-club stations. The "FD" demonstrated once again our will to keep abreast of the times in developing operating and technical skill. We are justly proud that the institution of amateur radio, in line with the current emphasis on preparedness, stands ready to do an efficient communicating job should emergency face us.

In 1940 we adopted a policy of classifying stations according to number of transmitters in simultaneous operation at any one FD set-up. Competition is considered to be among stations in each group alone. The score listings elsewhere in this issue credit the leaders in each classification. We would like to give you all the details on how each of these functioned but would need to take more space than we have available. However, since there always seems to be an intense interest by most participants in what groups had the highest all-around totals, we'll try to give you

an idea of what some of the all-time highs were.

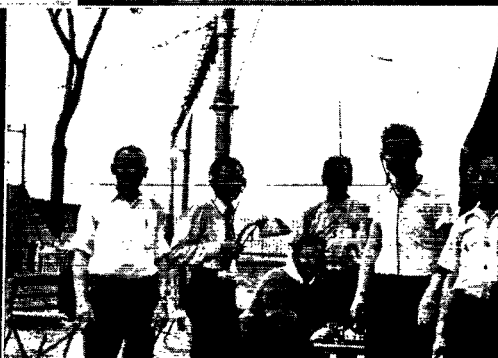
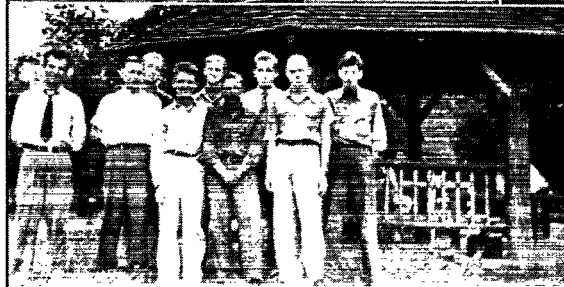
The previous record of 8406 points set in last year's FD was topped by no less than five groups this time.

Consistently a strong contender, the Tri-County Radio Association of Plainfield, N. J., W2GW/2, established a new record with the tremendous score of 13,968 points; 35 operators made a total of 1112 contacts, 415 with other portables and 697 with fixed stations! Eleven complete units were used on all bands from 1.8 through 112 Mc. The TCRA log shows 163 stations worked on 1.8 Mc., 447 on 3.5 Mc., 245 on 7 Mc., 144 on 14 Mc., 32 on 28 Mc., 20 on 56 Mc. and 61 on 112 Mc. Contacts were almost evenly divided between 'phone and c.w. — 570 on c.w. and 542 on 'phone. Power on all transmitters was limited to 30 watts and supplied by four gas-driven a.c. generators ranging in capacity from 300 watts to 3 kw. Say the gang, "This year TCRA had the best Field Day ever. The club set up in exactly the same location as last year. As a result of using the same QTH and the same equipment as last year, we were able to profit from many of last year's mistakes. The effect on our score is self-evident." Our hearty congratulations to you, TCRA! A superlative showing!

Those Jersey lads certainly went into the FD with a vengeance! Second highest score was that of W2AER/2, Jersey Shore Amateur Radio Association. It was, incidentally, the third consecutive year this group have placed second. They're doing an admirable job of holding up against tougher competition each year. Twenty-

◆
The Northern Nassau Wireless Association, W2FVJ/2, had plenty available power judging by the looks of this 7½ kw. portable generator! Front row, left to right: W2LZF, W2BJR, W2AZS, W2AYJ, W2AHC. Back row: W2MIL, Wes Landsman, W2MJY, W2HYJ, W2ICO, W2IRY, W2DUA.
◆





Upper left: "FD" location of W4CDC/4, Chattanooga Amateur Radio Club. Upper right: W9RT (left) and W9IWZ tend the gas-driven a.c. generator of W9RT/9 located at the ski slide in Ryan's Woods, Chicago, Ill. Upper center left: The "super de-luxe" portable generator used by the Amateur Radio Operators of Denver. The large clock in the upper center of the power panel is used to record elapsed time of generator operation. Upper center right: The Canton Amateur Radio Club of Ohio operated W8MWL/8. Seated in the 7-Mc. tent is W8QVK. Lower center left: Participating members of the Nashville Society of Licensed Radio Amateurs station W4GNN/4 set up in Warner Park, Nashville, Tenn. Lower center right: We don't imagine the Tri-County Radio Association was bothered much with visitors. Note the signs on the walls of one of their operating positions! Lower left: W9OXH (left) and W9RSI, power attendants at the 350-watt Kato-light generator used to run the 7-Mc. set-up at W9SBT/9, Iowa City Amateur Radio Communications Club Field Day station. Lower right: Members of the Jersey City, N. J. L/C Club who kept W2WC/2 on the air. Left to right: W2GKE, W2WC, W2FVB, W2NBE, W2EQS, W2LST.

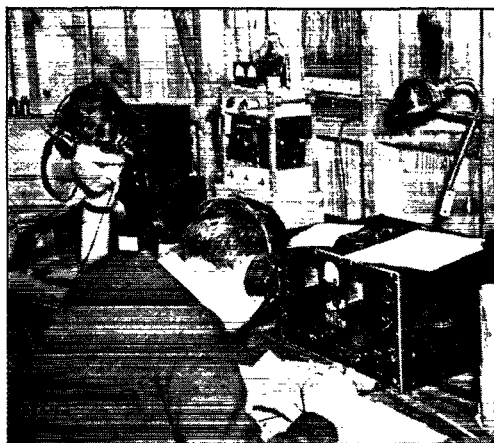
five operators accounted for a score of 12,348 points (921 contacts, 425 portables), with nine units in simultaneous operation; 65% of all QSOs were by c.w. A 5 kw. portable gas-driven a.c. generator provided current for operation of all equipment and transmitter inputs ranged from 11 to 30 watts. FB, JSARA!

The West Coast took honors for the third highest total. W6VX/6, operated by twenty members of the Society of Amateur Radio Operators, made 515 QSOs (241 portables) for a score of 10,571 points. It is interesting to note that 52% of all contacts were made by 'phone as contrasted to the other leaders who made the majority of their QSOs on c.w. Seven transmitters, each using e.c.o. frequency control, were worked on the following bands: 1.8-, 3.9-, 14-, 28-Mc. 'phone and 3.5-, 7- and 14-Mc. c.w. Probably accounting for a great deal of SARO's success were the very efficient antennas used. These included Sterba curtains, four half waves in phase and half wave systems. Input on all units was kept between 25 and 30 watts except the 112-Mc. rig which ran 5 watts.

Next in line we find the Frankford Radio Club, W3BKK/3, with 9765 points. Sixteen operators knocked off 644 contacts, 412 with portables. Four units were employed on six bands. Receivers were powered from batteries and transmitters from a Homelite a.c. generator. All rigs used e.c.o. The FRC also entered separate groups in the one, two and three transmitter classifications, leading in the first and placing third and second respectively in the latter.

Fifth highest score submitted was that of the York Radio Club, 8829 points . . . 598 contacts (358 portables). Eight units were worked simultaneously under the call W9KA/9. Bands used were 3.5-, 7-, 14-Mc. c.w. and 1.8-, 3.9-, 14-, 28-Mc. 'phone; all work was in the 30 watt class.

More than 5000 points were scored by each of the following groups: San Francisco Amateur Emergency Corps, W6MZ/6, 8073; Northwest Amateur Radio Club, W9POP/9, 7716; Buckeye Radio Club, W8GCI/8, 7371; St. Paul Radio Club, W9KYC/9, 7263; Cuyahoga Radio Assn., W8URA/8, 7083; Beacon Radio Amateurs, W3ATR/3, 7056; Wisconsin Valley Radio Assn., W9RQM/9, 6957; Frankford Radio Club, W3GKO/3, 6903; Frankford Radio Club, W3BES/3, 6498; Motor City Radio Club, W8MRM/8, 6246; Delaware Valley Radio Assn., W3AQ/3, 6075; Mike and Key Club of Santa Monica, Calif., W6SLF/6, 5994; Westlake Amateur Radio Assn., W8GYR/8, 5769; Greater Cincinnati Amateur Radio Assn., W8NC/8, 5737; New Haven Amateur Radio Assn., W1GB/1, 5598; Frankford Radio Club, W3EDP/3, 5571; Mountaineer Amateur Radio Assn., W8BOK/8, 5553; Radio Operators Assn. of New Bedford, W1UJ/1, 5517; Central Illinois



W8SMC (left) and W8SLO busily engaged in knocking 'em off at the 7-Mc. position of W8NC/8, Greater Cincinnati Amateur Radio Association. Receivers: HRO and HQ-120. Transmitter: Meissner Signal Shifter into an 809 final.

Amateur Radio Club, W9PSL/9, 5328; Philadelphia Wireless Assn., W3GAG/3, 5103.

Among the non-club groups, W9VXSX/9, had top score, 4964 points. Four transmitters, manned by 21 individuals, were kept in simultaneous operation. W9ERU/9, with 16 operators and three rigs, placed second with 4793 points. Third highest was W8OFN/8 — 4509 points, one transmitter, five operators. Following these, with scores over 3000 were W3FWH/3, 4465; W9AYO/9, 4050; W8DNO/8, 3798; W9JU/9, 3816; W2IYQ/3, 3744; W1EH/1, 3542; W5BB/5 3227; W9WGL/9, 3087; W5DV/5, 3011.

We extend thanks to club secretaries and those who sent us the reports of participation in the biggest and best "FD" yet. Keep up the good work, hams, and have that gear, whose reliability you proved on Field Day, in tip-top shape for any occasion when you may be called upon to use it under actual emergency operating conditions!

— J. A. M.

Individuals and Non-Club Groups

One Transmitter

W8OFN/8	W8NAB-OFN-QOK-Prater-Rider	261-	A-4509
W1EH/1	W1EH-JFN-LVQ-JPE-CBD-JEQ	204-	A-3542
W5DV/5	W5DB-IB	125-	A-3011
W1HJ/1	W1HJ-KYG	159-	A-2604
W8NOU/8		191-	A-2592
W8SBV/8	W8SBV-Lawrence-Frechtl	135-	A-2430
W6BAM/6	W6BAM-LVE-RKD-STM	95-	A-2358
W2JEQ/2	W2CYV-JEQ-W8VFI	132-	A-2313
W8TZP/8	W8ADY-TNE-TZP-UWU	135-	A-2151
W3EJB/3	W3EHW-ETIS-GBO-W8CL	71-	A-2039
W1BDI/1	W1BDI-CJD-JMY-JTD-JWG- WONFL-Lowery	109-	A-1931
W6QAP/6	W6CVW-QAP	81-	A-1881
W3FPQ/3	W3FPQ	96-	A-1795
W5EWS/5	Three opps	73-	A-1661
W6ASH/6	W6ASH	58-	A-1633
W8KO/8	W8KO	83-	

(Continued on page 64)



OPERATING NEWS



F. E. HANDY, W1BDI, Communicating Manager

J. A. MOSKEY, W1JMX, Asst. to the Coms. Mgr.

Got Your ARRL Emergency Corps Registration in . . . for Civilian Defense Availability? Membership in ARRL has shown a nice increase in the past year, possibly indicating the appreciation of amateurs for the need of support of the one organization to represent them consistently over the years. There have been an increasing number of letters from amateurs wanting to "do things" contributing to the national interest in the emergency. The institution of Amateur Radio more than ever to-day needs every licensee to pull his own weight by proper participation fully in the programs dedicated to the public interest. Unity is essential. The various amateur groups can get nowhere by working in a dozen different individually determined directions, but with all hands acting as a part of organized amateur radio itself in support of the programs, we can go a long way.

The Corps needs every amateur radio licensee. The interest of the nation and the amateur fraternity alike calls for every licensed amateur to add to the capabilities of amateur radio to perform for natural disaster relief or civilian protection (defense) alike by personal registration in this program. *The Emergency Corps (Form 7) blanks may be obtained from Hq., or your nearest SCM, EC, or Western Union office.* If you haven't already forwarded such forms to get the card identifying you with the Corps, send a radiogram or postal card for these blanks to-day.

Emergency Coördinators in scores of localities have already established contact with the local civilian defense authorities, reporting the availability of amateur operators to serve in establishing radio facilities in support of fire-fighting, police-services, medical-and-first-aid groups, rescue-squads, utilities, those maintaining vital services such as departments of public works, water supply, sewer, streets, shelters, buildings, etc., if and whenever necessary. It takes many operators to put a set up on a 24-hour basis in real emergency. With many possible secondary, and some primary jobs, as much u.h.f. gear as possible should be available. Moral? Build u.h.f., as well as using or converting all existing gear possible. Reports from a number of amateur groups that already have set up "defense" equipment for demonstrations and tests appear (in brief) through these pages. The coördinators reporting are highly enthusiastic about the fun and profit amateurs are finding in working out these

plans for building practical community service to the highest possible efficiency.

Please register on ARRL blanks to-day, if you haven't. Build u.h.f., to realize the most in fun that this new field offers, and to make sure you can contribute your part if called upon. See designs in this *QST* and the December issue!

Emergency Corps Re-registrations. The annual re-registration of Emergency Corps members will proceed in a few weeks from receipt of this *QST*. Re-registration forms will be mailed to all Corps members who registered before November 15th. This annual overhaul is more than ever essential this year as a check on the readiness of every member to perform. There have been location moves by members engaged in defense production. Lots of new u.h.f. equipment and self-powered units have been added to be reported in this survey. Each year we have to drop from the record those who report inactivity or who do not return the special colored forms direct to Hq. after receipt. Newly filed information is placed at the disposal of coördinators through whom contact and planning with local civilian defense officials is going forward at present. It is important that every Corps member who is in a position to give any effort and time (however small) to emergency preparedness re-file the blanks immediately on receipt. That will permit brand new registrations to make extensions in our total emergency-organized strength, a measure of our ability to render emergency radio service.

Warning . . . Precautions Necessary in 7-Mc. 'Phone Work. The December 20 changes permit some daytime amateur sharing of the 3800-3900 kc. pilot training frequencies for amateurs in 26 listed northern and eastern states *if no practical interference results.* In 1800-1900 kc., amateur 'phone operation must cease under the F.C.C. Order or citations are sure to arrive swiftly. Those interested in the newly authorized 7250-7300 kc. radiotelephone band should be especially watchful to avoid trouble, too. All amateur radio transmitters are required by the F.C.C. to be "as free from harmonics as the state of the art permits." ARRL Official Observers will assist by notifying off-frequency operators, if and when observed. There should be no voice-modulation components below 7247 kc. or above 7300 kc. Every station *before* going into operation on 7-Mc. 'phone should be checked for radiation of parasitics or of harmonics falling between 14,500

and 14,600 kc.! Adjustments should be carried out for minimum perceptible radiation of any harmonics. Balancing of push-pull amplifiers, adjustment of bias, and installation of faraday shields will help in harmonic suppression. In these times a high degree of responsibility should be displayed by all amateurs in all frequency bands to avoid possible interference with other radio services. All F.C.C. regulations should be observed to the letter at all times.

160-m Band Warming W.A.S. Party, Jan. 9th-10th-11th. See details of this activity elsewhere this month. Get on c.w. in the 1750-1900 kc. sector from Dec. 20th to see what it's like there! Make some regular traffic skeds, support your Section network on that band, advise the SCM by card that you are all set to work "160" and will serve as a c.w. outlet for your community for trainee traffic, or for state defense protection net operations, if possible to be designated for such work. From now on it appears that "80" will be increasingly full of interference as more "moving over" is necessary. Get on "160" to get around this. We hope there will be lots of successful Feb. 7th-8th work in this band in the 5th ARRL QSO Party coming up, too. First, try to do your best in the WAS-Band-Warm-Up, and report results for QST mention.

Code Proficiency Program and New Year's Resolutions. This is the time of year for review of our individual progress and usefulness as an amateur operator. It should be a time of dedication to new accomplishments and objectives and activity. Aim to be as active as possible in every amateur radio program through which organized amateur radio can make itself of value to the community or the nation. By so doing you may automatically increase your profit and enjoyment in amateur radio fourfold for the constructive efforts you put forth. Get ARRL Awards, apply for ORS or OPS appointments, get into u.h.f. and defense-emergency, and the trainee-tfc. and CP programs.

If you haven't one of those Code Proficiency Certificates now displayed in thousands of amateur stations yet, lock up the W1AW/W9HCC code practice and qualifying run schedules (see QST index to this issue) and plan to send in the copy at any speed you can get down in black and white. If you have an initial certificate don't rest until you have stickers showing your ability all the way through the 35 w.p.m. class. This program is not aimed at picking out a few fellows who are a whiz at code, but at lifting the average ability of all amateur operators, and demonstrating to government officials that every single amateur licensee without exception is interested in qualifications beyond those minimum qualifications proved by the license examination! Add your name to our records of those whose speed above the license minimum is "certified." Each name at 15-per adds to the program goal (58,000

certifications) as much as one at 35-per. Do your part in the demonstration of amateur qualifications to the government. Get the recognition of what you can do that is due you. Send in copy of the very next qualifying run!

A brand new year is starting. Resolve to participate in all the ARRL programs directed toward patriotic and useful amateur objectives. Organized amateur radio can only be as strong as each of our efforts makes it. Help amateur radio to help you. — F. E. H.

ARTICLE CONTEST

The article by Mr. Alden Smith, W2AFJ wins the CD article contest prize this month. We invite entries for this monthly contest. Regarding subject matter, we suggest that you tell about what activity you find most interesting in amateur radio. Here you will find an almost limitless variety of subjects. Perhaps you would like to write on working for code proficiency, Emergency Corps planning, traffic work, working in Section Nets, Phone and Telegraph operating procedures, holding a League appointment, working on radio club committees, organizing or running a radio club, the most interesting band or type of ham activity, or some other subject near to your heart.

Each month we will print the most interesting and valuable article received. Please mark your contribution "for the CD contest." Prize winners may select a bound Handbook, QST Binder and League Emblem, six logs, eight pads radiogram blanks, DX Map and three pads, or any other combination of ARRL supplies of equivalent value. Try your luck!

The Mother (?) Tongue

BY ALDEN SMITH, W2AFJ*

THIS period of geographical restriction upon our communications activities provides a particularly valuable opportunity for increased experimentation in new fields. Many of us are discovering that there are really stations on bands other than those to which we have devoted our attention in the past. Others are finding (or soon will have to!) that when the radio store doesn't have what we need, nine out of ten times the amateur can work out something with his own hands that will do the job as well as or better than the commercial product.

This ability to improvise and to experiment is as much a part of the real radio amateur as was Kitty, of mellow memory, part of The Old Man's shack!

Why not undertake some further experimentation in our use of words, in speech at the mike or with the key? Too many of us are craftsmen only until the last connection in the rig is soldered, and what we put on the air thereafter fails to do justice either to ourselves as individuals or as a group.

Dispose of the obvious matters first, such as profanity and stories that would be unsavory in an abattoir. We can all anticipate that through the regulatory agencies of government the operator who puts such stuff on the air will undergo speedy liquidation. More important is the language used by all too many who are operating in every respect within the law but who have simply grown careless in their speech.

* 706 Burns St., Forest Hills, N. Y.

No matter whether you speak with a Yankee twang or a Southern drawl, you still speak English — maybe! Now let's be specific . . . !

1. The controversial "ain't." Some lexicographers have gone so far as to suggest that this fellow has become a part of our language. According to Webster, it ain't so.

2. The tense of verbs. The other night an A-1 operator at one of the best 'phones on the air advised a certain W2 that "Over at W9— they wasn't a-going to put no rig on the new 7 Mc. 'phone band." That wasn't learned in no school, Boswell!

3. Colloquialisms, or ways of speaking. Under this heading "that jerk at W2—" would also be recognizable as "the operator at W2—" and the casual listener on your frequency would have a higher regard for your intelligence and operating ability. Other popular items come to mind, such as "heel," "slut," "hog-wash," etc., etc., ad infinitum.

4. Adjectives. Sometimes you hear some rather fantastic signals (page 7 Mc.), and while they may be decidedly T-1, they are *not*, for public consumption, "lousy" or "putrid."

If we give one-half as much attention to the quality of our thought expression over the air as we do to the quality of the signal carrying it, we will be better operators and will materially strengthen the position of the amateur in his relation to the public and, incidentally, the government. More ears than those of the operators at the termini of each QSO may now be taking it all in, and opinions based solely on what is *heard* are being formed. A favorable public opinion is important to all of us — and again, let's be specific.

Recently an inquiry was received regarding BCI caused by a local station. An attempt was made to adjust the matter by correcting the situation at the BCL's home. He flatly refused to cooperate. Why? Because, as he put it, "No one who uses such foul language should be in a position to be heard by decent people." That was a startling example of unintelligent operating, both with respect to its reflection upon the individual and upon all amateur operators. Of course, the BCL could have turned off his set, but that begs the question, and the harm to amateur radio has been done!

Possibly there is a greater burden here upon the 'phone operator than there is upon the c.w. man. At the same time it is possible to speak English with a key! If we use abbreviations they should be based upon thoughts that are clearly and grammatically present in our minds. You cannot make a coherent short representation of something that didn't make sense in the long form. Abbreviations are merely a condensed means to the end of complete expression, and are not designed for the purpose of linguistic obfuscation! Then too, a good many casual listeners can copy code — so bar-room language won't go.

Carry the idea of using our language, in its natural state, to QSL's. It is only too often that careless speakers are careless writers, and sometimes even more so. A recent card advised, "I come back to you, but you wasn't there." No, brother, I was here, but was still trying to unscramble your xmission uv lst wk. Of course the QSL is usually not on loan at the public library, but perhaps some worthwhile candidate for this amateur game will see it in the shack, in some form as that above, and will decide to leave amateur radio to the illiterates who apparently populate the field. So we lose face and a recruit to our ranks.

There are a few easy aids to the better use of English, and they are almost painless. Read an occasional good book, even a classic. Notice how the author expresses himself concerning familiar situations. Compare it with the way you would say it. Listen to a good speaker now and then. Analyze what he says and see how your vocabulary stands up by comparison. Cultivate a more reasonable speed of speech for a time, so that you can choose each word and enunciate it fully. On 'phone work try to modulate your voice to convey meanings, and avoid long unpunctuated dissertations — pause now and then and let a comma or a period slip in by proxy! Prowl around the 'phone bands and listen to some of the good operators, and apply what appeals to you in your own operating. Don't be long-winded with key or mike, but try to be succinct and accurate!

— Al Smith, W2AFJ

Calling-Signing Precautions for Network Operators

THE new FCC regs that make identification of both stations necessary in radio contacts have been a bit confusing to some network operators. When FCC's Sec. 12.83 (p. 28, Aug. '41 QST) is accepted for just what it says, however, there can be no possible confusion. When there is use of *break-in* it is prescribed that for bursts of transmission up to but not over three minutes, the calls need be put in identifying the transmission *only once every ten minutes*, besides at the very beginning and termination of correspondence. There *does* have to be intermediate identification at 10-minute intervals, or oftener if one terminates his correspondence or if he sends for more than 3 minutes. If you have short exchanges of *less than 3-minutes* duration (and if you do not terminate the correspondence), then in such exchanges you do *not* have to identify — until the clock gets up around the TEN-minute mark.

The first responsibility of netters and everyone else in these strenuous emergency-times should be, even at a little inconvenience personally, to operate so as to help minimize monitoring time for identifications. We can thus contribute as fully as we can to those requirements set by the FCC that help keep us on the air. The Commission has made some concessions to help practical break-in work, but its rules adhere to the steadfast purpose of facilitating monitoring identification. It is one of the essentials of the FCC's Defense Office on the side of national security. *Break-in* for time-saving in fast nets can still be used even though the FCC has stepped up its identification requirements to help keep the dials turning in the expanded defense monitoring service!

The main things to be kept in mind by netters to avoid FCC citations while saving time in network operations are the following points or precautions:

(1) Open a transmission, *when using break-in*, with "BK" or other indicator that tells the monitoring officers why no dual identification by calls is given at that point.

(2) In intermediate exchanges of transmissions in sequence (shorter than 3 minutes) be careful *not* to terminate with VA (end of work), or other "ending signals" which identify formal end of transmission or of correspondence, and according to the appropriate definitions might definitely call for IDENTIFICATION OF STATIONS. (If one stops after sending "HW" "QSL?" "AR" (end of message), "B," etc., not employing an end-of-correspondence signal, back and forth exchanges of under 3-minutes duration are facilitated.)

(3) When a transmission runs more than 3 minutes, remember to add *both call identifications* as required by the FCC.

(4) Regardless of the duration of short-burst exchanges, identifications are required at least as often as 10-minute intervals in such correspondence.

(5) At the beginning and termination of correspondence full identification (calls of both correspondent stations) is required by the FCC, for example, as ending identification: ". . . VA W6TI DE W1BDI," ". . . CL WIJMY DE W1NJM."

— ARRL-ORS Bulletin.

— — — — — BRIEFS

The Charlotte Amateur Radio Club were host to the North Carolina Floating Club on December 9th. The meeting was held at the Charlotte Women's Club and was attended by over 250 amateurs. Included in this group were about 70 soldiers of the Army Signal Corps who were on maneuvers near Charlotte at the time.

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The Chess Wireless Association (CWA) meets every Sunday at 3:00 P.M. CST. W9VDY is NCS and the object is to split up into pairs and spend a pleasant Sunday afternoon playing chess with a worthy opponent far away. All amateurs interested are invited to call into the net (7240 kc.), or, if you can't be on Sunday afternoons, drop W9VDY a card expressing your interest.

W1AW/W9HCC Code Proficiency Runs

QUALIFYING RUNS and practice transmissions are sent from W1AW simultaneously on 1761-3575-7150-14,254-28,510 and 58,970 kcs. and from W9HCC simultaneously on 3532-7058 and 14,312 kcs.

Practice Transmissions: W1AW practice on the above frequencies is sent nightly except Friday starting at 9:45 P.M. EST (8:45 P.M. CST, 7:45 P.M. MST, 6:45 P.M. PST). The code practice, about 10-minute practice at each speed, is sent progressively at 15-20-25-30-35 words per minute, automatic tape transmission being employed. One can also get 15-20-25 w.p.m. practice from the W1AW official messages sent at 8:30 P.M. EST and midnight daily.

W9HCC practice, also tape-sent, may be copied on Tuesday, Thursday, and Friday, between 8:30 P.M. and 9:30 P.M. CST, and includes 20-, 25-, and 30-word-per-minute speeds on each transmission.

For sending practice (or to enable self-checking of practice copy received) the W1AW text sent on Sundays, Tuesdays, and Thursdays is identified in a listing on one of the pages in the Operating News section of QST. The new list of Press Schedules there listed can be used for getting practice at other transmission speeds. All amateurs are urged to practice copying on a mill as well as by pencil-and-paper. By either method it is chiefly a matter of getting practice in coordination between hearing and writing. Strive to become a good operator, and qualify for ARRL's Code Proficiency Certificate Award for your self-demonstrated ability to write down what you hear!

Qualifying Runs: The next qualifying runs will be sent from both W1AW and W9HCC, at the same time, on all the above-listed frequencies. Here is the starting time¹ for different dates:

Daylight Runs of Jan. 4th, Feb. 1st, and March 1st:
1:30 P.M. EST, 12:30 P.M. CST, 11:30 A.M. MST, or 10:30 A.M. PST.

Evening Runs of Jan. 22nd, Feb. 16th and March 20th:
9:45 P.M. EST, 8:45 P.M. CST, 7:45 P.M. MST, 6:45 P.M. PST.

Copy the test text sent on these dates at the best speed you can. Note which station you copied, and on what frequency. Check your copy for 89, 119, 149, 179, or 209 consecutive correct characters-and-spaces as required in the copy sent in to make the required whole minute of solid copy for the respective 15- to 35-w.p.m. rates of transmission. It is best to send in 100% copy at a step lower speed than to invite a failure card.

Underline the full minute of perfect copy necessary to qualify at any speed. State if you copied by ear, without assistance, also if you are working for first certificate or for an endorsement (awarded to all amateurs who subsequent to qualifying for certificate show ability above the speed of initial qualification) so we can properly classify your paper. To be acceptable for checking the copies must be post-marked and mailed before the next following qualifying run. Mail your application for certification and statement to ARRL marking the envelope "Code Proficiency Copy."

Start after one of those fine operating achievement awards to-day if you haven't got yours yet. Every F.C.C.-licensed amateur is eligible and should have one!

— F. E. H.

¹ Copy qualifying texts sent 15 minutes after informative transmission at starting time.

