QST

DEVOTED ENTIRELY TO

AMATEUR RADIO

PUBLISHED SINCE 1915 BY THE AMERICAN RADIO RELAY LEAGUE INC.

DECEMBER, 1929 25c

WHAT'S NEWS IN RADIO?

A.C. OPERATED SHORT-WAVE KIT

Pilot's A.C. Super-Wasp, developed by David Grimes, John Geloso and Robert S. Kruse, employs a tuned screen-grid stage and a specially-created Pilotron 227—the only A. C. tube suitable for S.W. detection. 14 to 500 meters. Use your own ABC pack or Pilot K-111 ($16.50).

Kit K-115 **$34.50**
(Power Pack Extra)

Battery Operated SHORT-WAVE KIT

For those preferring this type receiver. The original Super-Wasp, used all over the world.

Kit K-110 **$29.50**

THE LATEST POWER EQUIPMENT

K-111. Complete ABC Pack for sets using 171-A Tubes. Complete, Ready for Use..... **$16.50**

K-112. Complete ABC Pack for sets using 245 Tubes. Complete, Ready for Use..... **$19.50**

K-113 Push Pull Amplifier for 245 tubes, all ABC self-contained. Semi-kit form..... **$39.00**

RADIO'S BIGGEST 50c WORTH!

It's Radio Design, the construction magazine jammed with meaty articles, the newest of the new, hot from the "lab." 50c brings you four quarterly issues and one year's free membership in Radio International Guild—a world-wide experimenter's organization with *Radio Design* as official organ.

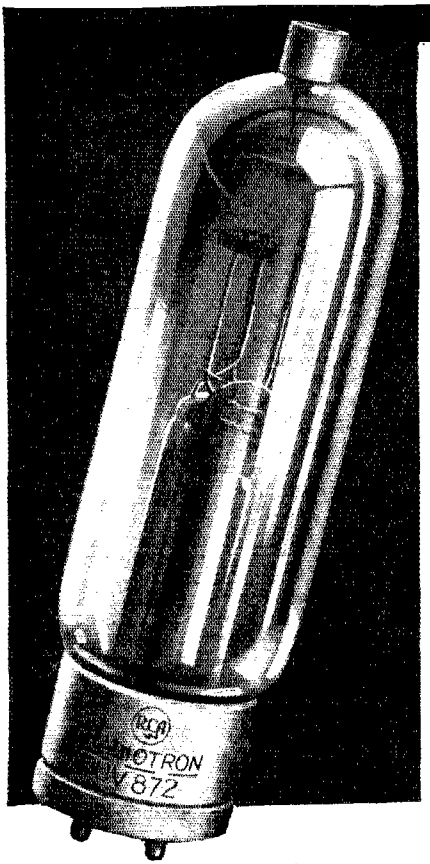
Prices Quoted are for Custom Set-Builders in U. S. A. Get Pilot's Latest Catalogue from nearest authorized Pilot Dealer or write Direct to Factory.

PILOT RADIO & TUBE CORP.

WORLD'S LARGEST RADIO PARTS PLANT—ESTABLISHED 1908

323 BERRY STREET **BROOKLYN, NEW YORK**

TRADE MARK REGISTERED



RCA announces RADIOTRON *UV-872*

A hot-cathode, mercury-vapor rectifier

THIS new Radiotron is capable of supplying to the amateur transmitter a rectified current larger than that obtainable from any rectifier Radiotron hitherto used by amateurs. Because it has more than four times the rectified current capacity of the well-known UX-866, amateurs will be more than pleased with its reserve of power.

Like the UX-866, Radiotron UV-872 possesses a low and practically constant voltage drop which insures a stable source of plate voltage — full load or no load.

The strength built into its simple structure, the low temperature at which its rugged, coated-ribbon filament operates, the extremely low voltage drop resulting from its composite design—all these are contributory factors to the remarkable performance amateurs will experience from Radiotron UV-872.

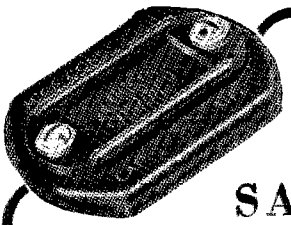
Filament Volts	5
Filament Amps.	10
Max. Peak Inverse Volts	5000
Max. Peak Plate Amps.	2.5
Approx. Tube Voltage Drop (Volts)	15
Max. Overall Length	8 1/2″
Max. Overall Diameter	2 5/16″

PRICE $22.50

Write nearest RCA District Office for further information

RADIO-VICTOR CORPORATION OF AMERICA

New York—261 Fifth Avenue
Atlanta—101 Marietta Street Chicago—100 West Monroe Street
Dallas—Santa Fe Building
San Francisco—235 Montgomery Street



SANGAMO CONDENSERS

for Dependable and Accurate Operation

That is why the Byrd Expedition, Western Electric and many other electric and telephone companies use SANGAMO. Ideal for short wave transmitters and receivers.

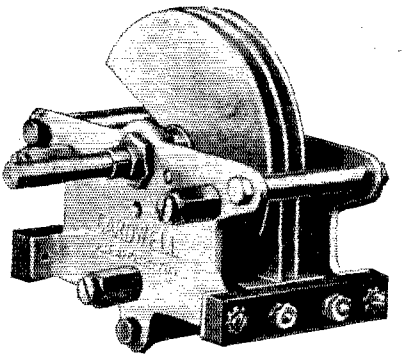
.00004 to .002 Inc.	5000 volts D.C.	$2.00
.0025 to .01 Inc.	2500 volts D.C.	1.75

LEEDS
The Home of RADIO

carries a complete line of SANGAMO Condensers

SANGAMO

Cardwell TAPERPLATE CONDENSERS



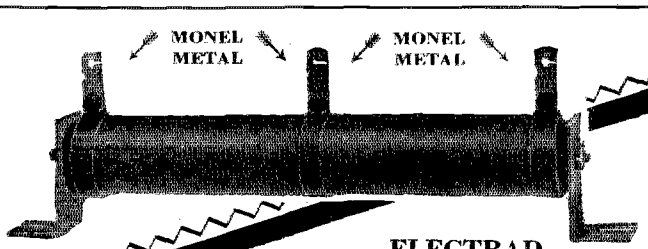
A new idea — enabling clean and clear separation of wavelengths. Easily mounted behind a 4-inch dial.

192 E	.0005	168 E	.00025	169 E	.00035
167 E	.00015	191 E	.000075		

LEEDS
The Home of RADIO

always has a complete line of receiving and transmitting CARDWELL products.

Write for Cardwell folder



QUIET! ACCURATE! PERMANENT!

ELECTRAD WIRE-WOUND TRANSMITTER GRID LEAK

Absolutely noiseless, distortion-free performance coupled with unusual accuracy and permanency of resistance rating. ¶ Unique construction allows for winding more wire of larger diameter without materially increasing the size of the unit. Liberally insulated and covered with moisture-proof elastic enamel baked on at low temperature. Corrosion-proof Monel metal contact bands and soldering lugs provide equal expansion and positive connections. Lugs are solder-dipped for easy soldering. ¶ *Guaranteed not to develop noise or open circuits.*

Made in three sizes (100, 40, 15 watts) and ten resistance values (from 10 to 500,000 ohms) tapped for all usual needs. List price $1.50 to $5.50.

175 Varick St., New York, N.Y.

ELECTRAD INC.

Write Dept. for complete data

Buy Your Radio Equipment from

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The Home of RADIO
45 VESEY STREET
NEW YORK

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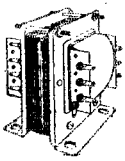
New York's Headquarters for Transmitting Apparatus

When in Town Visit Our Store

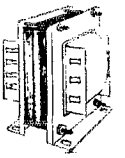
THORDARSON TRANSFORMER



150 watts, 400 volts at 375 M. A. 5 volt filament, centre tap. Fine for power supply for 75 watter or for crystal control power supply. Specially priced for a short time only. Each **$3.95**

THORDARSON B-Eliminator TRANSFORMER

using the Raytheon B-H tube. Will carry the maximum current consumption without overheating. 285 volts on each side of centre. Lower voltage may be obtained if desired. Listed at $5. Special NOW only . . **$1.65**



Make your own transmitting and receiving coils. Copper tubing transmitting inductance.

Size of tubing

Inside Dia.	3/16"	1/4"	5/16"
2 1/8"	9c	10c	12c*
2 3/8"	9c	10c	15c*
3 1/8"	10c	12c	17c*

Prices per turn

Ham Green, double silk covered, No. 16 receiving inductance.

2" diameter . . . . . 30c per inch
3" diameter . . . . . 35c per inch

Everything in
Acme
Thordarson
Jewell
Bradley
Pyrex
Fleron
IN STOCK

NEON GLOW LAMPS

Made by General Electric Co., type G. 10, standard base. 101 uses, as illustrated in *QST* May issue page 17. Price only 65c

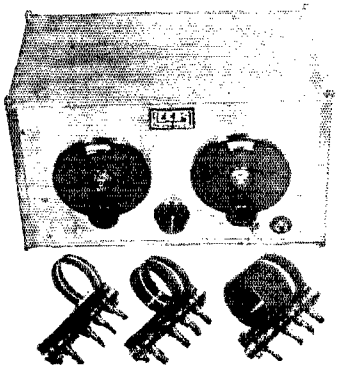
Aluminum Shield cans and panels of every description to order.

NEW 1930

SHORT WAVE RECEIVER

The LEEDS 1930 SPECIAL

A short wave receiver that's got them all beat. Best circuit design and finest mechanical construction. Praised by "Hams" everywhere as the greatest short wave receiver ever made.



What some prominent users say — "More than delighted with its performance." 4PD. "Far exceeded expectations." 2AFS. "Oscillation and tuning control far best I have ever seen." "Signal strength amazingly loud and response very clear."

In use by a constant host of Hams from coast to coast.

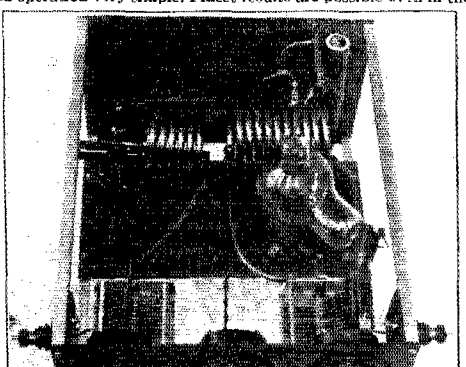
3-tube Receiver — detector — 2 audio, using three 201-A tubes. Universal type, continuous range 15 to 100 meters; amateur type covers Ham bands 20–40–80 meters with generous spread on the dial.

List price $60.
Special Offer, net **$37.50***

SHORT WAVE X-MITTER

The LEEDS High-C 75 Watter

A real X-mitter for those who are satisfied only with the best. Incorporates all the latest developments of the past year, insuring highest efficiency. Size 10" x 14" x 17" overall; adjustments and operation very simple. Finest results are possible even in the hands of a comparatively inexperienced operator. Hartley High-C circuit employed, insuring constant frequency stability. Employs one UX852 tube as an oscillator; wired almost entirely with copper tubing, still further adding to its electrical efficiency.



LEEDS RADIO LABORATORIES

Precision Custom Built Short Wave Receivers and Transmitters

This department under the supervision of the Short Wave Specialist Jerome Gross. We design, construct and advise on any material for the "Ham" Broadcasting station or laboratory. Write Jerry Gross for advice on any of your problems.

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LYNCH RESISTORS

for EVERY Resistance Need

Ideal for the amateur. Better-built . . . dependable . . and of the highest quality. Easy to use—whether you contemplate building a radio set, power pack, television outfit or short wave receiver.

DYNOHMIC Resistors

Furnished in cartridge or pigtail type, capacities ranging from 250 ohms to 10 megohms, ½, 1 and 2 Watt types. The resistance element is based on the famous metallized principle which has proved its superiority where accuracy and uniformity are of patamount importance. List prices range from 50c for 1 watt types to 85c for 2 watt types.

VERITAS Resistors

are supplied in either cartridge or pigtail type, and are made in four sizes with 2 watt, 5 watt and 10 watt ratings. Capacities range from 500 ohms to 10 megohms. The Lynch Veritas Resistors have the metallic resistive coating fused to the inside of the glass, and can run a great heat without change in value. Not affected by humidity—non-absorbent. It is as perfect a resistance as can be made. 85c list for 2 watt types, $1.00 list for 5 watt types, and $1.25 list for 10 watt type.

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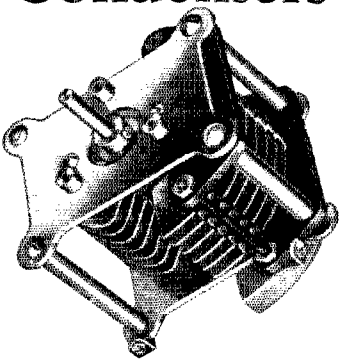
Carries a complete line of LYNCH PRODUCTS
Write for catalogue

General Radio VARIABLE Condensers



Continued tests under actual operating conditions have shown that the type 334 Variable Air Condensers, formerly rated at 2000 volts, may safely be used on voltages up to 2500, root mean square, or 3500 peak.

Type 334 R	250 mmf.	$5.50
Type 334 T	100 mmf.	2.75
Type 334 V	50 mmf.	2.50

LEEDS "The Home of RADIO"

has always on hand a complete line of General Radio Parts.

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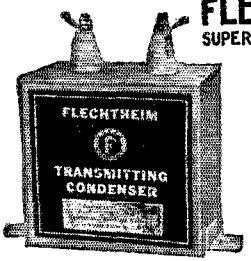
IF *you want*

THE BEST, MOST EFFICIENT AND RELIABLE FILTER

use only

FLECHTHEIM
SUPERIOR CONDENSERS



Type T–1500 v D.C. (750 rms RAC)

Type TH–2000 v D.C. (1600 rms RAC)

Type HP–3000 v D.C. (2200 rms RAC)

TypeVM–5000 v D.C. (3300 rms RAC)

AT THE RIGHT PRICES

A Complete Line of

By-pass and Filter Condensers

171, 245, 210 and 250 Blocks

Latest Catalog Sent on Request

"REMEMBER LEEDS—*for your* RADIO *needs*"

National Rectobulb

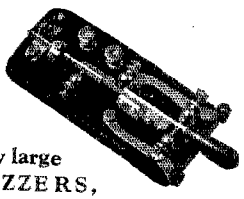
A reliable and efficient tube—low impedance due to mercury vapor—long life due to low temperature filament and oxide coated cathode of large area.

Normal rating 250 mils Filament Amps 1.7
Normal plate volts 3000 mils
Filament Volts 10

The accepted standard for Ham work—of increasing appeal to the Engineer in small phone Transmitters as used in Patrol Work and Air Service. Ideal for small broadcasters.

Price, each **$10**

SIGNAL Sematic Key



We have an unusually large selection of BUZZERS, SOUNDERS, KEYS

LEEDS "The Home of RADIO"

NATIONAL
Velvet-Vernier
Original Model A

The original and matchless Velvet Vernier Dial used by amateurs the world over. Available in various divisions. **Prices:** 3⅜" or 4" diameter. **$2.50**

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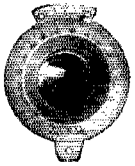
When in Town Visit Our Store

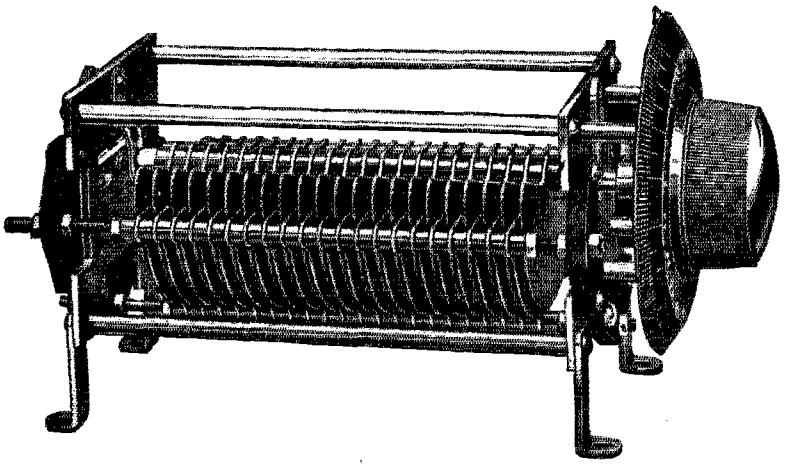
NATIONAL
Transmitting *and* Amateur Equipment

National Co. Inc. <NC> *Established 1914*



NATIONAL
Velvet-Vernier
Precision Type N

Four-inch solid German silver NATIONAL Velvet-Vernier Dial, Type N, developed for use in radio equipment requiring the utmost precision of logging. *Real Vernier* makes accurate reading possible to one-tenth division. Mechanism is original and unexcelled NATIONAL Velvet-Vernier design. List price, each **$6.50**



National Transmitting Variable Condensers

THE NATIONAL Variable Transmitting Condensers have seen constant and satisfactory service in the hands of ARRL members and commercial broadcast transmitting stations, and certain types have been standard in the U. S. Navy for many years.

.0001 Mfd. — 23 Plate (3/8" spacing) **$12.50**
.00015 Mfd. — 17 Plate (3/16" spacing) ... **$7.50**
.00023–5 Mfd. — 23 Plate (3/16" spacing) **$11.50**
.00045 Mfd. — 43 Plate (3/16" spacing) .. **$16.50**

These prices include NATIONAL Velvet Vernier "Type A" Dials. Condensers without dials, $2.50 less.

Standard insulation for 3/8" spacing condensers is Crolite, and hard rubber is standard for 3/16" spacing. Micalex can be furnished on special order to those licensed to use it.

Note. **— Prices on Navy type Condensers for high voltage work will be quoted upon receipt of specifications. The Navy type Condenser, built to order, has a ball bearing rotor shaft and pyrex insulators.**

Made in wide range of capacities and special types not listed here. Prices and particulars on application.

PLEASE PRINT YOUR NAME AND ADDRESS PLAINLY to AVOID DELAY | **WRITE FOR SPECIAL PRICE LIST** | **MAIL ORDERS FILLED SAME DAY** *10% Must Accompany All Orders*

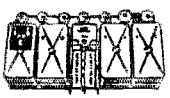
Aluminum Contributes to Radio

—*Lightness, Beauty, Finer Results*

MANUFACTURERS of the finest sets are using Aluminum in constantly increasing quantities. Their tests have demonstrated that Aluminum is the *one* metal that most efficiently meets the widely differing conditions encountered in radio design.

Its lightness; its permanent beauty; the fact that it does not rust or corrode; its high electrical conductivity; its efficient shielding quality; its "workability"—all are advantages that combine to make Aluminum the ideal metal for radio.

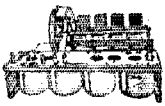
IN many of the most advanced receiving sets Aluminum Shields are used to achieve better



tone quality, greater selectivity, closer tuning—in short, finer reception.

Aluminum shielding reduces interference. It eliminates electrostatic and electro-magnetic interaction between various stages of radio-frequency amplification. It eliminates modulation of radio frequency stages by feed-back from audio-frequency amplifier. It makes possible more compact design.

Aluminum performs these functions efficiently and adds



less to the weight of the set than any substitute metal. Moreover, it is easily worked into special shield shapes—cans, boxes or casings. Thus it presents few limitations of size and shape.

It allows the engineer great freedom to design his shielding to meet, ideally, the various requirements of his set.

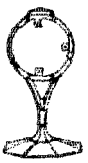
ALUMINUM is widely used for variable condenser blades. Aluminum Company of America produces special sheet Aluminum for this purpose that is accurate and uniform beyond anything hitherto attained. Gauge tolerance in thickness is

±.001 inch and the *total* variation within one sheet is limited to .0005 inch.

Aluminum Company of America also makes finished condenser blades from this highly accurate and uniform sheet.

THE leading manufacturers of foil and paper fixed condensers now use Aluminum foil because of its high electrical conductivity and its great covering area (a pound of Aluminum foil .0003 inch thick covers 34,000 square inches). Terminals can readily be soldered to Aluminum foil condensers by a process recently developed by Aluminum Company of America.

ALUMAC Die Castings of Alcoa Aluminum combine lightness, strength, accuracy and high conductivity. They have equal strength with *less than half the weight* of other casting materials. They are used with complete success for loud speaker frames and bases, condensers and condenser frames, drum dials, chasses—and even for cabinets.



There is a fund of information on the use of Aluminum in radio, and on radio in general, in the new edition of "Aluminum for Radio." Your copy of this interesting book will be mailed on request.

ALUMINUM COMPANY OF AMERICA

ALUMINUM IN EVERY COMMERCIAL FORM

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ALUMINUM

The mark of Quality in Radio

Section Communications Managers of
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*Officials appointed to act until the membership of the Section concerned choose permanent SCMs by nomination and election.
**Acting for the summer.

QST

The Official Organ of the A·R·R·L

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The American Radio Relay League

The American Radio Relay League, Inc., is a non-commercial 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 non-commercial 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 world 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. Correspondence should be addressed to the Secretary.

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ADDRESS ALL GENERAL CORRESPONDENCE TO THE EXECUTIVE HEADQUARTERS AT HARTFORD, CONN.

EDITORIALS

WHEN "KB" left for the Hague Conference he asked me to write the December editorial. I accepted the undertaking with a certain amount of pleasure, because it is a long, long time since I have written an editorial for *QST*, and it seemed like rolling back the years.

It used to be that I wrote every editorial. That was when "headquarters" consisted of Clarence Tuska, then a high-school boy, a wabbly old table, an aged and infirm rocking chair, and a hired typewriter in the third floor, rear, of Tuska's mother's house. After school, Tuska attended to League matters, and got out *QST*. I had my regular business office downtown, and Tuska used to come in almost every afternoon for half an hour, and together we would dig up the makings of next month's magazine.

QST at that time had a blue cover, some twelve pages, and possibly five or six paid ads. Toward the end of the month, things would get pretty frantic, and Tuska would get me to call for the magazines at the printers with my Franklin touring car. In the evening, Mrs. Maxim, my children, Tuska, I and a neighbor or the house maid, would wrap and address the issue. Then I would take it down to the Post Office, about nine o'clock, in a single bag, and hand it in.

What a contrast with getting out *QST* today! Now it takes a good many people and a fleet of motor trucks several days to get *QST* wrapped, addressed and mailed.

It's a lot of fun looking back to the start of things.

QST is fourteen years old this month. Unless we have things mixed, *QST* is the oldest all-radio magazine in the country. Many, many radio magazines have come and gone during the life of *QST*. The newsstands of the country were flooded with radio magazines when broadcasting started. And for a while they made our little amateur magazine look like something very old fashioned. But most of them passed out of the picture, after strutting their brief lives, whereas our *QST* has kept right along and prospered.

The A.R.R.L. is about a year older than *QST*. Old-timers will remember that we ran for nearly a year without a magazine or bulletin of any kind, except two call books which the League compiled and printed. In those days it was so thrilling simply to know there were other amateurs in the country that we made a mere call book get away with it. Of course, we are talking now of amateur radio of 1912, '13 and '14, when a good QSO across a twenty-five mile gap was a real achievement. I remember that Tuska and I once ran a test with a chap twelve miles away, and although each of us used a good full-sized kilowatt, we never clicked once! This chap and I used to run over to each other's house two or three times in an evening, and listen, but a month of hard work failed to make those sets percolate through twelve miles. Just think of all the triumphs awaiting us in those days!

I wonder if there are not just as many waiting just around the corner as there were fourteen years ago. They will be of a slightly different nature, of course. In those days, DX was our sole aim; nowadays we have attained the earthly limit in DX, and our triumphs are along other lines. But there are so many, many different ways of "skinning a cat." I do not believe that amateur two-way communication runs up against a stone wall at twenty meters, nor ten meters, nor five meters. We used to think it stopped at 425 meters. I got a special license to transmit on this wave simply because we all thought the higher wave meant greater DX. We believed absolutely nothing in the way of DX was obtainable with waves below 200 meters. That is the reason we amateurs were given them in 1912 — the engineers believed the same thing. But everyone today knows that we found a whole world full of unbelievable DX when we started to look around in that territory below 200. I have an abiding faith that there is a whole world full of undeveloped stuff lying just around the corner now, just as there was in 1914. I believe that from our number will emerge, in due time, a group of clear-thinking, unafraid minds that will unfold the ultra-high-frequency communication art, just as in past years the same kind of minds unfolded what we now call the high-frequency art.

Turn to the files of *QST*, and as you run the pages through your fingers you disclose the gradual development of one of the greatest branches of radio communication — the high-frequency art. My confidence in similar future development work is based upon my knowledge of the membership of our A.R.R.L., and its uncanny ability in finding new ways and means for "skinning cats."

— *H. P. M.*

The President's Corner

A WORD FROM

HIRAM PERCY MAXIM

PRESIDENT OF THE AMERICAN RADIO RELAY LEAGUE AND OF THE INTERNATIONAL AMATEUR RADIO UNION

IT is when I receive letters like the one below that I am particularly glad there is one part of this magazine of ours that belongs to me — a part where I can insist on printing whatever I like, editor or no editor. For Warner hit the finger with the hammer recently when he said that editors are queer fellows. One of the queer things about them is that while they think it is quite all right to print criticisms of themselves, they balk like mules at printing anything nice someone may say.

When the Chairman of the United States delegation to the Hague Conference takes the trouble to write a letter such as this about our Secretary, I think the membership ought to know about it. So here it is:

INTERNATIONAL TECHNICAL CONSULTING COMMITTEE
ON RADIO COMMUNICATIONS

THE HAGUE

DELEGATION OF THE
UNITED STATES OF AMERICA

My dear Mr. Maxim:

Referring to the assignment of Captain K. B. Warner to the United States Delegation to the International Technical Consultative Committee on Radio Communications at The Hague, I wish to express my appreciation of the services rendered by Captain Warner.

Realizing his long experience and keen interest in the affairs of the American Amateur, I naturally expected him to specialize on that work at The Hague. I wish to say that Captain Warner not only carried a heavy load in our work concerning the American Amateur but was very useful in other work. On several occasions, I assigned him to special duties which were performed with promptness and efficiency. I consider that he contributed to the success of the United States delegation at The Hague.

Yours truly,

(Signed) C. McK. SALTZMAN,
Chairman.

Southeastern Division Convention

December 27th and 28th at Atlanta, Ga.

NOT many conventions are held in this division, but when we do they are events to be remembered. Therefore, hear ye fellow amateurs the call for the second Southeastern Division Convention to be held in the city of Atlanta, Georgia, on December 27th and 28th, at the Hotel Ansley, under the auspices of the Atlanta Radio Club.

A very fine program has been prepared and good speakers will be present. Secretary-Editor Warner and Treasurer-Fieldman Hebert of A.R.R.L. Headquarters are expected and every one can be assured a pleasant time. On Friday at midnight will be held the first meeting of the R.O.W.H. alumni. Those of you who have been initiated into the Royal Order of the Wouff Hong are especially requested to appear.

A cordial invitation is extended to all the amateurs in the Southeastern Division and surrounding states. It is your attendance that will make the convention a success, so let's all boost for this convention. The committee will take care of the rest at the convention.

A word to Director Harry F. Dobbs, 245 Spring Street, Atlanta, Ga., will be appreciated. Let's go, fellows!

Amateur Radio and the National Air Races

By Harry A. Tummonds*

The Cleveland Wireless Association, Inc., handled the field communications in connection with the 1929 National Air Races. This live group of amateurs deserves full credit for once again putting over a good job for amateur radio. Amateur 'phone proved itself without a peer for the short distance high-speed work of reporting the races. The story of the radio organization work has been told in as much detail as possible for the benefit of amateurs who may undertake similar problems in the future. Well done, C. W. A.! — EDITOR.

"THE AIR CLASSIC OF THE CENTURY" was the slogan used in describing this great National Air Race Meet at Cleveland which took place between August 21 and September 2, this year.

The first regular meeting of our club and discussion regarding the Air Races was held early in June, 1929, at our club rooms at 2109 West 41st St. Huddleson, W8DBU, started the ball rolling. At this meeting he agreed to contact with the Air Race officials, find out their plans regarding communication, and ask permission for the Cleveland Wireless Association, Inc., to participate. Up to the time of this first contact, the communication requirements were still a difficult problem in the minds of the Air Race Committee; no definite plans had been made. The installation of special and expensive telephone lines was being considered. It follows that the Committee was receptive to our story. "What could we do? Who were we? What assurance had they that we could do the things we claimed? How much would it cost?" Mr. Huddleson answered all such questions quickly and accurately. He outlined amateur radio work in general to the committee. In this one contact the Race Committee became convinced that amateur radio would not fail, and accepted Mr. Huddleson's proposition, with details to be ironed out later.

THE U.S.S. LOS ANGELES

Following a second conference with the committee to discuss details and obtain data in writing, Mr. Huddleson asked permission to be relieved of his contact work on account of personal business and the writer was appointed in his stead. Carrying on a well-organized programme is a snap, especially with the gang we have in the Cleveland Wireless Association. Next, a joint meeting was held with the Air Race Committee at the Hotel Cleveland. Evidently the committee was satisfied as another later meeting was called. Questions were presented in writing to the committee in advance to save time. These letters were read at the meeting and details settled to the satisfaction of both parties. We had to make the most of these meetings as the Air Race Committee had hundreds of things to take care of with Derby entries, contestants, telegrams, etc., all demanding attention at once.

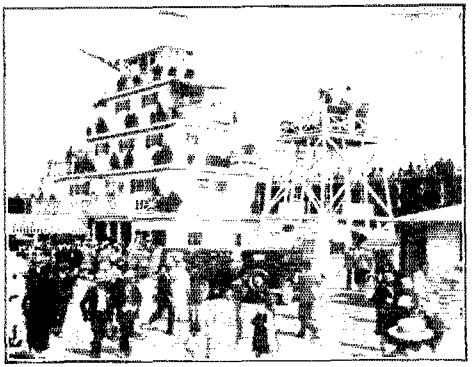
We had plenty to learn about air races so Mr. Logan[1] gave us a short talk and explained what it was all about. He outlined the 5- and 10-mile courses, using aerial photographs for locations, and then explained briefly just what we would be required to do, what information they wanted, to whom it should be delivered, what comprised the duties of judges, scorers, and timers. Housing equipment was needed for the apparatus at the pylons so orders were given to supply standard voting booths to be loaned by the City of Cleveland. The pylons were 75-foot angle iron towers, except at the grandstand where the special Navy mooring mast was used as a pylon and for the U.S.S. *Los Angeles* on its visit to Cleveland.

Many club meetings were held. A tentative daily programme was definitely decided upon,

*Chairman, Board of Directors, Cleveland Wireless Assn., Inc., Chairman Radio Air Race Committee, W8BAH, 2073 West 85th St., Cleveland, Ohio.

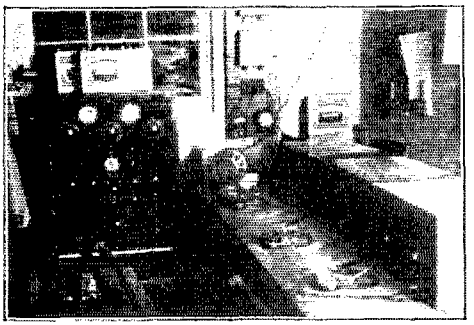
[1] The meet was sponsored by the City of Cleveland, National Aeronautical Assn., State Aeronautical Assn., and all those interested in the development of aviation, and air mindedness. A separate corporation, composed of prominent business men of Cleveland, financed the show, the profits to go to the development of aviation in Cleveland. Mr. Cliff Henderson, nationally known Air Race Manager, was appointed Managing Director of the complete programme. Assisting Mr. Henderson was Mr. Floyd Logan as Air Race Chairman. Contacts of the C. W. A., Inc. were made through Mr. Logan, our work falling within the jurisdiction of the Contest Dept.

equipment pledged and operators scheduled for each day of operation during the meet. Turner, our president, then produced a bound volume of *QST*, proceeded to read the complete story of the work done by the West Coast gang in the handling of the previous National Air Races.



THE ADMINISTRATION BUILDING AND THE KEY STATION AT THE BASE OF THE MOTION PICTURE PHOTOGRAPHERS TOWER

This write-up was a big help, but gave hardly enough detail. Also, we were to try 'phone for the first time which gave us a number of new



THE MASTER CONTROL STATION AT THE HOME PYLON, SHOWING WSBXB'S TRANSMITTER AND THE THREE A.C. OPERATED RECEIVERS
See text for details

problems to solve. While these meetings were being held, amateurs all over the country, no doubt, heard our preliminary Air Race net operating from the homes of the club members, over a period of two weeks' time. Assigned and reassigned master control stations contacted eight stations simultaneously during these tests. We kept schedules, reported imaginary races, and then discussed the tests at the meetings.

The races were held at the Cleveland Municipal Airport, Cleveland, Ohio, a space occupying several thousand acres—an ideal location. Special stands were constructed, housing grandstand seats; concessions; telephone and telegraph headquarters; visitors; executive offices; timers, judges, and scorers; Contest Committee; pilots; Army, Navy and Marine headquarters; police; hospitals; and special fire department booths. In addition to the above, the C. W. A., Inc., had a special room built at the right of the Administration Building, which housed all the apparatus used at Pylon No. 1. From this station each and every race was controlled. Weather throughout the meet was perfect. Approximately 2000 persons were included in the total personnel of operations and the spirit of every one was the spirit of showmen. This spirit held throughout the meet.

In order to be on the job at all times, we would have to have proper credentials to get into the race grounds. We were furnished individual personal season passes and official car signs for each man. Mr. Logan of his own free will unexpectedly furnished the gang with books of grandstand passes for the complete programme. In addition to the above, Cleveland manufacturers came to our aid by the donation [2] of necessary supplies.

Special permission was obtained from the Department of Commerce office at Detroit, by the Air Race Committee, whereby we were allowed to use personal call signals as special portables for the duration of the Air Races. The calls were as follows: W8BF, Pylon No. 1 (Control Station at Grandstand); W8CKJ, Pylon No. 2 (Engle and Snow Roads); W8BAH Pylon No. 3 (Engle and Brook Park); W8DBU, Pylon No. 4 (Stump and Snow Roads); W8BBE and W8DRD not used.

On August 23, 1929, we moved our equipment from our homes to the pylon locations at the Cleveland Airport. All sets were in operation in record time, and on the air at approximately 10 p.m. that night. Each group was assigned to the installation of one station with Roy Watterson appointed as Liaison Officer. Roy had the hardest and most important job of the whole meet and did it in A No. 1 shape. We worked DX that night and got out well, too. Everything worked out in fine shape and our president, Jim Turner,

[2] "B" batteries for transmitters and receivers: Donated by the National Carbon Co., Inc. "Just a few pounds less than a ton." All batteries to the club members after the races. "A" batteries for transmitters and receivers: Donated by the Willard Storage Battery Co. 6- and 8-volt type, also trucking service and service man at recharging panel. We were allowed to purchase these batteries at a reasonable price. Transmitting and receiving tubes: Kolster-Brandes Sales Co. DeForest 250 and 281 type., M and M Co. Sonatron receiving tubes. National Carbon Co. Eveready Raytheon Screen Grid tubes. Station WWO loan of tubes in an emergency. 112th Observation Squadron, Ohio National Guard also loaned tubes. All of the donated tubes were distributed to the membership. Antenna and hookup wire: Donated by the W. S. Tyler Co. Incidentally, they went outside and purchased the hookup wire as they did not carry it in stock.

These concerns all donated time, money, and wholehearted support to the success of the amateur network.

immediately sent an A.R.R.L. radiogram to Mr. Floyd Logan, Air Race Chairman, advising him that we were ready to go, and wishing the officials every success.

Races were held over 5- and 10-mile courses for a specified number of laps. Each corner of the triangles was marked with pylons or towers, 75 feet high, draped with flags at the top and yellow and black wallboard on the sides. Each outlying pylon had a voting booth to house our equipment. These all-steel booths were hauled in on big trucks and equipped with tables, chairs, lamps, etc. They made ideal shacks. The Air Race Committee supplied National Guardsmen to watch our equipment night and day.

The officers of the Cleveland Wireless Association, Inc., constituted the *Radio* Committee. This committee put the general plan in effect and was made up of the following members: J. P. Turner, president; E. T. Huddleson, vice-president; E. Putzier, secretary; F. Sauer, treasurer; H. A. Tummonds, Chairman Board of Directors and Chairman Radio Air Race Committee; Orrie Baumgardner, Chief Operator, all pylons; Al. Gyssler, Chief Operator Pylon No. 1; Russell Karg, Chief Operator Pylon No. 2; Paul Forrest, Chief Operator Pylon No. 3; Glenn Rogers, Chief Operator Pylon No. 4. Our operating personnel had all been planned

GLENN ROGERS, W8BBE, AT PYLON NO. 4

The first transmitter and receiver used were installed by W8BF, Orrie Baumgardner, the transmitter being similar to that used at the home pylon except for the battery plate supply. Following a failure of the UX-250 tube and modulation choke, W8COX's emergency transmitter was installed in record time by Ivan Ibaugh, W8BRI, so that not a single race was missed by this pylon. The second transmitter utilized one UX-210, a Hartley circuit and loop modulation.[4]

ahead of time. Assisting each chief operator were assigned members of the club at the required positions. Every one had a definite job throughout the races, and an opportunity to operate at each location. Transmissions were carried on in the 80-meter 'phone band (3500 to 3550 kc.). Glenn Rogers had an emergency portable receiver on the job ready to go in at any time, and at the writer's home station, W8BAH, we had an additional National screen-grid receiver and

THE ENTIRE OPERATING PERSONNEL DURING THE MEET, CAPTAIN HAWK'S PLANE IN THE BACKGROUND

Left to right, standing: N. D. McConnell; E. T. Huddleson (W8DBU); A. Weniger; Dr. F. R. Pettys; Paul Forrest; H. F. Byrd (W8BRD); Roy Watterson; A. H. Gyssler (W8BXB); A. R. Ziska (W8BJW); O. Baumgardner (W8BF) and E. T. Cunningham (W8DIZ). Front row, left to right: Russell Karg (W8CMU); Frank Heisler (W8DTH); Glenn Rogers (W8BBE); H. A. Tummonds (W8BAH); J. P. Turner; J. Miskovic and E. Putzier (W8CKJ). The following twelve men also took active part in the work: G. Jeffries; C. Barnes; C. J. Dorizil; A. Smith; T. S. Wenberg; F. Sauer; I. Ibaugh; N. C. Foster; R. Folkman; C. H. Thrasher; N. Dittman and R. Worder.

a portable transmitter ready, with power supply if necessary, to be put in at any location. The emergency portable transmitter was loaned by Ralph Folkman, W8COX of the Cleveland Police Department. This portable is the one featured in *QST* a few months ago.

From the top of the movie stand, short receiving antennas were strung in all directions. A common bus was used for ground connections with double-pole switches for grounding the antennas at night. Our operating period was approximately 11 a.m. to 7 p.m. We were forced to change the receiving antennas to the opposite side of the stand on the second day on account of telegraph pickup. This was called to the attention of the Western Union and Postal Telegraph officials on the job and they immediately instructed their men to build and install filters for all keys. These were installed the same day and interference practically eliminated from that source. With Mr. Spiller, W8ACR, in charge of telegraph installations, we received most splendid cooperation.

We in turn caused slight interference to the public address system at the grandstands. To work together we had a special telephone in-

[4] Loop modulation, while not recommended for regular amateur stations, due to incomplete modulation and frequency "wobbulation" in addition to amplitude modulation, is a practical necessity for portable service where the power supply equipment is limited and the number of tubes must be kept within limits to reduce the current drain required of batteries. — EDITOR.

stalled from the announcer's stand to our shack. We called when going on the air and they would tell the crowd, "Standing by for short waves" and then rebroadcast our transmission to the crowd. On one occasion when the coast to coast N.B.C. network was on the air, they also announced, "Standing by for short waves." Mr. Logan issued orders the first day that short wave

PAUL FORREST AND HIS EQUIPMENT IN USE AT PYLON NO. 3

This consisted of a single UX-210 in an Aero t.p.t.g. transmitter using loop modulation,[3] and the receiver is a product of National using a screen grid antenna-coupling stage. As in the case of the other pylon-stations, power supply is obtained from Eveready "B" and Willard "A" batteries.

radio should have the air any time required, all other equipment to stand by for us. Everything worked out on a coöperative basis.

Each station was equipped with a monitor as described in *QST* and all stations checked with the monitor at the control station at Pylon No. 1. We were in the band at *all* times.

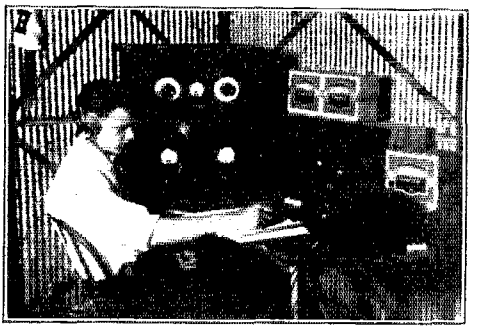
Pylons Nos. 1, 2, 3 were used in all 5-mile course races and Pylon No. 4 also in the 10-mile events. Pylon No. 4 was the *thrill point* of the races for both operators and the spectators. Several hundred people assembled at this pylon each day to see the planes go 'round in the vertical bank position. Each time a plane would pass at this pylon, there would be a slight decrease in volume due to the plane changing the wavelength of the antenna. In general each pylon operated with such ease that it was hardly necessary to report a plane passing as the roar of the motors would be heard at the receivers in the home pylon, although we had to have identification data on each contesting plane.

Race event bulletins were distributed each day from Contest Committee headquarters, giving all data on events except plane numbers. Jim Turner was stationed at a special telephone in the Judges' stand at the top of the Administration Building. Huddleson, W8DBU, operated the other end of this 'phone which was one of the special "ringer type" station-to-station 'phones. Turner would announce a race to Huddleson, giving event number, plane numbers, type of ship, number of laps, 5- or 10-mile course. He took all this information down on paper, handed it to Gyssler at the transmitter and then Pylon No. 1 went on the air with "QST All Pylons."

As all pylons used loudspeakers, they could hear Pylon No. 1 all over the shack and on one occasion No. 2 operator was on top of the pylon and heard No. 1 call him. Each pylon would acknowledge the "QST" through the separate receivers at the home station. If required, additional information would be given. Pylon chief operators would then inform the judges and scorers at each pylon of the data on the next contest.

Planes would then take off at specified intervals and when the first plane would cross the line, Pylon No. 1 would flash "Plane No. 139 off, Pylon No. 1 off air 'till completion of the race." Pylons would then report in turn: "Plane No. 139 past Pylon No. 2 first lap O.K.", "Plane No. 139 past Pylon No. 3 first lap O.K.", "Plane No. 139 past Pylon No. 4 first lap O.K.", etc., including brief data on fouls, or forcedowns as these occurred. This method worked well throughout the races. Reporting continued on throughout the number of laps of the specified race. All this data was carefully written down by the operator in the home station, monitoring the transmissions of a particular pylon. After the race, each outlying pylon reported, "Last plane past pylon No. — standing by."

