QST

january, 1945
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35c in Canada

devoted entirely to

amateur radio

In This Issue:

QST Looks at Television

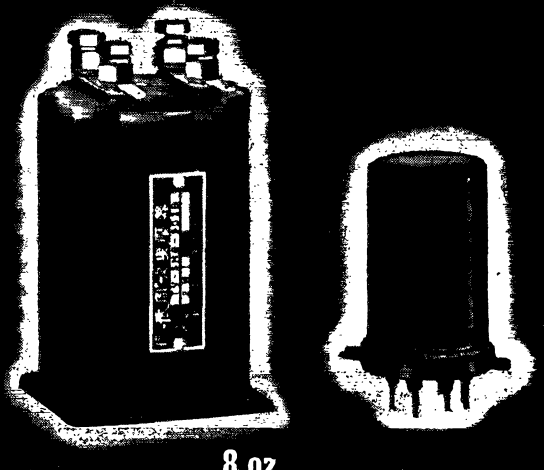
A High-Gain Audio Amplifier

Homemade Intercommunicating System

A Dual-Input Receiver for WERS Local Controls

Made in Japan*

A recent UTC analysis of Japanese components substantiates the conclusive superiority of products of American design and construction . . . for example, on transformer components . . .



* Japanese components illustrated obtained from the Pacific war theatre for the UTC Research Laboratory

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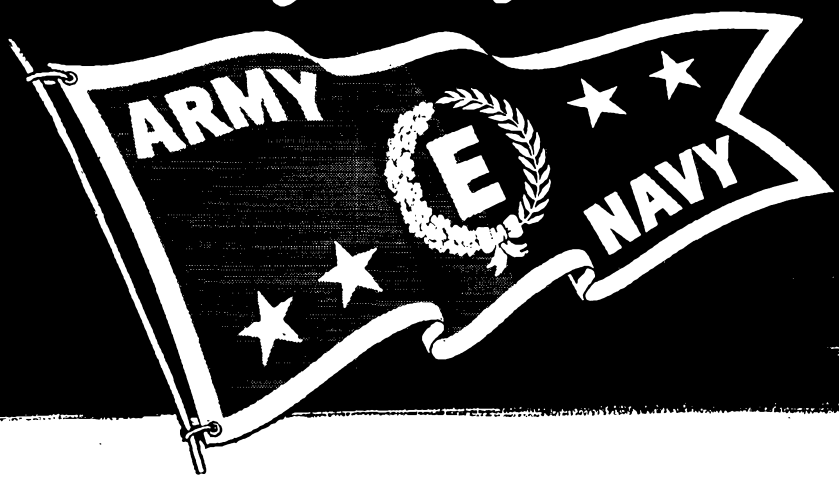
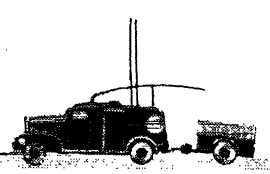


FIRST exclusive manufacturer of short wave radio equipment to receive the coveted Army-Navy "E" Award for the fifth time...the result of the continued and untiring devotion to duty of the company's 1,500 employees.



Builders of the famous SCR-299

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THE HALLICRAFTERS COMPANY, MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT • CHICAGO 16, U.S.A.

MESSAGES GOT THROUGH ON THE "BANANA NET"

THERE is many an exciting story about how amateur radio operators now in the services have helped extend the lines of victory around the world. There's the one about the "Banana Net"—the name the boys gave to the radio network down in the Panama jungle. As the G. I's have it, "it rains continually during the rainy season but only once a day in the dry season". The "Banana Net" is just one link in the vast network set up by the AACS—Army Airways Communications System. The AACS safeguards tens of thousands of lives by relaying weather reports, coordinating information on enemy ship and plane movements and by bringing home or locating planes that are in trouble.

The ranks of the far flung AACS are filled with one-time amateur radio operators. Amateurs have always found in Hallicrafters equipment the perfection they themselves have been seeking. For these exacting technicians Hallicrafters made superior equipment long before the war. As a matter of fact thousands of pieces of privately owned Hallicrafters equipment were drafted into the services right along with the amateurs who once operated them. After the war Hallicrafters will have a new kind of radio ready. You will want the radio man's radio—the radio that has an amazing range and performance on all bands, short wave and regular broadcast. Hallicrafters will have a set for you.

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JANUARY 1945

VOLUME XXIX

NUMBER 1

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★

OFFICES

38 La Salle Road
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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.

QST *devoted entirely to*

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

CONTENTS

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Now! EXTRA HUMIDITY PROTECTION IS STANDARD

. . . designed for tropical conditions
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Standard Sprague Koolohm Wire Wound Resistors now offer the same high degree of humidity protection formerly obtainable only on special order to match exacting military specifications. This construction, newly adopted as standard, includes a glazed ceramic outer shell and a new type of end seal. These features give maximum protection against even the most severe tropical humidity conditions. Type numbers remain the same except for the fact that the letter "T" has been added to designate the new standard construction.

Thus, again, Sprague leads the way in practical, truly modern wire wound resistor construction. Your job of resistor selection is greatly simplified. No need to study and choose between types or coatings. One type of Koolohms, the *standard* type, does the job —under any climatic condition, anywhere in the world!

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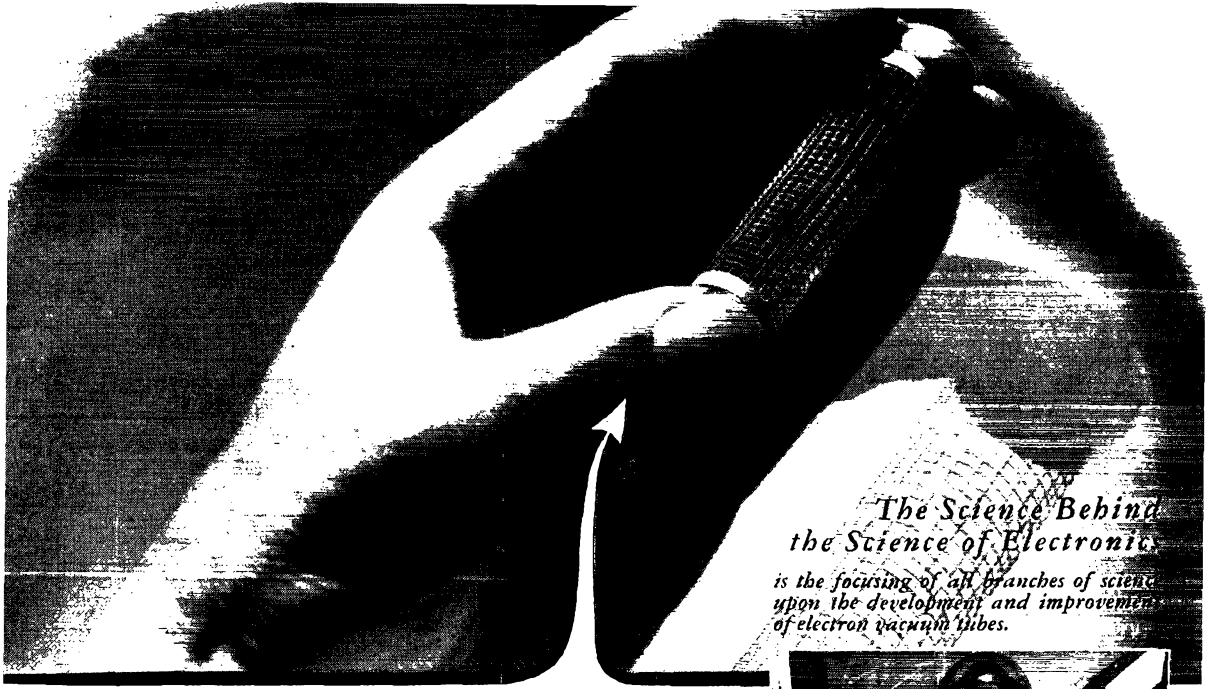

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is the focusing of all branches of science upon the development and improvement of electron vacuum tubes.

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Solves grid emission problem!

Grid emission, with the resulting instability of operation, parasitic oscillations and prematurely burned out filaments, has become a thing of the past. The new Eimac "X" grid will not emit electrons even when operated at incandescent heat.

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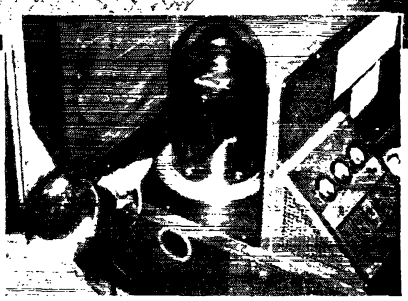

THERMO-DYNAMICS... Vacuum furnaces heat materials to exceedingly high temperatures.

CHEMISTRY... Experimentation with metallic components and preparation of chemical compounds.

POWDER METALLURGY... Compounding special alloys.

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Section Communications Managers of the A.R.R.L. Communications Department

Reports Invited. All amateurs, especially League members, are invited to report communications activities, training plans, code classes, theory-discussion groups, civilian-defense building or planning each mid-month (16th of the month for the last 30 days) direct to the SCM, the administrative official of ARRL elected by members in each Section whose address is given below. Radio Club reports and Emergency Coördinator reports representing community organized work and plans and progress are especially desired by SCMs for inclusion in *QST*. **ARRL Field Organization appointments,** with the exception of the Emergency Coördinator and Emergency Corps posts, are suspended for the present and no new appointments or cancellations, with the exception named, will be made. This is to permit full efforts of all in Emergency Corps plans.

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BELL TELEPHONE LABORATORIES

Exploring and inventing, devising and perfecting for our Armed Forces at war and for continued improvements and economies in your telephone service

RESEARCH, in the Bell Telephone System, has always been an expanding activity, growing with the scientific knowledge of the times and contributing to that knowledge.

The telephone, itself, was invented in the laboratory where Alexander Graham Bell was carrying on researches in speech and hearing and laying the foundation for the electrical transmission of speech. As time went on the telephone research program expanded to cover every science which gives any promise of improved telephony.

These researches and development studies now include electrical communication of speech—both by wire and by radio—the transmission of pictures (television)—and many important projects for war.

There Is No End to Progress

Every new research gives rise to new inventions and to new lines for development and design. New inventions indicate new lines for more research. In the early years, this work was carried in part by the American Telephone and Telegraph Company and in part by the Western Electric Company, the manufacturing unit of the Bell System.

For many years, however, the work has been assigned to a specialized unit, Bell Telephone Laboratories, Incorporated. Theirs is the responsibility for the technical future of the telephone industry.

The policies and procedures of Bell Telephone Laboratories are distinguished by two characteristics. In the first place the Laboratories design for service. The consideration is not the profit of a manufacturer, but the production of equipment which will give the best service at the lowest annual cost when all factors are considered, such as first cost, maintenance, operation, and obsolescence. The Laboratories make no profit and the equipment they design is owned and used by the telephone companies; and the emphasis is upon that use.

Organized Co-ordinated Research

In the second place the Laboratories design always with reference to the complete communication system in which the equipment is to play a part.

Reliable, economical telephone service, which is the product of its efforts, is not so much an assemblage of excellent apparatus as it is an excellent assembly of co-ordinated equipment—all designed to work together.

4600 People in Bell Laboratories

Bell Laboratories contributions to the Armed Forces derived in large part from the technical background that the Laboratories had acquired through their steadily maintained program of research. The Laboratories had special knowledge and skill which could instantly be diverted to war problems.

At the time of Pearl Harbor, over a quarter of the 4600 people in the Laboratories had twenty or more years of service. This breadth of background made possible many engineering developments outside the strict field of communication and these have been of value to the Armed Forces. So far the Armed Forces and the O.S.R.D. have engaged the Laboratories on over a thousand major projects.

Most of the Laboratories developments, of course, have been in the field of electrical communication. Communication, not simply between individuals as in ordinary telephony, but between mechanisms—as in the electrical gun director.

Leader in Electronic Development

The Laboratories techniques and electronic researches have produced many secret weapons for our country's Armed Forces. In World War I, they pioneered by developing radio telephone systems for talking between planes and between planes and ground stations. They also contributed methods and devices for locating enemy planes, submarines, and artillery.

In this war, Bell Laboratories have pioneered in the field of electronics. The Western Electric Company, which manufactures the designs of the Laboratories, is the largest producer of electronic and other war communication equipment in the United States and is now engaged almost exclusively in the manufacture of this equipment.

In war, Bell Telephone Laboratories devote their work to the needs of our Armed Forces. In peace, they are constantly exploring and inventing, devising and perfecting for continued improvements and economies in telephone service. Centralized research is one of the reasons this country has always had "the most telephone service and the best at the least cost to the public."

BELL TELEPHONE LABORATORIES

THE AMERICAN RADIO RELAY LEAGUE, INC.,

is a noncommercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite, although full voting membership is granted only to licensed amateurs.

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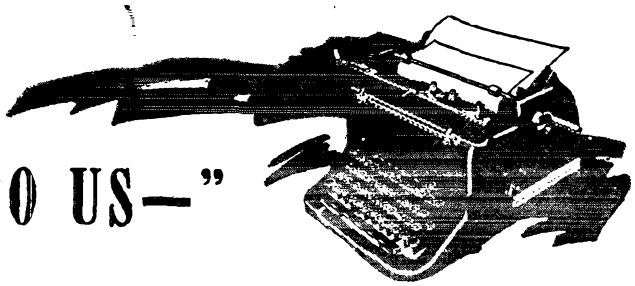


"IT SEEMS TO US—"

POSTWAR OPERATION

As nearly as we can make out, there have been no wartime discoveries that will have any deeply significant effect upon our kind of radio communication on our domestic and DX frequencies. C.w. and 'phone will still be our modes there, and stations that did these jobs perfectly before the war will be able to do a creditable job when we are on again.

But do you think we'll be content with that? Not us! Every mother's son and daughter of us will be rebuilding, and it's going to be great fun. We can count on big improvement in all our "communication-type" receivers. And for the transmitters that we build ourselves we're going to have brand-new parts throughout. We don't know a component of an amateur station that hasn't been materially improved during the war, and when they are assembled into a well-designed transmitter they are certain to result in a job superior in performance and ease of control.

Tubes will be easier to drive and so we're likely to have fewer stages in our rigs. Improved insulation and low-loss cable will conserve our precious watts. Switches and mechanical gimmicks will exist to make quick band-changing and precise frequency setting a delight. There's all manner of new measuring instruments. There is certain to be some new antenna dope — particularly, we suspect, on rhombics. Good crystals will exist by the million but there will also be wide-band e.c.o.s of gorgeous stability. Manufacturers are full of ideas on how to apply their wartime experience to our problems. (One of them was telling us of the possibility of a driver that would instantly yield any frequency in any amateur band by punching buttons on a device like a cash register, complete to displaying in figures at the top the frequency that has been "rung up.") We think we're sure to have so much intriguing auxiliary equipment that the chief problem will be one of selection. The new station promises to be materially smaller and compact and neater and easier to operate, a joy to heart, hand and eye.

The frequencies above a hundred megacycles are something else again; we'll find whole new techniques there. The progress in v.h.f., particularly in automatic two-way relaying, leads to an interesting possibility which we expect to see employed in many postwar amateur installations: control of a jointly-owned or club station, on the traffic or DX frequencies, by means of v.h.f. links from the individual operators' positions. Why not? Three or four of you, say, get together and build a better station than any of you could have alone, and put it in a better location — maybe out of town in a swamp or where there's room for a big diamond. You share time, by the hour or by the evening. Each of you, snug at his own fireside, has his own control position, and by means of v.h.f. or u.h.f. you control the big rig when it's your turn. You dial, and distant relays turn on the juice and select the frequency, and a masterly station sweetly obeys your commands. (The only bug in this lovely idea is that some stormy night it will be *your* turn to put on boots and greatcoat and muffler and work your cursing way to the station to unstick a balky relay, thinking dark and unprintable thoughts about the guy who advanced the idea. But shucks! we're forgetting that the improved relays of this war won't get stuck.)

However, operating ability and judgment and the intelligent organization of our bands will still depend upon the human factor and will still be at a premium because we doubt that we shall have any improved models of such things as that coming out of the war. We're going to have a great growth in numbers. We're going to be crowded. We positively must plan on making a saner use of our frequencies. For one thing, we'll be obliged to work out some system where we use every possible frequency, and distribute ourselves more or less uniformly throughout our bands, instead of piling up like stacks of dead Japs at the very ends of the bands. For another, we'll have to use each band for the distance and purpose to which it is best suited, even if thereby we impose some inconveniences on our individual freedom of action. "Planned use" can be carried much further than that; and we would do well to come to some understandings, both among ourselves in America and perhaps with our similars in other continents, for the sharing of frequencies in such a way as to make for more solid and enjoyable contacts. Numerous such plans cropped

up in prewar years but we were always cool toward them, not yet ready for them. The war has developed teamwork both between individuals and between nations. We have seen the ability to work out complicated timetables and agreements for joint action in fields of immense complexity. Perhaps we'll be ready for some of these things in amateur radio after the war. Surely we should be willing to embrace any such plans that give us, as individual amateurs, more pleasure and profit from our hobby than we could have without them. That's a phase of our own postwar planning to which we'll turn our attention after we see precisely what our postwar frequencies are. Some of it sounds like hard work, but hard work and fun have always been the same thing in amateur radio!

YEAR'S END—AND A NEW YEAR

WE COME to the end of another year off the air — the third for us, the fifth for many of our allies. We used to have the custom of summarizing our year's accomplishments at this time, recounting our new records and our new technical developments. It's an impossible thing to do now, of course, and there's many a gulp in even the contemplation. New records and glorious accomplishments there are but they're the work of GI Joe and Jack and Mac and Sal and under strange-sounding calls all over the globe.

In this particular kind of activity we on the home front can again point only at WERS. We've kept it going faithfully and, as the emphasis on ARP tapered, have done much to assist in its quiet transformation to a mechanism capable of coping with natural disasters with similar effectiveness — until the day when we're all back on.

Our Headquarters office has been a very busy place. We have two service flags, one for the tens of thousands of hams in uniform, the other for our staff associates in the fighting forces. (We should have a third one for those of our technical staff who, although still in civilian clothes, are at work in research and development laboratories on some of the major "secret devices" of this war.) We haven't had our old gang around and it has been a struggle, but we've got a lot accomplished. One of our major activities has been the representation of the amateur in the year's strenuous studies looking to postwar frequency allocation. That has been the most important thing on our own hook, and we report its progress to you separately each month. Our editorial crew, short of both personnel and paper, has been an overtaxed bunch, working unbelievable hours to revise the Handbook to be of maximum effectiveness on every front and struggling to give you an informative and helpful and interesting *QST* each month. Behind the scenes the League's business departments have wrestled with the new problems that bedevil all civilian activities these days. Our Communications Department, both in the home office and in the field, has been fully occupied with WERS matters. During the year our apparatus bureau (called around here the ApBu) finished its work and disbanded itself. Our personnel bureau (PeBu, of course) similarly reached the bottom of the barrel but is thinking now of fashioning a reverse gear to help when Joe and the rest of the guys come home. While waiting for Rosie to bring our lunchtime sandwiches and coffee we Hq. fellows sometimes have a few minutes to talk our postwar dreams — that *QST* Laboratory we're going to have, or our new educational department, or how we're going to publish our own callbook after the war, or how to revamp the CD into three branches for traffic, v.h.f. relaying and 'phone activities. About then, as will happen every time with a bunch of hams, somebody goes personal and starts sketching his postwar plans for a new dingbat for the home shack, and just then Rosie returns and we eat and run and get back to the business of seeing what we can do to help get this thing over so we can have some security and enjoyment out of life again. And that's Our Year.

There's one thing about this time of year, though, that is no different from the old days, and that's the spirit of Christmas. When times were happier, the cheery greetings of amateur to fellow amateur used to ring around the world, through our own stations. We can't do it that way now but it should be different next year! And meanwhile we all feel the same way about it, so join us in the warm old greeting, "To our brother and sister amateurs everywhere, a Very Merry Christmas and a Happier New Year!"

K. B. W.

★ SPLATTER ★

OUR COVER

THIS is one cover picture that will need no explaining — it's just another way of wishing you a MRI XMAS!

FOOTNOTES

QST begins its new year with four new authors and a trio of old-timers. The first on our list of those making an initial appearance in *QST* is **John F. Clemens, W9ERN** (p. 38), aged 20, whose home is in Evansville, Ind., where he began to operate W9ERN when he was 14. He describes himself as primarily a c.w. man (mostly on 40 meters with some on 80 and 20), with a little radiotelephone thrown in. He made WAS with a 9-watt transmitter and his 30 w.p.m. code proficiency certificate with a 9-watt receiver. A member of the RCC, ARRL and AIEE, he holds

(Continued on page 86)

QST Looks at Television—1944

The "State of the Art" from an Amateur Viewpoint

BY CYRUS T. READ,* W9AA

For many years leading experimenters in the amateur ranks have interested themselves in television and some notable work has been accomplished. Since Pearl Harbor all amateur television has of course been discontinued, but the commercial broadcasters have continued to experiment and plan for the future. *QST* presents herewith an account of present-day television as it looks from the amateur viewpoint.

OF ALL the electronic miracles which have been promised to the postwar world the most widely anticipated probably is television. Ever since the early days of radio broadcasting the possibility of being able to see as well as hear by radio has intrigued the public's imagination and every faltering step forward in this new art has been eagerly hailed with the statement that "television is just around the corner." This great public interest, accompanied as it has been by many irresponsible predictions of immediate availability, has not been an unmixed blessing. There is no television equivalent for the crystal detector or simple one-tube receiver — even the crudest early attempts at video transmission by means of rotary scanning discs required comparatively complicated equipment — and most of the serious workers in the field have done their best to head off premature promotion.

The eventual place of television in amateur radio is not yet clear. As early as 1925 *QST* carried articles about the scanning disc systems of that day and since then has consistently presented the facts about new developments in the art when they seemed to offer possibilities for amateur use. At the same time the limitations and problems still to be overcome have been clearly set forth, a notable instance of "debunking" being the article, "Television — What About It?" which Ross Hull wrote in 1931.[1] Late in 1937 *QST* started on a systematic development program for amateur television. An introduction by James J. Lamb [2] was followed by a series of articles on modern cathode-ray television adapted for amateur use, which were discontinued only when war put a stop to most amateur experimentation. This report on today's television is not intended as a continuation of that series but, rather, is an appraisal of the present situation as a whole, an attempt to shed a little light on what has recently become a most controversial subject.

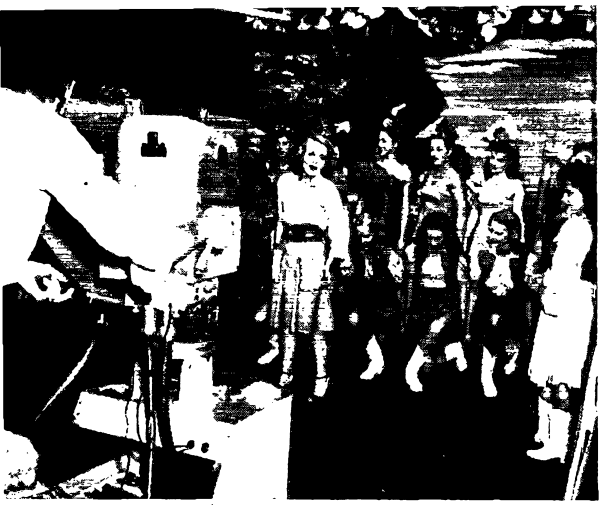
For the past many months the writer's principal duties have been to attend meetings and read voluminous reports, anything and everything that might conceivably have an impact on amateur frequencies. In the process he has been privileged to attend various panel and committee meetings of the Radio Technical Planning Board, meetings of the State Department's committee on radio allocations, and the recent hearings of the Federal Communications Commission. At many of these, television was the principal subject and the heated discussions between adherents of the present standards and frequencies and those who want to use more scanning lines and move to the u.h.f. region were strongly reminiscent of the 'phone-vs.-c.w. or high-vs.-low power arguments in amateur circles. *QST*, of course, is neutral regarding the television controversy as this is not an amateur matter. However, no dyed-in-the-wool ham can remain completely unmoved in the presence of a real good scrap over technical matters, so we determined to find out "what the shootin' was all about." Through the courtesy of Dr. Allen B. DuMont, ex-W2AYR/W2AHD, and Dr. T. T. Goldsmith, director of research for the DuMont Corp., we had the opportunity to visit WABD and inspect a modern television station.

The studio staff at WABD during the televising of "Parisian Memories." It takes a full size crew to operate all of this paraphernalia. The man in the left foreground is manipulating the microphone boom to pick up the singer's voice without letting the mike show in the picture.

* Assistant Secretary, ARRL.

[1] Hull, "Television, What About It?" *QST*, November, 1931, p. 20.

[2] Lamb, "Radio Amateurs in the Television Picture," *QST*, December, 1937, p. 8.



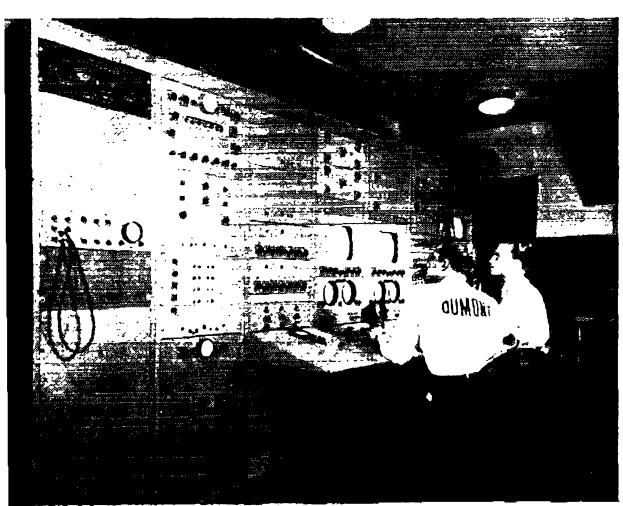
WABD has presented many interesting shows. Here is a scene from "The Boys From Boise," broadway musicomedy that was transmitted complete with orchestra, chorus girls, and all the trimmings.

WABD in Operation

WABD is on the air three nights a week from 8 until usually about 11 P.M. Practically the entire staff of engineers and technicians is made up of regular DuMont employees who are operating this television station on an overtime basis in addition to their full-time job of war production in the plant at Passaic, N. J. As might be expected, most of them are amateurs or have an amateur background.

While WABD operates under a commercial license and many sponsored shows are regularly transmitted, the entire set-up is still of a more or less experimental nature. DuMont provides all of the technical facilities and personnel but programs are largely furnished by New York advertising agencies who have gladly accepted this opportunity to gain practical experience in the newest of advertising mediums. This coöperation has resulted in many interesting shows for the TVLs (television lookers), a notable example being the recent transmission of an entire Broadway musical comedy complete with orchestra, chorus girls, and all the trimmings.

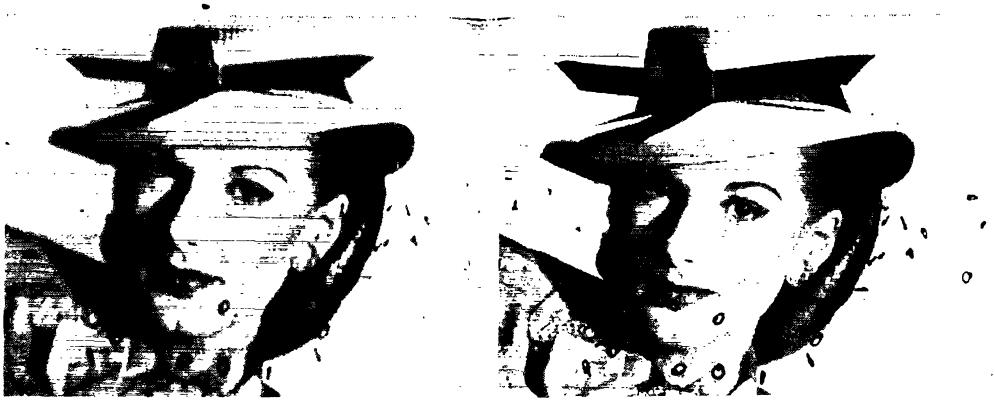
Promptly at 7:30 P.M. we arrived at 515 Madison Avenue, New York City, and were greeted by Morris C. Barton, jr., ex-W4CRV, chief of operations.



WABD's transmitters, main control room, and studio A are located on the 42nd floor, while offices and studio B are on the 2nd floor. The studios are somewhat similar in arrangement to those used for standard broadcasting but they contain much more equipment. One wall is covered with scenery — back drops, stage furnishings, etc. Overhead are banks of incandescent flood lights, the type in which the reflector is a part of the bulb itself. Two camera dollies, small rubber tired trucks which carry iconoscope camera, preamplifier, power supplies, and camera man, trail a tangle of coaxial cables and power wires behind them across the floor while other cables run to an enormous spotlight and to the microphone which is suspended from an overhead boom, a la Hollywood. It takes a full size crew to operate all of this paraphernalia. In addition to the people normally used in any broadcast studio, such as sound effects men and announcer (in television a charming young lady), there are camera men, men to push the camera men around on their rubber tired mounts, spotlight operators, microphone boom swingers, property men to move scenery, announcement cards, etc., and a couple of assistant directors. Camera men and directors are "wired for sound" — they wear headphones through which they can receive orders from the principal director in the control room.

Television employs many techniques of the theater but there are some rather startling differences. Because the monochrome camera does not respond well to red, the lovely girl singer who was about to go on appeared for work wearing

Above — The control room of Studio A. The small monitors on top use the familiar 5-inch oscilloscope tube. The picture is green but these tubes serve the purpose until new equipment is available. *Left* — The main control room at WABD. The large monitoring scopes have 14-inch screens and reproduce the picture in black and white.



Which is which? One of the above pictures is from an original 8 × 10 photograph and the other shows how it appears after having been transmitted by television. You pick 'em out.

dark brown lipstick. The scenery was painted in various shades of gray which have been found by experiment to give the most natural appearance on the screen. The nonchalance with which scenery was moved during the performance also was rather surprising until we realized that no stage curtain ever invented could conceal such activities as well as switching off the camera.

We did not get to see the whole show as we were far too busy asking questions of the engineers and trying to find out "what made the wheels go 'round." The part that we did see was highly interesting and well worth watching. There has been much argument of late about the quality of present day television pictures. We viewed the WABD show on the control room monitor which operates directly from the coaxial line running to the transmitter and on the main station monitor which picks up the program from the air.

Both of these use 14-inch tubes and the picture appears to be about 8 × 10 inches or slightly larger. This is not nearly as large as will be available on good home television receivers in the future — it is expected that a projection type set capable of producing a picture 18 × 24 inches in size will have been announced before this article appears in print. It is possible, of course, to get close enough to the screen so that the line structure becomes visible but the same is true of almost any kind of pictorial material. Moving pictures are very crude when seen from the front row and world famous oil paintings cannot be appreciated until viewed from far enough away so that the brush strokes are not predominant. From a normal viewing distance the 525 lines of present day television are not noticeable. This is in no sense an argument against a greater number of lines. If better television can be produced we are all for it, but the present version is good enough to make us put some of those war bonds into an envelope marked "television receiver."

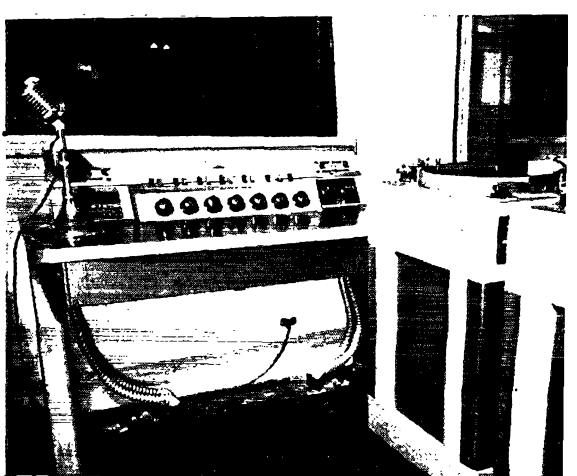
Control Room

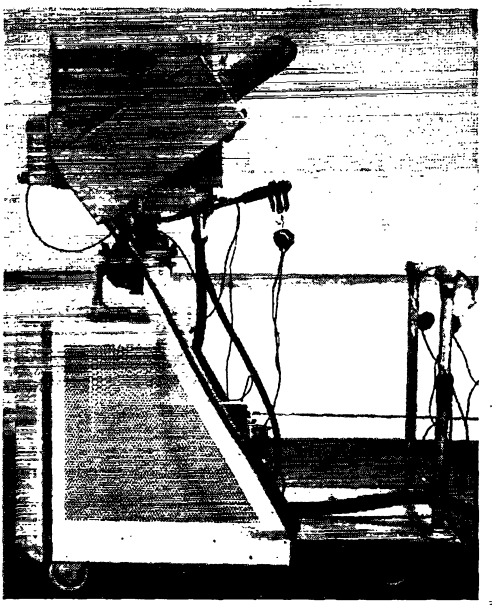
To get back to WABD. The studio control room also is much like the conventional b.c. type but with extra equipment and personnel. The sound control desk, which in ordinary broadcasting is the center of attraction, here is relegated to one side of the room. In its place before the plate glass window is a large console containing video controls, camera monitoring scopes, main studio monitoring scope, small scopes which show the detailed characteristics of the various video signals, scopes which show the "shading voltage" by means of which minor defects in lighting the picture may be corrected or special effects produced, and in fact more scopes than we had ever before seen in one place. In spite of the fact that Dumont manufactures these tubes WABD has to get along for the most part with prewar equipment, all new production being needed for war use at present.

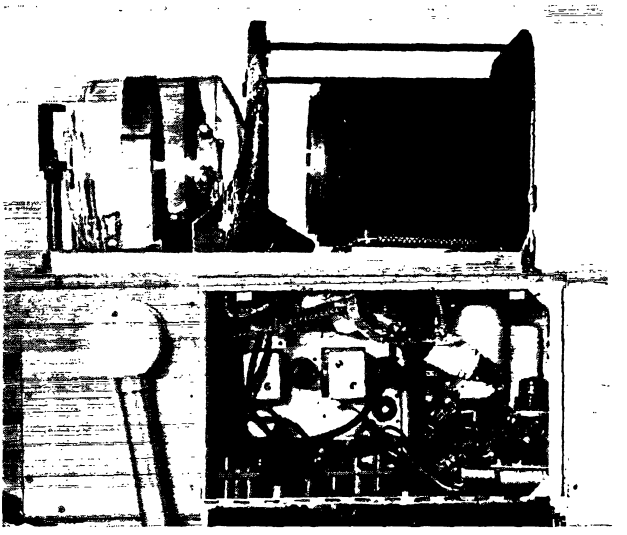
As in the studio itself, the control room requires a large staff. One sound engineer is sufficient but there are video engineers for each camera, a principal video engineer at the main monitoring scope, and the program director who supervises the entire production. By means of two simple gain controls the principal control engineer is able to make "lap dissolves," that is, fade from one scene to another, which would be the envy of any Hollywood technician.

At the rear of the control room a large panel contains amplifiers and the synchronizing pulse generator which is the heart of the entire system. This generator provides the timing, vertical and horizontal sawtooth voltages, blanking voltages, and synchronizing pulses.

Turntables and main sound control panels at WABD.







Above — A camera dolly carrying iconoscope camera, electronic viewfinder (using another green 5-inch tube) and power supplies for iconoscope, preamplifier, etc. *Right* — Television camera opened to show arrangement of parts. The iconoscope tube is at the upper left with base including electron gun slanting down to the right. Lens equipment for focusing picture on the screen of iconoscope is at the upper right. The bottom cabinet contains the preamplifier with the input tube placed as close to the Ike screen as possible.

At WABD the camera man never lines up the picture by visual means. Instead his viewfinder is entirely electronic, a five-inch scope in a viewing hood mounted on the side of the camera and fed by a coaxial line from the control room amplifier. For this reason he makes no allowance for parallax and there is no danger that he will cut off the heroine's head in a close-up. It is as though the operator of a movie camera could watch the scene he was taking through the camera's lens system instead of through a separate optical viewfinder, certainly a very real advantage. At present the camera viewfinders and the individual camera monitors in the control room use standard 5-inch tubes which show the picture in varying shades of green, only the large tubes make use of the new type of fluorescent material which responds in black and white. Incidentally, the contrast and brilliance of the pictures on these black and white tubes was much better than we had anticipated, although it is claimed there is still room for improvement. As is also true of moving pictures, black and white are purely relative terms, the unilluminated screen of the scope itself being white. However, the variations of brilliance between the illuminated and unilluminated portions of the screen do produce a very satisfactory degree of contrast.

From the studio control room the program goes to the master control room located next to the transmitter room on the 42nd floor. All video signals are carried by coaxial cables while the sound goes over an ordinary wire system. In the master control room the program is monitored again before being fed to the transmitter. In addition, master control switches between studios connect the special equipment which permits movie film to be televised.

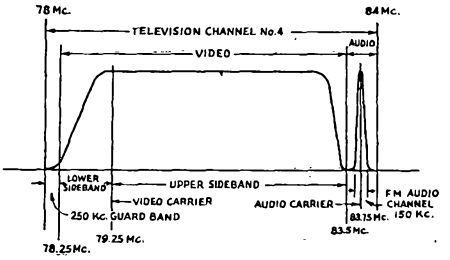


Fig. 1 — Television channel No. 4, showing how the six megacycles between 78 and 84 are used by WABD. The video carrier is amplitude modulated and has its lower side band partially suppressed.

Transmitters

The transmitters themselves are mounted in typical broadcast fashion in a large steel console extending the length of the room. Behind this imposing exterior, however, the rig looks strangely familiar, particularly to anyone who has done much work on the v.h.f. ham bands.

In the transmitter console the f.m. audio rig occupies the sections at either end and the video equipment fills the other five sections. WABD operates on channel four — 78 to 84 Mc. The audio channel starts off with a crystal on 129.244 kc. and multiplies by means of quadruplers, etc., to reach 41.875 Mc. in the f.m. exciter unit. Modulation is introduced through a compressor and a pre-emphasis amplifier and is accomplished by means of a phase shift method similar to the Armstrong system. After leaving the exciter the audio signal goes through an 807 doubler, an 829

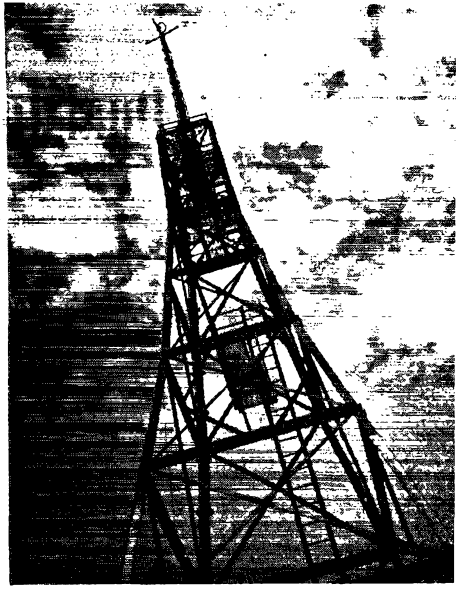
buffer, a pair of 100THs, and into the final pair of 450THs. The output, approximately one and a half kilowatts, goes to a ring antenna mounted on top of the tower. The center frequency of the audio channel is 83.75 Mc. and the deviation is 75 kc. plus or minus.

The video channel starts with a 4953.125 kc. crystal in a Pierce oscillator using a 7C5. After quadrupling twice the signal is amplified and applied to the modulated stage, a pair of 100THs. Grid modulation is used and the modulator consists of two HK257s. Three broad-band Class-B linear amplifier stages follow the modulated stage. The first is a pair of 152Ts using a coil and capacitor in the grid circuit while the plates go to a linear tank. The following two stages use linear tanks throughout with hairpin coupling loops, all on a rather massive scale judged by amateur standards. The driver consists of two water-cooled type 8002 tubes and the final of two 889s which are water cooled and in addition have a blast of air blowing on the glass seals. The final stage operates as a grounded grid amplifier, excitation being applied to the filaments while the grids are by-passed to ground. This arrangement is much easier to drive at these frequencies than the usual system and nearly eliminates the need for neutralization. The antenna for the video signal consists of folded dipoles arranged in a cross just below the doughnut which radiates the audio signal.

The unmodulated video carrier is at 79.25 Mc. with an output power of approximately 6 kilowatts and has one side band partially suppressed. All of the video amplifying equipment in the station is essentially flat to 5 Mc. but the signal that finally goes out is cut off at 4.25 Mc. The disposition of the two carriers in the 6 Mc. channel is shown in Fig. 1.

QST has published many articles dealing with the theory and operation of television equipment so no attempt will be made to cover the same ground here. The most recent of these, an explanation of iconoscope operation, appeared in July, 1944.[3] However, one feature of modern television transmission which has mystified many hams is the method by which moving picture film of 24 frames per second is transmitted over a system employing 30 frames and an explanation of the method may prove interesting. Actually this is not as complicated as it sounds. Because of the interlacing action of the television scanning beam the picture is covered by 60 fields per second, that is, the beam starts at the upper left-hand corner of the picture and scans alternate lines and then returns to the top of the picture and scans the other half, filling in the vacancies left the first time through. Thus two of the 60 fields are required to completely fill in a single picture or frame. As this scanning action is continuous there is nothing in video transmission which exactly

[3] Southwell, "The Iconoscope," *QST*, July, 1944, p. 26.



Antennas of WABD, station of the Dumont Television Corporation atop the 515 Madison Ave. Bldg., New York City. The folded dipole is the video antenna, the doughnut is for the accompanying sound.

corresponds to the shutter action of a moving picture projector.

The conversion of 24 frame-per-second movies to 60 field-per-second television is accomplished by scanning one frame of film for 2 fields and the next for 3. In this way half of the frames are scanned twice, 12 frames — 24 fields, and the other half three times, 12 frames — 36 fields, making a total of 60 fields or 30 television frames. With the high-speed continuous action of the electron scanning beam this process gives results that are as smooth as could be desired.

Future Prospects

Disregarding for the moment the postwar use of television by amateurs let us consider its probable commercial form. In the very nature of things television programming will have to be far different from the practices which have grown up in the broadcasting industry. Ordinary broadcasting has come to be, in many homes, a normal background accompaniment to all household activities, the day-long parade of soap operas, shopping advice, and the like, constituting a gentle obligato to the song of the vacuum cleaner. Such cannot be the case with television. Once admitted to the home this new medium will prove far more exacting — demanding as it does, our complete and undivided attention. Unless the

(Continued on page 92)

The transmitters at WABD. Panel at extreme left contains exciter and modulator for f.m. sound channel. Unit at the right contains final amplifier for sound. The rest of the equipment is all video.

A Dual-Input Receiver for WERS Local Controls

Constant District-Control Monitoring with a Resistance-Coupled Superhet

BY FRED CRAVEN,* W3ERV

In WERS work one of the duties which falls to the lot of the local net control is that of monitoring the district control to receive traffic originating outside the local net, and more important, to hear emergency "shut-down" orders for silencing all transmissions in case of an air raid. Ideally, this monitoring of the district control by the sub-control should be continuous, not only for the rapid handling of traffic but because the delay of even a few minutes in closing down a local net might have serious consequences. Occasional tuning to the district-control frequency by the sub-control operator is not sufficient.

The usual method of taking care of the situation is to provide a separate receiver and operator at the sub-control for the sole purpose of monitoring the district control, or one of the local-net stations may be assigned the duty of "watch dog." While either of these systems accomplishes the desired result, both involve extra receivers and operators which may not always be available. In addition, considerable difficulty may be encountered in operating two receivers in close proximity if one or both of them are superregens.

For some time we have been using simple resistance-coupled superhets in the WKIB net located in the Philadelphia area. These receivers have worked out very satisfactorily. They overcome many of the disadvantages of the superregenerative receiver without introducing too much selectivity to work well with modulated-oscillator transmitters. Since two of these receivers will work quite close to the same frequency without interaction, it was decided to see what could be done with a single receiver having two h.f. input circuits. One of these could be tuned permanently to the frequency of the district control, while the other could be operated in the usual manner in local net-control work. Both signals then would be heard simultaneously by the sub-control operator.

*WKIB-42, 2216 So. Seventh St., Philadelphia 48, Pa.

Resistance-coupled superhets have been suggested before as an aid in reducing QRM in WERS nets in congested areas. The one described here has the additional feature of a double-input circuit which may be used for simultaneous local-control work and monitoring of the district control or other special purposes.

Circuit Discussion

The resulting circuit is shown in the diagram of Fig. 1. The two h.f. input circuits are identical, each consisting of a 954 acorn oscillating converter, coupled in parallel to the single antenna system. With this arrangement, which of course follows a very old idea from the early days of superhets, no separate oscillator circuit is required. Feed-back for oscillation in the converter circuits is provided in each case through the common impedance of the r.f. chokes, RFC_1 and RFC_2 in the cathode circuits.

To obtain the required i.f. beat, the input circuits must be detuned by a frequency equal to the frequency of the i.f. amplifier. With an i.f. in the vicinity of 500 kc. and an input signal of relatively low frequency, the amount of detuning required would be sufficient to cause appreciable loss in signal. Therefore this type of converter circuit seldom is seen these days. However, in this case where the signal frequency is of the order of 100 Mc., the amount of detuning necessary to produce a low i.f. is a negligible percentage and thus there is very little loss through detuning. Experience has shown that interaction between the two input circuits is not objectionable so long as they are not tuned too close to the same frequency.

Both signals are fed through the same two-stage resistance-coupled i.f. amplifier and second detector to the single pair of headphones.

Construction Lay-out

Some general suggestions are in order for those who wish to build a similar outfit. The best procedure is to build a set with *one* input stage followed by the two i.f. stages and second detector shown in Fig. 1. When this much has been made to work properly, the second tuned input stage may be added. Then, if further refinements are desired, they may be added as the particular conditions at each station dictate. For example, it may be advantageous to use a magic-eye tuning indicator so that any chosen signal may be monitored visually with the audio gain control turned down. Without any disruption of the basic two-channel receiver circuit, the magic-eye indicator may be added. In another instance, auto-ignition noise may be high at a given location. A noise-limiter circuit then may be added to take care of this trouble. More volume may be desired under certain circumstances, in which case another au-

dio stage may be added in place of the 'phones shown in Fig. 1. Another refinement is a gain control on the tuned input circuit which brings in the signals from the main control station. Sometimes this signal is too strong in comparison to those from stations which are being worked with the aid of the other input circuit. In certain instances it may be desirable to precede one of the tuned input circuits with a stage of r.f. amplification. The use of plug-in coils also may be practicable to some builders, since this circuit will work well between 2½ and 10 meters. These refinements are suggested as factors which may influence the final design of the receiver. Of course, the first job is to get the main elements of the set into operation.

Tubes

The 954 acorn is recommended for the tuned input stages, although types 956, 1853, or the 9000 television series also may be used. Information in the tube tables of the *A.R.R.L. Handbook* indicate where slight circuit changes must be made to accommodate the particular tube chosen. In the i.f. stages, the familiar 6D6, 6SK7, or 6K7 tubes are satisfactory. The second detector may be a 76, 6C5, or 6J5. If an audio power output tube is added for speaker operation, a 6F6, or 6V6 will do the job.

The usual rules should be observed in the arrangement of components on the chassis. Details are given in the chapter of *The Radio Amateur's Handbook* on the construction of typical receivers, and these same rules are applicable to this unit.[1] The common practices of isolating the r.f. and audio sections, shortness of r.f. leads, right-angle placement of r.f. coils, and proper decoupling and by-passing in the audio circuits must be observed here as in any high-frequency receiver.

[1] "*The Radio Amateur's Handbook*," 1944 Edition, p. 287 ff.

Operation and Results

Both converters are, of course, operated in an oscillating condition similar to that of a regenerative detector on c.w. signals. Regeneration may be controlled by R_2 and R_6 which vary the screen voltage in each case. Under practical operating conditions one of the input circuits is tuned to the district-control frequency and left there for monitoring purposes. The best way to do this is to adjust the circuit to the proper setting with the district-control station actually on the air. Allowances then must be made for frequency drifts in the receiver and the district-control transmitter, so that it would be advisable to go back and check the original setting periodically during station operation. The second input circuit then is free to be tuned around to any station in the local unit which is being worked or listened to. A little practice will indicate to the operator the proper settings of the regeneration and gain controls. Variable antenna coupling permits adjustments of signal level and, to some extent, selectivity of the input circuits. This control could be used in the place of the r.f. gain control which has been suggested previously for this receiver.

The use of headphones in series with the plate-voltage lead to the second detector tube as shown in Fig. 1 suggests the caution that the operator watch out for shock through bodily contact between the 'phone connections and the chassis.

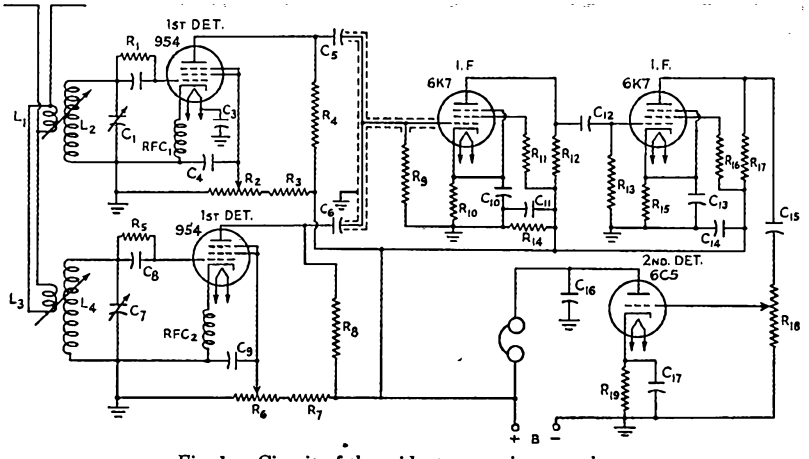


Fig. 1 — Circuit of the midget transmitter-receiver.

C_1, C_7 — 15-$\mu\mu$fd. variable.
C_2, C_8 — 50-$\mu\mu$fd. mica.
C_3, C_{10}, C_{13} — 0.01-μfd. 450-volt paper.
C_4, C_9 — 0.25-μfd. 450-volt paper.
C_5, C_6, C_{12}, C_{15} — 100-$\mu\mu$fd. 450-volt paper.
C_{11}, C_{14} — 0.1-μfd. 450-volt paper.
C_{16} — 0.006-$\mu\mu$fd. 450-volt paper.
C_{17} — 10-μfd. 25-volt electrolytic.
R_1, R_5, R_9, R_{13} — 0.25 megohm, ½ watt.
R_2, R_6 — 50,000-ohm potentiometer.
R_3, R_4, R_7, R_8, R_{11}, R_{14}, R_{16} — 100,000 ohms, 1 watt.
R_{10}, R_{15} — 400 ohms, 1 watt.
R_{12}, R_{17} — 50,000 ohms, 1 watt.
R_{18} — ½-megohm potentiometer.
R_{19} — 500 ohms, 1 watt.
L_1 — 3 turns No. 20 enamelled wire, ¼-inch diameter, close-wound, one wire diameter below cold end of L_2.
L_2 — 2¼ turns No. 20 enamelled wire, ⅜-inch diameter, spaced wire diameter.
L_3, L_4 — Same as L_1, L_2, respectively.
RFC_1, RFC_2 — V.h.f. choke (Ohmite Z-1).