BRIEFS

Attention amateurs in the vicinity of Boston; Company A, 1st Military Police Battalion of the Massachusetts State Guard is desirous of recruiting several radio operators for its signal unit which is in the process of formation. The State Guard was formed to replace the old National Guard and is

Brass Pounders' League

(October 16-November 15)

Call	Orig.	Del.	Rel.	Extra Del.	Credit Total
W6LUJ	552	805	570	794	2721
W5FDR	103	289	1666	270	2328
W7EBQ	150	237	1734	165	2286
W4PL	22	49	1800	44	1915
W5OW	139	43	1574	59	1566
W2SC	176	194	1258	129	1767
W9INU	10	230	912	212	1364
W6FWJ	306	204	588	200	1298
W3BWT	70	90	797	87	1044
W3FJU	30	50	934	30	1044
W9DIR	42	86	768	80	986
W9OZN	11	6	968	0	985
W4AOB	17	118	633	115	883
W6DH	82	133	476	119	810
W8DAQ	12	17	677	14	720
W9ILH	24	35	606	20	685
W2BO	55	36	554	20	665
W4KK	6	42	580	9	637
W5MNI	41	46	402	79	614
W9GFF	19	46	529	19	613
W6LTA	3	21	567	14	605
W9BRD	26	63	450	61	600
W9NSU	8	5	556	5	574
W4FWZ	460	52	22	30	564
W5HBQ	20	20	512	11	563
W8CJL	6	17	522	9	554
W8SJF	6	21	502	18	547
W4DD	0	0	530	0	530
W6IOX	9	24	474	23	530
W9QKL	15	14	491	3	523
W2DXS	12	18	458	17	505
W4DGS	0	0	504	0	504
W9OUD	21	91	370	20	502

MORE-THAN-ONE-OPERATOR STATIONS

Call	Orig.	Del.	Rel.	Extra Del.	Credit Total
K1IHR	1909	1575	12	1387	4883
W3USA	151	128	2577	123	2984
W1AW	30	146	310	145	631

These stations "make" the B.P.L. with total of 500 or over. One hundred deliveries + Ex. Del. Credits also rate B.P.L. standing. The following one-operator stations make the B.P.L. on deliveries. Deliveries count.

W6RBQ, 244	W9GPA, 132	W5ZL, 115
W9YOS, 207	W3FGJ, 129	W5CEZ, 112
W8TZD, 203	W3JAS, 125	W3AOC, 109
W6CFN, 183	W2KL, 124	W9IHN, 105
W6TYF, 178	W2CGG, 121	W3HAZ, 104
W1MIM, 176	W2BGV, 119	W6IOJ, 103*
W8UFH, 140	W8CKO, 117	W2MLW, 102
W9TOS, 135*	W8JW, 116	W8KNP/5, 101
		W6LLW, 101

A. A. R. S.

Call	Orig.	Del.	Rel.	Extra Del.	Credit Total
WLMR (W6PGB) 267		262	614	252	1395
WLN (W2SC) 70		36	538	57	801
WLYY (W6RGQ)* 47		61	398	61	567
WLMH (W6CDA) 5		9	485	8	507

WLYY (W6RGQ) made the B.P.L. on 106 deliveries.

MORE-THAN-ONE-OPERATOR STATION

Call	Orig.	Del.	Rel.	Extra Del.	Credit Total
WLM (W3USA) 275		147	2987	147	3556

A total of 500 or more or 100 deliveries + Ex. D. Cr. will put you in line for a place in the B.P.L.

* Sept.-Oct.

built along similar lines. If you are interested in becoming a radio operator with a military organization, drop in on one of the drills Monday evenings at 7:30 P.M. at the Commonwealth Armory, Commonwealth Ave., and Pleasant St., Allston, Mass.

October '41 O.R.S.-O.P.S. Parties

The fall ORS/OPS Parties were humdingers! A large gang of both the 'phone and c.w. boys turned out and scores were higher than in any previous October get-together. Every active qualified operator should get in these enjoyable activities by applying for appointment as ORS or OPS. Write your SCM (address on page 4 of any QST) or ARRL Headquarters for full particulars.

For the second time in his contest career, our own W1TS led the ORS gang. W3DGM, who was top man last time, slipped into second place and W9IU, a newcomer to the top brackets, gets third honors. W2JME, the lad who can give the boys a good run for their money when he wants to, placed first in the OPS group, followed by that five-party champ, W4DCQ. Congratulations to all the operators listed below for an FB showing.

Official Relay Station Scores (October)

Station	Score	Dif. Sigs.	Dif. Sects.	Heard	Power (Watts Input)	Operating Time
W1TS	19,185,620	238	46	—	450	16 h. 45 m.
W3DGM	17,734,750	233	42	—	150	20 h.
W9IU	15,203,700	225	45	—	—	13 h. 10 m.
W9BRD	13,637,106	215	43	27	95	19 h. 50 m.
W9DIR	13,511,058	200	46	13	—	18 h. 30 m.
W1BFT	11,786,160	196	44	19	—	19 h. 10 m.
W3IWM	11,609,425	194	45	5	—	18 h.
W2LZR	11,275,200	201	42	10	—	12 h. 20 m.
W6UFJ	11,220,780	143	45	9	300	17 h. 8 m.
W8EBR	10,833,620	201	42	20	—	19 h. 57 m.

Station	Score	Dif. Sigs.	Dif. Sects.	Station	Score	Dif. Sigs.	Dif. Sects.
W8ROX	10,800,576	203	40	W8RKM	4,791,500	140	35
W1K9Y	10,348,695	191	42	W8MLM	4,419,000	145	35
W8DUW	9,898,802	198	41	W3IKW	4,265,600	137	35
W3HUM	8,765,780	177	41	W4NC	3,984,400	130	36
W2HXI	8,658,780	181	40	W8DAE	3,531,715	119	38
W3HXA	8,556,472	171	40	W2AYJ	3,320,950	119	36
W6BEV	8,370,432	122	46	W1JSM	3,231,610	118	37
W3GJY	8,099,300	161	38	W1KYT	3,201,120	126	30
W5DBR/3	7,298,550	174	36	W8OKC	2,802,400	126	29
W9RQM	6,924,550	158	39	W9NUX	2,754,232	104	38
W9INU	6,766,640	165	40	W3IXN	2,561,260	119	32
W9GBJ	6,290,900	147	43	W8TOJ	2,274,102	103	30
W1IUE	6,129,000	162	38	W7GNJ	2,066,772	77	39
W9ARE	6,093,360	138	44	W2ISQ/1	2,028,090	103	30
W3JBC	5,965,300	150	38	W9GFC	1,905,518	91	31
W9GFF	5,150,712	143	43	W1MGC	1,809,000	112	22
W8UZZ	4,812,775	153	32				

Official 'Phone Station Scores (October)

Station	Score	QSO's	Sects.	Heard	Power (Watts Input)	Operating Time
W2JME	14,940	83	36	—	300/500	9 h. 5 m.
W4DCQ	11,520	66	32	15	900	6 h. 26 m.
W2IYX	10,320	64	30	12	150	6 h. 46 m.
W1EAO	9,482	51	22	13	250	7 h. 35 m.
W3CWG	8,295	55	21	10	300	8 h. 30 m.

Station	Score	QSO's	Sects.	Station	Score	QSO's	Sects.
W8AW	8,020	49	20	W1LNI	5,850	31	18
W2JZX	7,676	44	19	W4AJT	5,818	34	21
W1DWP	7,475	43	23	W2JKH	5,526	41	18
W1APQ	6,760	44	20	W1GKJ	5,440	31	17
W1EOA	6,324	36	17	W1GUF	5,000	48	20
W1KTE	6,142	34	19	W3GWQ	4,560	28	19
W8MBW	5,980	50	23	W8NDN	4,510	41	22
W2CET	5,865	45	23	W6CHV	4,356	21	12

In order to participate more actively in the next ORS/OPS Parties, W1AW will cancel Official Broadcast and Code Practice schedules on January 31st and February 1st.

The next quarterly ORS/OPS Parties are scheduled for January 31st-February 1st. Mark your calendar now and plan to get in on the fun.

F.C.C. Disciplinary Actions

CRIME does not pay." Witness the actions of the FCC as recounted below. This is no time for monkeyshines. Be careful to operate your station in accordance with the regular and special rules and regs of the Commission. If you are uncertain about the interpretation of any of them, write ARRL for advice and, above all, don't do anything on the air you're not sure is lawful. It may cost you your ticket!!

The Federal Communications Commission on October 7, 1941 suspended for a period of three months the amateur radio operator license with Class A privileges of Harry J. Van Gorden, Flushing, L. I., N. Y. for violation of the Communications Act and Commission Rules and Regulations.

(Continued on page 52)

NEBRASKA EMERGENCY

THE hams of Nebraska had their first taste of emergency work for 1941 on October 31st and November 1st when a heavy wet snow fell, followed by a quick freeze that took all communications lines out in eastern part of the State.

Fremont was completely isolated from the outside world for several hours. First communication lines were established by W9OED, Fremont. This was accomplished on 1.75-Mc. 'phone. W9OED called "CQ Omaha, Urgent Traffic," was answered by W9OYB, Omaha, who in turn called up W9VKT, Omaha, on the land line and informed him OED was calling him. W9VKT contacted the Associated Press office, and the night news for the Fremont Morning Guide was transmitted by VKT to OED. Immediately following completion of this effort, BNC, Omaha, called OED, Fremont, for traffic west to Grand Island for the A. T. & T. When contact was finally established in round-about way, BNT in the meantime had gotten into Grand Island via Kansas City, Julesburg, Colorado and North Platte.

The following morning, lines still being out of order, OED scheduled BNC for United Press news for the *Fremont Daily Tribune*. The October 31st news was handled at OED's with the assistance of RCH and his XYL, who copied the press in shorthand. Saturday morning on the BNC schedule, the local newspapers furnished a stenographer and the press transmissions were handled without a hitch. The U.P. had a direct landline to the home of BNC, who had an amplifier on the telephone and rebroadcasted the U.P. office reading of the news direct to OED, who merely sat and watched the stenographer take it down in shorthand.

The telephone, telegraph and teletype lines all went out and came back at about the same time.

All Western Union telegraph traffic in and out of Fremont was handled by VKG, who, with the assistance of BQP, passed 18 messages in a short time.

The Pioneer Radio Club of Nebraska are now all building 56- and 112-Mc. equipment, so that if and when another call comes for amateur radio assistance, they will be more than ready to fill the bill.

— Scott E. Davison, W9OED

Trainee Traffic Stations

THE following are additions to the lists appearing in the October, November and December issues of QST.

- W1NQX — Sgt. J. H. Carroll (W3ILL), Bangor Air Base, Bangor, Me., operates on 7 and 14 Mc.
- W2JVVX/2 — Sgt. S. A. Sterman, Mitchell Field, L. I., N. Y., schedules.
- W2JZX, who has AARS outlets, daily at 10:30, 11:30 A.M. and 12:30 P.M.
- W3JHY — Capt. Robert E. Kearney, Fort Belvoir, Va., schedules AARS nets and is prepared to handle traffic.



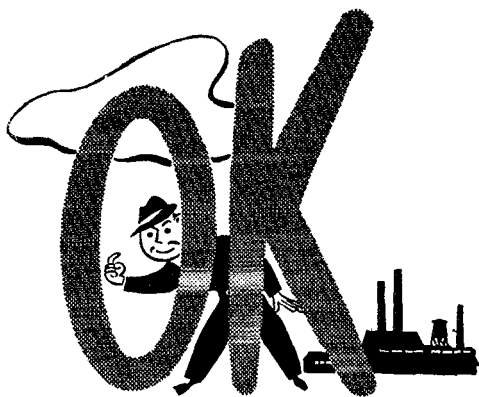
(Number ninety-five of a series)

Merry Christmas and Happy New Year from National Company which includes

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| Herman Bradley | W1BAQ | Robert Mugnai | W1KLW |
| James A. Ciarlone | W1BHW | Frank Lopez | W1KPB |
| Dana Bacon | W1BZR | Richard Gentry | W1LEN |
| C. F. Hadlock | W1CTW | John Stanley | W1LFF |
| Harvey Poore | W1DKM | Francis Waden | W1LNV |
| Seth Card | W1DRO | Richard Thurston | W1MFZ |
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| John Bartlett | W1EU | Carl Beckman | W1MPF |
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| Donald Hinds | W1FRZ | Richard Gysan | W1MUO |
| Robert J. Murray | W1FSN | Maynard Wentzel | W1NBV |
| John A. Baxter | W1HKR | George Vasil | W1NBW |
| David M. Smith | W1HOH | John M. Wondergem | W1NDA |
| Vincent Messina | W1HRW | Bruce Rich | W1NKO |
| Jack Ivers | W1HSV | William Doyle | W1TV |
| Matthew J. Sokolowski | W1ISR | Arthur H. Lynch | W2DKJ |
| Sumner Herrick | W1JDF | Myrl B. Patterson | W5CI |
| Edmund C. Harrington | W1JEL | Herb Becker | W6QD |
| Kenneth C. Nagle | W1JGD | John Prusak | (amateur operator
license but no call) |



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W5GKI — Sgt. Jack Cunningham, Camp Bowie, Texas; Sgt. George Krutilek, W5FID, assistant operator.
 W6FWJ — Capt. W. T. Dodge, Marine Corps Base, San Diego, Calif.
 W6KWI — Fred A. Nicholas, Bisbee, Ariz., handles traffic for Fort Huachuca on 7080 kc. at 9 A.M. MST daily and on 3515 AARS net Wed., Thurs. P.M.
 W6UGK — Radio Club Fort Ord, Calif., 7100 kc. from 8:00 to 9:00 A.M., 12:00 to 1:00, 3:30 to 5:00 P.M. PST. Operators: W6FDD, W6TSD. Schedules for other hours can be arranged.
 W9DDD/8 — Howard Schmidt, Fort Custer, Mich., 3.5-7-, 14-Mc. c.w., 14-Mc. 'phone.

Defense U.H.F. Nets

N. Y. 112-Mc. Emergency Net Activity

For the first time in New York City the ARRL Emergency Corps of Queens County worked in conjunction with the Police and Air Raid Protection Service of Civilian Defense.

On Thursday Night, November 13th, a mock air raid was scheduled to be held at Bayside, Queens County, New York City. At a prearranged signal, a portable mobile unit, operated by W2DTE with an assistant operator, W9JPY, was rushed to the scene of the supposed bombing. Another portable mobile unit operated by W2KIV and W2JSM was dispatched to the Zone Warden’s Headquarters and a portable station operated by W2KDC and Asst. E. C. W2EKK was rigged up at the 111th Precinct Police Station at Bayside, L. I.

Working under the assumption that the telephone lines were out, these amateur stations served as the only means of communication during the test.

The portable mobile unit at the scene of the disaster, acting under orders from the officials already there, contacted the Police Station telling them what had happened and what assistance was required. Police Cars and other emergency units were immediately dispatched to the scene. During operations another portable mobile unit with operators W2MJL, W2JSV and Asst. E. C. W2NDQ reported in at the Police Station and stood by in readiness to take over should their services be required.

The Air Raid Drill lasted for thirty minutes during which time all operators got a thorough workout under conditions approximating a real emergency with a couple of automobiles wrecked in the roadway, the telephone emergency trucks working on their lines, the Dept. of Sanitation trucks cleaning up the wreckage and the Red Cross Units caring for the injured.

—Howard E. Smith, W8GDF, Queens County Emergency Coordinator

Garden City Radio Club U.H.F. Program

GARDEN CITY, N. Y., Nov. 18. — Active work looking to a close tie-up with National Defense measures was started here last night at the regular meeting of the Garden City Radio Club; appointment of three committees by Dr. L. J. Dunn set the wheels in motion for an all-out effort which it is confidently expected will result in organization work that will set the pace for similar effort all over the country.

Actual work on the program starts Friday evening, November 21, when Dr. Dunn (W2CLA) will call the organization together for a roll-call and preliminary drill at 8:30 P.M., frequency used will be in the 112 Mc. band. Next regular meeting of GCRC, at which it is expected to complete an effective organization, will be held in Village Hall, Garden City, on the evening of Wednesday, December 3.

In the meantime, a General Committee to work out details of the program and to suggest suitable candidates to take over the work of actively heading the group, up to now aggressively handled by Dr. Dunn whose other National Defense activities no longer permit him to carry on this work, includes these amateurs: Chairman John Heins, Captain Wm. Allen and John Herlands. A second committee, to work with Chairman George Wies, will work on a Civilian Air Defense program and includes Bill Meisner,



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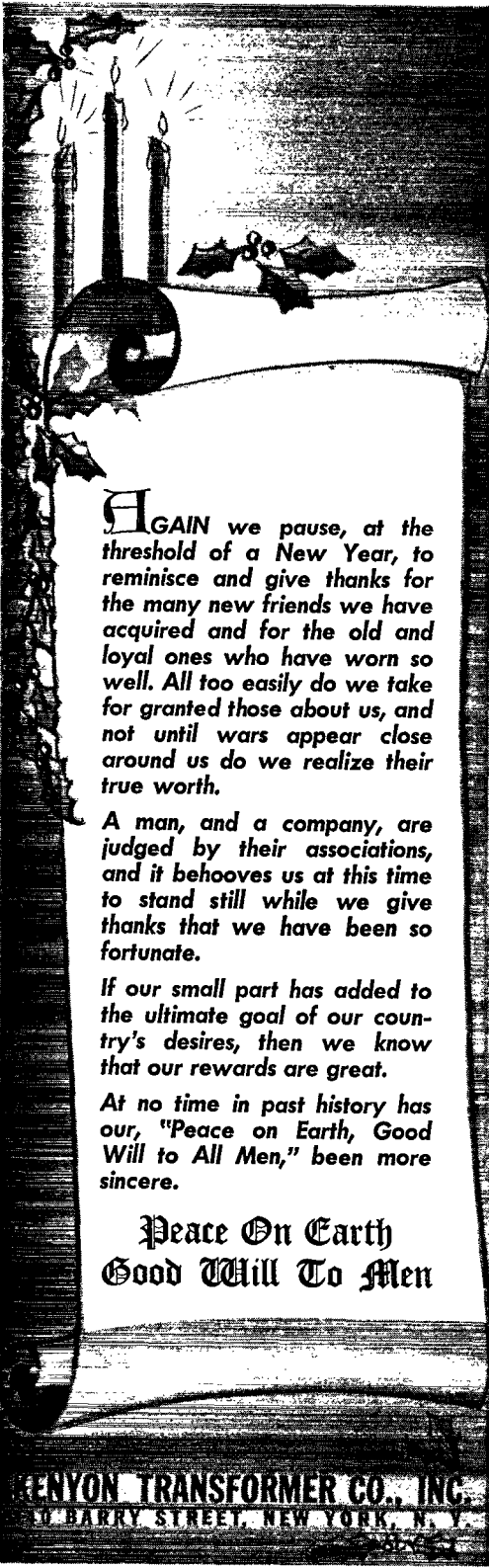
ments throughout the entire world. Dependability alone has built the fine reputation enjoyed by the "Super-Pro". Its ability to stand up over long periods of time, and give top performance under the most difficult operating conditions, has made it a leader in the field. The next time you have a difficult receiving problem try a "Super-Pro" and your worries will be over.

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AGAIN we pause, at the threshold of a New Year, to reminisce and give thanks for the many new friends we have acquired and for the old and loyal ones who have worn so well. All too easily do we take for granted those about us, and not until wars appear close around us do we realize their true worth.

A man, and a company, are judged by their associations, and it behooves us at this time to stand still while we give thanks that we have been so fortunate.

If our small part has added to the ultimate goal of our country's desires, then we know that our rewards are great.

At no time in past history has our, "Peace on Earth, Good Will to All Men," been more sincere.

**Peace On Earth
Good Will To Men**

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Arthur Lynch and Jim Tynan. This committee will coordinate portable mobile flying work and ground stations for observation tactics in defense work. Finally, a technical committee, headed by Ed. Ruth, will work out designs and details for equipment of the most suitable type for the work in hand. Other members of this committee are Jack Andriese and Jim Tynan.

— S. P. McMinn, W2WD, Secretary

W2HZL, Asst. Secretary of the Schenectady Amateur Radio Assn., reports that the club is conducting a 112-Mc. emergency net drill weekly. The first meeting, held on November 12th, was attended by fourteen stations.

Mr. Louis Melbert, W1FSH, is being recommended by the Manchester Radio Club for the post of Emergency Co-ordinator. Eight 112-Mc. stations under his direction recently demonstrated a set-up covering the community using portable and portable-mobile units, and handling messages "planted" by the control car based on various simulated contingencies. A good start has been made on plotting the community for possible dead spots. Regular Air Warden blanks such as used in Britain have been prepared for filing ARP message-reports to the Report Centers.

FLORIDA EMERGENCY

ON SUNDAY, October 5th, a storm was reported off Miami, Fla., with a wind velocity of 100 miles per hour near its center. At this time all emergency nets in the state on all bands became alert for the apparent emergency that was to come.

The storm was supposed to strike Miami in the early morning hours and the nets were busy getting organized with the various net control stations getting set for whatever traffic that they could handle when the occasion arose. Governor Holland had requested the amateur radio system to keep him posted on the storm at all times and it was then a matter of getting an outlet at Tallahassee for all traffic that would be coming in for the Governor and various state officials.

That detail taken care of, the nets settled down for an all night vigil of waiting for something to happen. At about 5:30 on the morning of October 6th the storm struck about 20 miles south of Miami but did not do as much damage as was expected. It then crossed the southern part of the state and was apparently forgotten as the nets disbanded about 8:00 A.M. on Monday morning. The storm had run into the Gulf of Mexico.

On Tuesday morning, October 7th, the people of Tallahassee, Fla., awoke to find themselves in the middle of the worst storm in the city's history. At about 5:30 A.M. the amateurs in Tallahassee found that all communications with the outside world were out. There was a report that eight people had lost their lives in Tallahassee and surrounding area.

The job of setting up headquarters for communications in Tallahassee fell on the shoulders of W4GAA and W4BOW. On checking the damage done to their antennas, W4GAA found that the feeders on his 1.75-Mc. antenna were down; on getting his 1000-watt a.c. generator going, he could raise no one using his counterpoise. It was then decided to shift the generator to W4BOW's QTH and put his 450-watt rig on 7-Mc. c.w. This being done, W4BOW raised W4PL in Sheppard, Tenn., who took the first traffic from him to the Red Cross in Washington, D. C. Traffic was handled with W4PL until he faded out in the early afternoon. The following stations were then on the alert for W4BOW's traffic until 7-Mc. started skipping out late in the afternoon: W4DRD in Miami; W4FQZ in Ft. Myers; W4FZW in Jacksonville.

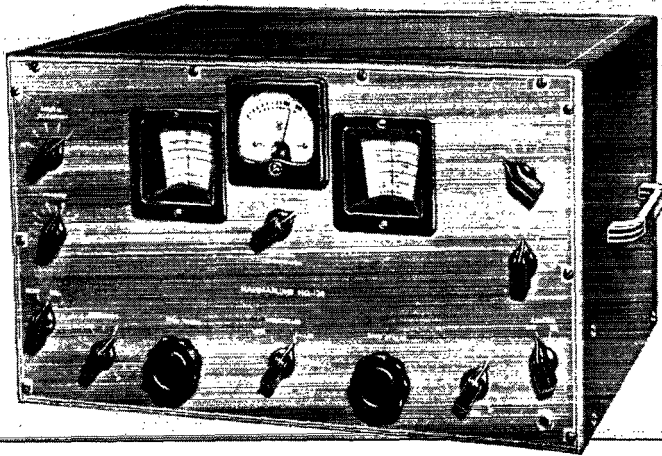
In the meantime, W4GAA had gotten the cooperation of the local fire dept. and had gotten his antenna feeders back up. He then raised W4FOP in Bessemer Ala., who took his first traffic.

At about 6:30 in the afternoon the Florida 1.75-Mc. AARS net was to have a drill. W4GAA knew that as soon as they got on, the net would take the responsibility of clearing the frequency and getting organized.

About 7:00 P.M. W4BOW came in with the report that 7 Mc. was skipping too much for best results and was returning the generator to W4GAA, which was a good thing as W4GAA was operating on 6-volt storage batteries driving a 325-watt converter genemotor taken from a local juke

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CRYSTALS

organ, and the batteries were getting very weak. About 6:15 W4GAA raised W4GVH in Panama City, a member of the 1.75-Mc. AARS and on getting set to start handling traffic, W4GUI, State Alternate Control Station, called in to take over. The following stations helped W4GAA handle traffic within the net: W4GUI, W4BJF, W4GVH, W4HLC and W4FRP.

Traffic was handled throughout the day by W4GAA and W4BOW for The Coast Guard, State Officials, City and County officials, Airlines, the CAA and the telegraph companies.

W4BOW and W4GAA were given splendid support and help with the handling of all traffic during the emergency by W4EIC and W4IDN and stations in states all over the country who helped to keep the frequencies clear. They did a swell job and deserve a lot of credit.

— *Raymond Sonderup, W4BOW, and Tommy Blalock, W4GAA*

F.C.C. Actions

(Continued from page 46)

The amateur radio operator license with Class B privileges of Karl Koella, Toledo, Ohio, was suspended on October 7th for a period of six months for violation of the Communications Act and the Rules and Regulations of the Commission governing amateur radio stations and operators.

On November 18th the Commission suspended for a period of one year the radio operator license of Kenneth Kangas, Minneapolis, Minn., for operating a transmitter on premises controlled by an alien in violation of the Communications Act.

The amateur radio operator license of Joseph Tenore, Quincy, Mass., was suspended for the remainder of the license term, for, while operating W1LKT, communicating with D4ARR located in Germany, in violation of Commission Order 72.

On November 25th the amateur operator license of Edward D. Wells was suspended for violating emergency regulations (Order Number 72) by using station W8AOO to communicate with stations XE1AM and CE1OM in Mexico.

WIAW SENDING PRACTICE SUBJECTS AND QUALIFYING RUNS

Daily-except-Friday WIAW Code Practice starts at 9:45 P.M. EST. Simultaneous transmission on: 1761, 3575, 7150, 14,254, 28,510, 58,960 kc.

The subjects given below will be followed each Sunday, Tuesday, and Thursday, December 23rd to February 1st, and the text is identified to make sending practice available. To get sending help, hook up your own key and buzzer or audio oscillator, turn to the QST material, tune in WIAW, and attempt to send right in step with the tape signals. Adjust your spacing in the manner the received signal indicates necessary for improvement.

Date	Subject of Practice Text from Dec. QST
*Dec. 23	Vibrator Power Supplies, p. 44.
**Dec. 26	<i>Evening Qualifying Run, 9:45 P.M. EST. unannounced copy.</i>
*Dec. 28	Hints and Kinks, p. 52.
*Dec. 30	A Coupling Unit for Continuous Antenna Rotation, p. 15.
Jan. 1	Cutting Bias Supply Size and Cost, p. 29.
**Jan. 4	<i>Daylight Qualifying Run, 1:50 P.M. EST. unannounced copy.</i>
Jan. 4	112-Mc. Emergency Gear, p. 9.
Jan. 6	112-Mc. Emergency Gear, 3rd par., p. 11.
Jan. 8	112-Mc. Emergency Gear, 3rd par., p. 12.
Jan. 11	A 112-Mc. Emergency Transmitter, p. 14.
Jan. 13	The Oscillator Circuit, p. 17.
Jan. 15	The Modulator, p. 68.
Jan. 18	What the League Is Doing, p. 22.
Jan. 20	Meter Shunts, p. 24.
**Jan. 22	<i>Evening Qualifying Run, 9:45 P.M. EST. unannounced copy.</i>
Jan. 25	A Compact Receiver for 112 Mc., p. 31.
Jan. 27	An Experimental 112-Mc. Receiver, p. 36.
Jan. 29	A Modern Vacuum-Tube Voltmeter . . . , p. 40.

* November, 1941, QST.
** W9HCC sends same text at same time on 3532, 7058, and 14,312 kc.

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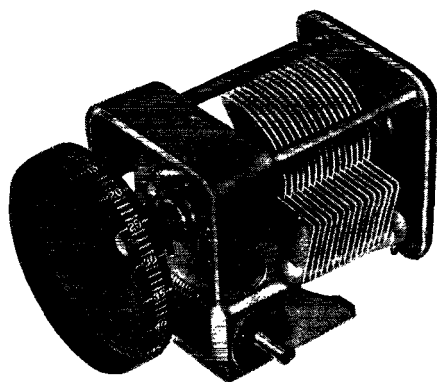
Peace on earth...

Certainly, at a time like this, we are not attempting to be facetious. In complete seriousness, our thoughts and our hopes are for peace and goodwill for all men. . . . It's Christmas time!

And the day will come, soon, we hope, when our laboratory and our factory will be enabled to release better-than-ever CARDWELL products . . . in normal volume . . . for your amateur and commercial applications.



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Emergency Equipment Power Supply

(Continued from page 14)

a.c. gave the desired 300 volts at 100 ma., put only 70 ma. at slightly over 200 volts into the same load resistance when operated from a battery. If it comes to a matter of necessity, of course, this method of operation at least is better than no battery supply at all. But with a little forethought and very little trouble it is readily possible to get the higher output.

In fact, we don't believe, now, that emergency power supply need give us any real concern. If one source of supply fails, there are enough alternatives — including that reservoir which the future may see us tapping for lots of our needs, the two-decade accumulation of outmoded b.c.l. sets.