Pylon No. 1 would then go on the air with "QST all stations please report all fouls or other data

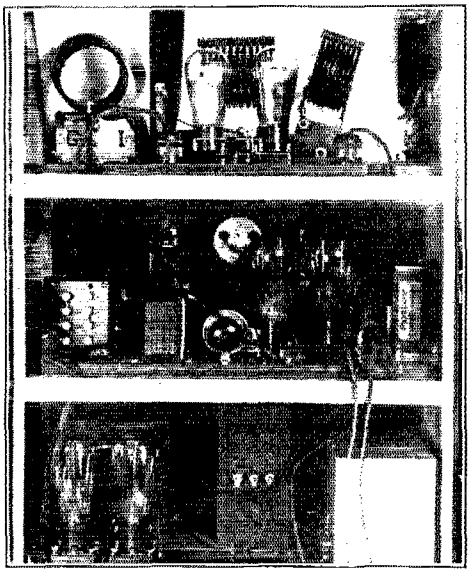


RUSSELL KARG, W8CMU, AT PYLON NO. 4

The transmitter is his own, utilizing a Hartley circuit, one UX-210 and loop[3] modulation. B batteries are used for plate supply and storage batteries for filament supply. W8DBU's receiver was used at this pylon.

on the last race." Each station would then report, "All planes passed Pylon No. 3, etc., O.K." or "Plane No. 222 fouled Pylon No. 4, 9th lap," and any other data of interest, then report, "Standing by." No. 1 would then go on the air again and report all O.K., stand by for QST on next race, then sign off. As transmitters were on at all the outlying pylons during the race, no calling was done between races. All data broadcast by each pylon was given to the chief operator by the chief judge. They called out all plane

numbers, laps, fouls, etc., and the judges' names were given with the final report from each pylon. This, of course, made the report official as the reports decided the winning of the race or disqualification in case of fouls. Reports of a certain



TRANSMITTER ARRANGEMENT AT THE HOME PYLON

Oscillators 2 210's; Modulators 2 250's; Speech amplifier 1 112; Rectifier, 2 281's.

plane passing any pylon were in the judges' stand before the plane was out of sight of the pylon reporting.

All of these operations are recorded in a movie made by our official club photographers, Cliff Barnes and Frank Heisler of the Alpha Moving Picture Corp. This film will be available for showing at radio club meetings anywhere in the country, simply by paying the transportation charges. A complete set of thirty still pictures is also available.

The Master Control Station was located at the grandstand (Pylon No. 1). Our shack consisted of the ground floor of the motion picture stand. The transmitter was designed and built by Al. Gyssler, W8BXB. A t.p.t.g. circuit with two UX-210 oscillators, two UX-250 modulators and speech amplification was used, the panel being equipped with meter jacks for measurement of all circuits. Having a.c. at the home pylon, this station was operated from the 110-volt outlet which usually checked around 100 volts. (The hot dog stands probably used the missing 10 volts at a dime apiece.) In this pylon were four receivers, one used for each of the three outlying pylons, and the fourth for control of all pylons. Three of the receivers were a.c. operated, also designed and built under direction of Gyssler. The fourth was the 1929 type as shown in *QST*. The a.c. receivers were installed by Al. Gyssler, Al. Ziska, and Frank Heisler, and the d.c. job by N. C. Foster, W8AZX. Except for the replacement of one receiving tube, we had no trouble at all with the equipment at this pylon. Pylons Nos. 2, 3 and 4 used antennas and counter-poises from pylon to shack, and Pylon No. 1 used a Zeppelin feed system. This had to be changed several times, but Gyssler had it in operation at all times without delays.

On account of the large number of events scheduled, the Race Committee was forced to operate an additional day. Mr. Logan told the fellows that if we did not stay on the air, they could not operate. The gang came through for the extra time; amateur radio never fails when called upon.

We made many friends; newspapers, local and national, gave us space unsolicited; race, Army, Navy, and police officials visited our installations and were very much interested in the layouts. We have several letters from the race officials of which we are very proud. What the gang in Cleveland put over at the National Air Races was done for amateur radio in general. Of course, we got a lot of fun and glory out of it for ourselves, but in general, it all goes to the great Amateur Fraternity held together by the A.R.R.L. and *QST*.

Strays

Thordarson has available a log book containing a large amount of valuable information on power supply, filament supply, and filter circuits. This booklet will be mailed to amateurs free upon request, which must be made on a QSL card which gives the call of the station. Address your cards to the Amateur Department, Thordarson Electric Mfg. Co., 500 West Huron St., Chicago, Ill.

NEW CALL-BOOK READY

The new issue of the government call-book, "Amateur Radio Stations of the United States," revised to June 30th last, is to be ready for distribution late in November. The price remains the same, 25 cents. Address Superintendent of Documents, Government Printing Office, Washington, D. C. Remember that stamps are not accepted — better send a money-order.

The book is in much the same style as before. The power-rating column is now omitted. Portables are indicated by footnote references. The book also contains a list of experimental and of technical and training school stations (X and Y licenses), the Q code, etc.

This book deserves amateur support. You should send for your new copy now.

Arctic Auroral Radio Interference

By Paul C. Oscanyan, Jr.*

EVERY returning explorer who has ventured to take radio equipment with him into the Arctic has been questioned as to auroral influence on his radio reception. The operators of stations situated within the Arctic Circle have all been questioned and in most cases the answers have conveyed little of direct scientific interest.

Aurora has long been classified as to type and action yet there is no definition of what it is.[1] Science has been frustrated by the height of the

THE AUTHOR, PROFESSOR J. E. CHURCH AND MR. C. R. KALLQUIST IN THE ARCTIC UNIFORM

display above the earth and its rapid changeability. Aurora has been classified as an electronic bombardment of certain gases of the upper air.[2]

During the author's stay at the Mt. Evans Observatory of the University of Michigan Expedition [3] to Greenland in 1927–28, he had the good fortune to witness many auroral displays and to be in a position to note their possible effect upon radio signals as received at that point. The observatory is situated some 1200 feet above sea level and gives an unobstructed view of the entire horizon. The receiving equipment of the radio station covers the radio spectrum from 15 to 30,000 kc. A special short-wave receiver covered the higher frequencies and the regular commercial IP-501-A receiver with loading coil unit was used for the lower frequencies.

For purposes of illustration let us here divide the aurora into a series of classes so the meaning of what is here set forth will be clearer. If there is any conflict with the true classification of aurora it must be borne in mind that this classification is intended only for association with this paper.

CLASS A1 — LOW AND INTERMEDIATE-FREQUENCY INTERFERENCE CLASS

The type causing interference on the low and intermediate frequencies is similar to a suspended curtain. It appears to the observer to be touching the horizon and extending for a relatively short height up into the atmosphere. It varies in bulk (apparent density) and in constancy of situation and duration. During displays of this class, the interference manifests itself as a form of marked fading. Signals of the intermediate frequencies (300 to 500 kc.) swing in and out, in fairly direct proportion to the auroral change. The observed aurora in these cases was extending its field of visibility along the horizon between the receiving and transmitting stations. The effect upon lower or higher frequencies was not noticeable. Diminution of the effect was reasonably relative to the variation from the mean of the frequencies observed to be effected. Limitations as to observable

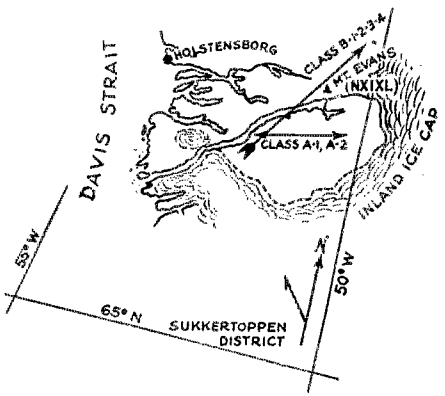


FIG. 1. — MAP OF THE REGION OF THE UNIVERSITY OF MICHIGAN'S MT. EVANS OBSERVATORY WHERE THE AURORAL STUDIES WERE MADE

Arrows indicate the general course followed by the auroral displays.

signals somewhat hampered us because of our being located at such an out of the way corner of the world. Ship stations (moored in quiet harbors) were our best sources. Signals from vessels on the transatlantic route and from Reykjavik, Iceland, also were affected and therefore added to our source of signals.

* R. C. A. Communications, Inc., New Brunswick, N. J.

[1] That is, no generally accepted authoritative definition. — EDITOR.

[2] *Physics of the Air*, Humphreys, N. Y. C., 1929.

[3] Prof. W. H. Hobbs, Director.

CLASS A2 — VARIABLE INTERFERENCE CLASS (LOW AND INTERMEDIATE FREQUENCY)

Owing to the scattering of the A2 variable interference class of aurora, the effect upon any set of signals in a given frequency band was not so marked and of necessarily short duration, inconstancy being often a feature of such displays. The border line of auroral classification, in so far as radio is concerned, lies near this class.

CLASSES B1, B2, B3, B4 — HIGH-FREQUENCY INTERFERENCE CLASSES

Because of the large number of high frequency stations on the air at practically all hours, the high frequency interference classes of aurora were best observed. This type of aurora starts in the western or southwestern sky and is well above the horizon. Its direction of movement and apparent density are generally quite constant and the change in appearance progresses as in B1, B2, B3, and B4. The effect upon the received signal varies as shown in the direction of the arrow, "S", from normal, down to inaudibility and thence back up the scale again until the display has passed on and the field of its influence has gone with it. The movement

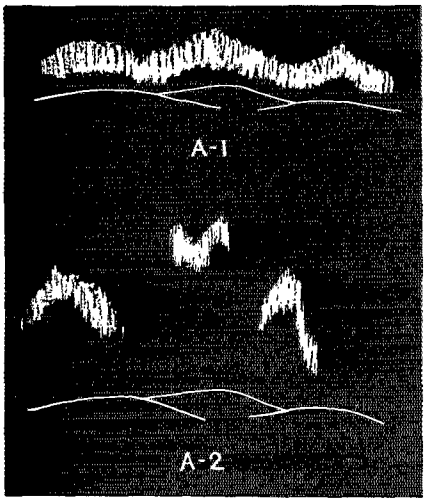


FIG. 2. — TYPICAL CLASS A1 AND A2 AURORAL DISPLAYS

These types effect low and intermediate-frequency signals.

of the display is in the direction of the straight arrow pointing nearly toward true north (N).

What really offers the most interest is the fact that there seems to be a point which can be calculated. When the corona formation is nearest to 17 degrees (or more) above the horizon, and between the receiving and transmitting stations, the signal is most greatly influenced. It is interesting to recall the experiments conducted by our expedition in 1926[1] to ascertain the angles and effects of topography on the possibilities of reception, especially short wave signals. It also appears that the corona of these classes of aurora is of considerable atmospheric depth and, therefore,

AEROLOGIST KALLQUIST STANDING AT THE TUNNEL ENTRANCE OF THE SHACK OF NX1XL

its action will extend over a large reception area.

Bearing the foregoing in mind, some connection can be evolved between the auroral corona and the "blanket effect" (obscuration of signals) sometimes noted in the Arctic.

There appears to be a form of disturbance of that part of the atmosphere of the earth, more readily classifiable as the radiosphere,[2] responsible for the occasional night or even short series of nights when no short-wave signals can be heard. During such a period one may maintain a tedious watch for hours at a time and find that only occasional "peeps" will struggle through from even the strongest stations. The auroral displays during those "blanket effects" observed were not particularly remarkable either as to class or types of radio influence. Ship stations and the other longer wave stations came through with normal clarity and volume, and until we became aware of the peculiarities of this "blanket effect" we spent a lot of time searching for the trouble in our short-wave receivers.

Listening to the radio stations of the Hudson's Bay Ice Patrol and also the signals of the schooner *Morrissey*, while in Hudson's Bay, indicated that radiospheric disturbances moved eastward and could be expected about 24 hours later, in most cases.[3] We could not find any definite connection

[1] *Proceedings* of the I.R.E., May, 1927.

[2] The "radiosphere" may be considered that portion of the atmosphere in which useful radio waves travel; that is, between the effective reflecting layer and the earth.

[3] The same "blanketing" effect has been noticed in the North Central part of the United States (North Dakota). Certain types of auroral interference contemporaneously affect reception on the high-frequency bands although reception on the intermediate-frequency broadcasting bands might be normal at that time. Twenty-four hours later, broadcast reception is completely "blanketed" with the

between these radiospheric and coincident atmospheric disturbances. Agitations of the radiosphere due to storms would account only in part for the occurrences noted.

Direct reference to the station log has been avoided, because it is desired to prevent emphasizing any one observation and to facilitate the general statements which may only be made when there is a relatively large amount of data to work from.

The English publication, *Wireless World*, has lately carried notes concerning the reception of signals reflected back from the aurora. Through this article one may observe what happens on the other side of that screen.

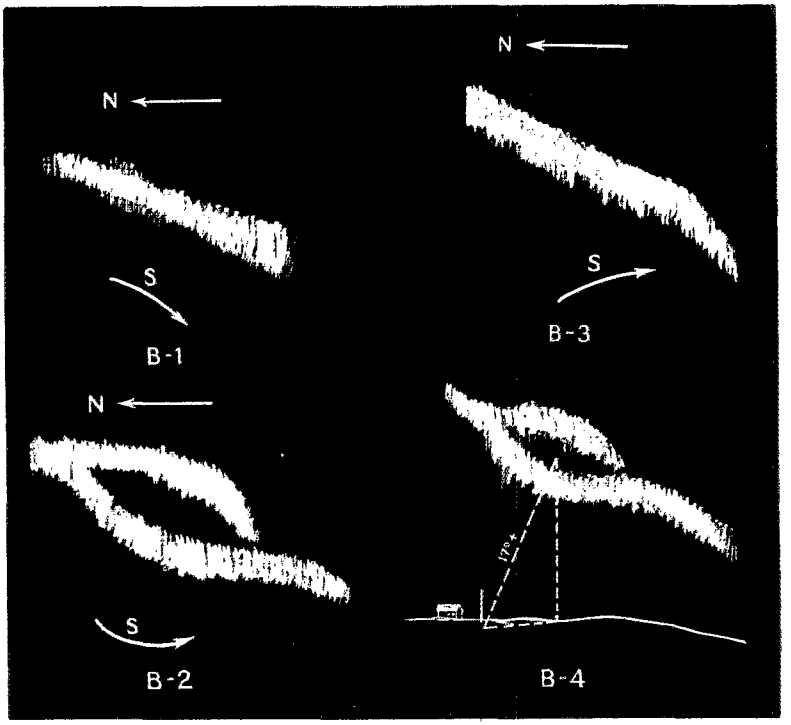


FIG. 3. — HIGH-FREQUENCY INTERFERENCE CLASSES OF AURORAL DISPLAY

The displays progress in the direction indicated by the arrows "N". The lower arrows, "S", indicate the relative strength of received signals during the various stages of the display's passage from southwest to north.

Persons concerned with radio traffic transmission and reception will appreciate that expeditionary results are often of interest only to those who expect to revisit the spot explored or its neighborhood. However, in this case, the author wishes to point out a difference. Greenland lies directly within the great circle path between the middle western United States and Northern Europe. The logical line of flight is along the great circle and we already know that radio signals follow such a path in their travels. Therefore, the writer submits that these observations have tangible value to anyone about to transmit signals across the Arctic or about to fly across and depend in any way upon radio transmission or reception. It is certain that there is more information still hidden up there for the radio engineer and the author looks forward to the day when he can again go north and resume this fascinating field of research.

(*Continued on page 84*)

possible exception of transmission from a few stations directly south of the receiving location. The type of auroral activity seemingly most effective in causing this phenomenon is that classified by the author as "A1".

Contrary to a more or less prevalent belief, auroral activity is never accompanied by electrical disturbances audible on a radio receiver. In fact, the usual static and background noises are also "blanketed" along with the signals and seeming difficulty in getting a regenerative receiver to oscillate has been noticed on nights of unusual auroral activity. This is probably an illusion resulting from the almost total absence of minute atmospheric disturbances which cause the usual "background" noises.

In northern North Dakota, the aurora is visible usually along the northern horizon from northwest to east although it sometimes rises up across the zenith and covers the whole northern sky. Simultaneous observations on auroral interference to radio reception at points in the Arctic and on this side of the "screen" would be of inestimable value in the further investigation of this interesting study. — EDITOR.

The Amateur and the C.C.I.R.

International Technical Conference Agrees Each Nation May Make Its Own Amateur Regulations—Move for Uniformity in Europe

By K. B. Warner*

THE Committee on Definitions and Standardization recognizes that it is not actually possible to draw up regulations relative to licenses for amateurs which could apply to all countries of the world and that this question ought to be made the subject either of regional agreements or of national decisions."

With these words the first meeting of the C.C.I.R. abandoned its endeavor to effect international uniformity in amateur regulations and yielded to the demand of the United States and other nations that each administration be permitted to remain free to make its own regulations for amateurs, of course within the limitations imposed by the existing Washington Convention. This consummation of the matter must be very pleasing to North American amateurs, being exactly what we were working for.

I shall endeavor to give here an account of all the features of the conference that are interesting to amateurs. The news this time is all good news. I'll have to start out, I presume, by telling what C.C.I.R. means and "what all the shooting has been about."

These mystic letters stand for *Comité Consultatif International Technique des Communications Radioélectriques*, which in English is the International Technical Consulting Committee on Radio Communications, an assembly of technical experts created by the Washington Convention of 1927. It is therein provided that such a meeting shall be held about every two years, consisting of the representatives of governments and operating agencies, to deal with technical questions which arise under the operation of the Convention. The committee can make no binding rules; its functions are advisory, its recommendations to be transmitted to the governments and operating agencies via the Berne Bureau. It was provided in the Washington treaty that the Netherlands administration would be the host for the first meeting, and so, about two years having elapsed since Washington, the Dutch government called the meeting to be held at The Hague from September 18th to October 2d.

To this conference the United States sent a strong and able delegation, of which I had the honor to be a member in the status of technical adviser, especially appointed with the approval of President Hoover in order to advise on amateur matters. I was the only member of the delegation who was not in the government service, and it should be said here in the interests of accuracy and completeness that my expenses were paid by the A.R.R.L. This, it may be seen, was a very special arrangement, significant in indicating the very real interest of this government in the welfare of its radio amateurs. Except for this special arrangement we would not have had representation, for we are neither a government nor a public-service operating agency and could not otherwise have participated. The chairman of the delegation was Major General Charles McK. Saltzman, U.S.A., retired, member of the Federal Radio Commission; and the other two official delegates were Major General George S. Gibbs, U.S.A., Chief Signal Officer of the Army, and Capt. S. C. Hooper, U.S.N., Director of Naval Communications. Then there were five technical assistants: Dr. J. H. Dellinger, chief of the radio laboratory of the Bureau of Standards; Dr. C. B. Jolliffe, of the same laboratory; Lieut.-Commander T. A. M. Craven, radio expert of the Navy; Mr. Gerald C. Gross (W3GG) of the engineering division of the Federal Radio Commission; and Mr. R. H. Norweb, attaché of the American legation at The Hague. In addition to this official delegation a dozen American operating agencies sent over a total of fifteen expert representatives, many of them famous names in international engineering circles. From the standpoint of amateur interest special mention should be made of the presence of that well-known amateur, Ralph M. Heintz, W6XBB, representing the Robert Dollar Co., but who of course interested himself equally in the amateur matter.

The United States' preparation for this conference had been thorough. Ever since May of this year the Interdepartment Radio Advisory Committee had been holding meetings at Washington, attended by all American radio interests, in a preparation which extended right up to sailing time and resulted eventually in a large mime-

* Secretary of the American Radio Relay League and of the International Amateur Radio Union; technical adviser, United States Delegation to first meeting of C.C.I.R., 1929.

ographed book of American proposals, acceptable to all of our people. It was the duty of our delegation to secure the adoption of these views so far as possible. In this preliminary preparation both Vice-President Stewart and I participated at Washington, I in fact being vice-chairman of the preparatory committee on amateur matters. The C.C.I.R. cannot amend the Washington Convention; reallocation of frequency bands is not within its province; it is concerned with technical matters which arise in the administration of that treaty. Its great concern this year, of course, was with the high frequencies and particularly with measures that might enable a more effective use of the limited number of channels there to be found. Thus the most important matters on the agenda related to a channelling system, separation between stations, permissible tolerances, stability requirements, monitoring equipment, the necessary accuracy in frequency-meters, comparisons of national standards, and similar studies which might help to overcome the world-wide shortage in h.f. channels.

We amateurs were particularly interested in Question No. 11 of the agenda, a proposal carried over from the European regional conference at Prague last spring, calling for an endeavor to secure international "uniformity, so far as possible, in the technical conditions imposed on the holders of amateur licenses." The Washington Convention gives each administration liberty to assign to amateurs as much or as little as it desires of the bands made available for amateurs, to fix their power, the required degree of technical proficiency in the licensee, etc. Naturally it was our view that that was exactly what was intended by the Convention, but amongst European governments there was no particular uniformity in the domestic regulations for amateurs, some holding back part of the bands, some other parts, power varying all the way from a modest 10 watts to the terrible power of 50 watts, and so on. Let us have international uniformity in these regulations, said Europe, so we'll know where we are. Now from the standpoint of the North American amateur the meat of the whole amateur matter is simply this: international uniformity at The Hague meant the lowest common denominator of European agreement, which through prejudice and ignorance of amateur matters would be highly restrictive. Our case, then, was a very simple one: we rested on the obvious intent of the Washington Convention to leave these matters to the determination of separate administrations, or to regional agreements, always of course within the limiting provisions of that document; and we determined to resist flatly the proposal for international uniformity because we knew that if that were settled on the basis of a division of votes we would be senselessly restricted to European dimensions. This viewpoint was unanimously accepted by the preparatory committee in the United States and was written into the proposals which we carried abroad. Let me say that this was really a unanimous American view, in which we were supported as much by our commercial people as by our government people.

Thus prepared we arrived at The Hague, one of the most charming cities of Europe, opened up a suite of offices, established our stenographers and interpreters, and went to work. The conference sessions were held in a large hotel in the center of the city. We found that about forty-eight nations and colonies were represented, with a total of around 180 delegates, not counting the numerous people of the secretariat, Dutch reception committee, etc. The work of the conference was to be done by committees, so the American personnel was apportioned to the various committees in such fashion as to enable each man to serve where he was best qualified and most interested.

And so, after a colorful reception and formal opening session, we went to work in committees, to labor for two weeks until our results came before the closing plenary session which accepted them. The main amateur question was assigned to Committee II, and that story I want to present in detail. We had another matter too, the question of frequency-meters for amateurs, which came before Committee III-A where our spokesman was Dr. Dellinger, assisted by Dr. William Wilson of the A. T. & T. Co. This committee was concerned with frequency standards and frequency-meters for all types of services, amateurs being but one. On the amateur angle the European view was to make the use of frequency-meters compulsory, so as to insure that "these amateurs" stayed within their bands. Our government, and we amateurs too, of course, equally recognized the necessity of staying within the bands but we seriously doubted that a frequency-meter of reasonably low accuracy was the proper method to insure this. We had in mind our American idea of using a monitor against a receiver, where the limits of the bands will be found clearly delineated, as has been so often expounded in *QST* and the *Handbook*. The American viewpoint was that amateurs ought to be obliged to use apparatus and methods which satisfied their own government of their ability to stay within the bands. In some countries this might mean frequency-meters but it would give us the opportunity of showing our government that the idea of the monitor beating against the receiver is vastly more reliable. There was a merry little scrap in this committee for a while, Dr. Dellinger ably presenting the American viewpoint and explaining the method which we amateurs have found so effective. Eventually, by the process of many additional clauses and much changing of wording, the committee adopted the following satisfactory proposal:

". . . that each country will take effective measures to see that amateurs remain well within the band of frequencies allotted to them, in particular in requiring of amateurs, if there be need, the employment of a frequency-meter or similar device."

THE MAIN QUESTION

This Question No. 11, about uniformity in amateur licenses, was assigned to a committee presided over by General Ferrié. On September 20th, after disposing of some other problems before it, the committee reached the amateur matter. We had arranged that on this important subject our spokesman would be General Gibbs, with Dr. Jolliffe and myself as advisers, and with Mr. Heintz also in attendance. At this juncture General Gibbs introduced the United States' proposal that each administration be left free to make its own amateur regulations, with no further international agreement. Mr. J. W. Bain, of the Canadian delegation, immediately announced that Canada wanted to endorse and support in fullest possible measure the United States statement. Let me pause here to say that Canada at this conference richly redeemed herself from the unfriendliness of her spokesman at Washington, giving the United States 100 per cent backing on amateurs; in fact, I do not recall an instance in the amateur discussion where the next speaker, after an American, was not the Canadian representative giving the fullest measure of support to that viewpoint—it was FB! Getting back: the U. S. S. R. (formerly, but not now, Russia) and Spain supported Canada and the U. S. A., and so did Great Britain. That sounds like a different line-up than Washington, doesn't it? Yes, Great Britain's spokesman, Mr. A. H. Read, of the G.P.O., supported the United States and opposed even a regional European agreement; Great Britain wanted each nation on its own, exchanging data via the Berne Bureau. But France, Germany and Czechoslovakia maintained the desirability of effecting an agreement on the major provisions of amateur administration. It was plain to us Americans that any tendency towards such uniformity was confined to Europe, and although we had no objection to a European agreement as such, if it left us out, we said it did not belong in the C.C.I.R. proceedings. General Ferrié ruled that interested nations could submit a group proposal, if they so desired, which our committee could consider and then either accept or reject. Who wanted to join in this study? We kept out, and so did Canada, Great Britain, Spain and the U. S. S. R., but the following joined for that purpose: Belgium, Belgian Congo, Czechoslovakia, France, Germany, Italy, Japan, Morocco, the Netherlands, Norway, Poland, Romania and Tunis.

And so we adjourned while the *petit comité* undertook their dirty work. What with interruptions by excursions and disagreements amongst themselves, it was the 24th of the month before they were ready, and then our committee met again to hear them. It was an interesting report with an ingenious preamble and a whole set of detailed regulations, many of them frankly administrative in character. I noted in passing that it provided for 50 watts power, 100 kilocycles out of the 3500–4000 band, and other things in this same general key, but we were not interested in arguing the pros and cons of each technical matter. Our spokesman, again General Gibbs, characterized the proposition as an interesting and useful guide to the nations which had drafted it but not applicable to other nations and other groups; it involved some questions which were not technical but entirely regulatory; it violated the Washington Convention which plainly left each nation free on these subjects; it could not be regarded as applicable to the United States but we had no objection if it was intended only for use within the group who prepared it. Again Canada was the first to support us, followed closely by U. S. S. R. Then Mr. Adolpho Ballivian, delegate of Bolivia, spoke similarly, opposing any extension of the Washington provisions. Mr. O'Monahan of the Irish Free State was in entire agreement. Mr. Cota of Mexico was of the same opinion. Mr. Beakes, for Costa Rica, supported the view. (You see, fellows, somebody had been doing a little missionary work during those four days.) Mr. Read of Great Britain agreed that they prefer to be left on a national basis. China (spokesman XL1) supported that view. So did Colombia, especially because amateur radio is only beginning there and the administration does not want to impede it.

Well! It rather looked like our view was dominating the meeting. I looked around the room and noted the following additional delegations which to my knowledge felt the same way about it and had come there prepared to say so: Brazil, Chile, Nicaragua, San Domingo and Siam. That, with the others, was some crowd, and incidentally a beautiful example of the Americas hanging together. It was apparent that if this question came to vote in that meeting it would be defeated easily. But it never came to that. Our remaining friends did not even need to speak their piece. Nor was there any use in any European speaking in favor of the proposal—it was obviously lost. So the chairman announced that on our minutes the proposition would appear as a proposal submitted but not accepted, a useful guide to the administrations which drafted it, and interesting information to other administrations. To that proposal there was certainly no objection on our part, and so it stood. It is from this committee action that the statement which opens this article finally resulted and was unanimously accepted at the closing session. It is almost needless to say that it fully met our views.

General Gibbs handled the amateur question, as the spokesman of the United States, in masterly fashion. He was out to protect the American amateur and he did it. I suppose there are some of *QST*'s readers who still do not know who he is. He is the chief of our Army Signal Corps, with whom A.R.R.L. has the affiliation which has resulted in the Army-Amateur Radio System. It is stated in that affiliation that one of its purposes is "to render such encouragement and assistance as may be desirable to firmly establish and perpetuate the American amateur." (*QST*, p. 21, March 1929.) Here was a concrete example of that assistance. It was FB! I must say that throughout this show we received the finest kind of encouragement and assistance from all of our government folks, and I see in it the completest justification of our A.R.R.L. policies of reasonableness and high ethics and a renewed demonstration of the wisdom and value of our close relations with our Army and Navy.

Having just returned from The Hague and hurriedly preparing this report to reach our members as soon as possible, I must confess that I am not yet well informed on the non-amateur results of the C.C.I.R. meeting. They pretty well avoid entanglements, however, and I know that our people generally regard them as sound and helpful. Some matters were left unfinished, and these have been "farmed out" to various nations which volunteered to conduct a study on them, in preparation for the next conference, which is to be held at Copenhagen in the summer of 1931.

A EUROPEAN AMATEUR "ARRANGEMENT"

The failure of the C.C.I.R. to adopt amateur regulations which would be uniform throughout the world was a disappointment to many of the European administrations. They felt the need of some measure of uniformity in Europe. Effecting the same by a regional agreement is quite within their rights, however, and in fact the United States encouraged them to undertake it if they so desired, as we in fact have in part in North America. Our only point was that it couldn't be part of the C.C.I.R., couldn't be made binding upon us just because Europe wanted it.

It was not surprising, then, that the delegates of most of the European administrations had an unofficial meeting shortly following the C.C.I.R.'s rejection of the European paper, for the purpose of forming a regional agreement on amateurs. This they did, 23 administrations in all, 13 of them in Europe. The document was deposited with the Berne Bureau, to be communicated to the administrations. It is not a very binding affair, since each administration has the right to modify the application of its provisions to any extent permitted by the Washington Convention under no other requirement than that she announce her modifications when ratifying. Similarly, non-signatory administrations are invited to signify their adherence, stating their own reservations if any. It is, however, a document of the greatest significance to amateur radio in Europe generally. Great Britain, the Irish Free State and Sweden refused to sign it; Denmark didn't; Portugal and some of the other smaller countries of Europe weren't represented at the conference; but in general terms it seems that here is uniformity, or a close approach to it, in much of Europe.

We present herewith the text of the "arrangement," with apology for the lack of smoothness in the translating, necessitated by the haste which we must make to meet our press date with this article.

INTERNATIONAL AGREEMENT

CONCERNING THE REGULATING OF AMATEUR LICENSES

The Delegates of the administrations of the countries hereunder, present at The Hague on the occasion of the first meeting of the International Technical Consulting Committee on Radio Communications:

French Equatorial Africa and other French colonies	Hungary French Indo-China
French Occidental Africa	Italy
Algeria	Madagascar
Germany	Morocco
Austria	Norway
Belgium	Netherlands
Bulgaria	Poland
Belgian Congo	Romania
Spain	Switzerland
Finland	Czechoslovakia
France	Tunis

In accordance with Article 14 of the Washington Convention dealing with special agreements;

Recognizing the services rendered by the studies and the experiments of amateurs and without wishing to restrict their interesting researches;

Considering that the operating possibilities given to amateur stations by the General Regulations of Washington must not permit them to cause any inconvenience to the traffic of stations of general interest;

That the increasing development of radio communications at great distance establishes a solidarity of interest between the countries of the entire world;

Having ascertained the impossibility of effecting an actual agreement among all the countries of the world represented at the C.C.I.R. with respect to uniformity in minimum conditions to be imposed in each country on private transmitting stations known as "amateurs";

Considering, nevertheless, that there is very great benefit in establishing a uniform basis of regulation in the matter because it is not practically possible for a country to undertake to regulate the work of its amateurs without taking into account the inconvenience that these latter may cause to the radio services of another country;

That the adoption of regulations of a general order for a group of countries would have the effect of preventing disputes between the amateurs and their respective administrations;

Have considered it necessary to establish the basis of a private general agreement the adoption of which they will propose to their respective administrations with the least possible delay.

This agreement, while leaving to each country independent regulation and surveillance of the operation of amateur stations installed in that country (and) the imposition of all domestic regulations, administrative or otherwise, which it deems necessary, carries the following provisions:

1. No person will be authorized to use a transmitter be-

(*Continued on page 76*)

The Single Control Transmitter

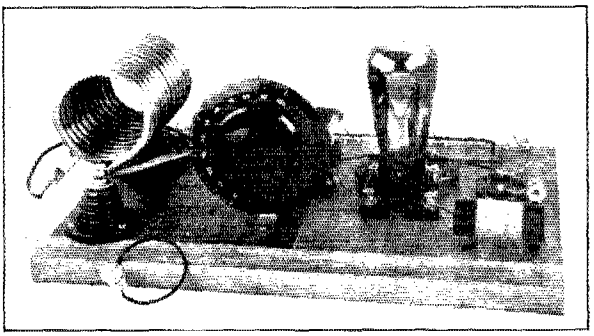
By George Grammer*

ONE of the great drawbacks of amateur transmission for the beginner is the multiplicity of controls and adjustments which seems to be necessarily attendant upon use of our present-day "standard" circuits. The poor chap is confronted by an array of things which have to be done to a transmitter to get the right kind of signal out into the ether; and if, as is often the case, he has only limited power and no indicating instruments at his disposal, with the nearest ham help miles away, he is truly up against it. It was with the hope of dispelling some of the bewilderment of this class that the little set to be described was built. In spite of its simplicity, it is a capital low-power outfit, suited to the requirements of the newest beginner or most proficient operator.

Omitting any consideration of oscillator-amplifier sets, our self-controlled transmitters usually have at the very least four, and sometimes more, adjustments which have to be made, no one of which is independent of the others. It may be argued that this in itself is no great disadvantage, since the aim is to find the best adjustment and then let the set alone — but it rarely works out that way. There is too much temptation to change something, especially after a few calls have gone unanswered. Then, too, there is the antenna ammeter, with its fiendish beckoning to drain the last drop of current from the set, in spite of what the monitor and our better sense tell us. Besides it takes long practice to get the "feel" of a set, and the new man wants results first and experience afterwards.

Despite the vociferous refutations which its adherents will no doubt immediately voice, the Hartley circuit with a high-C tank is a hard one for a beginner to adjust for reasonable output. The filament tap on the inductance is a critical and unsatisfactory proposition, especially on the higher frequency bands where the coils are physically small. The Colpitts circuit does not seem to be so popular with the newcomers, but is perhaps even worse than the Hartley from the standpoint of adjustment, because the two condensers in series make it impossible to change excitation without altering the frequency at the same time, and vice versa. It is true that a fixed feed-back ratio can be obtained by using three condensers, two in series and one, the main tuning control, across the whole coil, but this only partially eliminates the difficulty, and introduces an additional control.

There remains the familiar Armstrong circuit, the tuned-plate tuned-grid, which is about the easiest of the three to handle, since the excitation and output circuits are adjusted separately by means of condensers, and the two adjustments are comparatively independent.[1] There is also the additional advantage that series-feed plate supply may be used, lessening the work of the r.f. choke, a thing which cannot be done in either the Hartley or Colpitts without splitting the inductance — a messy job constructionally.



A FRONT VIEW OF THE TRANSMITTER

The plate coil is mounted at the left, the grid coil at the right. The resonance indicator is in the foreground.

In the tuned-plate tuned-grid circuit the plate tank circuit normally controls the frequency of oscillation, while the grid circuit, although having some effect on the frequency, functions chiefly as a control of excitation, thereby determining the output and efficiency. Furthermore, the grid adjustment is not particularly critical, and the same condenser setting will hold for a fair range of frequency change in the plate tank. This naturally suggests the use of fixed grid tuning for the band of frequencies over which it is desired to work. We don't know who first suggested the idea; the main thing is that it works, and works surprisingly well.[2] A suitable grid circuit will function over the entire 3500-kc. band, the

*A.R.R.L. Technical Information Service.

[1] Operating Characteristics of Vacuum Tube Oscillators, *QST*, November, 1929.

[2] Director Woodruff of State College, Pa., has been using this type of oscillator for some time. He has made it quite well known as the "T.N.T." circuit. The low-cost push-pull transmitter described in the September issue of *QST* also used this type of oscillator. — EDITOR.

widest of our three most popular bands, with practically the same efficiency at all frequencies.

The lower the decrement of the grid tuning circuit, the more critical will be the grid adjustment. Consequently, for fixed grid tuning, extremely low resistance is not particularly desirable, since we want the tuning of this circuit to be broad enough

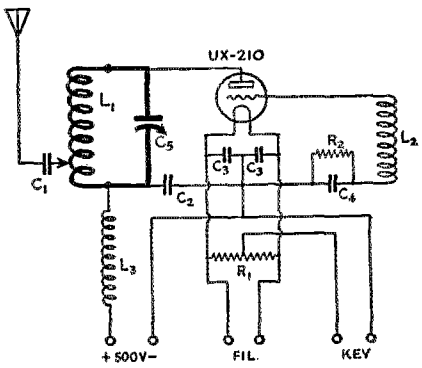


FIG. 1

L_1 — Plate Coil. See photograph.
L_2 — Grid Coil. See photograph.
L_3 — Radio frequency choke. Any commercial receiver-type short wave choke will do, or it may be made by winding 2 inches of No. 38 d.s.c. wire on a half-inch tube or wooden dowel.
C_1 — 2000 μμfd. (.002 μfd.) mica fixed condenser, receiver type.
C_2 — 2000 μμfd. (.002 μfd.) mica fixed condenser, receiver type if plate voltage does not exceed 500.
C_3 — 5000 μμfd. (.005 μfd.) mica fixed condenser, receiver type.
C_4 — 250 μμfd. (.00025 μfd.) mica fixed condenser, receiver type.
C_5 — 500 μμfd. (.0005 μfd.) variable condenser. Any good receiving condenser will be satisfactory.
R_1 — Center-tapped resistor, 75 to 100 ohms total resistance.
R_2 — Grid leak resistor, 10,000 ohms. Any small resistor rated at 5 watts or more will do.

Two General Radio or similar stand-off insulators will be necessary, as well as 7 Fahnestock clips, some miscellaneous small machine screws and nuts, and a few feet of bus wire. A UX-210 with suitable power supply should be used.

to hold over quite a range of frequencies. The necessary tuning capacity can therefore be supplied by the grid-filament capacity of the oscillator tube, the distributed capacity of the grid inductance, and the capacity of the associated apparatus. It remains merely to wind a coil of the proper size to tune to the frequency band on which it is desired to work. These coils will be described in more detail later.

So far we have a single control oscillator. There is still the antenna problem, probably the worst of all, with its usual coupling coil and tuning condenser or condensers, and the necessity for some form of misleading current indicator. Happily the solution was contained in an article on the single wire fed Hertz antenna in the September, 1929, issue of *QST*. This type of antenna and feeder system at one stroke eliminates the troublesome adjustments mentioned above and at the same time provides a radiating system of excellent efficiency. For the benefit of those who may not have a copy of the September issue, the antenna itself is the usual Hertz so popular with amateurs, the energy being transferred to it from the oscillator by means of a single wire, untuned, transmission line of any convenient length. As in the case of all Hertz antennas which are not cut to allow the insertion of tuning apparatus, the antenna length determines the operating frequency.

It can thus be seen readily that the transmitter to be described is not an oscillator alone, but includes an antenna system as well. The oscillator itself may, of course, be coupled to any of the usual types of antennas if desired, but the simplicity of adjustment and the "fool-proof" features are then lost.

CONSTRUCTION OF THE SET

The schematic wiring diagram is shown in Fig. 1, together with the constants, while the photographs show how the set looks when constructed. The layout chosen is one which allows short r.f. leads, although others equally good will no doubt suggest themselves.

The grid coils, L_2, are wound with No. 30 d.c.c. wire on 2½-inch lengths of 1-inch tubing, which may be of bakelite, paper, wood, or any other of the common insulating materials. After being wound the coils should be given a coat of Collodion or clear Duco varnish to keep them permanent. Two small brass angles, obtainable from any hardware store, serve as both connections and supports for these coils, the ends of the winding being brought out to small machine screws inserted at the ends of the coil forms.

The baseboard itself is a bread-board 13½ inches long by 10 inches wide. Two General Radio stand-off insulators are mounted at one end, as shown in the photographs, and serve as a support for the plate coil, L_1. These insulators should be placed 4½ inches apart between centers. This mounting is very solid mechanically, and allows easy changing of coils. If changes from one band to another are frequent, it might be advisable to use wing-nuts to fasten the coils down instead of the hexagonal nuts furnished with the insulators.

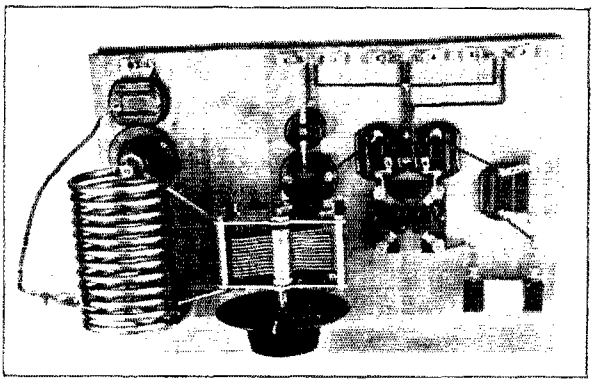
The plate coils themselves are ¼-inch soft copper tubing, wound around a pipe 2⅜ inches outside diameter. The ends of the coils are flattened in a vise and drilled to fit over the machine screws in the G.R. insulators. The 3500-kc. coil should have the turns so spaced that when finished it will just fit on the insulators without having the ends bent out, as is done on the coils for the higher frequency bands. The spacing between turns on the 7000-kc. coil is about 3/16-inch, and on the 14,000-kc. coil about 1/8-inch. After the coils are finished they should be polished with fine steel wool, thoroughly cleaned with alcohol, and

given a coat of clear Duco greatly diluted with "thinner," to keep them bright.

The tuning condenser, C_5, in this case a 21-plate Cardwell, is mounted on small brass angles of the same type used for mounting the grid coil. Connections between the condenser and the coil are made by pieces of copper tubing, since the leads in the tank circuit must be as heavy as the inductance itself. The connection to the insulator at the front of the baseboard should be from the rotary plates, that to the rear insulator going to the stationary plates. This puts the "hot" end of the coil at the back of the set and reduces the effect of hand capacity.

The plate by-pass condenser, C_2, is mounted close to the tuning condenser on the baseboard. The radio-frequency choke, L_3, is just behind it. The filament by-pass condensers, C_3, are directly behind the tube socket, while the grid condenser, C_4, and leak, R_2, are to the right of them. The condensers in this set, which are Sangamos, are mounted flat by means of machine screws running up through the baseboard. The antenna insulating or blocking condenser, C_1, is mounted on the left rear corner of the board, one side going to a Fahnestock clip for the antenna connection, the other to a piece of flexible wire 8 inches long terminating in a small spring clip which fastens on the plate coil. The filament center-tap resistor, R_1, is mounted directly on top of the filament by-pass condensers.

All connections are run to the rear of the board where they terminate in Fahnestock clips. From right to left in the photograph, the first two clips are for the key, the second two for filament supply, and the last two are for minus and plus high voltage, respectively. The wiring of the whole set is quite simple, and in case it is to be duplicated no difficulty should be experienced in following the diagram and photographs.



LOOKING DOWN ON THE SET

The arrangement of the parts and wiring can be plainly seen.

THE ANTENNA

The antenna is a very important part of the outfit, and the dimensions must be correct. The chart, Fig. 2, shows how to determine the right length to use for the working frequency chosen, as well as the proper point at which to attach the feeder. For the 7000-kc. band, multiply the frequency by 2 and divide all dimensions by 2; for 14,000-kc. multiply the frequency by 4 and divide all dimensions by 4.

The same antenna may be used for all three bands by making it the proper length for the lowest frequency used. It must be noted, however, that a length must be chosen so that the harmonics will fall within the limits of the higher bands if the band-changing feature is desired. For instance: If the antenna is to be used on all three bands, the length must be between 132 and 135½ feet, since only the harmonics of frequencies between 3500 and 3600 kc. will fall within the limits of the 14,000-kc. band. Similarly, if the antenna is to be used on 3500 kc. and 7000 kc. only, the length must be between 130½ and 135½ feet, since only the harmonics of frequencies between 3500 and 3650 kc. will be in the 7000-kc. band.