A coupling transformer could be used between the 'phones and the 6C5 tube, if a transformer is available; or the 'phones may be isolated from d.c. by incorporating a resistance plate load through which the d.c. is fed to the plate.[2]

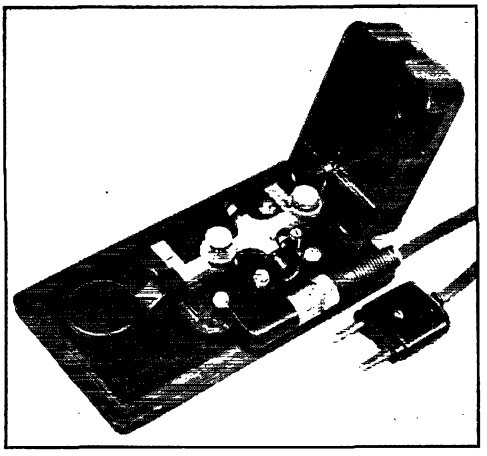
A caution against interference from low-frequency transmitters is that of keeping the antenna leads away from the control grids of the i.f. stages. Otherwise unwanted commercial signals may become mixed with the 112-Mc. WERS sigs. In connection with the two input circuits, oscillation should not be hard to produce so that the converter action of these circuits may take place, but if there is trouble in this respect, the use of a higher-resistance grid leak or higher plate voltage within recommended limits for the tube may help.

Results with this receiver in the Philadelphia area have been quite gratifying. The desired objective of monitoring the district-control station while normal communication goes forward with other stations is achieved. Efficiency of the WERS network thereby has been raised and operators have more confidence that they constantly are in a position to jump into action in behalf of the military needs of the community as they may arise. Therefore the receiver is recommended to other WERS hams with the hope that they will pass along news of their results to the other fellows through *QST*.

[2] "*The Radio Amateur's Handbook*," 1944 Edition, Sec. 7–5, p. 137.

A German Key

THROUGH the kindness of Sgt. Joseph H. Kadlec, W9UIN, we have been examining a captured German radio key which he picked up in Italy and which has several features of minor interest.



A captured German radio key picked up by W9UIN in Italy. Note the concave knob, which is an improvement over our usual flat knob, and the plastic dust cover. The subbase has a rubber bottom which is covered with large "pimples" to keep the key from slipping on almost any surface.

The base and its dust cover are a neat job of molded brown plastic. The base is mounted by three screws on a larger subbase of aluminum, which in turn wears a rubber bottom which pulls over the edge like "rubbers." The rubber bottom is covered with large "pimples," which keep the key from slipping on almost any surface, including even one's knee. The knob is concave, which we consider a magnificent improvement over our usual flat knob, and is of just the right height above table for us. The key is excellently balanced and has a very good feel. The construction is such, with the rubber overshoe and the springy contacts hereinafter mentioned, that operation is substantially silent, although the contact approaches that solid feeling we like in an American-made key.

The armature seems to be of dural and is connected to a pillar terminal by a small helical spring, so that no current passes through the trunnions. The latter are conventional pointed steel screws, except that only one is adjustable with a lock nut. The front contact point on the armature is removable, screwing in with a lock nut. Tension is adjusted by the usual type of spring and screw. The backstop screw also bears a contact point, and both it and the front contact operate against identical contact points mounted on small strips of metal which are each held to the base by two small bolts at one end and hence are quickly replaceable. These metal strips, about 1¼ inches long, are about 1/16 inch thick at the mounting end but only half that thick for the remainder of their length, and are of springy metal. The bottom contacts therefore float on these spring strips, rather than being rigidly mounted to the base, and hence contribute materially to both the springiness and the quietness of the action.

A two-wire cable, with a husky plug at the far end, is connected to the key via a formidable metal and bakelite housing held on by two bolts. However, this represents no quick-action device, for the two wires of the cable simply run through the housing into the open space under the hollow base and are connected under their proper bolt heads by means of lugs. The bolts which hold the cable terminal to the base are equipped with only simple nuts, which drop off when the bolts are unscrewed, making it necessary to remove the three screws which hold the key on its aluminum subbase before the contraption can be reassembled. This should be a decided inconvenience in replacing a damaged cord.

Another feature of interest, however, is that, the key having rear contacts, one wire may be connected to either the front or the rear fixed contact (the other going to the armature), and thus the key can be quickly changed to work a normally-closed relay, etc. It is obvious that a three-wire cable would make either connection available and we suspect that some are so equipped, else there would be no reason for the elaborate demountable terminal housing.

All in all, a nice job. But we want to know where the Jerries got that rubber!

HAPPENINGS OF THE MONTH

OPERATOR LICENSES EXTENDED

ALL amateur operator licenses due to expire during the year from Dec. 7, 1944, to Dec. 7, 1945, were extended for one additional year by FCC's adoption of Order No. 115-A on November 28th.

On May 25, 1943, FCC adopted the original Order 115. One feature of it provided that amateur op licenses that had expired between Pearl Harbor and that date were reinstated and extended for three years from the stated expiration date. The first of these extended licenses would begin to expire on Dec. 7, 1944, and hence the further extension. But note that the current extension is for but one additional year, not three.

The original order also provided that operator licenses expiring between May 26, 1943, and Dec. 7, 1944, were extended three years. So it will be Spring of 1946 before that group needs further attention. Of course the extensions do not apply to licenses suspended by FCC or voluntarily surrendered, or where the holder did not comply with Order 75 on fingerprints and proving citizenship.

The ordering portions of the new Order No. 115-A of Nov. 28, 1944, read as follows:

It is ordered, That:

1. Every amateur radio operator license which by its terms expired during the period December 7, 1941, to December 7, 1942, inclusive, but the duration of which has been extended by Commission Order No. 115 for a period of three years from the date of expiration provided therein, is extended for a period of one year from the date of expiration as extended by Order 115.

2. Every amateur radio operator license issued during the period December 7, 1941, to December 7, 1942, inclusive, is hereby extended for a period of one year from the date of expiration provided therein.

Provided, however, That the provisions of this order shall not apply to any amateur radio operator license that has been or may hereafter be finally suspended by Commission order, or voluntarily surrendered by the licensee, nor to any amateur radio operator licensee who fails or has failed to comply with provisions of the Commission's Order No. 75 as amended. . . .

F.C.C. TAKES THE BALL

FROM September 28th to November 2nd the FCC allocation hearings were in progress in Washington. Many hundreds of witnesses were heard, in thousands of pages of testimony, with hundreds of exhibits. Finally the job was done and FCC began the Herculean task of digesting and appraising the testimony and, from it, determining and announcing its intended postwar allocations.

As we write, in early December, it is expected that, although there has been delay, the FCC decisions will be announced in the next few weeks — perhaps piecemeal over that period. Where the frequencies concern only a short-range service of purely domestic effect, it is believed likely that FCC will announce definite assignments to services. It is expected that close liaison will be maintained with IRAC on behalf of Government needs. It is to be remembered, however, that the Cairo regulations are still in effect and binding upon the U. S. Wherever FCC desires a postwar change from Cairo frequencies, therefore, it is to be expected that the Commission will make recommendations to the Department of State, which is charged with preparing the U. S. position for the next world conference. It is then thought more likely than not that those recommendations will be laid before the study committees of the Department which, so far as concerns allocations, have been QRX for some weeks while subcommittees deal with other matters. All this is admittedly a little hazy. But progress is being made and the outlook for a workable plan is believed good. More news when we get it.

RTPB to FCC

As the concluding act to the FCC hearings. RTPB Panel 2 (allocations) again took the stand and filed its frequency recommendations in the name of the industry. The panel had several meetings in the weeks previous, including two night meetings in Washington. Its problems were so severe that it was able to give no attention to frequencies below 23.5 Mc. and made no recommendations thereon to the Commission. Its plan for the region above 23.5 may be characterized as a complex compromise. Its main provisions may be summarized as follows:

23.5–27 Mc., industrial applications. 27–29, amateur. 29–43, various, chiefly nongovernment emergency and miscellaneous services and government miscellaneous. 43–58, f.m. broadcasting. 58–60, amateur.

60–102 and 152–218 are proposed for television. In a complicated zoning system, the use of channels in alternate zones would be shared between television and nongovernment emergency services, except that the channels 60–66, 72–78 and 212–218 would be exclusively television. 18 television channels are provided. However, 152–156 for military aviation and 170–180 for air navigation would continue until the government is in position to give them up.

In the gap from 102 to 152, 102–108 would be nongovernment emergency and miscellaneous services, 108–132 for air navigation and air mobile, 132–144 for government, and 144–148 for amateur. Then going beyond 218: 218–225 would be amateur, 225–400 government, and 400–420 shared between various services. 420–450 would be shared between air navigation aids and amateur, the former to be discon-

ARE YOU LICENSED?

When joining the League or renewing your membership, it is important that you show whether you have an amateur license, either station or operator. Please state your call and/or the class of operator license held, that we may verify your classification.

tinued as soon as possible after the war, while in identical fashion 450-460 would be ascribed to air navigation aids and facsimile broadcasting. 460-956 is set down for experimental television broadcasting, with a small amount of sharing, some of it temporary, with other services. Above 956 the proposed allocation is:

956- 1125	Navigation aids
1125- 1225	Amateur
1225- 1325	Portable and mobile relay
1325- 1450	Government including air navigation aids
1450- 1500	Meteorological and air navigation
1500- 1600	Aeronautical experimental
1600- 1900	Government and studio-transmitter link (broadcasting)
1900- 2300	Relay
2300- 2500	Air navigation
2500- 2700	Amateur
2700- 3900	Navigation aids
3900- 4450	Relay
4450- 4550	Intra-city relay (television)
4550- 5200	Government
5200- 5750	Amateur
5750- 6800	Experimental relay and other experimental
6800- 7200	Experimental intra-city relay (television), experimental studio-transmitter link and other experimental
7200-10,000	Government
10,000-10,500	Amateur
10,500-13,000	Experimental relay and other experimental
13,000-16,000	Government
16,000-18,000	Experimental relay and other experimental
18,000-21,000	Government
21,000-22,000	Amateur
22,000-26,000	Government
26,000-30,000	Experimental relay and other experimental
Above 30,000	Experimental

The RTPB proposals for the amateur bands at 28 and 56 Mc. were unsatisfactory to ARRL. They arose through the panel's endeavor to provide more space for emergency and miscellaneous services, and not through the initiative of the f.m. people. At the request of RTPB, the ARRL Board of Directors was polled on the question of agreeing to the panel proposal. Our Board was unanimous in rejecting it. Our representatives in RTPB therefore voted opposed and filed a statement which RTPB read into the FCC record when it laid its recommendations before FCC. This statement follows:

The American Radio Relay League, speaking for the amateur service, regrets very much that it is unable to join with the other civilian radio services represented in this panel in a full endorsement of these proposals. It cannot regard as acceptable the proposals to displace the amateur band 28-30 Mc. and to cut in half the amateur band 56-60 Mc. Both in data submitted to this panel and in testimony adduced before FCC during the present hearings, it has been pointed out that a very great increase in the number of amateur stations is to be expected after the war and that a minimum provision for them requires the maintenance of the existing widths of the amateur bands in this part of the spectrum. The desirability of maintaining the harmonic relationship of the amateur bands as high as 60 Mc. has also been pointed out. While it is to be expected that the space between the amateur bands will now become occupied by other services, it is felt that there is no necessity for disturbing either the modest dimensions or the locations of these amateur bands, which were the first assignments in this part of the spectrum. Unlike most of the services represented in the panel, the amateur service has not asked for expansion of its existing bands, but instead has proposed merely that they be continued in their present dimensions. It has not asked for more than it needed, and so it is not in position to yield up some of its requests and still retain all it really desires. On behalf of the amateur service the American Radio Relay League therefore dissents from the frequency recommendations of Panel 2 as they concern the two amateur bands in question and requests the Federal Communications Commission to maintain the existing amateur allocations at 28-30 Mc. and 56-60 Mc.

RTPB remains in existence but its work, as concerns the present autumn's allocation planning, is ended. The next news will be from FCC.

VETERANS' BAND PROPOSED

DURING the recent FCC allocation hearings an interesting and unusual proposal was put forward by Rear Admiral Stanford C. Hooper, Rtd., former Director of Naval Communications and pioneer naval radio authority, now a radio consultant. Speaking only in his own behalf, Admiral Hooper suggested:

"Assign a new band, perhaps 2000 Mc. wide, somewhere above 10,000 Mc., to be known as the 'World War II Veterans Amateur Mobile Service Band' for use by private passenger automobiles in any way they wish, with one provision that there be designated a few calling channels within this band, and it be, for a while, only licensed for such veterans.

"Thousands of experts in radio will be returning as veterans of this war, full of experience in new ways of using radio in crowded areas in the services and full of ideas, and ambition, as to the parts they may play in the future in the application of new electronics services for the advantage of the public. It would be a gracious thing to give them special consideration in the ether, for a short period, especially where there is no demand for channels, and the public would profit from the developments which are certain to result."

STAFF NOTES

CAROL KEATING WITTE, W9WWP, for most of the past year our acting communications manager, was shown on our last month's cover displaying our service flag with a whopping big number representing the U. S. hams in uniform. Now, by her own action, she is adding one more to that figure. That is to say, we have to report that she has joined the WAVES, effective in mid-December, to serve as a biologist in the hospital corps. GB and GL, OG!

Charles A. Service, W4IE, assumes the toga of acting c.m. in addition to his regular duties as assistant secretary at Hq. He's an old traffic hound, having served for many years as division traffic manager of our whole Atlantic Division back in the years when he was 3ZA, and being both a former vice-president and a former director of the League. Despite these talents, he is standing chiefly *in loco parentis* in the Communications Department, for the department is now to be run, under his helpful eye, by Lillian M. Salter, assistant communications manager. Miss Salter, frequently mentioned in these notes as communications assistant, has been in the department nearly fifteen years and knows it backward and upside down (which it has often been). We're undecided whether to boast and

say that she is Handy-trained or to boast still further and say that of course she is a major reason for Handy's success as c.m. Anyway, it's now Lil, and she'll do a job for you until the boys come home.

We regret to report the retirement of Cy Read, W9AA, as one of our assistant secretaries. He has been assisting KBW on postwar matters, particularly the allocation studies, the past six months, sharing time between our job and his permanent one at Hallicrafters. Now the spadework at Washington is done, and Chicago doth call more urgently on account of maybe this war does have an end, so . . .

On the plus side, we announce the appointment to our staff of A. David Middelton, W2OEN, as assistant editor of *QST*. "Mid" has had a long and variegated career in amateur radio, beginning in 1921. Within that period he has accumulated a wealth of every kind of ham experience. He has possessed a long string of amateur calls, having been successively 9BJL, 9GX, 8CGI, 8AKA, W8ZZAK, W8UC, W4CA, W9WFV, W7GLH, W9AOB and finally (and now) W2OEN. He comes to us via one of the special "electronics" services, from a major wartime role in the Communications Branch of the Signal Corps Laboratories at Fort Monmouth. He's hoping for a W1 call as soon as FCC says when.

AMATEUR EXAMINATIONS

FCC continues to issue amateur operator licenses and the FCC examinations therefor are still being given, even though amateur station licenses are not issued during the war. The military services recognize the possession of an FCC amateur operator license as attesting a degree of proficiency in radio which is definitely interesting to them. And many hundreds of wartime radio students, with an eye to amateur operation after the war, are taking out amateur op tickets.

The League also advises its members that it is continuing the publication of *The Radio Amateur's License Manual*, with revisions as frequently as necessary, to prepare students for this examination. The *License Manual* gives details of the procedure for taking out a license and for modification and renewal, explains the scope of the exams, presents typical paraphrased questions and answers, and contains a complete text of the FCC regs governing amateurs.

FCC announces that it will give amateur examinations during 1945 on the following schedule. Remember this list when you need to know when and where examinations will occur. Where exact dates or places are not shown below, information may be obtained, as the date approaches, from the Inspector-In-Charge of the district. An asterisk (*) indicates that the examination dates shown are subject to change and should be verified from the inspector as the date approaches. No examinations are given on national or state holidays. All examinations begin promptly at 9:00 A.M., local time, except as noted below:

Albuquerque: Mar. 15th, Sept. 13th.
Allegan, Mich., P. O. Box 89: By appointment.
Atlanta, 411 Federal Annex: Tuesdays, Fridays and Saturdays at 8:00 A.M.
Baltimore, 508 Old Town Bank Bldg.: Wednesdays and Saturdays; other days by appointment.
Bangor, Me.: Apr. 17th * and Oct. 9th.*
Beaumont, Texas, 329 Post Office Bldg.: Thursdays; other days by appointment.
Birmingham: Jan. 20th, Apr. 21st, July 21st, Oct. 20th.
Billings, Mont.: Apr. 26th * and Oct. 8th.*
Bismarck, N. D.: Some time in April and October.
Boise: Apr. 21st and Oct. 20th.
Boston, 7th floor Customhouse: Daily.
Buffalo, 328 Federal Bldg.: First and third Saturdays of each month.
Butte, Mont.: May 2nd * and Oct. 11th.*
Charleston, W. Va.: Some time in March, June, September and December.
Chicago, 246 U. S. Courthouse: Saturdays.
Cincinnati: Some time in February, May, August and November.
Cleveland, 541 Old P. O. Bldg.: First and third Saturdays of each month; other days by appointment.

Ever wonder what IRAC looks like? These are the engineers behind the initials, the Government radio experts who comprise the Interdepartment Radio Advisory Committee, photographed at a regular monthly meeting in November, with some members not present. *Left to right, seated:* Harvey B. Otterman, Dept. of State; Marion H. Woodward, secretary, alternate for FCC; Dr. J. H. Dellinger, chief of the radio section of National Bureau of Standards; Comdr. Paul D. Miles, Navy Dept., chairman; Capt. E. M. Webster, chief communications officer of the Coast Guard, representing Treasury Dept., vice-chairman; Commissioner E. K. Jett, FCC; Col. Alva G. Simson, War Dept. *Standing:* Helen G. Kelly, alternate, Dept. of State; R. T. Manhardt, representing L. H. Simson of CAA; I. W. Conrad, FBI, Dept. of Justice; James P. Veatch, W9CJJ, FCC; Lt. W. R. Foley, K4FEC, alternate, Navy Dept.; E. C. Wagner, alternate, Dept. of Agriculture; Lt. Comdr. A. L. Budlong, W1JFN, chairman of technical subcommittee, alternate for Treasury Dept., ARRL assistant secretary on leave of absence; M. A. Price, of the IRAC secretariat, FCC; S. L. Windes, Dept. of Interior; L. R. Brady, of the IRAC secretariat, FCC; Comdr. J. M. Grider, Navy Dept. Photograph courtesy of *Broadcasting* magazine.

Columbus, Ohio: Some time in January, April, July and October.
Corpus Christi: June 8–9th and December 7–8th.
Cumberland, Md.: Apr. 11th and Oct. 11th.
Dallas, 500 U. S. Terminal Annex: Saturdays.
Davenport, Ia.: Some time in January, April, July and October.
Denver, 504 Customhouse: First and second Saturdays of each month.
Des Moines: Jan. 6th, Apr. 7th, July 7th, Oct. 13th.
Detroit, 1029 New Federal Bldg.: Saturdays; other days by appointment.
Fort Wayne: Some time in February, May, August and November.
Fresno: Mar. 20th,* June 19th,* Sept. 18th,* Dec. 18th.*
Galveston, 404 Federal Bldg.: Wednesdays, Fridays and Saturdays, beginning 8:30 A.M.
Grand Island, Nebr. (P. O. Box 788): Daily, beginning 9:30 A.M.
Grand Rapids: Some time in January, April, July and October.
Hartford, Conn.: Mar. 17th* and Sept. 22nd.*
Hilo, T. H.: Apr. 2nd and Oct. 15th.
Honolulu, 609 Stangenwald Bldg.: Mondays at 8:30 A.M.
Indianapolis: Some time in February, May, August and November.
Jacksonville: May 12th and November 10th.
Juneau, Alaska, 7 Shattuck Bldg. (P. O. Box 1421): By appointment.
Kansas City, 809 U. S. Courthouse: Saturdays.
Kaunakakai, T. H.: Oct. 9th.
Kingsville, Texas (P. O. Box 632): By appointment.
Lanai City, T. H.: Oct. 3rd.
Lihue, T. H.: Apr. 23rd and Oct. 29th.
Little Rock: Jan. 17th, Apr. 18th, July 11th, Oct. 10th.
Los Angeles, 539 U. S. P. O. & Courthouse Bldg.: Wednesdays and Saturdays.
Memphis: Feb. 20th and Aug. 21st.
Miami, 312 Federal Bldg.: Mondays and Fridays.
Milwaukee: Some time in January, April, July and October.
Mobile: May 23rd and Nov. 14th.
Nashville: Feb. 16th, May 18th, Aug. 17th, Nov. 16th.
New Orleans, 400 Audubon Bldg., Mondays at 8:30 A.M.; other days by appointment.
New York City, 748 Federal Bldg., 641 Washington St.: Tuesdays, Thursdays and Saturdays.
Norfolk, 402 New P. O. Bldg.: Fridays and Saturdays.
Oklahoma City: Jan. 25th, Apr. 26th, July 26th, Oct. 25th.
Omaha: Apr. 14th and Oct. 6th.
Philadelphia, 1200 Customhouse: Wednesdays and Saturdays.
Phoenix, Ariz.: Apr. 28th and Oct. 27th.
Pittsburgh: Feb. 10th,* May 12th,* Aug. 11th,* Nov. 10th.*
Portland, Me.: Apr. 21st* and Oct. 13th.*
Portland, Ore., 805 Terminal Sales Bldg.: Fridays and Saturdays at 8:30 A.M.
Reno: Apr. 18th* and Oct. 17th.*
Roanoke, Va.: Apr. 7th and Oct. 6th.
St. Louis: Feb. 10th, May 12th, Aug. 11th, Nov. 10th.
St. Paul, 208 Uptown P. O. & Federal Courts Bldg.: First and third Saturdays of each month.
Salt Lake City: Mar. 24th,* June 23rd,* Sept. 22nd,* Dec. 29th.*
San Antonio: Feb. 22nd, May 24th, Aug. 23rd, Nov. 22nd.
San Diego, 307 U. S. Courthouse Bldg.: By appointment.
San Francisco, 328 Customhouse: Saturdays.
San Juan, P. R., 322 Federal Bldg. (P. O. Box 2987): Daily by appointment.
Savannah, 214 P. O. Bldg.: By appointment.
Schenectady: Mar. 14–15th, June 13–14th, Sept. 12–13th, Dec. 12–13th.
Seattle, 808 Federal Office Bldg.: Fridays.
Sioux Falls, S. D.: Some time in March, June, September and December.
Spokane: May 5th * and Oct. 13th.*
Syracuse, N. Y.: Jan. 12–13th,* Apr. 13–14th,* July 13–14th,* Oct. 12–13th.*
Tampa, 203 P. O. Bldg.: By appointment.
Wailuku, T. H.: Oct. 6th.
Washington, D. C., 410 International Bldg., 1319 F St., N.W.: Daily except Saturdays.
Wichita: Mar. 16th and Sept. 14th.
Williamsport, Pa.: May 18th * and Nov. 6th.*
Winston-Salem: Feb. 3rd, May 5th, Aug. 4th, Nov. 3rd.

I.R.E. WINTER TECHNICAL MEETING

THE 1945 Winter Technical Meeting of the Institute of Radio Engineers will take place January 24–27, 1945, at the Hotel Commodore in New York City.

A wide variety of technical papers will be presented on radio circuits, vacuum tubes, quartz crystals, industrial electronics and radio links and relays. The following are a few of the many papers scheduled: "The Application of Double-Superheterodyne Receivers for Broadcast Reception," "Two Resonator Klystron Oscillators," "Frequency Adjustment of Quartz-Oscillator Plates by X-Rays," "Centimeter-Wave Measurements," "Ultra-Short-Wave Multiplex," and "Some New Antenna Types and Their Applications." Throughout the meeting there also will be exhibits by manufacturers.

NOTICE TO MEMBERS DISCHARGED FROM THE MILITARY SERVICES

THE requirement of continuous membership in the League for eligibility to ARRL offices has been waived for members serving in the uniform of the United States. See particulars on page 23 of *QST* for July last. Those desirous of taking advantage of this arrangement are asked to claim the right when renewing membership, stating the beginning and ending dates for their military service.

NEW ZEALAND NOTES

THE following notes on the contributions of New Zealand amateurs to the war effort are gleaned from a letter received at Hq. from W. D. Gorman, ZL2IY, secretary of the New Zealand Association of Radio Transmitters:

"Recently a party of twelve New Zealanders was sent to Great Britain to assist in radio production. They were claimed to be the 'Radio Brains' of New Zealand. Nine of them were amateurs and one member was our second district vice-president. The Controller of Radio Production in New Zealand is Ralph Slade, who was one of our pioneer amateurs, his call ZL4AG.

"New Zealand also produced an Army wireless set and here again amateurs were to the fore. The Mark I was designed by P. C. Collier, ZL2AP; and Mark II was designed by R. J. Orbell, ZL1AX-3AA, in conjunction with Major P. Barcham, ZL2AN, and Lt. D. P. Joseph, ZL1IO.

"At the beginning of the war our chaps were doing a listening watch and this was greatly appreciated by the Government. Later, when equipment became so short, the Post & Telegraph Dept. went around to all New Zealand amateurs and purchased much of their equipment. In some cases whole transmitters were purchased. Many of them are still maintaining links.

"Our contribution to the services is very big. Every signal unit has amateurs, all doing responsible jobs. I am in the Army experimental unit and our commanding officer and three other officers are amateurs. Field trials for us are very like old times. When we are allowed to publish names and positions held by amateurs in New

Zealand services the value of the amateur cannot be overlooked.

"We had a Canadian amateur with us, Lt. J. R. Ower, VE4IZ, — your Canadian amateurs will probably be interested. He is now in Australia but still attached to our unit.

"Your war records must be enormous but we of New Zealand are very proud of our little effort."

YOUR WAR RECORD

THE cutable-outable form at the bottom of this page is doing double-barreled duty. It brings us most of the names and dope for our "In The Services" department, where you can find out at least a little something about who is doing what in the ham war effort. It also brings to your League headquarters the names of thousands after thousands of amateurs who are employing their ham knowledge and experience in communications and electronics during this war — which you can see is invaluable statistical information for your League to possess.

Are you registered with us? If you are an amateur of either the United States or Canada, and are engaged in this kind of work in the war, we need to hear from you — whether you are in uniform in the armed forces or in one of the other categories. The same information on a post card will do if you prefer not to cut your *QST*. But in any event, please report in to us if you have not yet done so. And we shall continue to be grateful for any similar information that you can supply on other amateurs.

AUTOMATIC RELAYING

AMATEURS seem to have considerable interest in the possibilities of automatic u.h.f. relaying. Several commercial companies have indicated their intention of operating such systems after the war and work on two of them has begun under FCC construction permits. Some interesting information on the state of this art was given in the testimony, at the recent FCC hearings, of Dr. E. W. Engstrom, of RCA Laboratories, chairman of the RTPB panel on relay systems, a portion of which we quote below for the information of amateurs:

". . . On the immediate horizon, television broadcasters appear to be the first and most important prospective users of radio relays. Use by television broadcasters would be to join together two or more stations for the same program and for forming extensive program networks. Radio relays have technical merit for the distribution of television programs. It is believed, therefore, that such systems will be established and expanded in conjunction with coaxial cable links.

When not used for television, the broad band of a system capable of relaying television will permit the transmission of numerous other signals. For example, by some yet undeveloped facsimile method, printed material may be transmitted over the system at the rate of many thousands of letter-pages per hour. Police, Government and business groups will find useful the facility to transmit facsimiles of a variety of records.

There is a growing need to interconnect new forms of business machines which are sure to be developed. This is so that manufacturing, transportation and merchandising organizations, and the public they serve, may benefit from the advantages of decentralized and widespread operations with centralized management and control.

Radio relays may, of course, be used for long-distance multiplex telephone communication, particularly for the distribution of sound broadcasting programs. The sound accompanying television obviously should pass over the same system as the picture so that its handling may be properly coördinated and so that the picture and sound signals will be subject to equal time delays in transmission.

With the growth of high-speed transportation, particularly as the number of airplanes in flight increases, need for extensive communication and navigation aids will be increasingly felt. Radio relay systems might follow the transportation routes and might be coördinated with and, in some measure, serve not only the transport contacts en route but also general ground communication.

For medium- and long-distance overland circuits, relay systems are the only means for using the ultra-high and super-high frequencies. It is believed that radio relay systems will eventually be the technical means for handling most of the traffic of a point-to-point or multiple-addressee nature when using these frequencies.

Radio relay systems will constitute projects of major magnitudes and it seems reasonable, therefore, that circuits should be well loaded with a variety of services for all hours of the day and night. It seems further that a relay route might be designed for more than one wide-band circuit in each direction, wherever the load demand is sufficient. Such a relay system could then handle a wide-band service such as television and a multiplicity of narrow-band services; two or more television services, etc., simultaneously in either direction. Carrying a variety of services will assure better dis-

AMATEUR WAR SERVICE RECORD

Name

Present mailing address

Rank or rating

Branch or bureau: Signal Corps, AAF, Buships, WAVES, etc. If civilian industry, give title and company.

Call, present or ex; or grade of op-license only

SERVICE

- ☐ Army
- ☐ Navy
- ☐ Coast Guard
- ☐ Marine Corps
- ☐ Maritime Service
- ☐ Merchant Marine
- ☐ Civil Service
- ☐ Radio industry, 100% war

tribution of load over all hours and should result in both cost economy and channel-use economy.

Before the development of radio relay systems had been interrupted by the war, much pioneering work had been completed and the technical basis seemed assured for designing such radio relay systems. Many problems, such as must be solved in establishing any new service, still remain, but it can be stated with confidence that there are no insuperable technical obstacles.

The range of frequencies which will be used for radio relaying is so high that it becomes possible to utilize each frequency channel over and over again, not only over circuits which are spaced apart geographically, but even with some limitations for a number of circuits in and out of the same city. It is this possibility of using the same frequency band over and over again which justifies the assignment of wide channels to radio relay systems.

A fortunate circumstance is that, in establishing a radio relay system, a sizable portion of the cost is represented by the sites and towers and that no development which can be foreseen at present will destroy the value of these investments. Instead, it is anticipated that future developments will make it possible to utilize higher radio frequencies, as the service expands and as more circuits are needed, over the same route without requiring substantial alterations in either sites or towers.

Before the war, the development of radio tubes and receivers had been carried far enough to make it practical to utilize frequencies for radio relaying in the range from 300 to about 1000 Mc. It is anticipated that, as soon as restraints due to the war are removed, this frequency range will be extended upward; in fact, some of the early relay projects which are now contemplated will be at frequencies higher than the pre-war developments.

Radio relay systems will naturally be designed and locations for repeaters chosen to provide essentially ideal transmission paths. There will be line of sight between transmitter and receiver antennas and these antennas will be of sufficient height above ground to obtain practical gains from some addition of the direct and ground-reflected signals. For these conditions there is also technical merit in increasing the carrier frequency because this also contributes to the addition of the direct and ground-reflected signals Thus, the strength of the signal at the receiving location will increase with increasing frequency.

Initially, relay systems will use radio frequencies as high as the status of the art will permit, i.e., above 1000 Mc. Higher frequencies will be desired and may be used upward to the place where absorption in the atmosphere will be limiting. Transmission vagaries will most certainly be present over the band between 1000 and 30,000 Mc., but too little information is now available to be certain of the extent and limits.

Towers for mounting the transmitting and receiving antennas will vary from as low as 100 feet to as high as 300 to 400 feet depending upon the terrain contour and repeater-station spacing. For these antenna heights, repeater spacings will vary from 20 miles to as much as 40 miles. The factors affecting tower heights and repeater spacings are economic ones and as far as I know, require study based upon experience yet to be obtained. .

Generated transmitter powers for relay stations will be just a few watts, with no need for powers of over 100 watts and with need for less power as the frequency is increased. Substantial antenna power gains will be used for both transmitter and receiver — antenna power gains of several hundred times that of a simple dipole.

Frequency modulation or some variation of frequency modulation will probably be used in radio relay systems. This will permit amplitude limiting at the repeaters to remove variations in received signal amplitude and to assist in removing distortion due to non-linear amplification.

Radio relay systems will, except when carrying television, accommodate a multiplicity of signals. The channel width needed for television might be determined on such a basis as follows. In a radio relay system for transmitting television signals, it is considered essential to transmit the zero- or very-low-frequency components of the modulation so that the synchronizing pulses may occupy a fixed range of the modulation characteristic. Otherwise, the variations in image background level may modulate the wave form and amplitude of the synchronizing pulses in a manner to detract from the quality of the reproduced images. This means that the highest-frequency modulations of the frequency, modulated carrier current will be superimposed upon a carrier frequency which can vary between the values set for the black and white levels. This requires that the radio-frequency band width be equal to twice the highest modulation frequency plus the range of frequency lying between the black and white levels. For practical reasons, it is suggested that radio relay systems to serve the present standard television signals should have a nominal channel width of 20 Mc.

Wider bands, for television in color or theatre television, will mean even wider channels for radio relays. Systems for these wider channels could handle even more multiplexed relatively wide or narrow-band services when not used for television. Indications are that such channels should be allocated at one of the higher regions of the radio spectrum to be discussed later in this testimony. It seems reasonable that these wider channels be of widths which are multiples of 20 Mc.

Present thinking for a one-way radio relay circuit indicates that the transmitted frequency should alternate between two channels at repeater stations. Thus, a circuit of any length would require only two channels. For special conditions, a third channel might be used to form the bridge out of the circuit to another route differing in direction. Simultaneous transmission in both directions would require double the number of channels. These same channels could be used over again by another system spaced geographically from the first.

Research is planned which will reduce the channels required for a circuit to one frequency-band assignment. Thus, a circuit of any length would require only one channel because each repeater would transmit the amplified signal at the same carrier frequency as received. The saving in frequency spectrum should spur such a development. While much work must precede a one-frequency-channel system, there is assurance that it can ultimately be achieved from the point of view of apparatus considerations. More propagation information is needed basic to a one-channel system. . . .

Silent Keys

IT IS with deep regret that we record the passing of these amateurs:

W1MLI, Sgt. Wallace A. Copeland, Providence, R. I.

W2NKW, Lt. William Miller, Bayonne, N. J.

W2OT, Kirke E. Davis, Oceanside, L. I., N. Y.

W4GKN, Harry E. Northrup, Memphis, Tenn.

W5IZP, Lt. Brenard Keltner, jr., Austin, Texas

W6BKT, Albert W. Ellis, San José, Calif.

W7CYC, Capt. John S. Ingraham, Benton, Wash.

W7IZV, Don D. Kruse, RT1c, Camas, Wash.

W8DFP, French Shaffer, Elkins, W. Va.

W8EVK, Frank Teach, Columbus, Ohio

W8SPK, Pfc. Leo Mason, Detroit, Mich.

W8SYT, Alex C. Boulter, Mason, Mich.

W9CJR, J. D. Mills, Mount Vernon, Mo.

K7BZX, Rev. Harold L. Wood, Juneau, Alaska

VK2RJ, R. J. Fagan, Mandurama, Australia

VK2YK, F/Lt. Roy Abbott, Telegraph Point, Australia

Ensign John J. Pierson, Munsey Park, L. I., N. Y.

L. J. Ryan, Hannibal, Mo.

A Miniature Ham-Band C.W. Station

Compact Construction for Three-Band Portable Work

BY SHELDON W. GATES,* W8VWK

The compact unit shown in the photographs is a complete c.w. station built within the dimensions of a small vanity case. It includes a crystal-controlled transmitter, a regenerative receiver and a power supply for both sections. Space also has been found for the key, headphones and other accessories.

IN NORMAL ham activities there are many occasions for the use of small portable equipment. In my particular case I wanted a miniature transmitter and receiver so that I could take my hobby with me wherever I might go after the war.

Although I had considered designing the station equipment so that it could be operated from dry or storage batteries as well as the a.c. line, I finally decided against it, since I am mainly a city fellow and the rig will seldom go farther than the 115-volt lines go. As additional arguments against the original idea it was felt that the extra equipment needed for battery operation, such as vibrator, transformer, rectifier tube and batteries, as well as the necessity for a complete change of tubes, would make impossible the fulfillment of the primary requirements of minimum size and weight.

Transmitter

The circuit diagram of the unit is shown in Fig. 1. The transmitter is a single-tube crystal oscillator using the pentode section of a 117N7GT/G. The design is very similar to that of the "Pee-Wee" transmitter described by R. T. Lawrence in the January, 1941, issue of *QST* in a symposium of pocket-size rigs.

Coil L_2 and condensers C_7 and C_8 comprise a pi-section tuning system which will work efficiently on the 80-, 40-, and 20-meter amateur bands. The switch, S_4, shorts out the required number of turns on L_2, depending upon the band of operation and the antenna length. This arrangement permits feeding a wide variety of antenna types. It will load the oscillator effectively on any of the three available frequency bands when connected to any random length of wire from a few feet to several hundred feet. Since the power supply delivers only a little over 100 volts, no screen voltage-dropping resistor is required. Parallel plate feed is used to isolate the antenna from the plate-supply voltage. The transmitter is keyed in the cathode-circuit. The dial lamp in series with the high-voltage lead to the plate circuit is included as a resonance and loading indicator.

*1717 Forres Ave., St. Joseph, Mich.

Power Supply

A single power supply of the transformerless or "a.c.-d.c." type is used to operate the receiver as well as the transmitter which makes it necessary to have as much filtering as possible following the output of the rectifier section of the 117N7GT/G. A dual section 20-20-μfd. filter condenser, C_1-C_2, is used in conjunction with an 8-henry choke, L_1, and this combination gives satisfactory filtering for the transmitter. The condenser C_{16} and resistor R_9 constitute an additional filtering section for further reduction of ripple for the receiver supply. Condenser C_3 takes out most of the tunable-hum points which might be encountered throughout the higher frequencies.

The send-receive switch, S_2, changes the plate voltage and the antenna from the receiver to the transmitter and vice-versa. In this case a rotary switch was used but a d.p.d.t. toggle switch might be substituted if desired. An additional switch, S_3, is provided so that both transmitter and receiver may be operated at the same time for monitoring the output signal.

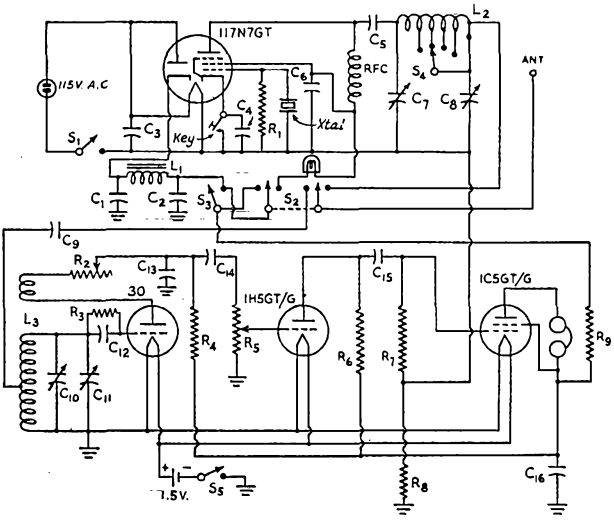
The Receiver

The receiver is a rebuilt three-tube Meissner Student Midget Kit unit cut down so as to fit in the available space. The 1E4G tube intended for the regenerative detector was not obtainable, so a type 30 was substituted. Regeneration is con-

The miniature portable c.w. station is built into a small vanity case with a hinged cover and lock.

Fig. 1 — Circuit diagram of the miniature portable station.

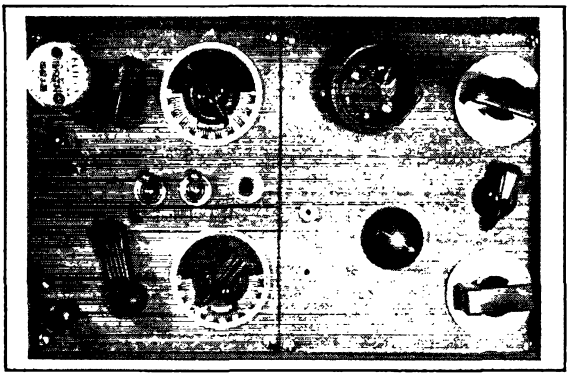
C_1, C_2 — 20-μfd. 150-volt electrolytic.
C_3, C_6 — 0.001-μfd. 600-volt paper.
C_4 — 0.05-μfd. 200-volt paper.
C_5 — 0.001-μfd. mica.
C_7 — 100-$\mu\mu$fd. variable.
C_8 — 140-$\mu\mu$fd. variable.
C_9 — 250-$\mu\mu$fd. mica.
C_{10} — 365-$\mu\mu$fd. variable.
C_{11} — 25-$\mu\mu$fd. variable.
C_{12} — 50-$\mu\mu$fd. mica.
C_{13} — 500-$\mu\mu$fd. mica.
C_{14}, C_{15} — 0.01-μfd. 200-volt paper.
C_{16} — 16-μfd. 150-volt electrolytic.
R_1 — 100,000 ohms, ½ watt.
R_2 — 10,000-ohm potentiometer.
R_3 — 5 megohms, ½ watt.
R_4, R_6 — 250,000 ohms, ½ watt.
R_5 — 500,000-ohm volume control.
R_6 — 500,000 ohms, ½ watt.
R_8 — 500 ohms, ½ watt.
R_9 — 5,000 ohms, 10 watts.
RFC — 2.5-mh. r.f. choke.
S_1, S_3, S_5 — S.p.s.t. toggle.
S_2 — D.p.d.t. tap or toggle switch.
S_4 — Single-pole, 5-position tap switch.
L_1 — 8-hy. 50-ma. filter choke.
L_2 — 90 turns No. 22 enameled wire on 1-inch form tapped at 90, 50, 30, 20 and 10 turns.



L_3 — Meissner plug-in coils, Nos. 18-2940 through 18-2944.

trolled by the series resistance, R_2, in the plate circuit. C_9 is the antenna coupling condenser.

A 25-$\mu\mu$fd. variable condenser, C_{11}, was added for bandspread and this aids greatly in separating stations on the higher frequencies. The short-wave coils supplied with the kit require special spring-type sockets, while the broadcast-band coil uses a standard five-prong socket. Since this would necessitate changing sockets every time broadcast-band reception was desired or, alternatively, having two sockets, it was decided to mount the short-wave coils in midget forms, so that the broadcast-band and short-wave coils could be used interchangeably in the same socket. The two stages of audio are resistance coupled and they provide plenty of headphone volume, even for noisy operating locations. A triode is used in the first stage while the output tube is a pentode.



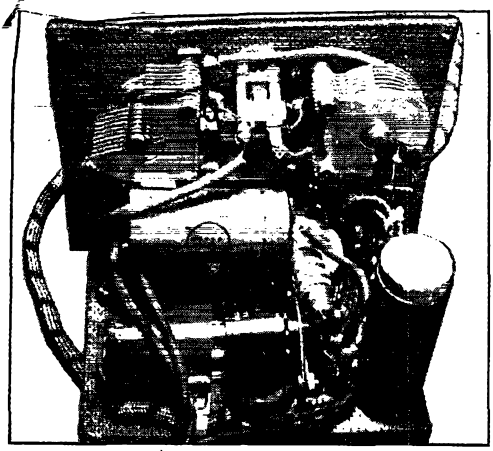
Panel view of the two sections of the miniature portable. The section to the left is the receiver with the two tuning controls and regeneration control to the left and the plug-in coil and "A" switch to the right. On the transmitter panel to the right are the two tuning controls to the left, with a metering jack and power and monitoring switches in between, the antenna change-over switch above and the tap switch, S_4, below. The antenna terminal, 60-ma. plate-current-indicator bulb and crystal are to the right.

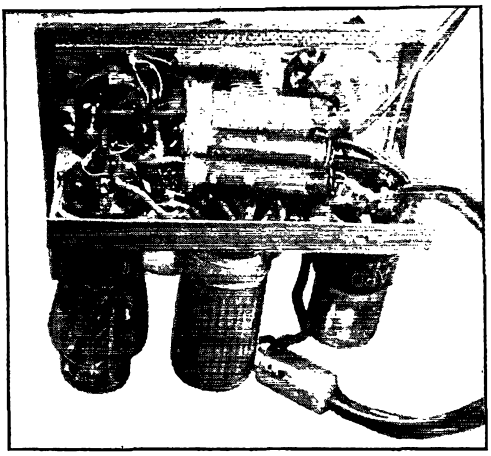
The receiver operates normally with 7½ volts of fixed bias on the grid of the 1C5GT/G. Since space limitations made batteries undesirable, it was decided to operate the filaments at a positive potential of 7½ volts in respect to the transmitter and power-supply ground. The voltage drop across the resistor, R_8, is used for this purpose. This resistor is connected in series with the negative high-voltage lead running from the power supply to the receiver. The grid-return lead then goes to the power-supply side of the resistor, thereby making it 7½ volts negative in respect to the filament. Filament power for the receiver is obtained from two flashlight cells clamped to the bottom of the cabinet.

Construction

The complete unit is built in a vanity case purchased for $2.49 and measuring 11½ inches long, 6½ inches wide, and 7 inches high. Of the 10½ inches available panel space, 4¾ inches are used for the receiver, 4¾ inches for the transmitter, and about one inch is left at the end for a compartment for wires, tools, pencils, and so forth. The case already was provided with a ⅜-inch lip originally designed to support a sliding shelf so the panels were fastened to this. Because a depth of only 3 inches is available between the panels and the bottom of the cabinet, all tubes were mounted in a horizontal position. The two flashlight cells are mounted in the bottom of the cabinet and fit nicely between the tubes of the receiver.

The panels of both transmitter and receiver sections are made of ¼-inch Presdwood, the one for the receiver being backed with a sheet of thin aluminum to off-set hand-capacity effects. The re-





Left — Bottom view of the transmitter section of the miniature station. The coil, wound on a wood dowel is in the lower right-hand corner of the photograph. *Right* — Bottom view of the receiver section of the miniature station.

ceiver panel is fitted with a small chassis bent from sheet metal on which the sockets are submounted so that the tubes will be in a horizontal position. The chassis runs approximately through the center of the panel. The large variable condenser, C_{10}, is fastened to the panel of the side of the chassis where the tubes are located. The small variable, C_{11}, the volume controls, fixed resistors and by-pass condensers occupy the space on the other side of the chassis. A short three-wire cable and plug provide a means for making the necessary connections between this section and the other section which includes the power supply. At the time of construction, the 10-watt, 5000-ohm resistor, R_9, was unobtainable and two 2-watt, 10,000-ohm resistors were connected in parallel, as can be seen in the photographs. After the photographs were taken, an open-circuit jack was added to the receiver panel so that either a 'phone plug or 'phone tips could be used for the headphone connection.

The two variable condensers of the transmitter, C_7 and C_8, are mounted on the panel. A small base of Presdwood is fastened to the panel at right angles along one edge to provide a mounting surface for the 117N7GT/G, the coil, L_2, and other small components. The tube is mounted horizontally by means of a pair of small metal angle pieces. The coil is wound on a piece of one-inch-diameter dowel which is fastened to the base with a wood screw.

The key is held in the lid of the cabinet by self tapping screws and can quickly and easily be removed when operation is desired. There is sufficient room in the space between the panels and the cover to put headphones, antenna wires, tools, log book, crystals, coils, etc.

Operation

Tuning the transmitter is relatively easy. After the correct crystal has been placed in the socket and the power supply turned on, the plate circuit should be adjusted for resonance.

Since they are in series across the tank coil, L_2, C_7 and C_8 both affect the resonant frequency of the oscillator plate circuit. The dial lamp will light to almost full brilliancy when the circuit is not oscillating. It will show a decided decrease, if it does not go out all together, when resonance is reached. The *ratio* of the two capacities determines the value of antenna coupling or, in other words, the loading of the oscillator. In practice, C_8 should be adjusted in steps, swinging C_7 through its range and changing the tap on L_2 for each step in the adjustment of C_8 until resonance is found. Then, if the loading is not proper, C_8 should be changed a small amount and the circuit restored to resonance by means of C_7 to determine if the loading is decreasing or increasing as may be desired. If this change causes the loading to increase when a decrease is desired, C_8 should be adjusted, little by little, in the opposite direction, each time restoring the circuit to resonance with C_7, until proper loading is obtained. If a decrease is obtained, C_8 should be adjusted in the same direction until the desired reduction in loading has been effected.

For reception of c.w. signals the receiver regeneration control, R_2, is advanced toward zero resistance almost as far as it will go. On the other hand, for receiving nearby broadcast-band stations, it may not be necessary to advance the regenerative control at all.

Best results for both receiving and transmitting will be obtained when a high antenna is used, the length depending upon the frequency of operation. Of course, it should be unnecessary to point out that the transmitter may not be operated on the air at the present time.

IN THE SERVICES

THE purpose of the ITS column, after all, is to publicize amateurs of the United States and Canada who are serving their countries in the war effort. Registrations by the dozen reach Headquarters in every mail, evidence that though this department has been doing business for three years and has listed more than 13,000 amateurs, many more still are to be heard from.

So without further delay we chronicle this month's new names, pausing only long enough to send sincere thanks to those who have registered; to ask those who have not, to fill in the blank on page 22; and to wish hams everywhere a very Merry Christmas and a safe and speedy return to their beloved hobby.