U. S. A. Calling

(Continued from page 16)

FREE RADIO ENGINEERING TRAINING

IN OUR last issue, page 26, and in the November number, page 29, we reported the availability of free technical schooling in a large number of educational institutions in coöperation with the U. S. Office of Education. An announcement from the University of Maryland brings to hand a specific example.

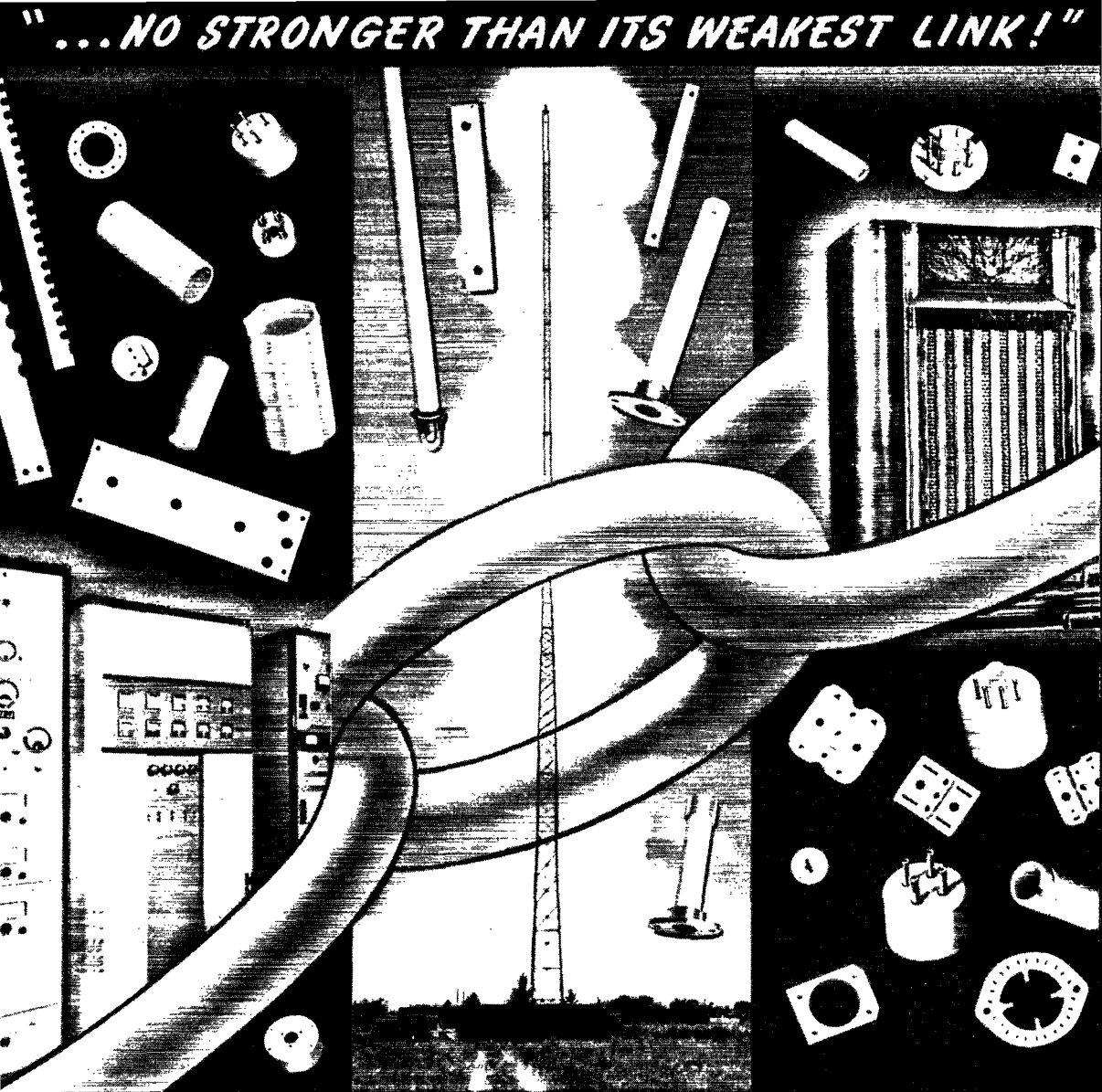
There is urgent need of radio engineers and other technical radio men in defense work. If a sufficient number of applicants can be found, the university plans to convene on January 5th a full-time day course in radio engineering, continuing through August 7th. The course will deal with advanced theory and practical radio engineering, the student spending a minimum of forty hours a week in lecture room and laboratory. Tuition expenses are borne by the government, the student paying his own living expenses. Requirements for admission include a degree in electrical engineering or a minimum of three years' E.E. training at a recognized college. The appearances are that all students completing the training will receive good offers of employment. Application forms and an outline of the proposed curriculum may be had from Dean S. S. Steinberg, College of Engineering, University of Maryland, College Park, Md.

Lock-in Tubes

(Continued from page 17)

generative effects. The filament-type double triode will provide a usable signal source up to 250 Mc. in a long-line oscillator circuit, while the filament-type triode will operate up to 350 Mc.

Another tube of interest to the 56- and 112-Mc. gang is the 7W7, a new high-frequency amplifier pentode identical to the 7V7 except that it has two cathode leads brought out at the base. This cathode lead arrangement is said to triple the input resistance at the higher frequencies, and the 7W7 is a useful amplifier up to 200 Mc. When employed as a mixer tube using signal-grid injec-



AISiMag steatite ceramic insulation combines these outstanding properties: high dielectric strength with low dielectric loss, high mechanical strength with excellent resistance to atmospheric conditions. ● Leading manufacturers of radio equipment use

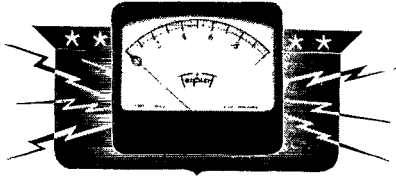
AISiMag from microphone to loudspeaker to be sure that insulation is NOT the weak link in the chain of materials used in their equipment. If you want to know that you have the best in insulation, specify AISiMag insulators when ordering your equipment.

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For TRIPLETT Customers Only

LONG BEFORE the state of emergency was proclaimed, the Triplet Company was getting ready to do its part in building our national security. We knew that we must meet important new responsibilities. At the same time, we felt keenly our continuing obligations to our customers—old friends with whom we have had happy business relations through many years.

We doubled—then tripled—our output to fill the needs of our old accounts. We added to our production facilities . . . hired many more men . . . are working extra shifts at time-and-a-half.

All this has not been enough. We have been called on to produce more and more for national defense. We are proud of the job we are doing to help meet the emergency, but it is difficult not to be able to serve our old friends equally as well. In the face of these conditions, the Triplet Company has adopted these policies "for the duration":

FIRST: We will continue to serve you by our service to our mutual responsibility—the national emergency.

SECOND: We will continue to do everything we can to fill orders from our regular customers, even though some deliveries may be temporarily delayed. No business from new accounts has been nor will be accepted until after our old friends have been served, except where priorities make it impossible to do so.

THIRD: Our engineering and research departments will continue to work on the development of superior equipment and improved methods to serve you still better when we can resume normal operations.

The present emergency is incidental and as we work towards the future, we will do our best to continue to merit your confidence and loyalty.

President
The Triplet Electrical
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Manufacturers of Precision Electrical Instruments

tion it operates satisfactorily at even higher frequencies.

Operating conditions and characteristics of the new tubes are given below.

1201

Cathode Type High-Frequency Triode

Heater voltage	6.3 volts
Heater current	0.150 amperes
Plate voltage	180 volts
Grid voltage	— 3.0 volts
Plate current	5.5 ma.
Mutual conductance	3000 μ hos.
Plate resistance (approx.)	12,000 ohms
Amplification factor	36

1203

Cathode Type High-Frequency Diode

Heater voltage	6.3 volts
Heater current	0.150 amperes
Plate voltage (r.m.s.)	10 volts
Plate current (average)	9.0 ma.
Resonant frequency	613 Mc.

1204

Cathode Type High-Frequency R.F. Pentode

Heater voltage	6.3 volts
Heater current	0.150 amperes
Plate voltage	250 volts
Screen voltage	100 volts
Control grid voltage	— 2 volts
Plate current	1.75 ma.
Screen current	0.60 ma.
Mutual conductance	1200 μ hos.
Plate resistance	800,000 ohms
Input resistance (100 Mc.)	20,000 ohms
Resonant frequency	545 Mc.

1291

Filament Type High-Frequency Double Triode Per section, except filament

Filament voltage	1.4 volts
Filament current	0.220 amperes
Plate voltage	90 volts
Grid voltage	0 volts
Plate current	5.2 ma.
Mutual conductance	1850 μ hos.
Amplification factor	21

Class C Push-Pull Amplifier (both sections)

Plate voltage	90	90	135	180	180	volts
Filament voltage	1.4	1.67	1.67	1.4	1.67	volts
Power output at 21 Mc.85	.88	2.19	2.82	3.00	watts
Power output at 120 Mc.32	.50	1.25	1.42	1.71	watts

1293

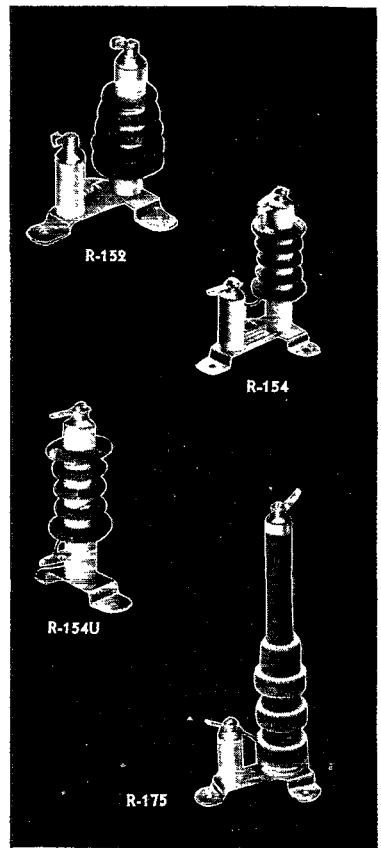
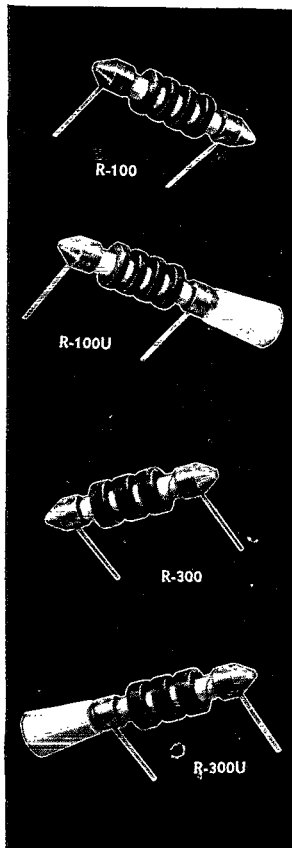
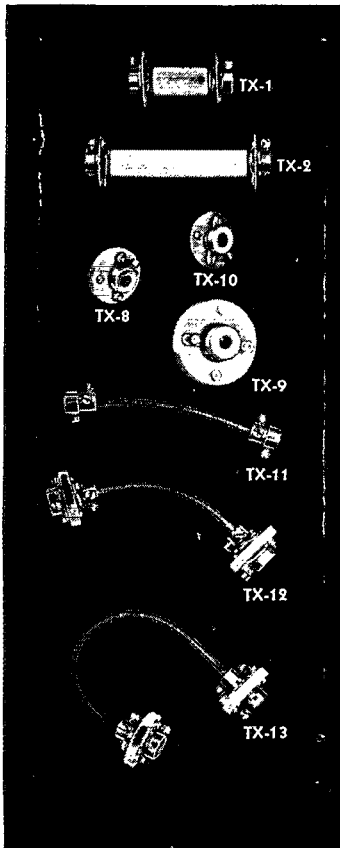
Filament Type High-Frequency Triode

Filament voltage (d.c.)	1.4 volts
Filament current	0.110 amperes
Plate voltage	90 volts
Plate current	4.7 ma.
Grid voltage	0 volts
Mutual conductance	1300 μ hos.
Amplification factor	14

7W7

High Frequency Amplifier Pentode

	Condition I	Condition II	
Heater voltage	6.3	6.3	volts
Heater current	0.450	0.450	amperes
Plate voltage	300	300	volts
Screen supply voltage	150	300	volts
Screen series resistor	—	40,000	ohms
Suppressor	0	0	volts
Cathode bias resistor (min.)	160	160	ohms
Plate resistance	0.3	0.3	megohm
Mutual conductance	5800	5800	μ hos.
Plate current	10.0	10.0	ma.
Screen current	3.9	3.9	ma.
Grid voltage for cathode current cutoff	— 6	— 14	volts



FLEXIBLE COUPLINGS AND RF CHOKES

- TX-1** Leakage path 1". **Net \$.66**
- TX-2** Leakage path $2\frac{1}{16}$ ". **Net \$.75**
- Flexible couplings, Isolantite insulated.
- TX-8** **Net \$.51**
- Non-flexible coupling. Isolantite.
- TX-9** **Net \$.75**
- Flexible, Steatite insulation $1\frac{5}{8}$ " Dia.
- TX-10** **Net \$.36**
- Flexible coupling with canvas Bakelite insulation. $1\frac{1}{16}$ " Dia.
- TX-11** **Net \$.42**
- The flexible shaft of this coupling connects shafts at angles up to 90°. Not insulated. Length $4\frac{1}{4}$ ".
- TX-12** Length $4\frac{5}{8}$ " **Net \$.84**
- TX-13** Length $7\frac{1}{8}$ " **Net .99**
- Flexible shaft couplings like the TX-11, but with Isolantite insulators at each end.
- All couplings above fit $\frac{1}{4}$ " shafts.

- R-100** **Net \$.30**
- Without standoff insulator.
- R-100U** **Net \$.36**
- With standoff insulator.
- RF Chokes R-100 and R-100U are identical electrically, but the latter is provided with a removable standoff insulator screwed on one end. Both have Isolantite insulation. Inductance $2\frac{1}{2}$ mh., distributed capacity 1 mmf., DC resistance 50 ohms, current rating 125 ma.
- R-300** **Net \$.30**
- Without standoff insulator.
- R-300U** **Net \$.36**
- With standoff insulator.

Similar to the R-100 series above in size and construction, but current rating is 300 ma. Inductance 1 mh., distributed capacity 1 mmf., DC resistance 10 ohms.

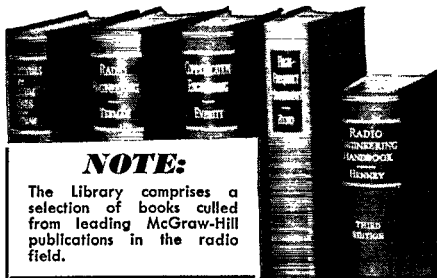
- R-152** **Net \$1.50**
- For the 80 and 160 meter bands. Inductance 4 mh., DC current 600 ma., DC resistance 10 ohms. Isolantite core.
- R-154** **Net \$1.50**
- R-154U** **Net 1.20**
- For the 20, 40 and 80 meter bands. R-154 and R-154U are the same except for mounting (see illustration). Inductance 1 mh., DC current 600 ma., DC resistance 6 ohms. Isolantite core.
- R-175** **Net \$1.80**
- For parallel feed as well as series feed in transmitters with plate supply up to 3000 volts modulated or 4000 volts unmodulated. Reactance is high throughout the 10 and 20 meter bands as well as the 40, 80 and 160 meter bands. Inductance 225 μ h., distributed capacity 0.6 mmf., DC resistance 6 ohms, DC current 800 ma., voltage breakdown to base 12,500 volts.

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In the Services

(Continued from page 28)

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Faries, 3AOA, is on active duty at the Customhouse in Philadelphia. Ens. Keener, 3AJS, is A.C.O. of the Washington. CRM Mundy, 3DBR, is assigned to the Naval Radio Station at Tutuila, American Samoa; Lovering, 1FDS, to that at Winter Harbor, Me.; and Eckford, K6NDF, at Midway Island. Lt. Jordan, 3FIU, and Ensigns Gladding, 1GTW, and Tippey, 4DBG, are three more lads in the Navy Dept., Washington. S1c Gilgen, 9WXH, is enrolled in the Indianapolis Radio School. On the Delta we find CRM Bowen, 3ITW, and Lt. (jg) Eglit, 2KDB; on the Moffett, RM1c Simmons, 5CPT; on the Munargo, Lt. Johnson, 9GT; on the Mattole, RM2c Baker, 4CQX; on the Wasp, Patton, 9BBV; on the Hughes, RM3c Gooch, 9VJG; on the Surveyor, Blankmann, 7DEU; on the Cyane, Lt. Johnson, K7IFE; the Curtiss, RM2c Orwick, 8JZF; the Idaho, Ens. Duke, 4FMB; the Dubuque, Ens. Stevens, 8WHO; the St. Michel, RM3c Wesslund, 9DNW; the Rush, RM1c Conner, 3HCE; the Gridley, RM3c Hassett, 8PVB; the Honolulu, Comdr. Murphy, 3FN, OM Beecher, 2ILE, of electronic key fame, is at the training station in New Orleans. At the section base in Astoria, Ore., are located RM3c Savage, 7GSG, and Wyke, 7HDH. Lt. Graveson, 2LR, is on active communications duty in the Third Naval District. RM3c Hamilton, 1MBV, is now assigned to the naval air station, Kaneohe Bay, T. H.; Ens. Bonell, 9MDE, to that at Jacksonville, Fla.; Rodgers, 4FLZ, at Alameda, Calif.; CRM Frederickson, 2FLD, Floyd Bennett Field; and Ens. Clark, 6GQC, Johnston Island, T. H.

ARMY

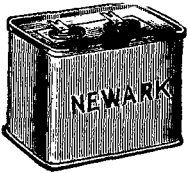
STAFF SGT. BRUENING, 8QOK, and Pfc. Przybycien, 8IXJ, and Betot, 8UUD, are Michigan guardsmen on duty at Ft. Leonard Wood, Mo., where also is selectee Pvt. Richards, 9GDK, Chief Radio Instructor of the 1st Bn., 184th F. A., Ft. Custer, Mich., is Tech. Sgt. Baxter, 9MQI. Donald Myers, 8CNV, is in charge of communications for the Ohio State Guard. Lt. Boyts, 5GEU, has been assigned to the test section of the Armored Force Board at Ft. Knox. Pvt. Pinkake, 7FTO, operates with regimental radio, 7th Infantry, Ft. Lewis, Wash. Pvt. Winters, 8PCM, pounds brass at the 21st Air Base Sqdn., Daniel Field, Ga. Capt. Vendley, 6AAE, is serving at Eight Corps Area Army Headquarters, Camp Bowie, Texas.

In the Marine Corps we find Capt. Smith, 3GKN, at Washington headquarters; Pvt. Paley, 2LQM, in the Navy Yard at Washington; Pfc. Thompson, 6UFS, at Camp Elliott, Calif.; and M. Sgt. Masters, 3HVF, at the aviation station in Quantico, Va.

Receiving special training at the Capitol Radio Engineering Institute in Washington is a group of radiomen from various parts of the country, including Staff Sgt. Nilsson, 4ALW, Pfc. Kolyisko (operator only), Hetchler, 9UUV, Baker, 2KTF, Mauldin, 4EEJ, and Bledsoe, 4GVZ, from Ft. Jackson, S. C.; Pfc. Kapp, 2CQQ, Ft. Ethan Allen, Vt.; Pfc. Policastro, 2LPE, Ft. Dix, N. J.; Pfc. Mataski, 2OHH; Madison Barracks, N. Y.; and Pvt. Thomas, 2LBS, Ft. Meade, Md. Two of the lads in Greenland are Pfc. Becker, 9SEC, and McCarthy, 9GEJ, with the 23rd Sig. Svc. Co. Pfc. Keidel, 8PLJ, is a guardsman pounding brass at Camp Edwards, Mass. The gang at Ft. Jackson, S. C., includes Capt. Zaebst, 4HWZ, M. Sgt. Wolf, 4ICK, Lt. Wever, 4MJ, and Sgt. Surles, 4HOY; at Pine Camp, N. Y., Pvt. Zauner, 2KES, Snyder, 3IQC, and Pfeifer, 2EMY; at Camp Shelby, Miss., Lt. Whitaker, 8BDM, Pfc. Glaze, 5KMG, and Pvt. Rexford, 8TBZ; at Camp Claiborne, La., Pvt. Roberg, 9CGK, Potter, 9ILT, Wilson, 9ABN, Junkert, 9UMH,

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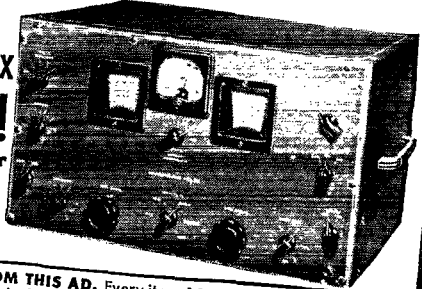
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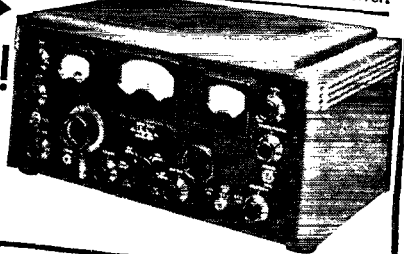


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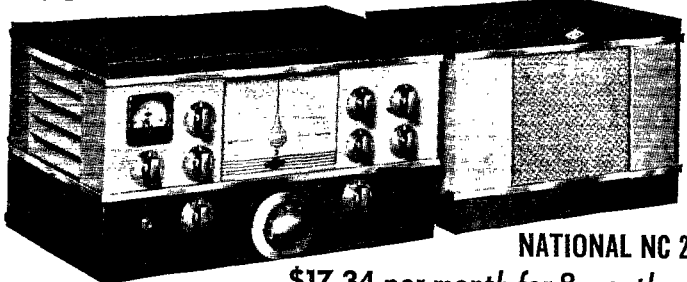
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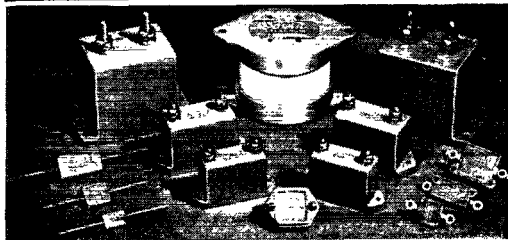
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Robert Leach, 1GFP, is with the foreign branch of the Civil Service at Trinidad, B. W. I., while his brother Arthur, 1GFQ, is with OPM in Washington. Pvt. Flynn, 2ILG, is an Air Corps enlistee learning the ropes at Kessler Field, Miss. Cpl. Donovan, 9QZW-6UAA, maintains AWS equipment at Hamilton Field, Calif.

Tech. Sgt. Williams, 7IZK, has duties with Regt. Hq. of the 206th C. A., Ft. Lewis, Wash., where also is Staff Sgt. Hruska, 7FRQ, in the 148th F. A. Selectee Phillips, 7CNM, is now Pfc. with the 67th Armored Regt., Ft. Benning, Ga. Pvt. Christ, 9ALU, is finishing up the radio course at Ft. Bragg, N. C. Staff Sgt. Arsics, 2MCF, teaches radio at Ft. Dix, N. J.

Soldiers and Sailors

(Continued from page 51)



Carol Bruce, Hollywood movie actress, decorates the dedication scene at WINTV. Right, RMIC Henry Kurtz, president of the ham club.

left for auxiliaries. As the stations will be operated by many different amateurs, with differing operating desires, it was necessary to incorporate great flexibility of operating frequencies as well as simplicity of control. The transmitter provides a 75-watt carrier on c.w. and 'phone, either crystal-control or e.c.o., with all controls from the front of panel, including band-switching and accurate tuning of the final. Normal 'phone operation will be push-to-talk but provision has been made in the construction for break-in operation where essential. A simplified doublet antenna provides a standardized sky-wire.

Hand-in-hand with the amateur units are radio recorders which NCCS has already installed in a great many of its clubs. A hundred thousand discs have been distributed to offer the soldier an opportunity to record his message and send home "A Letter on a Record."

Wired radio is the next major project in USO-NCCS clubs. Complete broadcasting studios are installed by NCCS under this nationwide plan. A low-power transmitter is set up in sound-proof rooms. Programs, written and produced by soldiers, are then tapped into the electric wiring system of the nearby post and the soldier-productions are then dialed-in by the soldier-listener as he sits inside his quarters. Preliminary scripts have been issued. Recording libraries are in the process of being selected. Radio clubs are being formed. The NCCS "Band-Wagon" is going places!

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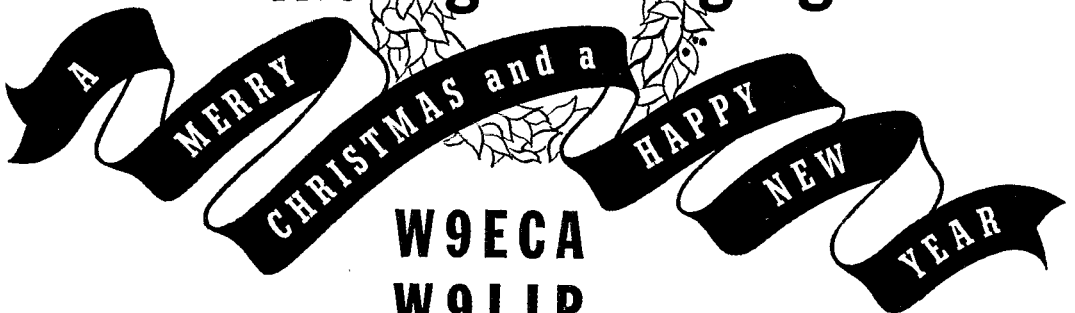


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Are you, like many other professional radiomen, so wrapped up in your present routine work, that you are losing sight of where you will be "tomorrow—and the day after"? Thousands of ambitious radiomen have been set on the right course with the help of CREI advanced technical training. Our records show that CREI graduates as a group are among the highest paid in radio—and that the majority enjoy salary increases during or immediately after their training! The well-written text plus the personalized instruction provide a proven formula for more rapid advancement—and security in the future. Why not investigate what CREI spare-time training in Practical Radio Engineering can do for you?

THINK THIS OVER—Actual records show: ● CREI training pays dividends in the form of job security and the ability to earn more money! ● CREI men are in more than 400 broadcasting stations! ● More than 5000 radiomen have taken this practical course of training! ● Employers are increasingly calling upon CREI graduates for personnel replacements and additions!

Jobs that provide security—jobs that will mean something long after "tomorrow" has come and gone—must be won and held on ability! Now is the time for you to plan your career for the future and not just relax in your job today. You have a jump on the other fellow because your radio experience is a valuable asset, if supplemented by CREI modern technical training. It's worth taking time right now to find out how CREI offers you a planned program for advancing yourself in radio.

Write for Facts Today!

Let us send you our interesting booklet, together with personal recommendations for your advancement in radio through a planned program of technical training. To help us intelligently answer your inquiry, please state briefly your education, radio experience and present position —also whether interested in home study or residence training.



CAPITOL RADIO ENGINEERING INSTITUTE

Dept. Q-1, 3224-16th St., N. W. Washington, D. C.

62

On the Ultra Highs

(Continued from page 34)

work out very nicely on 2½. Top and bottom sections are 63¼ inches long; center sections 79¼ inches. Stubs made of ¼-inch copper tubing spaced 2 inches are 14 inches long. Feeders, attached to the center stub at 9 inches from its shorting bar, are of number 12 wire, spaced 2 inches.

The Second U.H.F. Marathon has just come to a close. Participation during 1941 ran far ahead of 1940, and increased activity in many sections has resulted in higher scoring. Not everyone can win, of course, but the Marathon is fun for all. It provides a fine opportunity for each u.h.f. enthusiast to check up on his accomplishments and compare them with others similarly situated. We'd like to see every seriously-interested u.h.f. operator represented in the monthly reports in 1942. Why not send for those report forms now?

Thus we come to the end of two years of "On The Ultra-Highs." We hope that you've enjoyed it and found it useful as well. Please remember that your conductor's function is that of a reporter and editor. What you find in this space each month is mainly the result of many of you having taken the trouble to send in reports, suggestions, photos, and technical and operating hints. Your cooperation has been appreciated no end. Holiday Greetings to you all, and success on the Ultra-Highs in 1942!

A. A. R. S. Activities

(Continued from page 35)

To All Army-Amateurs:

In the past, Armistice Day has been the occasion for us to remember the close of a great world conflict. This year war again is raging in the world and it is vital that we look to our ramparts to ward off and defeat the aggressors. Radio communication is a most essential medium of defense and it is imperative that all who are in a position to render service in this important field should make themselves available for our country's defense. The Army-Amateur Radio System, comprised of radio amateurs throughout the nation trained in Army radio procedure, is a valuable civilian auxiliary to the Signal Corps. I am very glad of this opportunity to express my appreciation of the voluntary and spontaneous services which Army-Amateur members and other cooperating amateurs are giving to strengthen our communications.