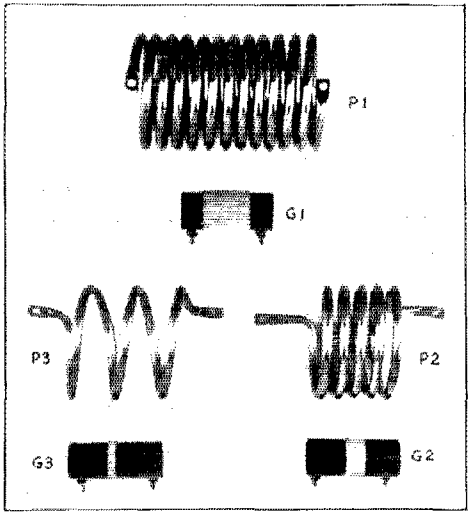
The point at which the feeder is attached to the antenna is important. The data in the chart should be followed exactly. Once the operating frequency is chosen, draw a horizontal line across the chart for that frequency. The points of intersection of this line with the curves will give the proper antenna length and the distance from the center of the antenna at which the feeder should be attached, respectively. These distances should be measured as accurately as possible, preferably with the antenna stretched tight, as it will be when erected.

The antenna and feeder should be No. 14 wire, preferably enamelled. The feeder can be any length, since its length has no effect on the dimensions for the antenna given in Fig. 2. Another point, which will be appreciated by the fellow with limited space at his disposal, is that the antenna itself need not be stretched in a straight line, although it is better to have it as straight and clear of surrounding objects as possible. The feeder can, of course, be bent as may be convenient, although it should be kept several feet away from roofs, walls, etc. Both antenna and feeder should be stretched tight so they will not be affected by wind.

TUNING

It is not until the time comes to start the process of tuning up that the real simplicity of the set begins to be apparent. The coil sizes shown are correct for use with a UX-210 with about 500 volts on the plate. A radio-frequency ammeter

in the feeder is of little utility, because the current with a UX-210 operating at usual input (25 to 50 watts) will be in the neighborhood of only 50 to 100 milliamperes. A plate milliammeter is a good thing to have but not entirely necessary. If the dimensions for the grid and plate coils are followed exactly, as they must be if best results are to be secured, the plate current will be just about what it should when the set is properly



THE PLATE AND GRID COILS

A description of these coils is contained in the text, while the number of turns on each is given below.

Coil	*Band*	*Turns*
P-1	*3500*	*12*
P-2	*7000*	*5*
P-3	*14,000*	*3*
G-1	*3500*	*60*
G-2	*7000*	*25*
G-3	*14,000*	*9*

tuned to the antenna frequency. While the set will oscillate over a wide frequency range with each set of coils, the sizes specified for the grid coils are such that the optimum output and efficiency will be obtained in the respective amateur bands. The length of the antennas determines the transmitter frequency so closely that if it is built correctly and the oscillator tuned to it, it is almost impossible to be out of the band, even if no frequency meter is available. However, a frequency meter and monitor are as helpful with this set as with any other, and it is strongly recommended that they be used.

The problem, therefore, is to tune the oscillator to the antenna. Only one very simple piece of apparatus is necessary for this, the flashlight bulb and loop of wire shown in the photograph. The process is as follows: With the antenna clip disconnected from the plate inductance, press the key and bring the loop near the end of the plate coil at the front of the set. The plates of the tuning condenser should be about ⅛ of the way in, assuming the set is to be used on 3500 kc. (With the coils and condenser described, the center of the 3500-kc. band will be at approximately 85 on the condenser scale, 7000 kc. at 75, and 14,000 kc. at 45. The condenser has a straight line capacity curve.) The lamp should light, indicating that the set is oscillating, and the loop should not be brought too close to the coil or the filament will burn out. It will probably be found that the lamp will light when the condenser is turned over about 50 per cent of its scale.

The antenna clip should now be put on the plate coil four or five turns from the front end (the end connected to the rotor of the condenser). Hold the loop steady a few inches from the coil, and swing the tuning condenser over the upper portion of the scale. As the dial is turned the lamp will get dimmer, and if the loop is held far enough from the inductance a point will be found where it will go out. Moving the condenser beyond this point will make the lamp get brighter again. *The point at which the lamp goes out is the point at which the oscillator is tuned to the antenna.* Now move the antenna clip toward the front end of the coil one turn at a time, swinging the tuning condenser, as before, each time a change is made. The dip will always occur at about the same place on the condenser, but as the clip is moved toward the front of the coil it will be less pronounced. Continue this until the dip is just perceptible. Then move the clip back toward the plate end of the coil one turn, tune as before and, as a final adjustment, set the condenser at slightly less capacity than the point at which the dip occurs. The signal should be checked at this point by means of a monitor or by tuning the regular receiver to a lower frequency band, as the final adjustment of the tuning condenser sometimes has a very noticeable effect on the tone. There should be just enough detuning to make the frequency stable and the note clear.

The tuning for the 7000- and 14,000-kc. bands is done in a similar manner, except that the clip should be moved only a fraction of a turn at a time. The number of coupling turns will vary somewhat, depending on the frequency used and whether the antenna is being operated on its fundamental or on a harmonic. In general, about 3 turns will be sufficient on the 3500-kc. band, 1 on the 7000-kc. band, and ¼ to ½ turn on the 14,000-kc. band.

Since a Hertz antenna will work quite well within a narrow band of frequencies about its fundamental, tuning over a small range of frequency is permissible. For this reason, it is possible to have the frequency fall outside the limits of the amateur bands if the antenna length chosen is near one of those limits and the tuning is not exactly correct. This is especially true when operating on 7000 or 14,000 kc., particularly when tuning to a harmonic of the antenna, the reso-

nance peaks on the harmonics not being as sharp as on the fundamental. A frequency-meter or calibrated monitor is therefore highly advisable.

Although this set was built primarily with the idea of working out something which would offer the minimum of constructional and operating difficulties, there has been no undue sacrifice of efficiency for the sake of simplicity. In fact, with so few controls, the chances are that a higher overall efficiency will be obtained than could be expected from the average amateur transmitter in which there are so many opportunities for maladjustment. It is not offered as a panacea for all transmitter ills, but despite its lack of complications it will compare favorably with any set of equivalent power capable of producing a "1929" signal.

A SUGGESTION FOR BEGINNERS

While monitors and frequency meters are every bit as essential to the operation of all good amateur stations as the receiver and transmitter, most beginners, sad to relate, put off constructing them until they get tired of guessing at what they are doing. This generally occurs months, and in some cases even years, after the transmitter has been functioning with apparent success. Since we know that the number starting off hopefully with only a receiver and transmitter is going to be quite large, we shall offer a few suggestions on getting started which do not require the use of a monitor and frequency meter, although it is strongly recommended that they be constructed at the earliest opportunity.

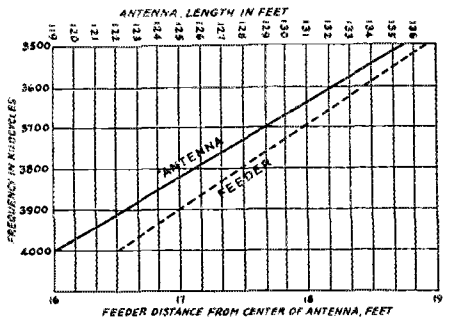
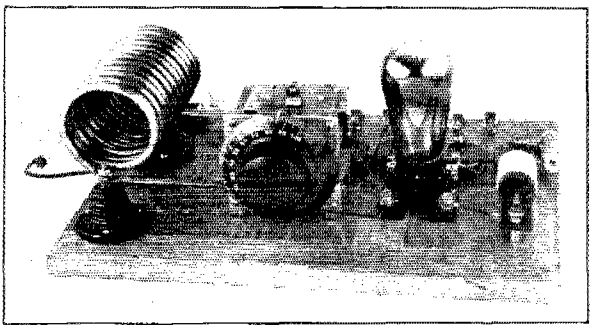


FIG. 2.—ANTENNA AND FEEDER DATA

While the above curves are for fundamental operation in the 3500-kc. band, they apply equally well to 7000 kc. by dividing all dimensions by 2, and to 14,000 kc. by dividing all dimensions by 4, simultaneously multiplying the frequency by the same factor.

In the first place, the frequency band on which every new man should make his first bid for the world's attention is that between 3500 and 4000 kc. The glorious super-DX possibilities of the 7000- and 14,000-kc. bands may have been extolled by an ardent ham friend, but in his enthusiasm he probably forgot to mention the freakishness of 14,000 and the congestion on 7000 kc. There is much good DX to be done on 3500. There is also the advantage, of prime importance to the beginner, that it is easy to get a set working right on this band. The interference is comparatively negligible and signals are dependable at all seasons. In addition, there is the opportunity for pleasant QSO's and rag-chewing, traffic handling, participation in Army and Navy communication work; in fact, all the joys of operating as opposed to DX hunting. It is an ideal band for learning correct operating practices and improving code speed.



A REAL BEGINNER'S VERSION

This one was built from the instructions given above by our Headquarter's Mail Clerk, Ralph Beaudin, as his first transmitter. Just to show that it is not necessary to make an exact copy of the original model, he has incorporated a few original ideas of his own. A National tuning condenser is used instead of a Cardwell and the grid coil is made plug-in by using G.R. jacks and plugs. Needless to say it works every bit as well as its forerunner.

A good way to start out is to build a set such as is described above, making the plate and grid coils for 3500 kc. A UX-210 tube should be used with about 500 volts of the nearest thing to pure d.c. it is possible to get. If for any reason such a plate supply cannot be had, some form of rectified a.c., or as a last resort, unrectified a.c. may be used. The investment in a power supply is quite an item to some of our younger members who have more eagerness to get on the air than cash to do it with. 180 volts or even less supplied by a B battery or eliminator will tide over the period between desire and fulfillment for such as these. If the UX-210 is out of reach at first, a UX-201-A may be substituted with practically as good results at low plate voltages. Some other types of tubes will also work in the set without any changes being necessary, but if the grid-filament capacity of the tube is very much different from that of a UX-201-A or UX-210 a change in the number of turns in the grid coil may be necessary. It is better to stick to the UX-210 or UX-201-A.

(Continued on page 84)

Seventy-One Rounds

The Farewell Party at W1AOZ

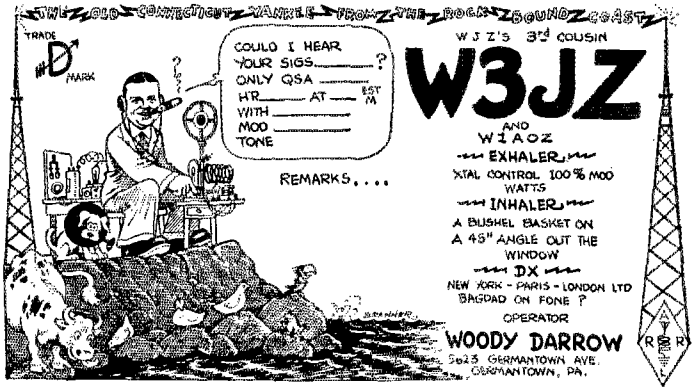
By The Old Connecticut Yankee

W1AOZ, on the Rock Bound Coast, with tears in his eyes, closed down after four years of operation with the first farewell party or Long Distance Talking Marathon officially recorded on our thermometer. (If anyone else has had one, I beg their pardon.) The Farewell Party gives an idea of what can be done with a low-power 'phone and brings to light some interesting figures on who is listening in on the amateur bands.

This party was advertised by 'phones all over the east for a week and a half in advance, and thanks are extended to those who coöperated and helped put the party over.

On the night of Sunday, September 22, 1929, at 3:45 p.m., E.D.S.T., the bender started with Round One and W8BXY, the Old Backwoodsman, as the first combatant. The party continued until 4:45 a.m., September 23rd, making 13 hours on the air. The Old Connecticut Yankee was at the mike all except 15 minutes for supper, when W1BDS did his stuff. During this time, 71 stations were worked in the following states: New England, New York, Pennsylvania, New Jersey, Ohio, West Virginia, Maryland, District of Columbia, Indiana, Illinois, Michigan, Kansas, and one station in London, Ontario. Eighty-eight letters and cards were received the week following the party; 13 came from men who expressed their intention of becoming transmitting amateurs, 20 from BCLs, 6 from "c.w." men, and the rest from 'phone men who either worked or heard W1AOZ on the night of the 22nd. Every person QSO'd or writing received one of the QSL cards shown in the cut and drawn by Martin Branner, the man who draws "Winnie Winkle."

Five telegrams were received the next day, due to the fact that the special Western Union wire to the studio was out of order. This resulted from one of the 12 people on the line getting green with envy with the result that his house burned down. But telegrams were "acknowledged" just the same, even if we did write them ourselves. As early as 5:15 we acknowledged the following:



THE OLD CONNECTICUT YANKEE'S NEW QSL CARD, DRAWN BY NEARBY MARTIN BRANNER OF "WINNIE WINKLE" FAME
The cow seems to thrive on salt water.

W1AOZ,
Waterford, Conn.
Your program coming in fine on 340 meters. Your announcer's great but when does the music start?

A. B. C. L.

W1AOZ,
Waterford, Conn.
You're one more station I won't have to worry about.

IRV. Weston, R. I.,
Boston, Mass.

At 6:15 the warning whistle sounded; 10 seconds, and the gong; end of "Round 18." During this time no stations were called, but were picked up one after another at the end of each round. At 8:03 some more telegrams "came in":

W1AOZ,
Waterford, Conn.
What are you trying to sell?

UNCLE DAVE,
Albany, N. Y.

W1AOZ,
Waterford, Conn.
Save a card for me; my wife wants something to amuse the baby.

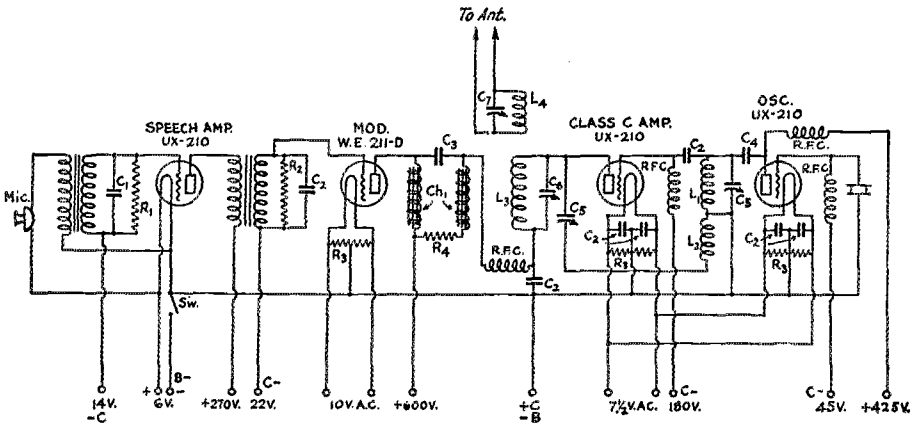
W2QN,
Pelham Manor, N. Y.

More "telegrams" at 11 p.m.:

W1AOZ,
Waterford, Conn.
Best wishes from me and the family.

HERB. HOOVER,
Washington, D. C.

W1AOZ,
Waterford, Conn.



THE CIRCUIT DIAGRAM OF W1AOZ'S CRYSTAL CONTROLLED 'PHONE

C_1 — *500-μμfd. fixed receiving condenser.*
C_2 — *2000-μμfd. fixed receiving condensers.*
C_3 — *2-μfd. filter condenser (1000 volt).*
C_4 — *1000-μμfd. fixed receiving condenser.*
C_5 — *250-μμfd. variable receiving condensers.*
C_6 — *480-μμfd. variable transmitting condenser.*
C_7 — *500-μμfd. variable receiving condenser.*
L_1 — *16 turns tubing wound 3" diameter.*
L_2 — *4 turns tubing wound 3" diameter.*
L_3 — *12 turns tubing wound 4" diameter.*
L_4 — *6 turns tubing wound 4" diameter.*
Ch_1 — *Each 30 henries.*
R.F.C. — 2500-kc. radio frequency chokes.
R_1-R_2 — *100,000-ohm grid-leak type resistors.*
R_3 — *100-ohm filament center-tap resistors.*
R_4 — *5000-ohm transmitting grid leak.*

Plate supply for modulator, Class C amplifier and oscillator uses 2 UX-281 tubes in full wave circuit and a filter consisting of a 30 henry choke and 12 μfd. of capacity. "A" and "B" substitute used on speech amplifier. Grid bias supplied by batteries.

W1AOZ,
Waterford, Conn.
Best wishes for a Happy Yom Kippur. Universal Pictures for the next year will be bigger and better.

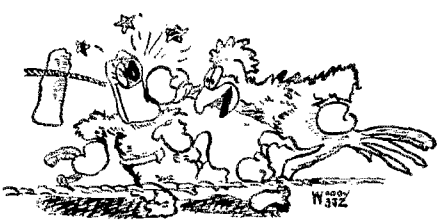
CARL SCHMEELE,
Hollywood, Calif.

At 10:17, W1AOZ reached "Round 46" with W8BJW in Cleveland, Ohio, when the official egg report was given out, summing up the entire season for the 2000 white leghorn chickens. Nearby Henry Brown and Nearby Henry White came over to the house and it was decided that the best cure for lice on chickens is one of W1AOZ's cigars in a gallon of water, the hens to be bathed in the nicotine solution.

The drawing is of W1AOZ's only rooster knocking the tar out of Nearby Henry Brown's duck during one of the rounds.

Can offer you $56.37 for the cow if it hasn't T.B.

W2FR,
Lakehurst, N. J.



W1AOZ'S ONLY ROOSTER KNOCKING THE TAR OUT OF NEARBY HENRY BROWN'S DUCK ROUND 62

(Continued on page 82)

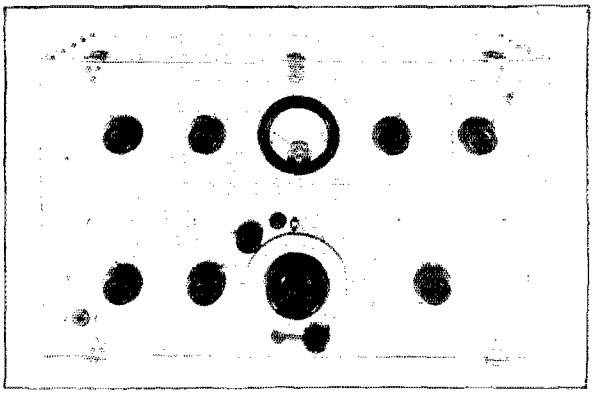
The Receiver at W1AOF

Which Incorporates New and Novel Ideas

By H. C. Wing* *and* Clark C. Rodimon, *Assistant Editor*

SOME time ago Mr. H. C. Wing, owner and operator of W1AOF, was in the office paying us a visit. He was looking around for some ideas on a new receiver he contemplated building. It seemed that the transmitter was working to perfection and that he needed a receiver to do it justice. We displayed what we had in the way of receivers at that time, which wasn't so much, as they get torn apart about as fast as they are built. We had nothing to suggest beyond a carefully-designed peaked audio screen-grid receiver. Just about this time W1MK had been telling fellows over the air of a new six-tube receiver just finished at that station. Mr. Wing, having overheard some of the remarks and enthusiastic comments, decided that he would like to build one like it. When Mr. Wing left this office he was equipped with diagrams, our well wishes and a suggestion that he use his ingenuity.

A few days ago Mr. Wing dropped in to say "hello." We were glad to see him and had quite a rag chew. Then we were asked if we would like to see a new receiver. Yes, we certainly would. The photographs reproduced in this article illustrate what we saw and why we became so enthusiastic about the receiver's features.



VIEW OF PANEL

The controls on the panel are explained in the text.

Here is a receiver that has a frequency coverage of 2000 to 15,000 kilocycles without pulling off the lid to change coils or condensers. It hits three of our amateur bands and spreads them as broadly or cramps them as closely as the operator may desire. Here is a solution to our problem of plug-in coils. Peaked or flat audio amplification may be had at will. This is all accomplished by means of knobs on the front of the panel. Heretofore we have had to put our hands inside our sets to change coils when going from one band to another and more times than not our hands came out faster than they went in because we forgot to disconnect the B supply. We allowed our wrist to become a "live" conductor across the 135 "jolts" of B battery for the screen-grid tubes. All the operator needs do with this receiver when going from one band to another is change coils by turning or twisting knobs. Simple. One merely pushes in a knob, turns it to the right about 120 degrees until a notch inside the set allows a spring to slip into place. This serves to inform the operator when the coil has been changed, so all that needs be done is pull the knob back out, into its original position, and the coil has been changed. Doesn't this seem to be an easier way of doing it? It seemed so to us and before we would allow Mr. Wing to take his receiver home we had our photographer take the "shots" of it which are reproduced here. Then, not being content with merely seeing the receiver, we wanted to hear it perform under its native roof. Accordingly, two of us bundled up one morning and drove to Greenfield, Mass., which is 65 miles north of Hartford, on the famed Mohawk Trail.

PERFORMANCE

The operation of this set is truly "different" — after one has become acclimated to it, as it were, and has become familiar with the important controls. Before we would turn the receiver off we had to change coils, tune in signals, marvel at the signal strength and lack of background, change more coils, and spread bands out. The more we tuned this receiver the better we liked it. In the hands of a capable operator who could use it to its utmost advantage, a set of this description would be all that one could desire.

One advantage over other receivers, which we noticed immediately, was the absence of back-

* W1AOF, designer and builder, 62 Pierce St., Greenfield, Mass.

ground noises of any sort. All r.f. leads have been by-passed and choked and these precautions certainly seem to be most effective.

The primary tuning condenser has two sections. One section is of extremely low capacity. Its capacity has been adjusted until it just covers our 7-mc. band with the proper coil at hand. This is with the larger section, which is shunted across the smaller section, at minimum capacity. The larger capacity is variable from the panel directly above and at the left of the main dial on the panel. This main dial tunes the smaller section of the condenser.

While listening to ordinary signals with headphones, the volume control is turned halfway back. This is a precaution which will be found desirable, even when listening to a weak signal, for if the operator forgets and starts tuning the condenser and runs across some amateur "WIZ," his ears will take an unnecessary drubbing. While tuning, everything is perfectly quiet. Then when a signal is heard it stands forth very prominently though it may be a comparatively weak signal. This importance of low background level cannot be stressed too much.

At W1AOF we tried different sizes of antennas and ended up with the proverbial "ten-foot piece of lamp cord." With this we heard the same signals we heard before but with less signal strength. Thus it can be seen that the set is sensitive. Enough on how the receiver works. Let's get at the construction so it can really be appreciated.

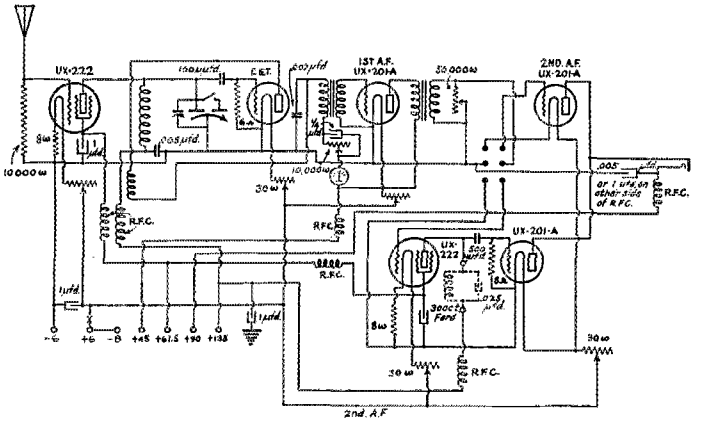
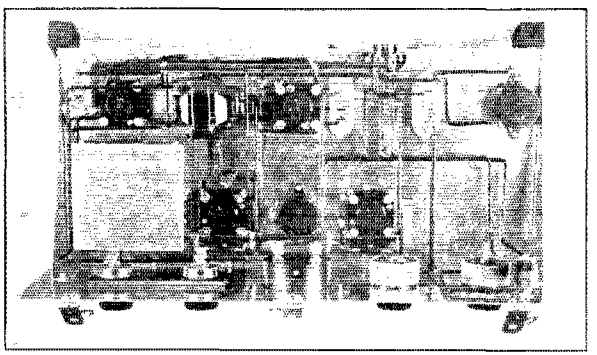


FIG. 1.—COMPLETE DIAGRAM OF RECEIVER



LOOKING DOWN ON TOP PARTITION

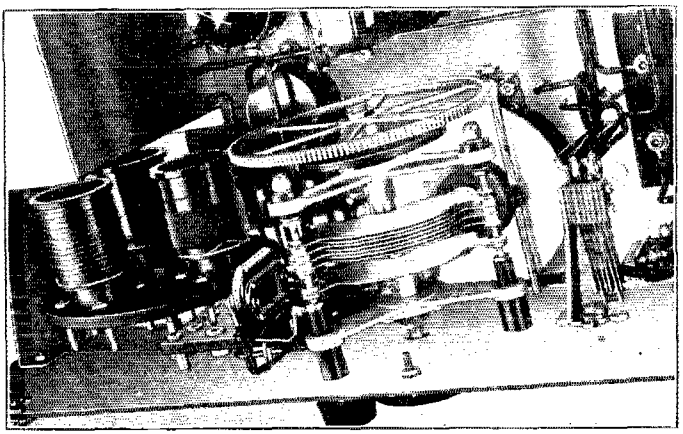
This is the audio frequency portion of the receiver. Notice the neat uncomplicated method of wiring. All wires are spaghetti insulated. The battery cable jack may be seen at the rear. The aluminum can at the left encloses the peaked unit (coil and condenser).

CONSTRUCTIONAL DETAILS

When laying out a receiver it must be decided whether or not it is going to be in a cabinet, shielded, or whether it is going to be on a series of breadboards extending into the next room. This receiver was designed to be shielded and compact. It is both. The only solution to compactness seemed to be in having a double-decked compartment back of the panel. Thus there are two compartments separated by a metal partition parallel to the top and bottom of the cabinet and about halfway in between.

The cabinet and shielding is aluminum which is used throughout. The aluminum is half-hard 14-gauge stock and a sheet 72" by 24" was originally purchased for $7. This was sufficient for all purposes. The completed cabinet is 20" long by 9½" wide by 12½" high. It is made of three pieces, two ends (separate pieces) and the top, back and bottom (one piece). The front panel is made of a piece of aluminum 20" by 12½" and is fastened to the top and bottom by Corbin hinge clasps. Two hinge clasps are used for the bottom and three for the top. This has the advantage of allowing the operator to get inside the receiver by tilting the panel forward on the two bottom

hinges. Nickeled machine screws and nuts are used to hold various corners and braces together as well as the various parts to the panel and partition. All battery connections are brought to the rear of the set and there they are attached to a battery cable and jack. A hole is drilled in the rear of the cabinet to allow the battery plug to fit into the jack.



CLOSE-UP OF COIL AND CONDENSER ARRANGEMENT

At the right may be seen the bottom of the G. R. plugs which extend through the partition from the peaked stage which is directly above. This photograph shows how the vanes on the tuning condenser intermesh. At the right of this condenser is the d.p.d.t. jack switch controlling audio selectivity.

THE CIRCUIT

The receiver uses one stage of untuned radio frequency amplification to couple the antenna to the set. A UX-222 is used in this stage. This is followed by detector and two-stage amplifier. Between the first and second stage is a switch to another amplifier which is tuned. This stage is made up of a UX-222 and a UX-201-A. Thus it may be termed a 6-tube set, though all six are never used at one time. For radiotelephone reception four tubes are used and for peaked c.w. five are used.

The detector tube is a UX-201-A and has a gridleak of 6 megohms and grid condenser of 100 micro-microfarads. Regeneration is controlled by a variable Clarostat of 100,000 ohms in the plate circuit. This is shunted by a quarter microfarad condenser.

The volume control is a 50,000-ohm variable Clarostat and is connected across the secondary of the second audio transformer.

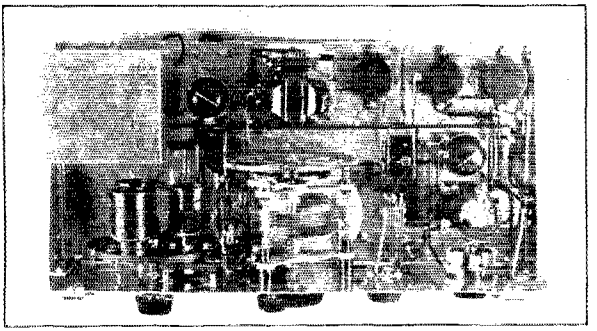
BELOW THE PARTITION

The r.f. portion of the receiver is below the partition. At the left is a metal can which houses the screen-grid antenna coupling tube with its associated apparatus which includes the 10,000-ohm antenna resistor, grid resistor and blocking condenser. Two sides of this can have "lips" along their edges and a hole is put in the center of each of these for fastening the can to the partition. Thus this stage is a shield within a shield. Directly in front of this can is the turret-head which holds three coils at one time. The coil forms are Silver-Marshall and plug into Benjamin subbase sockets which are mounted on the bakelite disk of the turret and have G.R. plugs fitted in the sockets in place of the original binding posts. This bakelite disc which forms the basis for the turret is ¼" thick and 5" in diameter. There are notches on the edge of the disc at every 120 degrees of its circumference. The reason for this will be explained later.

After the disc or turret-head is complete with its three sockets one now must fit up the bakelite holder which holds the four G.R. jacks. This bakelite holder is 2½" square and is mounted against the panel. Now one starts to get an inkling of how the arrangement works. This turret-head is connected to the front of the panel by a ¼" shaft which fits through the usual bushing in the panel. The holder of the four plugs is mounted as close to the tuning condenser as possible insuring short r.f. leads. Thus, to change coils or bands, the coil being used at the time is disengaged from the jacks by pushing in on the shaft from the front of the panel, the shaft is turned 120 degrees (to right or left depending upon which band is to be used next) and the next coil is in place. From the front of the panel one cannot tell just when these plugs are lined up with the jacks and can be engaged. Therefore these three notches which have been placed equidistant on the bakelite turret are necessary. A spring made of copper or spring brass should be attached to the mount which holds the jacks and made to ride the disc all the time. When the disc is turned

and comes to the proper position, the spring will slip into the notch thus advising the operator that the coil is ready to be inserted in its jacks.

To the right of the coils (in the photograph) is the main tuning condenser. This condenser was originally an R.E.L. type 187 variable all band tuning condenser. This condenser has two separate rotors and two separate stators. A single rotor plate and stator plate comprise the main tuning control and the seven intermeshed plates to the rear serve as a variable capacity in parallel. Originally this capacity was varied by means of a bakelite disc at the rear of the condenser. This couldn't be manipulated from the panel so a gear had to be rigged in. To accomplish this it was necessary to put in a longer shaft in the larger section of the condenser. The gear used was made up of brass stock 5" in diameter with 32 pitch. This intermeshes with a ½" bakelite gear at the bottom. This gear should be of insulating material or there will be considerable "hash" when tuning this section of the condenser. This bakelite gear is turned by means of a ¼" shaft and knob from the front of the panel. In the center of this shaft there is a worm which works into a gear which drives a drum. This drum has a scale and may be read from the front of the panel. The photograph which shows this part of the receiver in detail should be consulted. This all sounds complicated but is in reality simplicity itself once the idea of the mechanism is clear. Probably the individual builder who makes up a receiver employing the novel features set forth in this one will have ideas which are different and more suitable to his own particular desires.



BELOW THE PARTITION

This is tipped upside down for the purpose of seeing what was in the r.f. portion of the receiver. The can at the left holds the antenna coupling stage.

At the rear of this tuning condenser may be seen a G.R. 6 to 1 ratio transformer.

Several wafer-shaped cases may be seen in this under-partition view of the receiver. These are the r.f. chokes and are manufactured by Dresner. Two rheostats for the two screen-grid tubes may also be seen and are inside the cabinet because they do not require frequent adjustment.

The antenna is connected to the set by a telephone cord "jumper" which extends from the antenna coupling stage.

A double-pole double-throw jack switch is at the right of the tuning condenser. This is to select either flat or peaked amplification. A switch of this sort comes in very handy for changing from telephone to c.w. signals and should be incorporated in any receiver which has different types of amplification. Thus, also, a direct comparison of signals can be made readily and in turn, the form which is most suited to immediate needs can be used — all by a split-second turn of a switch.

ABOVE THE PARTITION

The top section contains the detector tube and audio amplifier. The aluminum can to the left houses the Ford coil and condenser which are mounted on one piece of bakelite and fitted with G.R. plugs and jacks so the whole unit is plug-in. This makes it possible to determine by comparison, with little time and effort, the practicability of any unit that happens to be in use at the time. The jacks extend through the partition into the lower portion of the receiver where the screen-grid tube (which belongs to the peaked unit) is. Of course, these plugs are insulated from the partition by means of drilling oversize holes and "floating" the plugs through the partition where they are fastened to another piece of bakelite. Four tube sockets may be seen in this view. Practically all audio frequency wiring is in this top section. What little r.f. wiring there is here is dropped below the partition. All instruments are insulated from the panel. The Weston milliammeter has a bakelite case and requires no insulating bushing.

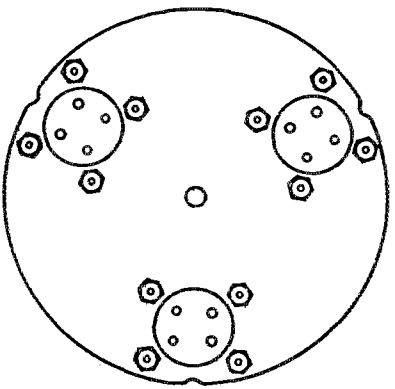


FIG. 3. — DIAGRAM OF COIL MOUNTS ON THE TURRET-HEAD

The battery cable jack may be seen at the rear. One of these is indispensable in a set of this

nature as the set is portable (even houses are portable!) save for the power supply. If the operator wants to change location he keeps the batteries connected to the battery cable and merely disconnects the cable at the set. Thus when ready to set up again all that has to be done is plug in the power supply. One of these cables makes it easy to disconnect power supply and work inside a set. To hook on the power supply again it can be done in one motion and not take minutes. Pull the connection apart and then be free to roam around inside the set without danger of having whiskers singed.

COILS

The coils are wound on Silver-Marshall forms. (Outside diameter, 1½ inches.)

Coil	*Frequency Band*	*Grid Turns*	*Wire Size*	*Plate Turns*	*Wire Size*
1	3500 kc. (80 m.)	20	20 d.s.c.	8	32 d.c.c.
2	7000 kc. (40 m.)	9	18 bare	6–8	"
3	14,000 kc. (20 m.)	4	26 "	6	"

The preceding table gives the specifications of the coils for this receiver.

It should be said here that these coils were wound to cover about 100 kc. above our bands with the condenser at minimum. At maximum this probably can be run some 200 kc. below the band. That is one great advantage of having a variable shunt capacity with the main tuning control. The amateur bands can be spread over as many degrees on a dial as one wants. In fact if this small section of the tuning condenser is not of the proper capacity to cover some frequency band in itself (without adjusting the shunt capacity) the stator plate may be moved ahead on the threaded shaft to increase the capacity or retarded to decrease the capacity. Thus, as one has by this time deduced, you can cover just about any territory you want and just as you want it. From a tuning standpoint this is a valuable feature.

(Continued on page 90)

Financial Statement

BY order of the Board of Directors the following statement of the income and disbursements of the American Radio Relay League for the second and third quarters of 1929 is published for the information of the membership.

K. B. WARNER, *Secretary.*

STATEMENT OF REVENUE AND EXPENSES	*For the three months ended June 30, 1929*		*For the three months ended Sept. 30, 1929*	
REVENUE				
Advertising sales, *QST*	$14,362.20		$15,961.84	
Newsdealer sales	10,976.20		10,250.32	
Advertising sales, Handbook	1,630.00		.....	
Handbook sales	3,238.64		4,149.79	
Dues and subscriptions	7,303.08		9,528.64	
Back numbers, etc.	847.01		369.82	
Emblems	147.26		105.41	
Interest earned	376.07		675.72	
Cash discounts earned	270.72		275.00	
		$39,151.18		$41,316.54
Deduct:				
Returns and allowances	$5,270.17		$4,147.94	
Less portion charged to reserve for newsstand returns	1,312.42		9.44	
	$3,957.75		$4,138.50	
Discount 2% for cash	289.68		284.58	
Exchange and collection charges	27.38		.82	
		4,274.81		4,423.90
Net revenue		$34,876.37		$36,892.64
EXPENSES				
Publication expenses, *QST*	$11,876.01		$11,626.56	
Publication expenses, Handbook	1,171.06		2,693.15	
Salaries and commissions	15,916.92		14,698.23	
Forwarding expenses	667.46		677.46	
Telephone, telegraph and postage	1,179.31		1,242.69	
Office supplies and general expenses	2,510.64		1,929.18	
Rent, light and heat	873.82		912.98	
Traveling expenses	2,490.80		1,423.98	
Depreciation of furniture and equipment	350.61		505.69	
Communications Dept. field expenses	78.18		174.55	
Headquarters Station expenses	156.04		117.19	
Bad debts written off	18.75		5.50	
Total expenses		37,489.60		36,007.16
Net gain or loss from operations		$2,613.23 Loss		$885.48 Gain

Coming—Operating Activities

January and February

By F. E. Handy, A.R.R.L. Communications Manager

DURING the last several months a number of amateurs have expressed increasing interest in taking part in more message handling contests and in another International-DX Contest similar to the one held in early 1928. We are entirely in accord with these suggestions. Such tests make possible many new and enjoyable contacts. Since the advocates of national and international competitions have about equal odds, we are planning to please both parties by arranging a double-barrelled plan of action at the height of our radio season in the northern hemisphere. Any operator of an amateur radio station anywhere in the United States or Canada can take part in one or both our contests. The second or February competition will be world-wide in scope. This will be the first international contest of which the A.R.R.L. is sponsor since the Washington Convention has been in effect.

Stations having truly modern equipment in line with the best practice will have the advantage and can take this opportunity to out-perform "just ordinary" installations not in line with the requirements of full operation in our present frequency bands. Our previous contests have in each case trebled and quadrupled the amount of operation normal at a particular season. Therefore it is inevitable that our coming tests will in a measure show up limitations of some of our frequency bands much more severely than do our everyday operating conditions. This will be true more especially if unreasoning amateurs center their operation on 7000 kc. during the evening hours. *Intelligent use* of *all* our bands is really the essential requirement to win. Much more than mere stations will determine who gets our certificates and trophies! Stations count, but this is primarily a question of operating skill. The best equipment made is only as useful as the ingenuity of the man behind the key can make it.

In the last tests the 14,000-kc. band proved itself best for daylight DX and for evening work until 9 or 10 p.m. The 3500- and 7000-kc. bands were fine for after-dark work over equally great distances. If we are not mistaken, 14,000 kc. will be used similarly during these next tests for work direct with remote Sections and with foreign countries during the hours when the 7000-kc. band is most congested. It is sincerely hoped that the tests will bring more amateurs a full appreciation of the value of our 400-kc. 20-meter privilege so that the work once started will continue. This highly valuable frequency territory should by rights carry a full load of DX communication work, relieving any unnecessarily crowded condition of the 7000-kc. band. It behooves us to maintain full and efficient use of *all* our valued frequency channels.

The fellows who swap messages easily and freely on the 14,000-kc. band (and perhaps the little used 1750-kc. band) will have a definite advantage over those who struggle with QRM in other bands. Those who complain of congestion in one band at hours when good work is being freely conducted without undue QRM on other frequencies will be showing merely their own lack of operating judgment. So it bears repeating that the most methodical and intelligent use of up-to-date amateur radio stations on all our different communication bands will determine the winners.

Better take a tip from those who know and start putting the station in the best of shape right away, planning operating schedules, advance tests, etc.

New contacts and friendships will be made. The first contest will put each participant in touch with others in many parts of this continent. The second will promote international friendships. Courtesy (or QSL) cards will follow in quantity if the experience of our forwarding bureau is any indication. Several months were required to clear the book of the thousands of cards that were received to be sent through Headquarters after our last tests. The contest in February will show which foreign stations can make the best record for reliable QSO with this continent. Experimental or test messages will be required to insure that actual solid two-way QSO's are made. The nature of the test is so designed that governmental regulations of different foreign nations will not prevent anyone from participating.

In the first contest the list of Sections which appears in the up-front pages of January *QST* will be followed. In the second or international affair the list of international amateur prefixes,[1] and the few remaining intermediates still serving as prefixes at the time of the contest will be strictly followed as a basis for partitioning foreign

[1] The Fourteenth Edition of the Rules and Regulations of the Communications Department (November, 1929) contains an up-to-date list of these prefixes and will be forwarded free of charge. Drop a card today if you need this.

localities. To prevent reports from straggling in months afterward, definite closing dates for receipt of logs and message files from participants are specified in the rules so that the winners may be announced as early as possible.

THE JANUARY CONTEST — JANUARY 18 TO 31 INCLUSIVE

Entries are not required in our first contest between the Sections of our A.R.R.L. field organization. Any messages transmitted complete in standard A.R.R.L. form (see the R. & R. or write us for a copy if you need it) and having a text of ten or more words may be originated or relayed to stations worked in other sections to be relayed or delivered, counting both for the contest and in the regular traffic totals in the usual manner. Participating stations will be limited for the purposes of the contest to sending but one test message to each station worked; that is, further messages can be transmitted but will not add to the contest score of either station. Two stations in contact must each transmit a message to the other station, making a score of one sent and one received for each participant, as proof of a solid two-way QSO, before any score will be counted for either. As soon as two stations have exchanged messages, the Section may be noted as "worked" and the two points entered. Messages must be kept away from the rubber-stamp type. This will call for individual originality in making up messages to be sent to each station worked. Such spurious messages will be ruled out of the count, which as will be seen, might be a serious matter affecting the total and final score provided the QSO ruled out is the *only* contact made with some Section. A method of grading logs has been designed which will *credit* the number of Sections worked in addition to counting the number of points gained by exchange of messages. As many messages can be sent to a given Section as you can work stations there, boosting the score a couple of points for each station worked. However, the final score will be obtained by multiplying the sum of all the points made *by the number of Sections worked*, by 68 if some station shall have succeeded in exchanging messages with at least one station in every Section, including his own Section. This will make our contest more interesting and general in its character. If you have never tried to work "all Sections" in a given time, this will be an opportunity. Any and all participating should be able to add to their list of Sections and states worked.

Certificates showing what was accomplished will be issued after the contest to the winning stations *in each Section*, the competition you will feel the keenest being that of the fellows in your own locality who will be out after that certificate. It will be interesting also to note the highest totals in the United States (including Hawaii, Alaska, P. I., Porto Rico, Cuba, etc.) and Canada. Sixty-eight separate records will be kept summing up the totals turned in by participating stations in the sixty-eight different Sections so that due credit can be given the most active Section organizations, too.

While stations owned and operated by members of the staff at A.R.R.L. Headquarters may participate and while the scores will count for Connecticut, the station owners and operators will be ineligible to receive any prizes or certificates as usual. The Headquarters station will transmit its regular official and special broadcasts at the usual times but whenever possible in the remaining time will participate in the contest work to add to the enjoyment and scores of those looking for QSO's.