ARMY—SIGNAL CORPS

1EMW, Petrillo, Lt. Col., Ft. Monmouth, N. J.
1GAC, Mourradian, T/3, Camp Myles Standish, Mass.
1HC, Gove, Lt., Camp Bowie, Texas
1HMZ, Schmittgall, Pvt., Upper Darby, Pa.
1JVZ, Evans, T/4, foreign duty
1KUX, Calkins, Lt., foreign duty
1LJR, Bassnett, Cpl., foreign duty
1LOI, Knapp, 2nd Lt., Ft. Monmouth, N. J.
1LQJ, Ballard, Capt., Cambridge, Mass.
1LTF, Cook, S/Sgt., Camp Crowder, Mo.
1MFY, Hollowell, 2nd Lt., Ft. Monmouth, N. J.
1MSG, Lemay, M/Sgt., foreign duty
1MVO, Rosenbaum, S/Sgt., foreign duty
1MWV, Madden, T/4, foreign duty
2FRZ, Koeper, T/Sgt., foreign duty
2HLX, Reeder, Pfc., Camp Crowder, Mo.
2JOY, Karsh, T/Sgt., foreign duty
2KHP, Morris, T/Sgt., foreign duty
2KPZ, Paulsen, Pvt., Camp Crowder, Mo.
2KZP, Karpen, Sgt., Camp Davis, N. C.
2MMU, Browne, Pfc., foreign duty
2NMU, Laurent, T/3, foreign duty
2OBM, Miller, Capt., Seattle, Wash.
3HUL, Kramme, Sgt., Stout Field, Ind.
3IWE, Bicking, T/5, foreign duty
ex-4CGQ, Gardner, Cpl., Camp Crowder, Mo.
4FUI, Reid, T/Sgt., foreign duty
4GBX, Fowler, 2nd Lt., Ft. Monmouth, N. J.
4GLE, Mabry, Pvt., Camp Rucker, Ala.
5FEC, Hawkins, Pvt., Camp Shelby, Miss.
5FLD, Hopkins, M/Sgt., foreign duty
5GDZ, Wooddell, 2nd Lt., Ft. Monmouth N. J.
5HPC, Loofbourrow, Lt., Abilene, Texas
ex-5HZ, Stallings, 2nd Lt., Ft. Monmouth, N. J.
5KPQ, Krischke, T/Sgt., foreign duty
5NF, McNally, Lt., foreign duty
6BCE, Nightingale, 2nd Lt., Ft. Monmouth, N. J.
6HRL, Curtin, T/3, foreign duty
6KHE, Hatashita, 2nd Lt., foreign duty
6PTY, Borden, 2nd Lt., Ft. Monmouth, N. J.
6SZN, Herbig, Lt., foreign duty
6UGC, Metcalf, Pvt., Camp Crowder, Mo.
7BAG, Shields, T/4, Anchorage, Alaska
7BPE, Loban, T/5, Anchorage, Alaska
7DVM, Carter, Sgt., foreign duty
7EIR, May, W/O (jg), Seattle, Wash.
7FGJ, Zanotti, T/Sgt., foreign duty
7FSA, Murahata, T/4, Camp Crowder, Mo.
7IFW, Sears, 2nd Lt., Ft. Monmouth, N. J.
7IQA, Ahlstedt, Sgt., Ft. Jackson, S. C.
7ISD, Pence, T/4, Anchorage, Alaska
K7ISG, Naff, T/4, Anchorage, Alaska
8BEA, Fischel, 2nd Lt., Washington, D. C.
8GQC, Frink, S/Sgt., Camp Crowder, Mo.
8GYT, Bradley, Lt., foreign duty
8HQV, Barone, M/Sgt., foreign duty
8IPK, Aho, 2nd Lt., foreign duty
8LTN, Anderson, Capt., foreign duty
8MHV, Tachoir, Capt., Arlington, Va.
8MYW, Green, 2nd Lt., foreign duty
8OMF, Hamilton, Lt., foreign duty
8PQE, Birrel, Capt., Orlando, Fla.
8SIR, Fugman, Lt., Cambridge, Mass.
8SWH, Payne, M/Sgt., Washington, D. C.
8VHG, Moore, Sgt., Camp Crowder, Mo.
8VUN, Zavatsky, M/Sgt., foreign duty
8WAK, Thompson, T/Sgt., foreign duty
9AGV, Hallquist, Pfc., foreign duty
9CKD, Mathews, 2nd Lt., Cambridge, Mass.
ex-9DMQ, McConell, T/4, Anchorage, Alaska
ex-9FKL, Eaton, Lt., foreign duty
9GDZ, Bath, Sgt., Cincinnati, Ohio
9GFR, Befera, 2nd Lt., Ft. Monmouth, N. J.
9GSO, Resetaritz, 2nd Lt., Ft. Monmouth, N. J.
9GUK, Volkland, T/3, Port Hueneme, Calif.
9HMH, Nelson, S/Sgt., Camp Crowder, Mo.
9IVB, Goforth, T/5, foreign duty
9LHD, Ide, T/3, foreign duty
9MIT, Wiest, Lt., foreign duty
9MZU, Fish, Lt., Wright Field, Ohio
9NBH, Anderson, T/3, Ft. Sam Houston, Texas
9NDZ, Kassens, 2nd Lt., Cambridge, Mass.
9NVY, Peavler, Cpl., Ft. Monmouth, N. J.
9OST, Fransworth, Lt., Cambridge, Mass.
9OUJ, Petrie, T/Sgt., Camp Crowder, Mo.
9PLG, Combs, Pvt., Robins Field, Ga.
9QDE, Evans, S/Sgt., foreign duty
ex-9QJN, Blodgett, S/Sgt., Ft. Monmouth, N. J.
9RHR, Berecaky, T/4, Hines, Ill.
ex-9RLW, Meskel, S/Sgt., foreign duty
9SKD, Allen, Pfc., Ft. Monmouth, N. J.
ex-9SNM, Kunsemueller, S/Sgt., Camp Chaffee, Ark.
9TJF, Buchan, T/5, Philadelphia, Pa.
ex-9TWK, Little, Major, foreign duty
9YGJ, Hammack, Lt., foreign duty
ex-9ZYO, Gibbs, Lt., Cambridge, Mass.

Operator's license only:

Arneson, Pvt., Camp Maxie, Texas
Baker, Cpl., Anchorage, Alaska
Beaver, Sgt., Camp Davis, Calif.
Childress, Pvt., Camp Crowder, Mo.
Costigan, 2nd Lt., E. Landsdowne, Pa.
Dertinger, Pfc., Camp San Luis Obispo, Calif.
Douglas, Cpl., DeRidder, La.
Ferrell, T/4, Anchorage, Alaska
Fox, Cpl., foreign duty
French, Pfc., Camp Crowder, Mo.
Grammens, Pfc., foreign duty
Gravlin, Lt., foreign duty
Hendricks, T/5, Oklahoma City, Okla.
Hervey, T/4, San Francisco, Calif.
Knudson, Sgt., foreign duty
Kohn, Pvt., Camp Crowder, Mo.
Koontz, Cpl., Wright Field, Ohio
Manhall, T/5, foreign duty
McLeod, Pvt., Camp Crowder, Mo.
Miltz, T/5, Camp Stoneman, Calif.
Nelson, 2nd Lt., Ft. Monmouth, N. J.
Phillips, Pfc., Camp Crowder, Mo.
Rosenthal, Cpl., Camp Crowder, Mo.
Rudoy, 2nd Lt., Brooklyn, N. Y.
Scolaro, T/5, Baltimore, Md.
Sprague, Cpl., foreign duty
Stull, T/5, foreign duty
Swing, Cpl., Camp Murphy, Fla.
Urquhart, Pfc., Camp Crowder, Mo.
Weiss, Pvt., Ft. Monmouth, N. J.
Westbrook, Capt., foreign duty
Westphal, S/Sgt., foreign duty
Wing, Pvt., Camp Crowder, Mo.
Wolf, Pvt., Camp Crowder, Mo.
Worthington, Pvt., foreign duty
Yarnall, T/5, Camp Polk, La.

All U. S. call districts are represented by this group of amateurs who attended the second Anglo-American hamfest held October 28, 1944, at the Mostyn American Red Cross Club, London, England. For details of the meeting, see page 49 in this issue. *Front row, left to right:* T/Sgt. A. Savage, W1CPV; Cpl. F. W. Roden, W2KED; Dan Stevens, OWI, W3GBY; Chaplain J. D. Andrews, W4EFG, and Cpl. M. S. Wiseman, W5KSU. *Rear row:* T/Sgt. J. Barclay, W6OIT; Cpl. W. C. Garbutt, W7GZI; T/Sgt. O. H. Mitchell, W8KFZ, and T/4 L. Dathe, W9SYX.

No, this is not a double exposure or a printer's error. The officer below is Ens. George H. Amber, W8TLI, and at the right, Ens. Paul S. Amber, LSPH. The remarkable resemblance is only the beginning. Identical twins, both graduated from college as electrical engineers, both were inducted into the Army as privates first class and served ten months in the infantry, both were discharged at the same time to accept commissions in the Navy, both are licensed amateurs, of course, and — oh yes, both are ARRL members.

COAST GUARD

1BBP, Ceruti, RT, New London, Conn.
ex-1BOC, Carini, RT1c, Atlantic City, N. J.
1BZS, Sale, RT2c, Groton, Conn.
1GUI, Holden, Lt., Groton, Conn.
1LMP, Konos, CRM, foreign duty
1MQO, Beam, RT2c, Portsmouth, N. H.
1MZP, Evangelista, Ens., Atlantic City, N. J.
1NDD, Redington, Lt. Comdr., Groton, Conn.
2CQL, Hand, CRT, New York, N. Y.
2ECA, Hansen, CRM, foreign duty
ex-3BHR, Elliot, S2c, Ft. Hancock, N. J.
3BZA, Greenawalt, Lt., Washington, D. C.
3EWK, Roberts, RM2c, Margate, N. J.
3HHN, Bell, RE, Groton, Conn.
4CWR, Pierce, CRT, Tampa, Fla.
4ECD, Bookout, W/O, Cleveland, Ohio
5BHE, Foret, RM1c, Raceland, La.
6KFI, Davis, RT2c, foreign duty
6NNR, Dennis, Lt.(jg), Los Angeles, Calif.
6OBQ, Riddell, RM1c, foreign duty
6RTG, McWilliams, RM1c, foreign duty
6TAW, Shull, RM2c, Southampton, N. Y.
ex-6UGB, LeBlanc, RM2c, San Pedro, Calif.
6ZM, Houston, BM1c, Oakland, Calif.
8OJL, Hannon, S1c, Pittsburgh, Pa.
8WSA, Pattison, A/S, Detroit, Mich.
9IDY, Evans, RM2c, St. Louis, Mo.
9NUI, Rau, RM3c, foreign duty
9PUC, Rudisuhle, Lt.(jg), Atlantic City, N. J.
ex-9TCR, Dunn, RT1c, Alexandria, Va.
9THB, Adamson, Cox., St. Louis, Ill.

Operator's license only:

Goguen, S2c, Silver Spring, Md.
Ives, S1c, Inglewood, Calif.
Morris, RM2c, foreign duty
Rogers, S2c, Vineyard Haven, Mass.

ARMY—AIR FORCES

1JRO, Steward, Lt., Clovis, N. M.
1KSF, Ansell, Capt., Maxwell Field, Ala.
1LMD, Vaccaro, Sgt., Mitchell Field, N. Y.
1LRZ, Truland, Cpl., foreign duty
1NSW, Brady, Lt., Boca Raton, Fla.
ex-2HFK, Reynolds, Pfc., Geiger Field, Wash.
2IJZ, Piser, Pfc., foreign duty
2JVC, Shoenberger, Lt., Orange, N. J.
2KQT, Serafin, Lt., Cambridge, Mass.
2LIM, Kulwiec, 2nd Lt., Cambridge, Mass.
2MIS, Cassidy, Pvt., Lowry Field, Colo.
ex-3BRF, Williamson, Sgt., Kelly Field, Texas
3GTO, Smith, Cpl., Brownsville, Texas
3IJI, Lundquist, A/T, Greenwood, Miss.
3NP, Frey, Cpl., Pocatella, Idaho
3OT, Colman, Major, foreign duty
4BED, Topling, Sgt., Craig Field, Ala.
4GRL, Hunter, Pvt., La Junta, Colo.
5CQY, Clark, Cpl., Bruning, Nebr.
5FDD, Marshall, Capt., Majors Field, Texas
5FTU, Dawson, Capt., Asheville, N. C.
5HNK, Roe, Sgt., Majors Field, Texas
5IBB, Bennett, Cpl., Harlingen, Texas
5JIE, Covey, Pfc., Sioux Falls, S. D.
6JCH, Bodin, M/Sgt., Scott Field, Ill.
6PYN, Boston, A/C, Merced, Calif.
6SBY, Eakin, S/Sgt., Brookley Field, Ala.
6TBZ, Jatkins, Pvt., Yuma, Ariz.
ex-7FYL, Miller, Major, Boca Raton, Fla.
7GIB, Dickson, S/Sgt., Geiger Field, Wash.
7HGP, Thornton, Lt., Casper, Wyo.
ex-8EVG, Owsiany, Sgt., Logan, Ohio
8GSZ, Brown, 2nd Lt., Cambridge, Mass.
8OWY, Sevick, 2nd Lt., Cambridge, Mass.
8PPN, Peterson, Major, Ft. Worth, Texas
8PXY, Crows, Lt., foreign duty
8RFO, Davis, Pvt., Scott Field, Ill.
8TLM, Theroux, Pvt., Buckley Field, Colo.
8UMQ, Smyth, Cpl., foreign duty
8URB, Baker, A/C, Houston, Texas
8VUQ, Harris, Pvt., Truax Field, Wis.
8WGP, Lemons, Cpl., Barksdale Field, La.
9BMA, Lane, Pvt., Ft. Leavenworth, Kans.
9GWS, Bussan, Sgt., Eagle Pass, Texas
9HXU, Swiderski, S/Sgt., Ft. Dix, N. J.
9QYH, Schaafs, Pvt., Belleville, Ill.
9SSX, Gourley, 2nd Lt., Cambridge, Mass.
9VVZ, Molledahl, Pvt., Kelly Field, Texas
9YIY, Guennewig, Pvt., Buckley Field, Colo.

Operator's license only:

Albright, Lt., Ft. Bliss, Texas
Baumoel, S/Sgt., foreign duty
Corey, Lt., Cambridge, Mass.
Fischer, Pvt., Scott Field, Ill.
Fuller, 2nd Lt., Cambridge, Mass.
Garlick, Lt., Cambridge, Mass.
Hawkins, Pfc., Coffeyville, Kans.
Lanzit, Pvt., Scott Field, Ill.
Longmire, T/Sgt., foreign duty
Markt, Sgt., Sacramento, Calif.
McFarland, Pfc., Robins Field, Ga.
Miller, Cpl., foreign duty
Moser, A/T, Hondo, Texas
Motter, Pfc., Detroit, Mich.
Parsons, T/Sgt., Pratt, Kans.
Paulina, Pvt., Scott Field, Ill.
Robbins, S/Sgt., Greenwood, Miss.
Schliestett, Cpl., De Ridder, La.
Shulman, Cpl., Orlando, Fla.
Shumaker, Sgt., Sioux Falls, S. D.
Silva, Cpl., Norfolk, Nebr.
Smith, Cpl., Brookley Field, Ala.
Sorenson, Lt., Smithfield, Utah
Squires, Pvt., Sioux Falls, S. D.
Stanley, Cpl., Rapid City, S. D.
Stone, Pvt., Sioux Falls, S. D.
Thorson, Cpl., Truax Field, Wis.
Tirrell, Sgt., Greenville, S. C.
Trent, Sgt., Dodge City, Kans.
Tucker, Pvt., Kearns, Utah
Vargo, Sgt., Lake Charles, La.
Walker, 2nd Lt., New Haven, Conn.
Werder, 2nd Lt., Geneva, Nebr.
Wolk, A/S, Marfa, Texas
Woods, Cpl., Camp Pinedale, Calif.

NAVY—SPECIAL DUTY

1ESN, Camuso, RT2c, Everett, Mass.
1LEJ, Rice, RT3c, Charlestown, R. I.
1LHS, White, RT1c, Washington, D. C.
1MPS, Townsend, RT, foreign duty
2EJK, Henderson, Ens., Cambridge, Mass.
2LPV, Sprick, RT3c, San Francisco, Calif.
3DOK, Schultz, RT2c, foreign duty
3DSX, Davis, CRT, Norfolk, Va.
3ENO, Sledge, RT1c, Clarksville, Ark.
3IDS, Wright, RT1c, Washington, D. C.
3IZV, Koons, RT2c, Key West, Fla.
3JVR, Reuwer, RT1c, address unknown
ex-4ACL, Rood, RT3c, foreign duty
4BZN, Stones, CRT, foreign duty
ex-4ESU, Mason, RT1c, foreign duty
4GIN, Coker, CRT, Mobile, Ala.
ex-5AGB, Browne, Lt.(jg), Brooklyn, N. Y.
5IGL, Redman, Lt.(jg), Cambridge, Mass.
5IMU, Reid, RT1c, foreign duty
5JIY, Ghiselin, RT2c, foreign duty
6DNU, Rose, CRM, foreign duty
6DTJ, Bennett, CRT, Treasure Island, Calif.
6JSF, Schad, RT1c, Treasure Island, Calif.
ex-6KCY, Bassett, CRT, foreign duty
6RCD, Goddard, Lt., San Diego, Calif.
7CTX, Seay, RT1c, Grangeville, Idaho
7DCV, Ripley, RT2c, Clarksville, Ark.
ex-7EJF, Martin, RT1c, Marshfield, Ore.
7FQB, Gies, CRT, Treasure Island, Calif.
7FZZ, Morin, Ens., Cambridge, Mass.
7HMJ, Ashley, RT2c, foreign duty
7HSZ, Jenkins, RT3c, Treasure Island, Calif.
7IIS, Hash, RT1c, Portsmouth, Va.
7ISH, Keyser, RT1c, foreign duty
7IVP, Streater, CRT, foreign duty
7IYI, Arnold, RT1c, San Diego, Calif.
7IZE, Amicarella, RT3c, Treasure Island Calif.
8BFT, Doyle, RT2c, foreign duty
8LNV, Kacsmar, RT3c, Chicago, Ill.
8MJX, Bergeson, RT3c, Chicago, Ill.
8NXY, Lutz, RT1c, foreign duty
8OYY, Schneider, Ens., Princeton, N. J.
8RZH, Werner, Lt.(jg), Cambridge, Mass.
9DEL, Goll, RT3c, Kansas City, Kan.
9DNB, Hirt, RT1c, Chicago, Ill.
9ITW, Cloud, RT3c, Farragut, Idaho
9JCY, Patterson, S1c, Stillwater. Okla.
9KQN, Wilson, RT1c, foreign duty
9MHG, McCord, CRT, San Diego, Calif.
9OJP, MacDonald, RT1c, foreign duty
9OXP, Reinke, RT1c, Washington, D. C.
9PWZ, Hildebrand, RT3c, Chicago, Ill.
9QZZ, Graves, RT2c, foreign duty
9SAE, Smith, CRT, Chicago, Ill.
9SUT, Kindt, RT3c, Chicago, Ill.
9TYJ, Wilton, CRT, Rockbridge, Ill.
ex-9UTW, Gronert, RT3c, Chicago, Ill.

Operator's license only:

Aleks, RT1c, Hollywood. Fla.
Cripps, RT2c, Long Beach, Calif.
Hartley, RT2c, Inglewood, Calif.
Kikta, RT2c, foreign duty
Lang, RT3c, Treasure Island, Calif.
Perkins, RT2c, foreign duty
Premru, RT3c, Norfolk, Va.
Robinson, RT, Vallejo, Calif.
Stoops, RT3c, Treasure Island, Calif.
Tocarsic, RT1c, foreign duty
Tucker, Capt., Washington. D. C.

ARMY—GENERAL

1CJU, Lang, Cpl., Ft. Jackson, S. C.
1JNK, Carey, Pfc., Camp Stewart, Ga.
1JYT, Karasek, Sgt., Fort Benning, Ga.
1MTL, Remick, Capt., foreign duty
2BPU, Triesner, T/5, Quantico, Va.
ex-2CKI, Jackson, T/Sgt., Ft. Monroe, Va.
2FKB, McLaughlin, Sgt., foreign duty

T/4 William F. Coates, W5IKU, has been awarded the Bronze Star Medal for meritorious achievement. His citation reads in part: "Coates served diligently as a radio electrician throughout the Admiralty campaign. — By his expert technical knowledge and his ability to improvise parts not readily available, he was instrumental in insuring continuous communication with the regiment's forward patrols — aiding materially in the rapid achievement of the regiment's objectives." Ham training does it!

2GMI, Morris, Pvt., New York, N. Y.
2GUQ, Wible, Lt., foreign duty
2HUH, Schuyler, Capt., foreign duty
2HVC, Dube, Sgt., Santa Fe, N. M.
2JBI, Krevsky, Pvt., Ft. Dix, N. J.
2LVO, Measnikoff, Sgt., Ft. Jackson, S. C.
2LZR, Poulin, Pvt., Camp Crowder, Mo.
2NDJ, Stansfield, address unknown
2NNC, Bril, Capt., New York, N. Y.
2NOM, Allen, Pvt., Ft. Monmouth, N. J.
2NZX, Stella, Pvt., Camp Croft, S. C.
2OAZ, Benson, Pvt., Camp Bowie, Texas
2OCG, Milton, Pvt., Ft. Benning, Ga.
2OJO, Whitehouse, T/Sgt., foreign duty
ex-3BFB, Braun, Pvt., Camp Crowder, Mo.
ex-3BJC, Sutterlin, Sgt., Mitchel Fld , N. Y.
3DIJ, Goldman, Cpl., Camp Gruber, Okla.
3FBN, Britton, Sgt., Utica, N. Y.
3GSO, Hartman, Lt., address unknown
3JRQ, Kaplan, S/Sgt., foreign duty
4CVN, Eskew, Capt., address unknown
4DRT, Dumas, Capt., address unknown
4DVB, Williams, M/Sgt., Camp Campbell, Ky.
4EQP, Bachman, T/4, foreign duty
4EVU, Davis, Sgt., foreign duty
5CIX, Thorn, 2nd Lt., Cuero, Texas
5IKU, Coates, Sgt., foreign duty
5IUW, Williams, M/Sgt., foreign duty
6NYY, McNeill, M/Sgt., Camp Davis, N. C.
6PBO, Dimmick, Sgt., foreign duty
6RWV, Wilms, Pfc., Camp Swift, Texas
6SMF, Shearer, Pvt., Ft. Leonard Wood, Mo.
K6SPM, Hoa, Sgt., foreign duty
6SRT, Binkley, Capt., Santa Barbara, Calif.
6STA, Barnard, Pfc., foreign duty
6TGJ, Appel, T/4, Ft. Jackson, S. C.
6TSV, Hadorn, Pvt., Camp Callan, Calif.
7FQC, Griffeth, M/Sgt., Stockton, Calif.
7GPT, Molchan, Major, Camp Polk, La.
8JJQ, Smith, Pvt., Madison, Wis.
8LUY, Miller, S/Sgt., Delray Beach, Fla.
ex-8NCQ, Cummings, 2nd Lt., Camp Stewart, Ga.
8NCW, Douglass, Sgt., foreign duty
8NFW, Glock, Capt., Ft. Belvoir, Va.
8PJY, Maaswinkel, T/4, Los Angeles, Calif.
8QGR, Baker, Cpl., Santa Fe, N. M.
8QKK, Baluka, Cpl., foreign duty
8RCK, Ray, Lt., Camp Rucker, Ala.
8RFK, Petrasek, Lt., Ft. Benning, Ga.
8TKA, Jarek, Sgt., Camp Van Dorn, Miss.
8UOD, Mullaney, T/5, Warrenton, Va.
8USH, Grayburn, Pvt., Camp Chaffee, Ark.
8VFP, Leonard, Pvt., foreign duty
9CHO, Pierce, Lt., foreign duty
9DMR, Stansch, Cpl., Reno, Nev.
9IKP, Kaempfer, Cpl., foreign duty
9IRK, Justmann, Pvt., North Camp Hood, Texas
9JEK, Huyett, 2nd Lt., Ft. Riley, Kan.
9JRV, Roper, Pvt., address unknown
9LYN, Frank, Lt., Abilene, Kan.
9MOO, Monfardini, S/Sgt., Quantico, Va.
9NAD, Beaudoin, Pvt., Neskowin, Ore.
9NRI, Denk, Ft. Riley, Kan.
9OQO, Kiser, Pvt., foreign duty
ex-9PFI, Strahon, M/Sgt., Ft. Sill, Okla.
9PUQ, Duckworth, Sgt., New Orleans, La.
9QFG, Wernet, S/Sgt., foreign duty
9QUM, Boyack, T/5, foreign duty

9QVP, Sederholm, Pvt., Camp Crowder, Mo.
9QWK, Rutkowski, Pvt., Leesville, La.
9TQY, Ruzin, Lt., foreign duty
9TWY, Ryburn, Pvt., foreign duty
9UBH, Wagner, Pfc., Ft. Sill, Okla.
9VTJ, Sopher, S/Sgt., Ft. Jackson, S. C.
9WQB, Wordel, T/5, foreign duty
9ZOG, Olson, S/Sgt., Brookley Field, Ala.

Operator's license only:

Altieri, T/5, Ft. Belvoir, Va.
Berry, Pfc., Ft. Monmouth, N. J.
Fujimoto, Pvt., Camp Blanding, Fla.
Martin, T/5, Ogden, Utah
McQueen, Sgt., Camp Wheeler, Ga.
Peterson, T/4, Ellensburg, Wash.
Samber, Sgt., foreign duty
Silva, T/4, Camp Swift, Texas
Williams, Pvt., Lynchburg, Va.
Winter, Pvt., Camp Howze, Texas
Youlart, T/Sgt., Ft. Riley, Kan.

MERCHANT MARINE AND MARITIME SERVICE

1DIA, Ohm; 1HEN, Myers; 1IAN, Eklund; 1LFL, Tuttle; 1MBU, Cipolla; 1MIR, Witherspoon; 1MXG, Homer; 1NIR, Champigny; ex-2DU, Engstrom; 2LID, Gagne; 2NKB, Buitekant; 2NKX, Beigbley; 2NWR, Troy; 3HMP, Smith; 3ISR, Lowery; 3JIY, Wolfe; ex-4EIG, Coe; 4FHM, Tankersley; 4HCS, Emerson; 4HOK, Shea; 4HRN, Watson; 5AXI, Hutchins; 5GEU, Collins; 5HDN, Hicks; ex-5IJF, Williams; 5KJH, Bickers; 6EFC, Schmitz; 6HAG, Aiton; 6ICY, Scharman; 6IEL, Alexander; 6JGP, Shank; 6KDK, Foley; 6MLY, McKercher; K6OD, Piric; 6OED, Cameron; 6OZA, Antone; 6QIT, Ketterman; 6RED, Williams; 6RUM, Hansen; 6TFH, Sabourin; 6TQL, McLeod; ex-7DVG, Johnson; 7IQD, Downing; 8EDI, Ayling; 8OAM, Keele; 8ULD, Tolles; 9ABD, Williams; 9MFN, Sharp; 9ODO, Cowan; 9PYN, Knowles; 9QFC, Lomprey; 9RSN, Hill; 9RXI, Barnett; 9UIS, Prokes; 9VNL, Glenn, and 9ZOA, Milster. Bilderback, Davis, Garcelon, Hower, Bevan, Opad, Perry, Romaniski, Schafitz, Shortall, Smith, Stover, Tomkins, Upchurch, Westbrook, White and Wilkinson hold operator's license only.

CIVIL SERVICE

ex-1BEM, Blake, AAF, electronics inspector, San Bernardino, Calif.
1BGU, Stone, SC, inst., Boston, Mass.
1BLG, Rollins, Navy Dept., draftsman, Somerville, Mass.
1CAW, Diggs, SC, radio technician, Norwood, Mass.
1DKR, Grella, CAA, foreign duty
1EAP, Burnham, AAF, radio mechanic, Langley Field, Va.
1FOF, Cook, SC, supervisor, Springfield, Mass.
1FXC, Rowse, supervisor, Ft. H. G. Wright, N. Y.
ex-1GWD, Landean, FCC, Laurel, Md.
1IOZ, Longtine, AAF, flt. inst., Albany, Ga.
1JRI, Meshako, Navy Dept., inspector, New Haven, Conn.
1JRM, Robinson, SC, engineer, Ft. Monmouth, N. J.
1JVM, Masulli, Navy Dept., inspector, Bridgeport, Conn.
1JXQ, Haynes, Navy Dept., Springfield, Mass.
1LGP, Williams, AAF, radio mechanic, Boca Raton Field, Fla.
1LNX, Barttro, War Dept., Camp Edwards, Mass.
1MAW, Clark, SC, radio mechanic, Presque Isle, Me.
1NBJ, Pike, War Dept., radio engineer, Silver Spring, Md.

Lt. Leo Meister, W2APP, has been granted no less than five patents and has seven pending, all for war work. One for speed-up of assembly of 75-mm. fuses replaces hand work with a machine and eliminates a bottleneck in production. He is now stationed in the Technical Division, Office of the Chief of Ordnance, Washington, D. C.

A military man must have his lighter moments. T/Sgt. Russell M. Short, W7BCU, after seeing action with the Signal Corps all over the South Pacific for the last fourteen months, was sent to Hawaii for a much needed rest, and later back to the States for special duty. He finds native bananas more attractive than native belles, a universal opinion among GIs, it seems.

1NTL, Paul, radio technician, Boston, Mass.
1VI, Wass, Navy Dept., radio electrician, Jamaica Plain, Mass.
ex-2ABZ, Regan, SC, radio engineer, Ft. Monmouth, N. J.
ex-2ACQ, Siebert, SC, radio engineer, Asbury Park, N. J.
2AVO, Mercer, OWI, foreign duty
2AVW, Rogge, SC, Jamaica, N. Y.
2BOK, Rubinstein, SC, radio engineer, Ft. Monmouth, N. J.
2CGB, Zacher, Navy Dept., electrical inspector, Kingston, N. Y.
2DOY, Bond, SC, Washington, D. C.
2ECI, Erdoss, SC, radio inst., Troy, N. Y.
2EJM, Bernstein, SC, electrical engineer, Philadelphia, Pa.
2GJU, Milstein, Navy Dept., Norfolk, Va.
2GLF, Malinowski, SC., engineer, Bayonne, N. J.
2GUS, Hertz, SC, assistant foreman, Newburgh, N. Y.
2GXR, Henry, War Dept., Washington, D. C.
2HUZ, Manamon, SC, radio engineer, Ft. Monmouth, N. J.
2IEW, Rudischhauser, Navy Dept., Norfolk, Va.
2IXW, Jacobson, SC, radio mechanic, Los Angeles, Calif.
2JFV, Weisberger, SC, engineer, Camp Coles, N. J.
2KDE, Schek, CAA, radio engineer, Charlotte, Mich.
2KVA, Balaban, SC, engineer, Owensboro, Ky.
2LSM, Frodella, Navy Dept., Jersey City, N. J.
2MIM, Gibbons, SC, Belmar, N. J.
2NE, Curtis, Navy Dept., Brooklyn, N. Y.
2NQS, Fernandez, SC, radio technician, Brooklyn, N. Y.
2NSC, Panzarino, War Dept., Washington, D. C.
2OEN, Middleton, SC, Ft. Monmouth, N. J.
2OFR, Wiener, SC, civilian instructor, Ft. Monmouth, N. J.
2OGY, Munzner, SC, assistant engineer, Camp Coles, N. J.
2OMO, Lamhut, War Dept., Washington, D. C.
ex-2QO, Hardy, Ordnance Dept., inspector, Irvington, N. J.
3AHT, Harvey, Navy Dept., electrical engineer, Washington, D. C.
3ARM, Brogan, inspector, Wilmington, Del.
3ASW, Long, AAF, radio engineer, Harrisburg, Pa.
3BFD, Sanders, Navy Dept., Norfolk, Va.
ex-3BHA, Farson, radio tech., foreign duty
3CDY, Sherman, SC, radio mechanic, Harrisburg, Pa.
3CNS, Walbrecht, engineer, Dover, N. J.
3CRO, Urian, SC, engineer, Springfield, Pa.
ex-3CUA, Rowand, CAA, radio electrician, Philadelphia, Pa.

3CVE, Bartinoski, CAA, aircraft communicator, Philadelphia, Pa.
3CYC, Spokas, War Dept., radio engineer, Washington, D. C.
3DDY, Tucker, AAF, radio engineer, Dayton, Ohio
3DHZ, Perry, Navy Dept., Norfolk, Va.
3DIU, Sponhauer, SC, foreman, Penbrook, Pa.
3DRO, Jacoby, FCC, monitoring ofcr.
3EAI, Eason, Navy Dept., Norfolk, Va.
3FNV, Fox, CAA, airway engr., foreign duty
3FRJ, Richards, maintenance foreman, Aberdeen, Md.
3FUA, Baylor, Navy Dept., electrician, Philadelphia, Pa.
3FVK, Stephan, radio installation, Curtis Bay, Md.

100 PER CENT WAR WORK—INDUSTRY

Raytheon Manufacturing Co.

1ADA, Taylor, foreign duty
1AUE, Graves, Waltham, Mass.
1BCG, Root, Waltham, Mass.
1BMK, White, Waltham, Mass.
1CTR, Giro, Waltham, Mass.
1EWD, Bishop, foreign duty
1EYI, White, Auburndale, Mass.
1HML, Newman, Waltham, Mass.
1IKT, Rice, Waltham, Mass.
1IPL, Mix, Waltham, Mass.
1JDP, Blake, Wayland, Mass.
1JPE, Goodman, Waltham, Mass.
1JSM, Brown, Waltham, Mass.
1MHC, Jarvis, Newton Centre, Mass.
1NBL, Patten, Waltham, Mass.
1NJ, Serreze, Braintree, Mass.
1NVO, Black, Waltham, Mass.
1NX, Towne, Dedham, Mass.
1PH, Hayward, Arlington, Mass.
1QD, Stansfield, Waltham, Mass.
1SZ, Rodiman, Waltham, Mass.
1TW, Borden, Waltham, Mass.
2BRI, Tynan, Waltham, Mass.
2CUZ, Whittemore, Waltham, Mass.
2IDN, Bashore, Waltham, Mass.
2KBY, Morrison, Waltham, Mass.
2LBL, Herrmann, Waltham, Mass.
2WQ, Hotine, address unknown
ex-3AKP, Thoman, Waltham, Mass.
3AOH, Geist, Waltham, Mass.
4APJ, Herman, Waltham, Mass.
4BIK, Pease, Waltham, Mass.
4CNY, Kelly, Waltham, Mass.
4COW, Randles, foreign duty
4CPG, Patterson, Waltham, Mass.
4DQY, Guignard, Waltham, Mass.
4TZ, Hunter, Boston, Mass.
5BDB, Mims, Waban, Mass.
5CS, Downs, Watertown, Mass.
5DXW, Johnson, Waltham, Mass.
5DZE, Bray, Waltham, Mass.
5EIZ, Taylor, Galveston, Tex.
5FOC, Morrison, foreign duty
5FWD, Bellew, West Newton, Mass.
5GGW, Alexander, Waltham, Mass.
5GNV, Sanders, Waltham, Mass.
6BGH, Pierson, Waltham, Mass.
6BZR, Robinson, Seattle, Wash.
6EPM, Ulmer, address unknown
6EPW, Milton, San Francisco, Calif.
6FTT, Boltz, Chula Vista, Calif.
6JMI, Hagerty, Waltham, Mass.
6JTN, Smith, San Pedro, Calif.
6KW, Griggs, San Diego, Calif.
6OOT, Strong, Waltham, Mass.
6TEH, Frankenburger, Waltham, Mass.
7ESO, Von Alvin, address unknown
8BFZ, Goldsmith, Waltham, Mass.
8CIR, Doherr, Waltham, Mass.
8CLS, Farrar, Waltham, Mass.
8DYY, Dixon, Waltham, Mass.
8KHY, Adams, Battle Creek, Mich.
8OWU, Kusisto, Waltham, Mass.
9ASA, Leigh, North Kansas City, Mo.
9BEU, Koehler, Waltham, Mass.
9BMU, Harvey, Waltham, Mass.
9BPN, Otto, Waltham, Mass.
9DJG, Jansen, Alton, Ill.
9DKT, Anderson, Waltham, Mass.
9DUD, Chapin, University City, Mo.
9EFC, Norwine, Richmond Hts., Mo.
9EKY, Rohan, Waltham, Mass.
9EQD, Black, Waltham, Mass.
9EZX, Van Aller, Brooklyn, N. Y.
9GIV, Boyter, Oak Park, Ill.
9GQO, Irving, Waltham, Mass.
9HWE, Shirley, Waltham, Mass.
ex-9JVM, Cole, Waltham, Mass.
9LBM, Dewey, Waltham, Mass.
9MCX, Jablonsky, Fall River, Mass.
9NBE, Eichinger, New Orleans, La.
9NSP, Warner, Waltham, Mass.
ex-9PFG, Spoolman, Brooklyn, N. Y.
9PI, Austin, address unknown
9SAA, Engleman, Waltham, Mass.
ex-9SIQ, Davidson, Waltham, Mass.
9VDY, Schmidt, Newton, Mass.
9VHN, Walker, Waltham, Mass.
9VND, Jaeger, Waltham, Mass.
9YCB, Chapin, University City, Mo.
9YZH, Rice, Concord, Mass.

Operator's license only:
Kadish, Cambridge, Mass.

CANADA

THE Canadian section this month is a little slimmer than heretofore and if it were not for a small group of fellows at home who send us monthly lists, it would shrink to a quarter of its present size. There must be many on foreign duty who have never sent in their amateur war service records and are unknown to our regular correspondents and a special appeal is now directed to them to come forward and make themselves known.

All Canadian amateurs will be interested to learn that Air Commander A. H. Keith Russell, VE9AL, director of technical training for the RCAF at Ottawa and first ARRL Canadian general manager, has returned to his law practice in Toronto after five years in the service of his country. The RCAF now has sufficient personnel trained or in training to meet the requirements of both the European and Japanese wars and further recruiting has been discontinued. It was possible, therefore, for Keith to request retirement to civilian life. Congratulations on a job well done!

CAA-CA(R)

1FJ, Higgins, honorable discharge
1NW, Cooke, honorable discharge
3QK, Perdue, Cpl., London, Ont.
4IZ, Ower, Lt., foreign duty
4TF, Newcombe, Capt., foreign duty
5SN, Sturdy, S/Sgt., Port Alice, B. C.

RCAF

1DZ, McNabb, F/O, address unknown
1OC, Solomon, address unknown
1OE, MacBournie, address unknown
3ABB, Johnson, Sgt., address unknown
3ACF, Chessell, F/L, Pennfield Ridge, N. B.
3GU, McKinty, F/L, Tofino, B. C.
3RN, Foster, F/L, Ancienne Lorette, Que.
ex-4ALP, White, Cpl., Boundary Bay, B. C.
4MX, Prest, Sgt., foreign duty

RCN

2OV, Gray, Lt., Ottawa, Ont.
3BBC, Robinson, Lt., London, Ont.

Operator's license only:
Donaldson, L/Tel., St. Hyacinthe, P. Q.

RCCS

3AQG, Kells, Major, Kingston, Ont.
3LT, Sheppard, Sigmn., foreign duty
4AHY, Runnalls, Sgt/Major, Ottawa, Ont.

CIVIL SERVICE

1BY, Nolan, Halifax, N. S.
1DJ, Campbell, Halifax, N. S.
1HA, Harris, Halifax, N. S.
1JK, Totten, Lunenburg, N. S.
1LT, Hirschfield, Halifax, N. S.
1NE, Burke, Halifax, N. S.
1NR, Coggon, Halifax, N. S.
2EZ, Mayerovitch, New York, N. Y.
3AHA, Hooper, Woodbridge, Ont.
3AKD, Woodill, foreign duty
4ACR, Browne, Winnipeg, Man.
4AIJ, Reid, Regina, Sask.
4AO, Pottle, Regina, Sask.
ex-4DP, Burch, Winnipeg, Man.
4FY, Sinclair, Regina, Sask.
4NE, Holley, Regina, Sask.
4UK, Miller, Regina, Sask.
5AAH, Rhodes, Vancouver, B. C.
5AEV, Lennox, Prince George, B. C.
5KJ, Bowden, Grande Prairie, Alberta

Operator's license only:
Harvey, Medicine Hat, Alberta
Romer, Montreal, Que.

100 PER CENT WAR WORK—INDUSTRY

2DT, Williscroft, Montreal, Que.
2OG, de Clercq, Montreal, Que.
3AJE, Houlgate, London, Ont.
3AJF, Hanna, Toronto, Ont.
3APH, Ireland, London, Ont.
3ARN, Ritchie, Toronto, Ont.
3AUQ, Culp, Toronto, Ont.
3AWD, Mackechnie, Woodbridge, Ont.
3AWO, Mills, Toronto, Ont.
ex-3CR, Metzler, Washington, D. C.
3HC, Hammond, Guelph, Ont.
3JD, Downs, London, Ont.
3LO, Seward, Toronto, Ont.
3MJ, Heron, Montreal, Que.
3MT, Potts, Toronto, Ont.
3RY, Hardcastle, Toronto, Ont.
3TD, Duncan, Toronto, Ont.
3TN, Walters, London, Ont.
3XO, Madill, London, Ont.
3XU, Liss, Toronto, Ont.
3YE, Durant, Toronto, Ont.
4OO, Gjernes, Ottawa, Ont.
ex-5AEU, Tripp, Mills Field, Calif.
5DO, Muskett, Port Alice, B. C.
5RK, Goodwin, foreign duty

F/L Couture, VE2KF, *left*, and F/L Wood, VE4ACG, are both in the RCAF doing radio work and are stationed in England, where this snapshot was taken. KF has been overseas three years in West Africa and England. ACG completed almost four years in England and has been furloughed home to Winnipeg.

A High-Gain A.C.-D.C. Audio Amplifier

Constructional Details of a Compact Multi-Purpose Unit

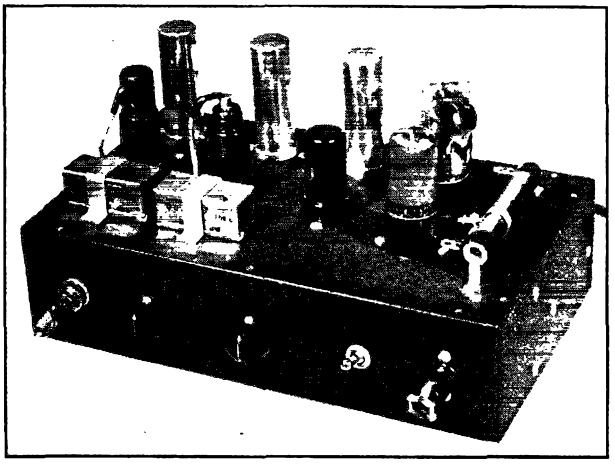
BY PHILIP S. RAND,* WIDBM

In this article the author describes the construction of a simple high-gain audio amplifier which may be used in a variety of applications. It can be made from parts usually found around the average ham shack.

THE construction of audio amplifiers for various purposes has been increasingly popular with radio amateurs since the war put an end to normal activities on the air, being second in interest only to WERS as a wartime ham project. There are many uses to which a high-gain amplifier can be put. For example, the one shown in the photographs was turned on after it was completed and turned off six months later after serving as a "radio nurse" for the junior operator. It has been used to listen for planes, for air-raid signals and for prowlers.

The unit is light in weight, compact, and operates on either a.c. or d.c. It has extremely high gain and, when used with a crystal mike, will pick up sounds at great distances. One time, with the mike lying in the back yard, we were aroused by a very loud noise in the speaker only to find that it was a cat walking in the leaves nearby. With the mike hanging out of the window, we can hear conversations of persons walking down the street as well as automobiles and trucks while they are blocks away.

*Electronic Division, Remington Rand, Inc., Middletown, Conn.



Top view of the a.c.-d.c. amplifier with the cover removed, showing the placement of tubes and condensers. The controls appear along the front edge of the chassis.

The amplifier also has been used to train WERS operators in proper procedure by setting up several speakers and mikes with change-over switches so that several groups may talk to each other in separate rooms, just as though they were operating in a WERS net. When used in conjunction with an audio oscillator or buzzer, the amplifier provides an excellent code-practice device. The total power drain is only some 350 ma. at 110 volts, about 38 watts, so there need be no thought of an excessive power bill.

Design Considerations

In designing this amplifier the decision to use the a.c.-d.c. principle was brought about by the desire to get rid of any hum pick-up from the power supply as well as to make it as light in weight as possible. The only disadvantage is that care must be exercised in placing the power plug in a receptacle, since with incorrect polarization the chassis is placed at a potential of 110 volts above ground. The plug and receptacle should be marked to prevent such an occurrence.

Since its main use was to be in voice communication, and since it was to have extremely high gain, the frequency response of the amplifier was limited only to that which was necessary for the purpose, from around 200 cycles to about 4000 cycles. By eliminating the lows and highs, a.c. hum pick-up as well as audio feed-back are reduced. The latter is apt to be quite a problem for, even when the mike is hung outside the window, the speaker must be located in a room across the hall with both doors closed if the full gain is to be utilized. The circuit diagram is shown in Fig. 1. Resistance coupling is used throughout, the speaker coupler, T, being the only transformer in the entire unit. 6J7 pentodes are used in the first two stages and they, of course, provide most of the gain. The third stage with a 6J5 triode drives the 25L6 output stage. The jack, J, and coupling condenser, C_{13}, are provided in case the use of headphones is desired.

The use of two gain controls makes the amplifier a little more flexible, since it allows one to adjust the gain so that nothing gets overloaded on strong signals. The low frequencies are cut off by using small coupling and cathode by-pass condensers.

The power-supply section is quite simple and straightforward. All heaters are connected in series with the "ground" side of the first 6J7. A

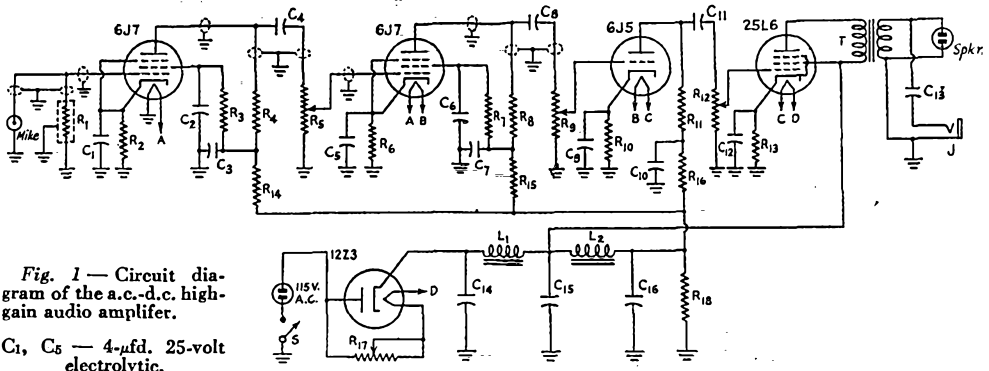


Fig. 1 — Circuit diagram of the a.c.-d.c. high-gain audio amplifer.

C_1, C_5 — 4-μfd. 25-volt electrolytic.
C_2, C_6 — 0.02-μfd. paper.
C_3, C_7, C_{10} — 20-μfd. 150-volt electrolytic.
C_4, C_8, C_{11} — 0.002-μfd. paper.
C_9 — 0.5-μfd. paper.
C_{12} — 20-μfd. 25-volt electrolytic.
C_{13} — 0.1-μfd. paper.
C_{14}, C_{15}, C_{16} — 20-μfd. 250-volt electrolytic.

R_1 — 2 megohms, ¼ watt.
R_2, R_6 — 5600 ohms, ½ watt.
R_3, R_7 — 3 megohms, ½ watt.
R_4, R_8 — 500,000 ohms, ¼ watt.
R_5, R_9 — 2-megohm potentiometer.
R_{10} — 10,000 ohms, 1 watt.
R_{11} — 250,000 ohms, ½ watt.
R_{12} — 750,000 ohms, ½ watt.
R_{13} — 150 ohms, 1 watt.

R_{14}, R_{15} — 20,000 ohms, ½ watt.
R_{16} — 2000 ohms, 1 watt.
R_{17} — 300 ohms, 25 watts, adjustable tap.
R_{18} — 100,000 ohms, 1 watt.
L_1, L_2 — 10-15-henry, 100-ma. filter choke.
S — Single-pole, single-throw toggle switch.

12Z3 half-wave rectifier is supplied directly from the 115-volt a.c. line. A three-section filter with condenser input provides sufficient filtering.

The values of the various resistors and condensers indicated in Fig. 1 were based upon recommendations found in the RCA resistance-coupled-amplifier chart of the receiving-tube manual. Since our half-wave rectifier gives us only around 100 volts, the values suggested in the 90-volt column were used. A plate load resistor of 500,000 ohms was chosen to get the highest voltage gain possible as well as to cut off the higher frequencies. For a single stage using this value the response begins to fall off at 5000 cycles. Other values given for the two pentode stages were approximately those recommended for a voltage gain of 140 per stage or an over-all gain of 19,600 for the two stages. We used the nearest values we could find in the junk box. The values suggested for the 6J5 triode stage are those for a gain of 13 at a plate voltage of 90. This makes the total gain 254,800 up to the grid of the output tube.

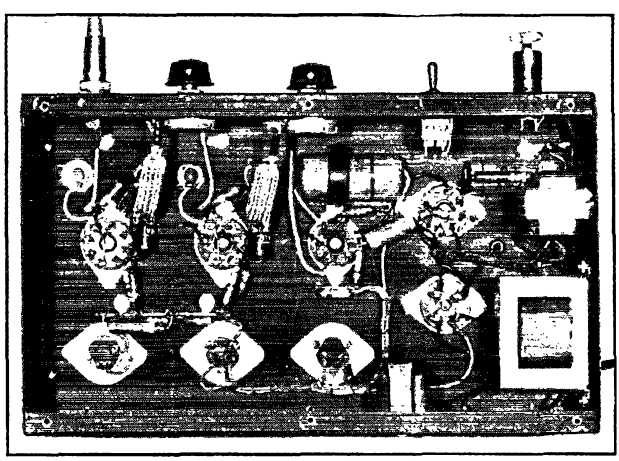
Construction

A fair amount of care in certain parts of the construction is necessary if stable operation is to be expected with an amplifier of such high gain. The photographs show most of the details. The chassis is a standard item, 7 × 17 × 3 inches. The amplifier tubes are arranged in a line along the center of the chassis with their sockets submounted while the three filter condensers and the rectifier tube form a row across the rear edge. The two rectangular condensers near the front of the chassis are the cathode by-pass condensers, C_1 and C_5. The heater series voltage-dropping resistor, R_{17}, is at the right-hand end where it will be well ventilated. The input-signal connector, the two gain controls, the power switch and speaker-plug receptacle are arranged in logical order along the front edge of the chassis. Coupling condensers, additional by-pass condensers and resistors are placed under the chassis along with the two filter chokes, L_1 and L_2.

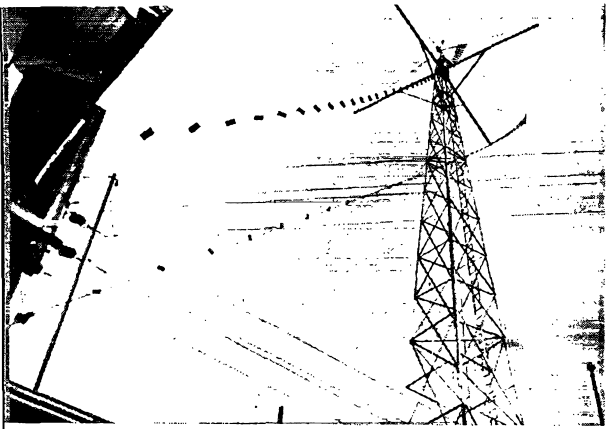
It is necessary to do a good job of shielding in both of the 6J7 stages, even to enclosing some of the resistors and coupling condensers in copper braid. Also, the filter chokes should be mounted at the opposite end of the chassis from that occupied by the input stage of the amplifier.

After the amplifier was completed, the gain and frequency response were measured and found to be in line with what we had expected. No instability was encountered and there is no trace of hum

(Continued on page 84)



Bottom view of the a.c.-d.c. high-gain amplifier. Shielded braid is placed over the grid and plate leads and the grid-coupling resistors of the first two stages. Leads to the two gain controls also are shielded.