DAWSON OLMSTEAD, Major General,
Chief Signal Officer of the Army.

Report on the results of this contest will appear in a future issue.

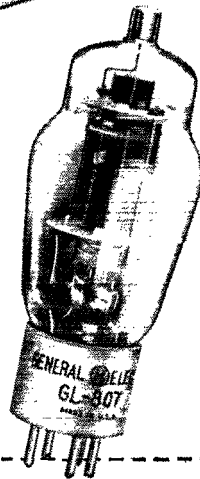
NEW ASSISTANT LIAISON OFFICER

FIRST Lt. William L. Montgomery, Signal Corps, recently was assigned as Assistant Liaison Officer, AARS, in the Office of the Chief Signal Officer, Washington. Lieut. Montgomery, W8EPL, has been an active amateur in Pittsburgh and an AARS member since 1927. He has been with the Pennsylvania National Guard for eleven years, serving with the 28th Signal Company and later with the 101st Signal Radio Intelligence Company. In addition to the call W8EPL he has held W8UJQ, Q8GUO, and W3BXX. Major David Talley will continue to have general supervision over AARS activities for the present.



WINEA uses ordinary kitchen cleanser for grinding down his crystals to a new frequency. In half an hour, he ground one from 7132 to 7222, using a spiraling motion on a sprinkling of cleanser on a piece of plate glass.

**HEY SPIKE, HE USES GL-807's
JUST LIKE THE COPS!**



IF Spike and Joe make a habit of stopping at hams' homes, they will find a lot of amateurs using GL-807's "just like the cops." For your sake, we hope they don't start collecting them instead of silver.

The GL-807 will give you record-breaking performance as a grid- or plate-modulated r-f amplifier, crystal oscillator, doubler, quadrupler, modulator, or buffer. It's being used extensively in FM broadcast transmitters and police communication systems. You can't buy a more versatile performer for \$3.50. Less than half a watt drives a pair; ICAS cw output: 100 watts!

Ask your dealer to show you the GL-807. And for your other tube needs, too, try G-E's — measure the difference yourself.

FREE!

DATA BOOK ON RECEIVING TUBES

It's different: 24 pgs., 8½ x 11. Includes tube dimensions, base connection diagrams, and interchangeability chart. It lies flat; the type is easy to read; technical information is in easy-to-get tabular form.

Also

GEA-3315C on G-E Transmitting Tubes

GEA-2021C on G-E Pyranol Capacitors

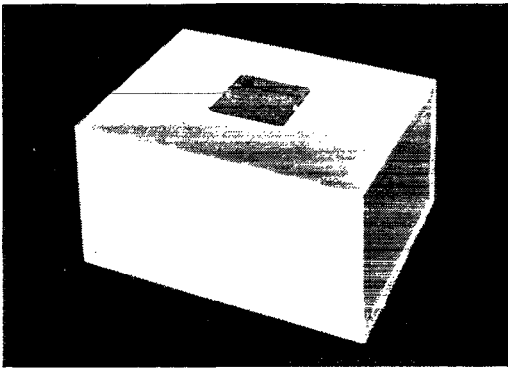
General Electric, Section A-161-30, Schenectady, N. Y. Please send me free the items checked.

Name

Address

City..... State.....

GENERAL ELECTRIC



Net price to amateurs, \$18.50 complete,
FOB Indianapolis.

Electronic Power Supply for 112-Megacycle Emergency Gear

● Simplicity, low cost and unflinching dependability immediately recommend an Electronic Model S-1040 Vibrator-Type Power Supply for use with your 112-Megacycle Emergency Gear . . . as outlined by Technical Editor George Grammer in December Q S T, page 9. (If you missed his article, it will be worth your time to check back.)

The Electronic Model S-1040 operates both transmitter and receiver from either car battery or 115-volt AC . . . measures only 4¾ x 6 x 9¼ inches . . . weighs 12¾ pounds, approximately . . . and conforms exactly with Editor Grammer's recommended specifications:

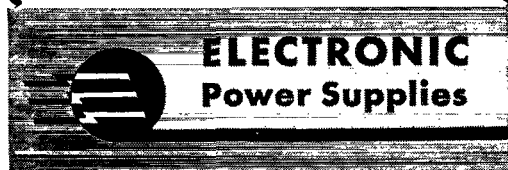
INPUTS: 6-Volt DC, and 115-Volt AC, 60-Cycle.
OUTPUT: 300-Volt DC, 100 Milliampères.
FILAMENT SUPPLY: 6-Volt AC @ 2½ Amperes.
VIBRATOR: Std. Electronic 120-Cycle Heavy Duty.
Tube filaments are fed from Converter. Switch permits instant changeover . . . AC to DC, or DC to AC. Separate AC input connection for 115-Volt operation.

Impressive evidence of the reliability of Electronic Vibrator-Type Power Supplies is their wide usage by the armed forces of the United States, Great Britain and other anti-Axis countries of the world . . . as well as in numerous commercial applications: Marine! Police! Amateur!

As the available supply of Electronic Model S-1040 Converters is necessarily limited, orders will be honored in the sequence received. Address the nearest Electronic office listed below.

ELECTRONIC LABORATORIES, INC.
Indianapolis, Indiana

New York City Los Angeles Toronto, Ont.
100 Varick St. 1406 S. Grand Ave. 560 King St., W.



Field Day Scores

(Continued from page 41)

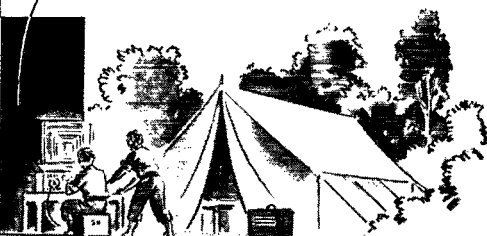
W8OPX/8	W8APC-OPX-PXP	142- B-1608
W8RKM/8	W8OSE-CYD-GZM-NWZ-REI-RME	121- B-1578
W2IOP/2	W2IOP	87- A-1557
W7GZG/7	W7GZG-IRI	73- B-1557
W9YMI/9	W9CJB-KSR-SCB-UYD-VLP-WRD-Roth	136- B-1516
W7GNJ/7	W7GNJ-HHH-HVX-IHK	55- A-1512
W5CYV/5	W5AQE-CYV-GTU-HBB	85- B-1424
W4FDT/4	W4AGW-FDT-FWP	73- A-1341
W8LCY/8	W8JJY-KYL-LCY	104- A-1278
W4AAO/4	W4AAO-AOB	60- A-1224
W6SXH/6	W6KMI-QNS-SXH	40- A-1202
W2JKH/2	W2JKH-NOK	61- A-1193
W8TJU/8	W8OML-TJU-VMF	58- A-1161
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W8HMJ/8	W8HMJ	63- B- 654
W9KBP/9	W9DLY-KBP	43- A- 648
W8JIW/8	W8JIW	27- A- 648
W7HIU/7	W7HIU	13- A- 635
W9EBK/9	W9EBK	33-AB- 633
W3FXZ/8	W3FXZ	36- A- 585
W6GM/6	W6GM	13- A- 581
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W4FCU/4	W4CDB-EUM-GNR-GOZ-FFT-PGJ-FCU	91- A- 546
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W7GCA/7	W7DIE-GCA-HUU-HYN	7- A- 46
W9EHT/9	W9EHT	3- A- 54
W1BFA/1	W1BFA	2- A- 36
W7GLF/7	W7GLF	4- A- 36
W1AJ/1	W1AJ-MJP	2- A- 18
Two Transmitters Operated Simultaneously		
W3FWH/3	W3FVC-FWH-ISE-IZU-LN-Almond-Sheckler	275- A- 4465
W2IYQ/3	W2IGT-IVQ-JUU-MAX-MNT-Scheid	226- A- 3744
W9YGL/9	W9JED-LWL-MJL-WGL	203- A- 3087
W8LEV/8		165- A- 2538
W5HIP/5	W5AAN-HIP-HJX	105- A- 2282
W3HUZ/3	W3FXV-HHY-HUZ-INS-JAU-JLX	173- A- 1926
W3BIP/3	W3BIP-GUR-GUX	103- A- 1381
W9ESJ/9	W9DYO-ESJ-LGO	58- A- 1422
W2EQQ/2	W2EQQ-HIA-KMK-LNC-MDV-MGF-MXX	137- A- 1332
W6OOF/6	W6MUV-NPM-PYG-QXF	47- A- 1121
W9MTO/9		104- B- 1092
W6DGL/6	W6DGL-NFH-RKM	52- A- 1082
W5JIZ/5	Three opns.	57- A- 977
W8IGP/3	W3CDY-DPK-IEG-IGP	43- A- 972
W5CJJ/5	W5CJF-CJJ-DAM	46-AB- 909



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The college has never advertised jobs or positions in lieu of education. Today it is well known there is a shortage of radio operators in every branch of radio; particularly flight and ground operators for airlines in America and South America — marine operators for ships traveling coastwise and foreign — geodetic-geographic research — broadcast stations — the Army and Navy — other positions in many departments of the United States Government. Therefore, we believe it is good common sense to mention that Port Arthur College is the sole radio school in America which owns a commercial broadcasting station with commercial advertising representatives in New York, Chicago, San Francisco, and many of America's leading cities, with active membership in the National Association of Broadcasters, and Broadcast Music Incorporated. Through these contacts the college receives from the broadcast industry alone more calls for radio operators than it is possible to supply.

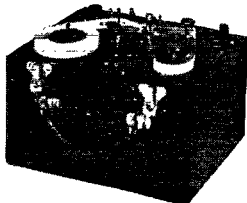
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W3RDA/8	W8HOM-OVN-QCZ-RDA	34-	AB-780
W23C/2	W2AXZ-BTH-KMS-KMT	47-	A-738
W1HWY/1	W1HWY-IOM-IST-IVV-JAU-LPZ	46-	AB-669
K6TTT/K6	K6BJJ-K6TTT	10-	A-500
W1HY/1	W1HY-I/O	87-	A-465

Three Transmitters Operated Simultaneously

W9ERU/9	W9AGV-AIC-BNO-BRY-BTQ-ERU-ESD-FFQ-HOA-KBB-MAP-NLC-NTV-PGQ-RBT-TET	207-	A-4793
W5BB/5	W5BB-GGS-GQI-DNN-END-IHK-IKD-IZN-JMJ	140-	A-3227
W9ARU/9	W9AEN-ARU-A-YE-FGK-FRM-CME-RPP-MRF-ZGY-ZWQ	101-	A-1692
W9RT/9	W9AVE-CEY-DBS-FUY-GFX-FAQ-HTZ-JPY-MPM-IWZ-RPX-RT	21-	A-514
W8BTR/8	W8BCY-GQE-MIB-RIY-UUZ-VUM	39-	A-495

Four Transmitters Operated Simultaneously

W9V8X/9	W9CLB-DXU-FIB-FWU-GPS-HOQ-HWN-HXW-KBO-LDD-LGU-MRQ-MUZ-RRQ-SXZ-TJD-TZC-FSX-ZYV-Elmer-Hank	319-	A-4964
W9JU/9	W9ABR-CNM-EZF-GUW-LLB-JU-KVY-LNQ-OQT-TAL-UVU-VTV-YUX-YWA-ZKQ-ZPN-ZYL-Wol-lenhaupt	255-	A-3816
W8WE/8	Ten oprs.	76-	A-1638

Six Transmitters Operated Simultaneously

W9AYO/9	Fifteen oprs.	281-	A-4050
W8DNO/8		395-	A-3798

HOME STATION SCORES

W3IWM	186	W1MEM	34	W8SQE	5
W9DIR	179	W9CKA	30	W8MOQ	5
W9YWQ	174	W9HNI	19	W8BJA	4
W9NFU	91	W6IOJ	17	W8BVA	1
W9KXK	42	W2CNC	14	W1JWV	1

Club Stations

One Transmitter

QSO's-Power-Score*

W3BES/3	Frankford Radio Club ¹	403-	A-6498
W4CDC/4	Chattanooga Tenn. Amateur Radio Club ²	188-	A-3240
W8UBU/8	Elmira Amateur Radio Association ³	160-	A-2700
W1INM/1	Providence Radio Association ⁴	137-	A-2250
W6CMP/6	Radio Club of Arizona ⁵	86-	A-2241
W8IBU/8	Trico Radio Club ⁶	134-	A-2223
W1MKR/1	Pittsfield Radio Club ⁷	122-	AB-1974
W1LXT/1	WPA-Park Dep't. Recreation Radio Club ⁸	108-	A-1953
W4KZ/4	Greenville Amateur Radio Club ⁹	119-	A-1908
K6PHD/K6	Maui Amateur Radio Club ¹⁰	124-	B-1674
W8QLU/8	Ithaca Mike and Key Club ¹¹	93-	A-1647
W9QYT/9	The Electron Club ¹²	49-	A-1384
W6QNC/6	Gila Valley Radio Club ¹³	63-	A-1347
W9OKY/9	Pikes Peak Amateur Radio Association ¹⁴	68-	A-1260
W1QM/1	Lowell Radio Operators Club ¹⁵	72-	A-1233
W9JMG/9	Northwestern Illinois Communications Club ¹⁶	68-	A-1124
W5DIC/5	Galveston Amateur Radio Club ¹⁷	50-	A-1080
W5DPA/5	Houston Amateur Radio Club ¹⁸	34-	A-1026
W2HVR/2	Westchester Amateur Radio Association ¹⁹	86-	B-1020
W4GEA/4	Blue Ridge Amateur Radio Club ²⁰	53-	A-1017
W7AQ/7	Yakima Radio Club ²¹	26-	A-945
W2GYR/2	Intercity Amateur Radio Club ²²	70-	A-936
W9TJA/9	Sioux City Amateur Radio Club ²³	89-	B-888
W4GKD/4	Palmetto Amateur Radio Club Inc. ²⁴	63-	B-802

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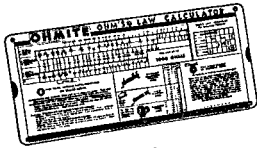
* The "power classification" used computing the score is indicated by A, B or C after the number of QSO's shown. A indicates the power up to and including 30 watts (multiplier of 3); B indicates power over 30, up to and including 100 watts (multiplier of 2); C indicates over 100 watts (multiplier of 1). More than one letter means that at different times power inputs fell within different classifications.

Club Participants: ¹W3BES, DMQ, HFD, IKW, ²Seven oprs. ³W8CHU, DZC, TOG, UBU, ⁴WIDDY, HRC, JEZ, KKE, LCH, LOS, LDL, LYE, MEK, MBM, JNM, ⁵W6CMP, KMM, WJEB, W8IBU, PYZ, QKL, QKM, QXS, RRQ, TIO, VVM, ⁶W1BKG, KZS, MPU, MKR, JLT, ⁷W1EAX, FJK, JYA, LXE, MBL, MND, MSV, MVE, MVN, NDR, NHL, ⁸W4AIS, DAM, EJH, FNS, FYL, GCW, GPX, HEY, KZ, W8UPK, ⁹K6AYD, PEJ, PHD, QLG, RLG, SPM, THA, ¹⁰Ten oprs. ¹¹Four oprs. ¹²W6QNC, ROD, RUI, SBN, W6IQW, ¹³W8EBC, EYT, PFE, EXY, KKY, QKY, YLT, ¹⁴Ten oprs. ¹⁵W9JMG, ¹⁶Participants not indicated. ¹⁷W5GLS, GRA, JOC, JPD, Brooks, ¹⁸Fifteen oprs. ¹⁹W4FXJ, PKK, ²⁰Participants not indicated. ²¹W9FDL, GYR, JSE, LEU, LMO, NWA, ²²Ten oprs. plus 8 other club members. ²³Twelve oprs.

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RHEOSTATS, Models H and J, Vitreous Enamelled... 2	FILAMENT DROPPING RESISTORS... 11
RHEOSTATS, Models K, L, N, R, and G, P, T, U, Vitreous Enamelled... 3	CENTER-TAPPED RESISTORS... 11
"DAVIDOHM" ADJUSTABLE RESISTORS 14, 25, 34 and 15 Watt Ratings, Vitreous Enamelled... 4	TAP SWITCHES, Open-Type, All-Ceramic Models 111 and 212... 11
"DAVIDOHM" ADJUSTABLE RESISTORS 106, 146 and 209 Watt Ratings, Vitreous Enamelled... 5	TAP SWITCHES, Power Type, All-Ceramic Models 312, 412 and 608... 12
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NON-INDUCTIVE RESISTORS, Vitreous Enamelled... 8	SOLDERING IRON CONTROL RHEOSTATS... 15
"MULTIVOLT" TAPPED RESISTORS Vitreous Enamelled... 9	"DETERMOMH" RESISTANCE BOXES... 15
"BITROHM" PRECISION RESISTORS... 10	DIALS AND KNOBS... 15
	LINK CONTROL... 15
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PRINTED NOVEMBER 1941

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Station Activities



NEW ENGLAND DIVISION

CONNECTICUT — SCM, Frederick Ellis, Jr., W1CTI — WIAW continues BPL listing. LJY is going to town with traffic and handles the Norwalk end of the Nutmeg Net. LOP is nearly finished with his kw. c.w. and 'phone rig. NAT from Hartford is now State Police radio dispatcher at Canaan. MMN sends in his first report. BDI is back home after a 4-week contact trip through Okla., Minn., So. Dak., Wis. and Mich. EAO is active in the Charter Oak Net 3950 kc., Trunkline N 3960 kc., and the Conn. State Police Net on 112 Mc. Ray says they need more stations on the Charter Oak Net, so any of the gang that can get on 3950 kc. should give him a buzz. On Armistice Day eve Easton had a rehearsal for housing and hospitalizing 650 from Bridgeport if a war-created disaster should ever strike that City. Emergency Coordinator APA set up his portable rig at headquarters in the Town Hall. GRU had an Abbott MRT3 in his car for mobile work. ACV had a DK3 in case one of the other rigs went haywire. GRU at the scene of the imaginary disaster radioed a report to APA that 15 persons had been injured in a mock attack on Beacon Hill. Ambulances, fire apparatus and demolition squads were immediately sent to Beacon Hill. Everything went along fine in spite of a total "Blackout" at the Town Hall, which was not expected. APA was off the air 15 or 20 seconds changing over to storage battery power. In case of emergency, if power and telephone lights are out, amateur radio will play an important part in communications. Keep in touch with your local defense council so that you will better know where your services will be most useful.

Traffic: WIAW 631 (WLWK 4) KQY 195 LJY 130 LOP 136 KYQ 118 TD 66 MMN 68 BDI-EAO 34 JQD 30 UE 29 MBN 26 BPU 10 BIH 8 GB 3 DWP-C71 2 JMY 22 LVQ 76.

MAINE — SCM, Ames R. Millett, W1BAV — To the Northern Maine Net gang your PAM extends to all a Merry Xmas and all the best for the coming year. The summary of NMN net activity over a three-month period certainly shows a fine record and this net is going places. HNS is a newcomer to the NMN for a swell Bangor outlet; he was one of the first stations on this net but had to drop out shortly after it started. MEV and NKJ joined NMN. KNJ is on 28 Mc. 'phone and 7-Mc. c.w. all the time now. KKKZ has new QTH at Winter Harbor. MXT and NBK motored down to MVD's for the Country Line Net party; they also dropped in for a very pleasant visit with BAV. MMF, now working in Schenectady, N.Y., spent a pleasant visit back home in Rockland recently. He is working portable from Schenectady on a 1.75-Mc. 'phone, is very anxious for Maine contacts and is on mornings around 5 a.m. NDC is back living in Augusta and working in Bath, gets on the air week-ends. CMO had to leave Seagull Net due to a change in working hours. TO has been doing fine work organizing an emergency setup. LHM is on occasionally and is coming along fine on the new home he is building. MLP is heard on 3.5 Mc. some. MXN is now living in Thomaston with his new bride. They were married just before the Rockland Hamfest. IIE is really getting to be an old timer, having just celebrated a joint birthday with his father who was seventy-five. The occasion brought together with Hal an old friend, Charlie Ellsworth, who was the No. 1 spark operator with Hal at NBD years ago. I also understand Hal is a regular caller over to Rockland for his "Lobsters." The PTN is going along in great shape and has been turned over to LYJ while GOJ is in the South for the winter. LNI replaced 809s with 812s final. AIS has a new 100-m.a. vibrapack. GKJ is on 3.5- and 3.9-Mc. 2CCU, 1 is a new ham at Old Orchard Beach. LKP has new C.P. sticker for 30 w.p.m. KOU had a swell turn out on the AARS gang at his shack with a great program. IJF, FAP, GVS and GE gave some very instructive and interesting talks and demonstrations. 112-Mc. activity is certainly picking up over the whole state. EJS, RU, FZD and PZW at Rockland are all at it along with the gang at Skowhegan and Augusta. LOA is working on a new rig with 800s long lines and already has new double-extended Zepp for 112 Mc. up in the air. FBJ and EWN are now planning some mobile gear for emergency work on this band. There was a fine turn out of Maine hams in the recent SS contest and I believe some fine scores will result. BAV finally completed his modulator and can get on

'phone now as well as c.w. My warmest greetings to all for a Merry Xmas and a prosperous New Year.

Traffic: W1LKP 63 LNI 6 KTT 12 IFZ 43 TO 24 GXY 31 AI 1 AUC 27 KRZ 20 MXT 13 IIE 73 BAV 16. AARS: W1AMR 47 CFO 58 EFR 40 FAP 133 GE 38 GHT 45 GVS 124 IJF 67 IST 15 IVV 37 KOU 122 LKP 34 LML 71 TO 15 AUC 12 DHD 13.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, Jr., W1ALP — Several more new ECs: W1KON for Danvers; MNK, Manchester; RD, Saugus; IHBG, Peabody; FDN, Reading. IHA is now OPS. If you can suggest any of the gang for OPS/ORS or EC, please send the call to any of the Section officials. MPP is doing nice job as PAM for 1.75-Mc. 'phone. KAO, Mystic Valley Radio Club hold meetings every Thursday at 8 p.m. in the Pythian Bldg., Malden. MNK, secretary of T9 Radio Club of Beverly, says they hold their meetings on second Tuesday of each month at various club members' shacks. LQQ gets home once in a while and says he does a lot of listening from his post. Parkway Radio Assn. are looking for bowling matches. Write to KTE. The Club also ran a whisky party and raffle and went into SS contest. ERH is heard back on the air. Welcome, Don. KQN went into SS. MDN has new beam on 42-foot mast. JRN is now on 3.9-Mc. 'phone. NKW with 20 watts had over 10,000 points in SS. EHT is building 112-Mc. self-powered setup. KII is organizing 112 Mc. net in Wash., D. C. and enjoyed Boston Hamfest. JDE has three element beam for 28 Mc. Lowell Radio Ops Club meets on the second and fourth Wednesday of each month at MKX's hay loft. BPH is on 14 Mc. doing a swell job. MQV has Class A. IYT is rebuilding. IID says superhets are the rage on 112 Mc. locally. MP and KSA are on with SX27s, IID, IKW, IZY and AKD with homebuilt jobs. IID is now 2nd Lt. in Signal Corps and may be in England when this is published. Good luck, OM. NPE's new beam is getting out well to K6 and K4. BDU and BXC almost made BPL. Look at these totals! MCR is taking traffic to and from 4GBV for JCT's family. Suburban Net held a hamfest on Nov. 1st. MDV was going strong in SS. DA fixed modulator and hopes for more q's on 56 Mc. NEZ runs his rig from 6-volt car battery. HDJ has all his rigs at his home QTH. DJ worked 4DXP in Miami on 56 Mc. for the 2nd time. LOS, MNH, LTP and FVL are now OPS and MKX is new ORS. MPP, EHT, DJ, BKE, COX, KH, DA and EKT were all on 56 Mc. for OPS Party. ILL got his code endorsement for 30 w.p.m. KCP, MMH, IS, HHU, MPT and a few other Quincy hams helped out the Report centers on 112 Mc. for the tests. Good work, gang. FWS, HOS, LID, KRJ and NDA took part in Milton Red Cross Emergency drill. IGO is back on 56 Mc. MOS in Charlestown, NGN in Roxbury and NGO in South Boston are the calls of the Boys' Clubs and they get on 1.75 Mc. for a three-way QSO. WI is going to help the boys in his town get tickets. Your Section leaders met at EHT's to talk over Banquet on Dec. 6th. Present were ALP, IBF, KZT, MPP, EKT, LR and KTE.

Traffic: W1BXC 430 BDU 406 LWH 309 (WLGF 50) AKS 284 (WLG0 62) EMG 282 AAR 276 JCK 250 JSM 248 KCT 143 KTE 82 BAO 80 FSL 59 MJK 57 KB 49 HWE 41 AAL 38 HIL 36 MQT 27 LID 25 NAV 19 MCR 13 MPP 12 MDV-DA 4 BAP 3 BKE-NEZ 2 HDJ-DJ 1. AARS 80 CW Net: W1AHP 45 EPE 195 (WLGs 19) MAN 6 NFZ 3 QA 9 TY 153 MTQ 121. 160 Phone Net: W1LSA 105 FVL 26 KMQ 17 EXU 10 MOJ 37 IEN 32 BWJ 22 MLZ 1 WS 30 IYU 18 NCF 20 KYN 22. 10 Meter Phone: W1AGX 49 IFS 53 LVZ 90 MQE 25. 2 1/2 Meter Net: W1EYR 93 MQH 131 MMY 82 NBC 49 MPT 58 MON 190 MWM 42 NBT 8 MZJ 52 MBS 74 MIG 34 MIT 30.

WESTERN MASSACHUSETTS — SCM, William J. Barrett, W1JAH — W1MIM makes BPL again. Nice going, Lee. IOR handles plenty of traffic. BIV is working on 112-Mc. rig for Civilian Defense setup in Gardner. MND is getting interested in BPL. BNL built A.C./Vibrator power supply for home and emergency use. His 5-10 f.m. rig is about set for air test. IINE is on again from home QTH after long sojourn in hospital. BXF is grinding crystals for new WMS frequency and for 3530. He reports two finger tips worn out already. ICW is endeavoring to coordinate distribution of trainee traffic to Westover Field. MKR has done most of his operating from MRA/1, the station of the Pittsfield Radio Club. AJ had visit from NJZ who has sold AJ, MJP and BXF on idea of 112 Mc. KZS is active again after tussle with grippe. MJP completed emergency transmitter for 3.5 Mc. c.w. FNY, ADF and LUA have been taking a shot at 112 Mc. with rest of Tri State Radio Club. Hoosac Valley Radio Club has also been breaking the ice on 112 Mc. locally, with

JAD, FFK and FZI building portable equipment. LUA visited 8SBV on his vacation. JAH dusted off modulator for awhile, is also wrestling with 112 Mc. installation for car. Here's hoping you all have a Merry Christmas and Happy New Year. 73.

Traffic: W10R 315 (WLGJ 32) MIM 272 BIV 211 (WLGJ 57) AZW 204 (WLGJ 48) FOI 147 MND 143 LUA 109 BVR 108 (WLGJ 104) NKN 96 JAH 93 (WLGJ 23) KZS 50 DUZ 49 BXF 46 AJ 45 MVT 35 NJZ 34 MKR 36 MJP 28 LHW-JFA 25 NLL 31 MBT 26 FNY 25 HNE 24 JWV-ADF 11 ICW 10 BNL 2.

NEW HAMPSHIRE — SCM, Mrs. Dorothy W. Evans, W1FTJ — NH AARS recently held a meeting in Laconia with a dozen or so members present. We understand that the Farmers' Net is all steamed up for 112 Mc. FB, BJJ is working on 56 Mc. rig. CRW moved to Salem, N. H., and can be found on 56 Mc. also. 2ISQJ, I finds time from his studies at Dartmouth to work on emergency u.h.f. rig for local fire department, forest fires, searching parties, etc. FFL arrived in England on one of the Defense jobs there. It has been reported that MDP and MZS are having FB time playing chess via 112 Mc. JKH has his 30 w.p.m. Code Proficiency endorsement. BHJ and JDV are active in Nashua on 56 Mc. LSN is trying to get second RF stage working on 56 Mc. converter. BFT is now home recovering from an appendectomy at Chelsea Naval Hospital. ITF is recovering from an operation at the Veterans' Hospital at White River. We are in sore need of Emergency Coordinators throughout the State, and if anyone is seriously interested please get in touch with the SCM. EDN is working in Connecticut and is operating portable from his location near Hartford. MZV recently visited his home in Concord while on leave from the Atlantic fleet.

Traffic: W1GEY 97 IP 93 IDY 71 GMM 60 AOQ 36 HFO 23 CEA 20 BFT 17 JKH 16 LSN 8 W2ISQJ/1 68.