There is no rule against making advance schedules by mail to assist in the message-handling work. All *QST* readers are equally free to start lining up such schedules now if they believe they will help. Hit-or-miss work over the air will be necessary in any case to run up a score as fast as QSO's can be made and messages put through in both directions. There will be no particular advantage in lining up a great many schedules. The main thing to be remembered is that only QSO's proved by copies of messages received *and* sent *during* the two weeks' test count. The two necessary messages with a certain station may or may not be handled both on the same day or during the same contact but they must both be handled sometime between the beginning and end of our message-handling all-Section contest. Most of the messages in our contest will probably be "originated and delivered," addressed to the station being contacted. However, when regular routine traffic happens to be in need of routing in a particular direction for delivery or further relaying, it should be handled and an extra copy made to be submitted with the report of work done in the contest. There is no excuse for routing messages in the wrong direction unless it is learned that a station can forward them by schedules or traffic routes, though. As in our last contest, off-frequency operation will result in disqualifications. The inclusion of messages with rubber-stamp texts or incomplete preambles will result in deductions from the scores of one or both stations responsible. In all cases in which Sections are smaller units than states, the name of the Section should be included in parenthesis in the preamble of originated messages to assist the award committee in identifying them. Thus a preamble might read, "Springfield (Western Mass.) W1BWY . . . Jan. . . ."

To make this discussion more understandable, an example will be given. Let us suppose at the start of the test that W7AFO (Tacoma, Wash.) works W7PP in Oregon. Each station originates and transmits a message of ten or more words

which is successfully received *and acknowledged* by the other. The score of each station will be two (one originated, one delivered in this case). Next W7AFO contacts W6NX (San Jose, Calif.) and sends him a message which he originates, for the purpose commenting on some phase of the contest perhaps. This is acknowledged but W7AFO is unable to get the message which W6NX tries to send *him* due to a local power leak which blankets everything. W7AFO tells W6NX that he will look for him at the same time later in the contest and puts the traffic, *on which a full record of the time and date and W6NX's call signal and the frequency band* has been entered properly, aside, circling the single point entered in the log, since this cannot yet be counted either as a single point or as a contact with a new Section (Santa Clara Valley). The third station worked by W7AFO is W9RR in Missouri and messages are successfully handled both ways. W7AFO has now contacted two stations in two Sections. His score (2+2) can be multiplied by two for a final result if no more work is done. But he works another Oregon station, adding two points to the score. (2+2+2) 2 would now be the final score. Another contact with W6NX is made on the last day of the contest and W6NX gives W7AFO a regular message (of more than ten words) to QSP. This makes it possible to count the Santa Clara Valley as a section worked and *now* it is possible to reinstate the message sent *to* W6NX several days before, this counting together with the message just received as two points. Should the contest end, the score would be (2+2+2+2) 3. W7AFO contacts with two different stations in his own home town, exchanging messages both ways with both stations. He thus adds four more points and has qualified as working another (his own) Section. Assume that the contest closes. All the points made in QSO total twelve in number. Stations in four sections have been worked. The score will be 12×4 or 48. Of course in actual practise, much larger scores will be expected. Canadian, Philippine, Hawaiian, Alaskan, Cuban and Porto Rican, etc., amateurs residing in any territory in which we have a field organization will take part and the lists of QSO's tabulated and turned in to Headquarters after the contest will show numbers of points obtained with stations in these Sections counting exactly as shown in our example. We expect there will be much competition between the different Canadian Sections, between Hawaiian and Philippine amateurs, etc., too.

THE RULES

1. This contest opens January 18 at 0000 G.C.T. and closes February 1 at 0000 G.C.T. Only work falling between these dates and times will be counted. (E.S.T.: Jan. 17, 7 p.m. to Jan. 31, 7 p.m.) — (7 p.m. E.S.T., 6 p.m. C.S.T., 5 p.m. M.S.T., 4 p.m. P.S.T.)

2. Participating stations must each send and receive one *complete* individually worded contest message of ten or more words with one station in any Section. As many stations as desired may be worked in each Section.

3. The *sending and receiving* of two messages constituting an exchange in both directions between the contacting stations shall be deemed proof of satisfactory two-way communication only when these messages (or copies) bearing notation of the date and time acknowledged with the call signal and frequency band used by the acknowledging station have been properly filed with the award committee at the conclusion of the contest.

4. Unless messages are composed and transmitted in the proper form with city of origin, station of origin, number, date, address, text, and signature complete and unless the text comprise at least ten words (plain language count) they shall be designated as incomplete. The award committee shall disregard such communications as insufficient evidence of satisfactory two-way communication.

5. A special log or tabulation of QSO's shall be submitted by each contestant, showing the number of Sections contacted, the number of stations contacted in each Section worked.

6. Credits: Sending a message counts one point, receiving a message counts one point, but unless a message has been both transmitted and received with each station contacted, no credits shall be entered. The total station score at the conclusion of the contest will be the product of the number of Sections worked and the summation of the credits obtained by all valid two-way QSO's. Section credits shall be the summation of the scores of all individual participating stations entering logs and message files and located in a particular Section.

7. Reports, logs, and copies of all messages for which credit is claimed must be received at Contest Headquarters from all stations except those in the Hawaiian and Philippine Islands on or before noon February 20, 1930. Entries from those outlying points must be received on or before noon March 31, 1930. Entries should be addressed to A.R.R.L. Communications Department, 1711 Park St., Hartford, Conn.

THE INTERNATIONAL TESTS — FEBRUARY 15 TO 28 INCLUSIVE

In *this* contest United States and Canadian stations must be entered in advance to be able to participate and to be eligible for certificates. Stations in all other localities need only take part on the dates announced and report results in full at the end of the tests as provided in the rules to be eligible for the certificates which will be presented to the winning stations in each locality, the localities being determined by the assignment of international prefixes. Bear in mind that in this second contest, amateurs with the prefixes W and VE will be taking part in a QSO party with stations in all other parts of the world including Hawaii, the Philippines, Porto Rico, Alaska, etc., where K and KA are used.

Stations in the United States and Canada signifying intention to take part by card or letter will each be provided with official test messages just in advance of the opening date of the contest. Unfortunately, a number of the several hundred U. S. and Canadian entries in the last tests came in at the last minute so that valuable time was lost before these stations could be equipped with full information and test messages. The closing date for entries is February 1, 1930. Requests for entries, official logs, test messages and serial numbers must be received on or before midnight G.C.T. this date to receive

consideration. Only stations entered before this time will be eligible for certificates. Just as in our first contest, there will be certificates to the best or winning foreign contact stations in *each* of sixty-four Sections in the U. S. and Canada. Of course stations in the outlying localities, Alaska, Hawaii, P. I., Cuba, Porto Rico and Newfoundland using prefixes other than W or VE will be awarded certificates based on their work *with* W-VE stations just as in the case of other remote localities.

Stations outside the U. S. and Canada will try to work as many W and VE stations as possible to get the test messages. As soon as each such station is in possession of one of the official test messages which has been acknowledged to the station from which it was received, a reply message will be prepared and assigned the exact serial number given in the North American test message. This reply contest message may be sent to *any other* W or VE station than the one from which the message bearing that serial number was taken. No address is necessary on any of the test messages but the serial number and identification group is very important for identification purposes. The return message will not count for anything in the score if returned through the same station that sent the original test message or if the text and signature duplicate a message already sent. No station can accept a reply test message bearing his own serial number combination on penalty or disqualification. Messages with incorrect or unofficial serial numbers don't count for any one. The text and signature (if any) of the reply messages must total at least ten words to count — ham abbreviations aren't words, either. Five figures or fraction thereof count as one word when sent in a group.

Just as soon as a few test messages are off the hook, the replies will begin coming back. Everyone will be looking for replies because these count for more in the scores of the stations handling them. Every station operator has an equal opportunity in this contest. Much depends on the judgment of the individual operators in determining the times and frequencies of operation of each station as well as on operating ability itself. Low power apparatus succeeds as often as high power on 14,000 kc. as was ably proven in our last international competition. Handicaps in power or in location can be overcome by careful planning. As usual a full report of our contest results will be printed in *QST* with the names and call signals of the certificate winners in each Section in the mainland United States and Canada, and in each and every remote locality in the world where amateurs participate. Reports are wanted from every station whether the score is one or one thousand, whether you live in the U. S. A. or in China. Get in on the fun and coöperate with your fellow ham by sending in your log and messages as confirmation of his score and so that we may mention your work with the rest.

In the coming tests participating stations will be limited to sending but one test message to each station worked. As many messages can be sent to a given locality as you can work stations there. This contest (we hope) will help you to add to the list of countries you have worked, and perhaps you will be able to submit your application for a WAC certificate after the fun is over.

Several different scoring systems have been tested out on logs placed on file in our last international relay party. The basic principle of both the W-VE station and the station in a foreign or remote locality receiving *one* point when the test message is acknowledged by the station in the remote locality has been followed. Also the count of *two* points for each station when a reply-contest-message is acknowledged is adhered to. A considerable amount of research has been attempted to answer the criticism expressed by several west coast stations that our last international tests employed a method of scoring that automatically discriminated in favor of east coast amateurs, due to the preponderance of European amateurs and the larger number of European countries.

Instead of awarding certificates to the high men in the national scheme of things, our contest this year will include awards to the highest scoring station in each continental section. This puts operators in the same localities in competition and is equally fair to all. It is realized that there are unavoidable differences in the ease of working certain countries from the east or from the west coast and in the numbers of active amateur stations in the different countries at any one time and so the plan to have amateurs in one section compete only with other amateurs in the same section is the only satisfactory solution for all concerned.

Nevertheless, the highest scoring stations in the national scheme of things will be of interest, so after due deliberation we are going to test a plan of balanced credits, stations in Minnesota, Iowa, Missouri, Arkansas, and Louisiana and east of these states being regarded as "eastern" stations, and all stations in states west of those named being classed as "western" stations. Stations in the Ontario, Quebec and Maritime Sections will be classed as "eastern" and in other Canadian Sections as "western." The sum of the scores obtained with different continents will be multiplied by certain arbitrary factors built up from simpler ratios by juggling east-west comparisons with a consideration of the relative difficulties of working different continents from a position on either the east or the west coast. The factors are given herewith and you will note that due to the widely separated portions of North America, it has been necessary to group

(*Continued on page 70*)

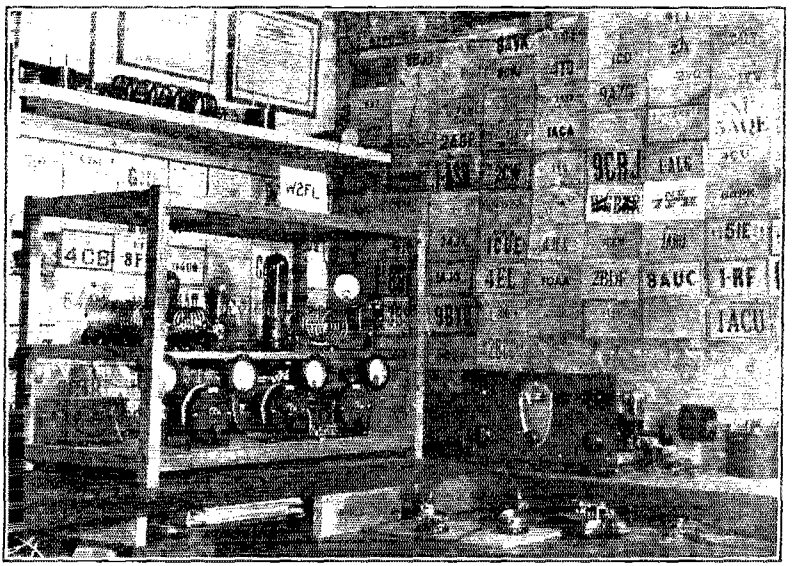
W2FL

In the March QST we detailed the opening of a station-description contest. The final published entry, in this issue, describes a second district 1929 type station. The winner of the cup will be announced in the January, 1930, issue of QST. Although the station description contest is formally closed, QST will continue to publish the best station descriptions which are received. — EDITOR.

WHEN the government regulations requiring the use of the W prefix went into effect, the call of W2FL was assigned to D. C. Akers, 181 Greenwood Ave., of East Orange, N. J. NU2BDC, the call which had been held previously, was still retained and is sometimes used. With the change in call letters came many changes in the receiving and transmitting equipment. The receiver, which up to this time was a super-autodyne set, went into the discard because it was realized that 1929 conditions required a non-radiating receiver. The transmitter, which was a tuned-grid tuned-plate affair, fed by a 500-volt, 50-watt motor-generator, and operating on the 14,000-kc. and 7000-kc. bands, began to fade into the discard as plans for a crystal-controlled transmitter were completed. Then the new set began to take shape.

The main object in rebuilding W2FL-W2BDC was to put the station on the air with a steady 1929 note. By 1929 the new equipment had all been completed, and since its completion, has been in continual use.

One of the photographs shows the general layout of the station. The crystal-controlled oscillator-amplifier transmitter, a self-contained unit, is mounted on a wooden bench at the left of the picture. The receiver, a "Chinese copy" of the four-tube screen-grid receiver described in the November, 1928, issue of *QST*, may be seen slightly to the right. The operating table, containing the log book, and two keys, is slightly lower than the benches supporting the transmitter and receiver. This lower height is more conducive to comfortable operating.



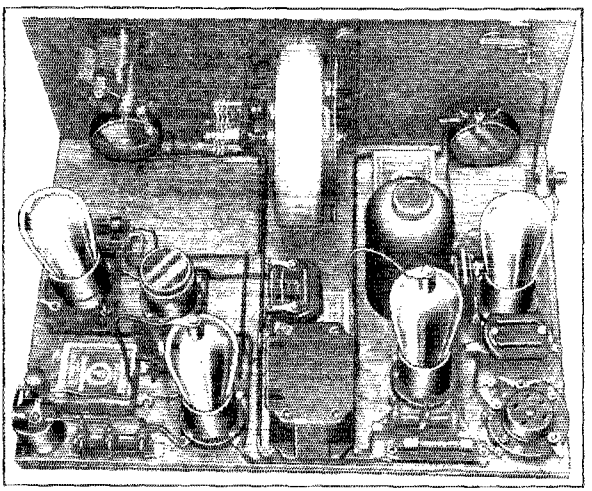
GENERAL VIEW OF W2FL SHOWING COMPLETE LAYOUT

A switch, conveniently located at the left of the operating table, permits a quick change from transmission to reception, or vice versa. The familiar QSL cards attest to the numerous stations that have heard and worked W2FL. All in all, this photograph gives a very good idea of the neatness and care with which the station has been constructed.

THE TRANSMITTER

A better view of the transmitter is given in another photo. Except for the motor-generator, the transmitter is a complete and self-contained

unit. The frame is built of 1" square hard maple, the joints of which are mortised and glued. The two shelves are also of maple, and like the framework, are given several coats of flat wax varnish finish to prevent the absorption of moisture. The



THE FOUR-TUBE RECEIVER AT W2PL

frame is completely inclosed with glass to make the transmitter dust-proof as well as fool-proof, while at the same time permitting the operator to view the operation of the transmitter as indicated by the meters.

The schematic wiring diagram is given in Fig. 2. A crystal-controlled oscillator using a UX-210 tube operating in the 1750-kc. or the 3500-kc. band is employed for operation in the 7000-kc. and 14,000-kc amateur frequency bands respectively. A feature of this oscillator is the tuned radio frequency choke coil in the grid excitation of the first frequency doubler which also uses a UX-210 tube. The final amplifier makes use of a UV-203-A tube. Fig. 3 gives a schematic wiring diagram of the transmitter. All of the inductances are made of 3/16" silver-plated copper tubing, and are mounted on General Radio porcelain stand-off insulators. The coil of the 3500-kc. tank circuit, L_1, has 15 turns of tubing 2 3/4" in diameter, and is shunted by a 500-$\mu\mu$fd. tuning condenser. The 7000-kc. tank inductance, L_2, is made of 8 turns of tubing of the same diameter as L_1, and is also shunted by a 500-$\mu\mu$fd. condenser. The 14,000-kc. tank circuit is also of rather high C construction, consisting of 5 turns of tubing 2" in diameter and is tuned by a 250-$\mu\mu$fd. condenser. The choke in the oscillator circuit consists of 50 turns of No. 28 d.s.c. wire wound on a 1" form, and is shunted by a 9-plate midget condenser. REL chokes are used throughout, except in the oscillator circuit. The blocking condensers are Sangamo bakelite insulated condensers having capacitances of 200 $\mu\mu$fd. each with the exception of the plate blocking condenser of the final amplifier, which is a Wireless Specialty Co. condenser having a break-down voltage of 7500.

A complete set of transmitting coils for both the 14,000-kc. and the 7000-kc. bands is a part of the station equipment. Two 1750-kc. band crystals, ground so as to have harmonics at the top and bottom of the 7000-kc. band are used to QSY in the 7000-kc. band, while three crystals, having fundamental frequencies of 3534 kc., 3567 kc. are used for operation in the 14,000-kc. band. This permits sufficient QSY for all ordinary purposes and yet permits of the advantages of crystal control.

Meters are provided for each stage so that the operator is always informed as to just what is taking place in each of the various circuits. A special four-pole double-throw switch is used so that one milliammeter may be used either in the oscillator circuit or in the plate circuit of the first amplifier. Thus, one plate current meter is saved. The final amplifier is provided with a plate current meter. Reference to the photograph of the transmitter will show the following meters, reading from left to right: a 0–15 thermo-ammeter-

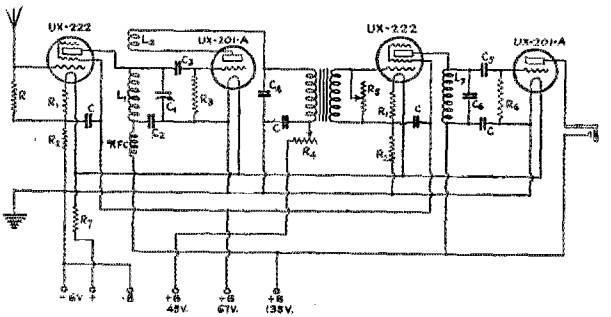


FIG. 1. — RECEIVER DIAGRAM

C — 1-μfd. condenser.
C_1 — Plug-in midget tuning condenser.
C_2 — 4000-$\mu\mu$fd. fixed condenser.
C_3 — 100-$\mu\mu$fd. grid condenser.
C_4 — 2000-$\mu\mu$fd. by-pass condenser
C_5 — 6000-$\mu\mu$fd. audio grid condenser.
C_6 — .01-μfd. audio tuning condenser.
R — 10,000-ohm grid leak type resistor.
R_1 — 10-ohm fixed filament resistor.
R_2 — 5-ohm fixed filament resistor.
R_3 — 6-megohm grid leak.
R_4 — 50,000-ohm variable resistor.
R_5 — 200,000-ohm variable resistor.
R_6 — 8-megohm grid leak.
R_7 — Filament ballast resistor.
L_1 — Tuning inductance.
L_2 — Tickler.
L_3 — Secondary of Ford spark coil.

for the tank circuit of the oscillator; a 0–1000 d.c. milliammeter; a 0–15 a.c. filament voltmeter which is provided with a double-pole double-throw switch as shown in Fig. 1 for measuring the filament voltage of the 210's or the 203-A; a 0–200 d.c. plate milliammeter for the final amplifier, and finally, mounted above the antenna coil and condenser, L_4, C_4, another 0–1.5 thermo-ammeter. Weston meters are used thruout.

A General Radio, amateur band, frequency meter is used occasionally for checking the old transmitter formerly operating under the call of NU2BDC, although its use is hardly essential since the transmitter is controlled by crystal.

POWER SUPPLY

The filament current for the two UX-210 tubes is taken from a step-down toy transformer which, because it is not provided with a center tap, requires the use of the resistors R and the by-pass condensers, C_6. The filament of the UV-203-A tube is also supplied by a toy transformer, since these transformers serve the purpose and are cheaper than those designed particularly for filament heating.

Biasing is done throughout with C batteries, as these have been found to give much better results than bias obtained by the IR drop of a resistor. The bias voltages are rather high to keep the tube from becoming too warm since a tube operates rather inefficiently when used as a frequency doubler. The grid bias voltage is approximately 15% to 20% of the plate voltage used. This high grid bias does not seem to impair the output any,[1] and gives the transmitter more stability than when low grid biasing voltage is used.

A 1000-volt, 450-watt Esco motor-generator is used to furnish the plate power to the tubes, and is shown in one of the cuts. The motor generator is mounted by spring suspension in a heavy wooden frame to prevent vibration. Heavy coil springs are used for suspension, while lighter ones keep the unit on an even keel. Voltages of 600 and 1000 may be obtained from the generators. A 15,000-ohm resistor is placed in series with the 600-volt lead to drop the voltage down to 300 for operating the crystal oscillator. The generator supplies 600 volts to the plate of the first frequency doubler amplifier. In the upper left-hand corner of the generator photo may be seen a fiber strip, supported by stand-off porcelain insulators carrying the four jacks for the 1000-volt tap from the generator. Two of these plugs are connected to the oscillator amplifier transmitter, while the other two plugs are connected to the old tuned-grid, tuned plate transmitter formerly used at NU2BDC. The high voltage leads are equipped with insulator plugs so all that is required to supply plate power to either transmitter is a change of these plugs from one set of jacks to the other. The 15,000-ohm resistor used to drop 600 volts to 300 volts may be seen immediately above these four plugs. The starting box for the motor may be seen in the center of the cut, while the fused double-pole single-throw switch may be observed mounted on the right-hand supporting frame.

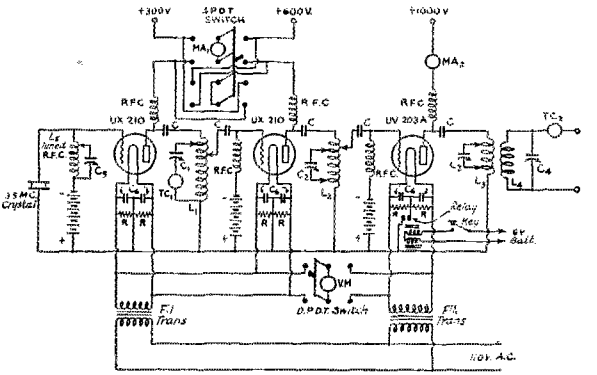


FIG. 2. — TRANSMITTER DIAGRAM

RFC — Radio frequency choke coil.
L_1 — 15 turns of 3/16" copper tubing, 2¾" in diameter.
L_2 — 8 turns of 3/16" copper tubing, 2¾" in diameter.
L_3 — 6 turns of 3/16" copper tubing, 2" in diameter.
L_4 — 6 turns of 3/16" copper tubing, 2" in diameter.
L_5 — 50 turns of No. 28 D.S.C. wire on 1" form.
C — Plate blocking condensers.
C_1 — 500 μμfd.
C_2 — 500 μμfd.
C_3 — 250 μμfd.
C_4 — 250 μμfd.
C_5 — 9-plate midget (capacity about 50 μμfd.)
C_6 — Filament by-pass condensers.
R — Filament center tap resistors.
VM — Filament voltmeter.
MA_1 — Plate current milliammeter for UX-210 tubes.
MA_2 — Plate current milliammeter for UV-203-A.
TC_1 — 0-1.5 ampere thermo-ammeter.
TC_2 — 0-1.5 ampere thermo-ammeter.

THE ZEPP ANTENNA

The antenna used at W2FL is the familiar Zeppelin two-wire feeder type. The flat top is 30 feet above the ground and is 57 feet long. The feeders are 6 inches apart and are about 28 feet long. These are inductively coupled to the plate coil of the amplifier through an 8-turn coil, 2 3/4 inches in diameter and shunted with a 140-μμfd. condenser.

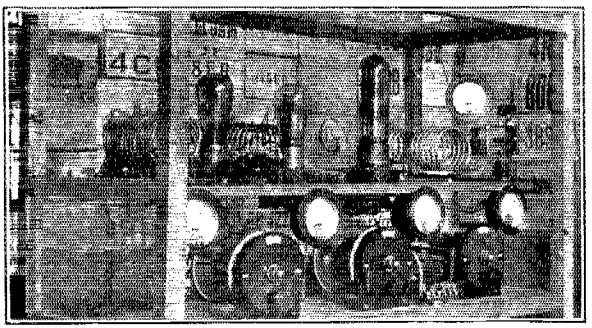
There has been considerable argument as to the exact operation of this antenna in the 14,000-kc. band as a true two-wire fed Zeppelin antenna. But 57 feet is the maximum length which the back yard at W2FL will give up to the antenna and as results are the prime consideration there seems to be little use in courting gray hairs to figure out how an additional seven feet of wire on the far end of the antenna might be added to

[1] See, "Vacuum Tube Amplifier Definitions" by Dart and Atwater, page 29, September, 1929, *QST*.

satisfy the more scientifically inclined friends of W2FL.

THE RECEIVER

Most readers will recognize the receiver immediately as being a copy of the four-tube screen-grid set described in *QST* last November. The 14,000-kc. band is covered by a rotation of 70 degrees on the dial with a 5-plate midget tuning condenser and a 5-turn grid coil. The other bands also, are spread over a large part of the dial. The receiver, a wiring diagram of which is given in Fig. 1, is extremely sensitive and is practically noiseless. Signals from all over the world come in with a gratifying punch, VKs being "among those present." The present receiving antenna, which gives better results than any other antenna which has been used, is a vertical wire, 20 feet long.

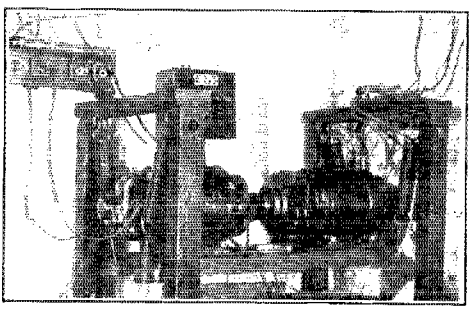


THE OSCILLATOR-AMPLIFIER TRANSMITTER

The transmitter is self-contained, except for the plate supply generator, in the maple frame and is entirely enclosed in glass.

OPERATION

The operation of the station is simple. The operating switches for both the transmitter and receiver are very conveniently placed at the left of the operating table, and may be seen just behind the phones. A slight movement of the left hand makes all the changes necessary to change from receiving to transmitting conditions. Although activity is primarily confined to operation in the 14,000-kc. band, it requires only a short time to shift the transmitter to the 7000-kc. band. The same antenna is used for 7000-kc. as well as 14,000-kc. operation, and QSY within either band is accomplished by changing crystals and slightly retuning the transmitter. The arrangement is found to be very convenient.



THE 1000-VOLT GENERATOR IS WELL MOUNTED TO REDUCE NOISE AND VIBRATION

The absence of a filter on the generator gives a very distinctive note which is slightly modulated and easy to identify. Judging from the reports that arrive by card, radiogram, and word of mouth, the note is certainly all that can be desired. Reports of QSA5 have been consistently received from stations in the middle west, with an occasional QSA4 report from west coast stations. Twenty-six countries have been worked and DX reports have ranged from QSA3 to QSA5, with the majority of signal audibility reports, R9.

The radio conditions for 14,000-kc. operation have been exceptionally good the last few months and little QRM, except from automobiles, has been encountered. The real pleasure comes when one can comfortably finish a foreign QSO. An incomplete QSO is annoying and tends to make an operator careless. The sharp steady note of W2FL's signals permit 90% of all foreign contacts to be satisfactorily completed.

Technical Information Service Rules

Please observe the following rules when writing the Technical Information Service:

1. Before writing, consult the *Radio Amateur's Handbook* and your files of *QST*. Nine times out of ten you will be able to find the answer in *QST* or the Handbook.

2. If reference is made to the *Handbook*, mention the page and the edition to which you refer. If reference is made to *QST*, mention the page and issue you have in mind.

3. Number the questions and make a separate paragraph for each question. Make the questions as brief and as direct as possible.

4. Give as much information concerning the operation of your set as possible so we can at least guess where the trouble might be. Don't simply tell us: "My set won't work — what's the matter with it?"

5. Write on one side of the paper only, and use a typewriter if possible.

6. Make diagrams on separate sheets of paper and fasten them to your letter with a pin or paper clip. All diagrams should be schematic — do not send pictorial diagrams.

7. Print your name and address in full on each sheet of paper. A return address on the envelope

(*Continued on page 90*)

The Experimenters' Section

THE UY-227 AS A DETECTOR TUBE

MICROPHONIC tubes are a serious source of annoyance in receivers, especially in those receivers which require the use of a headset. These noises are due principally to vibration of the electrode elements, and the various elements may have separate and entirely different natural frequencies at which they become resonant. Moreover, the tubes with the small elements are much more

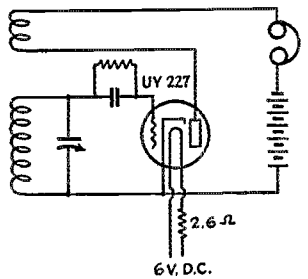


FIG 1. — THE UY-227 TUBE AS A REGENERATIVE DETECTOR

pronounced in microphonic noises than tubes with larger and better supported elements, as any user of a UX-199 or a UX-222 tube will testify.

The use of the UY-227 tube is therefore suggested by Mr. Francis Underwood, W9JN, for high frequency receivers to get rid of microphonic noises. The UY-227 tube has the same operating characteristics as the UX-201-A, except for the filament or heater voltage and current. When using the UY tube it is not necessary to

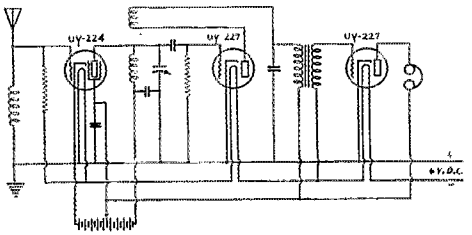


FIG 2. — THE USE OF HEATER TYPE TUBES IN SERIES AND METHOD OF OBTAINING GRID BIAS FROM THE IR DROP IN THE HEATER WIRING IS INDICATED

tune slowly or to avoid bumping the operating table in order to operate the receiver successfully. The tube can be operated from a six-volt storage battery by inserting a proper resistor to pass 1.25 amperes, as shown in Fig. 1.

If more than one tube is to be used, the tubes may be connected in series, and with the series arrangement, three tubes may be operated from a six-volt storage battery. The voltage on the heater of the indirectly heated tubes is not critical and as these tubes will operate successfully with as low as 1.5 volts across the heater terminals, the storage battery can be used until it is rather thoroughly discharged.

It should also be kept in mind that the UY-224 tube has the same heater characteristics as the UY-227 tube, and any combination of these three tubes can be operated either in series or in parallel from a storage battery. The tubes of the indirectly heated type may even be operated from alternating current, and although W9JN finds that "the slight modulation by a.c. is annoying" our experience has been otherwise. As a matter of fact, a high frequency receiver operating at frequencies as high as 16,000 kc. and using two UY-224 tubes and one UY-227 tube has been used in West Hartford for several weeks and has given very satisfactory results when operated from the 110-volt a.c. line.

When heater type tubes are operated in series from a d.c. source, the grid battery may be eliminated since the proper bias may be obtained from the *IR* drop across the heaters as shown in Fig. 2.

PUSH PULL ANTENNAS?

It is somewhat of a problem to couple the usual single wire fed antenna to a push-pull oscillator or amplifier and still maintain the effectiveness of the push-pull arrangement. After using up several pencils trying to figure out a method of hooking a voltage-fed Hertz antenna to a push-pull transmitter and keeping both tubes loaded, W9CRD decided that the best way out of the difficulty was to put up a "push-pull" antenna!

The antenna at W9CRD uses two 7140-kc. Hertz antennas spaced 6 inches apart. The feeders are clipped an equal distance apart from the center tap on the tank inductance. During the first fifteen days the antenna was up, W9CRD worked 84 stations in 18 countries. It would seem that the six-inch separation between the two antennas would not give sufficient phase displacement to make a very effective radiating system, but the antenna worked surprisingly well in this particular installation.

NOTES ON A VOLTAGE FED ANTENNA

The July, 1928, issue of *QST* described a simple but practical voltage-fed antenna system for operation on several frequency bands. The par-

ticular circuit is shown in Fig. 3, and should be very easy to operate. For some reason or another this type of antenna, originally described by Mr. Joseph Fuchs has not been very popular with amateurs and little has been heard of it. We have a letter from H. E. Hurley, W6CKS who reports the following success with this type of antenna.

"At Livermore, California, I used the Fuchs antenna idea with a tuned-grid tuned-plate semi-

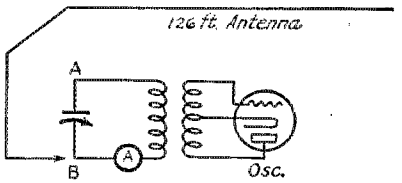


FIG. 3. — THE VOLTAGE FED ANTENNA SYSTEM
The antenna tap should be tried at both positions A and B, as the antenna will be found to radiate better with the antenna connected to one of these places.

portable set using a UX-112 tube, and B eliminator for power. The antenna was as follows: 25 foot indoor lead-in to set, a 35 foot rise at 45° and the balance, flat-top. The overall length was 126 feet. Operation was in the 7000-kc. band only. The antenna ran almost east and west except for the lead-in, and directional effects were very noticeable — the north strong, south weak.

"Signals were apparently stronger on 7000 kc. in the a.m. than in the p.m. Working the same station in Oregon about 800 miles away, signals would be reported R6 in the morning but at 7 p.m. they would be reported R3 to R4. It was found that the end of the tank to which the antenna was hooked made a world of difference. When hooked to one side of the tank circuit there would be plenty of current in the circuit but the signals didn't get out. On hooking the antenna to the other side of the tank circuit, the tank current was half as much as before but signals got out very well."

A CAPACITY BRIDGE FOR THE AMATEUR

By Walter Doyle*

Many amateurs have built up their own condensers for the transmitter but chances are ten to one that they do not even know the capacity of any condenser they have made. A handy instrument for the operating room is a capacity bridge. With one, the testing of antenna and condenser capacities becomes a comparatively easy matter and the amateur has the satisfaction of knowing he is right.

The cost of constructing such an instrument is within the financial reach of most amateurs. The parts can usually be found around the station and mounted and connected as shown, will be an asset to the testing equipment of the station.

* 157 S. State St., Marion, Ohio.

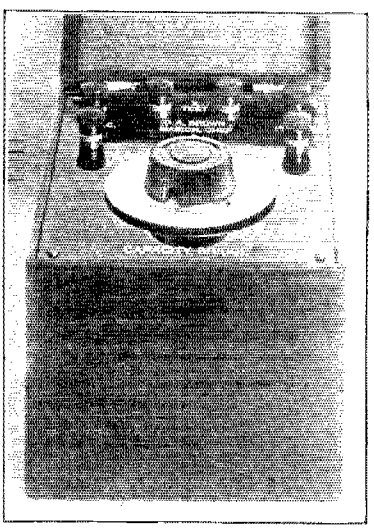
The parts used are:

1 General Radio Type 247-H variable condenser. (This is the one that has the semi-circular plates and is furnished with a dial reading micro-microfarads.)
1 Panel 5½ x 5 x $\frac{3}{16}$ inches.
1 50,000-ohm fixed resistor of the grid leak type.
1 50,000-ohm Clarostal or similar type variable resistor.
Necessary screws and binding posts.

Mount the parts as shown in the photograph, and connect as shown in Fig. 4. The headset should be of the high resistance type, preferably around three or four thousand ohms resistance.

After the parts are all mounted and wired, you are ready to calibrate the instrument.

Across the posts marked "X," connect a small fixed condenser of 500 $\mu\mu$fd. capacity. This condenser must be of good grade, such as Sangamo



FRONT VIEW OF THE CAPACITY METER

or General Radio, as it is the standard to which the bridge is calibrated.

Turn the variable condenser "C_1" to full capacity, that is, plates clear in. Then connect the 110-volt a.c. 60-cycle current supply to the posts marked such.

With the current connected to the instrument, you will hear very distinctly in the headset, the hum of the line current. By turning in the variable resistor "R_2," the hum will gradually diminish. Listening closely you will note a point where the hum fades out, this point is the balance point of the circuit, and the resistor should be fastened securely to prevent slipping,

as slippage to either side of the balance point will again introduce the hum.

Now remove the small fixed condenser across "X" and you are ready to measure unknown capacities.

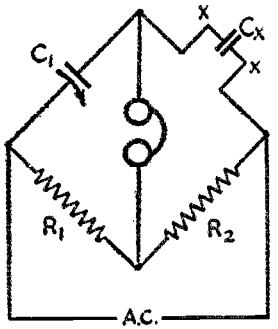
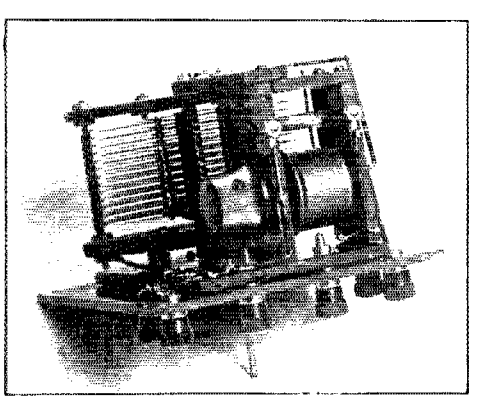


FIG. 4. — THE BRIDGE DIAGRAM OF THE CAPACITY METER

The resistance of R_2 is adjusted to be equal to the fixed resistor, R_1. The condenser C_1 is the General Radio type 247 with calibrated dial. C_x is the condenser of unknown capacitance which is to be measured. The capacitance of C_x will be indicated directly from the dial reading of C_1 when the hum in the headset is balanced out. If available, a 1,000-cycle a.c. source is much better than the 60 cycle source.

Connect the unknown capacity across "X" and with the bridge connected to the a.c. supply, turn the variable condenser in until the hum in the receivers is at a minimum and note the reading on the dial. This reading is the capacity of the condenser under test.

For the information of those who do not use the General Radio condenser, the capacity readings on an arbitrary scale of 0–100 will be equally divided thus:



REAR VIEW OF THE CAPACITY METER SHOWING MOUNTING OF PARTS

100 on the dial .0005 μfd.
75 on the dial .000375 μfd.
50 on the dial .00025 μfd.
25 on the dial .000125 μfd.

The readings between these figures are also equally divided, provided the condenser used is of the semicircular (straight line capacity) plate type.

These values of capacity hold for the condenser mounted in the round metal cans which G.R. makes, and will not hold exactly for the condenser mounted as shown. However, the accuracy of calibration is not greater than 2 per cent, so that this difference may usually be neglected for amateur purposes.

This type of instrument can be used only to measure capacities not over or below the maximum and minimum capacities of the condenser "C_1". For those who would like to check higher capacities, another instrument can be built using the same resistor values but substituting the variable condenser "C_1" with one of a higher capacity value.

The balancing procedure is the same and the capacity readings are also direct from scale.

With the above described bridge, the amateur can measure antenna, condenser and wiring capacitance as well as many other tests that involve the use of a capacity bridge with results that will enable him to know how he stands.

R. F. CHOKES

Most experimenters who have done any high frequency communication have run into some difficulty in keeping currents of proper frequency flowing in their proper paths. The radio frequency choke is still with us, and represents the same problem as ever. We are including three notes on radio frequency choke coils, and are concluding this month's X-Section with a reference bibliography on radio frequency chokes. The following articles on chokes are representative of the type of material we shall be able to use in this section. This section is maintained for the benefit of all experimenters. If you have a few notes which will help out someone else, let us hear from you.

The chokes used at W9ADS were constructed in the following manner: Old style non-renewable fuses were secured from the local power plant, and boiled in paraffine for an hour. For a 7000-kc. choke a tube five inches long, five-eighths inch in diameter and with sixteenth inch walls was used. This was wound with No. 36 d.c.c. wire for a length of three and one half inches. The winding was then coated with a paint made of celluloid and collodion. Suitable binding posts were provided.

The performance of these chokes was surprising. The first choke built was used in a small transmitter using a UX-210 and was very satisfactory in operation. It was then tried in a transmitter using a UX-852 with a plate current of

150 milliamperes and was equally satisfactory. This high current carrying capacity of the No. 36 wire seemed rather surprising so it was taken over to a neighboring station which used a pair of UV-204-A's drawing 650 mils. The little choke carried the load with no heating to amount to anything and improved the note of the transmitter indicating better choking action than the choke which it replaced.

This large transmitter has burned out chokes using as large a size of wire as No. 24 so that it is no doubt the circulating currents that do the damage which are not present in a choke using No. 36 d.c.c. that is efficiently designed.

Having constructed a flat top for 7160 kc. from the information given in the September, *QST* article by L. G. Windom may I say that it works *fine? The radiator is thirty-five feet above ground.* It is located in the thick of a lot of BCL antennas. There is something behind this writing that wants to come out so here it is for the benefit of the rest of the gang.

Before changing antennas, a single straight wire, voltage feed Hertz was employed without good results. Therefore the reason for trying to find a better radiator. However, the antenna gave some satisfaction and it was not uncommon to have some of the gang say crystal signals.

The beautiful new antenna was made and erected with great care. Now for some real good work and results, thought the builder. How badly I was mistaken! The tuning was easy, stations came back with reports strong raw a.c. sigs. Some, a little more encouraging, said r.a.c. signals. There was not a change made in the transmitter, but something had to be done now, as a perfectly good m.o.p.a. should not act in this manner under a different type of aerial. A monitor was borrowed, and the trouble run down. It was found that with a good radiator it is essential to have the rest of the set in good condition. The trouble was located in the choke coils. It was necessary to change the number of turns from 150 to 180 turns in both the oscillator and amplifier. Reports are now again, good d.c. to crystal signals.

In addition to the chokes another point was brought out concerning the place of contact of the feeder to the plate inductance. If a high "C" tank circuit is used in the power amplifier it will only be necessary to use one turn of the coil. If however, the tank is low C it is necessary to use three or four turns. The place of contact will also have a slight effect on the note and on the plate current.

—*Chris E. Hobson, W8BWP*

The radio frequency choke is one of the greatest of the small problems with which the experimenter has to deal. Especially in short wave work is the choke critical. The writer has been doing quite a bit of work on a new screen grid set, and designed and built one of the chokes described to fill a long felt need. It worked so well that two more were built to make a complete set for the screen grid set. The construction of the choke is shown in Fig. 5.

A spool, five small brads, two soldering lugs, a strip of phosphor bronze, some Empire cloth,

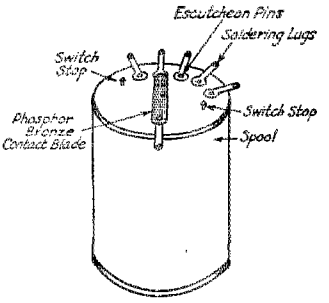


FIG. 5.—TAPPED RADIO FREQUENCY CHOKE SUITABLE FOR HIGH FREQUENCY EXPERIMENTAL WORK

shellac, and No. 30 wire are all the materials needed. First locate a point about one quarter inch from the edge of the hole in the spool and using that as a pivot, draw an arc with a radius of about three-quarters inch. Along this arc mark five points, taking care that each is over the main body part of the spool. With a small drill, drill holes at each of these points at such an angle that they will come out on the inside of the flange of the spool. Now wind on No. 30 d.c.c. wire in a haphazard fashion, making taps at the 1st, 100th, 175th, 250th, and 325th turns, making each tap in the form of a loop and drawing each loop through the holes in consecutive order.

Now drive a brass escutcheon nail or small brad into the body of the spool at each hole. To prevent splitting, it is well to drill a hole straight into the body of the spool before driving in the pins, the holes being of a diameter slightly smaller than the pins. Scrape the insulation from the wire close to the head of the pins and take a turn around the head of each before driving it home. A drop of solder on each insures permanent connections. Cut a strip of phosphor bronze $\frac{3}{8}$" x $1\frac{1}{2}$" and drill a hole in one end. The other end may be crimped to form a handle. Drill a small hole to take a wood screw at the point used for the pivot of the arc. Place a soldering lug under the switch blade and secure it with the small brass screw, leaving it loose enough to turn and yet fit snugly. Wrap a turn of heavy empire cloth around the spool snugly, give it a coat or two or shellac and the job is done. The choke may be mounted by drilling a counter-sunk hole nearly through the spool and fastening it down with a wood screw or small bolt, placing a small washer

(*Continued on page 88*)

I.A.R.U. NEWS

Devoted to the interests and activities of the

INTERNATIONAL AMATEUR RADIO UNION

President: H. P. MAXIM *Vice-Pres.:* C. H. STEWART *Secretary:* K. B. WARNER

Headquarters Society:
THE AMERICAN RADIO RELAY LEAGUE, Hartford, Conn.