Hams in the FBIS

The Work of FCC's Foreign Broadcast Intelligence Service

BY OLIVER READ,* W9ETI

Left — This maze of wire is but a small part of the elaborate system required to receive faint radio signals emanating from all parts of the world. The wires connect to twenty-nine communications-type receivers within the listening station located near Silver Hill, Md.

THE Foreign Broadcast Intelligence Service of the Federal Communications Commission is responsible for a great portion of the news that finds its way to our daily newspapers and is heard over our vast radio networks. You have often heard the following: "As recorded by United States monitors," or, "As heard by United States Government monitors."

Who are these monitors and what do they do? As a matter of fact, they operate one of the world's most elaborate systems of radio receivers. Their purpose is to listen to, record, translate, summarize and report the broadcasts originating in foreign countries. The FBIS is the sole governmental agency doing this job in the United States. They do not transmit propaganda; that is done by the Office of War Information.

It is interesting to note that the very development of the FBIS was born from the realization that short-wave transmission was one of the most potent weapons of war. Our enemies have bombarded us with all sorts of propaganda throughout this war. From it the FBIS is able to gather vital information which is then used for counter propaganda.

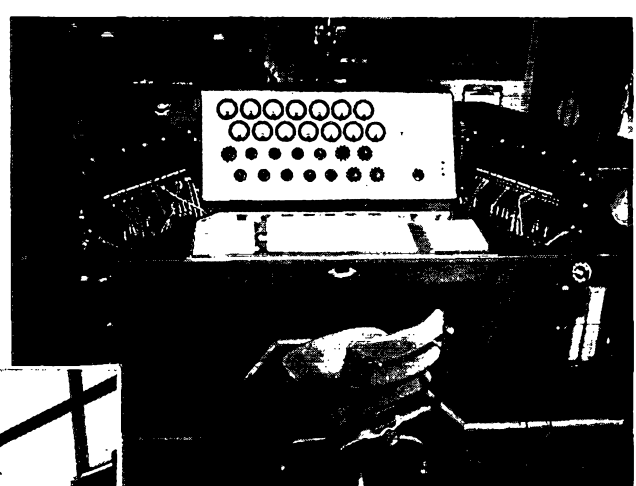
In the early stages of the war, the French followed a not very successful policy of attempting to jam German broadcasts reaching the vicinity of Paris. However, the French Foreign Office deemed it so essential to keep informed of the contents of those German outpourings that it established a listening post in Switzerland to intercept the very broadcasts which its own jamming prevented it from hearing inside France.

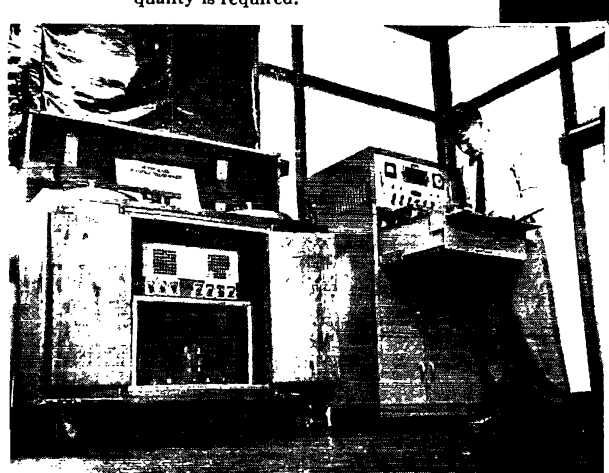
Today, every major nation in this global war and most of the neutral countries operate a monitoring service as part of their essential government functions.

The maze of equipment required to handle the vast number of words recorded and translated each day is tremendous. In fact, over 10,000 items

*540 N. Michigan Ave., Chicago, Ill.

Right — All programs received at Silver Hill are "piped" through this monitoring console. The operator on duty adjusts the volume of each station to a predetermined level suitable for recording purposes before it is sent on its way to the interpreter who is situated many miles from the receiving station. *Below* — David Cooper, FBIS supervisor, records a broadcast on a Memovox machine at the recording station. Over an hour's intelligence may be recorded on each side of a flexible disc. Continuous recording is possible by using duplicate machines. The console at the left is used for the recording of vital material where the utmost in quality is required.



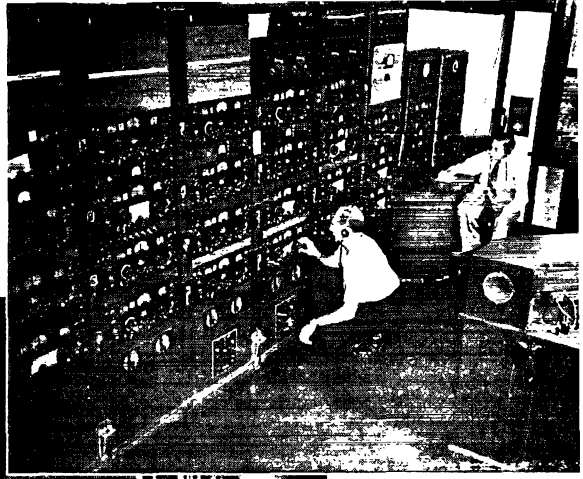


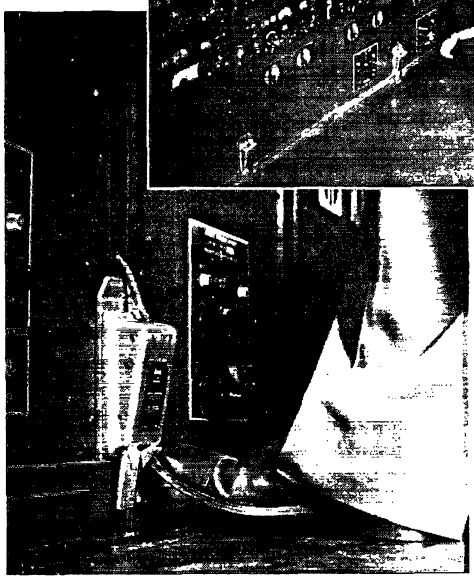
(an average of 2,500,000 words) are received daily at FBIS listening posts at Silver Hill, Md.; Hayward, Calif., and Portland, Ore. Manned largely by amateur personnel, these stations are tuned in twenty-four hours a day to programs being transmitted from all the countries of the world.

Silver Hill Installation

We visited the elaborate installation at Silver Hill, Md., recently in order to witness firsthand the important functions of the FBIS.

There we found the chief monitoring officer to be Frank X. Green, who has long been associated in the radio, public address and recording business. He entered the service of the Commission at the outbreak of the war. There are four monitoring officers: Conan W. Barger, formerly radio broadcast engineer of KFXJ, KFEL, KOA, KMA and KIUL; Francis N. King, who was radio broadcast engineer at WKBW, WHBU and WJTN, and formerly a short-wave radio operator on the Great Lakes; S. Vernon Ray, former radio operator in the merchant marine, and Bernard P. Sloan, W2KT, former chief radioman in the Navy and the Coast Guard and an operator in the merchant marine.





Above — The monitoring officer in the foreground adjusts the receiver of a station to be monitored a few minutes later. The officer in the background scans the ether for new or unknown stations. *Left* — Instantaneous frequency checks may be made at any time by connecting this special switch.

Assistant monitoring officers include: William A. Sodaro, former chief engineer of a West Virginia network and radio operator from the Gulf of Mexico; Raymond B. O'Neill, former telegraph operator with the New York Police Department; Hyman Wallin, formerly a merchant marine radio operator; James G. Wedewer, an official of several short-wave listening clubs and an outstanding authority on short-wave broadcast stations of the world; George E. Hathaway, former radio operator in the merchant marine, the Army, and for Western Union, and Russell G. Eversole, W3AXY, former radio operator in the merchant marine.

This fellow James Wedewer mentioned above can give you the location of any listed short-wave station or broadcast station throughout the world. We had quite a talk with this lad and picked call letters out of "blue sky" to test his ability to recognize the station. His quick identification was amazing.

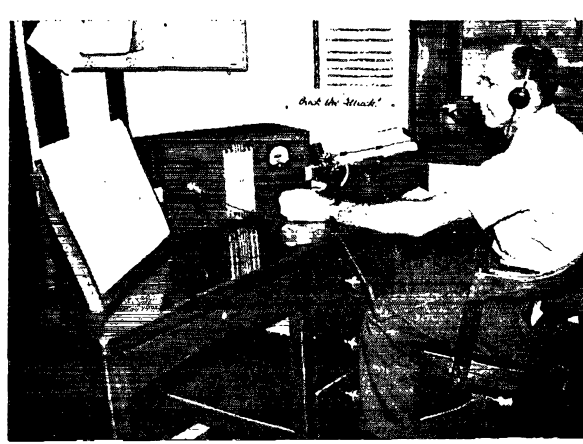
The receiving station at Silver Hill is concerned only with broadcasts originating from European and African short-wave stations. The other FBIS receiving stations are very similar to that situated at Silver Hill, Md. The one at Portland, Ore., takes care of Japanese-language broadcasts and the one at Hayward, Calif., records signals from the Far East and from the U.S.S.R.

Functions of the FBIS

There are nine successive steps in the operations of the FBIS: (1) scheduling, (2) intercepting, (3) and (4) monitoring and recording (which go on simultaneously), (5) translating, (6) wire service which includes editing and teletyping, (7) reports which include editing and mimeographing, (8) analyses including periodic and special reports, and (9) individual services of many kinds.

First comes the scheduling of all programs which are to be intercepted at each listening post during each listening period. An accurate index which includes frequencies, hours, languages, and program types is prepared. This comprehensive index lists over 6000 programs and is kept currently accurate.

Step number two is performed by the engineers, each of whom is in charge of a large number of Hallicrafters SX-28 communications-type receivers which are in continuous service. The performance and calibration of each receiver is known at all times. A gadget has been installed by the FBIS personnel so that a 100-kc. or a 1000-kc. signal may be injected to any receiver for a frequency check by connecting a special switch. The source



Each program received at the FBIS receiving station is recorded on a special log which shows the exact time of reception and other pertinent information. The operator selects various programs by rotating the switch.

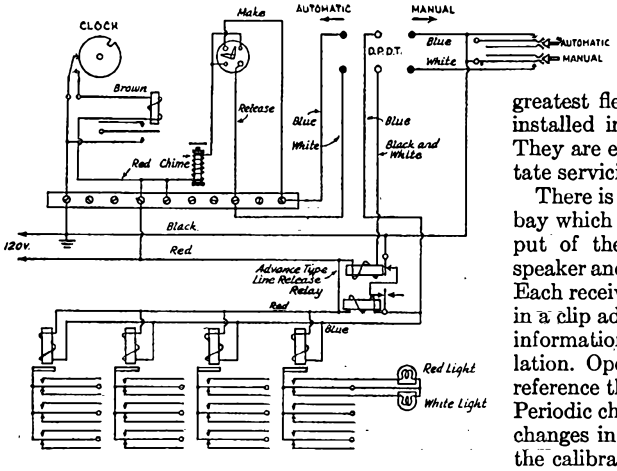


Fig. 1. — Diagram of the automatic timing device included in the console control and used to cut programs in and out.

of this signal is a crystal-controlled secondary frequency standard.

Having received his schedule, the operator tunes in in advance the requisite number of receivers to the stations, making sure that the signals are being received at best audibility. At precisely the right moment, he throws a switch, or an automatic control developed by the FBIS, cutting in the proper programs for recording and monitoring. He then retunes unused receivers to be held in readiness for following scheduled programs.

Other engineers patrol the ether continuously in search of new, changed, and discontinued programs so that an accurate "log" is always available. All programs are listed on a daily chart which gives a report on the audibility, signal strength, etc., of each program.

The antenna system consists of five highly directional Rhombic antennas orientated to cover a maximum of 20 degrees each. All of the Rhombics terminate to selector switches so that any or all of the twenty-nine receivers may be instantaneously connected into the feeder system. All inputs connect in parallel and series isolating resistors to each receiver input permit an even distribution of received signals.

Like the RID, the personnel of the FBIS have installed their equipment in such manner that greatest flexibility is realized. The receivers are installed in bays as shown in the photographs. They are easily accessible from the rear to facilitate servicing.

There is a small selector panel on each receiver bay which includes a voltmeter to check the output of the receiver, a selector switch for the speaker and another to select the proper Rhombic. Each receiver has its own calibration book placed in a clip adjacent to the set. The hand-calibrated information is prepared for each set in the installation. Operators can then determine by quick reference the exact settings for a given frequency. Periodic checks are made, especially when sudden changes in weather are encountered, to see that the calibration is accurate.

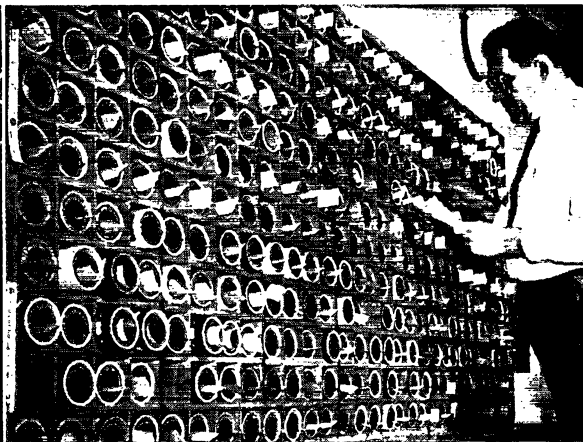
A control console which includes patch circuits and db. meters is an important part of the installation. The output from each receiver terminates at the jacks on the control console. From there signals are routed by wire to the recording and monitoring office which is located many miles from the receiving station. The operator on duty at the console "rides gain" on each channel in order that the signals arrive at the downtown office at proper audio level for recording purposes. This allows the translators to concentrate on the intelligence without being disturbed by having to adjust individual volume controls to suit their particular needs.

Recording of Programs

Certain types of programs are recorded on paper-based discs on Memovox recorders or, when high fidelity is required, on Presto acetate recorders. The latter equipment is located at the receiving station.

Persons known as monitors sit before typewriters wearing headphones. This highly trained personnel consists of experts familiar with many languages. Each monitor specializes in one or more. He is thoroughly familiar with the phraseology and other characteristics of the language he is monitoring. As he listens he translates the mate-

Left — Mrs. Kay Kimmers, FBIS expert in Italian, French, Spanish and German languages, transcribes a program from Europe. The same program is being recorded simultaneously on wax cylinders for reference purposes and for checking copy. *Right* — Victor Volmar, FBIS monitor, specializes in the German and Spanish languages. Wax cylinders are kept for a period of forty-eight hours and contain the original intelligence that has been received via the elaborate receiver installation at Silver Hill, Md.



rial and makes a typewritten summary in the English language of the broadcast. At the same time, dual wax-cylinder machines record the entire progam so that the monitor has a means of checking his copy and so that information can be held verbatim for a period of forty-eight hours in case some governmental agency needs the complete program for further observation and study. After the program's conclusion, the monitor goes on to the next one shown on his schedule. Generally, he types only highlights of the program, but if the item contains information of real importance in the judgment of the supervising editor-monitor, the monitor turns from listening in to a succeeding music period and translates the full text.

The next step in the operation is interposed between monitoring and editing for a portion of recorded broadcasts. It is known as the translation of texts. One of those in constant demand is the weekly Goebbels Das Reich article. This is sent with the summary to the translation room as soon as recorded to be rendered into English text. At present there are seventy-five expert translators in the FBIS having ability to undertake thirty-four languages and thirty additional dialects.

Distribution of Material

The sixth, seventh and eighth steps in FBIS operations deal with the distribution of material to various government agencies which use it. From the various listening posts come summaries, texts and daily round-ups that flow into Washington headquarters minute by minute, day and night. They come by typed transcript, by teletype, by cable, and by air mail and are then distributed to the element users.

The information goes out over six wires. The "A" wire terminates at the State Department, War Department, Navy Department, OWI, Office of Censorship, British Information Service, Canadian Wartime Information Board, the Philippine Mission and Chinese Embassy. The "B" wire goes to OWI in New York and Washington. The "C" wire, with Latin American material, goes to the office of the Coördinator of Inter-American Affairs. The "D" wire is a cable to the British Ministry of Information in England and carries Japanese material monitored on the Pacific Coast. The "PW" wire goes to the War Department, Office of the Provost Marshall General, and contains the full text of all enemy-broadcast prisoners-of-war messages. The remaining "X" wire connects to OWI in San Francisco and carries items relative to the Far East broadcasts from Europe.

The seventh step in FBIS operations is the preparation and issuance of two mimeographed daily reports.

The eighth step is the analysis of the volume of the recorded broadcast output, the preparation of periodic reviews of broadcasts from and to particular areas and the answer to the steady volume of queries regarding a particular subject, trend, or transmitter.

Incoming and outgoing traffic passes through the teletype machines which supply information to many government agencies both military and non-military. These include the War, Navy and State Departments, OWI, Office of Censorship, and a number of branches in Allied governments. *Left to right:* Mrs. Elizabeth Holt, Mrs. Chris Kimbrough, and Mrs. Helen Goss.

Special Services

The ninth and final step deals with individual special services. Principal speeches by German and Japanese leaders are recorded on the permanent high fidelity discs previously mentioned and are furnished to the OWI and the British Overseas Broadcast Agency for the Library of Direct Quotation.

These recordings have been used to good advantage in our own counter-propaganda. For example, six months after Tojo had broadcast a boast about the impregnability of the Marshall Islands, there came bouncing back to Japan his actual voice with its six-month-old boast accompanied by the damning facts of the actual Marshall Island invasion.

The Foreign Broadcast Intelligence Service is one of the Government's most important non-military branches. We hams may take pride in the fact that the FBIS has selected much of its personnel from our ranks to operate this vital wartime agency.

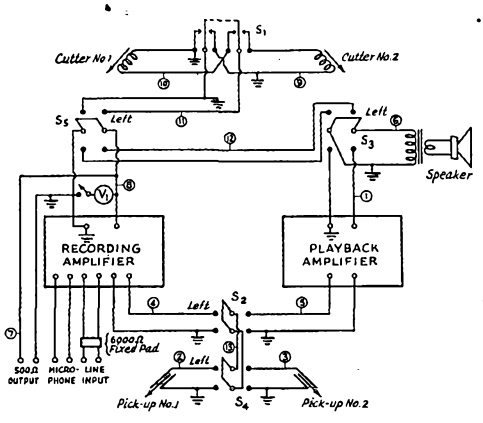


Fig. 2 — Wiring diagram of the acetate recorder in use at the FBIS installation at Silver Hill, Md.

A Midget Transmitter-Receiver

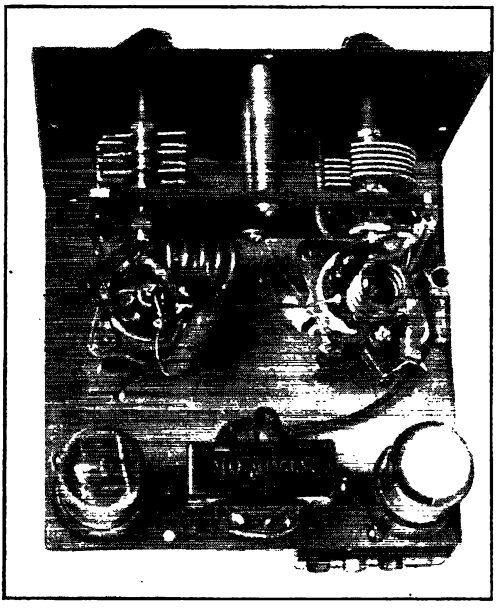
The P.M. Speaker Does Double-Duty in a WERS Rig

BY JOHN F. CLEMENS,* W9ERN

The construction of a simple compact 112-Mc. transmitter-receiver for WERS work is the subject of this article. Several microphone problems are eliminated by using the speaker as a microphone as well as in the usual way for reception.

PUBLIC-ADDRESS men are familiar with the use of a p.m. speaker both as a microphone and as a speaker. Perhaps the most prevalent commercial application of this idea is in two-way intercommunications systems. So smoothly do some of these systems work that it is just a logical step from this application to that of the modulation of a ham transmitter. This idea has been carried out in the WERS transmitter-receiver shown in the photographs. Not only does the dynamic speaker included in the circuit diagram of Fig. 1 work well as a microphone, but the need for a battery or other source of microphone voltage is eliminated. In addition, the use of a single unit for both purposes simplifies change-over switching so that an ordinary d.p.d.t. toggle switch may be substituted for the customary multi-gang change-over switch. Trial has shown that this type of mike puts out enough to excite a triode speech amplifier which drives the pentode output stage.

*712 Alvord Blvd., Evansville, Ind.



Top view of the transmitter-receiver showing tuning condensers and coils mounted above the r.f. tube sockets. The mike transformer and audio tubes are at the rear of the chassis. On the insulating strip below the audio tube at the right are three banana jacks for connections to the power supply.

The Circuit

One will notice that no antenna switching is used. It was found to be much simpler and more effective to use separate antennas because of inherent losses in switches through insulation and contacts, and because there is some degree of interaction between the transmitter and receiver when a single antenna and switch are used. Such interaction can cause frequency instability in the transmitter and dead spots in the receiver. Individual antennas also permit independent antenna adjustments for optimum performance from both r.f. sections of this unit.

The r.f. circuits differ very little from those commonly found in small transmitter-receivers. A 7A4 is used in the superregenerative detector and a 7C5 in the modulated oscillator. The transmitter tube takes more power at a given plate voltage when connected as a triode, as shown in Fig. 1, than it does with the pentode connection. However, if maximum output is not required, the pentode connection will provide a more appropriate load for the modulator, since with the triode connection the load presented to the modulator is quite low. For best frequency stability, the tank coil, L_2, should be adjusted so that the circuit tunes to resonance at the desired frequency in the 112-Mc. band with C_7 set near maximum capacity.

A 5.5-mh. choke seems to work satisfactorily at RFC_2. However, this value was used only because a choke of higher inductance was not obtainable. The more customary value of 60 to 80 mh. is preferable if such a choke is available. The audio section consists of a 6J5GT triode speech amplifier and a 6V6GT Class-A output stage.

Originally in this unit a circuit was used which included the usual mike in the manner described by Robinson in *QST*,[1] but experimentation showed that there was sufficient gain to modulate the transmitter fully using the speaker as a mike. It is not necessary to shout into the mike, either. The audio transformer, T_1, was given an extra winding of fifty turns of No. 30 wire to match the carbon mike, and it might be possible that a better match for the 4-ohm voice coil could be obtained with a smaller mike winding, say of

[1] Robinson, "Simplified Transmitter-Receiver Switching Arrangement," *QST*, Nov., 1943, p. 55.

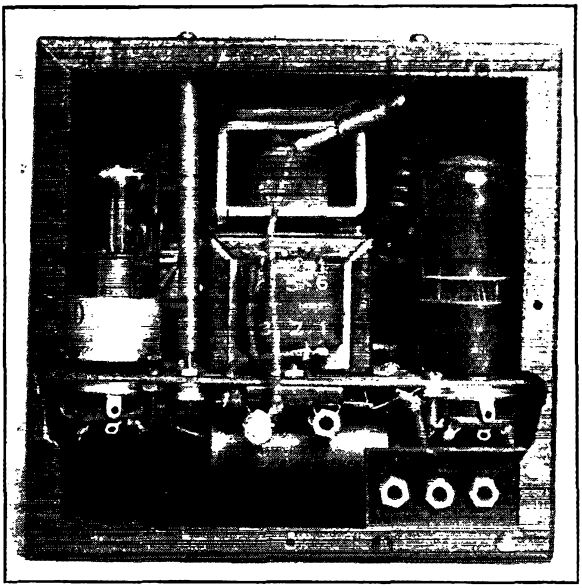
about twenty turns of No. 24. However, since the original winding provided plenty of output voltage, it was not changed. The primary of T_2 is used as an autotransformer when modulating the 7C5.

Construction

Units of this type have been described so often that the general requirements, particularly in regard to short leads, are familiar to most amateurs. This particular outfit is a demonstration of how a compact unit can be made when the bulky multi-gang switch is eliminated. The rig is housed entirely in a 6 × 6 × 6 inch metal box. The 4-inch p.m. speaker is mounted in the top of the box. One socket hole is punched somewhat back of the middle of top face of the box. This hole, and eight ⅜-inch holes which surround it, are covered with window-screen wire mesh to constitute the grille for the speaker. Two banana-plug jacks are used as terminals, if it is desired to use a separate external speaker for reception. These jacks can be seen in the rear view underneath the mounting base and directly below the output transformer. A short, flexible wire with a banana plug at one end is used to connect the internal speaker when it is used. The other side of the circuit is completed through the chassis. Power connections are made to the banana jacks on the bakelite subpanel shown at the lower right-hand side of the rear-view photograph.

The mike-audio transformer is mounted approximately in the center on the underside of the mounting base, as shown in the bottom view. In the same photograph, one of the cathode leads is shown coming to the switch terminal. This lead is of No. 28 wire, and at the point where it passes through the chassis, it has been spotted with Duco cement. This holds it firmly in place to prevent the insulation from being worn by the metal edge, and it looks just like polystyrene! The lead which carries filament voltage up through a hole in the chassis is shown in the top-view photograph; and the same view shows the chokes which are wired through other holes in the chassis to the send-receive switch.

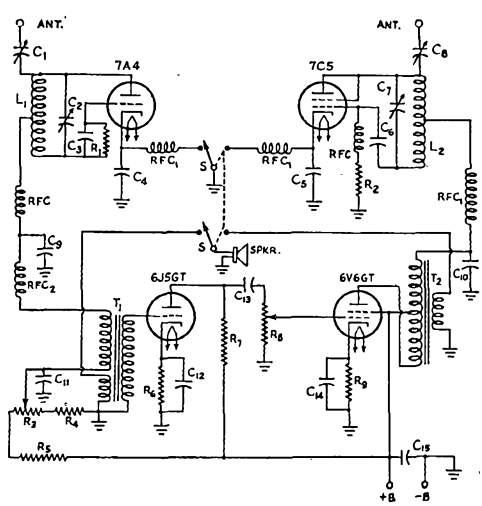
The photograph of the rig with the cabinet removed shows the r.f. arrangement. The two audio tubes are mounted in the usual way, one on each side of the output transformer. The r.f.

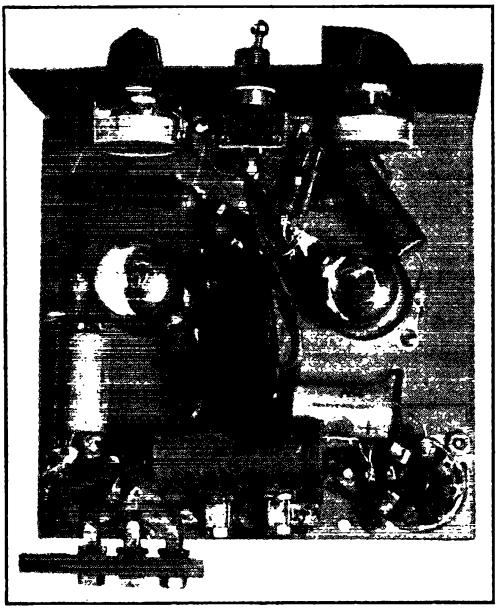


Rear view of the transmitter-receiver. The p.m. speaker is shown mounted with its cone pointing upward. The flexible lead for transferring the circuit for internal or external speaker is shown in the center, just below the output transformer. The two audio tubes are shown at the sides. Power is supplied to the three jacks on the bakelite block at the lower right. Rigid bracing of the chassis is provided by the metal rod at the left.

Fig. 1 — Circuit diagram of the midget transmitter-receiver.

C_1, C_8 — 3-30-μμfd. air trimmer.
C_2 — 15-μμfd. variable.
C_3, C_6 — 100-μμfd. mica.
C_4, C_5, C_9, C_{10} — 0.002-μfd. 450-volt paper.
C_7 — 50-μμfd. variable.
C_{11}, C_{13} — 0.01-μfd. 450-volt paper.
C_{12}, C_{14} — 25-μfd. 25-volt electrolytic.
C_{15} — 8-μμfd., 450-volt electrolytic.
R_1 — 3 megohms, ½ watt.
R_2 — 10,000 ohms, ½ watt.
R_3 — 25,000-ohm regeneration control.
R_4, R_5 — 25,000 ohms, 1 watt.
R_6 — 2500 ohms, 1 watt.
R_7 — 0.1 megohm, 1 watt.
R_8 — ½-megohm volume control.
R_9 — 250-ohms, 2 watts.
L_1, L_2 — 4 turns No. 14 wire, ½-inch diameter.
RFC_1 — 50 turns No. 28 wire, ¼-inch diameter.
RFC_2 — See text.
S — Section of d.p.d.t. toggle switch.
SPKR — 4-inch p.m. speaker.
T_1 — 3-to-1 audio interstage transformer with mike winding (see text).
T_2 — Push-pull output transformer (6V6 plates to 4-ohm voice coil.)





Bottom view of the transmitter-receiver showing the audio-input transformer, T_1, in the middle of the chassis with the 7A4 receiver tube at the right and the 7C5 transmitter oscillator tube at the left. The toggle change-over switch is shown mounted on the middle of the panel with the receiver volume control to the right and the speech-amplifier gain control at the left. Sockets for the audio tubes are at the rear. Power-supply jacks are mounted at the left-hand rear.

tubes are mounted upside down, with the tops projecting through the chassis. The sockets for the r.f. tubes are mounted with 1¼-inch spacers cut from copper tubing — a left-over, by the way, from an old "19" transceiver. Polystyrene sockets would be nice if they were available, but we had to depend on bakelite. The tuning condensers — Cardwell midgets — are mounted backwards on a 1½ × 4-inch bakelite subpanel, an arrangement which makes possible very short leads. Here again, a polystyrene mounting would be preferable. The inch-long leads from the tank to the tube socket are made of No. 14 wire, while grounding straps which usually are sold with volume controls form the connections to the condenser rotors. The two tank coils are mounted with their axes at right angles in order to minimize coupling. Tuning controls are connected to the condenser tail-shafts with one-inch pieces of bakelite rod. Since about one-fourth of an inch of the tuning-condenser tail-shafts are threaded 6-32, the bakelite extension rods may be coupled easily to these shafts by tapping the ends of the rods to a depth of about three-eighths of an inch. This method eliminates bulky insulated couplings.

The coupling system shown for both transmitting and receiving has been chosen for use with half-wave antennas. If quarter- or three-quarter-wave antennas are used, an inductive coupling system should be substituted. This may consist of a single turn of No. 16 wire with one end of the turn grounded to the chassis, the other end going to the antenna terminal. Provision should be made for varying the coupling for optimum performance. When using capacity coupling with half-wave antennas, the adjustable leaves of C_1 and C_8 should be connected to the antenna, and not to the plate, so that there will be no danger of shock to the operator during adjustments.

Antenna Adjustment

Adjustment of the transmitter and its antenna may be accomplished by connecting a low-wattage flashlight bulb across two or three inches of the antenna rod and as near to the feed-through insulator as possible when using a quarter- or three-quarter-wave antenna, or across the center of the antenna when a half-wave antenna is used. R.f. energy across this portion of the antenna in either case should illuminate the bulb, if the amount of power in the antenna is sufficient. If it is not, then the bulb may have to be inserted in series with the antenna for testing purposes, after which it must be removed in order to eliminate its resistance from the antenna circuit. The same also is true with the parallel testing arrangement. Also, frequency modulation of the carrier is aggravated when the flashlight bulb is left in the circuit, since its resistance changes with modulation and thereby continually changes the total antenna resistance. Adjustment is made by lengthening or shortening the antenna and observing the brightness of the bulb. As usual, maximum power output is indicated when the bulb glows the brightest.

The same lengthening-and-shortening process may be applied to the receiving antenna. With the receiver tuning condenser set for mid-band reception, vary the antenna length until maximum background noise is heard. This length, then, is proper for reception.

Operation of the set as a whole has proved to be convenient and flexible. For a rig of such small size, it has performed well enough to be recommended to the other hams who need a small outfit for WERS communication.

IF YOUR COPY OF *QST* IS LATE—

Bear with us. *QST* is being printed one to three days earlier each month to help keep deliveries on schedule — but unavoidable wartime delays do occur.

Above all, remember:

1. Slowness of delivery is beyond our control; your copy is mailed at the same time as all others for your vicinity.

2. *Don't write us* about non-delivery until at least the 10th of the following month; 99 times out of 100 your copy is on the way and will reach you safely.

3. Please allow plenty of time for acknowledgment of new and renewed membership-subscription entries.

25 YEARS AGO THIS MONTH

IN JANUARY, 1920, *QST*, Traffic Manager J. O. Smith reports that the volume of relay traffic to be handled is rapidly getting ahead of the facilities of the Traffic Department. Only a few really good stations have got on the air so far. A great deal of long-distance work has been done, over distances as great as 800 miles, but that does not make reliable relaying possible and there has been considerable delay on a great many messages. More relay stations are needed, and those who desire to take part in the relay traffic should communicate with the nearest traffic officer. On the spectacular side, however, the first transcontinental relay since the war has occurred. A message to President Maxim from Seefred Brothers, 6EA, our Pacific Division Managers, traveled leisurely via 6EA-LF-9BT-8AD to 1AW, consuming two evenings. Shortly after its receipt, 1AW was in direct communication with 9ZN and started a congratulatory reply. 9ZN first gave the message to 9BT but a few moments later LF was hammering in at Chicago and 9ZN gave the message directly to him; he made short work of it and handed it to 6EA with an elapsed time of 3 hours 45 minutes. This splendid work is possible through the presence on the air of a new station, LF, operated by Louis Falconi in Roswell, New Mexico, our district superintendent for that state. LF is most ably replacing our prewar gateways, old 9ZF of Denver, now out of the game, and Higgy of old 6DM, now located in Columbus, Ohio.

"One of the significant things to one who is in contact with what is going on in the air these nights is the fact that while there must be at the present time several thousand amateurs transmitting on 200 meters or thereabouts, there are not to exceed fifty whose signals reach any considerable distance. Where one is heard 500 miles there are thousands who never are heard beyond 25 miles." Thus "Dr. Radio," in the leading technical article of the issue, "Long Distance 200 Meter Work," deals with the problems: getting the condenser capacity and the antenna length and capacity correct, achieving resonance, getting a good earth connection, and using a high-speed low-note gap. . . . These are the practices of the best stations. 9ZN, which employs them, is the candidate for this month's station description. 9ZN, by the way, is working 8AA in daylight, and relay traffic has moved all the way from Chicago to New York in daylight.

Lou Pacent concludes his series of articles on wavemeters, while the humor of the month is contributed by S. Kruse in another article on "Masts." . . . The editor takes pleasure in announcing the completion of arrangements whereby the excellent papers presented before the Radio Club of America will be published henceforth in *QST*. . . . Several amateur wireless 'phone sets are reported in operation, including 1DA and 1DQ, and a New York ham is reported to have worked Ohio on voice on 10 watts.

The editor is busy with problems. The League attaches great importance to the establishment of affiliation with local clubs. Ten clubs have now become affiliated and more are coming into existence everywhere. Clubs can control local QRM between 9 and 12 P.M. to avoid interference with regular relay work, can appoint stations to act as traffic distributing centers, and can educate their younger element to obey the radio laws. . . . Responsive to the request of leading Canadian amateurs, the League announces its expansion to embrace the Canadian field, with the creation of four divisions covering southern Canada. Traffic in both directions is growing fast. . . . We are being plagued to death by the fading or swinging of signals which, for reasons that we don't understand, sometimes vary from amazing audibility to absolute silence in less than a minute. The phenomenon has no consistency, varying from night to night and hour to hour. Is there nothing we can do to solve the problem? . . . The League is to have an emblem, an identifying insignia of some sort whereby one ARRL man will recognize another on the spot. It hasn't been designed yet and we call upon the members for their ideas. . . . "When you hear a fellow who is some distance off, drop him a line and tell him about it. It makes him feel fine and he immediately bucks up and does even better yet. Tell him about his tone, whether he is sharp or broad and whether he fades and what you received him on and whether his signals strengthen as his rotary slows down. The farther off you are the more important it is to write."

This issue is accompanied by a sixteen-page supplement, a directory of amateur calls reported issued up to middle December. "As usual, *QST* is ahead of the field."

Strays

Our hats are off to Lt. Charles D. Houchin, W9OUQ, who has received the Purple Heart after being twice wounded in action in the Mediterranean theater. He received his first commendation from his commanding officer after receiving wounds in the battle for Tunisia. Recently, while serving on an Italian battle front, he was wounded again, and received, in addition to the Purple Heart, a commendation by the commanding general of the Third Air Force. Lt. Houchin has been overseas for eighteen months and has served in North Africa, Sicily and now in Italy.

Practical Applications of Simple Math

Part IX — Amplifier-Tube Operating Conditions in Relation to Circuit Values

BY EDWARD M. NOLL,* EX-W3FQJ

THE "operating point" is the crystal ball of audio-amplifier design. When its location is known the performance of the stage can be determined. At times in our encounters with schematic diagrams the only known factors are the values of the components and the supply potentials. In other instances the amateur has a number of parts of various values and would like to know the performance of a stage to be constructed with these parts. In Fig. 1 a typical resistance-coupled-amplifier circuit is shown using a 6C8G triode. Only the circuit values and the supply potential are known. The following procedure is used to find the operating point.

Locating the Operating Point

1) Construct the correct load line on the characteristic curve as shown in Fig. 2. Since the values of the plate and cathode resistors are known, the total plate resistance is

$$R = R_p + R_k$$
$$R = 100{,}000 + 3000 = 103{,}000$$

Consequently, our load line AB originates at the supply-potential point on the plate-voltage axis and is drawn with a slope corresponding to the total plate load resistance.

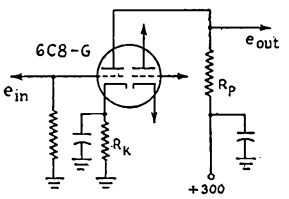


Fig. 1 — Reference circuit for determining the operating point as discussed in the text.
R_k — 3000 ohms. R_p — 100,000 ohms.

2) The operating point must exist at some point along the load line. Furthermore, the operating point must satisfy the two following conditions.

At the operating point the product of the operating plate current and the cathode resistance, R_k, must equal the grid voltage at the operating point.

At the operating point the product of the operating plate current and the plate resistor, R_p, minus the supply voltage, must equal the plate voltage at the operating point.

3) Let us take some point, Y, along the load line and see if these conditions are met.

*300 Fifth Ave., Asbury Park, N. J.

At Y the following operating conditions exist:
plate current — 1.75 ma.
plate voltage — 130
grid bias — 2 volts.

Now the product of the plate current and the cathode resistance should equal the grid bias. However, this condition is not met since
(I_p) (R_k) = (0.00175) (3000) = 5.25 volts instead of 2 volts. This result immediately rules out point Y.

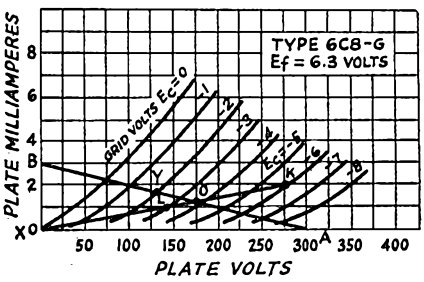


Fig. 2 — Average plate characteristics for each triode unit of type 6C8G.

4) Let us take another point O on the load line. At point O the following operating conditions exist:
plate current — 1.25 ma.
plate voltage — 175
grid bias — 3.75 volts.

In this case the product of the plate current and the cathode resistance is
(0.00125) (3000) = 3.75 volts.
Therefore the first condition has been met.

The second condition requires that the difference between the plate-supply voltage and the product of the plate current and plate load resistance must equal the operating plate voltage or

$$E_p = E_b - I_p R_p$$
$$= 300 - (0.00125)\ (100{,}000)$$
$$= 300 - 125 = 175 \text{ volts.}$$

Thus, the second condition also now has been met and point O is the correct operating point for the circuit values and supply potential indi-

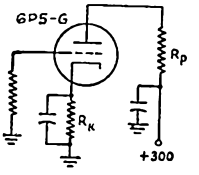


Fig. 3 — Reference circuit for illustrating the case of changing R_k, holding R_p constant.
R_k — 2000 ohms, 3000 ohms. R_p — 50,000 ohms.

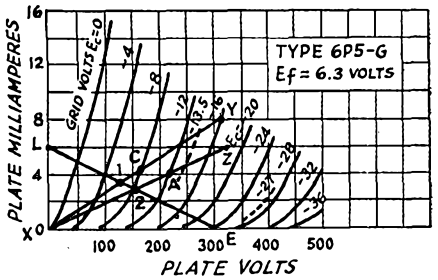


Fig. 4 — Average plate characteristics for the type 6P5G tube.

cated in the schematic diagram of Fig. 1. It is apparent that by using the above procedure the operating point can be found by a substitution process. However, there should be a more direct angle of attack.

Bias-line Method

Let us examine points along a line drawn from *O* to the origin *X* and extended beyond *O*. Point *O* itself represents a plate current of 1.25 ma. and a grid bias of 3.75 volts or a resistance of 3.75/0.00125 = 3000 ohms. Point *K* is located on the −6-volt bias curve at a plate current of 2 ma. which again represents a resistance of 3000 ohms. Likewise point *L* on the −3-volt bias curve at a plate current of 1 ma. represents 3000 ohms. Thus it is apparent that line *XOK* has a slope which corresponds to the value of the cathode resistor and, further, that the operating point for the stage occurs at the intersection of this bias line and the regular load line. The bias-line method of finding the operating point follows.

Using the schematic and characteristic curves of Fig. 3 and Fig. 4,

1) Construct the load line *LE* representing the total plate load which is 52,000 ohms in the case of the 2000-ohm cathode resistor and 53,000 ohms in the case of the 3000-ohm cathode resistor. Since there is a difference of only 1000 ohms in the two plate-load values, for all practical purposes, line *LE* is representative of both loads.

2) Construct the bias line *XY* which represents a 2000-ohm cathode resistance. This line is drawn by first locating two points *C* and *Y* through which the line can be drawn. In locating point *C*, a negative bias of 8 volts is assumed. With this value of bias and using a cathode resistor of 2000 ohms the plate current would be 8 divided by 2000, or 4 ma. Set down point *C* on the graph. In locating point *Y*, a bias of −16 volts is assumed (any bias points may be assumed, the purpose being only to locate two points which will permit us to draw the bias line). With this value of bias and using the 2000-ohm cathode resistor the plate current would be 16 divided by 2000 or 8 ma. Set down point *Y* on the graph.

3) Draw the bias line *XY*. The intersection of the bias line and load line, point *1*, represents the operating point of the stage.

4) The effect of increasing the cathode resistance also is shown in Fig. 4. In this case points *A* and *Z* are located first. Assuming a bias of −18 volts, the plate-current point is found to be 18 divided by 3000, or 6 ma., and assuming a bias of −12 volts the plate-current point is found to be 12 divided by 3000, or 4 ma. Locate these points on the graph and draw the bias line through them. The intersection of the bias line and load line, point *2*, represents the operating point of the stage with a 3000-ohm cathode resistor.

5) The operating point can always be tested by using the procedure outlined above. Thus, for example, point *2* represents an operating point at a bias of −8.4 volts, a plate current of 2.8 ma. and plate voltage of 160 volts.

The first condition is met since the product of 0.0028 and 3000 is 8.4 volts. The second condition is met since

300 − (0.0028) (50,000) = 300 − 140 = 160 volts.

The effects of varying the plate load resistor with a constant value of the cathode resistor is shown in Fig. 5 and Fig. 6. The step-by-step procedure for locating operating points *1* and *2* is as follows:

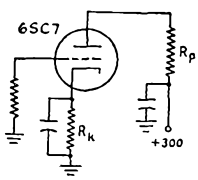


Fig. 5 — Reference circuit for illustrating the case of varying R_p holding R_k constant.
R_k — 1000 ohms. R_p — 100,000 ohms, 250,000 ohms.

1) Draw load lines *XY* and *XZ*.

2) Locate points *A* and *B* for the 1000-ohm bias line.

3) Draw bias line *OB*.

4) Locate points *1* and *2*.

Inspection of the curves clearly demonstrates the increase in operating plate voltage, plate current, and grid bias with a decrease in the value of plate resistance and a constant value of cathode resistance.

In concluding this installment I wish to express my appreciation to Mr. Lyle Galligos whose interest in the article and bias-line disclosures contributed immeasurably in its preparation.

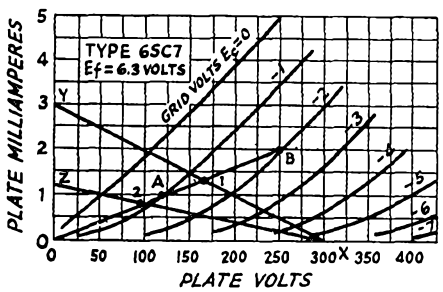


Fig. 6 — Average plate characteristics for type 6SC7

Hams in Combat

See You in Tokyo!

BY SGT. JOSEPH L. COLEMAN,* K6TTY

As we neared Pearl Harbor we could see heavy oily black smoke rising to the sky.

MY LAST message had just been completed to W4PL in the early morning of December 7, 1941. Ben and I had our usual QSO and then said, "Coffee, here I come" — that old familiar phrase which meant, "Brother, that's all for tonight." Switching off the rig, spinning the band switch on the RME-99 to the broadcast band to hear some swing music from the States, I let out a healthy yawn and wheeled around to the mill to type out my traffic for Monday's mail. Like countless other hams, little did I realize that this would be my last night in the old ham shack. K6TTY–K6TOP was now silent.

I was awakened by the "wumph" of exploding bombs. At first I thought that some unit was having practice on the artillery range. Thinking this rather strange for a Sunday morning, I nevertheless turned over and started to go back to sleep, cussing under my breath for being awakened so early. O'Connor, the supply sergeant who slept across the hall from my shack, came running into the room. "For heaven's sake, Joe, get up. Some damn fool is bombing Wheeler Field!" (Wheeler Field was the air strip adjacent to Schofield Barracks.)

At this time several Japanese planes flew overhead, pealed off and started to strafe us. It was hard to believe at first that we were really being bombed and strafed. However, it didn't take us long to gather what was taking place. Little time was lost in loading equipment and taking to the field to man our tactical positions. A few of our planes were in the air now and we could see several dog fights. As we neared Pearl Harbor we could see heavy oily black smoke rising to the sky. It looked like hell had broken loose. At eleven hundred hours it was over.

When the war started, I was radio chief. Fred, K6TOP, was communication chief. We had one other ham in the battery, Al Skinner, an ex-W5, who was then sergeant major. Our organization had been formed only a couple of months before, but there were only three men in my section who didn't have at least a year's training.

In February we turned our three transmitters over to the Signal Corps — one 1-kw. job and two 500-watt jobs. The remaining transmitting spare parts also were turned over to the Signal Corps. We kept our several communication receivers (we disposed of these later) which consisted of an RME-99, an SX-28, an HRO and an SX-18.

As the months passed we familiarized ourselves with new equipment. Most of the boys had never operated a rig that required more tuning than that of the master oscillator and antenna current. Our prewar field sets were all low powered with hand generators. The boys took to the new sets like ducks to water.

We were anxious to get a crack at the Japs, but feared we were doomed to remain in a defense position. Then the Marines hit Guadalcanal. The reports were vague, but rumors began to drift back. We knew they needed reinforcements and

*APO 25, c/o Postmaster, San Francisco, Calif.

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started to sweat it out. Our outfit was regular Army and we were itching to get into the fight. We didn't have to wait very long before we were informed that we were going into combat. We had some jungle training and beach-landing practice — then we were on our way. None of us knew our destination, although many rumors drifted around. The trip was the usual Army voyage where someone always had his feet in your face and you never knew who you were shaving in the morning

Approximately fifteen days later we were all topside shooting the breeze when the p.a. system broke in, "Attention, everyone! I know that each and every one of you fellows is anxious to learn where we're going. Our destination is Guadalcanal. . . ." The rest of the speech was drowned in a sudden yell from the entire ship's crew. I believe we were all thinking just about the same thing — this will give us the chance to start evening up the score.

Three days later found us entering Sky Lark Channel at dawn. We all were somewhat nervous, wondering what was in store for us. I went below and strapped my equipment on, then returned topside to await orders to man our stations. It was light enough now to see the shore line. I really don't know what I expected to see, but was somewhat surprised to notice that this was just a tranquil tropical island. Not a sign of life anywhere. A gentle breeze was blowing, and the channel was as calm as a sheet of glass.

As we cruised around a bend the scene changed. A couple of ships had been beached from previous landings, and further along the shore we could see other landing boats. It no longer looked like a tranquil tropical island, but a battlefield that had witnessed violent fighting. Our planes were overhead now, giving us air coverage. It was heart-warming to know that we had their protection as we were expecting an air raid at any moment.

Our first day ashore was very quiet. We could hear the artillery and the chatter of machine-gun fire on the front lines. It was thrilling to know that soon we would be participating in the battle that was expected to turn the tide of the war in the Pacific.

It was in December of 1942 when we first landed on Guadalcanal, but we didn't move up to the front lines until the early part of January. I shall never forget the morning that we made our first drive. H-hour was 0600, at which time all the artillery on the island was going to open up. Then, when we had set down our artillery barrage, the Air Corps was going to dive bomb the enemy's positions. I was conducting radio communication from one of our OPs and had an excellent view of the whole show.

Our mission was accomplished in the early part of February. Only one radio operator was wounded during this operation, and not seriously at that.

After accomplishing our mission we moved back to a more suitable position. We had plenty of air attacks from then on, though little damage was inflicted. Few of the Jap planes ever returned to their bases.

Other than air attacks we didn't see any more combat until August, 1943, when we sailed for Vella Lavella. We came in on the first wave, for the infantry was the first to land after the Navy shelled the beach. As at Guadalcanal we had nice air cover, but we weren't as lucky as we were on 'Canal. At 0810 hours the Nips hit us. Our LST hadn't landed as yet and I was topside watching the show when a buddy of mine said, "Here they come." We both dove under a 105-mm. gun which offered some protection from strafing. The Jap's bombs missed by a small

(Continued on page 98)

I was conducting radio communication from one of our OP's and had an excellent view of the whole show.

A Homemade Intercommunicating System

Using Junk-Box Parts in a Multiple-Station Circuit

BY E. H. HARTNELL,* W9WTE

This article describes how, faced with insurmountable priorities, W9WTE went about the job of rigging up a four-station intercom system from a collection of obsolete b.c. gear and a few ham parts. The result cost little and works well.

HAVING an urgent need for an intercommunicating circuit and being unable to supply the high priority to buy such a system, I set about laying out and constructing one from junk-box parts.

Briefly, my requirements included a master station and three remote stations with the additional provision that one remote station could communicate with another even though no one was present at the master station to effect the switching from "listen" to "talk" and vice versa. Only one master station is required to do the job instead of two as might be expected.

Circuit Arrangement

Since the system may be used with any audio amplifier having sufficient gain and power for the speakers used, only the switching arrangement is shown in Fig. 1. The transformer, T_1, is the input transformer of the amplifier and T_2 the output transformer. Station D is the master control and the four-pole, four-position switch, S_1, is located at this station. The four-pole, double-throw relay, Ry, is operated from the battery through either of the push-button switches, S_2 at one of the remote stations, B, or S_3 at the master control, D. These switches are held closed to transmit and released to receive, switching the speakers from the input of the amplifier to the output through Ry as required.