RHODE ISLAND — SCM, Clayton C. Gordon, W1HRC — W1CPV reported traffic for the AQ gang. NQW was on 112 Mc. pending erection of antenna for c.w. work. MEK has been on 112-Mc. 'phone and made about 26,000 points in the SS. He and NCD put on a radio demonstration at high school. QR has new MRT3 transceiver and Meissner Signal Shifter and is looking for traffic schedules. He reports the East Providence Emergency Network is beginning to work smoothly. MAV, who has been given charge of recruiting 1.75- and 3.9-Mc. 'phone nets for AARS in R. I. paid PRA a visit recently to tell us about the above activity as well as to meet the gang and see some of the results of our Standardization Committee's work on 112 Mc. emergency apparatus. IIE of Maine asks for information regarding a possible outlet for "trainee traffic" from Fort Kearny. If anybody can help out, please get in touch with IIE or myself just as soon as you are able to set up a reliable routine for handling the job. Your SCM, in addition to being on Div. 5 of the State Council for Defense, has been added to Div. 1, Sub-Committee on Evacuation Technique, as Liaison with Div. 5 is now in a position to tell you definitely that plans for the use of short-haul low-powered 112-Mc. apparatus are involved in this work. In conjunction with the PRA Standardization Committee, your SCM has assembled the first of the low-powered portable 112-Mc. rigs adopted by this committee as standard. The rig consists of a 7A4 oscillator, 7A4 detector and 6V6GT first audio and modulator. It is built into a 10 x 12 x 3 inch black crackle finish chassis with base plate for a back, and incorporates a send-recv switch which also controls the antenna changeover operation at one operation. It can be built for less than \$15.00 and all parts are available at this writing. Plans, specifications and wiring diagram are available to you for a self-addressed stamped envelope from the Secy. of PRA. We will need much greater quantities of this type of equipment than we have at present, or even have plans for. This apparatus must be as near foolproof as we can make it. It must be light and compact, must require the minimum power to operate consistently on the job it is to do, must contain a tube complement that is easily replaceable and operation must be as simple as possible with the minimum of essential controls so that it can be operated "in the dark" by one familiar with it. External connections must be independent of a soldering iron, which means terminal strips for battery connections. Terminals must be stenciled so that they may be easily identified. The equipment must be "standardized" sufficiently so that any member of our R. I. gang will be familiar with its operation without instruction. A wiring diagram of the circuit should be pasted inside the cabinet. All terminals as far as possible should be readily accessible to a soldering iron without tearing it apart. It should use horizontally-polarized antenna equipment when in actual emergency use to permit efficient point-to-point opera-

tion and at the same time limit interference to other circuits operating on or near the same frequency but in opposite directions. Power supply as well as all other parts of this rig should be independent of the automobile, since it may be impractical to drive to the spot where the station will be used. All of which sounds like a long list, but in emergency we are faced with different conditions than we encounter when "hamming" or "DXing" on 112 Mc. In emergency we want to be heard well by the station we are working, but not heard by other stations who will be working other points and do not want interference. Thus, low power and directive antennas. As hams we are individualists and like to use our own ideas best. When widespread demands for emergency communication call upon us, our individualism should be laid aside to permit the accomplishment of our purpose by the use of teamwork. Let us remember, "Those of us who will do what is needed must do enough more to make up for those who shirk." The following have purchased or ordered parts to build standard rigs: JEZ, AFO, NLF, EX (who lives in Seekonk but is working with the R. I. gang) and BFQ. May 1 add one more thought that comes from JEZ, namely, that rigs of this type should be attractive in appearance. This is important, since those who call upon us in emergency can only judge our product by its appearance until we have proved its reliability by trial. Neat appearance and good workmanship will inspire confidence in our equipment and its ability to do an efficient job. Let's go, gang. We are being counted on for a lot by the State. It's up to each and every one of us to be able to make good when the time comes. Don't put off till next week what should be done this week while parts and time are still available.

Traffic: W1CPV 70 MEK 39 LAB 40 LQG 36 QR 5.

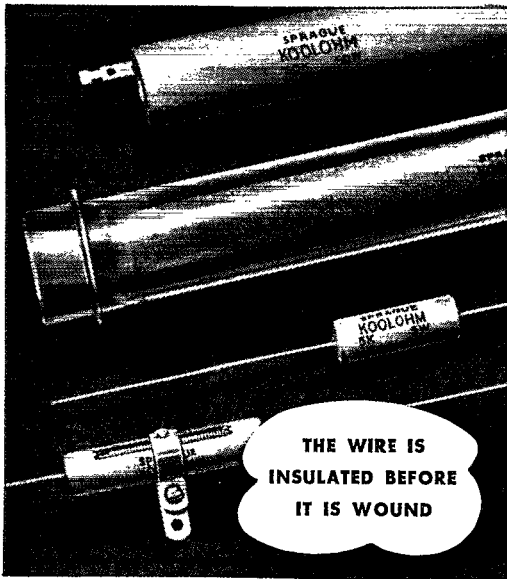
VERMONT — SCM, Clifton G. Parker, W1KJG — W1AVP reports activity on 3.9-Mc. 'phone each Sunday morning for Vermonters. NAG is active on 112 Mc. at Boston where he is attending school. MZO reports plans on portables. NHJ has nearly completed his FB 250-watt rig. JDP has schedule with NH net daily and is active on Vermont nets. AEA has been busy with work on his transmitter since an extensive burn-out. MCQ repaired his antenna system, is heard occasionally on 1.75-Mc. 'phone and was visited by LYS recently. KTB has found time to get back on the traffic nets in addition to duties in his new work. Mern has acquired a gasoline engine a.c. generator for emergency power. GQJ built and reports good results from a portable unit covering 1.75- to 14-Mc. 'phone and c.w. and was visited by NFI. QQ changed QTH to Norton, Vt., and recently lost power supply. KOO and brother acquired an SX25. Burlington Amateur Radio Club has a Comet Pro. The Club has a fine program scheduled for the winter season. GAE changed QTH to P. O. Box 735, Dillon, Montana, and is anxious to hear from the gang. LWN and family toured Indiana with visits to hams en route. KUY is now at Barre. AZV added battery-powered all-wave receiver to his station. MMU moved to Randolph and is busy installing his outfit there. DQK is rebuilding his 28-Mc. units. MYS at Alburg is active on 112 Mc. and has class of eight working for their licenses. MYS is our first exclusive 112-Mc. station and is ex-W2IUJ of New York City. Visitors at BJP were NNM, ITJ, KUY, LJZ, KTB, NDY and BJJ visited TJ, BLC, MLJ, NDB and MJU. BLC burned out his sig shifter and is back on air with crystal control! AD is securing some activity on 1.75-Mc. c.w. and is heard at 7 P.M. calling on 1798 kc. Increased activity on 112 Mc. in the southern part of our Section is reported with AD, HYO and LBJ having rigs completed for trials. EC appointments made in the Section since last listing are: BJP, Newport; AEA, Waterville, Cambridge and immediate area; MLJ, Barre City and Barre Town area; MMU, Bethel, Randolph and immediate area; MYS, Alburg and Grand Isle area; JVT, Hardwick and adjacent towns; KTB, Lyndonville and adjacent towns; MCQ, Stowe and Mt. Mansfield area. JDP has been appointed ORS. Be sure to register your station facilities with your local Civilian Defense Board.

Traffic: W1AVP 12 JDP 32 KJG 57 CBW 59 AEA 21 KTB 25 GQJ 16 MMU 11 BJP 10. (September-October: W1AEA 61.)

HUDSON DIVISION

EASTERN NEW YORK — SCM, Robert E. Haight, W2LU — W2ISQJ/1 enjoyed ORS party from Dartmouth College in N. H., and is working on organizing UHF emergency set up for Hanover in connection with Fire Dept. MIW and NQW are now located in Schenectady working for G. E. Co. Watch for them to be active on the air pronto.

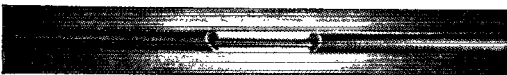
(Continued on page 78)



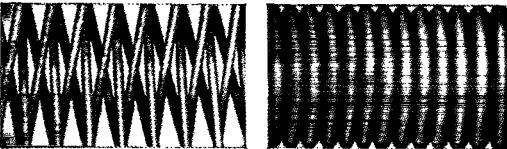
THE MOST AMAZING RESISTORS ON THE MARKET TODAY

FOR several years now, Sprague Koolohm Resistors have not only been meeting—but actually beating—exacting industrial specifications heretofore impossible for conventional wire wound resistor types. In defense equipment, their advantages have proved truly amazing—convincing proof of the efficacy of the exclusive Sprague method of insulating the wire before winding with a high-voltage ceramic insulation that is both moisture-proof and heat-proof to a temperature of 1000° C.

Koolohms give you many advantages available in no other resistor types—yet Koolohms cost no more! Sold by leading jobbers. Catalog free. Sprague Specialties Co. (Resistor Division), North Adams, Mass.



Koolohm wire with section of ceramic insulation removed.



Progressive winding. — Single layer winding

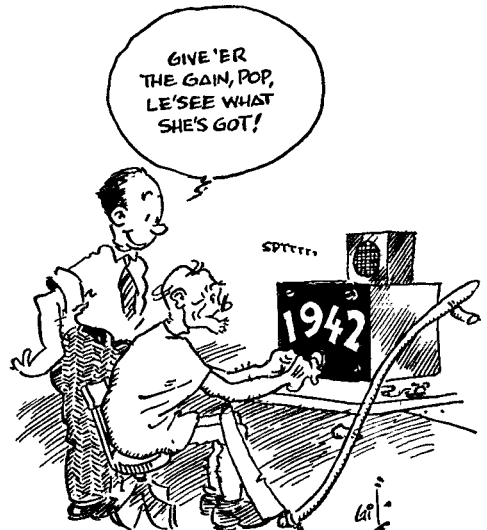
SPRAGUE
KOOLOHMS
 TOTALLY DIFFERENT — OUTSTANDINGLY SUPERIOR

UP-TO-DATE PRESS SCHEDULES

WE are indebted to F. E. Charlton, RM2c, U.S.N., Transmitter Bldg., Naval Air Station, Seattle, Wash., for the following data on Press schedules. It is suggested that amateurs interested in boosting their code copying ability use the transmissions for practice. We remind you that *addressed information may not be divulged except to the addressee*. Do not use such transmissions for anything but code practice.

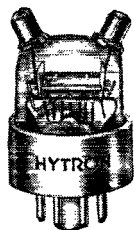
Time (GCT)	Call	Freq (kc.)	Place	Speed
0000	NAA/NSS	9250	Wash., D. C.	30
0000	KJY	17,440	San Francisco	45
0000	XKM4	—	China	—
0000	KGF2	18,460	San Francisco	40
0000	WCA	15,730	New York	45
0000	KFN	18,560	San Francisco	30
*0015	WFD/WAC	4985/10,470	New Orleans	23
*0025	KOQ	15,640	San Francisco	28
*0030	WCA	15,730	New York	45
0030	KJY	17,440	San Francisco	45
0100	WPN	11,900	New York	35
0100	KEN	18,560	San Francisco	30
*0105	WCX/WJS	7850/15,700	New York	35
*0115	WPK/2	13,185	New York	50
*0140	KKU	15,500	San Francisco	30
*0150	WCX/WJS	7850/15,700	New York	35
0200	KMN	7340	San Francisco	35
0200	WHL2	7470	New York	—
*0200	NSS	11,475	Wash., D. C.	30
0200	WJQ	10,010	New York	30
0230	WJH	7800	New York	—
0300	WBG2	7615	New York	—
*0300	KJP	7850	San Francisco	25
0315	WPN	11,295	New York	—
*0400	WCS	7850	New York	35
0400	KOP	10,750	San Francisco	40
*0400	JUP	13,065	Japan	20
*0415	WBS	7355	New York	30
*0418	WSL	11,115/5555/109	New York	20
*0418	WGG/WSC	6340/8430/21.5	New York	25
*0430	KIJ/KHI	5340/11,340	San Francisco	25
0500	WJQ/WDQ	10,010/7625	New York	30
0500	WHD	8360	New York	20
*0510	JUP	13,065	Japan	20
*0530	JAP	11,980	Japan	20
*0600	KFS/KNA6	12,550/6270/97.5	San Francisco	23
*0600	WHD	8360	New York	22
0630	WBG2-77	7615	New York	35
*0700	NSS	9250	Wash., D. C.	30
*0700	JUP	13,065	Japan	20
*0730	WJP/WCF	8810/5340	New York	25
*0800	KPH	12,735/12,380	San Francisco	25
		8400/126	Manila	25
0800	KUH	8355	Japan	20
*0830	JAU2	7350	San Francisco	25
*0900	KTK	12,495/11,280	New York	50
		8690/6400		
1030	WRM	18,560	New York	50

(Continued on page 88)



"It's Overloading That Ends the Life of Most Amateur Parts"

K. B. WARNER'S EDITORIAL IN QST FOR DECEMBER, 1941



Hytron's engineers verified the soundness of this statement years ago. When intermittent ratings were popularized, Hytron stood alone as an advocate of continuous-service ratings exclusively. Although the conservative continuous-duty ratings of its tubes did not have spectacular appeal, Hytron has remained firm in pleading for ratings which it considered to be in the best interests of the amateur.

Mr. K. B. Warner's plea for tube conservation, we believe, is particularly apt in this time of National Emergency. At our own expense, and to give additional prominence to these timely words of wisdom, we quote Mr. Warner:

"It's overloading that ends the life of most amateur parts. Conversely, underloading vastly extends their lives — indefinitely. There is no blinking the fact that it's going to be hard, if not downright impossible, to get some components. When they go *blowie* under our customary overloads, there may be no replacement. We therefore propose that all amateurs who value their place on the air immediately reduce power, say to three-quarters or half of what they are using now. We don't believe there would be any detectable difference in signal strengths and we know that gear would last much longer — particularly tubes, and especially rectifiers.

"If you'll cut down on that plate voltage that now rips hunks out of filaments and electroplates it onto grids, you'll be just as happy and you'll stay on the air a whole lot longer. Tubes deserve particularly loving care. Keep your filament voltages exactly right. Warm up *plenty*. Avoid frequent cooling and reheating of filaments; if you're going to use the transmitter again within two hours it will be cheaper in the long run to leave the filaments on. Treat each item in your station as if you never expected to see another like it. You'll be glad you did."



(Continued from page 69)

LSD's new QTH is 61 Grant St., Yonkers, N. Y. Nils is already on the air, going strong. All ENY members, note: No appointments will be made until a new SCM is elected to fill the office vacated by W2LU, who is serving with the U. S. Navy.

Traffic: W2ISQ/1 58 MHW 43 LSD 24 NCG 10.
NEW YORK CITY AND LONG ISLAND — SCM, Ed. L. Baunach — W2AZV — LUY is now ORS. NEE is out for ORS appointment. LZR is located at 34-16 43rd St., Astoria. FAQ got up his 40-foot masts, and built a new antenna as per *Handbook*. HGO has been having receiver trouble. BCS visited AHL, and is working on new antenna. BYL has gone into active service with the Navy. FLD is now a Chief Radioman at Naval Air Station N. Y. PF starts on his second year of duty as Liaison Officer AARS in Washington, D. C. VG finds that his doublet for 14 Mc. also works well on 7 Mc. Five of NAZ's YL students expect to have their tickets soon. JZX has a class of seventy YLs at Adelphi College studying for code and emergency operating. IYX has been working hard to get a 28-Mc. Net going. KTA reports a new station, OJY, on 112 Mc. NYC is putting in 100TH final for all-band operation. OAF is on 112 Mc. with KOU's transceiver. KJY is now located at 332 E. Walnut Lane, Philadelphia, Pa., is on 7 Mc. BO and SC make BPL. JGF enjoyed his ten-day furlough, and reports that IGO is now one of the benedicts. KFC is in the Coast Guard. HMY is building for 112 Mc. MID is back on 28 Mc. AYJ, BGV, GF, JBL and LZR run up high scores in SS. EC says trainee traffic has shown considerable increase on the A.P. Trunk Line. Traffic for Washington, D. C., can be given to KI daily. There is a tremendous amount of activity now going on in the AEC for defense communications in and around N. Y. C. GDF, EC for Queens County, worked in connection with the N. Y. C. Police Dept. during the Nov. 13th Mock Air Raid. All work was on 112 Mc. DTE, KIV, JSM, BKZ, MJL, JSV and NDQ took part. BKZ and NDQ are Asst. ECs on 112 Mc. in Queens County. DW, EC for Kings County, is having weekly meetings, and twenty stations are working on 112 Mc. CET, EC for Nassau County, is having weekly drills on 112 Mc. BGO, EC for Bronx County, and NNC, EC for N. Y. County, are having meetings in their respective counties. IYX, Asst. EC for Huntington, is getting stations on 28 Mc. lined up and DOG, Asst. EC for Riverhead, has a complete tie in with the defense council and is a member representing amateur radio. All stations who are not in on any of these activities should get in touch with me or their respective county EC for active work.

Traffic: W2SC 1767 (WLN 801) BO 665 AYJ 342 LZR 304 (WLN 86) BGV 266 KI 198 DW 174 JZX 104 BGO 100 AZV 97 GP 72 MZB 66 OAF 53 LUY 41 IYX 39 EC 37 DBQ 36 MT 29 NDQ 23 FAQ-NAZ 13 GTZ 12 DOG 9 BYL 7 BCS 6 AV-FF 5 LBI-MSS 4 HGO 3 CKU-CET-RZ 2 ADW-MSE 1 DXS 505.

NORTHERN NEW JERSEY — SCM, Edward Gurksy, Jr., W2LMN — PAM, 2LXI. RM's: W2CGG, W2HCO, W2IYQ. New appointment: ORS, W2ESO (W4GNQ/2). Atlantic Highlands is going "Dixie." W4GAMK and his XYL moved in across the street from W4GNQ and W4HZP. W4GNQ and his XYL, W4IIZP, are now signing W2ESO and W2OLB respectively. MIG left for active service Nov. 10th. NJO is at the Gallup's Island Radio School. Another newcomer to the section is W3GBB/2 who is on with 125 watts to T40 final from Jersey City. The 112-Mc. Net which meets at 8 P.M., Tuesdays, boasts the following members: HNY, JME, KP, LYP, NLY, NTN, 3EWW, and 3JJU. All stations have self-powered equipment in addition to regular. HFN, joined AARS NJ40 Net. EKU is putting HY75 on 112 Mc. AOQ is working on a new 28-Mc. beam. The L/C Radio Club of Jersey City is looking for invitations to visit other clubs in the Section. The club concerns itself primarily with National Defense and is organizing traffic routes to Army camps. ESO would like to hear from the fellows who are interested in forming a 1.75-Mc. C.W. Net. Those interested should write Gene Black, W2ESO, Belvidere Road, Atlantic Highlands, N. J. LMN finally worked Nevada in the SS for WAS. The East Orange Emergency Radio Club holds meetings every Tuesday evening at the Fire Headquarters on Main St. Amateurs located in the vicinity are invited to attend. 2BQH/4 is now signing 4IEF. IZV is active on 1.75 and 28 Mc. Joe Blauner, ex-2KDO, is back on the air with 2NYQ. LQN of the NJ 160 AARS Net received his active appointment. JLL is acting as NCS of NJ 160 No. 2. She is the only woman in the section who participates in a net. HZR is making great plans for an active season on 112 Mc. LCA sends code practice every Friday

evening at 9 P.M. on 14,420 kc. ASB does likewise on Sundays from 12 to 1 P.M. on 1896 kcs.

Traffic: W2CGG 358 MLW 339 (WLNC 50) HXI 211 NCY 106 ANW 103 MHJ 100 LFR 58 HCO-LMN 44 JME 41 HFN 35 NJE 29 EKU 28 MRJ 18 MZL 16 ESO 14 JKH 8 IZV 2. (Sept.-Oct.: W2ANW 101 HCO 32.)

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, Jerry Mathis, W3BES — W3BYF is working on emergency coordination from the u.h.f. angle in Allentown, under the direction of W3FJU. Don is doing a fine job for the ARRL in his Section and deserves the active support of the gang around Allentown. 8HDL of Mansfield, Ohio, is now ORS in E. Pa. He works for Westinghouse and lives in Norwood. 3AOC expects to be on 112 Mc. this winter, and suggests starting a local net there. Wotsa? AOC, HFE and QV attended a hamfest at Washington, D. C., and while there visited WLM, 3CZE, 3ZD, 3CDQ and 3HAL. FXZ has a new Vibroplex Champion which, she states, "works fine." HRD moved to Germantown and is on fixed portable. 8UQM reports some fine contacts with 8JDK and 8RH on 112 Mc. at a distance of 20 to 24 miles. RM/PAM 3AQN extends his thanks to all the E. Pa. Traffic Net members for their excellent cooperation. 8EU visited 8ATF for a protracted rag chew in person. 8ATF reports AEC in Schuylkill County going strong on low and high frequencies. 3FPCL lost his antenna, but expects to erect a new one shortly. 3IXN needs Utah for WAS. Let's wish him luck. KT moved rig into his unfinished house for the SS, and caught cold for lack of heat. He came back for more in the second week-end after the carpenters put up a couple of doors and windows. While absent from the house some local SWL's stole his complete antenna system, which was later recovered by Sherlock (W3JBC) Homes. They made the culprits put the antenna back! FRY replaced his six-year-old mast only to find it was in a state of perfect preservation. Moral: Use yellow pine wood. 2AME, 2IRY and 2KJY are on in Phila. now. 3GOW blew up his power supply in the SS and finished with 18 watts. 3IJN's brand-new rig blew up. IKW lost his 812 in the contest. DMQ ruined more ham gear including a Triplett tester and sundry meters, coils, etc., than W3BES will be able to buy him for the rest of the year. DGM used his new exciter to good advantage, getting 700 odd contacts in the SS. ENX put his new electronic key through its paces in the contest, and those that heard it must have envied its smooth performance. 3HFD dropped a couple of half wave vertical sections from his flat-top in order to get better local coverage, but succeeded in getting to the west coast better than ever. AGV was bragging about working stations off the end of the beam but, upon checking, discovered that the direction indicator had slipped 90 degrees. III. JNQ applied for ORS. IXA, DVC and FLH, separated by a couple of half-waves, were mixing it up on the low end of 7 Mc. during the SS. Strange enough, they all worked something; and had 1275 contacts among the lot. FQG worked until midnight at the Police Radio Station, but got on for a couple hundred QSOs. BXE had to resign his position as Asst. SCM in charge of EC work since he started work on Long Island in December. He will maintain his official residence and his affiliation with PA and F.R.C., however. GYV may have some difficulty in getting on the air down at Camp Forrest, Tenn., it is feared.

Traffic: W3FJU 1044 3AOC 291 3GKO 210 3HCT 34 3IXN 3FHE 4 3DRO 7 3FXZ 37 8OML 4 8UQM 42 3JBC 24 3ADE 31 3AQN 127 3BES-3DMQ 1 8ATF 69.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Hermann E. Hobbs, W3CIZ — RM, 3BWT. Regional Coördinator, W3ZD — On Nov. 15th the Washington Radio Club held a hamfest at the Continental Hotel, on Union Station Plaza, Wash., D. C. One hundred and sixty-five from this area and out of town were present. Seven districts were represented as well as Philadelphia and Baltimore. 3ZD was toastmaster. The speakers were George W. Bailey, W1KH, ARRL President; Brad Martin, W3QV, Atlantic Div. Director and H. E. Hobbs, W3CIZ, Section Communications Manager representing the Navy and the Army were John Reinartz, W3IBS and David Talley, W3USA, respectively. An orchestra provided entertainment and a goodly number of prizes for both the OMs and YLs were distributed to the holders of lucky tickets. Local stations were visited at the termination of the hamfest with the usual result that several of them refused to perform in company, but finally W3CDQ was on its good behavior and a W6 was raised by the visitors. A good time was reported by all present. The formation of u.h.f. nets as well as

1.75-Mc. state nets was stressed by the speakers, especially that of u.h.f. for emergency service by the military and naval representatives. U.h.f. emergency nets are in process of formation in the Wilmington and Cumberland localities, and the gang in Washington will soon be on the air. BAK keeps in touch with the members of his family who are away from home by short wave radiophone. 3GB is now located in Jersey City and is operating a 7-Mc. 125-watt rig there with T40 final. DLC has new HRO. ECP gets on the air now and then, when he can spare time from his official duties. FE will shortly be on the air with a low-powered 'phone. JJD hopes to have his permanent antenna up soon and will be on hand for any Xmas traffic schedules. JMC/3 added a vibroplex to the station equipment.

Traffic: W8BKZ 101 BWT 1044 CIZ 415 DLC 11 DRD 2 ECP 53 HUM 260 HWJ 8 JAS 302 JFW 37 JHW 3 JMC/3 30 PV 70 USA 2984 (WLM 3556).

SOUTHERN NEW JERSEY — SCM, Lester H. Allen, W3CCO — Ass't SCM, W3ZI. Regional Coordinator in charge of Emergency Coordination, W3BAQ. RMs: 3AVJ, ABS, GMY, GNY, ITU. PAM: EUH. Section Net frequencies: OPS, 1980 kc.; ORS, 1850 kc. In order to increase progress with the two nets in our Section, you will note that we have some new calls in the RM ranks. These fellows have been chosen on their past merits and on their shoulders rest the operations of our traffic nets. As SCM I ask all netters to cooperate 100% with these new appointees and I am sure our Section will reach the top in activity and traffic handling. W3HMR is now W2OEW at Kearny. Congratulations to W3GZS. Henry is the only member of the Phone Net to have 100% attendance record. AQ recently worked K6RLD on 3.9-Mc. 'phone and, during the same week, received report from South America of being heard on 1.75-Mc. 'Phone. ABS is looking for 56-Mc. stations to start an OPS Net and, when he gets the boys lined up, will be NCS. 9CAC is visiting 3FMR. ZI is general chairman for the 10th Anniversary Banquet of the DVRA. HAZ made BPL on deliveries. Bill also keeps daily schedules with 2HXI. EWK has new antenna working FB. IDZ is quite busy these days with extra time looking for Oregon and Idaho to complete WAS on 1.75-Mc. 'phone. CCO just completed a WAE (Worked All El Paso) and is waiting for certificate. AVJ, GMY, GNY are doing FB job as NCS in ORS Net. JWA is new call in Trenton. GCU is getting rig in shape for 7-Mc. 'phone. BWF completed 3-element rotary for 28 Mc. AEJ has e.c.o. working FB on 1.75, 3.5 and 7 Mc. ASQ was recently honored by the DVRA with an ebony gavel. Dal was second president of the organization. ACC has been doing most of his operating on 56 Mc. TL has rig working on AARS and ORS Nets. JAV has new modulator using 816's. IZT moved to new QTH in Bridgeton. EBA, EET, IOF, HND, JRO, ETL, HLM, IAS, HLY are all active on 112 Mc. The South Jersey Radio Assn. are looking forward to having a Ladies' Night. JNZ applied for OPS. HAZ complete a traffic map for N. J. including all AARS, ORS and OPS tie-ins. If you do not have a copy and would like one, request it from your SCM. FXV is doing commercial operating for the Merchant Marine and had to resign as ORS. FMR and IHO had OPS endorsed. 'AQ had OPS and ORS endorsed. MV has very FB signal on 28 Mc.

Traffic: W8ZI 204 HAZ 155 EWK 128 AVJ 68 IDZ 65 GCU 64 AQ 60 CCO 55 BWF 41 AEJ 27 ASQ 17 ABS 15 ACC 12 TL 9 JBU 8 IHO 6 JAV 5 ITU 4.