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Experimenterende Danske Radioamatorer
Nederlandsche Vereeniging voor Internationaal Radio-amateurisme
New Zealand Association of Radio Transmitters
Norwegian Radio Relay League
Radio Society of Great Britain
Reseau Belge
Reseau Emetteurs Francais
South African Radio Relay League
Wireless Institute of Australia

Conducted by A. L. Budlong

A MAJORITY vote of the member societies of the Union has been received on the matters put forth in the June calendar, and as a result Union Headquarters is happy to announce that the following additional societies are now full-fledged members of the I.A.R.U.:

New Zealand Association of Radio Transmitters (N.Z.A.R.T.) P. O. Box 779, Auckland, N. Z.

Norwegian Radio Relay League (N.R.R.L.) Voksenlia per Oslo, Norway.

Experimenterende Danske Radioamatorer (E.D.R.) 5 Holmens Kanal, Copenhagen, Denmark.

All old members of the Union join in extending a hearty welcome to the new trio. The three organizations are well known as active and energetic amateur societies in their respective countries, and it is also worth mentioning that amateur radio flourishes in each of those countries.

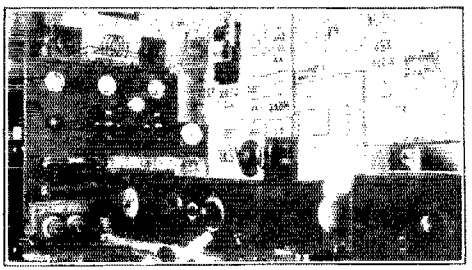
At the same time the three new societies listed above were voted into the Union, it was voted to drop from membership the long-inactive sections originally organized in Argentina, Brazil and Switzerland. This action was taken because of the fact that the elementary sections created in those countries some four years ago have never complied with the requirements of the Constitution by organizing themselves into independent and self-supporting national societies, and furthermore have neither corresponded with Union Headquarters nor participated in any of the voting for the last few years.

Union Headquarters wishes to point out that it will be pleased, however, to consider applications for membership from any bona-fide national amateur society in any of these countries.

In this connection it is interesting to note that the Swiss amateurs have already organized themselves into a national society, and even now have an application for recognition of their new society as the Union member for Switzerland. In Brazil, too, we hope it will not be long before a national society is recognized. Mr. Vasco Abreu made a personal visit to Headquarters this past summer, while visiting the States, and expressed the intention of getting the amateurs of Brazil together on his return.

The next calendar of the Union will be sent out about the time this appears in *QST*, and it is hoped that at least two additional foreign societies will be proposed for membership at that time. Interest in the Union has increased considerably since the adoption of the new Constitution, under which, it will be remembered, individual membership was abolished, and a membership of national societies created instead. The Secretary of the Union will be pleased to enter into correspondence with foreign amateur associations desiring to affiliate themselves with the I.A.R.U.

Notice the new heading? We hope you like it. Perhaps it gives our readers just a little clearer idea of what the I.A.R.U. is, and what it is all about. We have a real international union of ham societies now; amateurs all over the world can be proud of the accomplishment. A world-wide association of real, live national amateur organizations — now in a healthy condition, and growing stronger every day. What a flight of imagination this would have represented on the part of the average amateur ten years ago, when international contacts were unknown, c.w. just emerging from the experimental stage, and when the amateurs of one country hardly knew that there were any other amateurs anywhere in the world! Yet here it is, and we think it not at all unusual!



THE STATION SHOWN ABOVE IS THAT OF G6UH, owned and operated by Harry E. Smith, of Hackbridge, Surrey. The transmitter is a t.p.t.g. having an input of about ten watts from 250 volts of storage battery. In spite of this low power, G6UH has, on 14,000 kc. mostly, worked everything in the U. S. except the 6th and 7th Districts, and also South America, Africa, Asia and most of Europe. The station is entirely home-made, with the exception of the receiver, which was originally G6BY's.

We suppose there's a moral or something somewhere in that.

We got a real kick the other night when we talked direct with Warner at his hotel room at the Hague over the transatlantic 'phone; that "$75-for-three-minutes" feeling! Now we can high-hat all the neighbors. The best part of it is that we enjoyed all the nice part of that "$75 feeling" without any of the bad after-effects. It seems that the Netherlands Government very kindly extended the facilities of the T/A 'phone to the U. S. delegates. Rather sporting of the Dutch.

As for the conversation, we'll let "KB" tell the story of the conference — though we may mention that things were reported as going nicely.

The Czechoslovakian Ministry of Posts has written us that it intends to get out official amateur regulations as soon as the Hague conference is over. More progress!

Last month we stated that by this time we'd know whether or not our pleas in the October issue produced any results. Well, we do know, and the upshot of it is that we have a blissful and expansive feeling toward the world in general and certain hams in particular.

With respect to the "best times for DX" matter, we acknowledge with thanks the very kind reports of G6ZR and W5AFB, portions of which appear below. In addition, other reports have come in, too late to make the column this month, but assuring a continuance of the feature to next month. These will be mentioned at that time.

W5AFB sends in a table carefully averaged from his 14,000-kc. contacts over the last 20 months, and as a result finds that his figures check almost identically with the dope given in the October table (Central States) for South America, Australia and South Africa. He agrees almost exactly with that list for New Zealand, finding good QSO's from 0400 to 0600 GCT, but notes his best single time as 0500. Better make a note of it, you fellows in the central part of the country. He also tabulates European QSO's somewhat differently: 2300–0100 and 0300–0800, with 0000 and 0500 as the best single hour in each case. He also adds a time for Hawaiian QSO's — straddling 0430 GCT.

Ponting, of G6ZR, did a bully job by sending in lists for both the 7000-kc. and 14,000-kc. bands, tabulated for seasons. His tables for this time of the year (November, December, January and February) are as follows:

	7000 kc.	*14,000 kc.*
North America (W1, 2, 3, 4 & 8; VE1 & 2)	2230–0800	1530–2100
North America (W5, 6, 7 & 9; VE3, 4, 5)	0400–0730	1730–1830
		0530–0930
South America (E. & S. E.)	2130–0200	1930–2200
" " (W. & N. W.)	0400–0600	2300–0200
Asia	1900–2230	1530–1800
Africa	1900–2230	1800–2130
Oceania (Aust. & N. Z.)	1930–2030	1000–1500
	0500–0830	0630–0900

Remember that while this is a table telling the best times for Britishers to work the various continents listed, it also works the other way just as well; it tells the fellows in the U. S., etc., the best time for them to try to hook Britishers.

Remember, too, that all times are GCT (0000 being midnight), and that for EST you must subtract 5 hours; for CST 6 hours, for MST 7 hours, and for PST 8 hours.

Well, more of these lists again next month. Incidentally, does the gang generally want this continued as a regular monthly feature of this department? Drop a card or message letting us know.

And now about the other request, which was for foreign schedules to relay I.A.R.U. Section reports. We got three offers of help, up to this writ-

(Continued on page 58)

Calls Heard

VK2RX, 82 Gibbes St., Rockdale, N. S. W., Australia

14,000-kc. band

w1anz w1cjc w2ws w2arb w2ai w2abu w2bjg w2dp w2ws w3afu w4ajk w5bek w5ix w5ql w6awz w6bam w6bto w6cqg w6cut w6dbo w6dln w6dpa w6dml w6dow w6fh w6tj w7akv w7ga w7hn w7nr w8apb w8dsi w8gz w9cxx w9dkg w9emr w9fbv w9fxj w9fgg ct1aa ct1bx ce1av f8fc f8fk f8fj f8jl f8jf f8mrg f8zx d4uak d4uj gorb g6wt oa4o oa4q oa4s oz7y pk1bh su8rs uosx

Heard by Steamer Lydonia, WSQ, while off Delaware Capes, Operator, Ed. Kampf

(September on 7 megacycles)

ear9e hc1fg kdv5 ti2hv ve4gq ve4as oo1rj vk2wj (fone) vk2ij vk5bj vk2hc vk3ax vk2no vk5am vk5aw vk5hg vk5mg zl1ft zl3em k6ne k6cjs k6bra w6ew w6mn w6ft w6pw w6st w6wx w6zkw w6ate w6acz w6aay w6bwf w6bvy w6bam w6bpo w6brz w6cmm w6cto w6ceww w6clk w6cui w6cfk w6dzi w6dni w6dak w6dzx w6dpi w6dss w6ejf w6eog w6eke w6ebv w6ebv w6ebm w6ebz w6eii w6edo w6eeo w6egk w6ert w6edv w6eos w6epz w6eib w7ea w7it w7nr w7om w7aiq w7agn w7alm

VK3CX, Alan G. Brown, 8 Mangarra Rd., Canterbury, E. 7, Victoria, Australia

14,000-kc. band

w1anz w1bwx w2amh w2amr w2bjg w2fp w2jn w4mx w5aew w6ave w6bax w6cte w6czm w6dcv w6dpa w6dzm w6ehp w6ekw w6kj w6vz w7adb w7afo w7akv w7anh w7anj w7be w7ga w8axa w8djv w9dgz w9ef w9fxj wfat nkf k6zze k6cjs d4uj d4yt ear21 f8axq f8bf f8da f8fk f8gdb f8jf f8zx g2xv g5by g5ms g6nf g6vp oa4l oa4o oa4q oa4r oa4s oa4t oa4h on4fp on4ja on4jx on4uu on4us on4ww oz7t oz7y pa0qf py2qa sm5tn ti2hv vu2dr x9a

7000-kc. band

w1awe w2ags w2cxl w2qf w3bwt w4acc w4aef w4kh w5ain w5awd w5aqe w5bbc w5beb w5hy w5qa w5ql w5uf w6akw w6amm w6awf w6by w6bgh w6bih w6btz w6ebw w6enx w6dgx w6dtd w6dto w6dui w6ebg w6ec w6eeo w6egk w6ehi w6ieke w6ielm w6eog w6ieoj w6ieop w6eot w6epz w6sf w6zbb w7ag w7jc w7afo w7mo w8bts w8fz w9bez w9bvc w9cwi w9eel w9fmx w9pu w9gv aa1kab k1ab k1af k1ce k1cm k1cy k1hr k1mc k1pw k1rc k6bra k6bow k6bqh k6cib k6dju k6dtg k6dv k7em k7fq om1tb om2rc on4jp pk3bm oobam ve2bd ve5aw pmz xber xoz7xu

CP1AA, Mark W. Johnson, Bolivia Gold Exploration Co., Tipuani (via Sorate), Bolivia

14,000-kc. band

w8bga w6drb w5awd w9ka w8ccw w1aqp w9drv w1zz w4we w2el w1cfi w9dgs w3cee w1cel w1bux w9ef vk3jy zl1fb on4fp g5ml ve1ap

W9GHG, B. H. Moser, 2522 Circle Drive, St. Louis, Mo.

k6cjs k6bra k1cm k6dv k6dtg k6bhl d4dd kdv5 k1dj k1hr k1ce vk3pp vk2me vk3rg vk3vp vk2no vk2oj vk2jw vk2aw vk3jk vk2ww vk3sg vk4da vk3go vk5hg zl3em zl1fr zl2al zl2ab ve2ac ve4gb ve3cb ve5hc

W6DTU, F. L. Easter, 1336 E. Monroe St., Phoenix, Arizona

14,000-kc. band

w1abt w1adw w1agj w1akx w1aqf w1asj w1asu w1aue w1axa w1aze w1bjk w1bkr w1csk w1cjc w1cmx w1cnc w1cvl w1dq w1ei w1ii w1mo w1ry w1sf w1we w1zs w1zz w2acu w2age w2afc w2agz w2arb w2anj w2ake w2aex w2aiq w2aoz w2atz w2bkg w2blg w2bir w2bpm w2dab w2amm s2ei w2el w2fl w2rr w2rs w2jn w3ach w3aur w3azz w3ut w3awb w3bft w3bph w3age w3wy w4aaq w4aim w4afq w4akh w4abv w4ajk w4ale w4ald w4ahp w4akt w4acs 4afq w4aha w4akg w4cz w4dv w4nn w4ts w4nn w4uv w7be w7wv w7aah w8aur w8dyk w8qu w8dhc w8blp w8ewm w8bwo w8dfu w8bll w8bbl w8hh w8hw w8dvi w8dxm w8gk w8hh w8dpo w8ab w8vz w8fz w8fa w8cqr w8bpz w8dyc w8cml w8cc nj2pa kfr5 py1af py1aa py1be py1bf py1cm py1br py1cm ce1ah ce1aw ce3bf ce2ac ce1ac wfat zl2ac zl4ao zl4ai vk2rb vk2rx vkqtw mr2ea xw7eff kcal kebj k6gm k6alm k1af k6eat haf3ca haf1nn hafwav ctqab

VE4DJ, J. D. Lawson, 150 Roseberry St., St. James, Winnipeg, Canada

14,000-kc. band

ce1ah ce3ab ct1by f8ef g5ml g5by hc2jm hc1jg k6alm oa42 oa4o py1ah py1aw ti24a x9a zl1fw zl2ac zl2bx zlifb vk5hg vk3pa ve2bb ve3cx w1om w2ai w2afb w2bpd w3dwn w4ajh w4acs w4abw w5aqe w5bh w6cae w6cgq w6epi w6akd w6dij w6eph w6cub w6dca w6bvx w6dzk w6abg w6dpa w6ass w6eem w6etj w6dlx w7aof w7fh

7000-kc. band

cm2by cm2jm jhc2 k6boe k6csj k6alm kdv5 k7fq kfr5 k6dju keu5 nnfx ti2hv ti2wd x9a zl2bx zs5o.

W1AZE, E. C. Hogar, 50 Adams Ave., West Newton, Mass.

14,000-kc. band

ce2ad ce3ab ce3be cm5fl d4aar d4al d4jl f8aap f8bq f8ex f8gdb f8ho f8jf f8px f8rvl f8wb f8whg g5bd g5bj g5by g6lx g6lb g6nt g6wt haf8b kfu5 lu3fa on4ar on4fp on4hc on4ro on4us on4uu oz7y pa0ix py1aa py1ah py1aw py1ca py2ba py2bg py2ik sn1aa w0alw w6bau w6cuh w6dqo w6eug w7qb w7adb

W2AVS, Arthur Wilde, Jr., Briarcliff Manor, New York

7000- and 14,000-kc. bands

w6ac w6acs w6aef w6am w6avq w6awn w6bam w6bre w6btu w6bvx w6cjt wteqk w6cto w6cuh w6czz w6dbb w6dcq w6dhh w6dre w6dz wtiebg w6eem w6egv w6ehi w6eif w6eop w6epe w6fd w6sf w6tm w6ts w7aah w7acy w7aoc w7as w7ed w7mo w8ua ce2ab ce2ac ce3ab ce2jm cm5cx cm5fl ct1bk cx1ak d4aar d4jl ear21 ear98 f8da f8eg f8jf f8wb f8whg g6vp g6wt hc1dr hc2j k4akv k6cjs nj2pa on4fp on4us on4ww py1ah py1aw py1cm ve4bp ve4hq ve4fv vo8ae vo8mc vq2bh x9a nogm kf1f wfa wsq wye wdde wgdr

W6BAX, Ormsby P. Taylor, 183 Sunnyvale Ave., Sunnyvale, Calif.

f8da f8ho f8mrg f8hcl f8ix g5uw g6gc g6nt g6rb g6vp sm5tn d4yt ear21 ap1 x9b pk3bm oa4j py1br py1tq ce1ak ce1al

(Continued on page 64)

Correspondence

On Rag Chewing

Amersham, Bucks, England.

Editor, *QST:*

I have read W2AW's letter in the September *QST* with no little joy, and I wish to commend it to the notice of all hams. Since we are all, even including British hams, permitted to exchange "personal messages of an unimportant character," there is no possible reason for not rag chewing more, far more, than we do.

At any rate, let it be known that here is one ham who is not only willing, but anxious, to tell you fellows across the pond all about the view from his window and what he has for breakfast. Should the great God of Ham Radio grant that the sigs of G2HJ shall ever penetrate beyond his own back garden, then will that station be ready to talk with those whom he works on any subject they care to name, to give them biographical details concerning himself, and swap funny stories.

Here is a second exponent of "the gentle art of radio conversation."

—*K. E. Brian Jay, G2HJ*

Operating in Japan

1326 Keeaumoku St., Honolulu, T. H.

Editor, *QST:*

In June of this year I took a trip to Japan for a vacation. There I met some "J" hams. They had been working without licenses and were caught by government officials. Some of their outfit was confiscated, and they barely got out of paying a heavy fine. It seems the officials were tipped off by some anti-ham person.

After some trouble they were able to settle the argument and the arrested hams applied for licenses. Owing to a lot of red tape licenses will not be forthcoming for about three or four months. After that, if they do get their licenses satisfactorily, it means that their operating hours will be limited by law to some four or five hours out of the whole twenty-four.

Government officials are always listening to the QSO's made by the "J" hams, and a little slip like mailing a card without enclosing it in a plain envelope may mean the arrest of several hams at once.

Let's get together OM's and help our "J" brothers as much as we can.

—*Y. Katsuki, K6DPG*

Traffic Rules in Operating

S.S. Northwestern

Editor, *QST:*

From time to time in the past few issues of *QST* there have appeared articles condemning certain operators. The main exception taken to these men seems to be the fact that they, at some time or other, cut some well intentioned beginner short or refused to accept his traffic. I quite agree with the authors of these letters, but on the other hand, there is the other side of the argument.

Consider the amateur operator whose business allows him only a few precious minutes a day or a week at the key of his station. As an example: Not so many weeks ago I had a period of two days at home. A CQ at about 4:00 p.m. netted a "W7" about thirty miles distant. "W7" informed me he had QTC3 for Seattle so, in due form I told him, QSP K. All I got was a lengthy call with a request for his QRK. I told him he was R9 WSA5 and to GA. He did — and how! QSZ at about 6 per. All three messages were sent like this, followed with 73's and CUL SK, never waiting for a QSL. Now maybe this chap was new at the game — but why not use a few of his traffic rules?

At about 11:00 p.m. I again sent out a CQ and raised a "W6" in the vicinity of San Diego. He said QTC and along came his message, all in the same breath. Fine stuff, time saver, etc., but the message happened to be for Mexico City. I refused to accept the message, explaining that this was my last night on the air for three weeks and that I did not have a schedule with Mexico. Said "W6" informed me that was O.K. with him as he didn't either and for me to do what I could with it. He signed off and I had the message. I hadn't accepted it or QSL'd in proper form or anything but do you think that he was going to waste more time with his copy? Guess again. Now both of these chaps sounded like they were new at the game, but I fail to see why newness should be accepted as an excuse for practice such as this. Also, I wonder if operators such as these really expect other fellows to take time out to work them.

A few minutes later I contacted with a "W9" back in Denver who asked me QRU? I gave this operator a string of four, originating on my ship, and he stuck with me through heavy QRM till every one of those messages was O.K.'d. At the end of traffic he explained that this was only his

third week on the air. That operator used a lot of good common sense and stuck with it where lots of old-timers might have thrown in the glove. A chap like that will get a lot more fun out of his hamming and will find that the average operator will stay with him.

Several hours later I worked K1PW, who said QTC and asked for a QRK. His sigs were good and I told him to stand by until I moved the mill over and got some more blanks. He did and had the forethought to send a series of . . . —'s until I broke him and told him to GA. His string totaled 23 and it was only necessary to break him four times. This chap at K1PW wasn't a commercial operator — just a ham that used his head.

— *E. W. Stevens, W7BB — WCCW*

1750-kc. 'Phone

Demerest Road, Butler, N. J.

Editor, *QST:*

I am a 3550-kc. 'phone man and would like to offer a suggestion to relieve the QRM on that band.

Quite a few of the older phone men including myself, are going up to the 1750-kc. band this winter. Some of the fellows seem to have the idea that this band is no good at all for DX work, but W1CGR at Springfield, Mass., worked a fellow on the west coast with a spark outfit back in 1924. Then, with the 1929–30 transmitters and receivers, why will it be hard to do it with c.w. or 'phone?

If you want to dodge the QRM on the 3550-kc. 'phone band just QSY down to 1750 kc. and have some fun with the rest.

— *B. L. Capstaff, W3AVW*

3500 QSLs a Year!

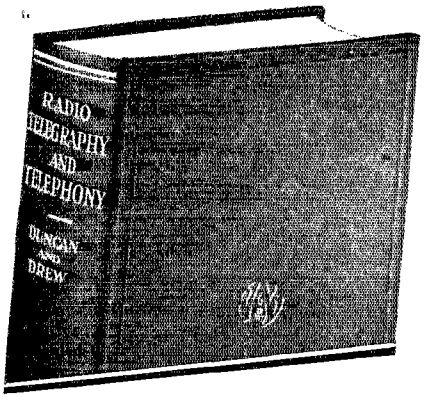
Oroville, Calif.

Editor, *QST:*

I have been a member of the League for the past two years and have noticed quite a bit of comment in *QST* regarding the QSL situation.

There seem to be some members who do not appreciate receiving a card unless it is from the north or south pole or twelve thousand miles from their own district.

Some claim it costs them thirty-six dollars a year for cards and while it may be true, that investment represents in the neighborhood of 3500 cards, I doubt very much, under the conditions we are working, if there are many stations that work 3500 different stations in a year's time that they QSL. Nevertheless, I sympathize with W6EIZ, but it appears to me that the present conditions will prevail, until the "Scotch" is forgotten, as most of us are in the game for the pleasure derived. I would like to tell the gang to remember the old saying, "It isn't the value of the thing as much as the thought it expresses." In other words, if you are asked to QSL you



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Published May 1929

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QST–12–29

should know that the ham requesting your card will appreciate it.

— *Plummer R. Walsh, W6DVD*

Amateur Radio at the Sick Bed

2717 Derby St., Berkeley, Calif.

Editor, *QST:*

I should like to have the privilege, through the medium of *QST*, of expressing my appreciation for the service which amateur radio has rendered me.

Last March I was taken with a severe illness which resulted in my being sent to a hospital in Oakland for an operation. My folks, living in San Diego, were naturally somewhat interested in having speedy and reliable communication with me, or rather with those in attendance at my bedside. Two young men, one of whom I have known for some time, Mr. Paul Weinstock, W6ACJ, of El Cajon, Calif., and Mr. A. Theil, W6BIW, of Oakland, Calif., arranged a schedule in such a fashion that Mr. Theil was in touch with the hospital and Mr. Weinstock with my folks. Quite as regularly as the clock strikes, judging by the messages, Mr. Theil and Mr. Weinstock sat down before their respective sets at 7 a.m. and proceeded to give and take messages. They proved to be fully as reliable as the telegraph or telephone, failing just once to make contact. That once was due to the failure of Mr. Theil's transmitting set, at which time he arranged with another amateur of Oakland for the handling of the messages. Neither of these two men received anything for their efforts save my thanks, recompense of doubtful value considering the time and electric energy spent.

All in all I am most favorably impressed by the ability and untiring efforts of these men. If they may be considered as examples of the radio amateur fraternity, then certainly American amateurs have just cause to be proud. To these two men, and to their "brethren of the air," I extend my sincere thanks.

— *George S. Parsons*

"An Unknown Friend"

10152 123rd St., Richmond Hill, L. I., N. Y.

Editor, *QST:*

There are many forces in this great world which will unite and cement strong friendships between two parties. To try to mention all of these forces would be quite a task. However, I will tell of one of them, to my knowledge and experience the greatest force of enkindling mutual friendship today.

When the layman hears tell of a "radio amateur," he conceives the idea that said person is one pursuing the art of radio for technical reasons of his own. This is true to a large extent, but let us look at the amateur's view of the situation. First of all he spends his money for equipment and then time and self-ingenuity in putting this equipment into workable order. When the task is

finished, the amateur, man or boy, woman or girl, feels thrilled at what is to come.

The government tests passed and license awarded, the amateur gives a far call through the weird etherical spaces; his hand with utmost care of manipulating his telegraph "key" spells out definite calls which his equipment hurls into the atmosphere. He listens for an answer; lo and behold! he hears another amateur calling him. "Contact," so to speak has been made. Conversation, signal reports, etc., friendly flow between the two "unknown friends." They do not know each other personally, yet with mutual understanding and sympathy, each has an "unknown friend."

Does not this factor, alone, make our "ham" radio hobby a most worth-while pursuit?

– *Thomas B. Norris, W2ATT*

I.A.R.U. News

(Continued from page 50)

ing, and anticipate more. One of those three hopes to make a definite schedule for one particular country. FB!

In the meantime, your compiler might state that he has a foreign ham, who contributes regularly with a report, fairly itching to land a good U. S. contact somewhere between the Mississippi Valley and the West Coast. Some "W" station in the 6th, 7th or 9th District, working on either 7000 kc. or 14,000 kc. and capable of consistent DX performance is needed. Apply direct to the compiler of this department. No reasonable offer refused. Who gets it?

And now to the reports of the Australian and German Sections and the newly organized Swiss outfit. In passing, we would like to point out that all these reports are exactly what we think a foreign report should be — an interesting account of what the hams in those countries are doing and planning to do. We hope other countries will follow their example when sending in reports.

AUSTRALIAN SECTION

By W. G. Sones, Hon. Publicity Officer of the W.I.A.

Scientific Expeditions: Australian amateurs are limited in the type of traffic which they are permitted to handle. Under the regulations governing radio in this country we are prohibited from transmitting anything other than information in relation to the tests in hand. A concession is allowed with respect to personal messages between two station operators, but nothing in the nature of a third party message is permitted. We would like to be able to handle the same traffic for scientific expeditions as is handled by U. S. amateurs, and have sought permission to do this in connection with an Antarctic expedition now be-

THORDARSON DOUBLE FILTER CHOKES

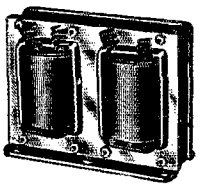
CONTAINS TWO 18 HENRY 250 MILL CHOKES

This Thordarson heavy duty, rugged double Filter Reactor is excellent for Filter Circuits in Transmitters, Power Amplifiers, "B" Eliminators and various other purposes.

Each Choke has a 2000 Volt insulation and the D.C. resistance of each Choke is 108.5 ohms.

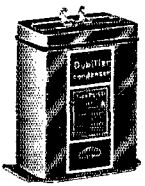
When connected in series this Filter Reactor has a capacity of 36 henries at 250 mills, and when connected in parallel 18 henries with 500 mills carrying capacity.

Weight for shipment 14 pounds. Dimensions 3 x 7 x 5½ in. Equipped with mounting brackets.



SPECIAL $6.25

MODEL T-2458
List Price $19.50



TYPE PL 571
List Price $7.25

Dubilier HIGH VOLTAGE FILTER CONDENSER

4 MFD. D. C. WORKING VOLTAGE 600 V

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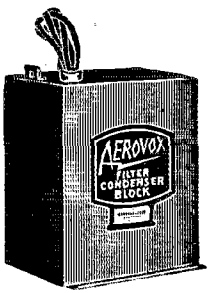
SPECIAL $2.25



SIZE 6" x 5" x 3½"

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7 MFD. HIGH VOLTAGE FILTER CONDENSER BLOCKS

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Each Unit is equipped with long, heavy, flexible leads, convenient for easy wiring, and also has mounting brackets. Latest design.

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CAPACITY	RATED D. C. WORKING VOLTAGE
2. 0 MFD.	1000 V
1. 0 " "	800 V
1.	800 V
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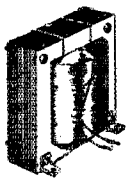
PER BLOCK



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85 MILLS

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1 mfd. D. C. working voltage 600 v.

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ing organized in Australia to proceed to the polar regions very shortly.

The expedition is a semi-Government one, and as no financial interests are involved it is feasible that we should be able to handle some of their traffic. The bulk of the traffic will be handled by the government organization here — Amalgamated Wireless (Australia) Ltd., which corresponds pretty closely to the R.C.A. in America, but it is probable that amateur radio may be able to assist in a number of directions.

A second expedition for geophysical investigation, financed by the Carnegie Institute is at present proceeding to the far northwest of Western Australia, which is very sparsely populated, and permission has been granted (with the same old restrictions as to personal messages) to handle the stuff direct to America. Most of the work will be handled by the West Australians (6th District), and to say that the gang is looking forward to this work is putting it very mildly indeed.

A third expedition, an aerial survey, has just been completed by the personnel of an Australian Air Force group of the north of Central Australia. Amateur radio participated in this work to the extent of handling a fair amount of traffic through stations (amateur) of the Air Force Communications Reserve.

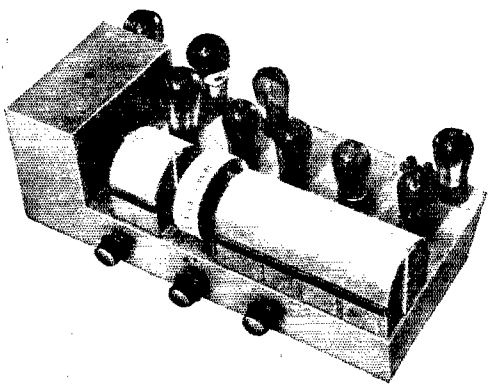
Airplane radio is getting a good deal of attention from our members at present in connection with the activities of our Air Force Reserve, and by means of alliances with civil aviation clubs, three sections of which have been organised in Victoria, New South Wales, and South Australia. During the last few months in which the Air Force Communication Reserve has been in operation nearly 2000 words of traffic have been handled by Reserve stations, and the success of the scheme has been better than we hoped for. Our alliances with the civil clubs give us an opportunity to undertake experimental work in connection with 'plane installations.

The attention of Australian amateurs is at present centred in the annual Federal Convention of delegates from each State Division of the Wireless Institute of Australia, which will take place in Brisbane (Queensland, 4th District) on the first of September. Delegates will meet and discuss the position of amateur radio in the same way as does the Board of Directors of the A.R.R.L. at this conference. They will lay down the policy to be followed by the Executive department, elect officers and decide the location of the Federal Headquarters for the ensuing twelve months. The organization of the W.I.A. differs somewhat from that of the A.R.R.L. because of local conditions outlined in the note and map on the geography of this country in the July issue of *QST*.

The deliberations of the convention will probably be of interest to amateurs of other countries (indeed they will! — Ed.) and will be reported in detail after the convention.

Operating activities in all bands are increasing; there is a regular rejuvenation of short-wave interest just at present.

The Radio of tomorrow



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GERMAN SECTION

By W. Rach, Sec'y D.A.S.D.

DX has been very bad lately on the 7000-kc. band, and although many American stations have been coming over with a signal strength up to QSA5, we are unable to complete many QSO's. On 14,000 kc. conditions were somewhat better, and many contacts were made, mostly in the late afternoon. For 28,000 kc. we have no results to report.

The most important event recently was the great German Radio Exposition held during the latter part of August and first part of September. The D.A.S.D. had a booth at this show, and a complete amateur station was installed. Both the booth and transmitter attracted a great deal of attention, and the hams at the booth were kept busy explaining what amateur radio was. We feel that a great deal of good has been accomplished.

On the last night of the show a meeting of all the hams present was held. Many German amateurs brought friends from out of town, and we even had visiting hams from foreign countries present. A most enjoyable evening was spent; those who had not visited Berlin before were taken by motor all over the city.

Note: In addressing QSL cards do not forget that most German hams are not licensed, and cards should therefore be sent under cover to the D.A.S.D., 19 Blumenthalstrasse, Berlin, W. 57.

— - - —

SWITZERLAND

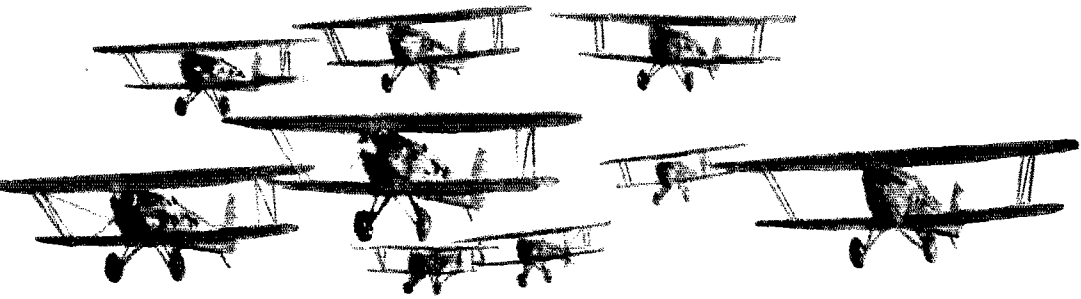
It gives us a great amount of pleasure to inform I.A.R.U. Headquarters that on August 4, in Zurich, the first real Swiss short-wave amateur club was founded. The name of the organization is the Union Swiss Kurtzwellen Amateurs, or Union of Swiss Shortwave Amateurs. The Zurich convention was a great success, and all those who had promised to attend were there. The spirit aroused at the meeting indicates that Swiss amateurs have finally attained a definite status in the world of amateur radio, and a rapid growth is anticipated.

The U.S.K.A., according to its Constitution, is a society formed for the promotion of short-wave two-way radio, and its purpose is to foster and protect the interests of amateurs — particularly transmitting amateurs. The officers are to be a President, Secretary-Treasurer and Traffic Manager. Mr. Degler has been elected the first president and Mr. Schneeberger the secretary.

Forty members are already enrolled, and we expect to grow steadily.

— - - - —

Well, here we are at the end of the "colyum" again, and being just a little short of radio material to fill out with, are going to take liberties to the extent of relating a little experience we participated in personally. You see, it was like this:



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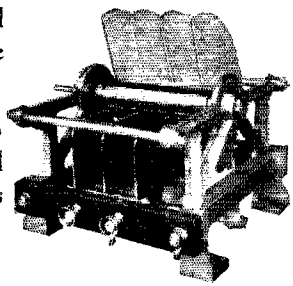

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Calls Heard

(Continued from page 51)

ce3ab ce3ce lu3fa lu3pa lu3da k7qf k7pv zl1fu zl2be zl4ax zl4ae vk2jj vk2rb vk2tw vk3pp vk4at vk4gh vk4rb cm2jt

VK3PR, W. R. Jardine, 264 Buckley St., Essendon No. 5, Victoria, Australia

w1ack w1akm w1acd w1afb w1aqt w1da w1gh w1ls w1cje w1cek w1mk w2exl w2alu w2aof w2arb w2bac w2tp w2ws w2qf w3bnu w3bjm w3amz w3afu w3apf w3aws w3ejn w3ut w4ahm w4aq w4abv w4aim w4abw w4cq w4nf w4oa w4qp w4rb w4we w5ahb w5awd w5ayy w5aqy w5qep w5nec w5bdy w5beb w5bek w5bam w5jv w5mm w5rg w5wr w5yg w6am w6aak w6abg w6afe w6ahp w6ann w6anl w6aov w6afa w6avx w6awa w6awf w6awp w6apd w6axe w6bau w6bfd w6bgh w6btm w6bto w6bsp w6cby w6byy w6cis w6eww c6exv w6czz w6dbo w6da w6bpm w6dho w6dns w6dqo w6dzx w6dow w6dyn w6dev w6ebg w6ebg w6elm w6egh w6eht w6bip w6ehi w6eif w6ekw w6bwf w6emx w6bly w6pf w6eqf w6eta w6eru w6jv w6kj w6nz w6qy g6sf w6by w6spp w6eop w6vz w6dns w7afo w7aev w7aij w7akv w7adb w7ao w7as w7if w7na w7om w6lw w7wh w8aph w8ayo w8axz w8bbj w8bud w8bae w8bly w8cr w8cly w8fz w8ke w8nb w8of w9ama w9alv w9aly w9bez w9beu w9bre w9bxj w9bqo w9efj w9etg w9exx w9csq w9dly w9dqi w9dfy w9ftz w9fxj w9gfo w9gv w9pu k1hr k1cm k1jr k1ab k1bd k1bi k1ce k1cv k1he k1me k1xa k4dk k6bxw k6boe k6bra k6dju k6dyo k6dtg k6etf k6n pk4ar pk3bm k7afe k7ly k7mn ac8ag ac8rv g5bz g5by g5wp g5yx g5wk g6wi g6xb g2xv f8axq f8btr f8fd f8gdb f8orm f8rrr f8xh on4di on4fp cr1ae ti2bv ve3cz ve3bm ve5co oobam kfr5 ap1 rwx xn5 k97 om1tb xw7eff wfat zem se1ah

W9CRD, C. C. Coleman, 503 Alta Ave., Danville, Ky.

7000 to 7500 kc.

ac2ff ac5go ac8rv j3ep om1tb vk2ao vk2aw vk2be vk2gp vk2gv vk2he vk2hl vk2jw vk2jz vk2kj vk2kl vk2ku vk2lm vk2no vk2oj vk2ow vk2rb vk2sa vk2wj vk3ax vk3bl vk8bw vk3kr vk3lm vk3lp vk3ml vk3pa vk3pp vk3rg vk3rp vk3vp vk4af vk4ar vk3bh vk4do vk4hh vk4hk vk4kg vk5aw vk5bj vk5by vk5da vk5do vk5dr vk5dx vk5gr vk5hg vk5it vk5kj vk5mj vk6mu zl1aj zl1ao zl1bb zl1bi zl1fr zl1ft zl1fw zl1kb zl2ad zl2ae zl2aj zl2al zl2aw zl2be zl2bo zl2bp zl2cm zl2ga zl2gd zl2gr zl2gw zl3ac zl3as zl3em zl4am zl4ao zl4bg k1af k1ce k1cm k1dr k1hr k1jr k1mc k1pw k1rc k4aan 4kkd k6avl k6axw k6bjj k6boe k6bqh k6bra k6cib k6cjs k6dfg k6dv k6aqm k7ak k7ame k7aop kyfq sa2rk ce3ae ti2ea ti2hv x9a kfr6 kdv5 kfu5 xw9crj wsq nnfx nneab nn1nie 55x x7xot pmz

14,000 to 15,000 kc.

yi1lm vk2hc vk2jy vj2kj vk2lj vk2rx vk3bq vk3pa vk3xg zl1an zl2ab f8asp f8da f8dj f8dot f8er f8ex f8fvl f8gdb f8jf f8px f8rbp f8wb f8whg f8zgx f8zx g2kf g2kf g2nh g5ml g5ms g5wp g5wt g6lb g6lk g6nt g6nt g6rb g6vp g6vl g6wt g6wy on4gn on4fp on4hc on4ww ear155 pa0ap ct1bx il1coc eu6kag xf8hpg fm8ru pylaa pylah pylaw pylax pylbr pylca pyled pylel pylem pylpe pylts py2ab py2ad py2aj py2ak py2ay py2ba py2bf py2bm py2cm py2hc py2ik py2ig py2qa py2qb py5af py7ab lu3dh lu3fa lu3pa lu6ea cx1cx cx2ak oa4o vp5oux an1aa zp5ab ce1ah ce1ak ce1al ce2ab ce3ah

ce8ac ce8bf ce8bm vo8ae vo8in k4aan k4akv k4kd cm2jt cm5cx cm5ry cmz cmz62 ti2ea wfa wx2yz co4 sf8 kfu5

OK2YD, c/o K. V. A. C., Praha 2, B. P. Nr. 531, Czechoslovakia

ac1bd ac3fr au1ak au1ai au12ra au7ae au7ah au7ba au7an aukwd au8an ai5vx vs8ab vu2kw vu2kt vu2dr vq2bh yi1lm yi1ae yl1mdz yi2gq yi2ua ar2gb ar8ufm fa8bak fk2ms fk4ms fk5cr fk6cr fo1sr fm8ev fm8rit fm8gkc fm8kik fm8jo tun1 tun2 ct3aa ct3am su8an su8rs su8wy zs4m zs2n zt2b zu0e zu0n w1ry w1ly w1ii w1cek w1aep w1cnx w1zz w1adz w2arb w2ark w2clw w2ddj w2ani w3ut w4uv w4aef w4pd w6bhi w6db w6be w6aze w6bax w6mx w6bd w7afo w8hx w8ahe w8aie w8azo w8adm w8ake k4kd k4ni k4aan kfr5 ve2be ve1ar ve3al ve4co ve5aw vo8ae vo8mk nx1xl ce2ab ce3ac ce6bf cm2jn cx1na lu2fi lu2ea lu4dh lu9dt py1cl py1cm py1co py1ca py1bm py1ah py1aw py2ad py2aj py2ay py2bc k1hz k1af k1hg k1cm pk1jr pk1bh pk3bm pk4az pk4bf vk2rx vk2hw vk2lk vk2fw vk2aw vk2hu vk2ng vk3pm vk3ep vk3lp vk4bb vk5hg vk5ja vk2aj vk5bw vk5bb vk5bj vk5dx vk6he zl1ao zl1ft zl1fw zl1ap zl2ae vl2bi zl2ae zl3am zl3aj zl3as zl3cm zl4ao zl4ac vk3ot zw7eff kfu5 ctjz xpa0ja xpa0ep xd4cy

G5SL, W. H. Slough, 46 Station Road, Finchley, London, England

w1aqd w1axs w1mk w1si w1st w1sz w2abn w2bff w2ewk w2cx w2cuf w3age w3asg w3bcc w1aef w4agr w4dv w4gv w4rf w4rn w8bab w8bae w8ei w8ti w8th w8lt w9rh w9fcx w9nk

W2CL, H. F. Washburn, 554 E. Mosholu Parkway, New York City, N. Y.

cm2jt ct1bv d4aar ear116 f8ct f8dot f8gdb f8jf fk6cr g5by g5ms g5wp g6dh g6gs g6iy g6lb g6nt g6pa g6rb g6wl g6wt g6wy g6xb hb9d nn1nic on4fe on4gw on4hc ou4jj pa0mm pa0qf pb7w s1fa un7ww vo8ae vo8mc vp5oux wfa

W4WZ, James R. Donovan, Box 254, Lawrenceburg, Tenn.

7,000-kc. band

he2jm he1fg he2bp he2grc hrg2 i1ll k6bra k6cjs k6dju k6alm k4kd kfr6 kfr5 kdv5 kfu5 kf1f nn1nic nn1fx nnfx ti2wd ti2hv ti2ea vk2dy vk2cg vk2rb vk2aw vk2ij vk2ro vk2ku vk3rm vk3rg vk3bl vk3ml vk3pp vk3pa vk4bl vk4bh vk4pa vk4bb vk4sc vk5hg vk6he vk7jk vq1aj wdgr wfa wfat x9a x20a zl1bb zl1ft zl1fm zl2be zl2gk zl4ao zl3cm zl3as

14,000-kc. band

ce2ab ce3ws k4kd lu7je lu3dh py1aa py1ca py2bg py3ax xf8hpg

W1CPH, Thomas L. Siglan, Jr., 23 Norwich Ave., Providence, R. I.