When the control switch is in the No. 1 position the master station, D, can communicate with remote station A, when in No. 2 position with remote B, when in position No. 4 with remote C, and when in position No. 3 remote B can communicate with remote A even though no one is present at the master station. In the last case, the relay is operated by the push-button extension running to S_2 at remote B. This switching arrangement is particularly well adapted to business places where the master station is located in the office which perhaps closes before several departments which may be working overtime and which still need to communicate with each other.

* Salem, Wisconsin.

Construction

In searching for suitable parts, the amplifier received attention first. A visit to the attic brought forth an excellent two-stage amplifier and power supply from an old but well constructed home radio. Luckily the r.f. section of this receiver was mounted on a separate chassis, so the usable sections did not have to be dismounted and reassembled. However, the amplifier did not supply the necessary gain so an additional amplifier stage was added. This consisted of a conventional resistance-coupled 57 stage operating from the common power supply. Room for this was found on the chassis holding the amplifier and power supply by removing the first-stage input transformer and the tone control which were of no particular use for the purpose at hand.

The next thought was toward suitable speakers which would provide reasonably good fidelity over the voice-frequency range and also have good pick-up when used as mikes. A search in the attics and basements of several friends and a visit to a local radio-service store yielded four old Atwater-Kent 12-inch cone speakers which were found to be in good condition after being cleaned up. The impedance of these speakers is of the order of a few thousand ohms, being designed originally to be connected directly in the amplifier plate circuit without a voice transformer. In order to match these speakers to the amplifier output-transformer secondary of 6 to 8 ohms and to provide for a low-impedance line be-

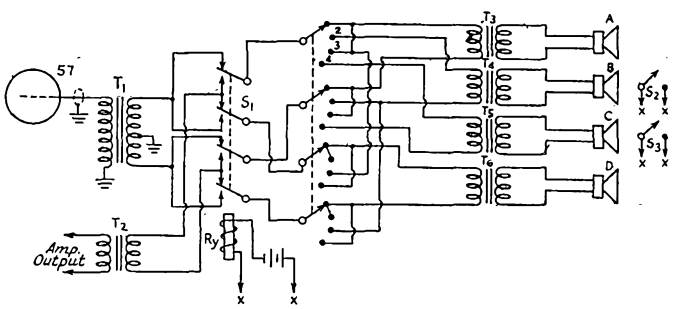


Fig. 1 — Circuit of the switching arrangement used in the homemade intercom system. D is the master control station, while A, B and C are remote stations. S_1 is the ganged four-section, four-pole rotary switch, and S_2 and S_3 are push-button switches actuating the four-pole, double-throw relay, Ry. T_1 is the amplifier input transformer and T_2 the output transformer of the amplifier.

tween stations, four old output-to-voice-coil transformers were selected from the junk box. Those with a relatively-low primary impedance provide the best match. These were mounted on the speakers and, of course, were connected in reverse, the primary to the speaker and the voice-coil winding to the line.

These speakers handle the full amplifier output without objectionable distortion and have sufficient volume to be heard fifty feet away in a fairly noisy shop. When in use as a mike, the pick-up is very good, comparing favorably with a p.m. speaker of late vintage and of like size. Anyone can be heard very distinctly when speaking at an ordinary conversational level thirty to forty feet away. The dynamic speaker which was supplied with the radio was used as the master station at first but this was later replaced by the A-K cone speaker, which gave better performance. Use of the dynamic speaker resulted in troublesome motor-boating at full volume, did not have the pick-up desired and resulted in an unequal output volume in comparison with the other speakers. The removal of the dynamic speaker field coil which served as a choke in the power supply did not necessitate the use of an additional choke in this particular instance, since the ripple was sufficiently well filtered without it. The field-coil terminals on the amplifier were bridged with a 20-watt resistor of approximately the same resistance as the field coil to cut the supply voltage down to the original value.

A double-button mike transformer, T_1, provides a satisfactory impedance match between the master-speaker transformer, T_6, and the grid of the 57. The input winding of T_1 is grounded at the center tap, providing a balanced line to remove any objectionable line noise. With the particular amplifier used I found it necessary to separate the mike transformer and the amplifier and power supply by at least three feet to avoid magnetic pick-up from the power transformer. No amount of shielding or orienting of the mike transformer would prevent an objectionable a.c. hum. I incorporated this mike transformer in a separate metal cabinet which also contains the four-pole relay and the line switch, S_1. A well-shielded lead is of course necessary between the secondary of T_1 and the 57 grid.

An old antenna relay with the addition of two poles and contacts was used for *Ry*, while a 4-pole, 4-position band-changing switch serves for S_1.

An old 72-ohm antenna lead-in and a discarded telephone twisted pair was used in the line construction since it was impossible to secure new wire. This outfit is used on lines 300 feet long with no apparent loss and with no power-line noise even though one line runs within 25 feet of a 26,000-volt transmission line.

While the impedance matching may not be perfect throughout the system, it works very well, as do most things which the ham concocts. The amplifier should make a very good driver for a pair of Class-B modulators in the not too distant future I hope.

★ ★ ★ ★ ★ ★ ★ ★

Gold Stars

LT. IRVING H. HOYT, USA, W7EDV, was killed June 19, 1944, on Biak Island when trying to rescue a wounded comrade. He was awarded posthumously the Purple Heart, the citation for his action reading in part, "A heroic deed of mercy."

W7EDV was a member of the Oregon National Guard which was inducted into federal service in September, 1940. The following summer he won his commission and, after attending the radio school at Ft. Benning, Ga., he was assigned the post of battalion communications officer in an infantry division which was sent to the Southwest Pacific early in 1942. In 1943 during the drive on Lae, New Guinea, Lt. Hoyt directed battalion radio nets and succeeded in keeping communication lines open against all odds. For this work he was awarded the Legion of Merit and received two citations from unit commanders. After a furlough in Australia he returned to New Guinea as a company commander and communications officer. He died a few months later.

PAUL YHOUSE, USMS, W8ULR, was killed in May, 1942, when the tanker on which he was radio officer was struck by a torpedo directly below the radio room and blown up. The captain and eleven of the crew, including Paul, were lost.

Just a month previously the ship he was on was sunk a few hours out of New York City, but all of the crew were saved. On that occasion he remained on board until the last minute sending an SOS, but when he left the ship he discovered that the antenna had been carried away during the first of the action and his signals had not gone out.

W8ULR and his buddy, W8ULT, studied radio theory and code together during their second year in high school and obtained Class C licenses in 1940. For the next two years they operated first a 6L6G crystal-controlled rig on 3.5 Mc., then a pair of 809s on 7 Mc., and then did experimental work with transceivers on 112 Mc. A few weeks after the attack on Pearl Harbor put a stop to hamming W8ULR joined the merchant marine.

★ ★ ★ ★ ★ ★ ★ ★

STRAYS

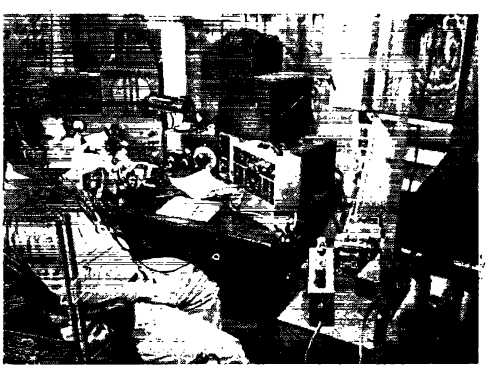
Within the Law Department of FCC, a new division has been organized — the Safety & Special Services Division — to handle the legal aspects of the aviation, amateur, ship, emergency, experimental and miscellaneous radio services in addition to similar new services that may be authorized in the future. The new division is headed by Jeremiah Courtney, who has been on the FCC legal staff for some years.

—•••—

Visual signaling still serves as a means of communication in the Southwest Pacific Area, despite the predominance of wire and radio there as in all other war theaters. Its chief use is to guide bomber pilots by designating enemy targets and friendly front lines in terrain that is difficult to identify by contour maps and practically impossible to describe verbally. One highly successful method has been the laying of panel arrows to indicate the target, supplemented by bomb lines marked with smoke grenades.

—•••—

Dr. William L. Everitt of Washington, one of America's foremost authorities on radio and electronics, has been elected President of The Institute of Radio Engineers for the coming year, it has been announced by the Board of Directors of that society. Dr. Everitt, who is Chief of the Operational Research Branch, Office of the Chief Signal Officer of the United States Army, succeeds Professor Hubert M. Turner of the Department of Electrical Engineers at Yale University, New Haven, Conn.



One of Rudy Jepsen's (W6KEI) friends furnished this picture to prove that after fifteen years of hamming, amateur radio just "closed in" on Rudy. The picture had to be taken with a camera set up outside the shack, because there wasn't an inch of room to take it inside. In fact, says W6KEI, the only kind of waves that could reach his receiver inside are "standing" waves. The friend says he doubts that anyone could equal W6KEI in having so much stuff jammed into one little building of its size.

The "Lost Battalion" of the Seventh Army, which was isolated for a week in the Vosges Mountains, maintained its only link of communications through a radio set which kept working on batteries supposed to last only two days.

—•••—

Lt. Leon Tinnell, a Signal Corp officer, who received his commission at Ft. Monmouth in 1943, has played a dramatic role in this war by serving as a spy in the Philippines during the Japanese occupation. His brilliant work of transmitting by radio information of Jap ship movements resulted in the sinking of 50 enemy ships, and he was able to furnish General MacArthur's Hq. invaluable information about Jap troop movements and installations on the islands. In the recent invasion of the Philippines, Lt. Tinnell rejoined MacArthur's force and landed on Leyte at the head of a group of men highly trained in reconnaissance and demolition.

—•••—

W. W. Chaplin has dedicated his book, "The Fifty-Two Days," recently published by Bobbs-Merrill Co., to "Jig Easy Sugar Queen" — the SCR-399 mobile radio transmitter over which the American people heard their news direct from the fighting front of the American Army throughout the Normandy invasion and now from inside Germany. Of the four-man crew of JESQ, who maintained regular schedules despite all the hardships of the battle front, three are amateurs: Lt. James W. Rugg, SC, W6QAK, officer in charge, S/Sgt. Henry Johnston, W9QXT, and T/4 Saverio Caltagrione, W2JEY.

—•••—

Being an enthusiastic ham before the war as well as a member of the Short Snorters, I have collected ham calls on my bill. Some of these were collected in blackouts or in bars so they may not be strictly accurate. I collected these calls all the way from Greenland to India as a captain in the RAF Transport Command: W1IOV, W1KXP, W1MIX, W5FWE, W6CV, W6GA, W6QLW, W9EDC, VE1ES, VE1KV, VE2BP, VE2IZ, VE3AIK, VE3AQM, VE3ARL, VE3KF, VE3KT, VE4AAC, VE4ALO, VE4APC, VE4BM, VE4BBR, VE4CP, VE4F(?), VE4HI, VE4XX, VE5HC, VE5JL, VE5MG, VE5ML, G2AI, G2CJ, G5WL, VO1F, VU2BY, VX4A, YI2LL.

— Don McVicar, VE4PH

—•••—

The new Canadian nickel, which is now being issued, contains in Morse code on the tail side the words, "We win when we work willingly." The Morse code inscription has be to ascertained very carefully through examination with a magnifying glass.

On November 17th, the Delaware Valley Radio Association, Inc. sponsored its first annual "Old Timers' Banquet." Highlights of the evening were the old-timers' yarns; the presentation of the "Grand Old Timer" prize to John A. Terrell, W3FDF; the drawing of door prizes, and the exhibit of old-time wireless gear. Thirty-five old-timers were present, including: W3AFA, AID, BBO, ex-BSF, VVY, BXA, BYW, ex-CBS, CCO, CWL, EDP, EED, EGU, FDF, GFQ, ex-GN, GQX, ex-GU, HBZ, HW, IDY, ITU, JAG, JEU, ex-UQ, ZI; ex-W8BRJ, DWE, ex-TR; W9AA; John Arndts, Frank Elyea, William Gaskill, William McAfee and P. Pankovich.

Appropriately enough, the following items were served during the dinner portion of the meeting:

Low frequency fruit cocktail
Radio-activated soup
High Frequency Roasted Turkey — Dressing a la Marconi
Grid leak drippings (cranberry sauce)
Rotary gap ground (mashed) potatoes — Low capacity peas
Current loop rolls and OPA butter
Filtered ice-cream and polarized cookies
DX-preserving coffee

—•••—

Recently the home of a prominent resident of the Canal Zone and sports editor for the local newspaper was plagued by repeated visits from members of the FBI disguised as telephone repair men, water company service men and building inspectors looking for a secret transmitter reported by a neighbor. It seemed the editor used a Hammarlund Super-Pro for copying spot sports broadcasts by short wave and the neighbor, seeing the "Send-Receive" switch, was convinced that the editor had a complete station and tipped off the sleuths. — *W5EWV*

—•••—

A new rhombic receiving antenna coaxial cable coupling transformer has been designed by The Andrew Co., Chicago, for out-of-doors installation. It provides an impedance match for 70-ohm cable to 700-ohm terminals with less than 1 db. loss over a range of from 4 to 22 Mc. Close coupling and powdered iron transformer cores of high permeability are used to achieve a broad frequency response.

Fine resistance wire, made of 80 per cent nickel and 20 per cent chromium, is a modern triumph of coöperation between industry and the U. S. Army Signal Corps. It is being used in communications equipment in the hottest battles, yet is considered to be "the smallest component of war." The diameter of this wire is as small as 0.0008 of an inch, which is about one-fourth the diameter of an average human hair. For purposes of insulation, it is treated with three to six coats of enamel, which is baked on in successive operations. Ninety miles of the wire — 475,000 feet — can be produced from a single pound of the nickel and chromium alloy. Its high tensile strength makes such fine drawing possible. Copper with less tensile strength, would snap before such fineness could be reached. The wire has a resistance of 650 ohms per circular milfoot.

Second London Hamfest

THE second Anglo-American hamfest held October 28, 1944, broke the wartime attendance records for amateur radio meetings in England when more than 150 British and American amateurs met at the Mostyn Red Cross Club. This meeting, like the first Anglo-American hamfest held in September, was attended by amateurs from all the nine districts of the United States.

Lt. Col. David Talley, W2PF, opened the meeting and was followed by F/Lt. John Clarricoats, G6GL, secretary of RSGB with a speech of welcome.

Leslie McMichael, G2FG, spoke briefly of the early days of the RSGB, of which he is co-founder.

Another pioneer of British amateur radio, Gerald Marcuse, G2NM, related incidents during his long association with the ARRL, RSGB and IARU. Arthur Milne, G2MI, described operation in Great Britain prior to the war. Bert Allen, G8IG, highlighted Mr. Milne's talk with off-the-air recordings of actual amateur contacts.

Mr. E. L. Gardiner, G6GR, president of RSGB extended an invitation to the Annual General Meeting of RSGB on December 30th and to all future Anglo-American hamfests.

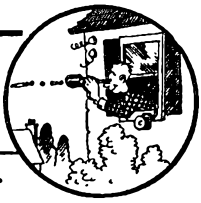
The meeting was concluded with rag-chewing and refreshments.

♦

Officials of RSGB and two prominent American amateurs who met at the second Anglo-American hamfest, held in London, England, October 28, 1944. *Left to right:* F/Lt. John Clarricoats, G6GL, secretary, RSGB; Leslie McMichael, G2FG, co-founder of RSGB; Lt. Col. David Talley, W2PF; E. L. Gardiner, G6GR, president, RSGB; Major Joseph Andrew, W4EFG; A. D. Gay, G6NF, immediate past president RSGB; and Gerald Marcuse, G2NM, past president, RSGB.

♦

EXPERIMENTER'S SECTION



Address correspondence and reports to ARRL, West Hartford, Conn.

PROJECT A

Carrier Current

THREE c.c. 'phone rigs have been in operation in Montpelier, Vt., for over two years. One is operated by M. I. Staples, using push-pull parallel 71As modulated by parallel 41s. Another is operated by C. L. Leslie who uses a single 6L6 modulated by push-pull 2A5s. My own rig uses push-pull 6L6s at about 15 watts input with push-pull 2A5s as the modulator.

Two of the receivers are four-band b.c. superheterodynes with an r.f. stage while the third is an old Philco Model 20 with coils rebuilt to tune from 110 to 250 kc.

Results are very good. 95 per cent of the time the signals are exceptionally strong. Our stations are about 5 miles apart by wire. The signals must go through a substation which includes metering equipment and induction voltage regulators. We have worked 14 miles on occasion with good results, and hope to try greater distances soon.

One of the reasons for our good signal strength is that we tune the transmitter output to the line with variometers of the old b.c. type. At the frequencies we have used between 115 and 195 kc. we have no trouble with loading. For each change of frequency the variometer must be reset. Tests have shown that stations which cannot be heard with the usual coil and condenser combination are heard with strong signals when variometer tuning is used.

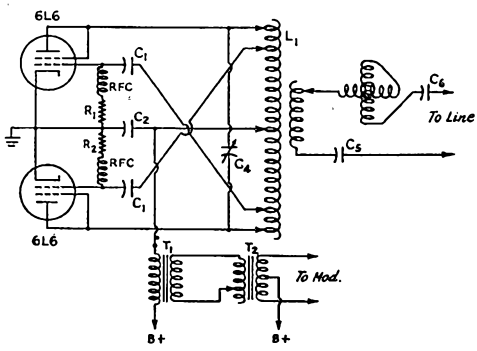


Fig. 1 — Carrier current transmitter with variometer for tuning load.

C_1, C_3 — 0.001 μfd.
C_2 — 0.006 μfd.
C_4 — 0.002 μfd. (old 4-gang b.c. variable).
C_5 — 0.1 μfd.
C_6 — 0.02 to 0.003 μfd.
R_1, R_2 — 50,000 ohms.
L_1 — 100 turns No. 16, 3½ inches diameter.
L_2 — 6 turns No. 14, tapped each turn. Wound outside center of L_1.
T_1 — Output transformer.
T_2 — Output transformer, universal type.

The circuit we use is shown in Fig. 1. In tuning the rig, the transmitter is set to frequency, then the variometer is adjusted to the point of maximum plate current. If the current is too high the number of turns on the coupling coil is reduced; if too low, the number of turns is increased.

Different lighting circuits will require different values of coupling condenser. Too small a value will make the rig tune so sharply that it will be almost impossible to hold it in resonance.

As in all modulated oscillators, the tube in this rig should not be overloaded if the quality is to be kept anywhere near right. It is much better to use only about 60 per cent of the rated plate current for the tube, for instance, about 40 ma. maximum for a 6L6. — *Gerald W. Benedict, W1NDL.*

I have been continuing my work on carrier current although, like everyone else, I have had very little time to devote to it. My main objective has been to establish communication between remote points on the distribution lines and the central station of the Municipal Power Plant where I work. Therefore I have had to construct not one but several units.

A secondary incentive, though important to me, is to establish communication with a certain college-girl's dormitory during the "quiet hours" when no telephone calls are permitted. I haven't a station built for the YL as yet. I am expecting to find difficulty in maintaining privacy for the communications when I do, as I have found that 5 or 10 watts of r.f. is sufficient to "saturate" the wiring in most any building. T.r.f. receivers will not reject it unless tuned to a strong local b.c. station. Am I in favor of isolating filters!

I have been working frequencies from 113 kc. to 270 kc. with modulated oscillators, a 6V6 Hartley modulated by a 6V6 with a 6SJ7 speech amplifier. I have had no trouble with harmonics. I use a fairly high-C tank circuit. The quality is very acceptable and line noise is seldom bothersome. The aircraft beams offer some competition to weak signals on the higher frequencies. My 6V6s usually draw about 10 watts, though I have tried 6L6s at about 15 watts with little improvement in signal strength.

Well spaced 4-gang condensers from 1930 or 1931 Majestics, etc., make excellent tank condensers for low-power c.c. transmitters.

(Continued on page 88)

HINTS AND KINKS FOR THE EXPERIMENTER

SOME HANDY TEST PROBES

A SET of inexpensive test probes using small lamps have been found convenient on my work bench and can be carried in the pocket when necessary.

In Fig. 1-A, a probe which can be used as an ohmmeter is shown. It requires two penlight cells and a pilot lamp such as the Sylvania S48, rated at 0.06 amperes at 2 volts. The lamp will light dimly at about 0.7 volts and about 0.03 amperes. Thus with a 3-volt supply this probe can be used to test circuits with resistances up to about 75 ohms. This range includes many of the coils, transformers and other circuit components commonly encountered. In testing low-resistance leads the current rating of the lamp will be exceeded, although it should "take it" if flashed only momentarily.

The probe of Fig. 1-B may be described as a substitute voltmeter for a.c. or d.c. It uses a neon bulb such as the G.E. type G10, with no resistor in its base. The bulb is connected in series with a 50,000-ohm 1-watt resistor. The starting voltage is about 65 volts, d.c., and 50 volts, a.c. The resistor limits the current to a safe value up to about 400 volts. If too high a voltage is used an arc will start between the elements of the tube. The relatively high impedance of this probe permits its use as a substitute for a voltmeter for testing circuits. It readily determines type and polarity of voltage. On a.c. both elements of the tube will glow. On d.c. that element which is connected to the positive side of the circuit glows. As the brilliancy of the glow increases with the voltage, a rough estimate of the voltage is possible.

The probe shown in Fig. 1-C is convenient for testing "A" batteries under load, which is supplied by the coil of resistance wire shown in the diagram. For testing flashlight cells the load may be about 3 ohms and the bulb rated at 1.5 or 2 volts.

A probe used for testing "B" batteries is shown in Fig. 1-D. A 6-watt, 110-volt bulb is used, connected in series with an 800-ohm ½-watt resistor. Because of the non-linear current characteristics of metallic-filament lamps, it is difficult to estimate changes in voltage by the brightness of the filament. The 800-ohm resistor in series with the filament tends to increase the linearity of the circuit, thereby making it easier to spot a low-voltage battery by a change in the brightness of the filament. A test load is supplied by a 2000-ohm 1-watt resistor shunted directly across the battery. A 45-volt battery in good condition causes the filament to glow red. A good 22½-volt battery will cause the filament to glow at the threshold of visibility. The probe may be used momentarily on a 90-volt battery, although the load current will be increased to a point which greatly overloads the 1-watt resistor.

The general construction of these probes is shown in the drawings of Fig. 1. In the cases of A, C and D, ⅝-inch diameter bakelite tubing is used as the housing, and in the case of B, ⅞-inch diameter. The point of the probe is a ⅛-inch rod threaded into a plug which is fastened into the end of the tubing with screws. A convenient method of mounting the bulbs is to solder a nut or binding post to the base to receive a screw passed through the wall of the tubing. The same screw may be used for connection to one of the test leads. As the larger bulbs are easily broken, it is well to wrap them with a turn or two of rubber tape as shown in the drawings. — *Robert C. Paine, 436 Cornelia Street, Boonton, N. J.*

—•••—

TRANSCEIVER IMPROVEMENT

WHEN a group of stations in a WERS net is assigned to operate on a spot frequency, an attempt to use ordinary transceivers presents operating problems. The usual design of the transceiver results in its transmitting on a slightly higher frequency than the station to which it is tuned in the receiving position. It then becomes necessary to shift the dial a few degrees on each

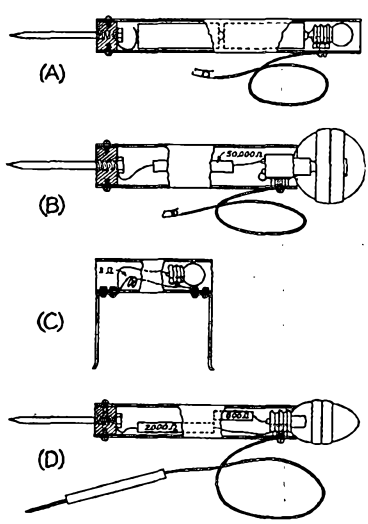


Fig. 1 — (A) Probe substitute for low resistance ohmmeter. (B) Probe substitute for a.c. and d.c. voltmeter. (C) Probe tester for low-voltage cells. (D) Probe tester for high-voltage batteries.

transmission in order to keep both stations on one frequency. This is inconvenient, slows up operation, and is subject to error in the exact setting of the dial for each transmission.

The circuit shown in Fig. 2 was designed to overcome this difficulty. Once the operating frequency is set, the dial need not be touched again. Transmission and reception will be on the same frequency at the one dial setting.

The addition to the transceiver circuit consists of a length of heavy wire and a 3–30-$\mu\mu$fd. trimmer condenser. One lug of the trimmer is soldered to the "transmit" lug on the change-over switch. From the other lug of the trimmer a stiff wire is run within about one inch of the tank coil or condenser and grounded on the chassis. The ground point, near the tank circuit, is chosen where the coupling lowers the frequency of the transmitter to the maximum possible degree from the normal dial setting. The trimmer should be set at about ¾ of maximum capacity to begin with.

The final adjustment is made by calling the net control station on the assigned frequency. The dial is left tuned to this station while transmitting. After being advised by the control station as to whether the signal is high or low in frequency, the trimmer condenser is adjusted accordingly, screwing it in to go lower or opening it to go higher in frequency. The screw should be moved only about an eighth of a turn at a time. There should be a separation of at least one-half mile between the stations when making this adjustment. It is important that the regeneration control and the antenna coupling be kept fixed during the tests.

One other suggestion: If an HY615 tube is used in the transceiver, a marked increase in r.f. output may be obtained by wiring a 2½-millihenry choke in series with the cathode and ground as shown in Fig. 2. — *Frank Heubner, 10 Park Terrace East, New York 34, N. Y.*

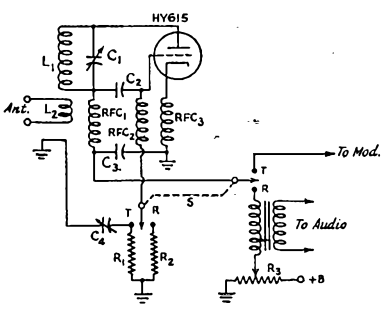


Fig. 2 — **Transceiver circuit with trimmer to enable reception and transmission on same frequency.**

C_1 — 2-plate variable, 10 $\mu\mu$fd.
C_2 — 50 $\mu\mu$fd.
C_3 — 0.005 μfd.
C_4 — 3–30-$\mu\mu$fd. trimmer.
R_1 — 10,000 ohms.
R_2 — 2 megohms.
R_3 — 50,000 ohms, regeneration control.
RFC_1, RFC_2 — Ohmite Z1.
RFC_3 — 2½ mhy.
L_1 — 5 turns No. 12, ½-inch diameter.
L_2 — 1½ turns No. 12, ½-inch diameter.
T_1 — Audio transformer.
S — 4-pole double-throw switch.

2½-METER COAXIAL ANTENNA MADE FROM COAST GUARD SURPLUS

SOME surplus material is now being released for civilian use. Among other items are the vertical radiators used by the Coast Guard on frequencies around 2.5 to 3 Mc., known as "top loaders." These antennas are made of stainless steel, and were designed to mount on the bumper of a car by means of a bracket supplied. They might also be mounted on a mast very easily. With a little revamping they can be converted to excellent coaxial antennas for use on 2½ meters.

To make the conversion the ¼-inch-20 screw and the bakelite insulator at the bottom of the supporting pipe going through the bracket are removed. The bracket is then struck with a mallet while the pipe is held firmly. This is done to loosen the pipe in the insulators, as they were cemented after assembly.

Next, the remaining half of the insulator is removed. There are two ½-inch 8–32 screws through the walls of the pipe, close to the bottom insulator. When these are removed the metal insert is taken out. The ¼-inch-20 threaded hole in this insert is to be drilled out with a 5/16-inch drill and a ½-inch bakelite sleeve driven into this hole. The sleeve is to be the insulator for a new bolt to be inserted later.

Notice that the top of the insert (the part which goes into the pipe) is hollowed out. Into this recess insert the small end of a polystyrene feedthrough insulator, of the ½ × 3-inch size.

The three screws holding the metal can, just under the flange which holds the whip, are now removed and the can is slid down. A loading coil will be found inside the can. This is removed by taking out the three screws at the bottom of the coil form, and the wire is removed from the form. A hole is drilled in the end of the form to pass a No. 14 insulated wire.

The large end of the aforementioned polystyrene insulator must be turned down, leaving a ⅜-inch shoulder, until it makes a snug fit in the insert found at the top of the supporting pipe, just above the bakelite spacer for the coil form. This insert is the part to which the coil form was anchored. If a lathe is not available the polystyrene insulator may be turned down by chucking it in an electric drill.

A length of No. 14 insulated wire, about 8 feet, is soldered to the head of a 5/16-inch-20 toggle bolt. The bolt is dropped down the pipe. The small portion of the polystyrene insulator, shoulder first, is slipped over the bolt. (The insulator must fit the inside of the pipe, but not snugly.) Next, the metal insert which has the bakelite sleeve driven into it is slipped over the bolt. Finally the bolt is inserted through the top portion of the bakelite insulator which goes into the mounting bracket. The other half of this insulator is replaced and the necessary hardware run on the toggle bolt. The two 8–32 screws are replaced, after shortening them so that they will not strike the new polystyrene insulator. A soldering lug is placed under one of the screws.

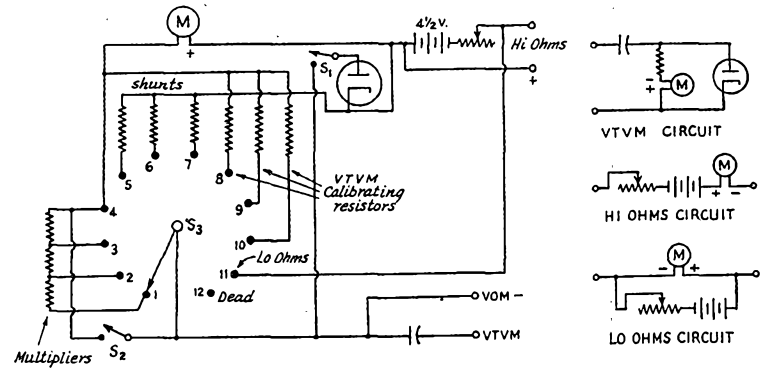


Fig. 3 — Diagram of a v.o.m.-v.t.v.m. using a simplified switching arrangement. The values of shunts, multipliers and calibrating resistors depend upon the ranges desired.
S_1, S_2 — S.p.s.t. toggle switch.
S_3 — 12-point rotary selector switch.

All the turns on the loading coil having been removed and a hole drilled 2 inches from the top of the form to accommodate the new wire, the turned portion of the polystyrene insulator is slipped over the wire and the insulator driven into the insert. The coil form is then placed over the wire and the wire drawn through the new hole so that it passes to the outside of the form. The form is put back in place on its support and fastened with the original screws.

The wire is trimmed and a lug soldered to the end so that it may be anchored under one of the screws holding the whip support after pulling it taut. It is important to anchor the wire here and not on the coil cover. Otherwise the antenna will not load properly, the sections not being matched.

After replacing the cover can, the job is finished. The result is a coaxial antenna for 2½ meters which is resonant at 114 Mc.

If coaxial cable is not available for the feed line, a 2-inch open line may be run; one side to the ¼-inch-20 toggle bolt, the other to the lug on one of the screws holding the bottom insert.

I am not licensed and so could not try out the antenna myself on transmitting, but had another ham try it during WERS tests. The reported results were amazing.

The total cost was $5.50, including the CG radiator, and fifty cents for the polystyrene insulator. The radiator was manufactured by Kaar Engineering Company at Palo Alto, Calif. — *P. L. Simandl, 6305A Sutherland Ave., St. Louis, Mo.*

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SINGLE-GANG MULTIPOINT SWITCHING FOR V.O.M.-V.T.V.M.

Because of wartime shortages it has been impossible for me to obtain a two-gang multipoint selector switch for a v.o.m.-v.t.v.m. The circuit shown in Fig. 3 was designed to permit the use of a single-gang selector switch and at the same time avoid the necessity for using pin jacks and patch cords for switching.

Two s.p.s.t. switches, S_1, and S_2, were employed in conjunction with the main selector switch, S_3.

When using the shunt ranges for readings on the MA and Lo-Ohm scales, S_2 is on and S_1 is off. When using the Hi-Ohm scale, S_3 is set at position 4 and the special Hi-Ohm jack is used. S_1 and S_2 are off. This range may be extended by using an external battery. When using the v.t.v.m., S_1 is on while S_2 is off. For all other measurements S_1 and S_2 are off.

The values of multipliers and shunts used will depend upon the internal resistance of the meter as well as upon the desired ranges. Data will be found in *The Radio Amateur's Handbook.* — *Lewis Garber, 18 Kemper Court, Sandston, Va.*

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COUPLING NETWORK FOR WORKING SEVERAL BANDS ON ONE ANTENNA

For several years at W2LIW I used a pi-section network, sometimes called a "Collins coupler," because of the ease with which it enabled me to work over a wide range of frequencies in several bands with one antenna. The antenna

(Continued on page 84)

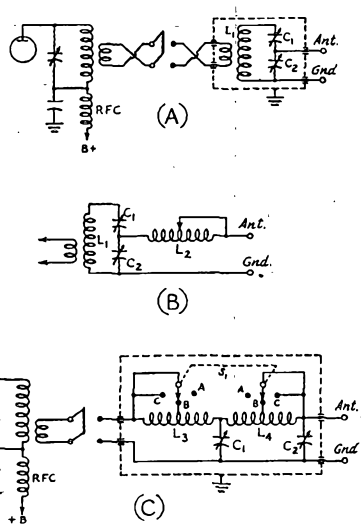

Fig. 4 — (A) Wide-range antenna coupling network. (B) Loading coil used with above coupler for working a very short antenna on a very low frequency. (C) Tapped antenna coupler for a band-switching transmitter.
C_1 — 250-μμfd. variable, widely spaced.
C_2 — 500-μμfd. variable, widely spaced.
L_1 — To resonate at desired band with low capacity.
L_2 — 30 turns, 2½ inches diameter.
L_3 — 30 turns, 2½ inches diameter.
L_4 — 40 turns, 3 inches diameter.
S_1 — Double-pole, triple-throw tap switch.

CORRESPONDENCE FROM MEMBERS

The Publishers of *QST* assume no responsibility for statements made herein by correspondents.

ARRL'S EFFORTS APPRECIATED

U. S. Naval Operational Training School,
12th Naval District, Treasure Island, Calif.

Editor, *QST:*

In my radar classes here at Operational Training School, I come in contact with many hams. My first query is, "Do you belong to the ARRL?" If the answer is negative, it doesn't take much talking to convince them they should join.

Anyone can understand how important organization is at the present time. Without it, we could easily be "left out in the cold" as far as postwar amateur activity is concerned. The ARRL, in my opinion, is doing a wonderful job of representing the radio amateur. I speak specifically of the portion of your testimony presented to the FCC that was published in the November issue of *QST*. It was well worded and well presented and accomplishes an end that ten years of bickering and pleading would not reach. Without the League's organization, how could a group of disunited amateurs — many overseas — hope for anything but postwar anonymity?

Keep up the good work and I'll continue my League recruiting, thinking not only of my own selfish interests, but of the advancement of amateur radio in general.

— *Lt. (jg) R. M. Kelley, USNR*

Raquette Lake, N. Y.

Editor, *QST:*

I have taken *QST* since you put it in circulation, and of course was a member of the ARRL, but that, I thought, was just a side line and your primary interest was to sell the magazine.

After the last war ham radio went on as usual for me. Possibly I was too remote to realize that the ARRL must have had a hand in our allotments of bands and our rapid progress. I realize, after reading your November issue, that I have been lax in not finding out twenty-five years ago the real good you have done for the hams.

Please accept my apology, and God grant you can keep up the good work.

— *Riley Parsons, W8BXY*

Provisional Sqd. B, Lincoln Army Air Field,
Lincoln, Nebr.

Editor, *QST:*

. . . I have been especially interested of late in ARRL's fight for ham radio's position in the postwar communications world. It is most comforting when most of us are so occupied and even more so to know that our cause is in such hands. We all have complete confidence in your ability to successfully defend our position at this time.

— *Lt. Hugh Brady, AC, W1NSW*

CHAIR-WARMERS—ATTENTION!

424 Grover St., Joliet, Ill.

Editor, *QST:*

In regard to the advisability of the return of amateur radio in the postwar era, I have not as yet seen this argument put forth.

Thousands of our boys in the service have had training as radio operators, technicians or in other fields connected with radio. Many of them have seen action on the various fronts. Many will return with the effects of the rigors of war instilled in their minds, their bodies broken, faced with the dread of spending the rest of their lives as invalids. It will be a hard task for them to forget what they have seen and experienced.

The long days to be spent as an invalid, or the convalescence of those more fortunate, could be greatly shortened through the medium of amateur radio.

Unable to get out of doors to see and talk to other people, think of the thrill one of these men would experience if he were able to tune up his transmitter, which he himself had constructed, and carry on a conversation with another amateur in his own city, state, or elsewhere in the country, and discover that the fellow he is talking to is a former "buddy" who had fought beside him on one of the battle fronts. He not only would feel the pleasure of talking to a friend miles away, but would derive the satisfaction of having accomplished something through his own ability, thus helping him to sweep aside that feeling of frustration and helplessness. . . .

Thus by permitting the amateur to return to the air the Government would win the undying gratitude of thousands of ex-servicemen who are unable to enjoy life as you and I.

— *Irvin L. Eaton*

CONTRIBUTION TO WORLD PEACE

623 North Hobart Blvd., Los Angeles 4, Calif.

Editor, *QST:*

In the discussions of the postwar position of amateur radio, it is apparent that an important point is either overlooked or not sufficiently emphasized by supporters of the art. Namely, the beneficial influence which amateur radio could exert on harmonious international relations.

It seems logical to this writer that never has there been a greater opportunity to bring the peoples of the world closer together than is now offered through the medium of radio. Mere commercial broadcasting of one-way mutual interest programs is not enough. In fact, it is only a step toward a destiny which promises personal communication between ever greater numbers of the

world's citizens, through the continually expanding medium of amateur radio.

Ignorance has always been a prime breeder of war. But now with the magic of radio, distance, the greatest barrier, is becoming as obsolete as "isolationism."

True, there still remains the language problem. But this should be solvable through enthusiastic and united action of a world amateur organization. Gigantic language classes could be conducted among progressive members of the fraternity — such as was tried, on a small scale, before the war. In this connection an international language as suggested by Maurice Gowdey, W7DZZ, in his letter which appeared in Correspondence in the November, 1944, issue of *QST*, may prove extremely helpful.

Of course, there are those who will scoff at this "Internationalist" view as idealistic. But I'm sure that no student of international relations would fail to see the great contribution that amateur radio is prepared to offer to world peace.

I feel that this fact should not be permitted to escape the attention of those authorities who will decide upon the future of a hobby which numbers among its followers men of all races and creeds from every country on the earth.

— *Reg J. Burrows, W6RJI*

QRP NOTES FROM W6BIL

174 Taurus Ave., Oakland 11, Calif.

Editor, *QST:*

. . . I was looking through my old log book the other night and noticed that I once built up a rig (3 stages with p.p. T20s) for 20-meter c.w. and had only 18 contacts on it consisting of PX1BX and VU2FV (both new countries for my DX list) and ZL J VE W2-4-5-7-9. (Not even a W6!)

The next rig that I built was a 6L6 crystal on 40 meters with 18 watts input. The rig was in a metal case 6 × 6 × 6 inches and weighed 8 pounds. With this rig I worked 13 K6s; 8 K7s; KA1; XE2s; VE2, 3, 4, 5; HH2; CM2, 7; VP4; ZL1; VK2, 3, 5; VK7; J5, and WAS. A total of 484 QSOs from April 1, 1938, to April 1, 1939. Some fun — this flea power!

How about some other low power DX lists?

— *George S. Maxey*

HOW ABOUT GLASS BLOWING?

APO 559, New York, N. Y.

Editor, *QST:*

. . . The other day when I'm minding my own business, which is running ye olde Harwell trainer (the radio op's version of a Link trainer), in walks a lieutenant. Pretty soon he's wanting to know how to tune up the transmitter. Then he's asking about E.T.O. procedure. So my question was obvious, "What's your call sign?" "W9QLA," says he. Whereupon we bat the breeze.

Alas, I haven't even a license so all I could do was listen except when the talk swung to GI radio. I took him to see the Hallicrafters transmitter from an SCR-299. We couldn't stay long, he'd have been drooling. He's Seymour Passen and a navigator on the big tin-birds. . . .

How about thinking of glass blowing soon? If you could publish simple articles on this, hams could enclose whole tuned fixed-frequency circuits in one envelope. Might help a lot on u.h.f. frequencies. One of the letters in Correspondence from Members some time back mentioned this. It seems like a good idea. . . . Along the same line, perhaps a bit of thought on small vacuum pumps would be rewarding. These are all just suggestions. Seriously though, is it possible at present, or in the future, to buy components of tubes such as heaters and cathodes, materials for plates and screens? . . .

— *T/Sgt. Warren H. Donnelly*

W6ANN'S CRYSTAL BALL

Miraleste, Calif.

Editor, *QST:*

Every once in a while between WERS drills we get to doing some mental doodling about the rig we are going to have after the war and the improvements we would like to make on the present junk and how we are going to be on all bands at once and we generally grind down to pretty much the same idea. Now we want to set down some of our ideas and see if you can get some of the master minds who are also sitting around keeping the shack warm to figure out just how we can do it.

We noticed that the November issue of *QST* urged everyone to get started as much as possible to make those needed changes to the ole fire pot as far as the available parts would go, but the more we look at our so-called rig, the more the idea seems to please us that the best thing to do is to jack up the meter and run a new rig in underneath.

How about starting some kind of a column for postwar ideas along with an answer column on can they be done — and how? Here's mine:

1) Over on the operating table I want an exciter about two thirds the size of my RME69. Now this is going to be a peculiar exciter. It will have a v.f.o. and a lot of crystals around the edges of the bands, but it will also be able to put out 25 watts on 7, 14, 28, 56 and 112 Mc., or whatever we get when the war is over. The v.f.o. will have an elegant dial like a frequency meter and be so calibrated that you can set your frequency at plus or minus a 100 cycles. Over on the other side of the cabinet will be the band-change switch. One click and you've got your 25 watts on the next band, the link is thrown in to the main transmitter and you're ready to go. Of course, you should be able to key the oscillator for break-in and maybe modulate the oscillator for f.m.

Now this would make a good transmitter in itself — but for me it is simply a band changer. Over on the rack we're going to have a flock of final amplifiers all hooked up to antennas and ready to go. These finals are going to have some newfangled beam tube that we can get the old California kw. output with only the 25 watts input to same. Now all we have to do to change

from one band to the next, is to turn the band-change switch on the exciter to the band wanted and turn the filament on for the final amplifier we are on. Simple, eh? Come to think of it, the exciter ought to have a built-in power supply.

2) Now that we have put on a little beef here and there and can no longer run the hundred in ten flat, we find it a little bit inconvenient to hang fifty feet in the air on top of the pole and try to hear what the XYL is saying as we try to tune up the three-element beam. Now, the only right way to do a thing is the easy way. Trying to imitate a flag pole sitter by the hour isn't our idea of something easy, especially when you climb down off the pole to find that the movement of a certain amount of lard has thrown the darn thing out of kilter. Now, the thing that this country needs is a good three- or four-element beam that can be tuned from the ground and preferably from inside the shack. Who can come up with the answer to this one?

3) We want a meter on the ole rig that really reads *output*. Remember in the old handbooks there was always a statement that went something like this — "This meter reads antenna current and any resemblance to power output is purely imaginary"? Why don't we get this meter to read power output?

One way it might be done is to have a permanent field strength meter located, say, at the house of the friendly neighbor across the street (apologies to W6AM) with a remote control meter at the rig? Maybe there is a simpler way — we surely hope so — but with this sort of a gadget you could surely tell just what effect those changes you're making were doing to your signal strength and not just moving the current node up and down the antenna.

Well that's sort of a start, and probably won't agree with *your* idea, but some other ideas will probably start me from scratch again. How about kicking it around a bit?

— *Bill Adams, W6ANN*

HANDBOOK IN ITALY

665 Tank Troops Workshops, REME, CMF
Editor, *QST:*

I wish to congratulate you on your 1944 edition of the *Radio Amateur's Handbook* which I received yesterday. I ordered it through the good offices of our own amateur radio society — the RSGB — last August and, although I had to wait several months while it made its way first to England and then out here to Italy, I honestly can say it was well worth waiting for. My opinion is endorsed by my fellow technicians and you will no doubt derive some satisfaction when I say that the *Handbook* will play its part in aiding us in our particular little part of the war effort. . . .

In closing, I also would like to tell you we think the *Handbook* well worth it if only for the valve data charts which are particularly useful to us as a considerable amount of the gear coming through our hands is made in the States.

— *CFN C. S. Dexter*

SEA-GOING OP REPLIES TO W3NE

c/o Fleet Post Office, San Francisco, Calif.
Editor, *QST:*

I have been catching up with my reading out here at sea and after going over the April issue of *QST* I decided that it was time to make a few statements.

Regarding the Hams in Combat story by A. C. Jones, W3NE, "A Ham Goes to Sea," I wish to say that Mr. Jones certainly made some observations the new merchant marine operator truly should read before setting his course to sea. There are a lot of things on which the new operator should be "wised up" in order to fit into his position aboard ship. As W3NE said, take things easy at first, be quiet and composed until you find out the lay of things. Listen to conversations at the mess and judge in your mind the persons who will make the best and most interesting friends. (Of course, the steward is a very important person aboard the ship and friendly relationship is important. Same goes for the chief mate.)

As for amateurs in the merchant marine, I think there are lots of them around. Every so often I bump into ham friends of mine or associate operators who before the war were in the "Great White Fleet" — the tuna boats sailing out of San Diego, Calif. Many men going to sea at the present time never had an opportunity of hamming — because of the war.

Mr. Jones, by now you probably have already found this out; the best way to discover if there are hams around is to wait until you get into a port overseas and, having made friends with the signalman, go topside and fire up those large signal lamps. Some of the hottest light circuits that were ever hooked up have been with radio ops shooting the breeze. For example, R. C. Smith on a ship anchored several hundred yards from me in the South Pacific: "HWS TNGS OM, CAN U QSY WID ME TO SHORE IN AM?" — "YES BUT QRL ANT FIRST ETC." Of course regular Navy signalmen don't understand a thing that is going on and most of the time don't think you do either, but it's true they try pretty hard to follow along. Hi!

— *Martin H. Smith, W6OBH*

A W4 MOVES NORTHWARD

Hq. 6th AACS Wing, Grenier Field, N. H.
Editor, *QST:*

Thought I'd write and let you know what is brewing with old W4GEE these days. I enlisted in the Signal Corps in November, 1942, and was fortunate enough to be stationed in Tampa, my home, for about 18 months. Our radio section was small and ratings were slow — I'd been a corporal 15 months when I remembered about the AACS. Was lucky enough to be transferred almost immediately and within 3½ months I held another stripe and the job of chief airways operator at MacDill Field in Tampa.

(Continued on page 78)

OPERATING NEWS

CAROL K. WITTE, W9WWP
Acting Communications Manager

LILLIAN M. SALTER
Communications Assistant

Merry Christmas! Happy New Year! To all the gang, at home and overseas, we send our good wishes for the season and the coming year. We may be greeting 1945 with machine guns and tanks, but if we tighten up the ole belts another notch, keep those sleeves rolled up and work harder than ever for victory this year, there's a chance that we'll be greeting 1946 with mikes and telegraph keys, too! (See KBW's editorial in December *QST*.)

A Message from OCD in Washington. In addition to previous pleas made in this department to hams and WERS operators all over the country to keep WERS alive and kicking, we now have the following letter to present to you from national OCD headquarters, dated November 30, 1944:

"Dear Mr. Warner:

In reference to the request initiated by your Acting Communications Manager, Mrs. Carol K. Witte, a conference was held with members of our staff relating to the present and future importance of the War Emergency Radio Service (WERS).

It is a fundamental concept that all operations, whether civilian or military, which involve the functioning of large numbers or groups of people, not long and frequently rehearsed in acting together will break down into disconcerted action of small groups unless correctly controlled and coördinated by a central authority; that in these modern times control and coördination of such is impossible without two-way communications; the incoming to bring in intelligence from the field and the outgoing to carry instructions, directions and advice.

The dependability, continuity and mobility, especially of the field end of such communications, is absolutely essential to insuring unity of action without which there is duplication, friction and confusion.

The performance of the WERS during the 14 September 1944 Atlantic Coast hurricane established beyond any question of doubt the continuing necessity for having Emergency Radio Service in natural as well as war disasters. WERS in some States permitted sending hurricane warnings to points where all form of wire communications had failed. In New York City, it permitted the police and fire service to continue in operation when parts of their wire systems failed.

For three years the National Office of Civilian Defense has piloted the way, in WERS as in all matters of Civilian Defense, so as to give each State time to organize and train their respective forces. The States have had that experience and development, so now they assume the direction of their own Civilian Defense and the function of the National Office is to act only as a clearing house for information; a gatherer, digester and disseminator of additional ideas, methods and information. Also upon request from any of the States, it renders assistance in all matters within its province.

There has been no recession by OCD from its belief in the value of War Emergency Radio Service, but it is convinced that the time has arrived for each State to assume the responsibility of their own WERS.

If it were not for the demonstrated patriotism of the radio "hams" in this country, WERS could not have made its rapid progress. They not only have furnished trained personnel, instructors to train others, but also technicians and the equipment for which there were no priorities allotted. It is the hope that they will continue the perfection of the WERS network in each State and in establishing mutual aid between cities, towns, counties and states.

Sincerely yours,
—William N. Haskell, Director
Office of Civilian Defense
Washington 25, D. C."

Ham Vets in Hospitals. Are you in the vicinity of an Army or Navy veteran's hospital or rehabilitation center? If you are a stay-at-home amateur, then maybe you'd like to consider the thought that there may be hams or SWLs within its walls who might like to meet other amateurs in the vicinity.

Dr. Raymond Woodward, W1EAO, is shown here being awarded the Connecticut Medal for Distinguished Civilian War Service by Connecticut's Governor Raymond E. Baldwin. "Doc" received the award for his fine work in organizing WERS throughout the State of Connecticut.

We got the idea from a couple of local hams, who are at present endeavoring to find out if there are any hams at the Army rehabilitation center for blind vets near here. The local hams plan to invite any of the blind hams or SWLs in the center to dinner in their homes, where they will be assured of some pleasant rag-chewing, or entertainment in the form of recorded music, etc. The local hams also intend to aid any of the interested vets with code and theory.

In other places, where the vets in question are confined to their beds or restricted to the hospital grounds, the local hams might be able to rig up some sort of a landline c.w. circuit from room to room in the hospital. This would enable those who know the code to carry on rag-chews with others in the hospital, and thus help to pass away more quickly some of the long hours.