WESTERN NEW YORK — SCM, Fred Chichester, W8PLA — W8JIC demonstrated ham radio to the visitors at the Rochester Hobby Show. ACY proudly displayed his QSLs embroidered on different colored diamond-shaped pieces of silk. TC set up his spark transmitter and receiver used back in 1913. CWW displayed his radio-controlled model boat. VWT was winner of a Prof. Quiz (W8DKN) contest at a recent meeting of the RARA. He was awarded a substantial receiver with crystal. UPH has a new QTH which is the envy of all who have seen it. VOW is back in East Rochester after spending some time in Buffalo. OQC recently rested his sea legs in Rochester. UIH is heard quite regularly from Ft. Niagara. RQX is sporting new vest-pocket transmitter from new QTH. RTB is back on 1.75 Mc. PPR, WME and JIC have been flying over Rochester contacting 112-Mc. stations in conjunction with the AEC Net on Sundays. DOD and TUQ are busy fitting up new QTH in Webster. DKN is ahead with 43 states worked in the WAS contest for the John Long trophy. TKY dropped in to see the gang while home on leave. Ex-W8NB and TC showed up at a recent meeting of the RARA and spoke about the good old spark days. 2NNT/8 is on 112 Mc.

regularly with 815 and 65 watts. CEZ is back on after long absence. New stations in Rochester area are WPJ and WMD. VUY upped his power to 100 watts. VWT has new transmitter with 812s final. DFN acquired two new 204As. VOX is working into Rochester on 112 Mc., a distance of 25 miles over hilly terrain. RLY is building to a kw. ACY and VFI are going strong on 14 Mc. The following are Monroe County AEC news items: Weekly 'Phone Net meets on 2020 kc., Sundays, at 1:00 p.m. Weekly C.W. Net meets on 3.5 Mc., Mondays, at 7:00 p.m. The 112-Mc. Net is doing nicely with 12 active stations and more coming. Drills and message handling on all nets with special events are held weekly. A simulated emergency drill was successfully carried out in conjunction with the sheriff's office. JIC and others on u.h.f. have been testing with the Civilian Aeronautical Corps in plane-to-ground tests, plane spotting, fire spotting, etc and plane-to-plane test with self-powered equipment. The Monroe County Emergency Planning Commission has given much cooperation in the way of drafting special maps showing all AEC data as well as other necessary defense information. PK is working regularly with a Brockport station on 112 Mc., a distance of 50 miles. Some of the Rochester gang are reporting nice 112-Mc. signals from Niagara Falls, some 65 miles away. A plan is gaining impetus to get a cross-state net working entirely on 112 Mc. MC is working on 112 Mc. with 100 watts, and is going to try to get through to RTX in Caledonia for schedules. OYJ moved to Syracuse. ETH, SUV, KYM and QLV are on 112 Mc. almost daily. BCU is contacting his son, who is in the Army, through a W9 station on 1.75-Mc. 'phone. VTJ is trying out a Stancor 10P transmitter. RKM and CSE are on 1780 kc., Wednesday nights, at 9 o'clock, looking for contacts. WGC and BHK are busy with experimenting and building. BHK has new mast and antenna. ECF is helping to clear traffic for Pine Camp. 9ZNC/8 and 9WKR/8 are taking traffic from SZB and LLZ for the same camp. FFU and RCJ are building 112-Mc. rigs. GFU will take traffic for Pine Camp. UMF is sporting Class A. USX moved to Stannards. JZT has a new antenna and a CP20. Members of the Allegheny county AEC held a meeting, Oct. 29th. ROU and QGN are stationed in Iceland. RTX has a new Abbott transceiver. RMR has his 110-volt generator about finished. RKM resigned as NCS of the 7-Mc. AARS Net and is now active on the 3.5-Mc. Net. BJO, State Radio Aide, has had his hands full trying to keep up with the flood of AARS applications. RME has taken over Bill's job on 7 Mc. and has been assigned the call WLNI.

Traffic: W8ADV 23 AMO 17 BLO 16 BJO 90 CSE 78 DII 128 DLU 14 DSS 24 FCG 52 JIW 140 KYR 312 MNW 7 MXC 4 MLM 21 ORU 36 PLA 331 RKM 121 RGH 122 RTX 230 RMR 27 SB 16 SBV 67 SZB 48 SVF 59 VNQ 15. (Aug.-Oct. W8MC 72.)

WESTERN PENNSYLVANIA — SCM, E. A. Krall, W8CKO/WLQL — Asst. SCMs W8KWA/WLQI and W8AVY. Active RM W8NCJ, TOJ. Your SCM wishes to thank the Asst SCMs and the RMs for their cooperation. NCJ worked 16 K4 stations toward WPR and hopes to have balance soon. He also worked 270 stations in 52 sections the first week of the SS. TOJ reports JSQ back in Warren and hopes to interest him in ORS and traffic work again. KBJ has surely come to the top with a very good traffic report. This shows what really can be done by 'phone. Other OPS stations, take note. YA reports hot activity on 112 Mc. at State College and says the school is planning the installation of some h.f. equipment. There are a dozen 112-Mc. men at State now. This is an opportunity for the W. Pa. gang to glean a few good contacts. PER is both ORS and AARS. We invite any ORS to become AARS, and vice versa. The qualifications are about even. TTD deserves credit for scouting traffic. He seldom misses a night without traffic. PX reports EC WJK is getting things going on 112 Mc. for Red Cross work. VYU is having fun organizing a high school radio club and asks for suggestions. "Mac" puts forth lots of energy toward her radio work. AZD sends in his first report, and reminds us that he is operating 3.5 Mc. for the first time also. UWZ reports 112-Mc. activity at Grove City. BWP sends word that OYY/8 is operating at Bellvue. RTU is now Ensign Dev. His friends may contact him at 42 Pleasant St., Brunswick, Maine. Here's another ham who has made good in the Navy. As SCM, I wish to extend Season's Greetings to all amateurs. Here's hoping that the coming year may find us as active as the past one.

Traffic: W8CKO 485 KWA 477 MJK 335 NCJ 199 TOJ 167 KBJ 153 YA 116 PER 113 TTD 112 PX 62 VYU 44 AZG 41 UWZ 11 OKK 7 AXD 6 RAT 4 HKU 3.

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(Continued from page 66)

One Transmitter

QSO's-Power-Score*

W4GNN/4	Nashville Society of Licensed Radio Amateurs ²⁸	45-A-792
W1JRO/1	Tristate Amateur Radio Club ²⁸	46-A-756
W9OMD/9	Delaware Amateur Radio Ass'n ²⁷	78-B-696
W7HWZ/7	Butte Amateur Radio Club ²⁸	16-A-618
W5IWL/5	Fort Smith Amateur Radio Club ²⁹	33-A-639
W8PZS/8	Ohio University Radio Club ³⁰	25-A-624
W4HAC/4	Bessemer Radio Club ³¹	45-A-612
W3GKF/3	Washington Radio Club ³²	46-B-538
W7IAP/7	Sheridan Amateur Radio Club ³³	24-A-580
W8ROT/8	Dial Radio Club ³⁴	126-AC-534
W1AQ/1	Associated Radio Amateurs of Southern New England ³⁵	88-A-507
W8NXX/8	Batavia Radio Operators Club ³⁶	25-A-360
W3QAQ/9	Council Bluffs Radio Operators Club ³⁷	37-A-333
W9EQQ/9	Waukegan Amateur Radio League ³⁸	23-A-324
W8APJ/8	Bluffton Amateur Radio Club ³⁹	21-A-324
W8LAC/9	Mike and Key Club of Chicago ⁴⁰	21-A-207
W8JMB/9	Clinton Radio Club ⁴¹	18-B-163
W8CS/9	Clinton Radio Club ⁴²	15-B-144
W9RWC/9	Clinton Radio Club ⁴³	14-B-138
W1ALP/1	South Shore Amateur Radio Club ⁴⁴	12-A-135
W9AEJ/9	Amateur Radio Relay League of St. Louis ⁴⁵	6-A-99
W9TVS/9	Central Nebraska Radio Club ⁴⁶	4-A-72
W9KXE/9	Chicago Amateur Radio Club ⁴⁷	1-A-18

Two Transmitters Operated Simultaneously

W9RQM/9	Wisconsin Valley Radio Assn. ⁴⁸	380-A-6957
W8MRM/8	Motor City Radio Club ⁴⁹	403-A-6246
W3EDP/3	Frankford Radio Club ⁵⁰	327-A-5571
W3GAG/3	Philadelphia Wireless Assn. ⁵¹	316-A-5103
W3DRQ/3	Chester Radio Club ⁵²	320-A-4725
W3EEQ/3	Trenton Radio Society ⁵³	251-A-3771
W3IGU/3	Harrisburg Radio Club ⁵⁴	120-A-3607
W9HHR/9	Dells Region Radio Club ⁵⁵	236-A-3492
W2GGN/2	Queens Radio Amateurs ⁵⁶	203-A-3357
W9SBT/9	Iowa City Amateur Radio Club ⁵⁷	208-A-3240
W9REA/9	Joliet Amateur Radio Society ⁵⁸	281-AB-3006
W9HPG/9	Chicago Radio Traffic Assn. ⁵⁹	160-A-2633
W5ASQ/5	Ponca City Amateur Radio Club ⁶⁰	101-AB-2564
W8MWL/8	Canton Amateur Radio Club ⁶¹	237-BC-2286
W8UPD/8	University of Akron Radio Club ⁶²	147-A-2232
W5MH/5	Baton Rouge Amateur Radio Club ⁶³	140-A-2214
W8SEL/8	Susquehanna Valley Amateur Radio Club ⁶⁴	179-AB-1855
W5HTK/5	Enid Amateur Radio Club ⁶⁵	76-A-1719
W1LLR/1	Eastern Mass. Amateur Radio Assn. ⁶⁶	91-A-1611
W9YOB/9	Black Hills Amateur Radio Club ⁶⁷	94-A-1557
W7DK/7	Amateur Radio Club of Tacoma, Inc. ⁶⁸	104-B-1539
W9WIN/9	Wichita Amateur Radio Club ⁶⁹	74-A-1341
W1CBA/1	Connecticut Brass Pounders Assn. ⁷⁰	100-B-1191
W9KZZ/9	Racine Megacycle Club ⁷¹	102-B-1140
W9EYW/9	Gateway Amateur Radio Club ⁷²	89-AB-1128
W8AQ/8	Medina County Radio Club ⁷³	83-A-1088
W1LVK/1	Manchester (N. H.) Radio Club ⁷⁴	57-A-1080
W8SWS/8	Piqua Radio Club ⁷⁵	84-AB-990
W6YU/6	San Mateo Jr. College Radio Club ⁷⁶	127-A-905
W1MTE/1	Westerly Radio Club ⁷⁷	75-BC-654
W4FDJ/4	Chapman Springs Radio Club ⁷⁸	47-B-524
W4EEZ/4	Athens Radio Club ⁷⁹	32-A-506
W9KBE/9	Mount Rushmore Radio Club ⁸⁰	100-B-446
W9UNL/9	Iowa-Illinois-Amateur Radio Club ⁸¹	32-A-441

Three Transmitters Operated Simultaneously

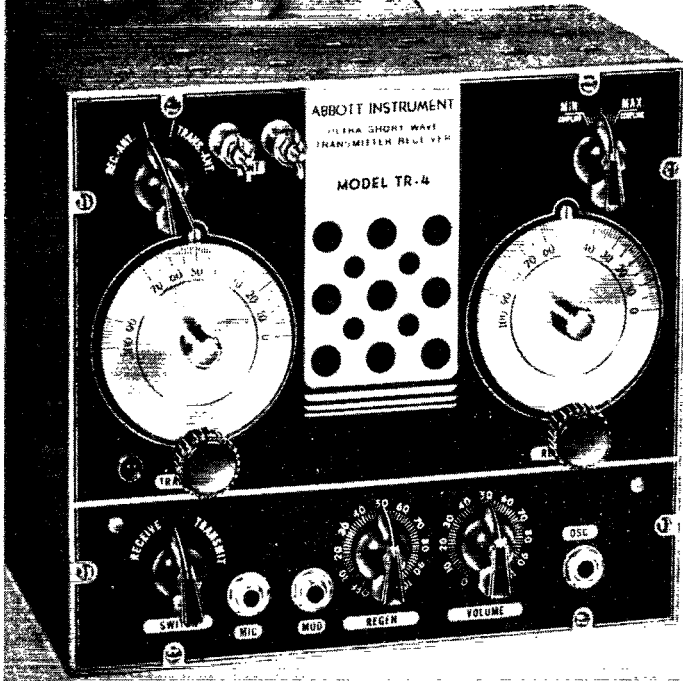
W9POP/9	Northwest Amateur Radio Club ⁸²	492-A-7716
W3GKO/3	Frankford Radio Club ⁸³	437-A-6903
W6LEE/6	Associated Radio Amateurs of Long Beach ⁸⁴	176-A-4023

²⁵ Four ops. ²⁶ WIENY, HRR, IJA, WQ. ²⁷ Sixteen ops. ²⁸ WZEM, GDC, GJC, HJL. ²⁹ Participants not indicated. ³⁰ W8EYQ, GXR, LKU, PCQ, VHZ, ³¹ W4CVY, FBI, FOP, FTQ, FZY, HAC, ³² W3EYX, FNG, FVD, ING, Hall, ³³ W7IAP, IPD, K7HUZ, ³⁴ Six ops. ³⁵ W1AOP, CH, CPV, EJE, LAB. ³⁶ Eight ops. ³⁷ W9PFG, SEE, UEV, UPD. ³⁸ W9BQE, GDV, GYV, JCK, KME, NRY, ³⁹ W9OEB, RW, ⁴⁰ W9AXY, LAC, LRI, OGA, ⁴¹ W9SMO, VLT, ⁴² W9AXD, CS, MGT, NIV. ⁴³ W9GWV, RWC, ⁴⁴ W1ALP, LID, MYL, ⁴⁵ W9AEJ, GHD, JKL, PUV, TBU. ⁴⁶ Participants not indicated. ⁴⁷ W9KXD. ⁴⁸ W9CPT, ESV, FEO, FZC, GAA, JJB, JBF, LED, OBZ, RLB, RNZ, RQM, SFP, SMP, ZTO. ⁴⁹ W8CJL, EDJ, NBF, QYV, QNK, RCH, RKL, SEU, Milton. ⁵⁰ W9AGY, CHH, EDP. ⁵¹ Eight ops. ⁵² W3BIL, CPT, CSN, CWQ, DDX, DGM, DRQ, GDE, GUF, HFO, HNO, IZX, JBC, JCO, JDR, Messmer. ⁵³ Twelve ops. ⁵⁴ W3AQE, EUC, FUM, GTO, IAY. ⁵⁵ W9EMO, FGU, HHR, RBI. ⁵⁶ W2AOD, CKQ, GGN, KCH, KPA, LPI, MJO, NDQ. ⁵⁷ W9IFP, JZL, KCO, MYC, NFM, OXH, QFY, RSI, SAI, SBT, UTY. ⁵⁸ Participants not indicated. ⁵⁹ W9AAW, ADF, DOU, GFF, HFG, BAN, REC, QV, Griem. ⁶⁰ W5ASQ, CEZ, EIA, GZA, HPV, W9N0F, W9WMY, Evans, Marshall, Martin, Nelson, See. ⁶¹ Twenty ops. ⁶² W8OYI, RJS, TLV, UKU, WAX. ⁶³ W5BRB, JHP, MH. ⁶⁴ W8DEC, NNY, QJE, RJD, SEL, UOH, UWQ, WBL, plus other members. ⁶⁵ Ten ops. ⁶⁶ Participants not indicated. ⁶⁷ W9BLE, GCW, GLA, IVT, KLD, ONV, OPS, VOD, YOB, Anderson, Brown, Wethe. ⁶⁸ Participants not indicated. ⁶⁹ W9AWP, DJL, DWC, IBN, WIN, YVI. ⁷⁰ W1BCG, BRA, CTL, UE, W8FXG, W8JQE. ⁷¹ Ten ops. ⁷² Fourteen ops. ⁷³ W8AQ, EEI, EMV,

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ABBOTT TR-4 TRANSMITTER-RECEIVER for 2½ METERS

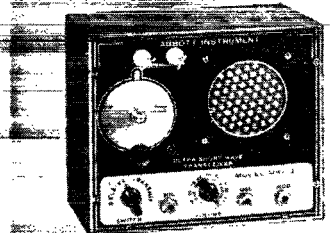


A compact, efficient unit, designed for either fixed station or mobile operation. Transmitter and receiver sections are completely separated. The 5 inch PM speaker is self-contained. Single inter-connected switch permits use of a common antenna for both transmitter and receiver. The TR-4 requires a 6 volt battery or 110 volt, 60 cycle AC power supply.

The receiver portion of this Abbott TR-4 incorporates a specially designed circuit in addition to numerous mechanical refinements, including front of panel control variable inductive coupling, variable sensitivity control, audio volume control, etc. . . . Receiver radiation is necessarily reduced to a minimum.

● FREQUENCY: 112 to 116 MC. ● RANGE: Varying from 5 to 75 miles, depending upon terrain. Contacts up to 150 miles have been completed in field tests. ● TUBES USED: One each of Hytron HY-615, Hytron HY-75, 7F7, 6V6 or 6L6. ● MICROPHONE: Any good single button microphone.

TR-4 Overall size 9" x 8" x 4½", less tubes and power supply, list price (subject to amateur discount)\$65.00



MRT-3

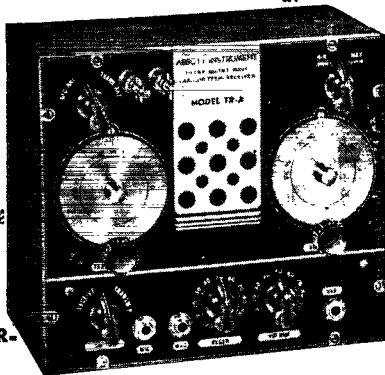
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**ABBOTT
TR-4
TRANSMITTER-
RECEIVER**

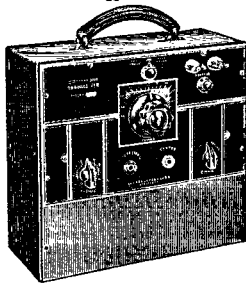
Here is an extremely compact 2 1/2 meter transmitter-receiver that has been expressly designed for government, commercial and advanced radio amateur requirements. Features separate receiver and transmitter with HY-615 in output. Ideal for fixed station or mobile use. Range 5 to 75 miles.

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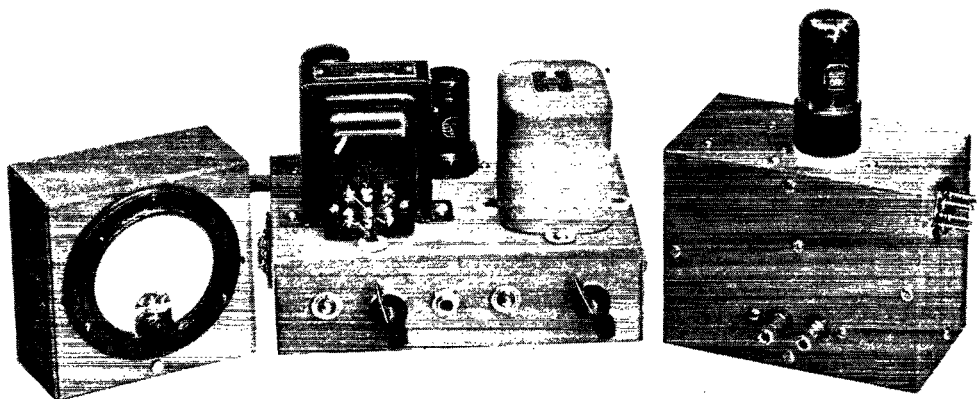
W8BOZ/8	Warren County Radio Club ⁸⁶	230- A- 3879
W6QXV/6	Santa Barbara Amateur Radio Club ⁸⁶	138- A- 3470
W6MGI/6	Helix Amateur Radio Club ⁸⁷	129- A- 3402
W5ALI/5	Muskogee Amateur Radio Club ⁸⁸	141- A- 3321
W3HC/3	Delaware Amateur Radio Club ⁸⁹	126- A- 3168
W8ARN/9	Peoria Amateur Radio Assn. ⁹⁰	124- A- 2556
W9CAA/9	Associated Amateur Radio Operators of Denver ⁹¹	180- B- 2340
W6HKM/6	United Radio Amateurs Club of Wil- mington ⁹²	114- A- 2241
W3JOI/3	Baltimore Amateur Radio Associa- tion ⁹³	144- A- 2169
W9MWJ/9	Tri-Town Radio Amateur Club ⁹⁴	151- A- 2133
W9MKS/9	Starved Rock Radio Club ⁹⁴	117- A- 2048
W6QMD/9	Ozark Empire Radio Club ⁹⁵	97- A- 1728
W4GNF/4	Greensboro Radio Club ⁹⁷	107-AB- 1716
W2BCC/3	Somerset Hills Radio Club ⁹⁸	184-AB- 1628
W3CCH/3	Reading Radio Club ⁹⁹	104- A- 1620
W9JTX/9	YL Radio Club ¹⁰⁰	156- A- 1602
W3IU/3	York Road Radio Club ¹⁰¹	93- A- 1503
W1KVI/1	Portland Amateur Wireless Associa- tion ¹⁰²	109-AB- 1329
W7LT/7	Portland Amateur Radio Club ¹⁰⁴	71- A- 1175
W1AUN/1	Chair City Radio Association ¹⁰⁴	57- A- 909
W8QZF/8	Horseshoe Radio Club ¹⁰⁶	49-AB- 732
W4BCU/4	Anniston Radio Club ¹⁰⁶	39- A- 729

Four Transmitters Operated Simultaneously

W3BKK/3	Frankford Radio Club ¹⁰⁷	644- A- 9765
W8GCI/8	Buckeye Radio Club ¹⁰⁸	510- A- 7371
W6SIF/6	Mike and Key Club of Santa Monica, Calif. ¹⁰⁹	265- A- 5094
W8GYR/8	Westlake Amateur Radio Assn. ¹¹⁰	369- A- 5769
W8NC/8	Greater Cincinnati Amateur Radio Assn. ¹¹¹	390- A- 5737
W1UJ/1	Radio Operators Assn. of New Bed- ford ¹¹²	350- A- 5517
W2FVJ/2	Northern Nassau Wireless Assn. ¹¹³	440-AB- 4761
W8NLC/9	Detroit Amateur Radio Assn. ¹¹⁴	324- A- 4752
W9PJY/9	Chicago Suburban Radio Assn. ¹¹⁵	294- A- 4338
W8KWA/8	Amateur Transmitters Assn. of W. Pa. ¹¹⁶	264- A- 4293
W6KW/6	San Diego Radio Club ¹¹⁷	197- A- 4280
W2ACB/2	Schenectady Amateur Radio Assn. ¹¹⁸	300- A- 4050
W8KCA/8	Kenmore Buffalo Tonawanda Radio Club ¹¹⁹	233- A- 3708
W8AN/8	Central New York Radio Club ¹²⁰	225- A- 3348
W8D/8	Toledo Amateur Radio Assn. ¹²¹	190- A- 2925
W2NSN/2	North Newark Amateur Radio Club ¹²²	175- A- 2799
W2US/2	Suffolk Amateur Radio Club ¹²³	173- A- 2781
W1NDS/1	Norwalk Amateur Radio Assn. ¹²⁴	120-AB- 2097
W8LHI/8	Niagara Radio Club ¹²⁴	167- A- 2079
W2BPY/2	Raritan Bay Radio Club ¹²⁴	90- A- 1485

HPD, KNF, LAV, RFS, ⁷⁴Eight oprs. ⁷⁵Fifteen oprs.
⁷⁶W6DXB, SSA, TBG, ⁷⁷Nine oprs. ⁷⁸Two oprs. ⁷⁹W4DND,
 DYK, EZZ, FGU, ⁸⁰W9KBE, KTS, RWX, FKX, W7DPK,
 Cook, Davidson, Lone, ⁸¹W8ALC, BGD, CTC, NLA, ONL,
 EBD, FMY, RBE, MUE, W4H, W4HKE, MUE,
 Bowden, ⁸²W8CX, EWG, GTM, IT, LBP, NII, NJZ, NZM,
 PKW, RJS, SUX, TGH, ⁸³W8BU, BXE, GKO, HYT, ILK,
 KT, ⁸⁴Fourteen oprs. ⁸⁵W8BOZ, HKW, JSG, KYW, LTQ,
 NTJ, PEC, SVT, ⁸⁶TJ, TWL, WBV, ⁸⁷Seventeen oprs.
⁸⁸W8BHP, BZL, EAT, FMI, HAE, JEM, KMV, NAV,
 NEJ, OUG, OVL, ⁸⁹W4AJ, BGR, HBE, HBE, MUE,
 HYY, IBY, JAV, JFY, JLO, ⁹⁰W3CGV, GZH, HBE, HC,
 IYE, NE, SL, MTW, DQZ, HGA, ⁹¹W8CQN, CZK, HB,
 NAG, NJX, MXD, QOP, ⁹²W9AYV, BFO, BFN, BGO, CAA,
 CNL, FTV, OLL, QYU, FFP, WYX, ⁹³Participants not
 indicated. ⁹⁴W8AJX, BTQ, CVA, EBI, EKZ, ESM, FAM,
 FJE, GRT, GWS, HRI, JAS, ⁹⁵Fifteen oprs. plus four club
 members assisting. ⁹⁶W8ATA, BIN, DBO, LNL, NCG, NIU,
 QLZ, TAY, TBF, TLO, YBY, ZEN, ⁹⁷W8FUM, ITW, JKF,
 JQJ, JXG, QCO, QCV, QMD, ⁹⁸Twenty oprs. ⁹⁹Participants
 not indicated. ¹⁰⁰Thirty oprs. ¹⁰¹W8DBD, GOJ, ILH, JPT,
 JTX, JWJ, ONW, PFC, WYX, ¹⁰²Twenty oprs. ¹⁰³W8BAV,
 CMO, CRF, DHE, DZU, EY, EWN, FB, GHT, GK, JRS,
 LNL, LOA, LZL, MBR, MFK, ¹⁰⁴W7AEF, CML, FZK, HLY,
 HTS, INU, INX, LT, ¹⁰⁵W1AUN, DCH, LLN, ¹⁰⁶W8IBB,
 RFM, RTH, RYN, TXQ, VPF, VRM, WAP, WBD, ¹⁰⁷Eight
 oprs. ¹⁰⁸W8ENH, ENL, FLH, FCG, FRY, GET, GEM,
 GQK, JVA, JGJ, KJN, JG, W4HN, W8LH,
¹⁰⁹W8AQX, BSB, BZL, CUL, FUP, GCI, LHU, LVV, LWE,
 NHV, QYR, SAF, SBA, SCF, TOL, UJB, UXR, VIM,
¹¹⁰W8DIO, DLL, JFV, LJD, RIU, RR, VB, ¹¹¹W8BCB, BXC,
 MXO, UBS, OPM, MOH, MXL, GYR, TWE, UUV, TIV,
 TWQ, ULV, UVE, VDA, PCC, GAY, FER, HVA, VRF, VOV,
 QYX, ¹¹²BCJ, FFB, BAJ, ELS, JAJ, JFC, NCV, NDN, NDU,
 NMR, ODF, QAD, QEB, RSW, SDN, SHD, SLO, SMC,
 STW, TEJ, TPZ, TYL, TYM, UEV, UFA, UFE, UOF, VAW,
 VBG, VIV, DYW, JOE, NTC, OMW, Corcoran, Goodrich,
 Jacobs, Mannix, ¹¹³W1AGW, CBZ, FWT, ICA, JYJ, KHE,
 LY, G, Chas. ¹¹⁴W8ACB, AZS, BGV, BJE, EYJ, ICO, JNO,
 DUA, AYJ, DUB, INF, MIL, LZF, MJJ, FPC, ¹¹⁵W8MT,
 GZS, NEX, OBE, Landsman, ¹¹⁶Seventeen oprs. ¹¹⁷W8MAT,
 PMJ, USJ, WWO, YXQ, ¹¹⁸W8AVY, AJU, CFF, CUG, BBO,
 HPQ, JAV, OLW, PEJ, SGH, SWX, USM, ¹¹⁹W8OAN, BZH,
 JMI, SLU, TSG, KW, TGT, QEL, RGY, DNV, MUR, FVY,
 TVY and others. ¹²⁰W8CIR, HZI, KFI, JZL, KBL, KVO,
 NBY, BRS, BGV, CBO, ACB, BKV, NOY, GVA, DDA, MVA,
 GTC, LU, BSH, MJI, IOF, NAD, MJT, MTE, WIMPE,
 W8AKS, W8SNE, Conti, Gennaro, Goraki, ¹²¹W8KCA, LFC,
 LQC, MBE, MOX, NJE, NVO, NVJ, NWH, UHI, ¹²²W8AN,
 BAL, EJJ, DRW, GYT, LJJ, W8VFP, RNE, ¹²³REX, JEO,
 QHE, SUG, ¹²⁴W8BZ, BZL, BZL, BZL, BZL, BZL,
 SMR, OJO, EGI, QUO, ARF, RRZ, FED, QOU, OFW, STF,

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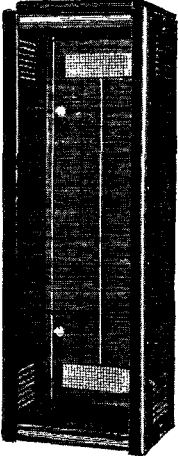
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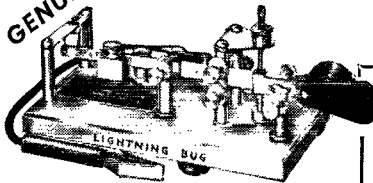
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W5BAT/5	Oklahoma City Amateur Radio Club, Inc. ¹³⁷	107-AB-1466
W2GX/2	Union County Amateur Radio Assn. ¹²⁸	129-A-1241
W9SD/1	Western Nebraska Radio Amateurs ¹²⁹	234-B-1398
W1JHT/1	Bridgeport Amateur Radio Assn. ¹²⁹	230-A-1245
W1LBU/1	Worcester Radio Assn. ¹³¹	93-AB-1092
W9FEL/9	Indiana Radio Club ¹³²	178-AB-944

Five Transmitters Operated Simultaneously

W8URA/8	Cuyahoga Radio Association ¹³⁷	458-A-7083
W3ATR/3	Radio Beacon Amateurs ¹³⁴	452-A-7056
W8BOK/8	Mountaineer Amateur Radio Association ¹³⁵	300-A-5553
W9TCK/9	Cahokia Amateur Radio Club ¹³⁶	330-A-4653
W5IAS/5	Tulsa Amateur Radio Club ¹³⁷	163-A-3821
W9ANA/9	Milwaukee Radio Amateurs Club, Inc. ¹³⁸	243-A-3636
W8DM/8	Kalamazoo Amateur Radio Club ¹³⁹	234-A-3516
W9LJU/9	Milwaukee Radio Amateurs Club, Inc. ¹⁴⁰	287-AB-3447
W1DJC/1	Manchester Radio Club ¹⁴¹	181-A-2070
W5EB/5	Advance Radio Club ¹⁴²	188-A-2061
W9NI/9	Kaw Valley Radio Club ¹⁴³	170-A-2781
W3GKI/2	Tri States Radio Club ¹⁴⁴	203-A-2248
W2SV/2	Sunrise Radio Club ¹⁴⁵	257-AB-1088
W7BAH/7	Sky-way Radio Club ¹⁴⁶	86-ABC-843
W2CBT/2	Raritan Valley Radio Club ¹⁴⁷	105-A-585

Six Transmitters Operated Simultaneously

W3AQ/3	Delaware Valley Radio Association ¹⁴⁸	430-A-6075
W8UK/8	South Hills Brass Pounders and Modulators ¹⁴⁹	323-A-4842
W9NNO/9	Minneapolis Radio Club ¹⁵⁰	248-A-3501
W3KW/3	South Jersey Radio Association ¹⁵¹	170-A-2633

Seven Transmitters Operated Simultaneously

W6VX/6	Society of Amateur Radio Operators ¹⁵²	515-A-10571
W9KYC/9	St. Paul Radio Club ¹⁵³	568-A-7263
W2WC/2	L/C Club ¹⁵⁴	310-A-4446

Eight Transmitters Operated Simultaneously

W9KA/9	York Radio Club ¹⁵⁵	598-A-8829
W6MZ/6	San Francisco Amateur Radio Emergency Corps ¹⁵⁶	398-A-8073
W1GB/1	New Haven Amateur Radio Association ¹⁵⁷	370-A-5508
W9PSL/9	Central Illinois Amateur Radio Club ¹⁵⁸	352-A-5328

Nine Transmitters Operated Simultaneously

W2AER/2	Jersey Shore Amateur Radio Association ¹⁵⁹	921-A-12348
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RXR, CPW, HSW,¹²² Ten oprs.¹²³ W2ADW, BFA, BIJ, CGD, DOG, EBT, FCH, IRC, KKM, KPB, LLI, LVB, LKK, LYH, US.¹²⁴ WILJY, LRT, MGX, MRP.¹²⁵ Ten operators.