14,000-kc. band

w6uc w6dns w6dca w6dtr w6dyn w6epz w6bpm w8aij w7dp w7eh w7ant ce2ab ce3me ce3bm ce1ah cm2jt cm5cx cm5fl cmz62 cma2 ct1bx cx2ak d4aau d4aar d4jl d4kd d1ma ear21 eargu f8xw f8zx f8aja f8ef f8cab f8xyz f8jf f8gdb f8mst f8oa f8ex f8ata f8da fk2ms fm8rit g6rb g6ws g6dh g6nf g6bo d2xv g2zu g5bd g6xm g6xc g6uh g6lw g5bj g5nd g6bz g5ms g6xb s6vp haf8b 4kaan k4aef k4akv k4ni lu3pa nn1nic on4fp on4hp on4jj on4ja on4ww oz7t oz7v pa0qf pa0kv pa0mm pa0ss py1br py1ah py1aa py1cl py1cm py3ah py2ag py2ba py2ab py2ik py3ca py2aj py2bg py2bn sp3kx su8gm ve1bm ve1br ve1ce ve1bw ve2ah ve2bb ve3bm ve3bo ve3vs ve3ur ve4dk ve4hc ve4bq vo8ae vo8an vo8mc vp5oux vz3nc w4de kflf foyq wfa

W. Clyde Townsend, S.S. Dromore Castle, Union Castle Mail Steamship Co., Ltd., Southampton, England

Cape Town to Bilbao, Spain, 1000 miles north Capetown

7000-kc. band

w1aje w1mk w1ni w2bay w2cy w2lx w3ado w3ahw w3anh w3ard w3bwt w3cfg w3aiz w3ayh w3chg w3vx ear62 ear113

eu2by f8gi f8rai k4abr k4kd on4hj on4jc pa0mi pa0nr py1ic sp5ar nowpi ve2bg yl2ad

1000 to 2000 miles north Capetown

7000-kc. band

w1pk w1vp w1wu w2aew w2bff w2exl w2re w3ahw w3anh w3aws w3lz w4aii w8did w8dil w8gz ct1br ear02 ear104 f8bz kfr6 sp3ba.

14,000-kc. band

w1ajv w2acg w2ait w2bda w2bjg w2fk w2hr w2mb w2rs w3abm w3adm w3ajd w3jn w8adm w8djy w8dld w8gj w9fby cm2jt g5bz g6me g6nt k4kd kfr5 lu2ca on4he on4ea py1aa py1el py2ay ve1ar

2000–3000 miles north Capetown

7000-kc. band

w1ajc w1asd w1axx w1bdi w1bsn w1cib w1cou w1kl w1sz w2asy w2bff w2by w2cxl w2oz w2re w3ado w3ajh w3ard w3ayh w3aws w3ejn w3ec w4aej w4agr w4ea w4pf w4zp w8bsi w8chg w8dil w8duw w8ho w8uk w8ut w8vx w9gj ct1by cl1ce ct2wr ct3am d4hz ear69 f8xw f8zic g6az hb9d il1coc on4jc ozde sm4xx wts

14,000-kc. band

w1om w2bnx w2el w2mb w8dem w8dld w8dno w9aid ce3ar ce3ag cxcwk g5ml g6wl k4kd ly9dt py1aa py1el pt1id py2ad py2ag

2500–1500 miles South Bilbao, Spain

7000-kc. band

w1ah w1afz w1coc w1erw w1fc w1kl w1lg w1mk w1nn w1rp w2afz w2awd w2cxl w2ec w3ard w3aru w3avh w2aws w3ep w4abl w3acy w4aej w4ao w4gy w4to w4zp w8aht w8bno w8bpp w8cli w8gz w8hl w8sw w8uk w9bir ct1az ct1cp ct1cc ct2ac cm2ay d4tl ear64 ear104 ear149 earc earf ei8c f8cv f8frtz fi8hzt fi2fr earc fr3ar75 g5lw il1coc il1fg il11 k4kd kfr6 k4kd kfr6 on4hm paoxz ppx2 sm6ua

14,000-kc. band

w1aeh w1id w2acg w2adp w2bn w2el w2mb w3pf w8adm w8aim w8aph w8bai w8cut w8djy ct3aa f8ypz haf0b palu3 py2bg

1500–500 miles south Bilbao, Spain

7000-kc. band

w1aof w1axx w1bdi w1bsn w1cfi w1cfr w1yi w2asl w2aix w2anr w2asg w2avp w2bea w2bff w2cxl w2jf w2ku w2nv w2re w2aal w2aix w2anr w2asg w3ahp w3afj w3aws w3ejn w3ec w4aai w4ao w4el w4ea w4ik w4kh w4kv w4ni w4rb w4si w4zp w8bau w8dlg w8vp w9ef ct1bd ct1by ct1cc ct1co ct1cp ct2ac d4dm d4sm ear64 ear149 ei8c freari g6is g6lw g6wl g6py g6cuj gi6mk il1coc il1fg kfr6 oz1k on4id pbf5 sp5ba

14,000-kc. band

w1anz w1def w1mo w1ry w2ary w2bjg w2bmb w2erb w2ezr w2eui w2el w2mb w2pe w3adv w3pf w8adm w8afi w8arb w8arg w8dem w9ef ct1aa g6ml g6nt g6uh gi6mu k4akv k4dk on4ww ve2hg ve3cz ve8ae

At Bilboa, Spain

7000-kc. band

w1aia w1aje w1bal w1bjc w1erw w1fz w1mk w1wu w2aft w2are w2asg w2aws w2biv w2jc w2kr w2kp w2nv w2vt w3fi w4aei w4si w4va w8vsl w8exc w8dil w8jl ct1cp d4fp d4hl d4vx d4xi ear105 ear116 earfu eu2gd eu3bn eu5cp fi8c i8dl f8fst f8gdh f8led f8lda fm7hs g2ci g2di g2dz g2gv g5br g5gs g5if g5ub g6iz haf8s il1coc il1fe ok4nd ok1az on4ic on4jc omr7 ozik oz7kw sm2vg sm5uk sm5xr pa0fr pa0ii pa0xg xw7eif.

W2MQ, Fred C. Seid, Hudson City Radio Club, Inc., 37 Sherman Ave., Jersey City, N. J.

w6aga w6ajp w6anl w6bgf w6bhr w6bpe w6dpo w6bqk w6djw w6bsw w6bzs w6btx w6dzj w6ec w6efo w6eih w6eii w6eos w6equ w6fs w6nx w6si w6aw w6wb w6wi w7aax w7acf w7acy w7dd w7mh w7mo w7oh w7pl w7ts w7wp k4kd f8vvd kdv5 nn1nic nn7nic zl3cm he2jm ti2wd x9a ve4dj as2

"A KNOCKOUT!"

. . . they said

AT radio shows throughout the country, the sensational new 1930 Crosley line was voted a knockout! You'll say so, too, when you know more about it.

"Tone tested" by America's foremost musicians! Alma Gluck, Edith Mason, Efrem Zimbalist, José Mojica, George Gershwin, Josef Pasternak and other equally famous artists regularly assist Crosley in developing its new tone beauty . . . a purity and richness that mechanical tests alone could never attain!

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Powel Crosley, Jr., Pres.

CINCINNATI, OHIO

Home of WLW—"The Nation's Station"

You're there with a

CROSLEY

Coming—Operating Activities

(Continued from page 40)

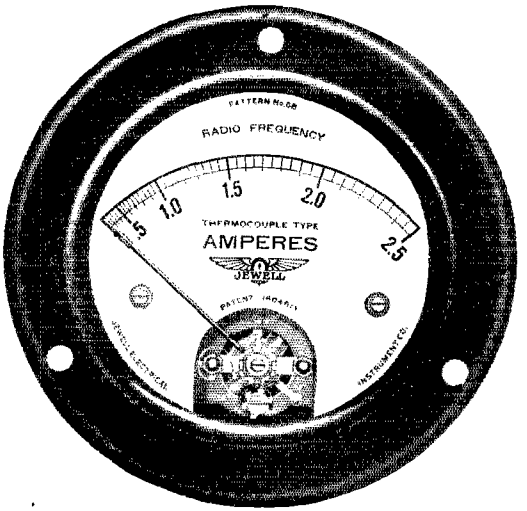
some countries. In addition, our records indicate that Mesopotamia must be segregated from the rest of Asia and separate factors applied. In our list the factor for the east coast group of stations is always given first. Europe 3, 11; Africa 15, 10; South America 3, 3; Mesopotamia, Iraq and Palestine 5, 15; Asia (China, Japan, Malay States, E. Siberia, Siam, French Indo-China) 20, 10; Oceania 4, 3; North America (Alaska 4, 3), (Mexico and all Central American countries 3, 3), (Porto Rico, Cuba, Bermuda, Bahamas and Antilles 2, 3), (Greenland, Iceland, Newfoundland and Labrador 2, 3).

After all the individual scores have been multiplied by the proper factor depending on whether you classify as an eastern or western station and the results added together this amount is to be *multiplied by the number of continents worked to give the total score.* The contest will then offer a distinct incentive to qualify for the WAC Club! With our own continent qualifying as one (except that W and VE QSO's with other W and VE stations will not count in the test, of course), we wonder how many stations can succeed in working all continents in the two weeks of our tests.

To make the contest scores of somewhat similar magnitudes and interest for participants residing in remote or foreign localities, we are ruling that their total scores shall be multiplied by the number of U. S. and Canadian districts they have succeeded in contacting. There are nine U. S. federal inspection districts and five Canadian districts making a possible multiplier of fourteen!

An example of the way messages should be handled under the rules of the contest will be given as briefly as possible. We shall assume that at the start of the contest G5BY works W6BTX and takes one of his test messages selected at random from his (W6BTX) list of messages provided by A.R.R.L. HQ. just before the tests begin. After the stations finish their QSO, W6BTX looks for other countries to work while G5BY writes out an answer to give to some *other* station in the U. S. or Canada the first chance he gets. On his next QSO, G5BY hopes to send this reply message and at the same time receive another message to boost his score all he can. If the message he takes on the second QSO happens to have the same text as the previous message, he can take it or ask for a different message if he likes. If he takes it, he must be sure to answer it *differently* before QSPing back to a U. S. or Canadian station. Late in the contest G5BY may work W6BTX again and while unable to take another message from him, he can give him (W6BTX) a reply to a message taken from any U. S. or Canadian station *except* W6BTX. W6BTX will know it is a different message because it will bear a different serial number than the one assigned the similar message by W6BTX. Every set of message assignments bears a cipher number which *must* be used in

MINIATURE INSTRUMENTS
of Remarkable Sensitivity



Pattern 68
for Radio Frequency

Pattern 78
for Alternating Current

Pattern 88
for Direct Current

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which have proved so valuable to radio manufacturers, are now available in new low ranges.

Pattern 88, the Direct Current Instrument in a moulded bakelite case, is available with scales of 200, 300, and 500 micro-amperes.

Pattern 54, the metal case D. C. Instrument, is also available in the above ranges.

Pattern 68, is available with 10, 25, 50, and 100 milliampere scales for high or radio frequency; also good on 60 cycles or audio frequency.

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numbering the reply test message for identification and checking purposes.

Sample messages as sent by U. S. or Canadian amateur stations:

TEST MSG DE W/VE (Insert call signal)
NR 3482F25 (Insert date)
WHO WAS THE REPRESENTATIVE OF YOUR COUNTRY AT THE HAGUE TECHNICAL CONFERENCE - . . . -

Answer as worded by any amateur in another locality and sent to some *other* U. S. or Canadian (W or VE) station:

REPLY TEST MSG DE G/VK/ZL/ZS/F, etc. (Insert call signal)
NR 3482F25 (Insert date reply returned to W or VE)
- . . . - I AM INFORMED THAT MY NATION WAS NOT REPRESENTED AT THIS CONFERENCE - . . . -
(Sign name and address if you wish for identification)

RULES OF CONTEST

1. The contest opens February 15 at 0000 G.C.T. and closes March 1 at 0000 G.C.T. Work before or following these dates and times shall be disregarded by the award committee.

2. Although as many stations in each foreign locality as desired shall be contacted, U. S. or Canadian amateurs may *each* send and receive just ONE contest message to any particular station worked.

3. Similarly but ONE reply contest message shall be accepted from any one station in a foreign locality.

4. Reply contest messages must contain ten or more words in the texts. Replies are prepared by the contestant himself who must see that each message is differently worded. Reply messages count only when sent to a station in the U. S. or Canada other than the station from which the original message bearing the distinguishing serial number was obtained.

5. Credits: (U. S. and Canadian stations.) Sending the contest message counts one point. Receiving a reply contest message from abroad counts two points. The score will be augmented regardless of whether a message is exchanged in one or both directions, differing in this respect from our January A.R.R.L. Sectional competition.

(Stations in all other localities.) Receiving the contest message counts one point. Successfully transmitting a reply test message to U. S. or Canadian amateur station other than the one from which the original message was received counts two points.

Total scores in all localities shall be computed in accordance with the number of continents or U. S. and Canadian inspection districts worked, including the system of weighted credits specified elsewhere in this article in the case of U. S. and Canadian stations.

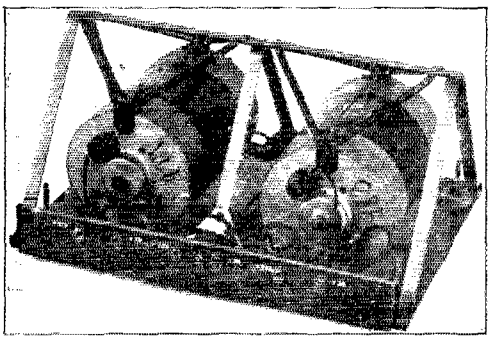
6. A report by mail is required of all participants at the close of the contest. Whether your score is 1 or 100, we want the dope for *QST*. All reports should be in the mails within three days of the close of the contest. Late logs and contest message files will not receive consideration in the analysis of results to determine the certificate winners or for *QST* mention. U. S. and Canadian logs and messages will be received up to midnight March 12, 1930. Reports and confirmation copies of messages handled in the tests will be received from stations in other localities up to midnight April 21, 1930. Reports received after these dates will be returned to the senders as they cannot be used in computing the results.

(a) United States and Canadian stations must return the message assignment sheets with the record showing when the message was sent, call of station to which message was given, date and frequencies used in the spaces provided on the special log sheets that will be issued. The copies of all messages received from foreign localities must be turned in as evidence of QSO with stations in the different localities. The information on time, call, date, and frequency should also be included directly on each message.

(b) Foreign confirmations: Copies of all contest messages received and reply test messages must be turned in with the information requested under (a). All reports should be mailed to the following address promptly at the conclusion of the contest: *International Contest Headquarters, Care A.R.R.L., 1711 Park St., Hartford, Conn.*

BARGAINS

ARMY AND NAVY RADIO SURPLUS



Western Electric Dynamotor System No. C. W. 927. Two 27/350 volt dynamotors in shock-proof hanger. May be used in parallel to give 100 mils at 350 volts, or in series, giving 80 mils at 700 volts. Can be used to operate transmitters up to 50 watts power from 32 volt D.C. mains. Ideal for Delco systems.
Two dynamotors in hanger $25.00
Single dynamotor without hanger 15.00

Western Electric Switchboard C. W. 928. Control board for Dynamotor System, C. W. 927. Consists of starting switches, fuses, 0-50-500 volt voltmeter with switches for testing main lines and output. Also contains complete filter system. Very special $8.00

Dynamotor, Western Electric 12/350 volts, C. W. 1056 mounted on heavy bakelite base, complete with filter, 80 mil output 18.00

Voltmeter, Westinghouse, No. 492419 cabinet portable, 2 scale 0–5–150, List $6.50 ..... 2.50

Dynamotor armatures, General Electric triple commutators, two sizes, D. C. 12/750 volt and 24/1500 volt, complete with ball bearings (build field and save $30) ..... 10.00 and 12.50

Ammeter, Westinghouse, type C. A., either 0–1, 2 or 3 amps., zero adjustment, flush mounting, 3" size .. 5.00

Ammeter, Thermo-couple, Weston 425, 6–7 amps., complete on bakelite base with large double throw knife switch 7.50

Ammeter, D. C. Westinghouse type PX2, 0–5 regular price $10.00 ..... 5.00

Ampere hour meter, Sangamo, Battery charge and discharge, type MS, 2 sizes, 0–400 and 0–800, List $50.00 ..... 10.00

Milliammeter, Westinghouse, type C. A. 0–500, zero adjustment, flush mounting 5.00

Voltmeter, Westinghouse, type C. A. 0–25, zero adjustment, flush mounting 5.00

Voltmeter, Westinghouse, A. C. 8" diameter with external resistance 0–175 volts 12.50

Voltmeter, Westinghouse model PT, 3 scale, 0–5, 0–7.5, 0–150 for measuring A, B and C voltages, portable bakelite case. Special 3.00

Motor Generator, Crocker Wheeler, 110 D. C., 200 A. C., 500 watt 500 cycle, Ball bearing 50.00

Complete line of 500 cycle motor generators from ¼ to 5 K. W. Prices on request

Edison Storage cells, 225 AH capacity, 1.2 volts per cell. Cell size 14" x 4" x 5". Regular price $25, a cell, our price, minus electrolyte 1.00
Trays of 13 cells giving 16 volts, minus electrolyte .. 50.00

Telephone Relay, WE 122AB, DPDT, operates on 6 volts at 20 mills. Contacts will safely break 2 amperes 2.50

Transformers, Peerless, 120 input, 5–10–15 volt output, ¼ K. W., 60 cycle 7.50

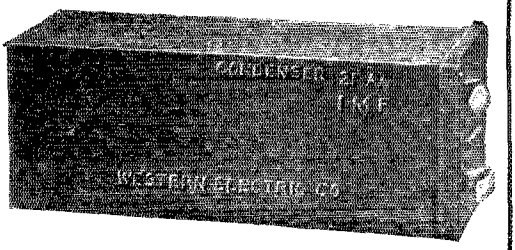
Transformers General Electric, current type, 125 to 2500, with center tap, 60 cycle, 200 watt 7.50

Transformers, Simon, 220 to 11500 closed core, ½ K. W., 500 cycle 5.00

Air compressors, Kellogg, Model T, 1¼ cu. ft. per minute, weight 6 lbs., 600 R. P. M., 125-lb. pressure 3.00

WANTED

RECEIVERS — IP–501, SE–1420, SE–143, CGR–1, SE–1220, CN–294.
TRANSMITTING TUBE —



Western Electric fixed Condenser 21AA, 1 microfarad, 1,000 volt A.C., test. Ideal filter condenser for low power transmitters. Fully guaranteed. Excellent value $1.00

Relay, Foote and Pierson, made for Western Union, 170 ohms resistance, Silver contacts, Adjustable magnets, heavy slate base. Fine keying relay to operate on 6 volts. Special $5.00

Condensers, Century, 500 volt, 4 mfd 1.25

Condensers, Dubilier, mica, working volts 12,000, capacity .0004 ..... 10.00

Condensers, Dubilier, mica, working volts 5000, capacity .32 ..... 10.00

Condensers, Century, volts 500 A.C., capacity 4 mfds ... 1.25

Condensers, Wireless Specialty, copper leyden glass jar, 10,000 working voltage .002 mfd 2.00

Condensers, Dubilier, mica, transmitting, 8500 working voltage .004 mfd 10.00

Condensers, Dubilier, mica, transmitting, 12,500 working voltage .004 mfd. Prices on request

Condensers, Wireless Specialty, transmitting, 12,500 volt .004 mfd. Prices on request

Transmitter, Holtzer Cabot, Utah type, carbon granular. .98

Western Electric Radiophone transmitter unit 326W, Special 1.50

Transmitter, telephone, U. S. Navy 30 ohm (used) ..... .75

Headphones, Holtzer Cabot, U. S. Navy, New, Utah type ..... .25

Headphone, Army, with strap, 120 ohm ..... .75

Headphone, Navy Radio School type, leather headband, 75 ohm 1.50

Keys, transmitting, Army practice 1.00

Keys, transmitting, Airplane flameproof, silver ¼" contacts 1.50

Keys, transmitting, Airplane flameproof, silver, 3/8" contacts, with blinker light mounted on bakelite base. List $7.50—Special 2.00

Keys, transmitting, Navy ½ K. W., "Mesco" silver 2.00

Buzzers, Century high freq., 2 coils 1.50

Buzzers, Western Electric, Extra quality high frequency 1.50

Receivers, Signal Corp. type B, C. 14A, 200–600 meters, with cry. det. and Century buzzer in portable case .. 7.50

Receivers, Navy, C. N. 113, 300–2500 meters 7.50

Receivers, Marconi, 300–2500 meters, type 100, commercial ship type 15.00

Receivers, Navy, C. N. 230, 1000–10000 meters 50.00

Receivers, S. E. 143 and I. P. 500. Prices on request

Insulators, Electrose, strain 7"–15, 12"–35, 18" ..... .35

Heterodyne, Signal Corps, type B, C. 104. For use with SCR 97 1000 to 4000 meters, with detector 15.00

Coils, Retardation, Western Electric Co. 57C, 83 ohm, 2 windings 1.00

Loudspeaker Unit, Western Electric, 193 W. Ideal for monitoring your transmitter. Without cord 3.00

Magnetos, Army mine and ringer type, has 4 large fixed magnets good value 1.00

Switch, Telephone, toggle, 2–4–6–8 point ..... .50

Switch, Knife, unmounted, back connected, polished copper, D.P.D.T., 250 volts-15 amp ..... .75

Variometers, General Radio No. 107D and 107E, with series and parallel connections 8.00

Telegraph and buzzer portable sets, mahogany case, 2 tone platinum contact high frequency buzzer, 2 telephone toggle switches, potentiometer, sending key, 4 mfd. condensers, transformer and 2 choke coils, receiver, $30 value 5.00

Battery, U. S. Army, lead-acid type, 16 volt, 20 ampere hour, Consisting of 8 individual 2 volt cells in sturdy wooden carrying case, minus electrolyte 5.00
Individual 2 volt cells, minus electrolyte 1.00

Generator, airplane, Signal Corps, with propeller, can be used as motor, 12 volts, 33.6 amp. Price 10.00

Sounders, Signal Corps, 120 ohms, with adjustable magnets, Price 2.50

Generators, 110 volt, A.C., 900 cycles, 200 watts, Price .. 15.00

Condensers, Kellogg, U. S. Navy, 3 M.F., 400 volts, Price 75c

General Radio Variable Inductor, type 196, 150 M.H. or 650 M.H. Price 6.50

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7. Evidence of more than one test message to any one station from a single U. S. or Canadian station will make a contestant ineligible for either a certificate award or honorable mention in *QST*. All stations must abide by the regulations of their respective countries or become ineligible. Other evidence of intentional infraction of the rules will make the contestant ineligible similarly.

8. The contest message serial number must be used in the reply test message. It is suggested that foreign participants include name and QRA at the end of their reply test messages for identification purposes. This is not a requirement necessary for proper credit but it is desirable *in a contest of this magnitude.*

9. U. S. and Canadian amateurs must signify that they desire to enter the contact-contest by sending a QSL-card or letter to the following address signifying their intention to participate. This will be acknowledged promptly but the actual message assignments will not be given out until just before the start of the contest. The closing date for entries is midnight of Feb. 1, 1930. There is no way in which one may enter the tests after that or become eligible to receive a certificate. Send your QSL card at once to the following address if you expect to participate in the February international tests. INTERNATIONAL CONTEST HEADQUARTERS, CARE A.R.R.L., 1711 PARK ST., HARTFORD, CONN.

Every foreign amateur will have a chance to make an unprecedented number of U. S. and Canadian QSO's!

Every U. S. and Canadian ham will be in on the fun!

Two weeks of opportunity to smash all previous records!

All amateurs in the world are cordially invited to participate.

COME ON IN, OM. Get your station in trim now and plan to grab off some of those certificates. U. S. and Canadian amateurs, get your QSL-entry cards in early to make sure that you comply with the Rules and are eligible. We hope to be able to show one of these splendid certificate-trophies in our next issue.

The February international test is announced in this issue so that all stations may have time to be in readiness. This early announcement is absolutely necessary to permit all amateur stations in remote and foreign localities to have information in time to work with us. Just think, it takes six weeks for *QST* to reach some countries, and in a number of individual cases much longer than that. A fellow ham in northern U.S.S.R. is perhaps the last to receive his copy of *QST* each month. Some of our expeditions also receive mail only about twice each year and they are completely frozen-in between trips of the mail boat. Thanks to amateur radio they do not have to depend exclusively on mail service. And we are told that it's a great feeling when several copies of *QST* arrive together.

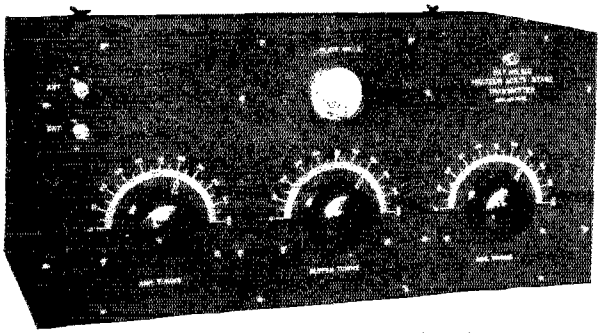
Mark the dates on your calendar now! Keep the contest article where you can find it for reference when you need it in either the January or February test.

Directional CQ's used in accordance with the suggestions contained in the R. & R. should be used profitably in both our contests by all participants — when it is desired to work particular remote Sections, additional continents, or new U. S. and Canadian districts.

There will be certificates for the high scoring

CRYSTAL CONTROL TONE
for C. W. Transmission

REL Cat. No. 215 Basic CW Telegraph Unit is the typical modern multi stage transmitter for the amateur who desires to use the best. Frequency flexibility throughout each amateur band with crystal controlled note at all times. Shift quickly and easily anywhere in the bands.



CAT. 215 TELEGRAPH UNIT

The REL Cat. No. 215 transmitter kit is furnished with all necessary parts including metal case, drilled and engraved aluminum front panel and a very concise instruction booklet giving information on the assembly and operation. Extremely simple to operate. Consumes minimum amount of power. Employs standard broadcast receiver tubes. May be operated from B batteries, ordinary B eliminators or other similar sources delivering 300 volts D.C. A complete low power transmitter ready for immediate operation. Employs UY-227 master oscillator tube, UY-224 screen grid buffer tube and UX-245 power amplifier tube. Will deliver 10 watts to the antenna as a CW telegraph transmitter.

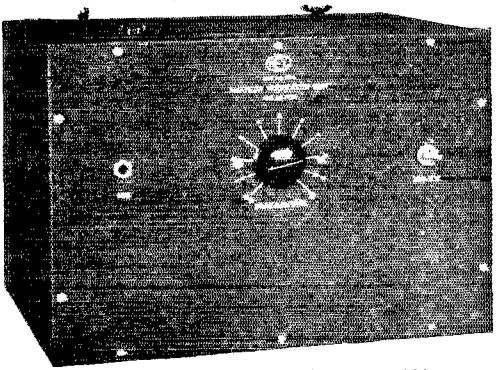
The Cat. No. 215 CW transmitter kit has been specially priced to meet the demands of every amateur. The price including one set of plug-in coils for any of the three popular bands is **$56.00.** (When ordering specify for which band you desire the coils.) Additional coils to cover other bands may be purchased at *$7.00* per set of three.

100% MODULATION
for Phone Work

REL No. 225 modulator and speech amplifier unit designed to operate in conjunction with Cat. No. 215 CW telegraph transmitter functions as 100% system modulator. When used with Cat. No. 215 unit will deliver 30 watts on modulation peaks into the antenna.

The REL Cat. No. 225 modulator and speech amplifier kit comprises all apparatus necessary and also includes metal cabinet and drilled and engraved aluminum front panel. The cabinet has the same height and depth dimensions as the transmitter. The modulator may be placed directly alongside of the Cat. No. 215 thereby giving a very neat appearance.

The same type of power supply may be used except that the plate voltage necessary will be 550 to 600 volts. The UX-250 tube is employed as modulator and the UY-227 tube is employed as speech amplifier. The No. 225 modulator kit sells for **$42.00.**



CAT. 225 MODULATOR UNIT

The amateur who desires a modern station should install both of these units. He will then have a perfect CW transmitter and a clear 100% modulated phone set. REL will be glad to forward you literature describing these two units

RADIO ENGINEERING LABORATORIES
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stations in *every* Section in our A.R.R.L. field organization in our January contest. In the February world-wide tests there will be certificates to the winning foreign stations in *every* remote locality, and to the high stations in every U. S. and Canadian mainland Section. Entries are required in the second or international contest. Send them in NOW before you forget, and before it is too late.

The Amateur and the C.C.I.R.

(Continued from page 24)

fore having proved his proficiency in conformity with an examination established by the administration of the interested country; this examination carries, as a minimum:

Transmission and audible reception of Morse Code at a speed of 10 words per minute, both for amateur telegraphers and telephonists.

An elementary understanding of electricity and radioelectricity and particularly that which deals with the operation and adjustment of an amateur station.

Legislation and national regulations dealing with radio communication.

The portions of the General Regulations annexed to the Washington Convention dealing with the operation of amateur stations.

The recipient of an amateur license must be at least sixteen years old.

2. Each government, in applying the rights which are conferred upon it by the General Regulations of Washington, Article 5, Section 18, line 1, will establish such restriction as it shall deem necessary in the use by amateurs of the frequency bands allotted them at Washington; particularly in continental Europe amateurs will not be allowed to transmit on the frequency bands reserved to be shared between public services and amateurs; however, the band from 3500 to 3600 kc. (85.71 to 83.33 meters) may be authorized for amateurs.

3. The administrations will assign to the holders of amateur licenses *bands* of frequencies and not definite frequencies; these administrations will assume no responsibility on the subject of interference (between amateurs).

4. The quality of the waves will be such that the entire width of the frequencies emitted by all amateur stations will be within one of the bands which are assigned to them.

5. The emissions, so far as practicable, must not produce noticeable harmonics.

6. Each amateur station will be obliged to have always available a wave-meter accurate to one-half per cent and of which the calibration will have been approved by the administration.

7. The total power employed for feeding all the plates of the last stage of the transmitter, including modulators if modulators are used, will be limited to fifty watts.

8. It is forbidden to use non-rectified alternating current for feeding the plates, or (unfiltered) rectified alternating current or insufficiently-filtered direct current.

9. Radiotelegraphic transmissions will be exclusively accomplished:

(a) By pure undamped waves,

(b) By modulated undamped waves, on condition that this modulation does not cause inconvenience to other radio reception.

10. Amateurs may transmit or exchange only communications relative to the tests or the adjustment of the apparatus, to the absolute exclusion of all other types of message.

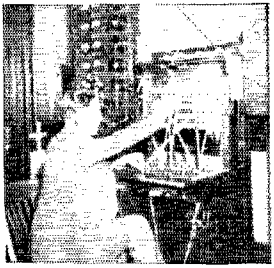
11. The administrations will undertake in an effective manner the application of the rule in the General Regulations of Washington concerning the frequent transmission, by each station, of its call letters.

12. The administrations may establish such restrictions as they deem necessary relative to hours of operation of amateur stations, particularly with a view to protecting the reception of radiobroadcasting.

Radio Inspectors $2000 to $4500 a Year.

Radio Operators $90 to $200 a month (board free).

Broadcast Operators $1800 to $4800 a Year.



Radio Repair Mechanics $1800 to $4000 a Year.

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PICK yourself a big-money job in Radio! Hundreds of men just like you earn from $2,000 to $25,000 a year in this giant world-wide industry . . . The livest money-making business of today! The whole world is calling for trained radio men.

Broadcasting stations and manufacturers are eagerly seeking trained men. Thousands of opportunities are waiting for you.

Easy to Learn at Home With This Magnificent Laboratory Outfit

The Radio Corporation of America sponsors this marvelous, simplified home-training course . . . by means of which you can prepare for success in Radio. Learn by actual experience with the remarkable outlay of apparatus given with this course . . . You, too, can easily have the confidence and ability to hold a big-money Radio job.

Only Course Backed by Radio Corporation of America

The progress of Radio is measured by the accomplishments of the great engineers in the Radio Corporation of America. This gigantic organization sets the standards for the entire industry . . . and sponsors every lesson in the course. That's why graduates of this school are always posted in newest up-to-the-minute developments in Radio and are always in big demand.

Money Back if Not Satisfied

This marvelous home-laboratory training practically insures your success by preparing you thoroughly in every phase of Radio manufacturing, servicing, broadcasting, photoradiograms, television and airplane radio equipment. As a student you will receive an agreement signed by the president of this school assuring you of complete satisfaction upon completion of your training—or your money will be instantly refunded.

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Address .....

13. Each amateur will be obliged to keep a log-book in which he shall make mention of the hours of transmission, the length of wave employed, and the calls of all stations worked.

14. The administrations will collaborate actively in the surveillance of amateur stations, by notifying each other of irregularities noted by them.

15. The administration of each country will communicate to the International Bureau of the Telegraph Union at Berne:

(a) Its regulations concerning amateur stations, particularly the examination mentioned under Item 1 hereof;

(b) The list of regularly-authorized amateurs in its country.

16. The administration of each interested country should notify as soon as possible to the International Bureau of the Telegraph Union at Berne its adherence to this agreement mentioning the reservations which it believes it necessary to make.

17. The countries whose delegates have not taken part in the drafting of this agreement, but which at a later date may agree to support the same, should communicate with the International Bureau of the Telegraph Union at Berne, mentioning the reservations which they believe it necessary to make.

The original of this agreement has been sent to the International Bureau of the Telegraph Union at Berne, with a view to its communication to the administrations.

Done at The Hague, 27 September 1929.

(Signatures)

The substance of this agreement is almost identically that which the European sub-committee of Committee II proposed as a world-wide basis and the adoption of which we prevented. Let it be clearly understood that the document above presented is in no sense a part of the C.C.I.R. proceedings but merely came into existence at the same time and place. Although some European countries will decline to have anything to do with it, to me it seems probable that it will become the basis for amateur regulation over the bulk of Europe. Truly, then, it is of wide-reaching importance. Let us examine it with those thoughts in mind.

The North American amateur shudders at some of the provisions. They would throttle us on this side to the disappearing point, because of our relatively vast numbers. For the European amateur, however, they do not seem to be so bad. The provisions in fact are the average of present European practice in amateur regulation. It should be noted that the signatory administrations do not promise to put the maximum of these facilities at the disposal of their amateurs; they merely agree amongst themselves that whatever they do will not exceed these maxima — except as they make reservations in the ratification of the agreement.

It then becomes necessary for the amateur societies of Europe to study this document and, if they find in it provisions harmful to themselves, open negotiations with their respective governments to secure modification when it is ratified. For example, Spain and the Netherlands now permit amateurs to operate throughout the band 3500 to 4000 kc. Many of the nations assign 1715–2000 kc. or a part thereof to amateurs. Amateur societies in these countries should make representations to their governments to continue in the present practice and so notify the Berne Bureau when ratifying — a possibility

distinctly provided for in the text. I do not attach too much importance to that restriction on the type of remarks that an amateur may make. Read strictly literally it is quite ridiculous but I find that the administrations expect that the permitted "tests" can only be carried out by the exchange of personal and "harmless" remarks, and I am sure that the paragraph does not visualize any change from the usual European regulation on correspondence.

I want to emphasize that this agreement was not prepared in any particular spirit of bitterness and hostility towards the amateur. It was, on the other hand, a distinct recognition of the fact that there were amateurs to be provided for, and I felt that the leading delegates fostering the agreement were sincerely desirous of establishing an equitable basis for European uniformity. Their magnitudes of course are European magnitudes and they are hampered by lack of knowledge of the amateur and some fear of him, but their general motive was not unkind. Almost every European amateur to whom I talked about the subject thought that the arrangement was fairly good. One fact is of outstanding importance: here is recognition of amateurs, provisions for them; these details having been agreed to throughout most of Europe, we may expect that many hesitant nations will now feel quite free to proceed with the more liberal licensing of amateurs. I know that some administrations, notably the Dutch, have held back awaiting this agreement. Let them now proceed, but let the amateur societies of those countries remember to appeal promptly any provisions of the document which to them seem improper for their country.

I should mention that on my trip I again had the pleasure of meeting most of the officers and, in some cases, many of the members, of the *Nederlandsche Vereeniging voor International Radioamateurisme*, the Radio Society of Great Britain, the *Réseau Belge*, and the *Réseau Émetteurs Français*, and in London I met Dr. Curt Lamm of the German D.A.S.D., and to all of them I am indebted for the courtesies shown me.

THE FUTURE

I spend a good deal of my time thinking about Madrid in 1932. Since my experiences at The Hague I am greatly encouraged. Because of the very powerful backing of this government and its plain determination to see us fairly provided for, a great change has come over the "non-amateur" administrations in their attitude towards this question. It emphasizes, incidentally, my repeated declaration that most of these administrations were strangers to the amateur matter at the first international congress in which we appeared — Washington in 1927. No longer at an international conference does an administration say "What is an amateur? Who are these people? What is the idea of giving them any facilities?" They know us now. Any administrations unfriendly to amateur aspirations know that even their own plans, to be adopted, must provide a place in the sun for the amateur. There

is now almost universal recognition of the rights of amateurs — the Washington Convention, in its definite provisions for us, did that. We exist, we are here, we are proving our value. There will still be administrations who say "That is too much for the amateur" and "Let us impose this restriction upon the amateur" but those things (and even the European "arrangement") are admissions of our right to be provided for, and with the solid array of enlightened and pro-amateur nations which we can now count upon we may feel much more confident of our ability to look after ourselves satisfactorily at Madrid.

Seventy-One Rounds

(Continued from page 31)

W1AOZ,
Waterford, Conn.
I may be the "Singing Fool" but you're the Talking Fool.

AL. JOLSON.

W1AOZ,
Waterford, Conn.
Can offer a second hand row boat and 6 empty gin bottles for your xtal.

W5KX,
Purcell, Okla.

W2FR was acting as toastmaster from 6:30 on. He and several others were rounding up the stations and passing them on. We tried to work 100 stations but, as is the case with lots of us, we talked too much for the purpose of keeping the interest of the gang and to cut down QRM and bring in BCL letters. The letters and cards that came in give an idea of how much interest there is in the amateur 'phone band, as perhaps but a very small percentage of those listening took the trouble to write.

The last station worked was W9GHI, Baldwin City, Kansas. The "round" numbers were then put in a hat and the lucky number drawn. "Doc" Dunn, W2CLA, of Brooklyn, won the 2-μfd., 1000 (working) volt condenser.

The crystal controlled transmitter used was *à la* (April) *QST* with the linear amplifier and buffer stage omitted. The receiver was 3 UX-199 tubes in the usual circuit. The antenna was a Zepp 132.5 feet long with 60 feet feeders. And the location was Waterford, Conn., "On the Rock Bound Coast" — bless it!

We give thanks to the following for keeping us awake and "blabbing":

Axwell House Coffee,
Nicotino Cigar Co.,
Smyth Bros. Cough Drops,
Local Power Company.

See you from W3JZ.

ASK FRANK LESTER

Station 2 A M J

(President Bronx Radio Club)

If you want to get the real line-up on the service Wholesale Radio gives to amateurs, just signal the well-known 2AMJ (Frank Lester himself). Frank is the active head of our Amateur Dept. He *knows* your requirements. He fills your orders **PERSONALLY.** And, if you want additional proof, just call 2X2BBN. Johnny Wilcox will inform you that Wholesale Radio Service is "right on the job." He ought to know because he himself helps to make that slogan truthful.

Personal Service to Amateurs!

Remember this: When you deal with Wholesale Radio you receive careful attention from people **WHO KNOW YOUR PROBLEMS!** In this unique service we are the only organization of its kind in the world! Send for big catalog explaining this.

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BIG SAVINGS *for* QST READERS!

Look through the catalog we will send free on request. It offers you **GREAT BARGAINS** on Transmitting and Short Wave Apparatus. No longer is it necessary for you to overpay on this kind of merchandise! Many nationally advertised brands are offered at **NEW LOW PRICES.** You may buy Short Wave Receivers, Short Wave Kits, Coils for Transmitters and Receivers, and a host of other merchandise necessary to the successful amateur. Nowhere will you be able to duplicate Wholesale Radio *values* or *prices!*

All our merchandise is **FULLY GUARANTEED.** You are protected in every way. QST Readers receive personal attention as described at the left. Two well-known amateurs head the department with which you deal. **BUY IN CONFIDENCE FROM WHOLESALE RADIO!**

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Guaranteed — Mounted — Complete

2 K. W. 2000—2500 each side..... $40.00
700 watt 1000—1500 each side..... 14.50
250 watt 500—750—1000 each side
unmounted $9.75; mounted $11.50
Auto-Transformers, Chokes, Polyphase and 25-cycle Transformers. Add $2.00 for tel. winding

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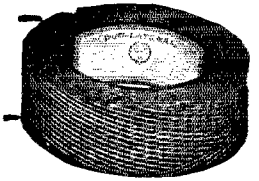

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Guaranteed — easy oscillators, carefully selected for maximum output, and ground to your approximate frequency which is stated accurately to within one-tenth of one percent.

1715–2000 Kilocycle band..... **$12.50**
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One-inch oscillating blanks..... **5.00**

We also supply "POWERTYPE" crystals to broadcast and commercial stations.

Write for literature

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1101 Huron Building Kansas City, Kansas
Specialists in frequency precision

Arctic Auroral Radio Interference

(Continued from page 20)

It would be a fine thing for radio if some expedition could and would major in that work. In passing, let it be said that observations of the type described require much dashing in and out from warm hut to sub-zero weather and will fare best when some definite planning is done in advance.

For instance, in our own case we had to do things on the spur of the moment. When the aurora would manifest its interest in radio, it was necessary to wake up the aerologist, Mr. Kallquist, and ask him to rush out into the penetrating cold night and take angles on the displays with a theodolite. That meant hasty dressing and only too often we had to evolve our own technique as we went. The observations were not always successful, because we were not at all sure of our course of operations. We were keenly aware that our other routine work interfered with explorations in this field of radio. If the reader will examine the illustration of the hut he will note that the entrance is like a tunnel, and actual practice demonstrates that while this style is best for general expeditionary work in Greenland, it is not adapted to the before mentioned rushing in and out, for the reason that one tends to stand erect before the passage is completed and the consequences of attempting to raise the building Ajax-wise seriously disturb one's mental notes.

The author has mentioned all this to show that he firmly believes a properly planned expedition, with coördinated observations being carried on at other points, will offer really interesting and important contributions to the radio art. It is indeed significant to point out that contributions such as those outlined in this and a previous article [4] were spare time by-products of a meteorological expedition.

The author wishes to acknowledge his debt of gratitude to Mr. Clarence R. Kallquist, of the U. S. Weather Bureau, whose efforts and enthusiasm assisted greatly in gathering this data. The Radio Corporation of America and the Burgess Battery Co. both lent valuable apparatus which made the work possible, thus sharing any credit for discoveries made or scientific services rendered.

The Single Control Transmitter

(Continued from page 29)

The antenna should be 127½ feet long. There seems to be considerable confusion among beginners regarding the terms "antenna" and "feeder." The function of the antenna is to radiate energy in the form of radio waves; that of the feeder is to transfer this energy from the set to the antenna without itself radiating. The antenna is a wire all by itself, and must, when of the type described above, have a certain, definite length, this length being determined by the operating frequency chosen, as shown by the chart, Fig. 2. The feeder, which can be thought of as a lead-in wire, must be fastened to the antenna at a certain,

definite point, also shown on the chart, but it need only be long enough to reach from the antenna to the set; in fact, it is beneficial to keep it as short and direct as possible.

The feeder for our 127½-foot antenna should be soldered to the antenna at a point 17 feet 9 inches from the center, or, to make the measuring a little easier, exactly 46 feet from one end. The natural or fundamental frequency of such an antenna will be 3750 kc., the center of the 3500-kc. band, and even if no frequency meter is available it will be almost impossible for the transmitter to be radiating outside the band if the tuning is done as described above by means of the flashlight bulb resonance indicator.

If the receiver can cover the 1750-kc. band, a good idea of what the signal sounds like can be had by tuning it in on this band. The information obtained in this way as to purity of note, steadiness, etc., is worth more than a hundred reports from other stations, particularly since there is always a very human and perhaps somewhat unconscious tendency to tell the other fellow what he wants to hear rather than the exact truth.

Of course we hardly need to mention the fact that before this or any other transmitter can be operated two Government licenses are required, one for the operator himself and one for the station. Information about getting such licenses can be obtained from the Supervisor of Radio for the district in which the station will be located, or by writing the A.R.R.L. Communications Dept., 1711 Park St., Hartford, Conn.