If it is impossible to locate any hams or SWLs in the hospitals or centers, it's a pretty good bet that there would be some servicemen who had radio training in the armed forces, and who would be interested in carrying on the work as a hobby. Many of the disabled veterans would be glad to follow the hobby of amateur radio, too, we feel sure, because it is certainly one in which most physical disabilities are not a limiting factor to participation.

We'd certainly like to hear about it if anyone is able to get a project of this sort started in a hospital or rehabilitation center. If there are any recuperating vets reading this who would like us to put them in touch with amateurs and club groups in their vicinity, we'll be glad to help you, too! Drop a line to the Communications Department at ARRL, and let us have your comment and suggestions on the subject.

World War II Equipment Exhibit. We are glad to announce plans for a prospective exhibit of radio equipment used in battle in World War II. The exhibit will consist of U. S. or foreign equipment, and will probably be maintained as part of the ARRL museum.

So far, we have an Italian radio tube, taken from a field set used in the African campaign by a British unit, which was donated by W7EPT of Bremerton, Wash. In addition, we have recently received a German telegraph key to add to the exhibit, which was donated by W9UIN, now overseas with the Hq. 4th Inf. Division. These two pieces of gear make a fine nucleus for the proposed exhibition, and we want to thank the fellows for their generosity in making the donation.

The League will appreciate receiving other donations of equipment of this sort, which has been captured or otherwise secured from the battle fronts. In every case, the equipment will be maintained at Headquarters as a permanent memorial and reminder of the service rendered by amateurs in the great conflict. The exhibit will include full credit to the donors, along with descriptions of where and how the equipment was obtained. For this reason, we will appreciate receiving full particulars, where possible, on the gear which is donated.

GB for Now. This is the last ON "transmission" for this op, before leaving to join Uncle Sam's WAVES. From December 14th on, the Communications Department will be managed very capably by Miss Lillian M. Salter, assisted by Charles A. Service, W4IE, and Miss Jeanette Copp. LMS and CAS take over the reins with years of League experience behind them, and will do a fine job in handling CD affairs, we all know. (By the way, LMS has taken a step in the right direction recently, for she now holds a third-class radiotelephone license.)

. It's been great working for and with you, gang, and I'm looking forward to QSOs on the ham bands with you again, soon!

— *C. K. W.*

BRIEF

The destructive spirit of Halloween was curbed in several communities by the coöperative action of local police outfits and WERS units. In Hamilton Township, N. J., eleven WERS units provided an inter-communications net to aid the local police. In Columbus, Ohio, the WERS crew did efficient job of helping to relieve the overtaxed police communications system during the Halloween "emergency."

Here's the annual photograph of the home-front members of the Hamfesters' Radio Club of Chicago, which is sent as a part of holiday greetings to their war-absent members. The Prairie Dogs, the Woodpeckers and the Pole Cats (Field Day groups within the club) are represented by placards in the picture. Numbering 285 active members, with 102 members in the service (2 members are gold stars), the Hamfesters comprise one of the world's largest ham clubs.

HamYarns

What is the most unusual experience you have ever had in connection with ham radio? Have you ever had a QSO that took place under peculiar circumstances, or that resulted in an exciting adventure? Have you ever been surprised, terrified, or highly amused at some incident that occurred during the good old days when you were operating your ham rig?

CD invites you to submit your story of the most unusual ham yarn you know of, whether experienced by yourself or a fellow amateur, for possible publication in Operating News. All stories should contain approximately 500 words, must be true, and must center about the subject of ham radio.

Each winning "Ham Yarn" will be published in this department, and the author may select a bound *Handbook* (Defense or regular edition), *QST* binder and League Emblem, Lightning Calculators, or any other combination of ARRL supplies of equivalent value ($2.00), as his prize.

All entries should be marked "Ham Yarns" and addressed to the Communications Dept., ARRL, West Hartford 7, Conn.

Ham Yarn No. 3

BY OSCAR A. NEUMER, JR.,* W9VOR

Of all the memorable experiences I have had in ten years of ham operating, the one that stands out most vividly in my mind is the one that occurred one night in 1936.

I was operating my first high-powered transmitter at that time, a rig of which I was very proud. I had taken infinite pains in constructing it, and it consisted of two bays of equipment. One of the bays contained all of the power supply and audio equipment, and the other contained the entire r.f. section. Of it all, however, the piece of apparatus which I most proudly displayed was a huge, double-pole double-throw knife switch, which was capable of handling about eight hundred amperes of current. This switch was mounted on the front panel of the power bay, which was about fourteen inches up from the floor. The blades of this switch were connected to the caps of the high-voltage rectifiers, and one set of the "jaws" had three thousand volts on them, and the other set had five thousand on them. Unfortunately, I relied only on the impressive appearance of the switch to keep people from touching it; and therein lies the tale I have to tell.

On one particular night I was busy handling traffic, with one of the local gang seated nearby in the shack to keep me company. (Although this fellow did not possess an amateur ticket, he was a good radio technician, and he often came down to chew the rag, or to talk over new equipment and procedures with me.) While I was on the air, our tenants brought down a couple of visitors to see the place, and they all sat down in the shack while I finished my traffic sked.

After exchanging hellos with the newcomers, I got back to business, forgetting to watch the one year old youngster whom the visitors had brought in with them. All of a sudden I heard, "Mustn't touch, Ronnie!", and glanced out of the corners of my eyes to see what was going on. The sight which met my eyes momentarily paralyzed me with terror.

The child, being a tot of the roving type, had maneuvered himself to a position on the floor directly in front of the transmitter, and was about to reach up and grab ahold of sudden death! I couldn't move or talk, as I watched the child's hand move upward toward the switch! It was one of those helpless moments when neither brain nor body seemed capable of functioning.

All of a sudden, as if from out of nowhere, a coil of antenna wire settled down on the switch blades — there was a flash, and then the circuit-breaker opened, rendering the switch harmless! Without doubt, I had witnessed a bit of the fastest thinking and prompt action of which a human could be capable, on the part of my technician friend. If he had not been there, this story might have had a different ending.

Needless to say, my transmitter did not go back on the air again until I had thoroughly changed its entire design and construction, and had equipped it with an interlocking system.

This incident taught me a great lesson. I hope that others reading this story will profit by the mistake I made, which almost resulted in the loss of a human life. Let *safety* be the watchword for all prewar and postwar hams, who construct amateur radio equipment in the future!

* Box 111, Lawrenceville, N. J.

Meet the SCMS

The very personable gentleman pictured below is not your favorite cowboy movie favorite, but N. Arthur Sowle, W6CW, the SCM of Nevada. No doubt his garb has something to do with his call slogan, for he signs himself most frequently as the old "Cattle Wrangler."

Born in September, 1907, he has managed to lead a very interesting life and carve out quite a career in radio work. After completing elementary and high school courses, and taking special courses at Stanford University and the University of Nevada, he held a series of varied jobs. These included work as a radio serviceman, service manager and broadcast operator. He is, at present, supervisor of the radio network for the State of Nevada Police, in Reno.

W6CW's interest in ham radio began in 1920, and he obtained Canadian license 5CE at Vancouver, B. C., in 1921. In 1922 he became W6CW in San Francisco, and in 1932 he added W6AXB as a portable call. In 1936 he moved to Reno, Nevada, where he became active in NCR and Trunk Line "B" work. He received the appointments of ORS and RM soon after.

Although chiefly active on 80 c.w., because of his traffic work, W6CW also has been active on 'phone on 75, 10, 5 and 2½ meters. The XYL, and, we might add, Sowle-mate, is W6JQH, whose voice is familiar to all those who operated on 10-meter 'phone.

The radio clubs in which W6CW has held office and in which he has been a member are: Santa Clara County Amateur Radio Assn., San Francisco Radio Club (pres.), Peninsula Radio Club (vice pres.) and Nevada Amateur Radio Assn. (pres.). In addition to these organizations, he is also a member of the International Footprint Association. Add to this the time spent in engaging in radio-controlled aircraft and HO-gauge model railroads as hobbies, and you will wonder when W6CW finds time to sleep and eat!

As if this weren't enough, this SCM is an accomplished skiier and swimmer, and holds a pilot's license. Truly, the amateurs in Nevada have chosen their SCM well, for only the sky is the limit to the ambitions of W6CW!

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BRIEF

The radio aide of Greene County, N.Y., Harold Schect, W2NOC, informs us that his group received their WERS license less than two weeks after the first application was mailed! Can any other licensee duplicate this record-smashing achievement?

The Month in Canada

ONTARIO—VE3

From Leonard L. Mitchell, VE2AZ:

WITH the end of the war in sight, Toronto amateurs are beginning to buzz like a swarm of bees. Realizing that in radio plants in and around Toronto, are congregated more amateurs from all parts of the Dominion than would normally ever be assembled in one locality, they have decided to hold a ham convention. With the help of the directors of the WAOO and a group of hams in a large war plant, a committee has been formed consisting of representatives from each VE district. The convention will be held early in the new year and over 300 hams are expected to be present. The CGM, alternate CGM, and representatives of the RMA and IRE will be invited to attend, along with OMs and YLs in the armed forces.

The WAOO is still active and holds meetings regularly on the third Thursday of each month in the Electrical Bldg., U. of T. At the October meeting a paper was presented by Capt. C. L. Richardson, RCCS, Inspecting Officer of Signals Equipment at Toronto, on the subject of Army Communications and Equipment. By special permission of his superior officers, Capt. Richardson was able to have on display many of the sets used at the present time by the armed forces. At the November meeting, R. H. Spencer, public relations representative of the Bell Telephone Co. of Canada, presented a very interesting paper on the history and development of telephone equipment. The new Mirrophone recorder was demonstrated and many of those present at the meeting had recordings made of their voices. The membership of the WAOO has increased by 29 since October 15th, with some of the new members from as far away as Hamilton and Oshawa. A drive is on to increase membership in the ARRL and results to date are gratifying.

3IB had a visit from 3TJ, who is spending his time testing radio equipment in test flights in Mosquitos. 3JM and 3OR are doing the same job, but in Lancasters. 3IB has been kept busy with school matters. 3KE, lately of Ottawa, is with the RCAF Communications, present address unknown. 3TC is still with Canadian Press. Congratulations to 4TO on the arrival of a baby girl, her name is Pat — more QRN for the 20-meter band. Messrs. Haines, 5MQ, and Reade, 5IO, were welcome guests at the last meeting of the WAOO; also 3AZI, Alf Gillier, and 3RH, Bob Haslett. 3AHM, who is with the RCAF, previously RAF, is now transferred from Halifax to Moose Jaw and is on the way to the West Coast on a postwar installation project. Bill Winters, 3APA, who has been in the hospital, is now very much better and hopes to see the gang soon. Everyone hopes he will have a speedy recovery. 9AL, Keith Russel, RCAF, has also been in the hospital but expects to be discharged before this appears in print. 3AXX, who is in the Navy, was home on leave recently, and is now stationed in Quebec. 3NP, Mac, is still at the old stand in Newmarket. 3YS is in the Army, QTH unknown. 3ADR, Harvey Reid, who saw service with the RCAF in Italy is at the Muskoka Hospital, Gravenhurst, and would appreciate hearing from any of the gang. 3MS, John Herring, stationed in India with the RCAF, expects to be home on leave soon.

ALBERTA—VE4

From W. W. Butchart, VE4LQ:

THAT genial RI from Calgary, 4HQ, Bill Stunden, recently had the misfortune of being one of the principals in a car-truck smash which occurred on a highway in the south of the province. At the present time I am unable to report on Bill's condition, but understand that he suffered some injuries. 4ZI, E. R. Irwin, of Barons, who sent in the clipping and photo from the Lethbridge Herald says he figures Bill's radar equipment let him down badly! Seriously, though, Bill, we hope that by the time you see this in print your troubles will be over. 4ZI attended the SAARC (Southern Alberta Amateur Radio Club) meeting in Lethbridge, held in the first week in November, to see and hear a demonstration and lecture on thyratrons, delivered by Albert Potoski, business manager and secretary of the SAARC. He was much impressed by the events of the evening, and tells us that next month's lecture and demonstration will be on impedance matching, filters, etc. 4EO, Bill Savage, of Lethbridge, according to the legend supplied by ZI, once keyed the "output" of a Schick electric razor, and really worked local stations. What's the true version of the story, Bill? 4ARC, Aylmer Gloer, of Barons, and 4ZI went out hunting geese recently, and among other things shot a coyote. After finally getting on the trail of the geese, they stalked them from behind a hill, with the result that the goose population of Alberta was decreased by exactly seven "honkers." In the excitement, ARC's gun jammed (or was it just "buck fever," Aylmer!). 4AQP, Milson Hodgson, of Barons, who has a new house under construction, is held up for windows and stucco wire, which articles appear to be very scarce all over the province. 4ADY, Laverne House, of Barons, went to the trouble of making most of his sash, as his father happens to be a carpenter. His Lincoln welder is now complete, and makes a very FB outfit. Can anyone put us wise as to just what a "Lincoln" welder is? By the way, last month we reported 4AQY, Ken McLean, as having forwarded a note via ANV, Dave Tait, of Edmonton, and possibly I gave the impression that Ken was in England. Such is not the case, as he is with the British Middle East Forces — which leaves plenty of room, too. 4AOZ, Slim Marsden, of Milo, advises that 4AOW's XYL passed away the 16th or 17th of October. Our sincere sympathy to AOW in his bereavement. Slim is proudly waving around a two-year subscription to *QST*. 4APZ, Alvin Campbell, of Innisfail, gave Slim an FB cabinet in which to mount his 12-inch dynamic speaker, so that he can get the best out of that Traffic Master.

Alex Reid, 2BE, our CGM, recently sent along a copy of the brief presented to the FCC in the U. S. by two members of Hq. Staff, and take it from us, the case of/for the amateur was never presented in neater form. Any of you chaps really interested in the brief can drop me a line if you would like to have a look at the above mentioned work. [The text appeared in *QST* for November and December, 1943 — Ed.] Funny thing, too, in reading it I learned for the first time that Canadian hams were on the air before the Americans after the last war. How many of you knew that? In reading it over I am sure that each and every one will feel that it is an honor and a privilege to belong to the ham fraternity. Did you chaps read the letter in *QST* a month or so ago re ham radio's fair-weather friends? Very pointed, and I would say it hits the nail right on the head! The good old ARRL is still the ham's best friend, and it hasn't let us down. How's your membership, boys?

4HM, Charles Harris, of Edmonton, and his YF are at present enjoying the company of both their son and daughter, they both having managed to be home on furlough at the same time. 4LQ, your reporter, received word a week or so ago that he had qualified as captain in the Reserve Army. 4BV, Reg. Mainwood, of Edmonton, keeps exceedingly busy in his line of business, but he always finds time to talk ham radio with his many ham customers, or is it "patients," Reg? 4VJ, Ken Angus, of Edmonton, has been rather under the weather for the past two or three weeks, and it is our sincere hope that by the time this is in print he will be percolating as usual. Ken happens to be one of those individuals who does not have the best of health, and through all his ups and downs I'll bet you can't find a chap with a more cheerful outlook on life. Ken has several hobbies, and through them he has cultivated a wealth of friends. You chaps throughout the province will possibly remember Ken better as the editor of the famous NARC Ham News, that growing youngster pioneered by the NARC for the year or so previous to the outbreak of hostilities. To Ken we owe much for the superb job he did on the paper, and we're all looking forward to its reappearance soon after we get back into high again. Rumor has it that our good friend 4GM, Bill Roberts of Hanna, has received another promotion in the RCAF. If such is the case Bill will carry the rank of squadron leader. How about confirmation on this, Bill? 4BW, Ted Sacker, of Edmonton, has his brother Cliff back with him again. Cliff left the Radio Supply Co. to go into business on the coast, but he says he is glad to be back here, even though he had to switch to long underwear again to become acclimatized. The brothers Cable, 4YX, of Edmonton, present a rather neat radio feature over one of the local b.c. stations once a week. It takes the form of questions and answers re troubles in b.c. receivers, presented in such a form as to be of real interest to the listeners. 4HM's son, Roger, is busy assembling a miniature b.c. receiver which he intends to carry with him on his RCAF travels overseas. Circuit and design were pioneered by EA and HM, and it looks as if it might turn out to be a hot little receiver when completed.

News from the local gang is very scant this month, boys, so we'll just have to sign off. My sincere thanks to the boys who are contributing to this column more or less regularly. Without their help I'm afraid that the VE4 section of the

(Continued on page 74)

AMATEUR ACTIVITIES

ATLANTIC DIVISION

EASTERN PENNSYLVANIA — SCM, Jerry Mathis, W3BES — 3RR is now well established in Denver, Colo., where he has moved for his health. His QTH is 1531 Jackson St., Denver 6. He would like to hear from the old gang. 3GVB is with the CAA at the Phila. Airport. 3LB is stationed at Ft. Mason, Calif. 3LU is going to the Navy school in Chicago. 9RQM, red-hot c.w. contest fan, dropped in to say hello. 3GHM was home on furlough before shipping off for DX points with the Signal Corps. 3FRY underwent a serious brain operation at the Mayo Clinic, Rochester, Minn. From there he went to the Harper Hospital in Detroit where he is taking high-voltage x-ray treatments. It would be swell if you fellows would drop him a line at his home, 708 South LeRoy Ave., Fenton, Mich. 3QP announces the arrival of his fifth "harmonic." 3PT/WKRV-16 writes as follows: "The Reading unit is growing nicely. There are perhaps 10 units which are on each report period and at least fifteen report once a week. The control station has worked WKIB-5, Philadelphia, at least once but all consistent contacts have been made either from the mountain above Reading by WKRV-2, 3, 4, 10, 16, or from WKRV-16's country location. Recently WKRV-6, located 15 miles further west from Phila., contacted WKIB-5. WKRV-12 had a "near hit" with WKIB-5 working from the central city. The 6-element "yagi" is a 6-element Sterba located 5 miles northeast of Reading, erected by WKRV-16, who also has tried several 8-wave rhombics (horizontal) but they are no good on 2½ meters. I believe that WKIB-5 hearing WJOR-1 Allentown is incorrect. For months we have been trying to connect WJOR and WKIB. We consistently hear WJOR, WLOA (Easton), WKKH (Bethlehem), WJSO (Lower Merion) and intermittently hear some of the N.N.J. nets. That WKIB-5 WJOR-1 episode concerns me. If WKIB-5 heard Allentown on a normal night, I think the time is again ripe to try to hook them up. Some of us are trying t.r.f. and supers to get away from reradiation." 3JN has just purchased a DX location in Penn Valley. 3HFE is looking forward to sea duty. 3HKY built up the *QST* double regenerative superhet to take to India with him. 9NOR, from Decatur, Ill., dropped in to learn of any ham activities going on locally. W3JUC/JSU reports that the original Swan Island ham, 6QFJ/5, is teaching at Bellevue, Washington, D. C. 3IJN was adrift in the Pacific for about a week. The Frankford Radio Club is contemplating adopting the York Road Club's system of holding meetings in the various members homes by rotation. 73, *Jerry*.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Hermann E. Hobbs, W3CIZ — The WRC held an election in Sept. with the following result: President, CDQ (also president of the YLRL); vice-president, FPQ; secretary, Barbara Peck; treasurer, George Sugar. The WRC is running a code class each meeting night and all interested are welcome. It is principally for those WERS operators who wish to obtain a ham ticket. The club has commenced the publication of a mimeographed "radio scandal" sheet which will be sent to all club members at home and abroad. This will give in detail the doings of the WERS and WRC. CDQ took a flying trip to N. Y. C. and brought back an attack of "flu." GQM has made CRT on board a tin can. FVD pounds brass on a destroyer and visited Pompeii. HMX operates a Red Cross station in the So. Pacific to entertain GIs. GKP is building an h.f. amplifier for his b.c. set after his first one nearly set the house on fire. IXY just returned from a year's duty in VK-land. FYJ is in Calif. ING builds special devices for the Navy. CJR is selling out. IPX attends school at NRL and is rated RT2c. IBS (ex-1QP) is stationed in California.

SOUTHERN NEW JERSEY — SCM, Ray Tomlinson, W3GCU — Regional EC for N. J. Technical Radio Advisor for N. J. State Defense Council, N. J. State Radio Aide for WERS and Radio Aide for Hamilton Twp. WERS, ASQ. EC for Somerville and vicinity, including Southbranch, and Radio Aide for Hillsboro/Branchburg Twps. WERS, ABS. Assistant Radio Aide for Hillsboro/Branchburg Twps. WERS, ACC. ASQ reports that there were quite a few late reports on WERS activity during the Sept. hurricane. A N. J. state WERS traffic net is in the process of organization and will function chiefly during emergencies. Regular drills for this net will be conducted during official periods. Participating in this network so far are the control stations of WKPX, WJMN and WKXQ. ASQ reports that 6 new operators have received their WERS permits and will be assigned to various Hamilton Twp. WERS units. Difficulties which arose at unit No. 15 have been ironed out. This location boasts the longest set of feeders in the WKPX net, approximately 95 feet with the antenna a good 65 feet above ground. A new antenna was installed Nov. 19th at unit No. 20. One of the small RCH units has been under test by ASQ during recent drills, but the transmitter has not been able to cover more than a few blocks. The new 815 transmitter built by ITS has been assigned No. 31, emergency control, and uses a superregenerative receiver equipped with an r.f. stage. ITS has just finished and erected a new coaxial antenna at his home for testing purposes. Another new unit is under construction by GCU and will use an r.f. stage ahead of a superregenerative. This unit will be used temporarily to replace each of the WKPX units while they are being equipped with an r.f. stage. ABS reports that activity is high throughout Hillsboro. They are still training operators, as well as proceeding with additional construction projects. The radio aide for Bridgewater Twp. reports active participation in the new traffic net; also progress throughout the WJMN set-up. On Hallowe'en the units of WKPX were ordered into action and, carrying two auxiliary police in each mobile unit, broke up several gangs of rowdies bent on destruction of property. ASQ took over control from twp. police headquarters, and results were so satisfactory that practically all calls were relegated to WERS dispatch. Eleven units located in volunteer fire headquarters and mobile units 25 and 26, operated by AXU and ITS, were pressed into service along with the unit in police headquarters. Units 25 and 26 maintained solid contact with police headquarters from places where the police radio cars were unable to get through. JAV, somewhere in the So. Pacific, reports that he is with the AACS. JAV would appreciate news of more of the gang, as there are several hams down there and they are eager for news from home. JAG, now radio operator in the merchant marine, has just returned from a six-month trip and is enjoying a 30-day rest. ATF has just returned to duty with the Marines after spending a 30-day furlough with folks at home. A letter from Paul Evans, licensed Jan. 7, 1944, asks of news of the boys, especially those from Pedricktown. Paul is in Washington, D. C., doing duty with Naval experimental units, and may be addressed as follows: Paul G. Evans, RM1c, 1225 15th St., N. W., Washington, D. C. He has an 829A, an 815 and a couple of other v.h.f. triodes of somewhat smaller power capabilities which may be obtained by some of the So. Jersey boys for WERS use, if they will guarantee to replace them at the end of the fracas. Paul says there are several other hams where he is, including 1JUB. ITS' XYL has just received her WERS operator permit. EUH has left Eastern Aircraft and has started in business for himself. DAF is chief radio electrician somewhere in the So. Pacific. JAG advised your SCM that he sent Ray a letter from Persia. Pierre and Ray had a swell talk 'tother day when they met on the streets in Trenton. Speaking of postwar equipment, EED and CCO are drafting plans and work has commenced on a 10-meter rotary beam antenna with several special features, including automatic rotating devices which will bring the beam into correct position by control of the incoming signal strength, remote control of the length of elements to afford instantaneous tuning for any frequency within the amateur 10-meter band and remote control of angle of radiation. At present work is confined to the rotating mechanism, consisting of an electric motor with gear reduction of 38 to 1 and a worm gear reduction giving a beam rotation of two r.p.m. EEQ, with the N. Y. labs of IBM, may be addressed: J. Russell Snedaker, jr., Hotel Dorset, 30 W. 54th St., N. Y. C. SW is somewhere in the Pacific. VE is somewhere in Germany. EGE has returned to the folds of the DVRA, having been accepted into active membership at the Oct. meeting. Bill has been busy moving into the new headquarters of his wholesale electrical supply business. HKO has just returned from overseas, where he covered a lot of ground, including England, France and part of Germany. 3FBC's brother has been awarded the DFC for outstanding service with the AAF. CCC, chief radioman, USNR, has been trans-

ferred to a new post in Puerto Rico. ARR is recuperating from a recent operation. CCO is looking for a good communications receiver, all-wave signal generator, audio oscillator and a 3-inch 'scope. ITR has been transferred from Colgate U. Naval Flight prep school to Chapel Hill, N. C., for final training. 73, *Ray.*

WESTERN NEW YORK — SCM, William Bellor, W8MC — From Washington, D. C., where he serves with Services of Supply, we get the following news from DT: Lt. MAD, who spent 9 months ferrying wounded out of New Guinea and other S. W. Pacific areas, was killed at Malden, Mo. Army Air Field on Oct. 10th while instructing in night glider flying. He was a resident of Clinton and was well known to the boys in Rome, Utica and Syracuse, where he was a member of the Syracuse unit of USNR from 1938 to 1940. GWZ, of Rome, has joined the Philco organization at Philadelphia after two years with the Air Service Command. Corp. AAP, of Utica, is now with the U. S. Signal Corps at Camp Holabird, Md. Address him at Bldg. 136. CVJ is signal officer at APO 958, c/o Postmaster, San Francisco. Don is formerly of Auburn and Syracuse, where he was employed at WMBO and WFBL. We have been asked several times about WERS in the Buffalo area and have now received the dope from SJV, radio aide for CD-WERS, Buffalo unit, WKNL. Lt. Leon Ryker is communications officer for CAP-WERS station WLDZ and Sgt. TCL is radio aide for State Guard WERS stations WJPX of the 4th Brigade Headquarters, 74th State Guard, Buffalo. The Erie County WERS unit's application is now with FCC and the license should be a reality when this gets into print, with EBF as radio aide and QZN, BZE, IRU, Lamey and Marks as assistant aides. The initial membership totals over 40 and includes such calls as 9PXV, NJW, ODQ, UJR, VMQ, DHZ, NUB, MBH, WLT, PCZ, ITG and FZE. We hear from the Rochester gang that RKO says he has no time for other activities as he is now burdened with tremendous responsibilities. His XYL just presented him with a jr. operator. OGC says the radio urge has attracted two old-timers back into the game, via State Guard WERS. Ex-BGJ and CSJ are WJPX-68 and 70, respectively. DKN has left his radio factory job and has opened up a radio repair store. Walt Malone, of WHAM, has heard from NVK, who is now a lt. comdr., communications officer, on a converted flat-top. Roger Greenman has been advanced to full commander. The regular meeting of the RARA was treated to an unscheduled but intensely interesting talk by M/Sgt. CEZ. Marty, who has been with the Marines at Guadalcanal and practically all other South Sea points of activity, kept the boys on the edge of their chairs with thrilling tales of the bravery of our boys and the heroic deeds of Army nurses who attended them. Marty now is assigned as instructor in radio in an Eastern school. LTJ is teaching pre-flight training. VOX is now a full-time instructor in electrical engineering at the U. of Rochester and also conducts an evening class in radio. 73, *Bill.*

CENTRAL DIVISION

ILLINOIS — SCM, David E. Blake, II, W9NUX — General: LBL is reviewing his copies of *QST* and has found many very good circuits which were overlooked in the past. He is also passing the time away with some oil painting. PEQ was in Chi for a short visit on his way to a new post. QDA left Chi for sunny Los Angeles to start a business. YLL is rebuilding his carrier current rigs. Wanted: Information about NUF by Lt. UTT/8UWE, Sig. C, AETC, Harvard U., Cambridge 38, Mass. Hamfesters want the service address of QPR. Club news: Joliet — ODT was re-elected pres.; DO, vice-pres., and WDH, secy and treas. Visiting: REA, RCJ, Burnett, Rurdy and Ray Timm. Chicago, Northwest Radio Club, Illinois Ham Club, Hamfesters and Society of Radio Operators report good attendance. Emergency Coordinator: ODT has been reappointed for Will County. WERS-OCD: Joliet has 10 operators and 10 units. Chicago, WHHI, now has 284 operators and 198 units. Downers Grove, WKDQ, works into the Chicago network from time to time. WERS-CAP: WAFH, TLQ, capt., now has 85 operators and 50 units in action. A new CAP building, complete with radio room and tower, has been dedicated at Aurora. Service News: 4HFN, ex-WLA, SP(Y)1c U. S. Naval Air Station, Control Tower, Shawnee, Okla., sends his regards to OKZ and the River Park gang. He also is Class A. 1st Lt. WJS, Robert G. Seymour, Box 270, SAAF, Stuttgart, Ark., is still teaching cadets how to fly. He now has a jr. operator eight months old who already reads *QST* (he says). YZT is now a captain in India. QXY is a lt. in the AACS. Service address data: M/Sgt. VIZ, H&S Co., 1286 Eng. C.B.N., Camp Rucker, Ala. T/R MHD, APO 432, c/o Postmaster, N. Y. C. Cpl. NHQ, APO 957, c/o Postmaster, San Francisco. EZG, ACRT, c/o Fleet Post Office, N. Y. C. S/Sgt. TXV, APO 758, c/o Postmaster, N. Y. C. RM2c ZZU, Navy 137, c/o Fleet Post Office, San Francisco. Pvt. UBT, APO 449, c/o Postmaster, N. Y. C. S/Sgt. VTJ, APO 448, Ft. Jackson, S. C. S/Sgt QFG, APO 322, c/o Postmaster, San Francisco, Calif. The SCM has complete addresses for those mentioned above. 73, *Dave.*

INDIANA — SCM, Herbert S. Brier, W9EGQ — EHT fixed several small receivers without much trouble. He is looking for tubes now. UZW/J is on Peleliu Island. He has been overseas 28 months. CTK has heard f.m. signals on 42 Mc. over 400 miles. PBS wants TIY to write a Japanese language course in Braille. YMV is chief radio officer. His YF reports that he is collecting bells. IUM can hardly wait to try his new antenna location. DDH located EUP, AHJ and SEO. Through *QST* and the *Bison*, YDA located DDH. YWE is a broadcast engineer, and has finally (?) gotten a farmer's daughter to say yes. FDS built an oscilloscope which worked the first time he turned it on. He wants GHZ's address. AB has started an amateur Class B class with 4 out of the 5 Mishawaka WERS operators who are not hams as students. He still dares SVH to visit him. HUV is dreaming of a 6L6-813 rig. EBB has moved to permanent quarters in Washington. PUB has been very busy making life uncomfortable for the Japs. SNF, home on furlough, was convinced after hearing and seeing WKMR, Gary WERS, in operation, that 112-Mc. will be the band for local ham work. He is preparing to build a superregenerative for "the day." MBM put 4,000 volts a.c. between the winding and core of an 866 filament transformer to see if the insulation would stand it. It wouldn't! DUT is building an extremely compact superregenerative superhet for portable-mobile work. MTL and WKN are looking for things more precious than gold: 12sa7s, 5016s, etc. CRZ, a captain in the Army, is in the N. E. I. He has been in the Pacific area for over 29 months. HJW, a lieut., is in Granite City, Ill. EGV installed a gasoline heater in his Austin. "It makes the neatest little jet-propulsion job you ever saw. All I use the engine for is to start the heater!" IFU is in the Navy. VCO lives in Missouri. HJJ has been buying and trading transmitting equipment. DOK is going to leave the accumulated dust in his rig with the hope it will smother the splatter. UYP is building a home in Dayton; so he is evidently lost to Ind. VMW and UCN got together through *Bison* publicity. KVE is captain of Evansville police radio. CTG is back at Purdue after serving his hitch with the Navy. BPX is still in the Army ASTP training program at State College, Pa. PQL is stationed on a ship as a radio operator. 73, *Herb.*

KENTUCKY — SCM, Darrell A. Downard, W9ARU — An inquiry of 8EQN regarding the QTH of EDV brought back memories of the annual get-togethers of the 89 Club. DFW says he will have an elevator installed at the location of WJKK-22 in lieu of the "booby trap" entrance, if someone will donate a YL operator. By this time, who knows, maybe the ARTS and the LPS will be having joint meetings. The door prize at the last two meetings of the ARTS has been a plane ride. WJKK-1 moved from the City Hall to the Court House. BUE burns up all his mike batteries at 23. Mobile 300 really gets out — with Judie as operator. TXC and CNE have something in common — club president hecklers. One of the operators at WJKK-1 broke her ankle. We didn't know you were using c.w. up there. Working YXF at 531 gives you the same kick you got when you worked a K6 — or don't you remember? GOM (dentist) offered a free extraction as an ARTS prize, with no takers.

MICHIGAN — SCM, Harold C. Bird, W8DPE — On Oct. 24th the WERS group of Pontiac started to take a course in electronics. This course will continue for ten weeks and promises to be a very educational project for the group. 8SSY sends in a new address and says he has an SW 5B 10–20–80 coil and power supply for sale. 8PYP says that SDH got sick of teaching radar so went to flying. Lt. Swigert now is overseas as radar officer. 8FX sailed on WTCA and WTCB in June but now is doing service work. He got his 2nd-class 'phone license in Sept. and there are rumors he is going after his 1st-class license soon. 8VRQ's mother reports that Don is with Western Electric on foreign duty. 8MCB says, "If I could see in the crystal ball and predict postwar

ham frequencies I would blow the dust off the transmitter and start modifying." The DARA Ladies Auxiliary had a swell Hallowe'en party. Our past-SCM made a very good Beulah and 8UOI was very good as the better half. Those in attendance were: Eddie, Dot, Clem (classy dancer), Edith, Elsie, Mary, Jo, Irene, Ed Hait, Ray, 8BIU, Mike, Eddie Gocha, Charlie, Toddy, Frank and George. The regular meeting of the DARA was held Nov. 2nd and a very good attendance was on hand. Your SCM was asked to run for director and a petition was started but the efforts were wasted as the petition had to be in by Oct. 20th. Your present SCM's term runs out Feb. 3, 1945. If you have a nominee in mind, better mark your calendar ahead. Francis Martin writes that he is pleased to hear about the committee taking care of the frequency allocation program. He is plugging for the boys to keep up their activity in the WERS program. 8QQK says, "Thanks for the reminder in the bull. I had completely forgotten youse guys were in the front of *QST*." 8MQG's new address is Capt. George H. Goldstone, Signal Section, Second Army, Memphis 15, Tenn. Capt. 8FM, formerly of Grand Rapids, writes that he has all the angles of communication to handle in his outfit, including lighting plants and what have you. He says that he has a bunch of good hams in the outfit and they in turn have trained the other boys. His outfit holds a record for performance that has not been approached by any one else, and he wonders if it is because of the hams in the outfit or from his many years of hamming. His address is: Capt. George R. White, APO 595, c/o Postmaster, New York, N. Y. 8NQ now lives in New Baltimore and says it is an ideal spot for amateur radio. 8UFH writes us that he cannot make BPL this month. He has moved from Yale to a new post closer to home. 8FU was disappointed that his petition to promote your reporter as director did not receive action in time. 8UGR remarks that he is looking forward to next month's *QST* for further frequency information. 8QBO, of Flint, sends us the following dope: "The WERS gang at Flint are holding tests three times a week with about ninety per cent attendance. John says he has not seen any of the Pontiac boys since their visit to Flint a year ago." Thanks for note, John, and keep us posted as to your WERS activities. 8NUV tells us that he still is with the AAL and is making regular trips. He also sends his best to all of the old gang. Lots of luck. 73, *Hal.*

OHIO — SCM, Carl F. Wiehe, W8MFP — NXJ reports continued WERS activity in Canton. The control station has good coverage for twelve miles, but above that it is spotty. Several new operators have been added. Club attendance continues good. EQN says the equipment at Springfield is being improved. RWZ's XYL complained about the time and money he spent on radio so he got a private pilot's license. 9UYP, now flight-testing planes at Patterson Field, is building a new home in Dayton, complete with shack attached. QQ reports all the WERS personnel now sworn in as regular auxiliary police of Columbus. Organization has been quite active since the affiliation. The chief of police of the city complimented the WERS crew for a very highly efficient job in helping to relieve the overtaxed regular police during the Hallowe'en season. A near hamfest was held Nov. 12th, by the CAP at Don Scott Airport of Ohio State U. Ground-to-plane and plane-to-plane DX contests were held. Columbus jobbers donated prizes, which were awarded for the best h.f. transmitter, receiver, transceiver and portable antenna, as well as for code proficiency. AVH reports that nearly every WERS operator and unit reported for duty during the Cleveland Gas Co. explosion and fire. AVH points out that because the Cleveland crew had practiced for fires similar to this the units knew their jobs very well. He continues, "Lest some WERS groups fold up, they had better consider the possibility of such a disaster as we had." FHE has donated a 1-kw. transmitter and a good receiver to the Cuyahoga Radio Assn. It is being installed in the club headquarters in the Red Cross Bldg. annex, along with WJJH-80, the Red Cross-WERS link. CRA attendance is approximately 80 per meeting. Ohio amateur radio extends its sincere sympathy to CBI on the passing of his mother. Former Dayton Deputy Radio Aide, Hal Jones, visited Dayton over the Nov. 11th week-end. He is now established in New York City and wishes to join the WERS activities there. CBI reports good attendance at Dayton WERS, WJTW, drills. WJTW stations work WHIK stations at Troy and Piqua almost every drill. WJTW-18, Ed Morris operator, is equipped with both beam and general coverage antennas. The beam is used to direct signals southward to reduce QRM in the city area, and the general coverage antenna is used when operation into the city is required. TQS reports good activity at the WKHO Greater Cincinnati WERS area. Excellent success is being had with the stacked array described by 6AM in Hints & Kinks of Sept. *QST* at the area control station, WKHO-3. Awards are being distributed by the Queen City Emergency Net for outstanding WERS work of the year in the WKHO area. Prizes are also being given for the highest zone activity and for the most efficient radio locating done in the "simulated illegal transmitter" hunts that have been held from time to time. PNJ has at last applied for a WERS operator permit. PBX sends his regards to the gang and says that he and quite a few more hams are stationed on the East Coast installing and repairing radio and radar gear on ships. We regret to report the death on Nov. 8th of Frank Teach, who had held many offices in the Columbus Amateur Radio Association. Capt. 2IAS, ex-8KYP, announces the arrival of a new YL operator on Nov. 8th.

WISCONSIN — SCM, Emil Felber, jr., W9RH — FPB writes from Fort Worth, Tex., that he's through with a six-month course as radio electrician at the CAA's Signal Training Center there. He also reports that EBI is with Minneapolis-Honeywell. IGU is attending Stout Institute at Menomonie and her brother, 4GUY, ex-NHZ, is radio officer with ATC out of Miami. HWI is an ensign in the merchant marine. SHL, of the Viroqua gang, is still pounding the keys of the linotype for The Vernon Co. QKQ, of Manawa, is now located in Milwaukee and is organizing a WERS unit with the CAP. 8WWX, who formerly lived in Chicago, is also a resident of the Beer City. ACRM JPS, USNR, was a visitor. He's attached to a carrier-borne dive bomber squadron. T/Sgt. Eugene Berens spent his furlough by taking unto himself a wife. Don Merten was reported in Milwaukee. Pvt. John Holmes, located in New Caledonia, sends 73 to all the boys. SYT has arrived in France as a technical observer with the Signal Corps. Lt. (jg) Louis Wollaeger, USNR, in the S.W. Pacific, says conditions would be better at the new location if it weren't for the chlorinated water and lack of beer. Lt. UHZ is somewhere in France with the Army. T/4 Ed. Strelczyk is in England again. KLN is an operator with Northwest Airlines located at Chicago. CRM QIH, USNR, wrote GPI from the S.W. Pacific that he has been promoted to chief radio man; also that he's that way about a nice girl from the West Coast and there will be a wedding in the near future. Pvt. P. J. Ripple is in France with a railway operating battalion, and is helping the GI's run railroads. S/Sgt. Jack Bock's mother informed HRM that he's still in Africa. Mr. I. M. Jones of Houston, Tex. was a visitor at the MRAC and inspected our WERS net. He's attending a six weeks' electronics course at Marquette U. in Milwaukee. The WERS tests of WMFI are progressing nicely. 73, *Emil.*

DAKOTA DIVISION

SOUTH DAKOTA — SCM, P. H. Schultz, W9QVY — ZBU reports: SGI has been working in Chicago at the Army Assembly Plant since he left the shipyards at Portland. Jerry Ellerman attended Radio Parts Manufacturing Convention in Chicago. He expects to enter the wholesale business after the war. Jerry was connected with the old Dakota Radio Wholesale House at Yankton in prewar days. DKJ reports that he has been in the Radio Division of the Bureau of Ships, Navy Dept. for better than a year. He sends 73 to all his old friends. His address is: Lt. M. M. Hasse, USNR, 1926 Locust Grove Rd., Silver Spring, Md. M/Sgt. Roland B. Hunt, Coast Artillery Corps, U. S. Army, has received the Legion of Merit. ZWL is acting secretary of the BHARC and sends in the following news: The Rapid City club still holds meetings about once a month. TZJ is in England in the Army Air Corps and is now a captain. GLA is back from USNAS, Patuxent, Md. He is running for a fourth term as president of the Black Hills Amateur Radio Club. YKY is back from Arizona and points south. BLK is now with local power company, a grunt for a stump hopper. IWT is in Army Airways Communications at Medford, Ore. OPS now is at Great Lakes in the Navy. GCW is going to Navy school in Chicago. UAV is at Wright Field. KNV is overseas. YJX is back from overseas. He is a captain at Bend, Ore. T/Sgt. ANW is in Italy. Ex-AKO is working in Washington, D. C. at good old radio. JKD graduated from Stamford with honors. VQN now is at Minitare, Nebr. — Western Air Lines. ONV is in CAA in Alaska. HYH is with UAL at Chicago. IYN is in California working at a war plant. AOZ and FWX are in the Navy. DJM, of Wagner, is teaching at Soo Falls Radio School. Lt. Col. SWV is doing

communications work for the Army in France. MNO is married and is working on the West Coast. GVR is back in Gering, Nebr. TOP is a lt. in communications in Washington, D. C. CJC is at Lockheed in California. YQR is busier than ever with the telephone company. 73, *Phil.*

NORTHERN MINNESOTA — SCM, Armond D. Brattland, W9FUZ — Thanks are due JNC for sending in much of the news this month. He is located at Chanute Field, Ill., studying electronics after completing a five months' course in radio at Madison, Wis. TKX, formerly of NWA, is in the merchant marine. S/Sgt. JRI, USMC, was home on furlough after a year in the So. Pacific. T/Sgt. JHF, also of the Marine Corps, spent 30 days at home after two years in the So. Pacific; he now is taking additional radar training. QIN is in Dallas, Tex., as a research engineer for Mpls. Honeywell. NCS, one of the MSN control stations in the good old days, is in Hawaii with the Coast Guard. DVG and IPA are at Truax Field, Madison. JNC inquires about ZMQ. You can write to him at Section N, Chanute Field, Ill. CUD, of the Signal Corps, is in the Admiralties. RBA is in Alaska with NWA and the ATC. He used to hold forth on 80 and 40. FUO likes his Signal Corps set-up. He is in New Guinea and operates a fixed control station. LPL is slated for navigation in the AAF. He now is located in San Antonio taking pre-flight. A former NWA man, CCF, is in the merchant marine. WLK, of Morris, gets into the headlines with his development of a cipher at the Mare Island Navy Yard. The American Cryptogram Assn. printed a brief description of the new ciphers in the Aug.-Sept. issue of the *Cryptogram*. UWG, one of the faithful net men, writes from Madison where he is an instructor in radio attached to the AAF Technical Training Command. Any of you boys coming through Madison can visit him at Bldg. 1506 ARE, Progress Check Room. ZWW, the St. Paul Radio Club's analytical wizard, is m/sgt in the AACS and is located hither and yon, mostly Central America. He writes BHY quite regularly and in his last epistle said he had a gadget he cooked up which will be a boon to bk-in net operators. TEF, of the Coast Guard, reports from San Francisco and says the ship he is on is no ocean liner. BHY informs us that the WERS in Civil Air Patrol has resulted in some very interesting "field days." He constructed a two-tube transmitter-receiver job that pokes a very healthy signal into a loud speaker at 7 miles using a 48-inch dipole. Separate tanks are used, switching the grid and plate leads of the HY615 from one to the other with the change-over switch. The stability is usually good. A separate carrying case houses the vibrator and motorcycle battery. Being an auxiliary to the AAF, the CAP is now receiving numerous radio components for this purpose. QPL is somewhere in the vicinity of Aachen. TLE is employed at the Telex Products as a special instructor, in addition to his similar work at Miller Vocational in Mpls. GVO is looking forward to postwar activity. OPA is in good health waiting for the sunrise of amateur radio in all its glory. JIE and family visited BHY recently and passed judgment on the new kennel. MTH has been down with a bad cold lately; meanwhile has been knocking off a few elements for a commercial. RPT spends long hours at work and also finds time to do a fine job as supply officer and assistant communications officer on Wing Staff of the CAP. FUZ carries on as chief radio operator on board an MM ship in the Pacific. Send a card on your activities to A. D. Brattland, 2802 So. Western, Los Angeles. 73, *Army.*

HUDSON DIVISION

NORTHERN NEW JERSEY — SCM, Winfield G. Beck, W2CQD — ECO reports that T4 CFW, formerly of Jersey City, Caldwell and Nutley, and for many years active on the DX bands, is somewhere on the East Coast ready to go over. Pvt. Jack Fern, of Clifton, writes from Drew Field in Tampa that he was a former SWL-W2 and that he's hot on the trail of an FCC ticket when time permits. He's radio operator in the Signal Corps now, having spent time at Truax in Madison and Scott Field, Ill. He brings back fond memories of hearing yours truly on 75-meter 'phone. He met my ole YL friend, 9ZQI, while she was on furlough in Fla. He talked to her first from JDM of Passaic. He's bunked into 5HJB, 9CJY, 9SLJ, 9MQK, 9KXK and 4BVV. He asks the gang who knew him as "The Wandering Baker" to write to him. His address is: Pvt. Jack Fern, 721st SAW Co., Drew Field, Tampa, Fla. Sgt. Wm. "Dave" Kreuzinger, APO 241, c/o Postmaster, San Francisco, writes from Kwajalein Island as follows: "Have always wondered why there wasn't more news from No. N. J. When I was home I saw JLV; he's working out in Bound Brook for the Bakelite Corp. Also saw Verne Wintermute. He's back in his radio service shop. I tried to find FLB but couldn't seem to find out anything about him. Would like to know the whereabouts of JOU and LP. D'ja ever hear K6SWV on the air? While traveling around these Pacific Isles I ran across 'Bunny' Hall, 3rd operator at K6SWV. He was pounding brass at Palmyra. Ole Sarge Hoskins, who was chief operator at K6SWV, is now a major at Hickam Field. I pounded brass first for the infantry for about a year, then tried the AAF. Worked on a B-18 and various others for a while. Then did some fixed station work on various islands in the Hawaiian group. Then transferred to the AACS, where I am now working. I think that as a result of my service in this outfit, I'll be very well qualified to hold up my end of the 40-meter band. JLV has a new — well sorta new — XYL'n a jr. operator plus a daughter." If Dave can take time out to write from Kwajalein, how about a line to let those fellows know what we're doing over here? LSX, S1c, U. S. NAAF, Ayer, Mass., writes: "Wrote to LOP and received a prompt and newsy answer. Right now I am sweating out RM3c. I keep up the fist by copying press and using an oscillator. LQR is a pfc. in the Signal Corps and recently was married. MDA is a sgt. in the S. W. Pacific, also in radio. Sgt. MCX is in the Asiatic theater, attached to a signal service battalion which maintains a radio station in the vicinity of some of our previous best DX territory. I would like to locate NUF, who, when last heard of, was a W/O with the Maritime Service." 73, *Wm.*

MIDWEST DIVISION

IOWA — SCM, Arthur E. Rydberg, W9AED — JIH reports that KGIL, Cedar Rapids WERS, after a temporary lapse in activity is at it again and is doing a lot of antenna testing. KFHR, Polk County WERS, activity is increasing with the coming of colder weather. At present 6 stations are active in Des Moines with several more preparing to get on the air. Drills are held Sun. 4–6 P.M. and Mon. and Wed. 8–10 P.M. UAD recently was home on leave from V-12 at Purdue U. SQV also was home on leave. GBP, Army radio, was in California but now is in Mississippi. OCG, after Army service in No. Africa, becomes a civilian in December. DIB and BAL report that pheasants are harder to find this year. AHP laments that after thirty years of intermittent ham activity he is unable to qualify for the 20-Year Club. VUN writes from somewhere in Belgium and says that TXO, EBZ and KZJ are Iowa hams in his armored signal company. MTS, somewhere in Germany, has been poring through the *Handbook* planning his postwar rig. Irving would like to hear from hams at home. Your SCM can supply addresses of hams in this column. NMA, in the Navy at Corpus Christi, Tex., is doing some flying along with radio. 73, *Art.*

KANSAS — SCM, Alvin B. Unruh, W9AWP — Your SCM starts a third term with this report. Let's hope the completion of this term, two years hence, will find the boys back from overseas and on the air. 8OHB (ex-Signal Corpsman) returned to radio maintenance job at KGPZ, but resigned to accept a job as flight crew member for B-29 test flights. He checks radio, electronic control devices, and radar. YVI, formerly president of WARC, is filling a similar job. OZF, formerly in the radio business in Topeka, is now at Ft. Monmouth, N. J. with the Signal Corps. ICV is installing a new v.h.f. antenna at KGZC. QQT is compiling a list of hams employed at Boeing-Wichita. He received a write-up in the *Wichita Eagle* for his outstanding work as a foreman in functional test department, supervising testing of radio, electrical and instruments. 73, *Abie.*

MISSOURI — SCM, Mrs. Letha A. Dangerfield, W9OUD — HIC was finally transferred to the Signal Corps down at Camp Bowie, but is in the message center and yearns for some operating. Jim wants the addresses of ex-JWI, BAU and HCL. ZXX passed his final exams at the College of the Ozarks and the Navy has sent him to Chicago for further instruction. GHD has a new mailing address, but his actual location is apparently the same. The new address is on file here. ZJG says he is doing about the same thing over in France that he did up at Lee's Summit, working on transmitters, receivers, a bit of operating — and dodging bullets. TGN had 15 days leave. BMS whipped up some spare parts into a squelch circuit for the SX 24 — it works fine. OKF has been transferred to the Lincoln sector of the

CAA; he says not being able to talk about the new developments in commercial radio cramps his style. OUD is becoming quite a proficient housekeeper after a year's practice. Season's Greetings to every one of you from all the gang.