126 W2KTR, NJO, AGM, GGH, AUL, ICG, MOR, HUZ, IGN, ERY, MDE, WSB, EUJ, NEJ, DME, DFW, HUD, GUG, NLH, CLK, ISB, LNK, NDO, Little Bow, 1st. Participants not indicated.¹²⁸ W2AGH, BRC, BYD, CHQ, CZS, DSP, EUI, IIN, LCO, LKN, LOX, NEL, Grippe, Hyland.

129 W9AZT, KQX, LWS, MEJ, MGW, MTL, RGK, YXR, W7ACQ, W7AMU, W7ELO, W7CBL, W7IDO. Eight oprs.¹³¹ Twelve oprs.¹³² HZB, BNR, GJD, SVU, MDC, YVS, IUM, FTY, IWN, YZJ, GAN, UDV, FFM, FIO, EBC plus three other members.¹³³ W8AOK, AVH, BMX, DS, EBJ, FFK, IKA, KOL, LB, MIB, NV, PFH, PWY, QV, ROX, SIV.

134 W3ATR, BGD, BUK, BZC, CMW, CNP, DYL, ERV, FHD, GRF, HTE, HTM, IDQ, IKP, W6QYH.¹³⁵ W8BOK, GBF, OXO, KWL, NIV, MKE, OJT, TDJ, MIP, VZD, KWI, ESQ, RCN, QR, KVV, GAD.¹³⁶ Twelve oprs.¹³⁷ W5AEK, AYE, BCO, BRX, EAK, FDQ, FFW, FHZ, FWZ, GIN, GZS, HFY, HKH, HKI, IJW, IKY, IOY, IWW, JBX, JHI, LW, WI.

138 Eighteen oprs.¹³⁹ Fourteen participants.¹⁴⁰ Thirty oprs.¹⁴¹ Eight oprs.¹⁴² W8EB, IRO, BQD, ADJ, GMR, HUZ, HSH, HNW, HXV, DRX, EVD, Avoca, Michigan, Smith, Aronault.

143 W9AHG, BJJ, BQW, FMR, GOY, HBL, ICV, KXB, JLJ, LJJ, NQH, NVH, OZF, RZF, SJC, TWI, TPF, UFA, VJA, VWU.¹⁴⁴ W2IQQ, CUR, GFF, HVM, DZA, LVD, AC, Thompson, Snyder, Harter, Peck, Pitman.¹⁴⁵ Twenty oprs.¹⁴⁶ W9WJP, ABM, DAK, W7BAE, EUZ, HDS, ERM, IFL.¹⁴⁷ Ten oprs.¹⁴⁸ W3BAQ, CCO, KEY, EED, EUB, GCO, HAZ, HKO, IOK, IOU, ITU, JXX, JOL, BWF, ISZ, ZI, ASQ, ATE.¹⁴⁹ W3AET, AIG, BDW, BK, CKO, FCO, GJM, MPO, FX, UK.¹⁵⁰ W9NNO, OBM, ZXV, JFH, DIJ, DOB, DBC, OWK, JNC, EFK, PTY, NFD, BWM, NJJ, YLZ, FMS, ACV, KCA, JHK, GAL, RVS, ABD, IGP, LJI.¹⁵¹ W8KW, BMA, EWT, BWL, FSZ, HLY, IZP, DAJ, FDE, HND, BIC, BPH, HLM, YX, GPV, IJW, EET, FSZ, FEY, EBA, FZP.¹⁵² W8WCE, DDO, EHS, EY, HB, KQJ, LFV, NQJ, NZY, OCZ, OMC, ONY, OSY, PFM, QWX, VX, ZP.¹⁵³ W9QDF, OCN, JRI, NCS, MPW, NQD, HRI, QPL, LEV, PCW, QEQ, QVC, HKE, ZWW, ORA, EYK, MAW.¹⁵⁴ W2EQS, LET, WQ, BNU, KVE, GBE, GBE, FVE, IGH, JED, KPE, NQK, NRT, MKX.¹⁵⁵ W9JO, NST, KA, CY, TH, TGB, PAE, NAB, PNB, QDG, CQI, CWP, LLM, IAH.¹⁵⁶ Participants not indicated.¹⁵⁷ W1AGT, ATH, BYW, EUG, EWI, FMY, JHN, JKC, KDO, KQY, KUK, LTZ, MEF, TD, Lincoln, Allen, Wing, Lohse, Vaughn, Reeves, Libertino, Greely.¹⁵⁸ Participants not indicated.¹⁵⁹ W2PWS, GBE, FVE, GAK, CQB, FRC, BZJ, ABO, NTA, DSV, AFU, FQK, AER, AIW, CJU, CYS, DSY, FC, NIE, HWX, IKL, HZT, MJK,

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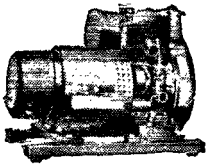
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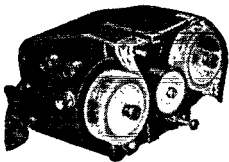
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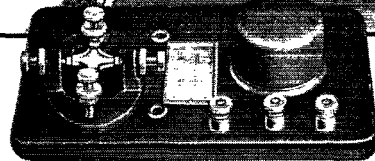
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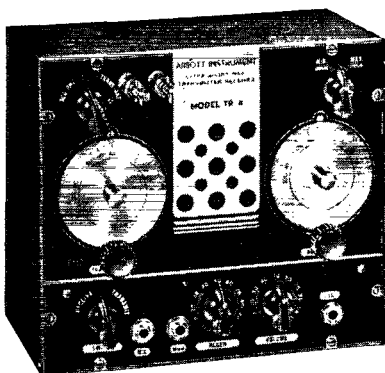
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U. H. F. Receivers

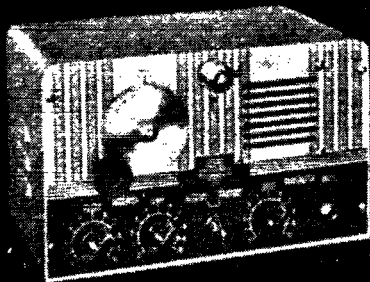
(Continued from page 26)

scribed above, the oscillator tube can be returned to its socket and the tuning condenser, C_3 , set to near its full capacity position. By adjusting the oscillator bandset condenser, C_4 , it should now be possible to tune in a signal at the low-frequency end of the 112-Mc. band. One's own transmitter will furnish a handy signal if no other is available. The tuning range of the oscillator can now be checked by tuning in a signal at the high-frequency end — if it comes in at the middle of the dial there isn't enough bandspread and if it can't be heard it indicates too much bandspread. Too little bandspread means the turns of L_3 are too close together, and they should be spread apart a bit — vice versa for too much bandspread.

The only other adjustments necessary are to make sure that the mixer resonates to the band and to adjust the voltage from the oscillator to the mixer. Since the mixer tuning will "pull" the oscillator slightly, it is not always possible to simply peak the mixer tuning on a signal without detuning the signal, but by retuning the oscillator it will soon be apparent whether or not the mixer is resonating to the signal or whether it is tuning to a higher or lower frequency. If the maximum signal is obtained with the mixer condenser, C_1 , set at either its minimum or maximum setting it will be well to adjust the coil L_1 until the signal peaks at about the center of the mixer condenser range. The oscillator voltage coupling, controlled by C_2 , should be adjusted to give an oscillator voltage at the mixer of just slightly less than the mixer cathode bias voltage. One can cut into the tuned-circuit ground return and measure grid current, loosening the coupling just past the point where grid current is obtained but, lacking facilities for this method, one can set the condenser at the point which gives loudest signals as judged by the amount of silencing when a signal is tuned in.

During operation the mixer tuning condenser control can be set for the center of the band and will probably not have to be touched unless receiving stations at the edges of the band. Thus for all normal operation the receiver will handle like the usual superregenerative receiver with the exception that it will tune a bit more sharply and — a decided advantage — the regeneration control will not have to be touched for any setting of the tuning control.

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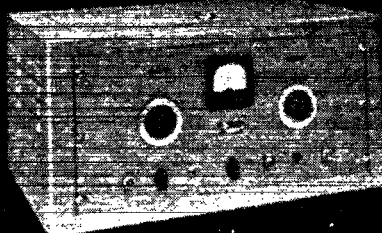
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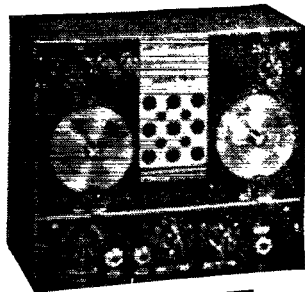
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General

It will be noted that each receiver diagram includes a dropping resistor from the on-off switch to the receiver proper, with a 8- μ fd. condenser connected on the receiver side of the resistor to ground. The resistor is for the purpose of dropping the voltage from the power supply to 300, since the voltage will run considerably higher than this value with drains of less than 100 ma. The 8- μ fd. condenser is necessary to eliminate "motor-boating" of the two-stage resistance-coupled amplifiers. Even higher values of resistors can be used, resulting in further power economy and life of the tubes.

The two receivers with built-in speakers will give better low-frequency response if a bottom plate is fastened to the chassis, although speech is perfectly understandable without the plate. However, it also serves as protection for the wiring and thus makes a nice addition to the unit.

The two superregenerative receivers are not non-radiating. However, their interference range is about a half mile under normal city conditions. As pointed out previously, the radiation can be reduced still further by using special u.h.f. tubes for the detectors, but under normal conditions with stations spotted several miles apart there should be no trouble from receiver QRM.

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The standard musical pitch carried by the broadcast is the frequency 440 cycles per second, corresponding to *A* above middle *C*. In addition there is a pulse every second, heard as a faint tick each second when listening to the 440 cycles. The pulse lasts 0.005 second, and provides an accurate time interval for purposes of physical measurements.

The 440-cycle tone is interrupted every five minutes for one minute in order to give the station announcement and to provide an interval for the checking of radio measurements based on the standard radio frequency. The announcement is the call letters (WWV) in telegraphic code.

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(Continued on page 86)

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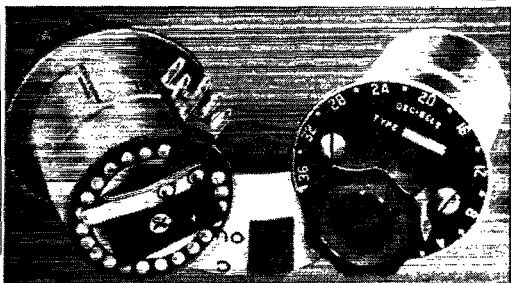
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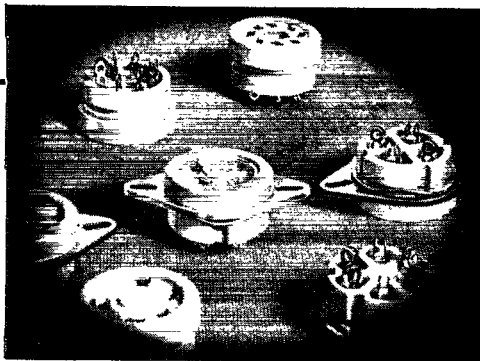
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(Continued from page 82)

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Hall Bubb, "Hal," Stn. Eng. and Chief Opr.
George Hart, "Geo," 2nd Opr. See others, below.

The following calls and personal signs belong to members of the ARRL Headquarters gang:

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W1BAW, R. T. Beaudin, "rb"
W1BDI, F. E. Handy, "fh"
W1CBD, C. B. de Soto, "de"
W1DF, George Grammer, "gg"
W1EH, K. B. Warner, "ken"
W1GS, F. C. Beekley, "beek"
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W1JEQ, Vernon Chambers, "vc"
W1JFN, A. L. Budlong, "bud"
W1JMY, J. A. Moskey, "joe"
W1JPE, Byron Goodman, "by"
W1JTD, Hal Bubb, "hal"
W1LVQ, L. John Huntoon, "jh"
W1MEC, W. J. Fricke, Jr., "bill"
W1MFA, Harold K. Isham, "hi"
W1NJM, George Hart, "geo"
W1SZ, C. C. Rodimon, "rod"
W1TS, Don Mix, "don"
W1UE, E. L. Battey, "ev"

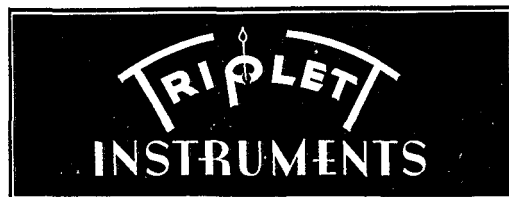
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It is with deep regret that we record the passing of these amateurs:

Joseph A. Barkley, W3SL, Wilmington, Del.
John F. Baurer, jr., W3ATK, Lancaster, Penna.
Lindsey G. Doherty, W5CQV, Vivian, La.
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Rosewell Stanley Flower, W9ZIG, Springfield, Mo.
John LeRoy Hansen, W6KSM, Los Angeles, Calif.
J. Gordon Kerr, GMSQD, Glasgow, Scotland
L.A.C. J. M. Macdonnell, VE3AKM, Toronto, Ont.
Orrin B. Nelson, W9DZE, Eau Claire, Wis.
Major R. E. L. Pirtle, K6OAY, ex-W9SZ, Schofield Bks, T. H.
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 HARTFORD, CONN. 227 Asylum Street
 Radio Inspection Service Company
 HOUSTON, TEXAS 1021 Caroline Street
 R. C. & L. F. Hall
 INDIANAPOLIS, INDIANA 34 West Ohio Street
 Van Sickle Radio Supply Co.
 KANSAS CITY, MO. 1012 McGee Street
 Burstein-Applebee Company
 NEW HAVEN, CONN. 1172 Chapel Street
 Hatry & Young, Inc.
 NEW YORK, N. Y. Harrison Radio Co. 12 West Broadway
 NEW YORK, N. Y. 100 Sixth Ave.
 Radio Wire Television Inc.
 NEWARK, N. J. 24 Central Ave.
 Radio Wire Television Inc.
 READING, PENN. 404 Walnut Street
 George D. Barbey Company
 SCRANTON, PENN. 519-21 Mulberry Street
 Scranton Radio & Television Supply Co.
 WASHINGTON, D. C. 938 F Street, N. W.
 Sun Radio & Service Supply Co.
 WATERBURY, CONN. 199 South Main Street
 Hatry & Young, Inc.

ALBANY, N. Y. Uncle Dave's Radio Shack 356 Broadway
 ATLANTA, GEORGIA 265 Peachtree Street
 Radio Wire Television Inc.
 BOSTON, MASS. Radio Shack 167 Washington Street
 BOSTON, MASS. 110 Federal Street
 Radio Wire Television Inc.
 BRIDGEPORT, CONN. 177 Cannon Street
 Hatry & Young, Inc.
 BRONX, N. Y. 542 East Fordham Rd.
 Radio Wire Television Inc.
 BUFFALO, N. Y. 1531 Main Street
 Dymac, Inc.
 BUTLER, MISSOURI 211-215 N. Main Street
 Henry Radio Shop
 CHICAGO, ILLINOIS 833 W. Jackson Blvd.
 Allied Radio Corp.
 CHICAGO, ILL. 901-911 W. Jackson Blvd.
 Radio Wire Television Inc.
 CINCINNATI, OHIO 1103 Vine Street
 United Radio, Inc.
 HARTFORD, CONN. 203 Ann Street
 Hatry & Young, Inc.
 MINNEAPOLIS, MINNESOTA 1211 LaSalle Avenue
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 NEW HAVEN, CONN. 1172 Chapel Street
 Hatry & Young, Inc.
 NEW YORK, N. Y. 100 Sixth Avenue
 Radio Wire Television Inc.
 NEWARK, N. J. 24 Central Ave.
 Radio Wire Television Inc.
 READING, PENN. 404 Walnut Street
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 Sun Radio & Service Supply Co.

Listings on this page do not necessarily imply endorsement by QST of the dealers or of other equipment sold by them.

For National Defense—
For personal pleasure—

Go 2½!

For proven construction—
For good results—

Go ABBOTT!

For prompt service—
For full value—

Go HARRISON!

HERE, at UHF Headquarters, we have in stock everything you need for 2½—complete units, packs, parts to roll your own, accessories, etc. Tell us just what you want to do and we'll supply the proper equipment—economically.



THE NEW ABBOTT TR-4
Transmitter—Receiver

Complete, ready to plug in and operate,—with good tubes, Abbott 6 volt mobile power supply, bias battery, power cable with plugs, and instructions. **\$65.49**
Less only microphone and antenna....

- Same, but for 110 volt AC operation.....**\$65.43**
- With two power supplies, for operation on both 6 volt DC and 110 volt AC.....**\$83.95**
- American hand microphone with plug.....**\$3.49**
- Johnson 2½ meter "Q" Antenna.....**\$3.90**
- Vertical ¼ λ mobile antenna.....**\$1.75**
- Belden weatherproof co-axial cable feeder, 13¢ per foot

Of course! We have the MRT-3 and the DK-3 in stock, too. **\$28.81** and **\$18.82**. TR-4 stripped—**\$38.22**.

GET YOURS TODAY!
FROM



USE BILL'S
EASY PAYMENT
PLAN!

HARRISON
RADIO COMPANY

12 West Broadway • New York City

Telephone WOrth 2-6276

Up-to-Date Press Schedules

(Continued from page 70)

Time (GCT)	Call	Freq (kc.)	Place	Speed
1100	WDH/WRK	19,470/15,910	New York	30
*1100	KGT5	7825	Los Angeles, Calif.	30
1200	WRM	18,560	New York	50
*1200	WCX	7850	New York	35
*1230	WJQ	10,010	New York	30
1300	KMN	7340	San Francisco	—
1300	XKM2	7800	China	—
*1300	WJS/WCX	15,700/7850	New York	35
*1330	WJQ/WDQ/WCA	10,010/7625/25,730	New York	30
1400	WRM	18,560	New York	50
*1440	WCA	15,730	New York	30
*1500	WJS	15,700	New York	35
1515	WBE	19,850	New York	—
1600	WRM	18,560	New York	50
*1600	WJS	15,700	New York	35
*1630	JUP	13,085	Japan	20
*1635	KOQ	15,640	San Francisco	25
1635	WJS	15,700	New York	35
(67)				
*1700	WJS	15,700	New York	35
1715	WBE	19,850	New York	—
1750	WRM	18,560	New York	50
*1800	WJS	15,700	New York	35
*1800	KTV	8680	Manila, P I	25
1800	GBR	8640	OXFORD, ENG.	20
1845	WBE/WPU	19,850/14,635	New York	—
1850	WRM	18,560	New York	50
*1900	WRK/WDH	15,910/19,470	New York	25
*1900	KOQ	15,640	San Francisco	25
*2015	WJS	15,700	New York	35
2030	WPU	14,635	New York	50
2030	WCA	15,730	New York	45
*2115	KYN	18,560	San Francisco	35
*2130	WJS	15,700	New York	35
*2215	WJS	15,700	New York	35
*2230	KYK	16,740/12,495/7830	San Francisco	25
*2300	WJS/WCX	15,700/7850	New York	35
2300	WFC	6785	—	—
*2315	WRK/WHL	15,910/10,750	New York	30
*2330	KIE2	19,550	Los Angeles	18
*2330	WCA	15,730	New York	45
*2330	KJY	17,440	—	30

* Known to send regularly at time indicated. Stations not marked thus are known to send, but time is only approximate.

Strays

Although a quarter-inch arc could be drawn from the chassis of a neighboring b.c. receiver when his transmitter was operating, W3DEJ swears that no trace of interference could be found! — W3EVH.



Bill wishes you —

A Very Merry Christmas

AND A

Happy New Year!

Make it **HAPPIER**
with a **HALLICRAFTERS**
from **HARRISON!**

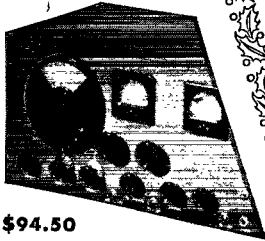
This is the time to buy a new receiver. Right now we have practically all models in stock for immediate delivery (unbelievable, but true).

And with Bill's well known policy of lowest prices always, easiest payment plan, highest trade-in allowances, and 100% cooperation, it is to your advantage to get it from — **HARRISON**. Don't delay—Come in or write to me today for anything you need.

73

Bill Harrison

W2AVA

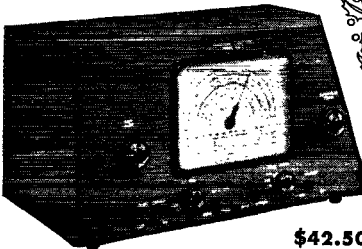


\$94.50

hallcrafters Super Defiant

Model SX-25. Has all the features of sets selling for nearly twice as much!

Harrison has it — in stock!



\$42.50

NEW Echophone EC-2

Here's the new and improved version of this popular set. Now with an external speaker (just like EC-3). Automatic noise limiter, preselection on all bands, calibrated bandspread, AC-DC, safety headphone jack, 8 tubes, 595 Kc 60 30.5 Mc. Bigger value than ever at only \$42.50, complete with speaker in matching cabinet.

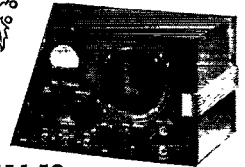
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No matter where you are (even in defense bases) Harrison delivers the goods! Receiver, transmitter, parts, tubes, everything you need supplied promptly and economically. Shipped safely, fully insured at from 2c to 12c per pound. Credit extended to officers—to others with guarantor.

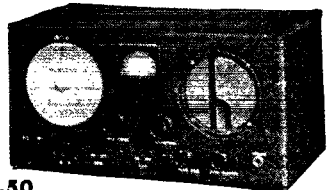


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Model S-20-R. Excellent value. Nine tubes, noise limiter, preselector stage, .545 to 44 mc, bandspread, etc. Socket for battery or vibropack operation.

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\$32.50

hallcrafters Sky Buddy

Model S-19-R. A six tube set that offers good results for a moderate price. .545 to 44 mc with continuous electrical bandspread.

Harrison has it — in stock!



\$179.50

hallcrafters Super Skyrider

Model SX-28. "Tops" in performance. 15 tubes, 2 r.f. stages, calibrated bandspread, etc. Covers .55 to 42 mc.

Harrison has it — in stock!

HARRISON RADIO CO.

12 WEST BROADWAY • NEW YORK CITY

WOrth 2-6276

**HE BOUGHT AN
ECHOPHONE EC-1!**



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(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others.

(3) The Ham-Ad rate is 15¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 25th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising in which, in our judgment, is obviously non-commercial in nature and is placed and signed by a member of the American Radio Relay League. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, if by a member of the American Radio Relay League takes the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising by him takes the 15¢ rate. Provisions of paragraphs (1), (2), (4) and (5) apply to all advertising in this column regardless of which rate may apply.

Having made no investigation of the advertisers in the classified columns, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products advertised

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QSL'S. Cartoons. Free samples. Theodore Porcher, 7708 Navajo, Philadelphia, Pa.

CALLBOOKS — Winter edition now on sale containing complete up-to-date list of radio hams throughout entire world. Single copies \$1.25. Canada and foreign \$1.35. Radio Amateur Call Book, 610 S. Dearborn, Chicago.

COMMERCIAL radio operators examination questions and answers. One dollar per element. G. C. Waller, W5ATV, 6540 Washington Blvd., Tulsa, Okla.

QSL'S. Finest. Maleco, 1805 St. Johns Place, Brooklyn, N. Y.

TELEPLEXES, Instructographs bought, sold. Ryan's, Hannibal, Mo.

WANTED: Will pay cash for Mims Deluxe 3 element 20 meter antenna, HRO, and 2000 volt tubes. W9QOB, Columbia, Mo.

QSL samples, prices on request. W2AEY, 338 Elmora, Elizabeth, N. J.

OLD QSTs. Bought — sold — traded. 1915/41. W6SN.

NEW transmitting kits all phone and CW from 15 watts through 150 watts. Also new ECO unit for \$39.50. New 40 meter phone transmitter reasonable. Also plenty of 40 meter crystals. Write for details today. Leo, W9GFQ.

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TRANSMITTING headquarters on latest Stancor, Thordarson, and other kits — commercially wired at low cost. New 70 watt transmitter kits complete only \$35 — speech amplifier modulator up to 80 watts at \$29.50 — up to 150 watts \$49.50. New JT-30 mikes & stands \$5.95. Easy terms. Write Leo, W9GFQ, today.

LEO, W9GFQ, offers the hams more and a better deal always. Lowest terms without red tape on all new and used equipment. Free trial. Personalized service. Write for big free ham bargain catalog and used receiver list. Wholesale Radio Labs., Council Bluffs, Iowa.

CRYSTALS: famous P.R. mounted in the latest Alsimag 35 holders — 40, 80 meter PR-X, 160 meter PR-Z \$3, 40, 80 meter PR-Z (low drift) \$3.50; 20 meter PR-20 \$4.50; unconditionally guaranteed. Immediate shipment. Quality blanks 70¢. Wholesale Radio Labs., Council Bluffs, Iowa. W9GFQ.

QSL'S — Brownie, W3CJI, 1725 Frankenfield Ave., Allentown, Pa.

TRADE: Eastman cine-kodak, model K, 16 mm, camera, fast F-1.9 kodak anastigmat lens in focusing mount, Eastman kodascope 16 mm. projector, model EE, with fast projection lens, carrying case for projector, condition like new. Only 400 feet film run in camera and projector. Will trade the above 16 mm. movie outfit for best offer in commercial built transmitter. Please describe xmitter fully. C. C. Robison, W8GAP, 1359 Blair Avenue, Tyrone, Pa.

TUBES wanted RCA. 1628's new. S. Osterlund, W9TJL, 914 Wellington Ave., Chicago.

WANTED — HT6 — DB20 — RME69 or what? W9ITI/K7. QSL'S? — SWL's? Samples? What's your desire? W8DED, Holland, Mich.

NATIONAL NC100, R-meter, speaker unmounted \$50. W2TG, Brizzolari, 68-60 108th St., Forest Hills, N. Y.

FOR sale — National 100X receiver, best cash offer takes it. Merlin Schumacher, Juneau, Wis.

COLLINS high fidelity transmitter type 300BA cw phone 400 w. 10 through 80 complete two cabinets 7C speech amplifier mike, cost \$1750 — make offer. W5DLC, 4425 Bordeaux, Dallas, Texas.

80-WATT transmitter in cabinet, National 101X receiver. Cash or trade for Speed Graphic. W9SFG, Brownsburg, Ind.

DOES that rig of yours call for a combination 6- and 115-volt supply that delivers 400 volts at 135 ma.? You will find the constructional data on page 336 of the Handbook.