While this set is very easy to build and operate, there may be some points which are not quite clear. If the solution cannot be found in the diagrams or text, any questions will be gladly answered if addressed to the A.R.R.L. Technical Information Service.

The set shown has been tried out on just such an antenna as described above, which incidentally was bent in the shape of a "V," in a rather unsatisfactory location, and a number of contacts over a few hundred miles were made in daylight, or early evening with 180 volts on a UX-201-A. When using such low power fewer stations are worked and the signals are perhaps not so strong as with a 210 at higher plate voltage, but we wanted to satisfy ourselves that it could be done. It can, and by any beginner!

The Experimenters' Section

(Continued from page 48)

under the head to keep it from pulling through, if necessary.

You will find, after constructing this choke, that there is nothing quite like the right size choke for your short wave set. If it is found that values between the number of turns tapped are needed, you can take off the connection from the 325th turn instead of the 1st, and then you have either 75, 150, 225, or 325 turns available instead of the 100, 175, 250, or 325 available when connected in the other way. Thus, in this way, you

have a dual range choke making it very adaptable.

— *Wm. N. Crawford, W8AET*

R. F. CHOKES

Radio frequency choke coils are useful and frequently necessary in both transmitters and high frequency receivers for the proper performance of these pieces of equipment. The use of the proper radio frequency choke coil may do more than anything else to make the transmitter perform satisfactorily and give the d.c. note so much desired.

A number of very excellent articles and suggestions on the proper design and use of radio frequency chokes has been published but the subject has certainly not been exhaustively treated. We are publishing a bibliography on radio frequency chokes and related subjects this month for those who may care to refer to papers on this subject.

BIBLIOGRAPHY ON RADIO FREQUENCY CHOKE COILS

QST References:

R. F. Properties of Insulating Materials, by Preston and Hall, p. 26, February, 1925.

Plug-In Choke Coils, p. 42, March, 1926.

Buying Inductances by the Inch, p. 42, June, 1926.

The R. F. Choke Puzzle, p. 44, September, 1926.

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Radio Frequency Chokes, by Lidbury, p. 27, June, 1927.

Another Angle on the R. F. Chokes, by Webb, p. 39, June, 1927.

Condenser-Tuned Short Wave R. F. Chokes, by Binneweg, p. 46, November, 1927.

Radio Frequency Chokes for Receivers, by Browning, p. 31, January, 1928.

Use of a Non-Magnetic Meter for Testing R. F. Chokes, p. 41, May, 1928.

An Effective Low Cost 'Phone and C. W. Transmitter of Modern Design, by Lamb and Dudley, p. 9, September, 1929.

Books:

The Radio Amateur's Handbook, by Handy and Hull (fifth edition).

Measurement of the Reactance, Inductance and Distributed Capacity of Radio Frequency Choke Coils. (Measurement No. 12), p. 700, 6th revised edition, Robison's Manual of Radio Telegraphy and Telephony.

Radio Telephony for Amateurs, by Ballantine.

Radio Theory and Operating, by Loomis.

Coils and Magnet Wire, by Underhill.

The Receiver at W1AOF

(Continued from page 36)

PANEL DESCRIPTION

In the upper left corner is the Clarostat volume control. Next comes the Clarostat regeneration control. The meter is a Weston 0–1 ma. This is in the detector plate circuit. At the right of the

TALKS TO LONDON FROM PLANE IN AIR

Reporter in Craft Speeding Over City Has Conversation Across the Ocean.

THREE CALLS ARE MADE

Words Understood Clearly in Spite of Static—Electric Experts Pleased With Results.

Special to The New York Times.

HADLEY FIELD, N. J., June 25.—Flying at ninety miles an hour today with a thick fog blanket blotting out the earth below him, W. W. Chaplin, Associated Press reporter, casually turned to a microphone and asked for the London office of the news association. The request, relayed through the laboratories of the Bell Telephone Company, passed on to the radio ocean radio telephone station at Belfast, Me., and then carried again on the air across 3,000 miles of ocean to London.

The connection was made quickly and Chaplin asked that Miss Martha Dalrymple of the London office be called to the phone. The conversation, once greetings were over, Chaplain said later, had to do mostly with the weather. It was broken somewhat by static, but the two persons talking, one in a fog-bound plane a half-mile in the air and the other in a fog-bound London office, understood each other and exchanged greetings.

meter are two 30-ohm rheostats for the audio tubes and detector tube. On the upper right corner is the push-pull switch which turns off the filament power. One of these is not needed on a receiver when a battery cable is used as this cable may be pulled apart and the whole power supply is disconnected from the receiver. At the lower left is a 30-ohm rheostat controlling the last two audio tubes. At the right is the knob controlling the double-pole double-throw jack switch for audio selectivity. Next we come to the main tuning control which is a 4-inch G.R. dial with vernier. Above this dial to the left is the knob which controls the variable capacity in shunt. The peep hole which allows the operator to see the drum dial (attached to shunt capacity) may be seen here. At the extreme right of the tuning dial may be seen the knob which controls the coil turret. In the lower left corner is the 'phone jack which fits through an insulating bushing in the panel. All knobs are of G.R. manufacture. The panel is shiny as it originally was purchased.

OPERATION

To fully appreciate the advantages of a receiver of this design and magnitude one must become acquainted with its intricacies. After it has been completely wired and ready for reception the operator may be greeted by some unearthly scream or howl. This is nothing more or less than a tickler being of the wrong size or improper B battery voltage. After these minor difficulties have been eliminated one at a time, a receiver of unlimited possibilities is the result. Then one can sit back and enjoy scouring over and in between three frequency bands with as little trouble as is usually experienced with the coverage of a single band. All that is needed now is to become accustomed to the unusual audibility level.

Readers and admirers of this receiver may not wish to incorporate all the features disclosed or wish to give up their pet receivers, but there are features in this receiver that might well be incorporated in any receiver of amateur construction. It is with this thought in mind that this lengthy description has been presented.

Technical Information Service Rules

(Continued from page 44)

is not sufficient, as the envelope is destroyed by the office manager as soon as the letter is opened.

8. Keep an exact copy of your questions and diagrams, and mention that you have done so.

9. Do not ask for opinions on, or comparisons of, business concerns or their products.

10. Enclose postage for the reply but do not send an envelope. It is much more convenient for us to use our own envelopes with our stationery.

11. Address all questions to the Technical Information Service, American Radio Relay League 1711 Park St., Hartford, Conn.

(Any back copies of *QST* to which we refer you may be obtained from our Circulation Department for twenty-five cents each.)

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 arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others.
(3) The Ham-Ad rate is 15c 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 takes the 15c rate. Provisions of paragraphs (1), (2), (4) and (5) apply to all advertising in this column regardless of which rate may apply.

PLATE power for your set, the very heart of its performance. For quietness DX ability, life-long permanence, absolute dependability, lowest ultimate cost, no other plate source even approaches the achievement of an Edison steel-alkaline storage B battery. Built painstakingly; every joint pure nickel, upset electrically welded. Genuine Edison Electrolyte. Our list describes complete batteries, construction parts, enameled aerial wire, silicon steel. Available immediately, filament and plate transformers for the new 866 rectifier, complete plate power units. Rectifier Engineering Service, radio W8ML, 4837 Rockwood Road, Cleveland, Ohio.

THE most complete line of modern short wave receivers for every particular service. Four to nine tube designs, Radiophone-CW transmitters, of any power or type. We make a complete line of apparatus including speech amplifiers, filter coils, transformers, rectifiers, variable condensers, inductances, etc. Any special apparatus, designs, made to order using your parts if desired. Prices on request. New bulletin lists complete line of apparatus. Write for copy. Ensall Radio Laboratory, 1208 Grandview Ave., Warren, Ohio.

AMATEURS — experimenters, builders. We serve over 4000 I.R.E., A.R.R.L., etc. experimenters and "nuts." Full discounts. $50,000 stock approved parts — no sets. Over four pounds catalog, circuits, data, prepaid, 50c. Weekly bulletins (new items, results of experiments, etc.), 20 weeks, $1. Sample experimenters "Over the Soldering Iron" magazine, 25c. Transmitting data, price list, etc., 25c. Kladag Radio Laboratories, established 1920, Kent, Ohio.

QSLs — plain at $1.00 per hundred. W9BEU, 9032 Windom, St. Louis, Mo.

WANTED — your radio wants. Parts for that receiver, transmitter or power supply. Special apparatus. Pontiac Engineering Co., 1100 Ave. I, Brooklyn, N. Y.

WANTED — navy standard receivers SE143, SE1220, SE1420, IP500, 1P501, also 203A and 204A tubes and spark gap units. State condition and price. Paul Trautwein, 38 Park Place, New York City.

TELEGRAPHY — Learn Morse and wireless telegraphy. Big salaries. Tremendous demand. Expenses low, can earn part. Catalog free. Dodge's Institute, Wood St., Valparaiso, Ind.

CRYSTALS — each plate tested on the air and fully guaranteed. 3500-kc., $14; 1750-kc., $9; blanks, $4. W9DRD, Herbert Hollister. Edwardsville, Kans.

PANEL engraving — finest workmanship on radio laboratory apparatus. Request price list. A. L. Woody, 19 S. Wells St., Chicago, Ill.

SELL — MOPA xmitter. Has good quality parts, all okay. Suitable for two 210s or one 210 as one 852. Includes 5 gd. meters. Hundred bucks. Other dope on request. Chas. Noxon, W8QP, 835 Maryland Ave., Syracuse, N. Y.

SALE or trade for smaller dynamotor, 500-volt, 200-watt generator. W9AZF, Adams, Minn.

KENNEDY Universal receiver 175-26,000 meters, with two-stage amplifier, $25. Dr. Sceleth, W9GV.

S-M Round-the-World four, wired, complete with tubes. First $30 takes it. T. L. Titus, Glen Cove, N. Y.

POWER crystals for broadcast and amateurs, ground to your frequency. Write and get our prices. Filter condensers, 1000 volts, d.c., $2.50. All absolutely guaranteed. Fitz-gerald Harrison Laboratories, 43 Summit Ave., New London, Conn.

MICROPHONE transformers — for single or double button microphones, $6.10. Ed. Keers, 319 Garnsey, Joliet, Ill.

SELL short-wave equipment, meters cheap. W6NH.

SELL Kennedy universal and two step, $50. M. N. DeShazo, 2110 North 60, Seattle, Wash.

SELL or trade: 6-350V dynamotor; 18-450V dynamotor; ½ h.p. motor; screen-grid receiver, 15-550 meters; WE power amplifier; broadcast two-button microphone; lineman's a.c. voltmeter; WE212D; RCA inductance and numerous small parts. W9ENG, Mound Valley, Kans.

WANTED: Thordarson wireless transformer, type R, 1 kw., 25,000-volt. State condition and price. C. W. Gartlein, Rockefeller Hall, Ithaca, N. Y.

FILTER Chokes — real chokes for your filter system. Large condensers unnecessary with these chokes. Price list on request. Scott Coil & Transformer Co., New Albany, Miss.

SPECIAL rectifier aluminum, $1.25. Lead, $1.00 square foot. Elements 1 x 4 15 cents, 1 x 6 17 cents pair. All prepaid. Best Silicon transformer steel cut to order, 25-35 cents pound. Postage extra. George Schulz, Calumet, Mich.

WANT .30-06 Springfield sporter or military A-1 condition. Have plenty SW tubes, meters, transformers, etc. Swap? Kent, 39 Fairview Ave., Hempstead, N. Y.

SELL — Kellogg two-button mike, just repacked and guaranteed perfect. Just the thing for that new phone transmitter. First $65 takes it — or trade for motor generator. W9CHS, R. No. 1, Box 265, Kenosha, Wis.

SELL — complete station 7½ transmitter, three-tube receiver. Write for details. D. Brown, 3125 Main St., Buffalo, N. Y.

HAMS: Get our samples and prices on printed call cards made to order as you want them. W9APY Hinds, 19 S. Wells St., Chicago, Ill.

JEWELL 1000 ohms per volt, meters No. 54 d.c. 0-2000 $14, 0-1000 $13. No. 74 a.c. 0-1000 $11. 60 lb. 30H 500 M.A. choke $25. Hilet products in stock. See Hilet advertisement. Write for specifications. M. Leitch, Park Drive, W. Orange, N. J.

SELL: 50-watt transmitter. Three Jewell meters, REL inductances, Tobe filters, 1 UV203 tube, 550V Emerson mg. Everything mounted and ready to operate. Bargain for $100. Write for details. W9FOR. Guy E. Williams.

SHIELD grid transformers, new Tyrman Company bankrupt. Set of 4 matched, $8.45. Unmatched, 50c each as is. Chicago Radio Service, 2650 Burling, Chicago.

RECTOBULBS, $10, Pilot super-wasp, $29.40, 25% off on Leach, Signal, REL, Jewell, Ward Leonard; 30% on Thordarson, Sangamo, Cardwell; 35% on Tobe and Flechtheim. Any new apparatus you need at maximum discounts. Write Henry's Radio Shop, Butler, Mo.

WESTON 301 0-8V d.c. voltmeter, 0-5 d.c. ammeter used, $3.50 each. Write for list. H. F. DeGarmo, Early, Iowa.

TRANSFORMERS — 100-watt, 110-volt, 60-cycle, 750 volts each side center tap. One 7½-volt, center-tapped filament winding, $7.25. Same as above, but two filament windings, $8.00. Above will operate two 210 tubes. Same transformers as above, but 150 watts, $9.25. Same as above, but 250 watts, $11.50. All mounted, heavy construction, no heating. Scott Coil & Transformer Co., New Albany, Miss.

SELL REL 3-tube amateur band receiver in metal cabinet, $25. W8QP, 2405 Jenny Lind St., McKeesport, Pa.

SELL 4-type a.c. 24, $3 each; 1 R-80 rectifier, $2.25; 2 L-45, $2.50 each. Ceco tubes. 1 UY227, $2.25. Kenneth Ervin, Utica, Miss.

WANTED — Grebe CR-9 cheap. W6NH.

DEAD speaker units repaired. Send to Robert Schlosser, Pontiac, Ill.

LEARN code at home with our famous code machine. Amazingly low price. Write Codegraph Mfg. Co., Winchendon, Mass.

QSLs — different, distinctive. You'll like them. Free samples. W2AKE, 1317 Rosedale, New York City.

QSL cards, $1.00 per 100. Two colors. Samples. W9CKA, Corwith, Iowa.

3000V, 4000W, 7½ Hp. 3-phase drive double commutator motorgenerator, complete $50.00, 2500V, 500W, double commutator, single phase drive complete $225.00. 500 Cycle 1 kw. ballbearing motorgenerator, 110V, DC drive $175.00. 250 Cycle 1¼ KW. ballbearing motorgenerator 110V. DC drive $165.00. 2-5KW. Rotary spark gap 110V. DC drive $35.00. 1000V, 200 W. Esco 1-phase drive $75.00; 300W. GE $95.00. 750V, 250 W. new General Electric motorgenerators $52.50. 200W, $42.50. 32V. drive motorgenerators, 750V, 150W. $37.50; 200W. $42.50; 300W. $65.00. 400V. 100W. generators $8.50; ¼Hp. 3450 speed motors $10.50; ½ Hp. $16.50. ½ H. 110V. AC synchronous 1800 speed motors $20.00. 8V, 5 ampere generators $6.50. Queen City Electric, 1734 Grand Ave., Chicago.

QSL cards, stationery, wall cards, message blanks, etc. Seldens'. Cranesville, Pa.

CRYSTALS — power oscillators, dirt cheap. Write W6EBV and save some cash.

FOR sale — 250-watt transmitter and parts. Write for list. Al Miller, 414 9th St., Rockford, Ill.

A.R.R.L. *sweater emblems make fine Christmas gifts. They* are made of best quality yellow and black felt with embroidered symbol, 5 x 8 inches. M. O. or currency only accepted. Price $1.00. Eric Robinson, 135 Jefferson Road, Webster Groves, Mo.

SALE or trade: 1500-volt dynamotor, 1000 volt-generator. Esco. Two 852 tubes. Omnigraph. One "8" tube. All cheap. Want crystal, blanks, 7½-watt tubes or what have you? W4EC.

DUBILIER condensers, 40,000-volt, cap. .0012-.001-.0008, $35.00. Power control relays, 4 sets ⅜" silver contacts, metal cabinet. Special, $5.75. Palmer & West, 504 Maritime Building, Seattle, Wash.

EX-NAVY dynamotors and generators of unusual construction, ball-bearing and new. Shaft extension for external motor or gasoline engine. $3 additional. General Electric 24/1500 volt, 350 watt, $37.50; 24/750 volt, 150 watt with filter, $27.50; 12/350 volt, 50 watt used, $15; Holtzer-Cabot 12/500 volt, 35 watt, $20; Westinghouse 6-15 volt, 500 watt, with propeller, $15; 27.5/350 volt, .08 ampere special $12. 50 twins for 700 volts, $20; 10/350, $18; ½-kw. 500 cycle with d.c. exciters, $15; 900 cycle 200 watts, $25. With complete aircraft spark transmitter, $30. 1-kw. 500 cycle ship motor generators. Complete list. Henry Kienzle, 501 East 84th St., New York City.

TRANSFORMER specials. 500-0-500, 7½ volt, $4.50. 550-0-550, 8 volt, $5.50. 0-550 with two 8-volt windings, $3.75. 750 each side, two 8-volt windings, 250 watt mounted, $10.50. 10 volt, 75 watt, $3. 1000, 1500 volts each side center, 700 watt, $14.50. 300-0-300, 5, 5, 2½, 1½ volt electric set transformer, $4.50. 350-0-350, 5, 2½, 2½ volt, $5.50. 30 henry 85 M.A. double choke, $1.75. 50 henry 100 M.A. double choke, $3. 300 M.A. 30 henry single choke, $5.75. Complete 245 power pack, $14. 171 power pack, $10.50. Prices are net F. O. B. Phila. Send for new catalog listing a complete line of transformers, chokes and power packs. Electrone Labs., 834 N. Randolph, Philadelphia, Pa.

650-volt Power-filament transformers, $6.90. Plate supply 550 and 750, $12. Potter condensers, test voltage, 1 mfd., 2000, $2.50; 2500, $3.25, 2 mfd., 1000, $2.50; 2000, $4.00. Aluminum square-foot, 85c. Lead, 85c. Ham List, 4c. Curtis Sales Company, 1109 Eighth Ave., Fort Worth, Texas.

CABINETS — genuine RCA metal cabinets for 33, new and perfect, $1.00. *Fine for shielded receivers, power supplies,* laboratory apparatus, etc. Walnut cabinets for Radiola 60, $3.00. O.K. for QST shortwave super. W8CHN.

PLATE supply transformers — all sizes. Our new price list quotes our complete line, mailed on request. Scott Coil & Transformer Co., New Albany, Miss.

NEW Morton Electric Company motor generator sets 250W 1000V, $50. 500W 2000V, $165, F. O. B. Chicago. Generators direct connected to one-phase 60-cycle motors. Hanson, 4832 Rice St., Chicago, Ill.

OMNIGRAPHS, Teleplexes, transmitters, receivers, Vibroplexes, 50-watters, rectifiers, portables, motor generators, monitors. Bought, sold, traded. Ryan Radio Co., Hannibal, Mo.

QSL cards, two colors, $1.00 per hundred. Free samples. W8DTY, 257 Parker Ave., Buffalo.

CRYSTALS cheap. Write W8DMI.

SELL one 0-5 Weston voltmeter, $5; one 0-10 Weston voltmeter, $5, and one 0-6 Jewell voltmeter, $4. C. G. Kenefick, 88½ Brook St., Hartford, Conn.

SALE or trade: 4-tube 1929 receiver, $40; Kennedy two step, Aero monitor, $7; Signal key, $10; Jewell milliammeter 0-50, $4; 0-1½ TCA, $7. Want good parts. W9GEK.

GENUINE Silicon bronze antenna wire, ship aerial, used by the marine trade, wireless and major broadcasting stations. Finest for conductivity. Will not corrode, rot or stretch. Years of service, 2¾c per ft. A. S. Antenna Wire Co., Nutley, N. J.

MOTOR generator bargains: 750-volt, 250-watt direct connected to 110-volt, 60-cycle, alternating motors with field resistance, $49.50. Also 150-watt same as above, $40. ¼-horse, 110-volt, General Electric and Westinghouse alternating motors with pulleys, $8.75. ⅓-horse, general electric, repulsion-induction motors, $14.50. ½-horse double shaft buffing and grinding motors, $11.50. We are also offering many other bargains in motor generators in voltages to 3000. Also separate generators, motors, etc. Write us for quotations on any machines you are interested in. Electrical Surplus Co., Radio Dept., 1911 Chicago Ave., Chicago.

LISTEN, fellows, if you have not already heard about them, this is your lucky day. VT14 navy five-watters. Voltage ratings *same as UX210. These tubes were made for U. S. N. by* General Electric, and they are all new and in original navy boxes. We're passing them on to the boys for one buck each. Sent P. P. or C. O. D. Add some for postage. G. L. Lang, 1128 Springfield Ave., Irvington, N. J.

PORTABLE transmitter and receiver described July Radio News. Selling to free investment for further research. Best offer. Also W. E. 7-A amplifier. Lieut. Wenstrom, West Point, N. Y.

SELLING out high power and surplus apparatus, Jewell a.c. 0-15 voltmeter, $5; Jewell 0-500 mill, $5; Kico 100-volt storage B battery, $6; 1000-watt 20,000 ohm c.t. grid leak, $2.50; Hyvac UX222, $4.50; National .00015 xmtr condenser, $4.50. These articles were not used yet. The following second hand: Mercury arc, tipping magnet, holder oil and oil receptacle for arc, $14; WE212D emission tested A1, $32. Willard 6-volt storage battery, $5.25. Have transformers as follows: 12-volt 175-watt Thordarson, $8.50; 7½-volt, $1.25; four 400-volt, $14; 550-volt c.t., $2.25; 6 and 200 volt secondaries, $2; shop-worn push-pull transformer, $5. Three used 5-watt and 2 used 7½-watt tubes altogether $8. W1AVT.

5-WATT tubes. Brand-new at $1 each. These are rugged, thoroughly tested tubes. Unloading overstock. Renmo Tube Co., 115 Newbury Ave., Atlantic, Mass.

FILAMENT supply transformers — Any size or voltage supplied to specifications. Write for our new price list of these. Scott Coil & Transformer Co., New Albany, Miss.

PILOT super wasp a.c. short-wave kits in stock, $34.50 net. Send for our new price list just published. Hatry and Young, Hartford, Conn.

QSL cards $1 per 100. Two colors. W8AAM, 533 Manhattan, *Hazleton, Penn.*

BARGAIN — Model 8A Kolster broadcast receiver. New, in original carton. This table model d.c. set in satin finished mahogany cabinet contains four stages of tuned r.f., detector, and three special audio stages. Single illuminated control. Selectivity or sensitivity adjustable. Requires seven 201A's and will take power tube in last stage. Height 12¼", width 27½", depth 14¼". A fine set, and only $40 cash takes it. Miles W. Weeks, 40 Norfolk Rd., Brookline, Mass.

TRADE crystals for what have you? W6EBV.

PRINT your own radio call cards, stationery, circulars, advertising, etc. Junior press, $5.90; job presses, $11; rotary, $149. Print for others; big profit. Easy rules furnished. Write for catalog presses, type, paper, etc. Kelsey Company, Q-18, Meriden, Conn.

REAL bargain: Screen-grid SM4, factory-wired, first-class shape, $22. Write R. E. Shettler, W8DFD, 112 Central Ave., Oil City, Pa.

NAVY ¼-kilowatt, 500-cycle transmitter with motor generator, $160. Wanted 2000-volt generator set, two or three units. Navy General Radio wavemeters, direct reading with galvanometers. Special, $14.00. Arthur Faske, 1515 Eastern Parkway, Brooklyn, N. Y.

SPECIAL — home-made bugs, $5. Guaranteed fast, smooth action. Xmitters and receivers made to your specifications. Years experience. Work guaranteed. W9CDU, Nevada, Mo.

XTALS power, 3500-kc. band, $10; 1750-kc. band $8. Also xtal xmitters. W2BOA, 605 Corlies Ave., Allenhurst, N. J.

Q R A SECTION

50c straight with copy in following address form only:

W3OA — C. D. Stein, 304 N. 9th St., Allentown, Pa.

W3OP — E. J. Knoll, Jr., 708 N. 6th St., Allentown, Pa.

W9DEE — Richard E. Wlua, Clarkson, Neb.

W9ECP — Don Friend, Box 514, Limon, Colo.

To Our Readers who are not A.R.R.L. members

WOULDN'T you like to become a member of the American Radio Relay League? We need you in this big organization of radio amateurs, the only amateur association that does things. From your reading of *QST* you have gained a knowledge of the nature of the League and what it does, and you have read its purposes as set forth on page 6 of this issue. We should like to have you become a full-fledged member and add your strength to ours in the things we are undertaking for Amateur Radio. You will have the membership edition of *QST* delivered at your door each month. A convenient application form is printed below — clip it out and mail it today.

A bona fide interest in amateur radio is the only essential qualification for membership

AMERICAN RADIO RELAY LEAGUE
Hartford, Conn., U. S. A.

I hereby apply for membership in the American Radio Relay League, and enclose $2.50 ($3 in foreign countries) in payment of one year's dues, $1.25 of which is for a subscription to *QST* for the same period. Please begin my subscription with the ..... issue. Mail my Certificate of Membership and send *QST* to the following name and address.

.....

.....

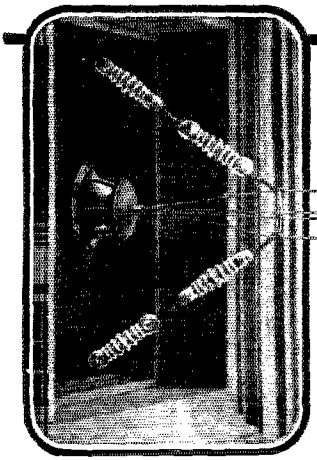
.....

Do you know a friend who is also interested in Amateur Radio, whose name you might give us so we may send him a sample copy of *QST*?

.....

Thanks

For Your Convenience QST'S INDEX OF ADVERTISERS IN THIS ISSUE



The right insulating equipment to avoid radio energy loss at a close-coupled horizontal lead-in

THIS antenna insulator installation has helped Broadcasting Station WQAM, owned by Miami Broadcasting Co., Miami, Fla., to send its fine programs far into the southwestern, central and northeastern portions of the country without loss of clarity and with the moderate power of 1000 watts.

The PYREX Navy Type Entering Bowl coupled direct to the end of the antenna carries the lead-in squarely through the center of an opening in the wall, and two PYREX Strain Insulators in series on each anchorage and tension line keep the radio energy *in* and the disturbing stray secondary currents *out* of the antenna. Semi-tropical rains and moist salty atmosphere do not impair the protection because PYREX Insulators have a dense impervious surface that sheds water and collects no deposits. Likewise in dust and smoke-laden atmosphere, particles that settle on PYREX Insulators are blown off by wind and washed off by rain. In any location, there is no deterioration in insulating value.

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Suitable types and sizes of PYREX Insulators for every antenna, lead-in, stand-off, base support and bus-bar purpose are illustrated and described in the PYREX Radio Insulator Booklet, which will be sent on request.

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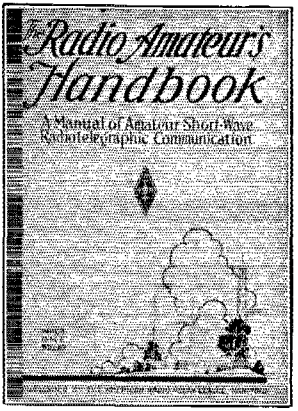
RADIO INSULATORS

RUMFORD PRESS
CONCORD

The Radio Amateur's HANDBOOK

Sixth Edition
By HANDY *and* HULL

For Those Who Don't Know It:



THE Handbook is a practical manual of amateur radio in all its phases, published by the American Radio Relay League, the amateur's own organization. It starts at the beginning and tells the whole story: What amateur radio is, How to be a radio amateur, How to obtain your licenses, How to build the simple apparatus of a simple station, How to build the best known apparatus for the most modern station, How to operate the station. Enough information to keep you busy and interested for five years.

For Those Who Do Know It:

FOR years the Handbook has been the practical working guide of successful amateurs the world over. It has been completely revised in terms of 1929, by Mr. Handy, the League's Communication Manager, as to all the aspects of operating procedure, and by Mr. Hull, the director of the League's Technical Development Program, as to all its features of apparatus and technical matters. Everything in it is on a 1929 basis, replacing the 1928 methods which used to be good enough but aren't any more.

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NOW IN ITS SIXTY-FIRST THOUSAND

232 Pages $6\frac{1}{2} \times 9\frac{1}{2}$ *188 Illustrations*

In wealth of treatment and profusity of illustration, a big book. Printing in the familiar *QST* format makes for handiness and enables distribution at ridiculously small cost.

In keeping with our policy of constantly revising the Handbook the copies now being distributed, although not advertised particularly as a new edition, contain new and modernized material on Crystal Control, Amateur Radiotelephony, Power Supply and Keying. Kept constantly up to date, this is by long odds the best edition of the Handbook ever distributed. Anyone at all interested in the technical side of radio can ill afford to be without it.

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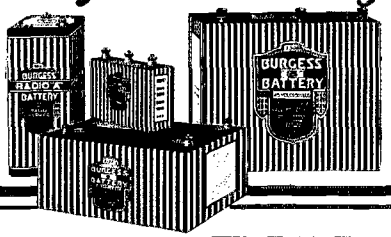
Hartford, Connecticut, U. S. A.

"Ask any Radio Engineer"



BURGESS BATTERY COMPANY

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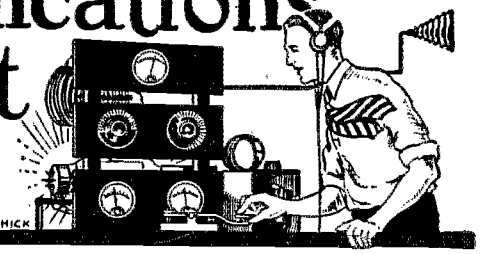
The Communications Department

F. E. Handy, Communications Manager
E. L. Battey, Asst. to Coms. Mgr.
1711 Park St., Hartford, Conn.



A Good Radiotelegraph Operator

By Richard A. Hilferty*

The Communications Manager invites contributions on every phase of amateur communication activity, offering a prize for the best article selected each month. The author whose article appears to have the greatest value each month has his choice of (1) a buckram-bound copy of the Radio Amateur's Handbook, (2) six pads of A.R.R.L. message blanks, or (3) 500 A.R.R.L. log sheets. The right is reserved to use other articles at any time with the usual credit to the author. A wide variety of subjects on which to write was suggested with our original announcement (March QST, page 62) and the offer stands good for all articles received in 1929 marked for attention in connection with the contest. Why not sit down and send us your ideas today?

WHAT are the qualifications of a good radiotelegraph operator? In this day and age of speed and accuracy, you can bet that his ability must be of the highest order in his particular line of work.

Let us for a moment step out of our characters as amateurs, and consider the things that our brother the commercial telegrapher is doing. True, the sphere he occupies is somewhat removed from our own, but all the same an examination of his methods may be helpful to us in that it may show wherein we are delinquent, and may set higher standards towards which we should strive.

In order to see our brother operator in his element, let's drop into the syndicate room of the nearest large newspaper. Amid scores of clattering telegraph sounders we are directed to a man who is an able representative of the fastest class of telegraph operators in the world. He is a Phillips Code man. We glance over his shoulder at his flying fingers and smoking typewriter. And right here we lose any semblance of swelled head which we may have had concerning our own operating ability. For this man has never even heard "20 w.p.m." He talks in terms of "3000 words per hour"! Not 20 words per minute for five minutes, but 60 words per minute for hours at a stretch. Nor does he stop at this meagre accomplishment. He inserts all punctuation marks in their proper places; he capitalizes and makes paragraph indentions; he numbers each sheet with its proper page number and serial number; and his copy is as neat and perfect as a printed page in a newspaper. His memory is so keen that he often copies as far as twenty or thirty words behind, and keeps the story in his head while editing it, reading the sounder, and pounding his "mill" — *and* he hasn't said "BK" for a year. Does he say "OK" at the end of each despatch? He does not. It's unnecessary.

Phew! That was hard work just watching that bird. But here we are at the Western Union station. Let's see how these boys work. We notice that here, too, there is a decided absence of the letters "BK" and "RPT." The operator to whom we confine our attention is busily engaged in copying messages of less length than those which we saw coming in on the Phillips wire. He has to change blanks more often, and he has to write in more preambles. In addition to these operations, he tears the carbon copy off of each delivery blank, and spikes it for his files. He's in no hurry. They can't snow him under. The sending operator doesn't ask if he's being received well either. He leans on that bug for all he's worth. But his Morse is *good*. It doesn't sound like Japanese code. It sounds like what it's meant to be, and that's the way it comes out on the other end. We notice that the receiving operator here too is always a few words behind. He has a memory.

Now while we're here, let's ask our guide to show us the static room. Forthwith we are ushered into what seems to us a more natural-looking room, decorated here and there and everywhere with knobs, dials and wire. "Ah," we sigh, "at last we're getting into our own element. No sixty words per minute stuff here. These fellows are radiomen." One of the large-eared gentlemen stops copying long enough to hand us a pair of phones. "London," he says laconically, and types furiously to catch up on himself again. We listen attentively, but concentrate as we will we can't get two words out of ten. But this man is making solid copy, and at forty w.p.m. through static wipers that wreck a half dozen words at a time. He seems to concentrate on the signal and read right through the "X's." And furthermore, he seems always to be a few words behind. At another table a man sits in front of a short-wave receiver. He is copying slowly and with evident difficulty. "Bum signal," he says as he hands up a pair of phones. We listen. We listen some more. Why, we can't even hear the signal, and still he copies. And we thought we were good. But enough of this. Let's run over to the R.C.A. office where we can see the signals without listening.

Well, here we are at Broad Street (R.C.A. transatlantic office). We crash the gate and are admitted to the large quarters of Radio Central's operating department. Are these boys real operators? You can bet they are. Look here at this circuit. It's going a hundred words a minute. Two men are punching on this one circuit, and how their fingers fly. Messages of all descriptions are pouring in and are placed before the operator to be converted into holes in a paper tape which runs through an automatic transmitter. These messages are not in plain English. They are in ten-letter code and languages of all nations. The operator must be accurate in punching these words. And he is — at fifty words per minute. Opposite him sits a man who is receiving. Slip is running before him a mile a minute, it seems. He glances at the irregular ink line on the slip and grabs an XQ blank or what not. It's a split second work. No delays here. And accuracy above all. All figures in the messages are repeated at its completion and are sent in abbreviated form (collation) to save the fraction of a second necessary to repeat the long continental numeral characters. Speed. More speed. And accuracy above all.

We could make a trip to the transatlantic cable office, but that would only be adding insult to injury. We're ashamed

*W1AFC ("DH" of W1FL) now with NBC, 711 5th Ave., New York City.

enough now of our sloppy operating without being brought further into contrast with these boys. Let's go home and study this thing out. There must be something back of all this — something that we've missed entirely in our many years of playing with amateur radio. Playing! That's the word. We've just been playing without having taken the trouble to learn the fine points of the game.

We ask ourselves this question: "Is there not more fun playing a card game, of which we know the rules, than if we were to sit in on a game at which we were a total flop?" The answer is inevitable, and here's where we get down to business. Amateur radio is a game for our enjoyment. It's a more or less complicated game that needs study. It's a game that's a long way from being solitaire. The players number in the thousands, and one bum player can cause an otherwise pleasant pastime to become a disorganized riot. The rules have been laid down many a time and oft in *QST*, but the proficiency of the players is dependent entirely upon themselves.

Along the lines of proficiency, let's see what we have learned from our little exploration trip of today.

First we must learn to read code fast. This requires nothing more than serious study. It's awfully easy to listen to slow sending exclusively, because it's too much bother to listen to a fast circuit. The remedy is obvious, we must pin ourselves down for a few minutes each day, to a signal that is just a bit beyond our reach in speed. The high frequency spectrum is teeming with signals of automatic character (which is the ultimate in perfection of code sending), and we have but to twist the dial to find the speed we want. When we have arrived at the point where we can make PERFECT copy at fifteen words per minute, the next step is to try something faster until we have mastered it.

Second, we must learn to copy *a word or so behind*. On account of static, fading, poor transmission, etc., it often happens that we miss a number of intermittent letters in a single word, and it is not until the word is completely transmitted that we recognize it. Copying behind, and memorizing what has gone before will usually enable us by a rapid process of substitution, to supply the missing letters and perfect the copy without breaking or asking for a repeat.

Third, we must learn to concentrate so closely on the signal which we are copying that we will be able to distinguish its musical (or unmusical) character through interference or static of equal if no greater intensity. We must get away from that idea that a signal is unreadable on account of interference. As a matter of fact, it may be 100% readable to an operator who has trained his ear and his mind to reject a pitch other than that to which he is listening.

Fourth, we must learn to make a neat copy which will be readable to others as well as to ourselves. Proper use of a typewriter is an asset in this case, and incidentally may help us to increase our speed if we are not expert penmen. A glance at a copy of a commercial telegram is a shining example of neatness. The filing time, the origin, the signature, and all other parts of the message appear always in the same position and are spaced properly.

Fifth, we must be accurate, which we cannot be until we have mastered the four previous points. And we must combine speed with accuracy in order not to hold up the game.

Sixth, we must not yell "BK" or ask for "words twice" while there is a chance to copy single solid by a slight effort on our part. For breaks and words twice slow up the circuit and cause unnecessary interference to other stations that may be on the same frequency. We must never give up trying to take a message unless the signal is so far in the mud as to be undistinguishable.

Last, but far from least, we must learn by listening to automatic transmissions, how to handle a key. If we will listen to our own sending, and get away from the idea that every receiving operator excepting ourselves is a mind reader, we will find many more interesting contacts with stations that have not worked us heretofore because our rotten fist gave us away. We didn't know how to play the game. We must bear in mind that a "bug" does not miraculously change our fist overnight from mediocrity to perfection. We will probably note that the operator who can make his bug sound like an automatic transmitter is the man who also has a hand-sending fist that is a pleasure. The bug sender who makes his dots conform to the speed at which he is sending is the man who knows his business. There is a peculiar tendency on the part of many of us to set our dots for a speed of forty words per minute and then send dashes for a speed of twenty words per minute. The incongruity of the thing is immediately apparent. The characters are so far unbalanced as to be almost unintelligible. The remedy in this case is obvious. Set the dots for slow speed and listen sharply so that the speed of the dashes may conform to the speed of the dots or vice versa.

The whole business of operating well depends on first, careful study of correct procedure, and second, determination and persistence in making all the points learned a part of the daily practice followed by ourselves and those with whom we have no radio contacts.

W1MK

A.R.R.L. Headquarters' Station W1MK operates on frequencies of 3575 kc. and 7150 kc. Robert B. Parmenter, "RP," is the chief operator; his fist is familiar to most of the amateur fraternity. Occasionally other members of the Headquarters' staff operate at W1MK. Their personal signs may be found in the QRA Section of *QST*.

Throughout the following schedules Eastern Standard Time will be used.

OFFICIAL AND SPECIAL BROADCASTS *are sent simultaneously on 3575 kc. and 7150 kc. at the following times:*

8:00 p.m.: Sun., Mon., Tues., Thurs., and Fri.

10:00 p.m.: Mon. and Fri.

12:00 p.m. (midnight): Sun., Tues., and Thurs.

GENERAL OPERATION periods have been arranged to allow every one a chance to communicate with A.R.R.L. Headquarters. These general periods have been arranged so that they usually follow an *official broadcast*. They are listed under the two headings of 3500 kc. and 7000 kc.; to indicate whether the watch is devoted to listening on the 80-meter band or to the 40-meter band.

3500 kc.

8:10 p.m. to 9:00 p.m. on Sun., Mon., Tues., Thurs., and Fri.

10:00 p.m. to 11:00 p.m. on Tues. and Thurs. (No OBC sent before these periods.)

12:00 p.m. to 1:00 a.m. (or later) on Sunday night (Monday morning).

7000 kc.

10:10 p.m. to 11:00 p.m. on Sun., Mon., and Fri.

12:00 p.m. to 1:00 a.m. on the following *nights* (actually on the morning of the day following): Mon., Tues., Thurs., and Fri. (*Only* on Tues. and Thurs. does the OBC precede these periods.)

SCHEDULES are kept with the following stations, through any of which traffic will travel expediently to A.R.R.L. Headquarters, on 3500 kc.: W1ACH, W1KY, W1VB, W1WV, W1ZA, W2JF, W3BWT, W3SN, W3ZS, W8AAG, W8CUG, W8ZZ, VE9AL, W9APY, W9ERU and W90X; on 7000 kc.: W6AKW, W6CIS, and W6TM.

Traffic Briefs

On September 22, when J9AA visited Seattle, Wash., W7BB and W7MB were right on hand to show off the town. There is nothing extraordinary about this except the fact that J9AA is a YL and was dressed in her native costume, even to the wooden sandals, while the boys were showing her the sights. . . . J9AA, in turn, undertook to make W7BB feel at home on his recent visit to Japan.

— - - -

K4AKV complains of being troubled by house lizards sleeping in his transmitter inductance and detuning the set. K4KD adds that he recently found a cremated lizard in his antenna condenser. Hi. Life is tough (as well as hot) in the Tropics!

— - - -

K4KD and K4AAN listened in on the Lindbergh plane during its flight from San Juan, P. R., to Paramaribo, Dutch Guiana. They kept a daily schedule with each other, K4AAN keeping a log of communications from the plane for the information of the Military Governor at St. Thomas, Virgin Islands.

— - - -

W9GV has worked VK5HG 276 times and VK3PP 127 times on schedule. Some record!!

— - - -

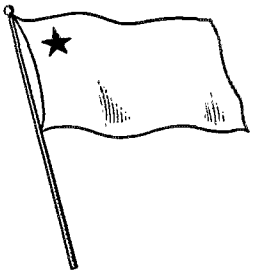
Our list of benedicks is growing every day. W6DAU has gone and done it! W2UM took the fatal step! W9BBS was married on October 11! And we recently received the announcement of the betrothal of W9EGU-GZ. Who's next?

Traffic Summaries

SEPTEMBER–OCTOBER

Pacific led by Los Angeles	9414
Central led by Michigan	5844
New England led by Connecticut	5802
Midwest led by Iowa	4678
Atlantic led by Eastern Pennsylvania	3836
Northwestern led by Oregon	3097
Hudson led by New York City & Long Island	1939
West Gulf led by Southern Texas	1258
Roanoke led by North Carolina	1227
Dakota led by Northern Minnesota	1120
Southeastern led by Alabama	561
Delta led by Louisiana	504
Rocky Mountain led by Colorado	330

652 stations originated 10,704, delivered 6909, relayed 21,997, total 39,610. (64.5% deliveries).



The Los Angeles Section in the Pacific Division leads the country in traffic this month, and carries the Traffic Banner for the third consecutive time!! How long is Los Angeles going to hold the lead? Give 'em a little competition, fellows! The Banner goes each month to the Section with the largest total of *real* messages. Which section will carry it next month? The traffic summary printed above shows the standing of the various Divisions for the past month and the leading Section of each Division. The Section with the highest total for the country is sure to help its Division head the list. Let's go

Traffic Briefs

Among the various ham societies throughout the U. S. there is one with headquarters in Seattle, Wash., called the "20-Meter Flat Head Club." W7AAV is President; W7ACB and W7ABG, Vice-Presidents; and W7GA, Secretary. The rules of the Club are to encourage better stations and operating, reasonable CQ and to QSL 100 per cent. There are now over 75 members enrolled, located in many countries. It is purely a "just for fun" outfit, no money involved, everything is free. Further information will be gladly given by any of the above officers.