NEBRASKA — SCM, Arthur R. Gaeth, W9FQB — WERS activity in Omaha has brought about the birth of the AK-SAR-BEN Radio Club with a charter membership of 23. Meetings are held on the last Mon. of each month. Officers are YDC, pres.; FQB, secy.; ZZG, treas. Pre-winter activity around Omaha seems to be the hoisting up higher to clear the winter snows, of 2½ meter antennas, with Js and folded doublets predominating. There are still a lot of the homeguards not in the WERS who are missing a chance to be of some real service. DPA has completed his tour of duty with PAA in Alaska and, after a short furlough at home, has entered upon his new duties as an operator with the merchant marine. LXI is serving with the AACS in the S. W. Pacific and has charge of a detachment. RM2c LPU reported while on furlough at his home at Brownsville. He states that WKP is at home from his work in Kentucky. VOI has returned from his job in Omaha. HIJ is now a lt. (jg) in the USNR and is home on leave after a tour of duty on the Atlantic. LPU is president of SENRC, and has been serving in the Navy in the So. and S. W. Pacific for nearly two years. GAS says that he is now T3 and is serving with a signal outfit in the Pacific area. He enjoys *QST* more than ever and wants the present QTH of Arlen Gaddis and Jim Steidly of Grand Island, and Bob Lanik of Wahoo. UHT and his XYL spent a recent vacation at Cedar Point Ranch. Lt. H. L. Hinkle inquires of MUK, RIE and FOW, the gang who operated K6TSF. HTE reports that he and PID met in New Guinea and are now the best of friends. New Year's resolution suggestion: I will endeaver to send in a report each month for the good of the service. Best of luck for 1945. *Art.*

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Edmund R. Fraser, W1KQY — KOY writes from Stout Field, Ind., that FOU, lt. col. in the Air Corps Communications Section, has left for foreign service. DJC has been advanced to chief in his section of the O. W. I. in London. KOY enjoys reading WERS news and passing along word praising Don Hunt for a very effective WERS organization in Glastonbury. NJM, former Acting Communications Manager, ARRL, writes from San Antonio, Tex., where he is attending O. C. S., that he met quite a number of hams in the AACS in Asheville, N. C. NRR has completed his radio course at Gallup's Island and has been assigned to a ship in the Maritime Service. Harry Johnson, ex-SF, is recovering from a nervous condition and can receive visitors at the N. H. Hospital. CTI reports that he and BWM, both bank tellers in the daytime, are working side by side at night on a war job. BCG is back in New Canaan and ex-NY1AA is somewhere in France in charge of Naval communications. Ex-AKG, of Shelton, took his examination over again and received his ticket from Washington. Fred Burkle of Hamden, 1st lt. in SG-WERS, passed his Class A exam. LZH, of New London, and FSH, of Manchester, paid your SCM a visit while attending A. T. & T. Co. school in West Haven. Visits were also had with IQX, manager of Conn. L & P Co. in East Hampton, and MVH, who gave a farewell party for his jr. operator, who now has left the country for the second time. MVH is building an operating desk for his rig with all wires concealed. 9DGE, of Minneapolis, Minn., who worked for G. E. in Schenectady for the past three years, now is doing special work for the Gray Manufacturing Co. in Hartford. Club news: At the annual meeting of the NHARA, held at GB in Oct., the following were elected to office: Pres., FMV; vice-pres., TD; secy., ATH; treas., JQK; directors, LTZ, LTB and KQY. Former club members Ernest Mongillo and HMZ, both in the Army, were present. GB is holding a weekly advanced code and theory class on Friday nights prior to the club meeting. Refreshments are served and movies are shown by IGT and Willis Lohse, WJLH WERS photographers. WERS News: On Oct. 22nd a group of 58 WERS operators from Middletown, Hartford, New London, Stamford, Waterbury and New Haven warning districts met at Guilford to participate in a transmitter hunt in which two units, WJLH-51 and WJLH-60 were hidden. The former was found by WKWG-2, WMHC-20 and WMHC-24 with WJQA-30 close by. The latter unit was located by WKOB-2 and WJLH-32 with WJQA-31 close by. WKAO, Bridgeport: IM, district radio aide, has been acting as relay station for WKAO and WJQA districts on Mon. inter-district test periods. ZT, who operates WKAO-55, a crystal-controlled f.m. job, sure puts in a swell signal in the neighboring districts. WKNQ, Middletown: DBM, district radio aide, reports receipt of modification of license to include 5 new mobile and fixed units, bringing the total number of units to 36. WKNQ-4 antenna is being experimented with to increase efficiency as a relay unit between the WKNQ and WJLH districts. WJTR, Norwich: ALW, district radio aide, reports WJTR-6 contacted WKNQ-1 during a Mon. night inter-district test period with unsatisfactory results. WKWG, Waterbury: Carl Weyand, operator of WKWG-70, has completed his f.m.-television mast. This unit is one of the main relay points during the Mon. night inter-district test periods, using two bi-directional antennas, one directed toward Hartford and the other toward New Haven. BQQ of Cheshire is now working at b.c. station WBRY, Waterbury. WJLH, New Haven: KQY, district radio aide. KAT, Guilford radio aide, is changing jobs from the power company to b.c. station WELI, whose staff includes EUF, GC, LVX, IAK and Taber (LSPH). JPG is building an m.o.p.a. using 6V6 tubes. EUG is building a 112-Mc. superhet receiver with r.f. stage to keep radiation at a minimum. GC is also building a receiver for 112 Mc. MEF is teaching a radio class at the Hamden H. S. Steve Taber has been appointed radio aide in West Haven to succeed Steve Van Esen, who is returning to White Plains. The Misses Cadari and Creaven of Hamden, Miss Doyle of New Haven and Miss Desmond of West Haven have been covering WJLH-1 during the illness of Miss Jackson. JQD reports the Sun. A-1 emission test periods are well attended. DGG has sent in his EC certificate for endorsement. Season's Greetings. 73, *Ed.*

MAINE — SCM, G. C. Brown, W1AQL — BTY and GMD have sent in their EC certificates for endorsement. Your SCM suggests that each EC check the expiration date on his certificate and mail it to this office when due for endorsement. UP, CBV and CRI have signed up with the CAP in Bangor. GXY of Bath is teaching radio to the CAP in Brunswick. The *Sunday Press Herald* ran a nice picture and write-up of FBJ handling the radio control car for the CAP radio unit in Portland. GMD is on a special Naval assignment in New York. A letter was received this month from LHA/4HRN, somewhere in France. Many of the Maine gang will remember him as chief RM in the Pine Tree Net. LHD is a "sarge" in the Marines, stationed in the Pacific. LDN, of WGAN and WCOU, is riding flea catchers overseas. LYC has been in the Panama Canal Zone. BTY is busy trying to run a store, a mill and a blueberry farm. VF is in the Navy. LRQ is in a radio factory, checking equipment for the Navy. If anyone knows the address of CCF, please drop a line to your SCM. AMI, of Worcester, Mass., is C.P.O. at Seawall. 73, "*G.C.*"

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — MCR operates WJPY-19 every Sun. MZR has all the rigs for WERS in Topsfield, but he is the only ham left in town. Anyone willing to help him out? IVI is now CRT in England. MJE is back in Danvers and is working in a bank and doing Red Cross work while her OM, KON, is out in the Pacific. 6IOJ is working in Hawaii. 6OE has left M.I.T. and is working at KFI, a b.c. station. EKG has his Class A and 2nd-class 'phone licenses. The South Shore Amateur Radio Club held its regular meeting with these hams present: FWS, JXZ, MMH, HCL, IS, LAT, FKV, MMU, EKG, IHA, CPD and ALP. It is planned to have a supper get-together early next year. FZX writes from Hicksville, N. Y., where he has completed a course on Army high-power transmitters. LID writes from Kearns, Utah. KCP has left Calif. and is now in Hawaii. CGM is now a grandfather. AUG and VS are working for Wholesale Radio in Boston. AUG says he lost everything except his mike because of a fire in his house in Millbridge, Maine. KTG says WERS in Cambridge is planning more mobile units for possible disaster work. MIH writes from Hyannis, where he has been living for 3 years. He says that ex-BON, and also Al Saunders from Mass. Radio School, come to see him once in a while. More hams at M.I.T. are: LNX, LUL, API, AUM, 2HBA, 3GFR, 5GQW, and XYL, ex-6IPF, 7DTU, 9HUC, SFZ, 8KCH and TCI. JFS sends in more news: AGX and his XYL made a trip to N. Y. C. ZZC is in France and visited a radio store there. MQE met LYG in Hawaii and sends 73 to the North Shore gang. JKY is listening for his little 5-month-old YL to talk. Bob Magher, of Salem, sends 73 to all from the Navy Radio School in Chicago. LWH is now in the radio repair business

for himself in Ramona, Calif. WERS in Quincy and Milton are on every Mon. night with ALP and MMU at WJYM-1, LZW and IHA at WJYM-6, HHU and John Donnelly at WJYM-7. IS at WJYM-5 and JXZ at WJYM-29. JXZ has a new skyhook working very well. MMH is making a new unit for WJYM-4. FQV and JXH have operator licenses in and will be on later. MCR sends in some WERS news: AKD, MUD, EJU, LYL, JNV, BDM and Geo. Stevens are active in Dorchester. AMK is on at WJPY-22 in Roslindale. AKD is an engineer with an Attleboro firm. KSA is in the Navy amphibious force. JQH is in Italy with the Army. KCF is in the Navy. IDU is back in the U. S. A. after 2 years in Newfoundland. MMY is in the Navy at Atlantic City; his XYL is in the WAC. JBY is now with the FBI. I want to wish you all Season's Greetings. 73, *Frank.*

WESTERN MASSACHUSETTS — SCM, William J. Barrett, W1JAH — JOT reports from an Army hospital, where he is recovering after an amputation of the right leg just above the knee. He was wounded in France July 16th and arrived back in this country Oct. 8th. He says his spare time is being spent trying to catch up on ham radio and taking a course in radio servicing. His address is Lt. Theodore Simmington, jr., Det. of Patients, Ward 24, Percy Jones Gen. Hospital, Battle Creek, Mich. AZW was seriously scalded several weeks ago when he passed out from overwork and fell into the bathtub, accidentally turning on the hot water. It was necessary to give him plasma, and the Pittsfield radio gang were quick to volunteer their blood to replenish the blood bank. Prent is now in the House of Mercy Hospital, Pittsfield. Our best wishes to JOT and AZW. MVV, who was in sick bay at Great Lakes, wants all the old gang to drop him a line. His address is: Clayton Roberts, S1C, Class 2-45-B, N. T. Sch. (EE & RM), College of the Ozarks, Clarksville, Ark.

NEW HAMPSHIRE — SCM, Mrs. Dorothy W. Evans, W1FTJ — KKL has returned from a trip to New Caledonia. JBM is now stationed at San Bruno, Calif. CME is back at his old Manchester QTH and is head over heels in war work.

RHODE ISLAND — SCM, Clayton C. Gordon, W1HRC — We regret the necessity for reporting the death of MLI, Wallace A. Copeland, Sgt., U. S. Signal Corps, whose parents live at Massachusetts Avenue, Providence, R. I. NKL is now 18 and in the Navy. LQL is back in Providence after a medical discharge from the Coast Guard. We had a nice visit with him at the P.R.A. the other night, after which FUB entertained with a piano solo. FUB reports he is spending his spare time building frequency meters, to be prepared for the "great day." Ens. NLH, chief radio operator in the merchant marine and radio pal of NLF, has returned home from his second trip to India. He has been to England, No. Africa, Australia, Ceylon, Iraq, and a lot of other countries we will never see. We heard the other day that KYK had reached a code speed in excess of 55 words per minute. A nice note was received from Win Armstrong, still at Marshfield, in which he spoke of the "North Atlantic Rescue" article in a recent *QST*, and which he found so interesting because he is at "NMF" now and knows one of the fellows mentioned in the article.

VERMONT — SCM, Burtis W. Dean, W1NLO — KJG attended the attorney generals conference in Lincoln and Omaha, Nebr., in Nov. 2IP, engineer with N. B. C., was in Burlington, Nov. 5th, to handle a political broadcast from the WCAX studios over the Blue Network. HPN, chief engineer at WCAX, was present at the Westinghouse technical meeting on a.m. and f.m. broadcasting in Boston, Nov. 17th. IQG and family spent Thanksgiving in Vt. visiting relatives and friends. Your SCM and LWN attended GE's conference on f.m. and television at the Statler Hotel in Boston, Nov. 27th. They also visited BME and 2MBS at the WEEI studios. KWB was at the G. E. meeting. Paul reports that Portsmouth, N. H., is licensed for WERS with the call WJSP. They have 5 units — 4 transceivers and 1 transreceiver. KWB's XYL has a 3rd-class 'phone and also a WERS permit. LMO has built himself a v.t.v.m. Season's Greetings. 73, *Burt.*

NORTHWESTERN DIVISION

ALASKA — SCM, James G. Sherry, K7GNN — Augie Hiebert and Dick Hall were hosts at an indoor picnic Aug. 13th to a group of amateur operators, including: K7FHD, Fairbanks; K7GNN, Homer; W7HXV, Portland, Ore.; W3IXA, Richmond, Va.; K7JDS; W5ICO of Conway, Ark.; K7LD, Fairbanks; W7IQE, Mt. Vernon, Wash.; W7EGN, Fairbanks; K7FDW, No. Grub Creek, Alaska; K7GVS, Sleetmute, Alaska; K7FWD, Fairbanks; W2BHW, Ladd Field; K7FUO, Fairbanks; W7EBF, Fairbanks. Others present were: Lenard Safran of Haverhill, Mass. and Harry Deles, jr. of Chicago, both stationed at Ladd Field; W7IQC, of Boise, Idaho; K7CBF and XBS of Trinidad, Wash.; Earle Granderson and Dick Hall of KFAR, and KXA, Seattle, Wash. The personnel of KFAR put on a fine feed for the boys and Bill Cowles furnished the entertainment by giving several dramatizations. W3IXA, the boy who climbed the 300-foot tower with a walkie talkie, gave the boys a thrill and a chance to work some heavenly DX.

OREGON — SCM, Carl Austin, W7GNJ — HVX paid a visit to the GNJ-HHH bailiwick and left a list of hams who are working at Oregon Ship, as follows: 7DIU, 7NT, 9QEZ, 7QY, 7HWU, 9DQN, ex-7BXU, 7GPP, 7GWS, 7WJ, 9DID and 7HVX. Red says all these hams are rated as leadermen or better. Another caller was 7ENC, who flew out from the Aleutians for a 19-day leave. Ed is a sgt. in charge of a transmitting station, and has five overseas bars on his sleeve. He says 7IM and GLF are in the same outfit, and there are lots of hams there. An FB letter from IIX discloses that he has been in the Aleutians for 17 months, is a sgt., and is chief operator of an aircraft warning company. He was inducted at Ft. Lewis in Sept. '42, took basic training at Sacramento, thence to Valparaiso, Ind., graduated from Dodge T. and R. Inst. Feb. '43; from there to Tampa, Fla. for maneuvers, thence overseas. One of the ironies of fate was receiving his Class A ticket Dec. 8, 1941. We are thankful to CZJ for some dope regarding FTA and ITZ (his XYL). The Army transported them to their station at the Arctic Circle, via plane. It was overcast and foggy most of the way to Anchorage. The next day they ran into more fog and landed at Nome instead of the regular station. After arriving and getting on the job, Perc had to QSO a freighter in the harbor by means of the porch light of his house, with a key in the 110 line. A tug broke away and was drifting to sea, and he had to make arrangements for its rescue, using both blinker and radio. Ruth and Perc work different shifts, but they have a nice house, modern, automatic oil heat, and a commissary in the basement. 73, *Carl.*

WASHINGTON — SCM, O. U. Tatro, W7FWD — IOQ reports a trip up Mt. Pilchuck, maintaining contact with Everett, Mukilteo, Bothell and Mt. Vernon all the way with a "handie talkie" weighing only ten pounds, complete with 90-volt battery. The greatest air line distance was 35 miles in fog with visibility of about 50 feet. KFNV and KFEY, WERS stations, continue active. HDC, S1c, is at Treasure Island taking a technical course after finishing primary school at Del Monte. IZV, RT1c, was killed in action on Peleleiu Sept. 28. HCE, located at the Naches Power House, gives this report: AUI has built a classy shop in his basement. HW is still very busy with appliance repair. ALH bought a new home and looks forward to a micro-wave net in the valley. AUP has been transferred to Eureka Calif. by the Weather Bureau. The Yakima Amateur Club held a farewell party at which Andy was told how much he will be missed. BHO has returned from a long stay in the South Seas, where he waved his elbows over Navy soldering irons. Bob rejoices that by-pass condensers and stuff do not mold and rot in Yakima valley as they did way down there. ARF, originally of the Portland, Ore. ham crowd, is now set up as distribution dispatcher in PP&Ls Union Gap sub-station. 9JLX is now helping 7CAM at Northwest Airlines Office. 9JLX still has his pee-wee, but potent, 10-meter rig. FCZ is busy helping Uncle Sam with his sheet metal business. Ed says his future ham rigs will have nothing but the best metal cabinets. Capt. ETX has been sent to Ann Arbor, Mich. for further study. HYL is in Naval radio. BCS maintains many transmitters for ACS in South Seattle. He tried to sell the Yakima hams on single side-band transmission on his last visit. AYO is trying to locate some photo equipment he still lacks. Stan makes CAA's high-speed c.w. circuits speedier. Those that have worked Stan on 40- or 20-meter c.w. can understand that 73, *Tate.*

PACIFIC DIVISION

NEVADA — SCM, N. Arthur Sowle, W6CW — Asst SCM, Carroll Short, jr., W6BVZ — Boulder City reports BVZ, PGD, MRT and PZY still on the job for L. A. Dept. of Water and Power as radio operators and GSB, QXH and CDM supplying the power as powerhouse operators. TKV received a medical discharge from the Navy and is back with us at his old job piloting boats on Lake Mead, for the

National Park Service. RXG is still in Las Vegas; we hear him on KENO every day. No word from the following for a long time: HDC, HJZ, OQU, OTU, OPP, PAQ, JQX, IAJ, QNV, Vincent Berry, Arthur Gunther and Salvador Curley. QMU is back in Reno operating a gas station and auto courts, but is practicing up on his code. He has the urge to go to sea again. AJP, one of Reno's oldest hams has gone to Boston on an engineering job. FUO has an elegant rumpus room at the new location and is now planning an adjoining ham shack. Ex-KMQ is now 7JAC, and evidently is going in for astronomy, as he wrote FUO for full details on how to build a telescope like Doc's. AIS, who has been all over the world with the merchant marine as radio operator, visited us for a few days. BWX is putting the finishing touches on a new CAP rig for search and rescue missions. UIZ, our youngest ham, is studying hard to take the commercial exam soon. CW is installing a county-wide police radio system in Lassen County, Calif. 73, *Art.*

SANTA CLARA VALLEY — SCM, Earl F. Sanderson, W6IUZ — RM: LLW. CRK is home on furlough after a year and a half in the So. Pacific. 1WV, formerly of Brookline, Mass. reports he is now located with the S.C.V. gang and had the pleasure of a personal QSO with TBK. He expects to make Calif. his permanent home and would like to get acquainted with more of the local club. Contact him at 1200 Arbor Road, Menlo Park. RDF/JWI is back from across the pond after several years and is located in Oakland. FBW reports that CFK is standing up well under the strain of being a new father. We regret to report that BKT's key is silent. He had been in radio for many years and will be greatly missed. 73, *Sandy.*

EAST BAY — SCM, Horace R. Greer, W6TI — EC, QDE; EC v.h.f., FKQ; Asst. EC v.h.f., OJU; OO v.h.f., ZM. The regular monthly WERS meeting of Nov. 16th was held at the Mechanics Bldg. on the University of California campus. Dr. Leonard Black gave an FB demonstration of centimeter wave lengths, etc. It is VX, not ZX, as reported in Nov. *QST*, who is the proud pop of a brand-new baby. By the way, ZX has just returned to work after being ill for a year. Lt. QGG, 6 Agassiz St., Apt. 4, Cambridge 40, Mass., reports the following: "Several weeks ago I was visited by NHE, who has been in the Mediterranean Theater for 14 months as a radar officer for a squadron of P.T. boats. He is now a lt. (sg) in the Naval Reserve and expects to start on a refresher course at M.I.T. shortly. NUC expects to visit us soon. He spent some months on a So. Pacific atoll with a radar set after a period of Navy Training at Treasure Island. He was recently appointed a warrant officer in the Naval Reserve. I have been stationed with the Army electronics training course at Harvard, taking their course in graduate engineering. This is to be followed by three months of radar at M.I.T. Was commissioned a 2nd Lt. in the Signal Corps after four months of OCS at Ft. Monmouth, N. J." FAQ, OCZ, CBX, LCG and NZG are in Honolulu. EY is taking some training in the Coast Guard Auxiliary. IMA, in Texas, has three stripes. LCH is still in India. BUY is now located at Berkeley Pac. Tel. & Tel. District Office. "Another day closer to victory." 73, *TI.*

SAN FRANCISCO — SCM, William A. Ladley, W6RBQ — ECs, DOT and KZP; OO v.h.f., NJW. Mail was received from Lt. Comdr. 9FA, USNR, Navy 129, c/o Fleet Post Office, San Francisco, Calif. Warrant Officer CIS' correct address is Navy 3205, c/o Fleet Post Office, San Francisco, Calif. RBQ's son, Bob, and Ken met in the So. Pacific recently and spent a full day together. KLV and DNR are located at Fort Mason, San Francisco. 1JKT is stationed at Santa Rosa Army Air Field. He spends his spare time monitoring bay area WERS stations on SX-27. 9DJG and 9BPM, both with Raytheon, passed through on the way to Pearl Harbor. Lt. HJP is still in the Marshall Islands. 7BIC and WAVE RM2c 1NHN visited RBQ. After reading KB's Oct. editorial RBQ built a new 40-meter center-fed Zepp for 7003 kc. and raised one mast 12 feet. Another word of such cheer and up goes a 20-meter rotary on a 66 ft. telephone pole. An old S.F. WERS member, Chief 9YGS, writes in from Chicago that he has built a 9-tube super for 2½-meters and a frequency meter and secondary standard. Frank says no more 160 'phone for him but rather the ultrahighs with directive antennas and the benefit of 36DB. gain. He wants to be remembered to the WERS gang. BP, the old brass pounder of KRM, has joined the merchant marine after years of operating commercially, and is headed west. His address is: L. R. Babize, c/o Fleet Post Office, San Francisco, Calif. 5FDR reported in after another air trip from Pearl Harbor to San Francisco. Sgt. IPH writes in from Italy. His address is Sgt. F. W. Fielder, APO 650, New York. 9EKY visited RBQ, along with 9BPN, on the way to Boston for a short stay before going back to the Islands. It is reported that 9DJG of ERC, St. Louis, is en route to Pearl Harbor for Raytheon. It is likely that our WERS group will do some communications work for the State Guard. Three new members for the League this month: WB, Fran Wells and KB6ILT. When you locate a prospect please advise and application blanks will be mailed you promptly. Radio Aide DOT called a committee meeting of zone aides to discuss new WERS plans. Present were: CVP, KZP, NJW, DAV, JKN, DOT and RBQ. 9FA arrived by plane from Pago Pago, where he has spent 19 months in Naval communications. Glenn will spend thirty days with his family at his home in Denver before leaving on a new assignment. He visited 6FKY, who is chief engineer for CAA, while at Pearl Harbor. Sgt. 1PBK reports in after 30 months duty in the Pacific as chief radio operator for an Army transport. He now is residing here and instructing in radio. PPO, who recently left S.F. as master for U. S. Army Transport Service, is returning because of complications of an old leg injury. CVP and Zone Aide EVI are doing a fine job for WERS. Add Vic Solorzano and Russ Sorensen, both active in WERS, to the new members listed above. 73, *Bill.*

SAN JOAQUIN VALLEY — Acting SCM, Edward H. Noack, W6BXB — BXB just returned from a trip through Oregon and No. California visiting a few hams. OHT is stationed at Treasure Island on shore patrol. JZA is with the U.S. Forestry Engineering in San Francisco. KFJ is in the Navy. ABJ is in the Navy Air Corps. CCW is in civilian Army work in Hawaii. CVL is doing war work in Oakland. IBJ is radio technician at KADJ, highway patrol station in Sacramento. ASV is still a motion picture operator and is doing police radio maintenance work at Visalia. KAU is in the Army Signal Corps. FNO is in the oil business. RFO is in the Navy, back at sea after a well-earned furlough. BIL, BIJ and LBC are all at KRBU, the highway patrol station at San Francisco-Oakland Bay Bridge. BIJ is the supervisor. I believe NO is also with this patrol. FKK is at KTRB. QJP and CLP are in the radio repair business, located just one block apart. COJ is still at the same QTH. RDW is in the Coast Guard. LMT is doing professional photography. It is understood that MZD is a major in the Army Air Corps. ENA is with the telephone company at Sacramento. CAT is in Shasta City. DXL is at sea after being in Samoa for a couple of years as radio instructor. I wish to thank QDT for most of the above information. *Pop.*

ROANOKE DIVISION

VIRGINIA — SCM, Walter G. Walker, W3AKN — The SCM has heard from the following, whose complete addresses will be furnished by the SCM upon request. Lt. IEX, Navy 3505, c/o Fleet Post Office, San Francisco, Calif. NE, H. W. Wickersham Co., The Anchorage, Phila., Pa. Col. HWJ, U.S. AAF, Key Field, Meridian, Miss. Maj. 4BC, U.S. ATC Hdqs., Wash., D. C. M/Sgt. GON, Keesler Field, Biloxi, Miss. Dan visited Langley Field in November. T/Sgt. GGI, Sec. B, Flt. 1, BMC-3, Boca Raton Field, Fla. Last reports on the following hams follow: Sgt. HBF, APO 523, c/o Postmaster, New York. Capt. L. E. Stafford, APO 322, c/o Postmaster, San Francisco, Calif. Pvt. BZE, 566 AAF Base Unit R. AAB, Reno, Nev. Pvt. JLS, Co. G, 800 S.T.R. Barracks 3727, Camp Crowder, Mo. CRO IKV, Luckenback Lines, c/o Postmaster, New York. Capt. ELA, 2117 AAF. B.U. Sect., C-1 B. AAF, Fort Myers, Fla. M/Sgt. HBH, RCAC-5 1244 SCSU, T.T.S., 673 Broadway, New York 12, N. Y. Ens. HAE, USNR, M.I.T., Boston, Mass. Radio Operator GAL, Maritime Service, c/o Postmaster, New York. 73, *Walt.*

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, H. F. Hekel, W9VGC — CAT, at the Lutheran Sanatorium in Wheatridge, Colo., wishes to thank some unknown friend for the gift subscription to *QST* and he would like to see any of the old gang. If you can get out around 8300 W. 38th Ave. in Wheatridge, stop in and visit Jack Wallace. QEC and his mother are enjoying the fine weather in Tennessee and he expects to spend a few days down Florida way as soon as Ed gets his vacation. WYX and his whole family are down with a bad case of "flu." 3JIN and Millie are on the prowl again, looking for a new place to live. The Radio Widows put on their annual Hallowe'en Party at the home of CAA and a big time was

had by all. The next big event was their 4th Anniversary Meeting with Pearl Stockman as hostress. Here is the list of officers elected: Lena Fitzpatrick, Head Man; Mabel Hekel, Second Fiddle; Margaret Swanlund, Keeper of the Secrets; Olivia Webber, Holding the Bag; Alberta Markwell, Flower Girl for the Sick and Wounded. KFND-4 took Jacquee and Old Timer back to Illinois to visit his sick mother. Let's have news from other parts of the State. I don't dare write all I know about this bunch in Denver, ferinstance: Last spring Howard Markwell and Jonnie Webber decided to try their skill at raising chickens. Everything went fine and when the chix got to the size of friers they hired a shaker to come out from Denver to sort the flock and then they waited for egg production to start. But for some reason the eggs did not come through as expected. Instead they found snakes in the hen house. This called for another specialist — a trapper — so Webber devised a trap of his own. He got a board that was full of knot holes, set it up on edge in the chicken yard and put a row of china nest eggs on each side of the board: Here is how it worked: The snake would get in the chicken yard, see the eggs, take one, look up and see the knot hole, stick its head through the hole, see another egg on the other side, get part way through and take another egg. Results were fine until they ran out of snakes. *QST* will not permit me to divulge any personal or family secrets so the next best thing is to try to get the dope from sources other than those usually used by Champa Street 73, *by Heck.*

SOUTHEASTERN DIVISION

ALABAMA — SCM, Lawrence J. Smyth, W4GBV — The following hams got together recently at the home of GBV: GGC, EFD, DVJ, GOX, EW, AUP and GBV. A wonderful chicken supper was served up by Mrs. GBV and was thoroughly enjoyed by those present. During the conversation around the table our thoughts turned to the good old days, when the following were active in the capitol city: GKZ, ECF, BYW, DPX, FUM, FYC, FYF, FMW, FVS, DGS, IDZ, GDU, GDV, GRA, DPQ, AP, AEZ, FXN, BYX, BZA, EIB, EAY, GSQ, HDI, HVP, GUR, FTV, ANT, APJ, GVO and BYW. With sadness we recalled GIR, who has joined the list of Silent Keys. GDU is with U.S. Engineers in Montgomery; he is also "top kick" for the local CAP unit. GKZ is still in Australia and reports that the fishing is really "big business on a small scale." DPX is in France. AEZ is in No. Africa. ECF is back in Hawaii after an extended tour of duty in the So. Pacific. BYW is still in China. 9MIC has been transferred to Hawaii, where he is pounding brass for AACS. DGS sends a letter with the following information: EOX, an ensign in the Navy, has returned from sea duty and is now stationed in the Bureau of Ships, Navy Dept., Washington. His boss is Lt. 1QB. They are in IFF work. AGI, a major in the Marines, has returned to USA after many months with DGS in Washington. CJZ participated in the FCC hearings on frequencies for Special Emergency Services. APJ dropped in on DGS in Buships. APJ returned after 18 months in England; and then left for an overseas point. EHO and EVI still work for the Marine Corps as civilian engineers in Washington. A recent ARRL memo regarding WERS activities was received by DGS and passed around the Radio Division of Buships. As it passed it picked up the following calls: 4EHO, 3FZ, 3DAL, 2AXJ, 9AUK, Lt. 9DKJ, 4CYU, Lt. 4HDN, Lt. Comdr. 7RG, 3ZE, Lt. 9PQR, Lt. Comdr. 3EXJ/6OAH, Lt. 6GQL/6HQV/6ILT/3JFH/6NDI/XU7MN/KA1MN/K6NDI, Lt. 3ETT, Lt. 6MH, Lt. 6DEP, 4EVI, 9MAJ, Lt. 5CVO, Lt. 4DRZ, Maj. 9LFU (Army liaison officer assigned to Navy), Lt. 8SKA, Lt. 1QB, Lt. 1GG, 6CAE, Lt. 8UQR, Lt. 1JEK, CRE 2IXG, Ens. 6BTY, Ens. 4EOX, 3VG/1KKF/3BPF. Lt. DAU, ex-WPFR; Ens. EOX, ex-WPFR, and DGS, ex-WMPM, had a nice rag chew over shrimp plates on the waterfront in Washington recently. DAU is traveling in and out of Signal Corps Headquarters in Washington after many months overseas. EBZ was recently promoted to 1st lt. in the Signal Corps in the S.E. Asia area. NN was spotted by CJZ and DGS at the FCC hearings. NN was on the witness stand, pleading for his forestry radio channels. AAD left the Navy to do private engineering work.

EASTERN FLORIDA — SCM, Robert B. Murphy, W4IP — Since '42 FZX has advanced from RT1c to ensign and is doing installation work. 6CUG asked about VP and a letter to him told about the excellent job at defense work VP is doing in a Jax machine shop. ACZ now is a captain in the Florida State Guard and sends in a very excellent report about their activities and the fine work of 8UBN/4 and FWZ. DDB up and did it — married a Wac. He is stationed at Camp Pickets, Va., as reported by Max Mosler, now with Vultee in Miami. Max used to work WS in Deland and knew DDB very well. CPG is with Raytheon, on Naval service in the Miami district. BYR has just returned from a trip to Chicago. He reports FYI is a chief radio technician. GNT is crew chief of PAA line crew aircraft radio. CO7CX is a grandpappy. CM2MU passed through Miami after attending the International Airways Conference in Chicago. 3CM, with an old ham ticket dating back to Oct. 1919, is working with PAA radio overhaul. DHD has been enjoying a "boot" leave with his YF in St. Pete. IEV is assistant foreman of radio aircraft with PAA; he was also known as 9AJX. BYF is doing nicely after a sick leave and is getting some new blood into his local WERS set-up. 1KVB will be Mac's assistant. IEV, 3CM and 3GS have had excellent training in the ultra-highs and we are looking forward to some real activity here in Miami. Mac carried on his drills from a sick bed. EYI is holding down the fort in St. Pete. COS asked about PEI. When last heard from he was in Sanford. CNZ is with the PAA teaching staff here in Miami and recently declined a tour of foreign duty to Costa Rica. 8IP recently came over from Brownsville. He is flying out of Miami as an FRO. KK is still doctoring here in Miami and keeps up with his code speed by practicing almost every evening. ES has just returned from Chicago and New York and met QW on the train. QW is on his way to the Pacific. IP's jr. operator recently returned from Casablanca. COZ and his brother-in-law are very active in WERS work in Miami. ASR is still plugging it out with his b.c. station at Daytona Beach. The following amateurs are working in the overhaul shop of Pan-American Airways: PAA, GNT, IEV, 1LUR, 1KVB, 3CM, 3GS/4, 1HOO/K4HWO, ET's YF, DZH, EB, 6ICC/7HYY/4IHJ, 8EME, 1LPE/4IBS, CO2AL, CO2CG, CM2MN, CM1ML, CM2SG and CM2DU. 73, *Merf.*

WESTERN FLORIDA — SCM, Oscar Cederstrom, W4AXP — A little 8 lb. 2½ oz. bundle of joy, Margaret Karen, arrived Oct. 24th to gladden the hearts of Lt. and Mrs. 6PNI. Lt. Blevins of aircraft radio is now a lt. comdr. ART1c 9MEI, formerly of Victor, Iowa, visited the OM at communications training shop and a nice rag chew ensued. He made Class B in '38 and Class A in '39. AQA, is now a lt. (jg). Don is an old-timer as hams go. He started with a small transmitter and worked on the 40-meter band mostly. Don graduated from Ga. Tech with honors and has been making good ever since in both civilian and Navy life. Sally (Walker) Dawson has left us for a probable final destination of her husband's home in England. She hopes to span the distance via ham radio after the war is over. FJR, ECT and AXP enjoyed a personal rag chew up town recently. EQR, ECT and AXP got together for a personal rag chew. George Foxworth visited the OM at N. A. S. He is close by in the radio repair department. T. H. Smith, ex-3FZL, a field engineer and radio instructor, dropped us a nice line with a promise of a visit. He worked at the air station here from '39 to '41 and has put in 18 months as chief radio operator in the merchant marine, with several trips to Europe and South America. Carl Rodgers, one of our instructors, is studying flying. He is a first class navigation instructor as well as a radioman. Carl is an old-time Navy man, a CPO at that. He was retired once but went back in to do his bit in this war until forced out by his health. Henshaw, our World War Vet radio operator and author, is back on the job after a well-earned vacation. He visited New York City and Havana, Cuba. Crowson has gotten his new house on Navy Point in order. Boys, buy War Bonds and report to your SCM. The services need your cash and the SCM needs your reports. 73, and a Very Happy New Year to all, from *The Old Maestro.*

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, H. F. Wood, W6QVV — TDO writes that he's somewhere in the Pacific on a Victory ship as assistant operator to SJT. The third operator is a ham without a call. He would like to contact ROE. The SCM has his complete address. SSU dropped into town on his way from San Diego to San Francisco, where he is to join up with the merchant marine as operator. UQL, "way up there," reports that the wx is getting no better fast and he envies us our sunny clime. SSU and PPW had a good old gabfest recently and Dick reports Brownie looking fine and

(*Continued on page 70*)

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Calvin Hadlock	W1CTW	F. Lopez	W1KPB
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D. Smith	W1HOH	Myrl B. Patterson	W5CI
John Baxter	W1HRK	Herb Becker	W6QD

John Prusak (*Amateur operator license but no call*)

★ For seven years it has been our custom each year to buy National Tuberculosis Society Christmas Seals and have *QST* stick one on this page in each copy of the January issue. But this year, like last year, there seemed to be more important wartime jobs for girls to do than licking 60,000 stamps. We are making our contribution in the same amount as if we had bought the Christmas Seals, and the printed reproduction above is a symbol of the stamp we wish were there.

Amateur Activities

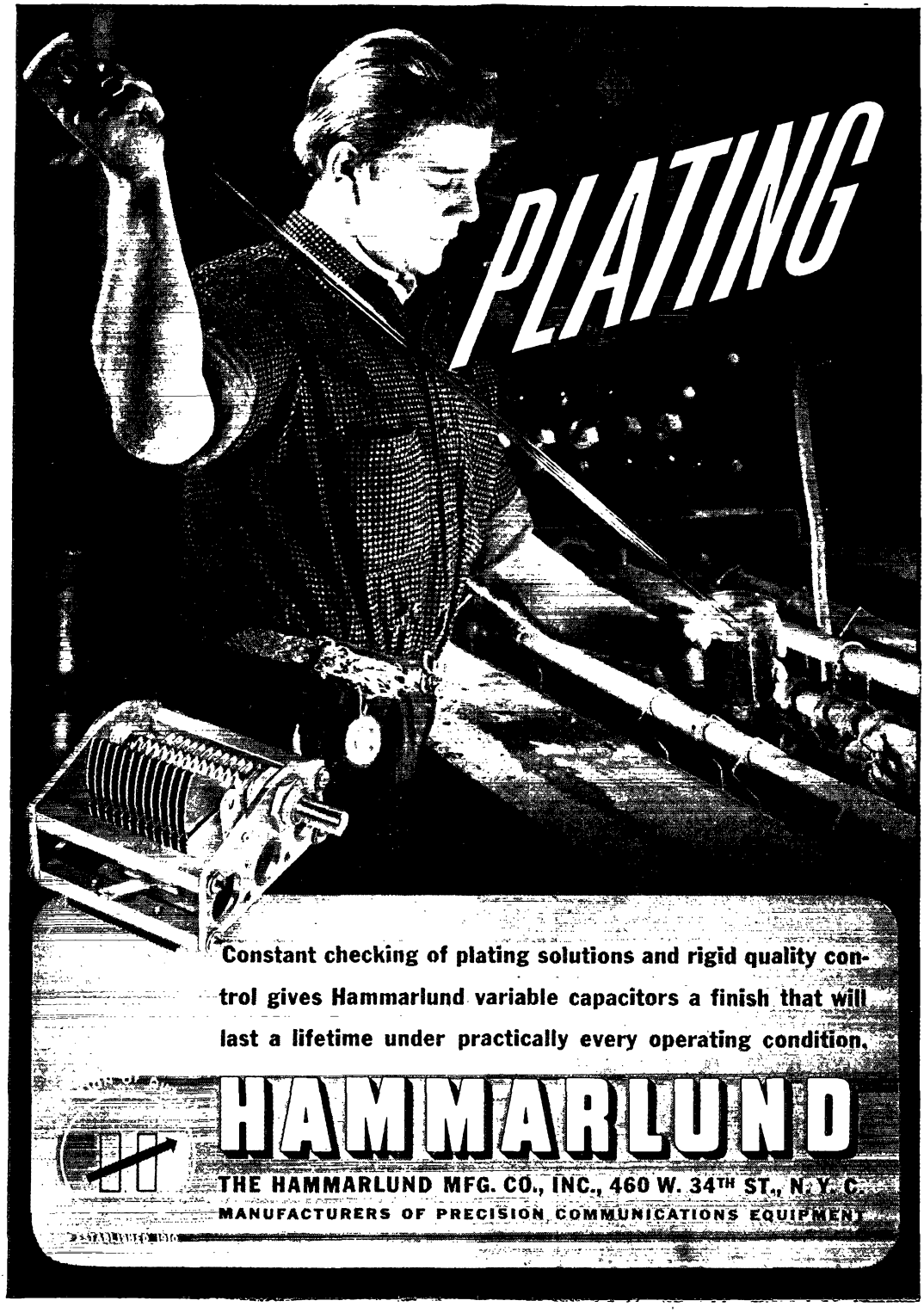
(Continued from page 68)

itching to "get back." ESX's son graduated from Yale and was sent back to our Coast for assignment. Fred Stapp, reporting for KGIC, says that they have just received a modification of their license from FCC and the number of their units is increased from 18 to 26, including 10 mobile. They added 4 new operators during November and are training more. Several of the gang are working on beam antennas and good reports are coming as results of their tests. During a recent net drill a large percentage of the units participated and a great many messages and reports were handled very satisfactorily to the Defense Corps officials. ON reports that KGCL, the Los Angeles County network, is functioning very well. FFN, who has been very ill, is once again taking part in drills. Considerable work is being done on crystal-controlled rigs in that group as well as on walkie-talkies. They were found to be very necessary pieces of equipment in the handling of a recent plane smash-up on Mt. Harvard. The incident was very ably handled by unit 57 of the KGCL net, at the request of the Altadena sheriff's office. Temple City units helped with mobile and walkies and valuable aid was given to the sheriff's crews and also to the forestry department, as a fire had been started on the mountainside. KGLV network activities are progressing and more suitable equipment is being developed and put into service right along. Work is being done on receivers as well as on crystal-controlled transmitters and antennas and a very interesting program is under way. Season's Greetings. 73, *Ted.*

ARIZONA — SCM, Douglas Aitken. W6RWW — The Tucson Short Wave Assn. should be awarded an "E" pennant — they have held code and theory classes ever since Pearl Harbor without a break. TJH dropped in on the bunch for a rag chew. GS made the razor-blade receiver outlined in Oct. *QST* and says it works FB and that he had heard Phoenix, about 100 miles away, on it! REJ has left for overseas. An error crept into the Oct. column — BMQ should have been BMC. Both SQN and his XYL have been in the hospital, but are now OK. RZN reports OFS is chief W/O in the Navy and in the East, and that he ran into OPV in Los Angeles while she was having a bit of an argument with a traffic officer. She is attending a b.c. school. Art says that FNN is EM 1c in the Navy and JRN is now a lt. in the Air Corp. Art is with the U. S. Engineer Dept. in Los Angeles and would like to know of any of the gang in those parts. He says he and CMP often get to hoist a few highballs. TOZ has been transferred to the U. of Colorado in the Navy V-12 set-up. Sentiment seems to be greatly in favor of an Arizona state-wide radio club. Condensed, this is the plan: To cover the entire state, but *not* in competition with local clubs; no officer other than possibly a secretary to be eligible to succeed himself; not more than one elective office to be held by any one town; an annual hamfest; several activity managers, as for different bands, traffic, etc.; all officers elective at the annual meeting, with mail votes desirable for those who cannot attend. We have a sparsely settled state and with just one or a few hams in a lot of the towns, we are going to need a bit of "pressure" now and then and only in union is there strength. With the help of all we should be able to have a highly useful and enjoyable organization if we all pull together. Comment on this is solicited. Write RWW, QNC or MLL what you think about it! 73, *Doug.*

SAN DIEGO — SCM, Ralph H. Culbertson, W6CHV — Asst. SCM, Gordon W. Brown, W6APG — The second meeting of the San Diego gang to put the WERS in commission was held on Nov. 2nd at the home of LYF. Members from all sections of the city were represented, including APG, MHL, OIN, QKI, RGY, 8VHN, NDD and CHV. NDD made a report as tentative radio aide. He has made contact with the chief of police, City of San Diego, and reports everything very favorable. He also contacted Mr. Rieley of the San Diego County sheriff's office with the same FB report. Tentative locations of the control stations were suggested and discussed. Any amateur in S.D. who is interested is urged to contact APG, NDD or CHV. RPJ has returned to S.D. to stay, after being away for a couple of years. MKW has returned from Alaska and is located in Santa Ana. 8VIB, after spending five weeks in S.D., left for the northern part of California, but says he will be back after the war to settle permanently and put on a Calif. kilowatt. We wish one and all a very Happy New Year. 73. *Ralph*

(Continued on page 72)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(Continued from page 70)

WEST GULF DIVISION

NORTHERN TEXAS — SCM, Jack T. Moore, W5ALA — CPW reports that DFO is with No. American Aviation at Dallas. ICB is reported as about due for his first solo flight. FIV is flying the ocean for American Airlines. 9QIN moves from Dallas to Corpus Christi Naval Base. NW reports that the postwar amateur frequency situation looks very favorable at this time. Brother Groves also reports that he had an FB chat with CV in Lubbock recently, that AUL is a lt. cmdr. in the Pacific and that APW is the postmaster at Chico. AJ sends in a report from Philadelphia, where he is an associate radio engineer for the Signal Corps. Pronto says that he was in Brazil last year and will soon go to sea as a Maritime radio officer. SU is on Magnolia geophysical crew out of Sinton, Tex. CDU wants the QTH of BUV and ISD. Joe would like to hear from members of his Army net. CDU also advises that 8GYR is now a resident of Dallas. ASA is doing aircraft electrical work in Monroe. EN is reported as having been to Africa and England for Western Electric. IJC was recently home on furlough from the Navy. AAK is teaching at SMU. GTL was recently back in Dallas after spending some time in Alaska. GZH reports that HOL is a lt. col. and is overseas. It has been reliably reported to the SCM that JQY had to take down his antenna pole because of termite trouble. SN has been promoted to m/sgt. and is still in India. DAS has gone into the radio service business. FKM recently completed his Scottish Rite degrees. DLP is now with Philco. HMH takes time off from being CRO for Braniff Airways to welcome an 8-lb.jr. operator. KDO is an A-20 pilot and participated in the Normandy Invasion; he also recently received two battle participation stars. JCN has gone to work for CAA, installing blind landing equipment. John also reports that he has acquired an Aeronca Chief. HKK advises that the D.P. & L. is using lots of electronic equipment and is also using carrier current extensively. BUT is working in the post-office at Love Field. IAD has recently returned to Dallas from the West Coast. GPA is the 5th Ferrying Group control officer at Douglas Aircraft in Oklahoma City. GSR has been in India for three years. EOH was last reported as being R1c at Hensley Field. FQY reports a recent visit from 3IJG (ex-5FQA), who stopped by on his way to Central America for Western Electric. IPC reports that he and JIZ are attending S.M.U. and that JIZ is scheduled to graduate in March with an E.E. degree. IXM is S2c in the Navy. Col. J. R. Haynen, who was active in prewar Philippine amateur work, is with the 8th Service Command. Thanks are due JJK for keying this report on the mill. IJR is teaching at Texas A & M. 73, *Jack.*

OKLAHOMA — SCM, Ed Oldfield, W5AYL — The Oklahoma City Radio Club had a meeting the other night and a few more of the boys came out. Those answering the call were: HXI, IUF, JCR, CXE, APG, AFX, AXM, HGB and AYL. We have set the meeting day for the club as the first Thurs. in each month, and location information can be obtained from AYL or CXE. ARB, who used to work for O.G & E., now is RM1c, Navy, at Norman, Okla. IUF is working for the county treasurer at Oklahoma City. HGB, recently returned from the West Coast, is now at O.C.A.D. JHO has seen some action and is doing a good job in the Pacific. We were fortunate in having a visit from HXI, and he says he's putting out the 100 octane for the flying hams. EFY is servicing radios in Capitol Hill. FRY is in the Navy. IFA is in the Pacific with the Navy. HXR is flight surgeon in the AAF. IQR has been teaching Navy radio in Texas. IFB operates at a local b.c. station. FRL is East helping to produce radio equipment. JRF recently transferred to O.C.A.D., radio branch, from the West Coast. *Ed.*

NEW MEXICO — SCM, J. G. Hancock, W5HJF — Recent visitors to the SCM were Harold Wheeler (LSPH), David Erwin (LSPH), the XYL and jr. operator. Dave is chief petty officer, USN. JLJ and KCW also dropped in for an evening. Fourteen-year-old Jimmy Brown promises to give Portales a very valuable addition to its growing list of postwar operators. To these hams, both present and future, and to RM2c JWA; Capt. ZU/ZM, Signal Corps; Capt. ENI, M. C.; Lt. HWG, Navy; HDN, merchant marine; 1st Lt. CSR, Signal Corps; GSD, USN; DYV, Navy; 3IRM (ex-5ND jr. operator, lt, AC); HAG; ND; BKD, police operator; F. J. Gormley (LSPH); GXL; HPZ; JZT; CJP, GUZ (presumed prisoner of war of the Japs); FAG; GGX; FMM; CXP; ISN; DLG; ICD; HDH; FPC; FSP; JGV; JXL; JZQ; KKS, and to all the other OMs and YLs, Season's Greetings and an "on the air 1945." 73, *Jake.*

The Month in Canada

(*Continued from page 60*)

"Canadian corner" would go sadly lacking at times. It seems that just as we're despairing as to what to write about, along comes a letter or post card from chaps such as AOZ, ZI, EO, Albert Potoski, etc, See you next month!

MAILBAG

CPL. W. J. MARTIN, VE3AXU, who is with the RCAF, adds these items of interest.

"We certainly look forward to *QST* every month down here, although I have been a little disappointed in the VE3 news. As one of the boys wrote though, we are all pretty busy and never seem to get around to sending in any news.

"Last month I took unto myself an XYL. 3ABW is now at Bagotville, Que., with the RCAF and 3AZX is now at Glace Bay with the same outfit. 3ACF is at this station as a flight lieutenant. 5ID is the signals officer here. Ex-3FW was here, but left recently. 3AWO has changed his QRA, but is still in Toronto.

PO Tel. David Scholes, VE5DY, sends in the following collection of news items:

"As for news of hams, I haven't much to contribute this time. 5OS has returned home after about three years in New Zealand with the RCAF. 4AEY is now instructing at the RCN Signal School, St. Hyacinthe, Que. 4MN didn't care much for his station on the mainland, and got himself a draft back to my station. Since then he has been drafted to another West Coast station. Ex-4IC is back in St. Hyacinthe for a course of instruction. He was in the RCNVR at the outbreak of hostilities as a Tel., and is now a CPO Tel. in the RA branch. 5EP and 5QH have been transferred from their station near here to a camp in this district. Saw 5AAH recently — he now has a 2nd class commercial ticket and is with the Department of Transport at a radio-range station on Vancouver Island.

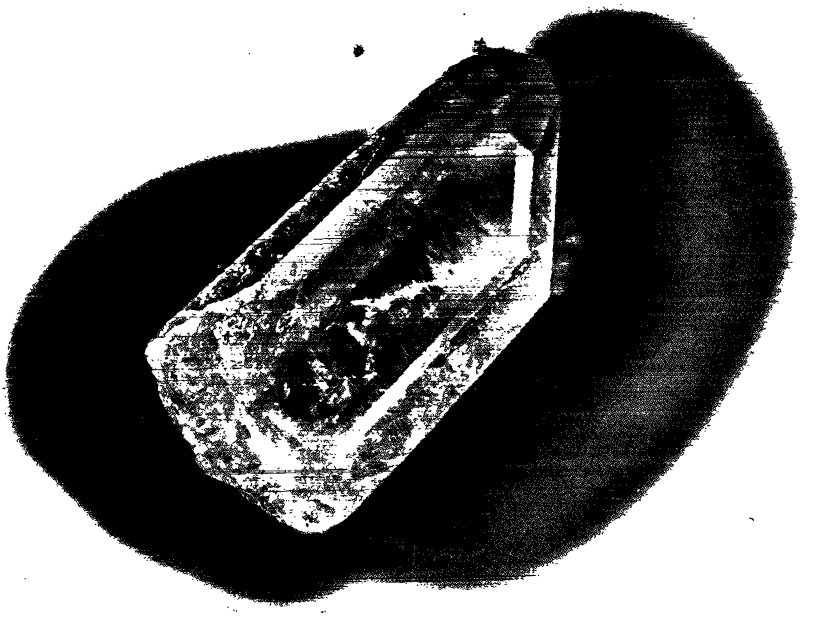
"Just had a letter from 5ACE, who says he has been transferred from Ceylon to a station in India, where he does not say. He reports that *QST* is being received regularly now, and is unable to understand why his call is given in May *QST* as being assigned to Macaullay. As far as I know it was originally assigned to D. T. Jones, who held it at the outbreak of war in September, 1939.