WANTED: pair Baldwin phones — mica diaphragms good condition. Netter, Freehold, N. J.

WANTED — Utah transmitter kits #3 — 4 — 5. Donald H. Hathorn, W1BG, 370 Broadway, Bangor, Me.

WANTED — good ham receiver, standard make. Must be reasonable. David Lieter, 4600 — 14th Ave., Brooklyn, N. Y.

SELL Jewell 0 to 5 amp. thermocouple meter. Best offer takes it. W9FE.

SELL — Instructograph complete with 10 tapes, \$18. W9LTR, LaGrange, Ind.

WANTED: Hallierafter transmitter 25 or 100 watt. Will pay cash. Mattison, 712 State St., Lima, Ohio.

SELL — old QST's, 1924 — 1940, A-1 condition. W9HQ, 5937 S. Washtenaw Ave., Chicago, Ill.

CRYSTALS, commercial or amateur: police, aircraft, marine, defense projects, etc. A complete line of dependable crystal units is available for commercial services. Over a period of years Eidson commercial crystals have a record of 70.7% repeat sales — satisfaction set that record. Send for catalog. For hams: those unbeatable T9 40 and 80 meter crystals still sell for only \$1.60. T9 40 or 80 meter spot frequencies \$2.50 or \$3.60 with holder. Sold by: Henry Radio Shop, Butler, Mo.; Kerr Radio Shop, El Paso, Texas; Pemberton Labs., Ft. Wayne, Ind.; Frank Mayer Co., Corpus Christi, Texas; Teague Hardware Co., Montgomery, Ala.; Casa Edison, Havana, Cuba; and Eidson's, Temple, Texas.

WANTED: receivers RME69 or 70, AR77, HQ-120X or Super Pro. State condition and price first letter. M. W. Macy, Syracuse, Ind.

FOR sale — 700 watt cw rig, 250TH final has 15 hours. 4 black crackle decks. Would sell final with its power separately. Rig in storage different QTH. Best of parts. Excellent appearance. W5GKB, Esca Forgy, McCamey, Texas.

MUST sell surplus equipment. 2 250TL finals and 2 doubler driver 35T output units. All new commercial relay rack construction. Sell some components separately if necessary. Relay rack and cover on dolly. 78 3/4" panel space. Brand new Mac 200 w.p.m. recorder and tape puller. Aerovox capacity resistance bridge and condenser checker. Hickock Model 110VT a.c. and d.c. voltmeter. Box 436, Oklahoma City, Okla.

WANTED — used Meissner deluxe signal shifter. Pay cash. Louis Mackay, R.D. 1, Perth Amboy, N. J.

DYNAMOTOR — Pioneer Silver Band Type E 250-volt 100-ma. Rugged, heavy duty, complete with base-mounted filter. List cost \$54.50. Sacrifice at \$16. W1CBW, Granby, Conn.

SELLING out at bargain prices, meters \$1, other such low prices in new or slightly used parts, receivers, tubes, etc. Send for list. W2BFT.

QSL'S — SWL's, 100 — 3 color — 75¢. Lapco, 344 W. 39th, Indianapolis, Ind.

250-watt traffic transmitter; best offer takes; write W8SMH, 76 Rotary, Binghamton, N. Y., for details.

WANTED — Teleplex, Instructograph, meters, midget transmitter, etc. W8KQZ.

COLLINS 30FXC transmitter complete with tubes; 10, 20, and 80 meter coils; three Bliley LD2 crystals; and microphone. A-1 condition. \$300. W9NHF.

ORDER from Bob Henry, W9ARA, for immediate delivery and best deal on all amateur receivers, transmitters, kits, parts. Bob offers you largest trade-in; best terms (financed by Bob at lowest cost with no red tape); lowest prices; ten day trial; personal cooperation to see that you are 100% satisfied. Write, telephone, telegraph anytime for anything. Bob stocks hundreds of amateur receivers of all makes and models for positively immediate delivery. Henry Radio Shop, Butler, Mo.

RECONDITIONED guaranteed amateur receivers and transmitters. All makes and models cheap. Free trial. Terms. List free. Code machines rented. W9ARA, Butler, Mo.

1000 watt transmitter in black crackle metal cabinet, RME69 receiver and DB20 Bogen amplifier, D-104 chrome mike. Total investment \$1500. Will sell quick for \$500. Write for full particulars. J. H. Parkinson, 200 Searlwyn Rd., Syracuse, N. Y.

"FROM the estate of its late Treasurer, A. A. Hebert, W1ES, and on behalf thereof, the office of the American Radio Relay League, as agent, offers for quick cash sale the following items from that station f.o.b. Hartford: 40-80 m. band-switching RK20—PP RK36's (350 watt input) rack and panel transmitter, complete as is with power supplies 1250 v., 200 ma., and 1500 v., 300 ma. Includes Cardwell condensers, crystals 3590-3630-3993 kos., antenna pi-network unit, eight 3-in. meters, r.f., doma, a.c. volts, excellent rack. The amateur-parts-cost was \$357.90. Make best offer. 20-40 m. band-switching RK23-RK37-PP RK36's rack and panel transmitter. (Unless purchased as a companion unit, it is minus two above listed needed power supplies.) As is, with cabling to be reconnected to terminal boards, it includes Cardwells, 7100 & 7142 kc. crystals, pi-network, eight 3-in. meters (one cracked glass), r.f., doma, a.c. volts, excellent rack. Parts-cost \$193.75, make best offer. Modulator and speech-amplifier units, fit in 20-40 rack above includes 203A's, Thor. 250-watt Mod. transformer, speech amplifier with power supply, 1250 v., 200 ma. Parts-cost \$117. Make best offer. HRO-Sr. receiver, four sets coils complete with tubes and power supply, like new. Make best offer. Gordon Specialties World Time Clock. Make offer. Hallicrafter Skybuddy, almost new, \$20. Mac Stream key #1. Used Bunnell Goldbug \$1.50. 3-in. meters, flush-panel mounting style: (Weston) 0-8 v. d.c. \$3, 0-3 d.c. amps. \$2.50, 0-10 v. d.c. \$3. Jewell 0-15 v. a.c. \$2, 0-2½ amps. r.f. \$4, 0-15 v. d.c. \$1.50. Jewell table style 0-150 & 0-7½ v. d.c. bat. testing meter \$3, 0-1500 v. d.c. G.E. HV voltmeter, with multiplier, \$5. Shure crystal mike, type 70-D993 with plug, \$5, 2 8 mfd. 1250 v. oil condensers \$2 each, 1 Dub. PL455 11 mfd. 400 v. paper condenser 75¢. Transformers: 1 150 watt Fil., 110/12 v. \$1.50; Freed #512 110/650 v. 50 ma. & 5-2½ v. 50¢; Freed #513 110/650 v. 40 ma. 5-2½ v. 50¢; 1 160 watt T3202 with extra windings 105-110-115-120-125/2½-5-7½-7½ v. \$2; 1 T7081 Fil. trans. 75¢. Chokes: 1 T16C20 5-20 H 130 ohm 200 ma. 2000 v. ins. \$1.50; 1 T 6877 12 H 250 ma \$1. Insulators: 2 3" standoffs 50¢; 2 5½" pyrex \$3; 6 3" glass, 60¢. 0005 mfd. 5,000 v. Sangamos at 25¢ ea. Address all orders to American Radio Relay League, West Hartford, Conn.

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Reasonable, Efficient and Thorough, Hundreds of
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As older men leave for the army, Radio calls for high school graduates. So don't snap up just any temporary job! Train for \$150 to \$250 per month positions at school where the army has sent many men the past year. Next class starts Jan. 5. Write for free catalog now!

THE DODGE TELEGRAPH & RADIO INSTITUTE
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Start January

RADIO OPERATING • BROADCASTING • CODE
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Success depends on your training. Nilson's

MASTER COURSE IN RADIO COMMUNICATION

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- Amateur operator who wants commercial license
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- Send for Circular No. 3 giving full information.

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MINILOG

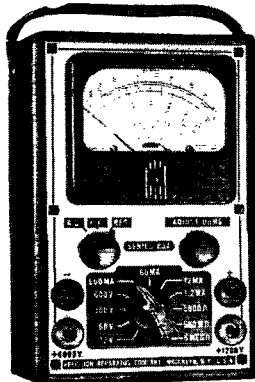
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"PRECISION" SERIES 834

31 Range AC-DC compact circuit tester



- 6000 Volts • 600 MA
- 5 Megohms • 70 DB

★ All ranges self-contained—NO EXTERNAL multipliers or batteries • 6 AC—6 DC—6 output voltage ranges—12/60/300/600/1200/6000 V. • 1000 ohms per volt • 4 current ranges—1.2/12/60/600 mills • 3 resistance ranges—0-5000/500 M/5 Megs • 6 DB ranges from -10 to +70 DB ★ All measurements from ONLY TWO pin jacks except 1200 and 6000 volts ★ New type, extra large, easy reading 400 microampere rectangular meter ★ 1% multipliers and wire wound bobbins ★ Overall size only 7" x 4½" x 3".

Tops in multi-tester value at only.....\$19.95 net

Write for the new radio amateur, laboratory, industrial test equipment catalog No. 42-Q... just off the press

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Standard of Accuracy SEE THEM AT YOUR JOBBER

PRECISION APPARATUS COMPANY
647 Kent Avenue Brooklyn, New York
Export Div.: 458 Broadway, New York, U. S. A. — Cables: Morhanex

Your Nearby Dealer Is Your Best Friend

Your nearby dealer is entitled to your patronage. He is equipped with a knowledge and understanding of amateur radio. He is your logical source of advice and counsel on what equipment you should buy. His stock is complete. He can supply your needs without delay. His prices are fair and consistent with the high quality of the goods he carries. He is responsible to you and interested in you.

One of these dealers is probably in your city — Patronize him!

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Everything for the Amateur

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Quoted from QST’s advertising rate card.

Every conceivable need of a radio amateur can be supplied by the advertisers in QST. And you will know the product has the approval of the League’s technical staff

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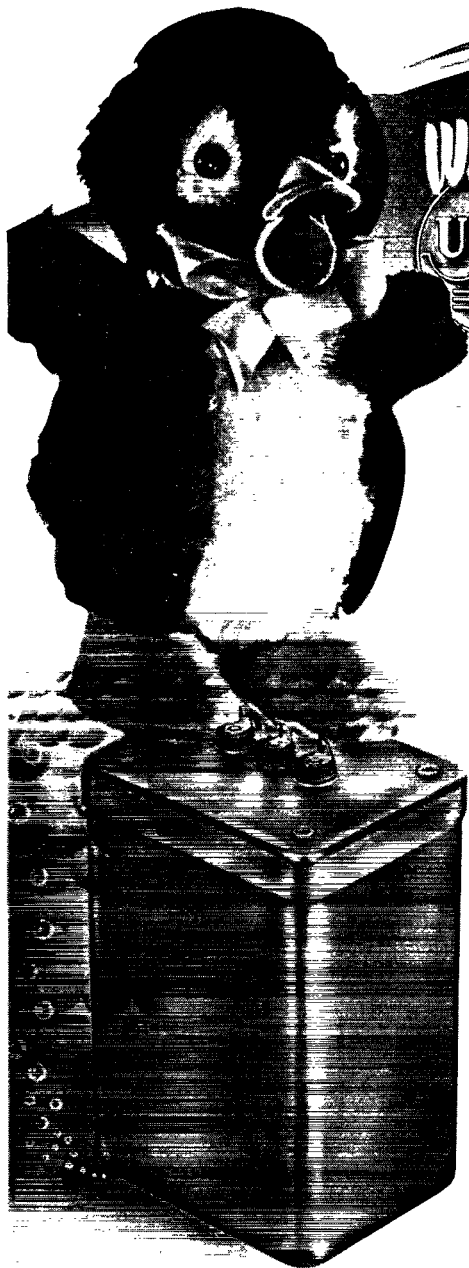


Bob Henry

W9ARA

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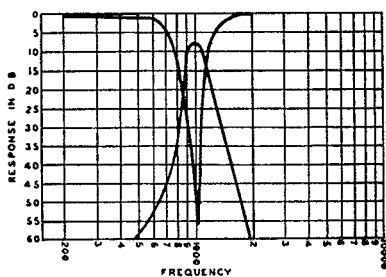
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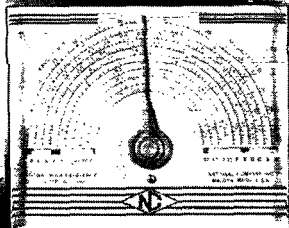
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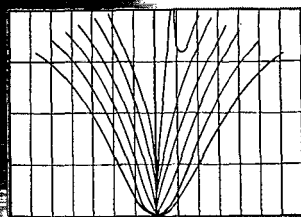
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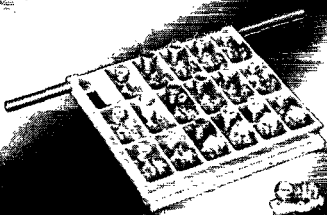
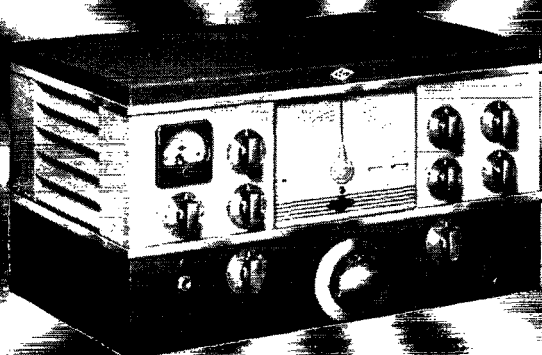
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 EXPORT DIVISION:— 100 VARICK STREET NEW YORK, N. Y. CABLES: "ARLAB"



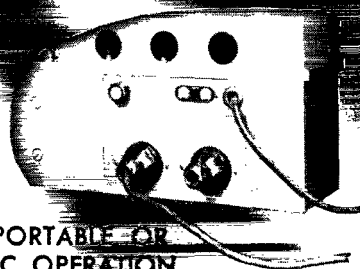
TEN CALIBRATED
COIL RANGES



WIDE RANGE
CRYSTAL FILTER



MOVABLE COIL
TUNING UNIT



PORTABLE OR
AC OPERATION



TEN CALIBRATED COIL RANGES ■ The NC-200 has ten calibrated coil ranges. Six of these ranges provide continuous coverage from 490 KC to 30 MC. The remaining four ranges cover the 10, 20, 40 and 80 meter bands, each band being spread over the major portion of the dial scale.

WIDE RANGE CRYSTAL FILTER ■ An improved wide range crystal filter is used in the NC-200. Selectivity is adjustable in six steps corresponding to band widths from 200 to 7600 cycles. The phasing circuit provides rejection ratios as high as 10,000 to 1 when the interfering signal is only a few hundred cycles from the desired signal.

MOVABLE COIL TUNING SYSTEM ■ RF and oscillator coils, together with their associated padding condensers, are completely inclosed in separate pockets in a heavy cast aluminum shield. This shield moves bodily on a track, bringing the desired coils into operating position directly below the tubes and condenser, and taking the unused coils out of the way.

PORTABLE OR AC OPERATION ■ Typical of the refinement in the NC-200 is the provision for operating standard AC models on batteries for emergency or portable use. All that is necessary is to plug in a battery cable in place of the dummy plug supplied with the receiver. This makes all connections and leaves the speaker and standby switch in operation.

NATIONAL COMPANY, INC., MALDEN, MASS.

NC-200 RECEIVER

*The
Season's Greetings*

PRIORITY

12-25-41

(CLASS AA+)

Although every RCA division has a vast amount of Defense work, it is worthy of note that the percentage of total Transmitting Tube production going for Defense is greater than that of any other division. This means that priorities are the order of the day. It means that we're busier than ever before. It doesn't mean, however, that we're too busy to cooperate wherever we can with our old friends—or to pause at this holiday time to extend our sincere wishes for the Season's Best to all.

These are priorities reserved for our many old friends of peace time days. They are ones we can, and always will, deliver in fullest measure.



Transmitting Tubes



WAR COMES!

We Take Our Posts in the Country's Defense

In time of emergency, amateur radio steps forward and applies its specialized knowledge to the task of replacing and restoring and supplementing the normal communications system. That is our traditional responsibility — a tradition we have ourselves built and a responsibility we have ourselves sought. War is the gravest emergency of all, and it is now our duty to discharge that traditional responsibility in the war emergency with discipline and patriotic devotion.

Since December 7th, amateur radio has been operating under wartime controls. Eight hours after the first bomb fell in Pearl Harbor, amateur radio as we have known it in peacetime was suspended for the duration. In its place, in the past five days, the volunteer communication system upon which the civilian defense of these shores will be built has begun to take form.

FCC's order suspending normal amateur radio, with its hamming and chewing, should be examined simultaneously with its announcement of a mechanism under which amateur stations whose operation is essential to national defense are being returned to the air:

ORDER NO. 87

At a session of the Federal Communications Commission held at its offices in Washington, D. C., on the 8th day of December, 1941;

Whereas a state of war exists between the United States and the Imperial Japanese Government, and the withdrawal from private use of all amateur frequencies is required for the purpose of the National Defense;

IT IS ORDERED, that except as may hereafter be specifically authorized by the Commission, no person shall engage in any amateur radio operation in the continental United States, its territories and possessions, and that all frequencies heretofore allocated to amateur radio stations under Part 12 of the Rules and Regulations BE, AND THEY ARE HEREBY, WITHDRAWN from use by any person except as may hereafter be authorized by the Commission.

By order of the Commission:

— *T. J. Slowie,*
Secretary.

FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C.

December 8, 1941

NOTICE TO ALL AMATEUR LICENSEES

All amateur licensees are hereby notified that the Commission has ordered the immediate suspension of all amateur radio operation in the continental United States, its territories and possessions. Under this action all amateur radio operation in the continental United States, its territories and possessions is prohibited until further notice. In any instances where amateur radio operation is deemed to be required in connection with the national defense, appropriate authorization to engage in such operation will be issued but only upon application by a duly authorized federal, state, or local official made to the Defense Communications Board.

Pay particular attention to the language in the latter portion of the notice: *The way is open for every amateur whose services are desired by proper officials to get back on the air and help.* We should perhaps say "desired and needed," because hams aren't going to be able to get back on the air simply because they want to or because they are "willing to help" or even because they can get some small-fry or "unofficial" official to certify them. Chiseling is definitely discouraged and there must be a bona-fide defense need to be served. But once there is, the route is open. Our situation, then, is that rather than being off the air we are being resited in what amounts to a species of relicensing under DCB whenever it is apparent that a competent official needs our help. Already, as we write, numerous amateur groups and nets have been activated and returned to the air for a purely defense purpose. It's a new kind of amateur radio but it is still the familiar picture of amateurs and their gear and their traditional skill and loyalty.

SPECIAL AUTHORIZATION

HERE is some practical information on the mechanism that is permitting defense activities to retain the services of amateur radio — although we should emphasize that in a

rapidly-changing situation the information we have to-day may not be entirely reliable by the time this is in print. (Suggestion: Check official broadcasts from WIAW.)

When an authorized public official, such as a governor or a mayor, wires or writes DCB or FCC a description of his proposed communication plan and a statement of why he has to have it, together with the names, calls and addresses of the amateurs he desires to serve in it, he may reasonably expect to receive a prompt response to the effect that the named amateurs are authorized to work in his system until further notice, as an exception to Order 87, for communications directly connected with national defense activities primarily relating to the defense work in his charge. A copy of that authorization will be sent to each individual amateur concerned and will be his operating credentials.

Note carefully that no authorizations are issued direct to an amateur or simply because an amateur wishes to offer his services. Application for the activation of amateurs may be made only by a duly-authorized federal, state or local official, and must spring from a need. Moreover, that official cannot be given a blanket authorization to permit operation by any amateurs he wishes. He must first explain his plan and show that the requested operation is necessary to perform a special national-defense function, and then he must name the individual amateurs concerned — not only their calls but their names and addresses as well. One reason for this is that Washington and the monitoring services must have a record of who has been authorized; another is that authorization from DCB must be sent to each individual amateur.

It will be noted that no stipulations of frequencies are required. The thought at the moment is that it is proper and desirable to permit the use of any band needed by an authorized official. Therefore when operation is authorized it is subject to all the usual FCC regulations and the special orders that have recently governed us, but all the usual amateur bands are made available. Most of the nets that have been authorized these last few days have been voice systems on $2\frac{1}{2}$ and 5 meters but some are 80-meter c.w. operation and some are 160-meter and 75-meter 'phone nets, with or without connecting u.h.f. networks at each city.

While it is not permitted the individual amateur to get back on the air solely under his own

auspices, there is of course no objection to amateurs, groups, nets and clubs explaining the present mechanism to competent officials who have need of amateur assistance; or to their doing some of the manual work of typing the requests for the signature and certification of the official. Certification, by the way, is not confined to any stated language: when a proper official asks authorization and asserts that he needs a certain amateur arrangement for a specified defense purpose, that is sufficient certification. There is no standard form, and requests may be telegraphic or by mail. The state defense systems are better known and better organized than many of the local ones and in some states OCD organization is not very far advanced. If there is room for any doubt about the recognition that DCB would give some particular local coordinator of civilian defense, it would be better if the request came from the mayor of the town, or from the chief of police if that is a proper function of the latter in the local plans.

A word here about DCB. Under an Executive Order recently signed by the President, all the latter's wartime powers over communications are lodged with DCB. It is at the very top of the wartime communications picture. But DCB is a board, not a commission with extensive personnel, and much of its work will be done for it by FCC personnel. Net result is that the applications we are talking about may be filed with either the Defense Communications Board or the Federal Communications Commission at Washington.

Headquarters urges that all League officials who have contact with authorities who are using amateurs, or who ought to be using them, bring to their attention the mechanism whereby amateur stations may be reactivated and assist them in making requests in proper form. We urge all amateurs to develop an association with a defense activity that will permit them to be returned to the air for that purpose, and then to do their best in the discharge of such duties. Radio amateurs are needed — in some places desperately. We believe we can count upon the amateurs of the country to see their duty, to devote themselves to patriotic service, and willingly to get back on the air for that purpose in large numbers.

SOME CAUTIONS

THE nation is at war. Complete Naval censorship of outgoing international correspondence was instituted December 7th. Ama-

teurs in defense work are on their honor to censor themselves similarly. *The permits now given amateurs rigidly confine them to defense operation.* No ragchewing will be tolerated and the fellows who engage in it will fare much worse than simply to lose their permits. The NDO monitoring service daily receives lists of the amateurs whose return to the air has been authorized and it is a safe bet that FBI will walk in pretty promptly on any gatecrasher who is not specifically certified for defense operations. As we value our return to the air, let there be no monkey business about this. If we are undisciplined or just playing around, or are incautious in our remarks, the War Department is practically certain to wash us up promptly and permanently and we would thereby forfeit our one chance to be on the air. They can't take chances with us if we don't show ourselves to be absolutely trustworthy. We'll all have a serious purpose but we mustn't even be careless, not even for a moment.

It is also emphatically worthy of notice that the suddenness of the emergency has given us tasks that were not originally contemplated for us, so that we are in the presence of our one big chance to make good. Let no careless amateur spoil this!

There are no specified details on what a net or group may or may not do. The agency for whom the group is authorized is in charge of its operation. If that agency says there may be no closing of switches until there is traffic of that agency to be handled, then there is no closing of switches. If that agency orders daily or hourly testing of the net, that testing is proper. If mayors or other proper local officials handling civilian protection work say that u.h.f. rigs must be installed and tested, that makes it proper for authorized amateurs to do so. But testing means disciplined testing and there must be *no idle gossiping and chewing the fat.*

Let it also be clearly understood that the amateur regulations are in full effect on those who are put back on the air. That means, among other things, that only licensed amateur operators may control the equipment; that the required log must be kept; and that great care must be taken to prevent unauthorized persons from having access to the apparatus.

CIVILIAN PROTECTION

WHEN war came, OCD's planning for civilian protection in air raids was still in-

complete. Naturally this work is now being accelerated tremendously, particularly on the seaboard. Within a few weeks it may be expected that every vulnerable community will have its organization well in hand. We learn that each local coördinator of civilian defense is being called upon to appoint a competent communications administrator with the duty of creating and managing the community communications plan. It is under this official that we amateurs will participate in the ARP work. Thinking over the communications facilities that exist in cities with which we are familiar, it seems to us that the only systems that satisfy the need for the primary network are the wire telephones and the municipal signaling systems. Other facilities inevitably will be pretty random and catch-as-catch-can. It is imperative that the community possess a secondary system to go into operation whenever the primary one is interrupted — or, for that matter, whenever it begins to near its capacity, so that there may be retained in it some elasticity for the traffic of higher priorities. The backbone of this secondary system necessarily is amateur radio with its u.h.f. Thousands of us are needed with our home-built low-powered gear, to aid the communities in which we have lived and worked. Our job will be to bridge the gaps that occur in the primary system, to deal with critical overloads, and to provide portable or mobile service for incident officers, wardens and so on.

OCD is according definite recognition to amateurs. Instructions are being sent the local volunteer enrollment centers that will soon make it possible for all radio amateurs reporting locally for registration to be "earmarked" exclusively for communications work. In the meanwhile, we repeat that all amateurs interested in the protection work in their community should register themselves with the local ARRL Emergency Coördinator, which is our only way to have a group spokesman to represent us until the time the communities open amateur enrollment and appoint the local communication aide to the CD chief. Our Emergency Coördinators have now been instructed by the League to report at once to the local coördinators of civilian defense to arrange *something* to serve during the critical period until organization can be perfected, or to lay the facilities of our gang before the mayor or chief of police in cities where OCD work is not yet sufficiently advanced. See pages 7 and 8 of this issue for more information.

In the current situation no city in America can feel itself entirely safe and some are definitely anything but immune. We can see our job: if trouble comes to our home town, we'll be needed, for we are the only ones who can help when the wires go dead. We must build movable self-powered u.h.f. sets after the general prescriptions of *QST* — build them by the thousands! We must enroll for operating work with our gear — temporarily with our own ECs, later through the volunteer centers. We must help our communities in the actual job of organizing and lend them aid in securing the required special authorization for amateur communication assistance.

DISASTER RELIEF

ALL the foregoing arrangements relate to defense communications in the *military* emergency. At the moment of writing, no provision exists for the usual amateur aid in the event of interruption of communications by *natural* disasters such as floods, hurricanes or earthquakes. The activation of a defense net for this purpose would seem to be unauthorized unless the agency for whom the net was organized could establish that the disaster was also imperiling national defense.

Officials of the League are urgently endeavoring to obtain government approval of a formal plan whereunder amateurs may maintain their time-honored duties in this field, in the knowledge that Nature is no respecter of military emergencies. Should a disaster occur before such a plan is put into effect, the League will urge FCC to broadcast special authority to *all* hams in the affected area to get on the air and help. If this occurs, we can do the usual job, but it will be no excuse for a clambake and again we must confine ourselves strictly to the job in hand. Meanwhile all amateurs must distinctly understand that unless they do receive some such authority they may not come on to the air for this purpose, even though communities are suffering.

WATCH FOR WIAW

THE regulatory situation is likely to change from day to day, hour to hour. New rules may come out at any time. By special federal authority, our headquarters station WIAW is remaining indefinitely on the air, conveying government announcements to amateurs and watching over our bands. Whenever there are new needs or new rules affecting the amateur in defense work or disaster work,

it may be expected that WIAW will bring you the news faster than any other means. Keep an ear out for it.

TEARS AND CHEERS

IF WE had the time, in our rush to get these special pages to press, we'd pause to shed a tear over the fact that for the first time in over twenty-two years the fun and camaraderie and rough-house of the amateur bands are stilled. Instead, we have a call to arms. If we could afford the luxury of a more leisurely mood, there are some deep-down-in-the-heart remarks we might make about that situation, and some pointed ones we'd like to get off on the cause of it all. But *QST* is basically the medium of our particular art and we are already a group of people schooled in industry, patience and conscientious application to our responsibilities. In the position of America to-day, Headquarters sees no need for flag-waving when it addresses the membership of the American Radio Relay League. We are a mature group and our emotions toward our country need no artificial stimulus. The field of the League is amateur radio and we have here confined ourselves to practical considerations in the application of that skill to the nation's needs. The dear glad days are necessarily gone for a while and there is no time or place for tears. Instead of the old kind of amateur radio, our actions are now directed solely to the assistance of the defense of the nation, at the urgent request of competent officials. Our stations, our operating ability, our devotion are being summoned for innumerable communications tasks of the sort that only we are prepared to discharge. We are now engaged — all of us — in the traditional duty of amateurs: supplying all-essential communication in an emergency. Let it be our high resolve that we shall never be found wanting!

December 12, 1941

K. B. W.

Strays

For the first time since conscription began, it is now possible to enlist in the Signal Corps. The Army needs operators — many of them. Any licensed amateur or commercial operator who presents his license to an Army recruiting officer will be permitted to enlist and will be assured of radio work.