"An air mail letter from 5EC reports that he is moving so fast at times that mail takes months to catch up with him. He received two letters from me written months apart, and some of his mail was marked "unknown" at the Base P.O. 5ACE expects to visit G2FO, who was about 35 miles from him at the time of writing. As have most VEs overseas he has visited Scotland when on leave and likes it, especially Edinburgh. He also reports that radio parts are not hard to get now, though when speaking of building a receiver he says he can get a power transformer for 35/-, about $8.00!

"5HR is recovering from an appendectomy performed a couple of weeks ago. 5PO has recently returned from a trip to the interior of B.C. where he was making movies for the provincial government travel bureau. 5OR has had another promotion and is now a F/Lt. He is in the RAF with the India Command. Today's paper announces the appointment of 5BL as coroner at Parksville, B. C. 5NG reports that the OM, 5EP, has reverted to Sgt. and 5QH to Cpl. — both are in the RC Signals."

Martin B. Goodwin, ex-VE5UI contributes the following VE5 news:

"It is over five years since we have been on the air up here and most of the young fellows I knew in the ham racket at Vancouver are spread all over the world, but if you are interested in a little bit of the dope about them, here it is. 5TR has come back to Canada as a flight lieutenant after four years in the RCAF and, incidentally, picked a Halifax girl for the OW. 5AFE is traffic manager in the PAA at Whitehorse. 5RT is at National Research Council at Ottawa. 5AHR is a lieutenant in the Navy. 5AAN and 5AGP are in the DOT on the West Coast. 5UZ is up at Coppermine. 5FB has been in the Army five years and has been overseas four years. There are many others in the armed services, but I have more or less lost track of them. As for myself (ex-5UI), I was in the Coast Station Service in British Columbia for the last year and a half. I am now studying medicine at McGill University. I guess I am one of the few of the young squirts back at Vancouver who isn't working in the radio business in some form or another."



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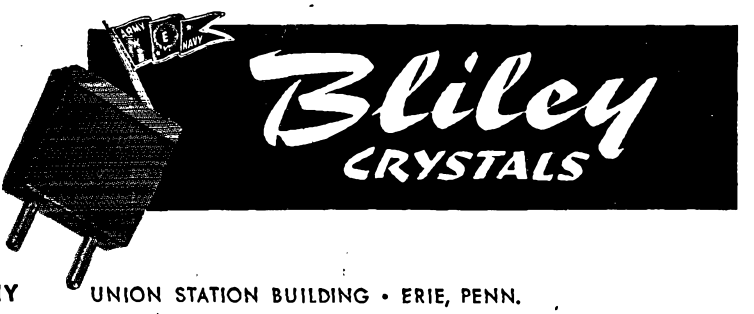

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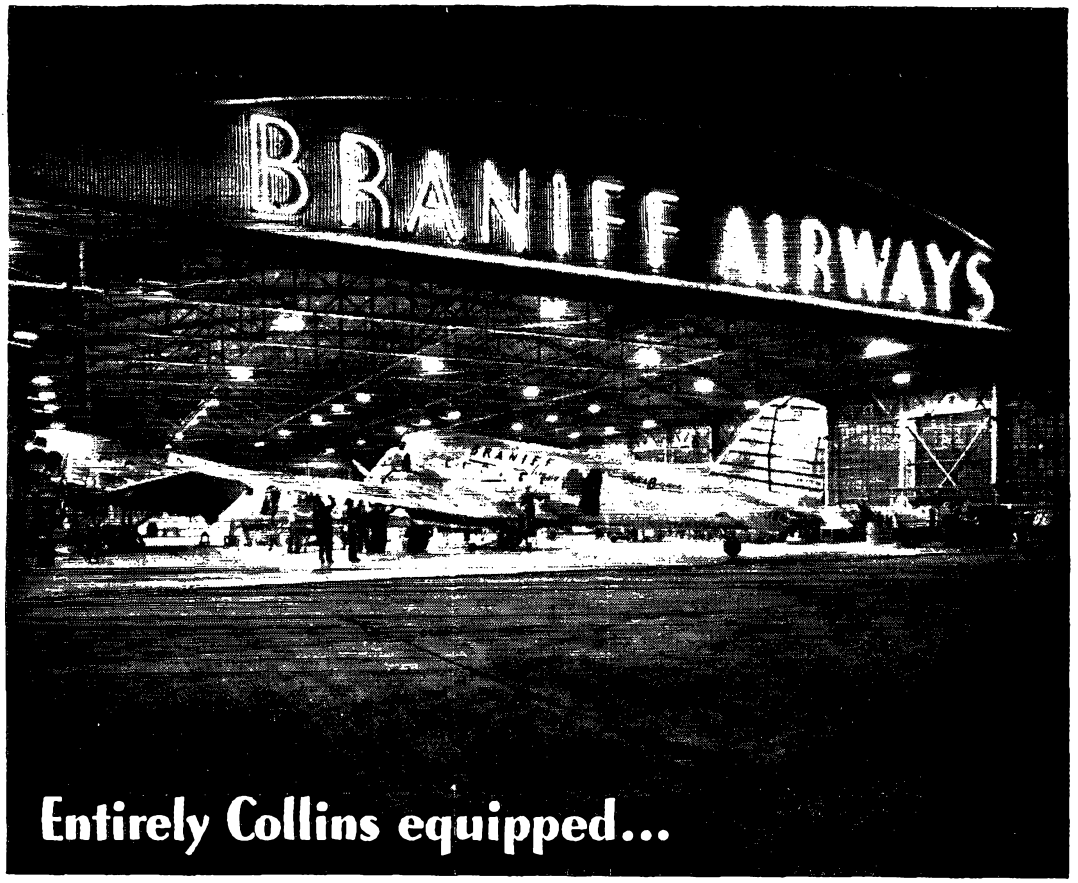
Of the frequencies mentioned above, the lowest provides service to short distances and the highest to great distances. In general, reliable reception is possible at all times throughout the United States and the North Atlantic Ocean, and fair reception over most of the world.

Information on how to receive and utilize the service is given in the Bureau's Letter Circular, "*Methods of Using Standard Frequencies Broadcast by Radio*," obtainable on request. The Bureau welcomes reports of difficulties, methods of use, or special applications of the service. Correspondence should be addressed to the Director, National Bureau of Standards, Washington, D. C.



Entirely Collins equipped...

BRANIFF AIRWAYS, INC. has been using Collins ground transmitters since 1935 and Collins aircraft transmitters since 1937.

It was the first great airline to recognize the superiorities of Collins design, workmanship and performance, the first to avail itself of the precise, sturdy, reliable Collins Autotune.*

Today Braniff uses Collins multi-channel or Autotune equipment at every point at which it has a radio station, and every ship in its *Super* B *Liner* fleet carries a Collins 17F Autotune aircraft transmitter.

There is a deep satisfaction in having supplied the nerve-system on which Braniff relies in maintaining its magnificent record of safety and operating efficiency.

When Collins turned to war production, it could apply the know-how that came from furnishing communication equipment which met the exacting needs of Braniff and other major airlines. When it returns to civilian design and production, it will add to that know-how the tremendously increased, intensified experience acquired in its services to the Armed Forces. Collins Radio Company, Cedar Rapids, Iowa.

ARMY E NAVY

*The Collins Autotune is a repositioning mechanism which quick-shifts all transmitter or receiver tuning controls simultaneously and with extreme precision to any one of a number of pre-determined frequencies. Patents issued and pending in the USA and other countries.

COLLINS

REG. U.S. PAT. OFF.

Correspondence

(Continued from page 56)

W4ERU, Burgess, was inducted in the summer of '43 and has been in the AACS ever since. He's now a s/sgt., just arrived in New Guinea, and advised me what a nice outfit it was. He and Buchwald, W4COV, and I were civilian War Dept. ops at MacDill for over a year. I was chief op of the station when I enlisted. At present I'm "sweating out" orders sending me up North. Am fortunate to get an assignment in my type of work because to a certain extent it takes my mind off the absence of ham radio activity.

As I've always figured, ORS and AARS training, Field Days and other ARRL contests have helped me no end. All of us feel that the country owes a lot to hams, not only for the source of many A-1 ops and technicians, but because their activities have kept the factories tooled up to a point where they were able to furnish radio equipment for war needs. We have great faith in the League and appreciate its efforts in our behalf — we know when peace comes that we won't be let down. "It can't happen here."

. . . For those interested in the whereabouts of some of the Tampa Ham Club boys — Eledge, W4FYI, is CRT on a destroyer; Harnett, W4GNS, is in a Navy V-12 unit at Villanova, Pa.; Buchwald, W4COV, is teletyping in the signal section at MacDill Field, and Hunter, W4TZ, is an engineer with Raytheon in Boston, Mass.

— *Sgt. Richard C. Heuer, W4GEE*

ANY KINDRED SOULS?

Prairie du Sac, Wis.

Editor, *QST:*

Back in the dear, dim days — not quite beyond recall — when wireless was the word; when the coherer was just passing out in favor of the various crystal detectors; when everybody was trying to make an electrolytic detector work; when all tuning was done with tapped coils, or coils equipped with sliders; when anybody could go on the air with anything, on any frequency, without restrictions of any kind; when The Electro Importing Co., Wm. B. Duck, and a few others sold all there was to sell; when *Modern Electrics* was *the* magazine and its "Oracle" answered all the questions (the same ones over and over again); when I was passing out of knickerbockers into long pants — it was then I became interested in what now is known as amateur radio.

My interest at that time was in experimenting, but lack of funds and time did not permit much of that. Subsequent events of the next few years made it inconvenient, if not impossible, to take more than an academic interest in radio, and so, in this interval of time, I bought a few radio books and read the various radio magazines as they came — all the while learning to be an electrical engineer, getting married, and raising a family. All of this being practically completed, I am now thinking of picking up where I left off some years ago.

(Continued on page 80)


Centralab
CRL
SELECTOR SWITCHES
Manufacturers
are invited to take advantage of Centralab's unchanging quality and splendid engineering co-operation Selector Switches.
Built by Centralab to withstand the heavy service specifications required by the Army and Navy. May be had with fungicidal treatment for tropical climate.
Centralab
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Division of GLOBE-UNION INC., Milwaukee
Producers of Variable Resistors — Selector Switches — Ceramic Capacitors, Fixed and Variable — Steatite Insulators.

(Continued from page 78)

Are there any, or many, such aged souls in amateur radio? I would be very much interested in seeing an answer to this question published in *QST*.

— *O. H. Cramer*

IT WASN'T SO BAD

511th Airborne Signal Co.,
Camp Mackall, N. C.

Editor, *QST:*

Like everyone else, we are praying for the day when we may once again burn the midnight oil. In this regard I would like to make a few comments. . . .

As you say, now is the time to start wondering about postwar amateur activity, but I am inclined to believe that everything would work out satisfactorily if we returned to our former status. . . . I think the country, and more particularly the FCC, has a good idea of just what service the amateur has been to his country. With this in mind they will be only too glad to restore us to active status under the same conditions we previously enjoyed. Maybe the requirements for a ham ticket are a little easier here than in other countries, but have you ever said this about anyone you worked, "He should never have been licensed"? I hardly think so. You knew only too well that time and experience would straighten him out, and soon he would be right up there with the speed boys.

Honestly, we in the services are so anxious to get back on the air we would hate to see any kind of quibbling prevent us from realizing that wish. Let's go back as we used to be. It wasn't so bad, was it? You're darned right it wasn't! . . .

— *S/Sgt. Thomas J. Ryan, jr., W2NKD*

FROM AN S. W. L.

c/o Fleet Post Office, New York, N. Y.

Editor, *QST:*.

. . . I wonder if there couldn't be something done to put an article in *QST* about us short-wave listeners, commonly known as SWLs. I know that there are many boys who are not yet hams, but who are thinking about getting their tickets like I am. Meanwhile they are only SWLs interested in amateur radio.

I think they would all be happy if there was an article about them in *QST*. They also could get to know other SWLs and maybe exchange ideas on different types of receiving apparatus. They also could hold contests to see who could receive the most SWL cards or something like that. I think that the majority of the short-wave listeners read *QST* and I think that most of the hams will tell you that they were SWLs before they got their tickets.

Ask the boys who have their tickets what they think of the idea. . . .

— *Pvt. James Nash*

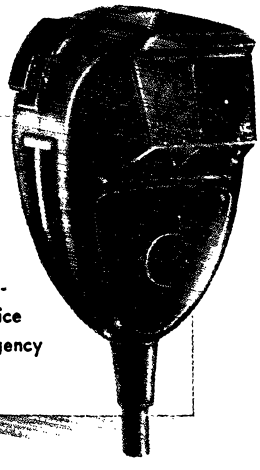
(Continued on page 82)

NOW AVAILABLE

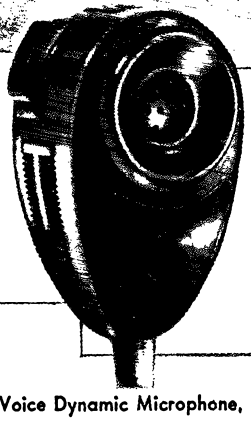
NEW CATALOG, DESCRIBING THE COMPLETE LINE OF

Electro-Voice COMMUNICATIONS MICROPHONES

Electro-Voice Differential Microphone, Lip-Type Model 245 for applications where background noise elimination, free use of hands and high articulation are required.



Electro-Voice Differential Carbon Microphone, Hand-Held Model 205-S, an ideal microphone for aircraft, industrial, railroad, police and emergency services.



Electro-Voice Carbon Microphone, Model 210-S, a single button microphone which embodies all of the latest developments required for military use.

Electro-Voice Dynamic Microphone, Hand-Held Model 600-D, designed for high fidelity speech pick-up in those locations where the ambient noise does not exceed 100 db.

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Please send us your new "Electro-Voice Communications Microphones Catalog."

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ARMY E NAVY

(Continued from page 80)

MERRY-GO-ROUND

504 Marengo Ave., Forest Park, Ill.

Editor, *QST:*

Several brains have bemoaned the fact in *QST* articles, including editorials, that the frequency allotments (rations) which we take for granted, when returned to their rightful owners, will not accommodate the greatly multiplied family of hams returning to civil pursuits after this shindig is over.

I have been waiting patiently for the announcement that some one of our brains had a real come-back to this problem. If my vast laboratories were not entirely devoted to the prosecution of the war, I would take my code practice oscillator apart and really do some research work myself.

Only two or three lousy suggestions were weakly mentioned to overcome this tremendous QRM problem. Directional arrays are fine if you have the acreage (about one per cent of us do). Low power also has been mentioned timidly by one or more persons in a recent survey. But nothing has been done about interference by summer lightning or fading. This, of course, could be controlled by contacting the proper congressman so these two suggestions can be dispensed with.

While watching the squirrels at play in the big box elder (one of my favorite pastimes since radio silence and gas rationing started) an idea of astounding proportions came to me. Why not key or voice modulate a 30-kc. signal (this being a supersonic frequency) and modulate the regular rig with a 10-kc. slice of it and, zingo, you have 50,000 channels inaudible to anyone without a 30-kc. mixer at his second detector. Of course, this supersonic modulation principle would be allowed to be used only by holders of extra first grade licenses with more than 400 watts (my station is registered now at 1 to 2 watts c.w.). This would allow the low-powered stations to operate without interference.

Other ideas came to me after I was confident the QRM problem was solved. How foolish we have been, I mused, to use a h.f. oscillator with all its alignment problems, drift controls, etc., when all we needed was two carriers for each signal, crystal controlled right at the transmitter.

We could use our i.f. amplifier, tuned of course, to receive the signals spaced 465 kc. A third carrier would allow the c.w. beat oscillator to be dispensed with likewise. This system would open up vast new fields of untried techniques, such as dual-diversity transmission and dual-diversity reception for the common man.

No wonder we unsuspecting hams have been dupes to the greedy receiver manufacturers, fostering the idea of selling us these complicated collections of mechanisms to justify the terrific prices they ask for these monstrosities full of unnecessary circuits and gadgets.

This is the time for hams to do something about these problems so when Johnny comes marching

You Are Going to Want BROWNING FREQUENCY METERS

How will you have them?

Take this opportunity to name your specific desires . . . to have your own wishes incorporated into equipment you will want to make standard for mobile radio installations.

You will want Browning Frequency Meters because they do what you will want them to do, at a price that will let you use them generously.

Ever since their rapid acceptance several years ago, Browning Frequency Meters have been standard equipment in police and other emergency systems all over the United States.

HERE IS WHAT BROWNING FREQUENCY METERS ALREADY HAVE AND DO:

- Check, with better than .005% accuracy, any five frequencies from 1.5 to 120 Mc.
- Less than a minute required to check any one frequency.
- Pre-calibrated for specific frequencies.
- 100 Kc. crystal oscillator provides at least two check points in any band.
- High dial-reading accuracy achieved by narrow frequency range.
- Cathode ray indicator permits visual check against crystal standard and transmitter.
- Complete voltage stabilization.
- Portable, light-weight, A.C.-D.C. operation.

What More Do You Want?

Certain interesting improvements are already in store for this product of Browning Laboratories research. Whole-hearted devotion of all our energies to war production keeps them in the planning stage. But our postwar thinking, as it takes shape in rough sketches, turns to you — the future owner of future Browning Frequency Meters. We want you to have what you want.

Your letter about what you want in Browning Frequency Meters will receive a cordial welcome. And will, if possible, be reflected in the model delivered to you when we can deliver. Write soon, won't you?

BROWNING
LABORATORIES, INCORPORATED
WINCHESTER, MASSACHUSETTS

Browning Laboratories, Inc.
750 Main Street
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Gentlemen:

Here are the new features I'd like to see in Browning Frequency Meters:

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NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

_____

HERE ARE MY ROUGH SKETCHES

(*Continued from page 82*)

home he will be proud of us home-front workers who have looked after his heritage while he was away defending it. I tell you, if my vast laboratories were not being used to the fullest for the prosecution of war. . . .

—*R. C. Chouinard (The Brain), W9FI*

High-Gain A.C.-D.C. Audio Amplifier

(*Continued from page 33*)

in the speaker with both gain controls wide open with the first grid grounded. This is partly because of the good filtering and partly because of the lack of response at frequencies below 100 cycles.

Further reduction in high-frequency response is possible by the inclusion of a tone control, such as a condenser in series with a variable resistance across the input of the output stage. The over-all frequency response may be improved greatly by incorporating some negative feed-back. A 0.1-μfd. condenser might be hooked in series with a 100,000-ohm resistor and a switch between the grid and plate of the 25L6. However, in this case, more trouble might be experienced with feed-back from loudspeaker to mike because of the extended frequency range. If headphones are used, this trouble could be minimized.

Hints and Kinks

(*Continued from page 53*)

was a 66-foot end-fed Hertz, with a number of bends.

The transmitter was located in the attic, about 35 feet above the ground. When operated at 3.5 Mc. it was being fed near a current loop, with large currents flowing to ground. As the 35 feet of steam pipe, electrical conduit, etc., which comprised the lead to actual ground, represented a considerable fraction of a wavelength, the transmitter in the attic was quite a few volts above ground. As a result the r.f. got into a number of places where it had no business — in the lighting system, for example. Since the power supply delivered only 30 watts to begin with, I resented a large portion of this being wasted in illuminating bulbs in various parts of the house, particularly since the orange glow produced was useless for practical purposes.

After a good bit of experimentation the system shown in Fig. 4-A was evolved. The important thing is to see to it that the coupler itself is completely insulated from the transmitter ground (chassis) and link-coupled to the transmitter. Then the ground lead from the coupler is carried to an actual ground (in my case the water main in the cellar) and carefully insulated all along its length. No. 14 wire supported on stand-offs is suitable. Absolutely nothing else is to be connected to this ground lead. Links on both the final tank and the antenna coupler may be permanently coupled closely, as all variations in load-

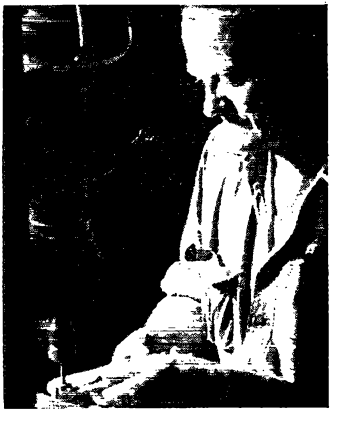
MEN OF MEISSNER

... ON THEIR FACES ARE THE SMILES OF PRIDE IN WORK WELL DONE

In the little city of Mt. Carmel, Illinois — famous for music and electronics—the men of the Meissner Manufacturing Company are now devoting their skill and experience to speeding the final day of Victory. All were hand-picked for their jobs—many "grew-up" in the business, doing their share toward making the name Meissner stand for the ultimate in radio quality. They have had the pleasure of turning out perfect work—felt the thrill and satisfaction that comes with achievement. And in the bright, postwar world of tomorrow, it will be these same men of Meissner that add new fame to the name of Meissner radio and other electronic equipment.

Skill PLUS "Know How" — The secret of Meissner's reputation for superb quality precision work is more than just great skill and intricate machines. It is a combination of these two, PLUS the "know how" that comes only from years of experience.

Expert—His is a heritage for producing far-famed quality. Mt. Carmel, Illinois, is said to have more electronic technicians per thousand population than any other city in America.



Meissner's Precision-el — that's the name earned by the Meissner personnel for their skill, and for the pride they have taken in doing their precision work right.

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ADVANCED ELECTRONIC RESEARCH AND MANUFACTURE

Export Division: 25 Warren Street, New York; *Cable,* Simontrice, New York

(Continued from page 84)

ing are taken care of by C_2, the 500-$\mu\mu$fd. variable output condenser. The other condenser, C_1, is a 250-$\mu\mu$fd. variable.

The coupler tank coil, L_1, is cut so that it will resonate in the desired band with very low tuning capacity. The entire unit is placed in a shield can which is grounded to the transmitter chassis, while the coupler is carefully insulated from the shield.

The tuning process is the same as with any other form of pi network. The transmitter first should be tuned up with the d.p.s.t. switch in the link open. After that the transmitter is not touched. Loading is adjusted by means of C_2, a surprisingly easy process. Resonance is achieved by varying C_1. Then the power is going to the right place, as can be observed easily by placing an r.f. meter in the antenna lead.

A variation which is useful when working, say, a very short antenna system on a very low frequency, is by the addition of a loading coil, L_2, as shown in Fig. 4-B. If mechanically feasible, this loading coil might be placed at the open end of the antenna. This would move the current loop, the point of maximum radiation, further out in the clear, a definite improvement in design.

The arrangement shown in Fig. 4-C is excellent for a band-switching transmitter. The two switch sections comprising S_1 may be ganged after the optimum position for the taps has been found by experiment. What has already been said concerning insulation still applies, and the tuning process is the same.

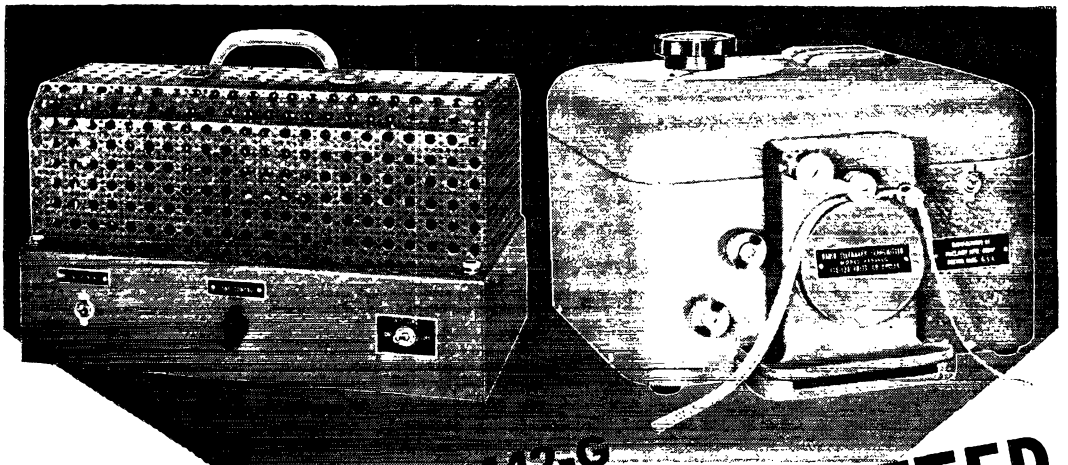
At W2LIW, one coupler is used from 1.75 to 14 Mc. For 28 Mc. a v.h.f. version was constructed, using two 50-$\mu\mu$fd. midget condensers and an air-wound coil. All leads were made very short. Excellent results were obtained. — *Harry R. Hyder, Lt.(jg), USMS, W2LIW.*

Strays

WITH KEY AND HEADPHONES

We sit down here with faces sour,
And hear this cackling by the hour:
With dits and dahs and dahs and dits,
They give a normal man a fit.
They pound your ears with fiendish glee,
Like a dozen machine guns on a spree.
A million devils on your brain
Will drive you, sure as h — l, insane.
Your eardrums vibrate all night long,
While headphones sing a ghoulish song.
You tear your hair and twirl your thumbs,
And swear to all your time has come.
Your seat gets hard from sitting long,
You cannot stand and type, doggone!!
Some day I'll get a padded cell,
And see what jumbled codes can spell
While tax-payers bear the heavy load
For me — a victim of the old Morse code.

— *W2CRN*



McElroy Model XTR-442-G

AUTOMATIC TRANSMITTER

New TYPE HEAD!

New MICROSWITCH!

The McElroy Model XTR-442-G automatic transmitter opens and closes any keying circuit to form mechanically precise signal elements . . . dots and dashes — in response to Wheatstone perforated tape. This unit will key either the intermediate relay of a radiotelegraph station or an audio oscillator for training radiotelegraph operators.

The motor drive of this unit provides accurate calibration of words per minute at all speeds. McElroy engineers have developed an entirely different type of auto head, with the most modern type of ball-bearings, including a new plastic bearing and tool steel bell cranks. The speed range on the first set of gears is from 10 to 60 words per minute . . . an instantaneous gear shift provides speeds from 50 to 300 words per minute.

Another McEroy development is the microswitch operated by a lever that extends throughout the front panel by which power is removed from the motor, and the face of the drive pulley is drawn away from the rim of the friction drive, thus assuring long life of the power mechanism and parts. The McElroy Model XTR-442-G is available, for immediate delivery, at $490.00.

McElroy engineers never copy . . . never imitate.
We create . . . design . . . build.
We are never satisfied with mediocrity.

Requests for additional information will be handled promptly

McElroy **MANUFACTURING CORP.**
82 BROOKLINE AVE., BOSTON, MASS.

★ BUY AND HOLD MORE WAR BONDS ★

Experimenter's Section

(Continued from page 60)

Stove "isinglass" available at most hardware stores, is usable in high-voltage mica condensers. It will usually average 2.5 to 3 in dielectric constant. Thin aluminum foil, carefully washed to remove all trace of electrolyte, may be salvaged from discarded electrolytic condensers to make excellent "leaves."

I am always glad to hear from anyone else who is interested in c.c., or anything else of a scientific nature for that matter. — *John Garner, Hiram, Ohio.*

—•••—

About a dozen hams in the vicinity of Jackson Heights are experimenting with carrier-current communications. Distances of up to 10 or 15 miles have been worked, although not consistently. The dependable range appears to be of the order of only a few blocks' radius. — *Robert F. Clough, W9OMU, 37-28 86th St., Jackson Heights, N. Y.*

—•••—

An eastern Connecticut group interested in c.c. is headed by Prof. James W. Yates of the University of Connecticut. His residence is at 200 Lewiston Ave., Willimantic, Conn. Others are Gilbert Pearson, Prospect St., Willimantic, Conn.; David J. Blick, Mansfield City, Conn., and Joe Arnold, North Manchester, Conn.

—•••—

Hartford experimenters include Bill Slocum, 54 Pleasant St., West Hartford; Paul P. Graves, New Dom Hotel, Hartford; W. E. Bradley, W1FWH, 217 Washington St., Hartford, and H. Pilafian, R/1c, W1LJW, Platoon 10, Navy V-12, Trinity College, Hartford.

—•••—

I am ready to go on c.c. here in Maplewood. My transmitter is a Hartley 6L6 oscillator with 25 watts input. I would like to hear from others in my area who are interested. — *Jack Fox, 440 Richmond Ave., Maplewood, N. J.*

—•••—

A group of us at the Radio Matériel School have become interested in carrier current methods of transmission. — *Ralph W. Curtis, W1KJP, CRT, USN, Radio Materiel School, Staff Division 7, Naval Research Laboratory, Bellevue 20, D. C.*

—•••—

I would like to get in contact with amateurs in the Philadelphia area operating or experimenting with the carrier-current method of communication. — *Kit H. Carlos, 1640 Green St., Philadelphia 30, Penna.*

—•••—

I am interested, with several other fellows, in carrier current. We would like to get in touch with any one who would help us in getting started. — *Warren O. Nilsson, 715 South Washington St., Apt. A2-2, Alexandria, Va.*

(Continued on page 90)

(Continued from page 88)

The radio department of the Eugene, Oregon, Vocational School is conducting tests to determine the feasibility of carrier-current transmissions in the Eugene area. Voice and music are used in modulating the test transmissions.

Input power is 18 watts to a 6L6 final amplifier on 180 kc., driven by a 6C5 crystal oscillator on the same frequency. The 6L6 is plate-and-screen modulated by the output of a high-fidelity Inca amplifier. An r.f. current of 0.6 ampere is delivered to the "hot" side of the 115-volt line.

Transmissions of excellent quality have been received up to a maximum airline distance of six city blocks. So far no reception has been reported in areas served by other substations. Permission has been granted by the power company to experiment with coupling to one phase of the 2300-volt distribution system, and it is hoped that this will result in wider coverage. — *Roger J. Houglum, W7FHB.*

—•••—

Maynard B. Chenoweth, MC/W2GCC/3, Army Service Forces Chemical Warfare Center, Edgewood Arsenal, has a receiver on 170 kc. and wishes to hear from others in his vicinity interested in carrier current.

—•••—

I am interested in carrier current and would be glad to hear from anyone living in Edmonds or vicinity who has a like interest. My telephone number is Edmund 1587. — *William Farr, Route 1, Box 660, Edmonds, Washington.*

—•••—

I am very much interested in the Experimenter's Section of *QST*. I should like to know if there is anyone in Hazardville or vicinity who would like to contact me through c.c. — *Robert Morris, Abbe Road, Hazardville, Conn.*

—•••—

There are quite a few carrier-current fans here in Alameda, including myself. — *Mon L. Webb, Sr., W6AD, 2004 3rd St., Alameda, Calif.*

—•••—

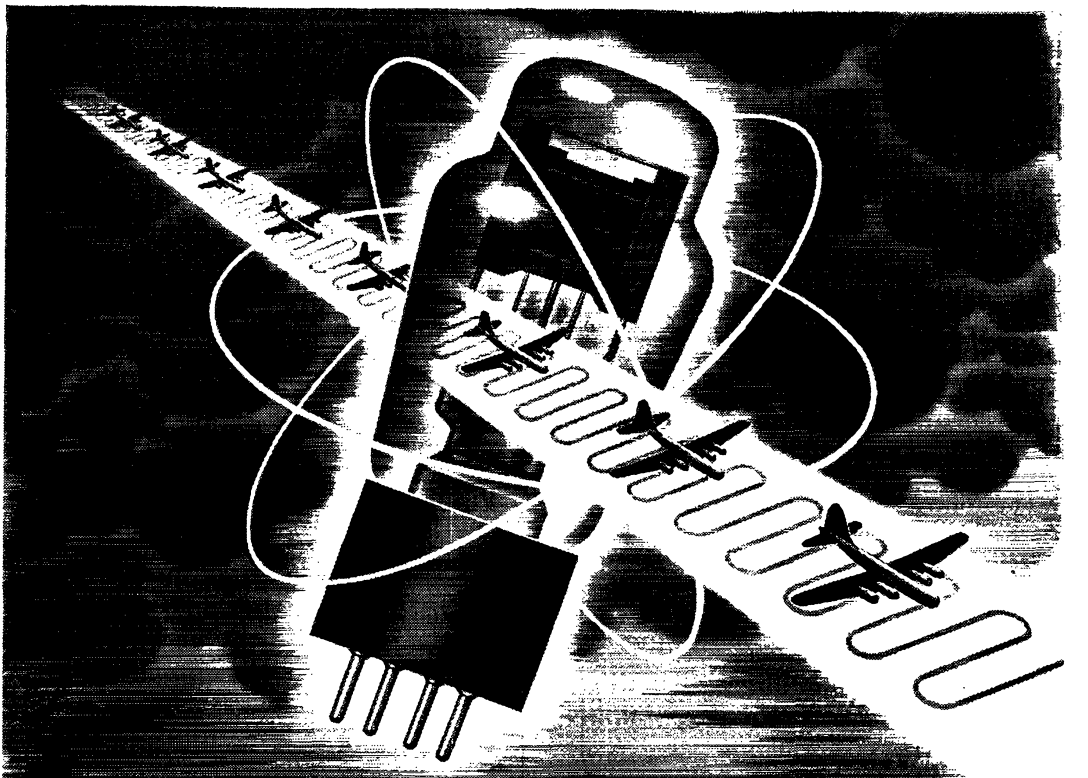
Please list my station as active on carrier current communication work. I am located near Sunset and Vermont and can be reached by telephone 137-22. — *David R. Kerr, W6RPW, 1331 N. Lyman Place, Hollywood 27, Calif.*

—•••—

I am building a carrier-current rig and desire to communicate with other experimenters in the Brooklyn area. My phone number is Ing. 2-1946. — *Ted Fishman, 180 Lenox Road, Brooklyn 26, N. Y.*

—•••—

One of the nationally-known mail-order radio supply houses has just announced a line of receiver and transmitter coils designed for 200-kc. carrier current rigs. Input, interstage and diode output transformers, oscillator coils and r.f. output coils are listed. Input receiver coils and output transmitter coils have windings for connection to power lines. Leads are color-coded and diagrams are supplied.



Delco Radio Products Mean Fine Performance

From compact auto radio sets to highly intricate radio and electronic equipment for the armed forces, Delco Radio products are distinguished by fine performance. Each unit reflects care and competence in engineering; each part represents advanced techniques in production accuracy. Tomorrow's civilian needs, like today's military demands, will benefit from Delco Radio's engineering vision, manufacturing precision.

Delco Radio Division, General Motors Corporation, Kokomo, Indiana.

Put Your Dollars in Action—BUY MORE WAR BONDS

Delco Radio
DIVISION OF
GENERAL MOTORS

Hams in Combat

(Continued from page 45)

margin, and believe me, my heart was in my mouth. From that moment on we were under constant air attack. These attacks continued until we moved up the island to make contact with the enemy.

We used a transmitter to operate with the rest of the division, who were fighting on the surrounding islands. Little trouble was encountered here with wire communication, therefore we kept radio communication to a minimum. We did handle traffic back to Guadalcanal, as this was our only means of communication with our base. It kept us fairly busy handling traffic, not only for our own outfit but also for other units that landed with us. We had no repair equipment with us, except what is carried in a battalion, which at that time was nil. Once when our receiver went out (we had only a voltmeter with which to do any testing, and a few broadcast radio parts for repairs), I thanked heaven that I had enough experience to do something with nothing. No Signal Corps personnel accompanied us on this mission.

When our mission was accomplished we went back to 'Canal, and from there we visited New Zealand for a rest period.

I am the only ham left in the old outfit. Fred, K6TOP, has been commissioned a lieutenant and is back in the States. Al Skinner, ex-W5, is attending OCS in the Signal Corps. However, most of the radio operators who first started out with us remain, and we are now awaiting further assignments — see you in Tokyo!

QST Looks at Television

(Continued from page 16)

housewife can develop eyes in the back of her head and a dual personality she will certainly be unable to peel the potatoes, mind the baby, and do the week's washing while raptly listening to *and watching* the adventures of "somebody's other wife."

The pioneers in this new industry are well aware of these difficulties in program planning and are prepared to take appropriate action. It is very doubtful if continuous programs of the type now offered by standard broadcasting will be available, certainly not until a real demand arises. For the immediate future it appears that television broadcasting will take place during two well-defined periods of the day, a few hours in the afternoon devoted mainly to educational subjects, perhaps actually presented in coöperation with local school or college classes, and an evening program of entertainment running from 7 to 11 or 12 P.M. The costs of television programming are much higher than comparable sound broadcasts and this factor, combined with the inability of the TVL to sit still and look for more than a few hours at a time, seems reason enough to expect that our postwar television programs will be furnished

(Continued on page 94)

(Continued from page 92)

only at those times when a comparatively large audience may be reasonably expected. In the event that this prediction turns out to be all wrong and we find that the "viewies" run night and day without even time out to polish our glasses we will have to admit that we grossly underestimated both the commercial possibilities of this new art and the ability of the American public to "take it."

Now for the amateur possibilities.

During our visit to WABD we met Chief Engineer S. R. Patremio, W2ITL, to whom we are indebted for taking time out in an extremely busy evening to describe the various circuits and explain their operation. We also met Howard Schubert, W2JUO, in master control; Melvin Stagg, W2CNO, and Otis Freeman, W4HGN, video engineers, and Richard Adler, W2NPB, sound engineer. In addition to the hams just mentioned, the following are members of the Dumont staff: W1ISI, W2AHU, W2EBU, W2ENY, W2GZA, W2HOD, W2HRZ, W2KCN, W2LNT, W2LT, W2LMA, W2LYS, W2MOH, W2NYY, W2OMI, W8TNC, ex-1RJ, ex-1SS/1RI, ex-W2HEI, ex-2XC/2XD, ex-W6CRM, and ex-W9KHG. A similar group probably can be found at other television stations. Knowing the proclivities of amateurs who work in broadcast stations to take a busman's holiday and sit up half the night pounding brass or yelling into a mike after having done a full day's work at practically the same thing, we think it highly probable that the operators of television stations will likewise go in for ham television.

It now appears that postwar amateur bands will include not only our traditional long-distance frequencies but will have in addition lots of room on the ultrahighs — what better use can we make of these frequencies than to plunge wholeheartedly into experimentation and research in this newest of communication mediums. Who can tell — the day may soon come when CUL will mean exactly what it says.

Strays

The suggestion in Strays in May, 1944, issue of *QST* of cleaning volume or tone controls with carbon tetrachloride is good, but may not be necessary. I have run into a series of calls when the owner complained of noisy v.c., but when I arrived it wasn't noisy. I believe the owner hit on moments to turn the v.c. just when there was a local disturbance. The performance of a v.c. can be checked upon by using Adams' suggestion and then hooking the v.c. in a test-ohmmeter circuit. If jiggling the v.c. arm while turning it does not give a flicker on the ohmmeter you can be sure the v.c. is okay.

— *W8VD.*

Bill Shaw, W9UIG, recently was appointed chief inspector of Taylor Tubes, Inc.

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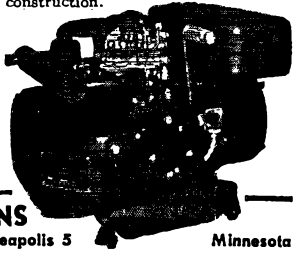

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Splatter

(Continued from page 10)

Class A amateur and first-class radiotelegraph licenses. When we last heard from W9ERN some months ago, he was a private first class studying electrical engineering at the University of Florida, having finished basic training in the infantry — "'Oh, it's a cinch — you're sure to go to the Signal Corps,' the classification officer said."

Fred Craven, W3ERV (p. 16), tells us that he received his Class B ticket in 1933, and Class A in 1934. He contacted and had verifications from 55 countries on 40- and 20-meter c.w. using low power. He operated on 75- and 20-meter 'phone with 200 watts, on 5 several years before the new regulations came into effect, and on 160 just before the war. With the ban on operating he boned up and got second-class radiotelephone and radiotelegraph licenses. The assistant radio aide of the Philadelphia WERS net, WKIB, he built and installed WKIB-42 which he now operates. He worked for Philco prior to the war, but changed to RCA where he now is a Class-A radio transmitter and receiver testman and troubleshooter.

While **Sheldon W. Gates, W8VWK,** is only 17 years old, he has been in ham radio several years, having received his Class B ticket when he was only 13. He now holds Class A amateur and radiotelephone second-class licenses, and has been president of the Saint Joseph High School Amateur Radio Club for the past two years. His chief interest in radio lies in the design and construction of transmitters, and more particularly of portable equipment. It is only natural, then, that he should be writing about the station he describes on page 23. His other major interest is photography — the radio shack doubling as a dark room.

The last one on our list of new-comers, **E. H. Hartnell, W9WTE** (p. 46), is, in fact, very much of an old-timer, having become interested in and experimented with radio in 1911 before the advent of the vacuum tube. He secured his first-grade commercial operator's license in 1914 at the age of 15, and when taking the exam he met our old friend R. H. G. Mathews, 9ZN, who helped convince the R.I. that a 400-foot antenna could be tuned to radiate on 200 meters. He operated a 3-inch spark coil on 200 meters (plus) prior to World War I with the call 9KY, a description of this station having been published in a very early issue of *QST*. After the war he operated a 1-kw. rock-crusher as 9DP. His license lapsed for several years due to business (he has operated his own auto sales agency and garage for the last 20 years) and establishing a home, but he was relicensed in 1936 as W9WTE and received Class A in 1937. Prior to Pearl Harbor he operated on 20-, 75- and 160-meter 'phone. He also holds a 25 w.p.m. code proficiency certificate.

Coming now to those authors playing return engagements, we have on p. 42, **Edward M. Noll, ex-W3FQJ** (Splatter, Oct., 1943, p. 8); on p. 32, **Philip Rand, W1DBM** (Splatter, Nov., 1942, p. 12), and on p. 34, **Oliver Read, W9ETI** (Splatter, Oct., 1944, p. 96).

HAM-ADS

(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 arrangements, 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 30c 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 7c per word will apply to advertising 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 7c 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 30c rate. Provisions of paragraphs (1), (2), (4) and (5), apply to all advertising in this column regardless of which rate may apply.

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A few left: 27, 70¢; 80, 70¢; 5Y3, 70¢; 5Z3, $1.10; 12SK7GT, $1.10; 24, 90¢; 35, $1; 6U7G, $1; 6J5, 90¢; 26, 75¢; 2A7, $1.10; 3A8GT, $2.35; 1T4, $1.60; 6SK7, $1; 39, $1. Kindly add postage. A few new crystal pick-ups. $5.50, plus postage. Abbott, 2101 Grand Concourse, N. Y. C.

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WANTED: Hallicrafters S-19R Sky Buddy. Will pay top price. Also 2½ meter transceivers. Give details and price of equipment. Bob Ulrich, Rt. 1, Box 230, Livingston, California.

WANTED: RME 69, Hallicrafters S-9, SX9, or S20R. J. W. Fowler, W4ELO, 584 Holderness St., S.W., Atlanta, Ga.

WANTED: two 100-100 $\mu\mu$fd. condensers. Describe same. J. R. Strite, 31 North Grant, Waynesboro, Pa.

WANTED: tube tester. Late pre-war model. Harnack, W9LMO, Munster, Ind.

WANTED: National NC-200 receiver. Mrs. M. M. Zettler, 4521 Third St., N.W., Canton, Ohio.

SELL or swap: National CRM scope, 807, Thordarson T-19P62: 2000 1750 v.d.c. 300 mills. Wholesale Radio Labs modulator: 83, 6SJ7, 6N7, 4-6L6 PP Par with 1KW cath. mod. output transformer, Astatic UT-48 Xtal mike, 300 ma. choke. Want capacity analyzer, signal tracer v.o.m. C. D. Justis, Christiana, Del.

WANTED: Recording unit, turn-table and head. State make, condition and lowest price acceptable. Eugene P. Tetreault, W1CDI, Route 1, Box 322, Walpole, Mass.

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WANTED: Echophone EC-4 or similar. Overseas request. Mrs. H. Munn, 419 W. Granite Ave., Albuquerque, N. Mex.

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WANTED: One phonograph motor, 110 v.a.c. 60 cycles, and turntable. Bob Bransom, Burleson, Texas.

WANTED: G.E. 2 ampere Tungar charger bulb, Cat. #277465. W1BB.

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FOR SALE: Signal tracer, volt-ohm-milliammeter, d.c. and a.c. volts. d.c. vacuum tube voltometer. One Hughes-Mitchell X-EC frequency control unit, like new. One Ward-Leonard heavy duty antenna change-over relay. Like new. Best price takes them. W9YJS, James N. Blair, 600 City Bank Building, Kansas City, Missouri.

WANTED: 110 volt a.c. power plant, gasoline engine driven, 1000 to 3000 watts output. Give complete description and cash price, crated and delivered to transportation company. Earl A. Nielsen, Kealakekua, T. H.

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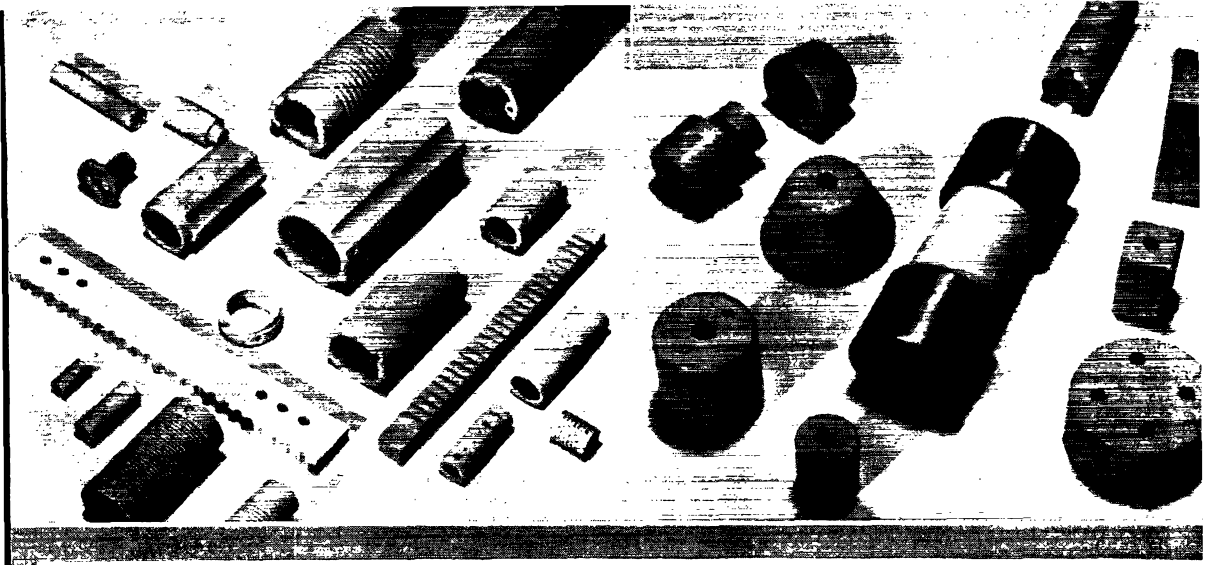

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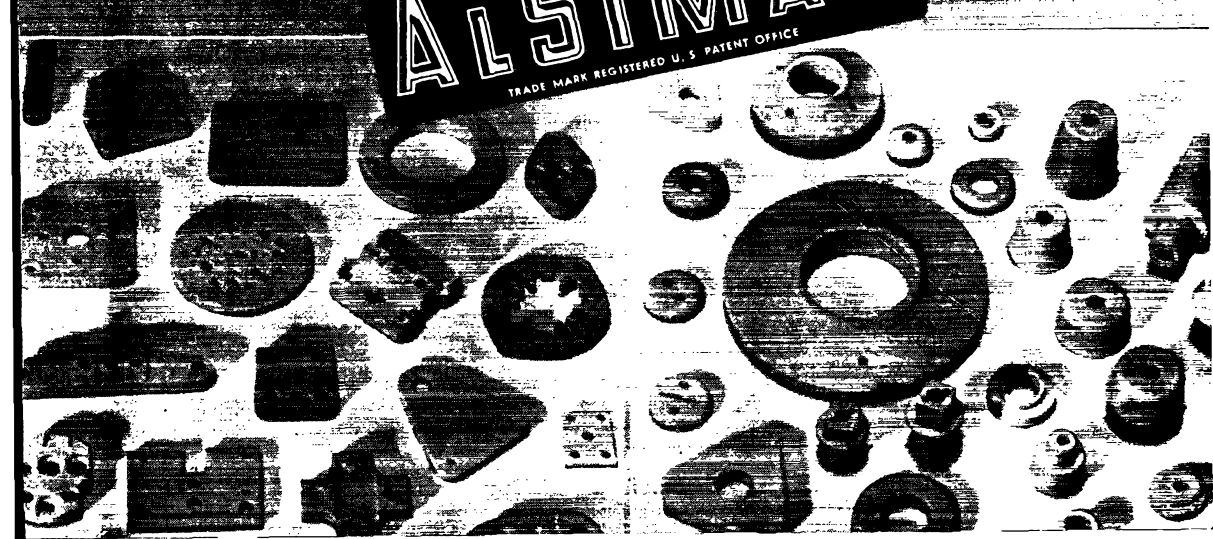

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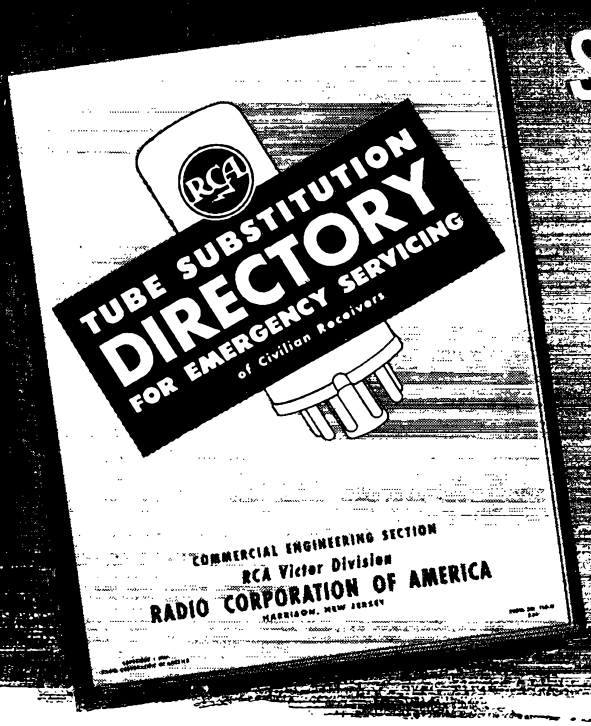

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