The several amateur stations responsible for the best traffic work — the ones that are "setting the pace" in worthwhile traffic handling — are listed right up near the top of our B.P.L., the figures giving the exact standing of each station accurately.

All these stations appearing in the Brass Pounders League are noted for their consistent schedule-keeping and dependable message-handling work in amateur radio. Special credit should be given to the following stations (in the order listed) responsible for *over one hundred deliveries* in the message month: W6TM, W6AD, W7TZ, W3AFE, KA1HR, W7BB, W9ZZ, W2AVP.

Deliveries count! A total of 200 or more bona fide messages handled and counted in accordance with A.R.R.L. practice, or just 50 or more *deliveries* will put you in line for a place in the B.P.L. Why not make more schedules with the reliable stations you hear and take steps to handle the traffic that will qualify *you* for B.P.L. membership also!

BRASS POUNDERS' LEAGUE

Call	Orig.	Del.	Rel.	Total
W1BCR	821	72	9	902
W6EVA	810	1	4	815
W2AVR	14	8	746	786
W1MK	76	97	480	653
W6TM	124	243	295	662
W6AD	77	228	333	638
KA1HR	254	164	198	616
W2SC	39	95	424	558
W8DYH	39	41	439	519
W3BWT	78	88	243	409
W6ERK	110	85	208	403
W8CUG	7	46	331	384
W6AKW	20	23	316	359
W1ACH	222	33	92	347
W8DLG	11	18	316	345
W9FZO	163	71	107	341
W6BIP	79	35	226	340
W1IP	19	40	278	337
W7WP	3	24	305	332
W1ATO	232	33	62	327
W7ABH	146	35	144	325
W3AFE	52	172	100	324
W7TZ	47	212	64	323
W4TO	306	—	12	318
W1WV	25	53	236	314
W9CRD	2	64	237	303
W8AWO	41	20	242	303
KA1AF	131	51	112	294
W6ACJ	80	48	165	293
W8CMB	30	61	198	289
W3NF	6	89	194	289
W9COS	160	93	24	277
W9DEA	224	14	27	265
W6DTU	123	51	82	256
W9DLD	25	10	220	255
W8KX	254	—	—	254
W6EIB	8	20	222	250
W8CRI	77	21	143	241
K6DTG	47	54	140	241
W9CET	28	14	191	233
W8DHT	6	18	209	233
W8BRO	29	13	94	230
W9ZK	48	30	152	230
W9BVH	226	2	—	228
W5AHB	54	69	102	225
W6BIW	36	50	139	225
W7BB	62	143	18	223
W7UN	40	27	156	223
W6CHA	31	35	152	218
W9FWG	50	24	142	216
W9FFD	22	18	174	214
W9FGQ	48	12	152	212
W5WW	36	28	148	212
W6ASH	19	43	148	210
W9QF	15	49	146	210
W1UE	74	43	91	208
W8CNO	35	31	142	208
W7LT	33	32	142	207
W9FKD	13	9	184	206
W1LQ	32	75	96	203
W6CBW	11	97	76	184
W6BI	23	50	110	183
W9BEU	9	62	112	183
W5RJ	39	64	78	181
W6EGH	3	79	94	176
W9BRH	66	73	26	165
AC8RV	78	64	10	152
W2AVP	4	101	42	147
W9ZZ	15	105	2	122
W2JF	14	84	24	122
W9EQF	43	69	—	112
W9BKL	14	60	22	96
W6CIS	8	51	26	85
W2APV	15	67	—	82
W6CUI	3	56	4	63

W9FO advises that Rodman, VU2KT, is now in China using call XU2UU.

Finding the Expeditions

Expedition Station	*Frequency (kc.)*	*Call Signal*	*Remarks*
Yacht *Carnegie*, Dept. of Research in Terrestrial Magnetism, Carnegie Institute of Washington.	*9045*	WSBS	In second year of three-year cruise. Sailed from Honolulu Sept. 19 for Apia, Lyttelton, So. Georgia, St. Helena, Cape Town, etc. Operator, Stuart L. Seaton of W3BWL.
Base Station, All-American Lyric Malaysian Expedition, Poeroek, Tjahoe, Borneo.	7330	PMZ	In the jungle conducting radio and other research work. Traffic should be filed with W1MK or W6AKW to be sent to PMZ direct or via K1AF or K1CY. Operator, Harry W. Wells, ex3ZD.
Yacht *Ripple*.	*8290* 5525	KFLF	Sailing north from Gloucester, Mass., to Halifax, N. S., calling at ports en route. Operator, J. R. Foran. QSL to Box 188, Bradenton, Fla.
Oxford University Exploration Expedition, in British Guiana from July until December.	7000 *14,000*	VP5OUX	50-watt base station and 10-watt portable station with survey party. QSL via A. C. Edwards, G6XJ, c/o Stratton & Co., Ltd., "Eddystone" Radio, Balmoral Works, Bromsgrove St., Birmingham, England.
Base, Byrd Antarctic Expedition, Lat. 78.34 S, Long. 163.30 W.	*8810* *6560* 13,180	WFA	WFA calls CQ after regular schedules, also at 0400, 0700 and 1000 GCT daily, choice of frequency depending on season and conditions. Operators, Berkner, Hanson (MP), Peterson (Pete) and Mason (MN).
S.S. *Eleanor Boling* of Byrd Expedition.	8330 7310	WFAT	In port at Dunedin, N. Z.
S.S. *Lake Ormoc*, Ford Motor Company.	8560	KVUA	Bases at rubber plantation at Santa Ream, Brazil.
Italian Arctic Expedition.	14,500	LDIV	Worked by W8VS, Sept. 8, when at Nova Zembla (an island north of Russia).
Cableship *Dellwood*.	8600	WUAJ	On world cruise in mid-Atlantic QRD London when worked by W6CUH, 500-cycle note.
Mawson Antarctic Expedition, S.S. *Discovery*	8330	VPNQ	May be reported to Secretary, Discovery Committee, Colonial Office, Whitehall, London SW1, England. Now between South Africa and Kerquelen Island. Worked by W6AM.

Traffic Briefs

FOREIGN CONTACTS

W1CMZ is keeping daily schedules with CM2YB and TI2HV.

W1KH schedules VO8AE Mondays, Wednesdays, and Fridays.

W2API has efficient schedules with G5BZ, G5ML, G6VP, F8DA, F8SM and others. He invites traffic for all parts of Europe.

W2FN has a "sure-fire" schedule with K4KD at 11 p.m. E.S.T., Mondays, Thursdays, and Saturdays. Delivery is *guaranteed at both ends*.

W5WW is in daily communication with NN1NIC.

W9AHB keeps a twice-weekly schedule with KFR6.

W9BCA has daily schedules with NNCAB and NNFX.

W9CRD also schedules NNCAB daily, and NN7NIC likewise.

W9EF connects the United States and South Africa on his weekly schedules with ZT6X and ZU6N.

W9GHG communicates with KDV5 daily.

Did we hear some one say the 3500-kc. band is NG for DX? If this is so, howcum Mark H. Churton of Auckland, New Zealand, heard the following U. S. stations in that band?? — W1BDX, W1SW, W2AG, W2SC, W3ANS, W3AWU, W3AQR, W5OM, W6BYH, W6EQJ, W6CZZ, W6EOP, W6DGI, W6FO, W6RJ, W6APA, W6ABF, W7ABQ, W7ADX, W7NT, W8AHC, W8CHC, W8DAQ, W8XE, W9BCS and W9DBM. Mr. Churton says the best time for reception on 3500 kc. is from 1 to 2:30 a.m. E.S.T.

With the coming of cold weather several coast-to-coast traffic routes are shaping up. We have information on the completion of a chain as follows: W6BIP, San Francisco, to W6ACJ, El Cajon, Calif., to W5TV, Des Moines, New Mexico, to W9FKD, Colony, Kansas to W9AP, Winnetka, Ill., to W1AZD, Pittsfield, Mass., and W2ASG, New York City. This net is connected with branches covering the states of Oregon, Washington, Nebraska, and Minnesota. Other branches will be added from time to time, and, if any station wishes to leave the chain, he will be requested to secure another station to fill his place. Good luck to all connected with this new route!

REQUIREMENTS FOR U.S.N.R. ENLISTMENT

The following, which we quote from a circular issued by the Chief of the Bureau of Navigation under date of October 5, 1929, will be of interest to amateurs interested in joining the U. S. Naval Communication Reserve, Class V-3:

"Certain changes have been made by Radio Division, Department of Commerce, in the license requirements for commercial and amateur operators. The Bureau of Navigation hereby cancels former requirements for ratings in Class V-3.

"The following requirements will become effective immediately:

(a) Amateur and commercial operators holding licenses designated below will be considered eligible professionally for enlistment in Class V-3 and may be enrolled in ratings indicated without examination other than physical:

(b) Commercial — Extra First Grade: Chief Radioman.
Commercial — First Grade: Radioman, 1st Class.
Commercial — Second Grade (Note 1): Radioman, 1st Class.
Commercial — Second Grade: Radioman, 2nd Class.
Commercial — Broadcasting Station operator (unlimited): Radioman, 1st Class.
Commercial — Broadcasting Station operator (limited) (Note 2): Seaman, 1st Class, for Radioman.
Commercial — Radio telephone operator: Seaman, 1st Class, for Radioman.
Amateur — Extra First Grade: Radioman, 1st Class.
Amateur — First Grade: Radioman, 2nd Class.
Amateur — Second Grade (permit): Radioman, 3rd Class.

(NOTE 1. — Commercial 2nd grade may be enrolled as Radioman, 1st Class, when such commercial license has been issued as a renewal of commercial 1st grade license due only to applicant lacking commercial service necessary for renewal of commercial 1st grade.)

(NOTE 2. — Commercial Broadcasting Station limited grade should be enrolled as Seaman, 1st Class, for Radioman, with understanding applicant may be rated Radioman, 3rd Class, as soon as a code speed of fifteen (15) words per minute shall have been reached.)

(c) The minimum code speed requirements for enrollment are as follows (continental only):

Chief Radioman, V-3, U.S.N.R. — Send-receive 25 words per minute.

Radioman, 1st Class, U.S.N.R. — Send-receive 20 words per minute.

Radioman, 2nd Class, U.S.N.R. — Send-receive 18 words per minute.

Radioman, 3rd Class, U.S.N.R. — Send-receive 15 words per minute.

Seaman, 1st Class, for Radioman, U.S.N.R. — Send-receive, 5 words per minute.

Seaman, 2nd Class, for Radioman, U.S.N.R. — Send-receive 0 words per minute."

We hear very little about message-handling by 'phone, but we know it is being done. One evening W9GHI took a message from W3CV going to W6ABF. Next morning at 2 a.m. he delivered the message to W6ABF and received a reply. At 3 a.m. he gave the reply to W3CV. And all this was done on 'phone!! Let's hear of more relaying by 'phone.

W7BB sends Pacific Coast football returns each Saturday night after the games on 7225 kc. Watch for W7BB's QST at about 6 p.m. P.S.T.

Speaking of QSL cards, W5ANC suggests that we call them "Courtesy Cards." He says the exchange of cards is the final courtesy of the QSO, so why not give them a more fitting term than "QSL cards."

W4ACO, W4AKF and W4VR, members of the U.S.N.R., played important parts in the hurricane that struck Pensacola, Fla., during the latter part of September. W4ACO and W4AKF ran an auxiliary power line to the Reserve transmitter, NDD, and kept that station on the air during the worst part of the hurricane. Contact was kept with NDU at Jacksonville and NDZ at New Orleans. W4VR assisted by copying weather reports from NAA. Nice work, fellows!

W3OI, the station of the Lehigh Valley Amateur Radio Club, was kept quite busy at the Annual Radio Show at Allentown, Pa., during the week of September 16. A new transmitter using an 852 was built especially for the occasion by W3ATS. W3AWB, who erected the antenna, chose a 3600-kc. single feeder Hertz (thanks to W8GZ). W3NF, W3ADX, W3AFE, W3ATS and W3OA did most of the brass pounding. The booth was "hamishly" decorated with cards taken from W3CJN's stack of 3000. A total of 148 messages was handled.

W2BNX installed his portable, W2AFU, at the Mineola State Fair (Mineola, N. Y.) and handled many messages during Fair week, September 17 to 21. The transmitter consisted of two 852s in series feed Hartley circuit. Much traffic was handled for all points, schedules being kept with W1WV and W3AJZ. The station installation was in the nature of an exhibit under the auspices of the Boy Scouts, and the judges awarded a blue ribbon to W2AFU. FB!!

W7WB has a novel way of telling when he is QRMing the neighbor's BCL programs. The neighbor has placed a light in one of his windows within view of W7WB, and when QRM starts he turns on the light. When the QRM stops the light goes out. Try this out, fellows, it has great possibilities. Hi.

SPEED

SPEED to most hams means the ability to send and receive from 25 to 35 words per minute. This is very fine, and all hams should strive to work up as much of this kind of speed as possible.

But there is another kind of speed that is seldom taken into consideration. This is SPEED in the handling of messages. What is the use of copying a message at 30 words per minute, and then letting it lay around the shack for two or three days? How much better it is to copy the message at 10 to 20 per minute and then either relay or deliver immediately! Here is where the beginner and average ham can show *real speed*.

Let's have more of the slower and more careful sending that does not necessitate fills and repeats to get the complete message, and then some SPEED in handling the received message.

— E. D. Miller, W4QL

Following NAA's sign-off after the Navy Day Broadcast (CQ de NAA SK) we heard W2AVR calling NAA like mad!!

RADIO RIFLE MATCHES

Last year there originated in the Personnel Office of the New York Stock Exchange the idea of exchanging its rifle team scores by Amateur Radio. By means of notices posted on the many bulletin boards of the Exchange requesting employees interested in amateur radio to report same to the Personnel Manager, a small corps of "hams" was organized and given instructions to inform all interested stations of the coming radio rifle season.

Schedules were arranged with stations in all parts of the country, matches were arranged and confirmed and the first *bona fide* radio rifle season was in progress.

Here's the way radio rifle matches are managed: The Exchange Rifle Team arranges the match by mail stating that it will be a radio match, and instructs its radio representatives to get in touch with the stations designated by the out-of-town team. When contact has been made and schedules have been satisfactorily completed, a short test is held on the date of the match followed by any information which might be necessary to complete the final arrangements. When the team has finished shooting, the scores are given to one of the Stock Exchange stations assigned to that particular match and individual and total scores are exchanged.

The Navy Day Honor Roll will appear in January *QST* together with the complete text of the messages that were transmitted by NAA and W1MK on this occasion. This feature is held over this year as we find that copies are still being received from participants as our forms close.

Army-Amateur Notes

SECOND CORPS AREA: A very successful Army-Amateur meeting was held at the Army Bldg., New York City on November 4, in connection with the monthly A.R.R.L. Hudson Division meeting. Captain L. J. Dunn, Col. Allison, Capt. Baldwin and Lt. Talley, W2PF, spoke for the Army, Director Walsh and E. L. Battey represented A.R.R.L. Hqs. The revised regulations for Army-Amateur stations will be given in January *QST*. Regular A-A schedules were resumed on November 11.

New York State Net: Net Control Stations W8AHK, W2ANV, W2OP and W2BPQ are busy lining up their Net stations for regular schedules. W2BQD is N.C.S. of the Westchester County Net. W2BGO is now the N.C.S. of the Bronx Net.

New Jersey State Net: W2AOS, the N.C.S. of the state, and W3MI, the alternate, operate on the same frequency so that schedules may be kept with the minimum of delay to the Corps Area N.C.S. It is suggested that all N.C.S. designate a particular frequency in the 4000–3846 KC (75–78 meter) band and have all their stations operate on that frequency. Most of the old timers such as W2AHN, W3ATJ, W3AWL and W3ASG have resumed their active A-A status.

Delaware State Net: W3MA, the 198th Coast Artillery, Del. N.G., is the new State N.C.S. Lt. Pyle is in charge of the station.

FIFTH CORPS AREA: Army-Amateur activities in this area are on the increase. The Corps Area N.C.S., W8GZ, is handling much traffic with the Army N.C.S., W2CXL. The outstanding stations of the area are W8OK, W9EZ, W8BKM, W8BBR and W8CRI. Any station in the Fifth Corps Area (Ohio, West Virginia, Indiana and Kentucky) interested in becoming an A-A station should communicate with the Radio Aide, L. G. Windom, 1375 Franklin Avenue, Columbus, Ohio.

NINTH CORPS AREA: W6DFR, the Area Control Station, handled 86 messages during the last month. W6UO, W6EAF, W6ALX and W6EDK are all going 100%. The southern California Net is beginning to function. The W6DFR-W2CXL schedule is working fine. A-A applications are solicited from Washington, Idaho, Utah, Wyoming and Northern California.

Official Broadcasting Stations

CHANGES AND ADDITIONS

(Local Standard Time)

W2LV (7100), Sat., 5 p.m., Tues., Thurs., Sat., midnight; W8CNZ (7 and 14 mc.), Mon., Wed., Fri., 9:30 p.m.; W8DED (3500 voice), Sun., 5 and 6:30 p.m., Wed., 7:00 p.m.; W9ACU (7050), Sun., 9:00 a.m., Mon., 8:00 p.m., daily except Sat. and Sun., 12:15 p.m.; (3510 phone), Mon., 8:30 p.m., Tues., Wed., 6:30 p.m., Thurs., 8:00 p.m., Fri., 6:30 p.m.; (14050), Thurs., 6:30 p.m.; W9DXP (14180), Sat., 6:30 p.m., Sun., 5:00 p.m.; (7090) Sun., 10:00 p.m., Wed., 6:30 p.m., Fri., 6:00 a.m. and 6:30 p.m.; (3570), Mon., 10:00 p.m., Fri., 10:00 p.m., Sat., 11:00 p.m. W4AHP (3650) Tues., Thurs., Sat., 7:30 p.m.; W5AQX (7160) Sun., Wed., Sat., 9:00 a.m., Sun., 11:00 p.m.

BEGINNERS, ATTENTION!

Elsewhere in this issue you will find instructions on building a transmitter for the 3500-, 7000- and 14,000-kc. amateur bands. This transmitter has been designed especially for men who have had no experience with amateur radio and is an excellent outfit. Instructions on how to build a simple receiver for the 1750- and 3500-kc. bands appeared in November *QST*. This is an ideal set for receiving code transmissions on 1750 kc. which have been arranged for your benefit. A reprint of the description of this receiver will be sent to any one requesting it. A list of the "volunteer stations" that are sending code practise and other information for your especial benefit appears in this issue. The *Radio Amateur's Handbook* contains useful suggestions for memorizing and learning the code. We invite requests for any information you may need. Just drop a line to the Communications Department and we shall do our best to help you.

Wanted!

More volunteer transmitting stations are needed to help in the 1750-kc. code broadcast program that we are conducting for beginners. The thirteen stations that have already volunteered are listed elsewhere in this issue. This is nowhere near enough stations to take care of the hundreds of beginners that are looking for code practise. An examination of the list of stations now sending the code practise will show that stations in the eastern part of the country are particularly needed. We should like to see a whole page of 1750-kc. volunteers!

Both c.w. and radiophone stations can engage profitably in broadcasting and two-way work for beginning "hams." Radiophone volunteers are really preferred, however, as by using *both* microphone and key instruction can be given most efficiently to the listeners. Last season those who took part in this work had gratifying results and built up large audiences and many friends, who listened regularly as soon as the schedules were announced. So if you have a 1750-kc. radiophone or telegraph transmitter and can engage in this most worthwhile work, please drop us a line at once, giving data on your exact frequency, hours of schedules, etc., and prepare to follow your schedule as soon as it is in print. We shall be glad to send you some mimeographed ideas and helps which will help you in putting this service over to those who copy your transmissions.

High Quality Signals

3500-kc. band: W1MK**, W2ACB, W2BRO, W3ATP, W3QL, W5EB, W8AYJ, W8BGW, W8CAU, W8CHB, W8CNE, W8CNO, W8KR, W8YA, W9BBS, W9BHC, W9CYB, W9DLD*, W9EHO, W9EJQ, W9EMR, W9FHU, W9FUD, W9JL.

7000-kc. band: W1BAL, W1BJD, W1FC, W1FN, W1MK*, W1MR, W1SZ**, W2AFC, W2ASG, W2BDJ, W2VJ, W3ANH, W3AQI, W3AQZ, W3ARU, W3CEE, W3CKL, W3PF, W3ZM, W4AFC, W4AO, W4EI, W4HE, W4IS, W4PF**, W4PM, W4VZ, W4WE, W4ZW, W5AFX**, W5AQE*, W5EB, W5NW, W5OH, W5QL*, W5RU, W5UK, W5WW, K6ALM, W6AQJ*, K6AVL, W6AVQ, W6AZB, W6BQP, K6BRA, W6BTQ, W6BY, W6CGJ, W6CHY, K6DJU, W6DZJ, W6EAC, W6EPF, W6EPZ, W6ETX, W6KD, W7DP, W7LP, W7OM, W8ADS, W8AGI, W8ALU, W8AVI, W8BAU***, W8BCQ, W8BMW, W8CCN, W8CCS*, W8CLJ*, W8CM, W8CTJ, W8CVQ, W8DWM, W8DYH*, W8DYS, W8GZ*, W8HE, W8HF, W8IQ, W8LT***, W8PL**, W8VO, W8WO**, W9ARA, W9BEQ*, W9BEZ, W9BHZ, W9BPB, W9BPQ, W9CET, W9COS, W9CVN*, W9CVT, W9DBJ, W9DSC*, W9DXP* (7090 kc. cc.), W9EJP, W9ERU, W9FCI, W9FDJ, W9FKD, W9FIS, W9FVI, W9BZO*, W9GKA, W9HL, W9HW, W9JL, W9NK, W9NR*, W9QF, W9UI, KA1PW, VK2CG, VK2KU, VK3BL, VK3ML, VK3PP**, VK3RG, VK4BL, ZL1FT*, ZL4AO, VE2AP, VE2CE, VE2TM, VE3TM, TI2HV, KDV5, KFR6, NURL.

14,000-kc. band: W1BJD, W8AFM, G5BY, CE2AB, OA4O, PY1AH.

Well-operated stations: W1BIL, W1MK*, W1SZ, W2BCM, W2CXL, W5AFX, W6AD*, W6AKW, W6AM, W6AMW, W6AYC, W6BIW, W6CGM, W6EBG, W6EJB, W6EPF, W6KD, W6ZF, K7ABE, W8BAU, W8BMW, W8CNO, W8GZ, W8LT, W8PL, W8WO, W9BEQ, W9CVN, W9ERU, W9QF, KA1AF, KA1CE, KA1CM, KA1DJ, KA1HR*, KA1PW, KFR5, NN1NIC, OM1TB, AC5GO.

NOTE. — The stars indicate the number of extra times stations were reported.

In addition to "1929 Signals" we have been receiving a number of lists of "prehistoric signals" (a.c., i.c.w., Broad r.a.c., etc., etc.). Some fellow are in favor of a regular list of these appearing in *QST*, in order to show which stations are still in the Dark Ages. Here's the first list of "Prehistoric Signals": W1BBL, W1VP, W2AFR, W2AYZ, W2AZH, W2KU, W3ASO, W3APF, W3AJR, W3DJ, W4AEF,

1750-KC. VOLUNTEERS' SCHEDULES

Station	*Location*	*Freq.*	*Days*	*Hours (Local Time)*	*Remarks*
W3MM	Allentown, Pa.	1875 kc.	T., W., Th.	7–8 p.m.	
W4LT.	Ozark, Ala.	1720 kc.	Sun., Wed.	8–9 p.m.	'Phone and c.w.
W5BDT	Gouldbusk, Texas	1760 kc.	Fridays	9:30 p.m. on	i.c.w. and 'phone will be used.
W6BUZ	Reedley, Cal.	1875 kc.	Fridays	9–10 p.m.	'Phone and c.w.
			Sundays	9–10 a.m.	
W6DYL	El Monte, Cal.	1765 kc.	Wed. & Fri.	9:30–10:30 p.m.	5 to 7 w.p.m.
W6EAF	Independence, Cal.	1750 kc.	Fridays	8–10 p.m.	
W6EEQ	San Leandro, Cal.	1940 kc.	Sundays	8–9 a.m.	
			M., W., F.	6:45–7 p.m.	
W6UJ	El Monte, Cal.	1765 kc.	Tues., Thurs.	9:30–10:30 p.m.	
W8DRG	Shenandoah, Pa.	1715 kc.	Daily except Sat. and Sun.	10:15 p.m.	'Phone and c.w.
W9AFP	Tabor, S. Dak.	1715 kc.	Tues., Thurs.	8–8:30 p.m.	If QRM is bad 1935 kc. is used.
			Saturdays	Midnight–12:30 a.m.	
			Sundays	9:30–10:30 a.m.	
W9BSP	Olathe, Kansas	1780 kc.	Every day	7:30–8 p.m	
W9DHC	Dakota City, Nebr.	1950 kc.	Mon., Sat.	10:30–11 p.m.	Voice and buzzer.
W9EBD	Menasha, Wis.	1715 kc.	Sundays	12:30–1:30 p.m.	
			Monday	6:15–6:45 p.m.	
W9FLS	Ava, Ill.	1715 kc.	Tues., Thurs.	10:30–11:15 p.m.	Ten word speed for first twenty minutes, and about 20 w.p.m. for last twenty. Five minutes devoted to explanation.
WORC	Worcester, Mass.	1200 kc.	(249.9 meters) Saturdays 7–7:30 p.m.		

W4AFS, W4JQ, W5AIN, W5AZS, W5BIJ, W5GR, W6AGA, W7IM, W8AA, W8ALB, W8AZO, W8BGX, W8BGY, W8BTH, W8CUA, W8DDK, W8DJV, W8DLG, W8DUW, W8DVO, W8KD, W8PP, W8SX, W8TC, W8UC, W8UF, W8VK, W8VP, W9AID, W9BDS, W9BIT, W9EDK, W9EPS, W9FEY, W9FS, W9HD, W9MJ, W9US, NN1NIC TS2WB. Shall we list these every month? Or won't there be any to list?

Philippine amateur calls now bear the prefix *KA* instead of *K*.

We are unable to present the Canadian activity reports this month. Unfortunately none of them have been received at the time of make-up of this part of the magazine.

DIVISIONAL REPORTS

ATLANTIC DIVISION

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, F. Calhoun, W3BBW — This was a fine month of reporting, fellows. See if we can't keep it up. Let's try to win the traffic banner or at least lead our division. We welcome back some of our old gang this time, also several "non-ORS." Maryland: W3CGC is on again with a new MOPA and SG receiver on both 3700 and 15 mgs. W3GF, a non-ORS, turned in a nice total. W3BBW is coming thru again and if I don't reach a good total guess I'll sell out. Hi. W2ALD, who is a commercial operator, stayed at the SCM's station all night and missed his boat. W3NY, a new ORS, worked ON4FP in the afternoon. He is trying a Hertz *à la* Sept. *QST*. W3DG, our other new ORS, just can't get going. More pep, OM. Delaware: Both of our Delaware ORS reported. W3ALQ is trying to get his receiver and xmitter going on 28 mc. W3AJH has a BC license now and operates at WDEL. Dist. of Columbia: Our RM, W3BWT, leads us in traffic again this month. He has 4 ops on over there. We welcome two of our old friends back, W3GT and W3CDQ, also some new non-ORS — W3PM and W3LX. W3GT is building a new "hi C TPTG" and hopes to resume his old skeds shortly. W3CDQ, Washington YL, made application for ORS. W3PM threatens to handle lots of traffic. W3LX also wants an ORS and skeds. W3ASO sent in his report late and missed out on the Sept. issue. Sorry, OM.

Don't forget, let's see about that banner.

Traffic: W3BWT 409, W3BBW 62, W3GF 46, W3ASO 23, W3LX 22, W3CGC 10, W3NY 6, W3ALQ 4, W3AJH 4, W3GT 2.

EASTERN PENNSYLVANIA — SCM, Don L. Lusk, W3ZF — Activity in this Section is certainly increasing by leaps and bounds and the SCM is pleased with the showing of the stations, particularly those who are interested in securing an ORS certificate. W3MC and W8VD will receive theirs this month. W3AFE has a nice total. The Lehigh Valley Radio Club's station, W3OI, handled 170 msgs at the Allentown Radio Show. W3NF keeps skeds with ten stations and passed in a mighty fine total. W8DHT is certainly an example for other ORS. Look at his total for this month! Miss W3AKB surprised me by reporting. She may take part in a coast to coast net that W9ERU is preparing. W8AWO came through in fine style this month. W3AWB is using AC until he can replace a 281 tube he hocked to W3NF. Hi. W3AUR is in line for an ORS. W8DRG reported too late last month. W3LC has a new job now and here's hoping for some good reports from him in the future. W8KX of the Electric City Radio Club in Scranton desires to thank those who so willingly and kindly made their affair at the Scranton Radio Show a huge success. W3CDS reported "no traffic" *for* the third successive month. We are sorry, OM, but your ORS will have to be cancelled now, as 10 messages per month is the law. Let's make it only temporarily, tho, wot say? Will the men in this Section who are interested in securing an ORS, OBS, Official Observer, Route Manager and coast to coast skeds get in touch with the SCM immediately? W3PB, who mentioned in a past issue of *QST* that his concern had several hundred "Q" signal sheets to give away, has had requests from all the U. S. and even one from England. He says he still has a few and first come, first served. Thanks are due to Raymond Rosen & Co. of 7 North 11th St., Phila., Pa.

Traffic: W8AWO 303, W3NF 289, W8KX 254, W8DHT 233, W3AFE 324, W3OI 170, W3AKB 44, W3LC 36, W3MC 30, W3AUR 17, W3AWB 16, W8DRG 6, W8VD 5.

WESTERN NEW YORK — SCM, Charles S. Taylor, W8PJ — The autumn leaves are falling and so are some of the regulars in Western New York. But there are a few who are trying their best to push Western New York to the front again. W8ABQ is now hot after schedules. W8AFG is rebuilding to crystal control. W8AIE is a new ham from Granville, Ohio, who wishes to get some schedules in Rochester. W8AIE is at Dennison University. Their call is W8SG. W8AKZ has been busy traveling around with his orchestra, but he finds time to report anyway. W8ATH is building a new transmitter using 2 50-watters in a MOPA set. W8AYN busts out with the news of a new club which has formed in Rochester, N. Y., called the Wireless Amateurs of Rochester. A. J. Mancuso, W8CPR, President; David Melman, Secy.-Treas., and S. Calaty, W8AYN, Pub. Mgr. The club has a membership of about nine who are after new members, traffic and schedules. The Jamestown Amateur Radio Association held its first meeting at 143 Fairview Ave. The officers are: President, Whitney S. Gage, W8BAV; Porter M. Turner, V.-P.; Harry Stewart, Secy.-Treas. The club call is W8BAV. W8AHK of Rochester has a brand new howling device at his station called Jerry, Jr., 2nd op. Congratulations from the gang! W8BCM sends in a fine report. W8BCZ has moved to Binghamton, N. Y. W8BDV has joined the U.S.N.R. and the A.R.R.L. W8BEN is rebuilding again. W8BFG promises fine reports with a new transmitter. W8BGN, the old timer, is still at it. W8BHK is leaving Western N. Y. district. He is going to New York City. Sorry to lose you, OM. W8BJO has been building new filter system. W8BLV works California quite often now and has moved to 286½ Tremont St., Syracuse, N. Y. W8BMJ states traffic FB. W8DQP is after schedules and traffic.

The annual meeting of the Syracuse Amateurs Transmitting Association was held on Oct. 3rd. Election of officers resulted as follows: President, Bruce Hoag, W8AXA, Vice-Pres. Walt Turner, W8AYU, Secretary, Arnold Weichert, W8AOW. Several new members were admitted. The club transmitter was decided upon as a Hartley.

W8BSL, a new ham, is after an ORS. W8BUP wants schedules in Rochester and Buffalo. W8BYO is now back with us again. W8CDB has his set busy with the Empire Airport on weather sigs. They have a plane equipped and get his reports while flying. W8CDC will be back with the gang again soon with a 50-watter. W8DAB is another new ham from Utica, N. Y. W8DII worked the Yacht *Ripple*. W8DME visited Buffalo and whoopee what a time he had. He gave the Radio Assn. of W. N. Y. an earful of home-done crystals and visited many hams in Buffalo as well as Niagara Falls. OW W8DME saw the pretty lights at Niagara Falls too. W8DSP still promises wonders with a new 204A. W8JH, ex-9ARE, ex-9FGD is doing fine work on both 7 and 3.5 mc. W8QL has a good total this month. He tells of a gathering at LeRoy, N. Y., in W8IH's new shack where future radio ops gathered and pledged schedules, traffic and A.R.R.L. support. Here's a new one. W8AFM is celebrating the first birthday of his station, just a year old Oct. 20th! From collected reports there seem to be many stations and operators who have not been bitten by the A.R.R.L. spirit and reports from these new hams direct will be appreciated. Let's make Western New York section go over the top for the coming year of 1930.

Traffic: W8ABQ 3, W8AFG 44, W8AYN 11, W8AFU 7, W8BAY 20, W8BCM 65, W8BCZ 44, W8BFG 1, W8BGN 5, W8BHK 9, W8BJO 25, W8BLV 13, W8BMJ 37, W8BQP 23, W8BUP 8, W8CDB 18, W8DII 56, W8DME 30, W8JH 15, W8QL 114, W8SU 46.

WESTERN PENNSYLVANIA — SCM, A. W. McAuly, W8CEO — W8CUG, again the section leader by a slight margin, is the proud possessor of a letter from President Maxim as a result of his work in the HPM Relay. W8DLG is the runner-up with a fine total. W8CFR has a schedule with WFA. W8AJE wants some schedules. W8AGO reported by telephone. W8GI has resigned as route manager and the job will be taken over by W8CUG, C. H. Grossarth, Eicher Road, Emsworth, Pa. Write to him about schedules, or get in touch with him over the air. W8AMU is still observing quiet hours. W8CNZ says there are lots of folks

away from home trying to get in touch with the old home town and that this should mean traffic. W8DUT says "Crystals engaged. Results: Enraged." Hi. W8CMP reported via radio. W8DNF has offered a prize for the best record of ATA QSO's. W8AYH is working DX. W8KD and W8DNU are breaking into the game in Erie. Welcome, boys. The Erie gang report that they have a machine to tell good crystals from bad ones before grinding. The ATA was treated to a demonstration of W8CMP's TNT transmitter at their banquet in Pittsburgh this month. Here is the scoop of the year: W8OW handled a message! Report regularly, if you would get a new ORS or keep an old one.

Traffic: W8CUG 384, W8DLG 345, W8CFR 63, W8AJE 24, W8AGO 24, W8BGW 18, W8GI 8, W8AMU 5, W8CMP 21, W8DUT 15, W8DNF 9, W8AVY 5, W8AYH 6.

The Western Ontario Amateur Radio Association staged a very successful District Hamfest at London, Ontario, on October 9th. The meeting started at 2 p.m. with a talk on "Some Contributions of Radio to Science" by Dr. Dearle of the University of Western Ontario. Practical talks by members of the association followed — "Power Supply for CW Transmitter" by VE3CS, "A Beginner's Transmitter" by VE3HB, and a discussion of QST's low power 'phone transmitter by VE3FD and VE3LW.

A traffic meeting followed the technical discussion with talks on traffic conditions and amateur activities by VE3FC, the SCM, and VE3CS. After this meeting the gang split up, some visiting the combined station VE3CS-VE3HB, and others looking over CJGC, the local BC station.

A theatre party was formed at 6 p.m., which lasted until 8:15, when everyone repaired to the Hotel London for the banquet. Prize donations followed the eats and nearly everyone present got a prize of some sort. The hamfest broke up at about midnight with all expressing what an enjoyable day they had had.

CENTRAL DIVISION

ILLINOIS — SCM, F. J. Hinds, W9APY — W9GJ says DX reception has been good the past month. A squirrel got mixed up with the 33,000 volt line near W9FUR and blew the works. Hi. W9BMQ is a new call at the Oak Park High School and is in line for an ORS. W9CF is a new station in Champaign at the U. of I. with W9CAR, W9PU, W9AOA, W9AFB and W9CSB as operators. The set consists of a pair of 204A's in a push-pull Hartley — sync rectifier. W9BCS will be on the air soon with 250 watts on 7 and 3.5 mc. W9GJJ wants schedules. W9ANQ also wants schedules and reports DX coming in well. W9ERU was one of the stations handling the most HPM messages in the birthday relay of our president, Mr. Maxim. FB, OM. W9CKM has now recovered from the fire which took all his outfit to the happy hunting ground. W9AKA says that 3500 kc. has real traffic stations and that the CQ hounds are missing. W9TJ has an 852 on 14 mc. and is opening a radio store in Brookfield under name of Grand Radio & Electric. There is a crystal now at W9CBK. W9FO has schedule with VK3CX. W9IZ says traffic is picking up nicely. W9AFF will soon have an 852 in PA 210 xtal oscillator with WE 211-A in modulator for fone. Traffic is scarce at W9BNR on 14,400. The input at W9AD is 3 watts using a xtal. W9GIV says he wished he had a vibroplex like W8AA's. Hi. (Christmas is coming.) W9AP says "Hark from the tomb — I am back on the air." W9AFN did some fast relaying by telephone the other evening with W5AEA. Report of a powerful fone set at W9DJ, for traffic, has just been received. W9BKL is out for a southern schedule. W9AAS is now in New York preparing to enter school in February. W9BNI was a visitor at W9ANR, W9CNH, W9DOX, W9US, W9FO and WVT this month. W9FCW has started traffic on 7 mc. but needs the help of more traffic men on that band. W9FDJ is keeping schedule with ex-W9CRJ on the Pacific and reports 7000 kc. DX good. Best DX was SA2RK in the jungles of Brazil. A pair of new rectobulbs are being broken in at W9DXG. W9BEF has a new monitor and a 15-mike bank for filter on 3500-kc. fone. W9BRX has a new voltage feed Hertz which he likes better than the Zepp. W9KB received all his eleven messages from one station. W9CUH was R8 in Russia and worked WFA. W9CZL is coaching a new ham, FB. W9BZO is now an official frequency station and wants the gang to watch his smoke. W9DGK says 43 of his messages were handled in *one* day. W9DCK says traffic is picking up nicely. The new screen-grid receiver at W9BVP is pulling in the whole gang. W9BLI and W9ECR are busy with relays and relay circuits. W9BLL has been trying to get a mercury arc going. W9FDY is still rebuilding the outfit. Ex-50M is doing fine work at W9QF.

Traffic: W9QF 210, W9AP 118, W9BKL 96, W9TJ 96, W9DGK 90, W9AFN 43, W9GJ 36, W9ERU 30, W9CZL 29, W9IZ 28, W9APY 26, W9FDJ 24, W9DCK 23, W9BNI 17, W9ANQ 16, W9KB 15, W9BNR 14, W9AKA 13, W9GIV 13, W9BEF 10, W9DOX 10, W9ECR 10, W9CNH 9, W9CUH 9, W9BMQ 8, W9GJJ 8, W9FCW 7, W9DXG 6, W9BVP 5, W9AD 4, W9BLL 4, W9CBK 4, W9BRX 2, W9FO 1, W9ACU 3.

INDIANA — SCM, D. J. Angus, W9CYQ — Radio activity is rapidly increasing in Indiana. Most of the old gang is now on and many new members are getting under way. Fort Wayne and South Bend report healthy clubs. The Indianapolis Radio Club now has a membership drive on and will start a new code school soon. W9RW has skeds with W9FIW, W9JR and W8JH. W9AHB wants more skeds on 7000. W9GCO has been handling some Chinese traffic. W9EXW reports that two more stations are starting up in East Chicago. W9EDC is a new one at Bloomington. W9BWW and W9EPH have a station going at the Sigma Nu House, Indiana University. W9FYB is putting in a station at the High School at Bloomington. W9EF reports worked his 47th country with a contest with North Rhodesia. W9EMR rings the state bell with a total of 111. Good work! W9GJS has applied for an ORS. W9CLO is moving to a new location in Indianapolis. W9GJS wants schedules.

Traffic: W9EMR 111, W9EF 61, W9DSC 20, W9CYQ 18, W9FYB 20, W9GGI 3, W9EVB 8, W9GKI 10, W9EXW 33, W9GCO 33, W9BKJ 28, W9EWQ 2, W9AHB 3, W9RW 4.

KENTUCKY — SCM, J. B. Wathen, III, W9BAZ — Excellent work this month, fellows. Let's get it a little higher each month. W9CRD stacked 'em up in fine style. Also got in a bit of DX on the side — 29 countries and five continents. W9EYW reports all skeds "duds." W9CEE has fallen prey to the fone urge. W9FBA has bestirred himself and turns in a report. W9GAL is thinking of installing a fone. W9ARU and W9FKM have been rebuilding. W9GGB has added another 210 with slight increase in DX. W9AZY does right well with his push-pull 210's. W9JL started the new year right with a gob of traffic. W9FQN repairs BCL sets. The Covington bunch are having a QSO contest. W9EGO, a new ham in Paintsville, says W9BWJ has let him borrow everything but his shirt. W9ELL has received his appointment as Ensign in the U.S.N.R. W9FZV had a misunderstanding with the R. I. but we believe all is OK now. W9AUH had a grand smash-up and was heard calling QTE. QRD a harp — almost. W9BAZ had a very enjoyable time in Henderson one weekend. W9DQC chases ducks in his speed-boat. W9DLU is known as "The Barefoot Boy." W9DDH is bothered with YL QRM. W9BAN shines as a draftsman and sax artist. Reports from newcomers are requested. Several new ORS are getting backward in their reports. Get 'em in.

Traffic: W9CRD 303, W9JL 153, W9BAZ 136, W9OX 119, W9BGA 76, W9AZY 56, W9ELL 42, W9BXK 31, W9BAN 23, W9EYW 22, W9FQN 20, W9FBA 19, W9AUH 17, W9GGB 9, W9CEE 6, W9FKM 5, W9FZV 3.

MICHIGAN — SCM, Dallas Wise, W8CEP — W8DYH is high man with 519! W8WO has been doing quite a bit of phone work lately. W8DED is still on the map. W8AUB operates at W8SH at Michigan State College. The Amateur Radio Club has been reorganized with W8DRB, Vice-Pres.; W8AHM, Pres., and Mrs. W8DRB, Secy. and Treas. W8ASO is still working on the new set. W8DJR, who has also been the op at WOOD for the past two years, has left for New Orleans to enter the commercial field. W8DFB handled some of the HPM messages. W8BRO has the 852 stepping out in great style. W8ZF reports no operators for message traffic will be available until after first of the year. W8CAT has a new antenna and reports it much better than the old one. W8CU is going to night school so not much doing with the radio. W8BRS works a schedule with W9CE for Army traffic work. W9EGF, who also operates WHDF, is now on the job regularly. W8AUT is working in all bands and looking for a few more reliable daily schedules. W8AX has a C.C. set perking with about 50 watts input. W8CKZ promises more time on the air as the overtime work is about finished. W9CE QSO's both the 7000 and 14,000 kc. bands now. W8BGY has been pounding thru in fine shape lately. W9AXE now has an 852 and a new antenna. W8MV, a new station in Detroit, is using a TPTG set with a 210. W8DYH has been on the job every day and

together with W8CAT and W8JD handled the bulk of the 65th Div. Cavalry traffic. W9GJX, Helen M. Hargreaves of Manistique, is Michigan's own YL.

Traffic: W8WO 11, W8HL 26, W8AUB 2, W8DFB 8, W8BRO 230, W8CAT 104, W8CU 10, W8BRS 46, W8DYH 519, W9EGF 11, W8AUT 27, W8AX 10, W8CKZ 10, W9CE 14, W8BGY 50, W9AXE 56, W8MV 14, W8JD 102, W8QN 50, W8DED 6, W8CEP 120.

OHIO — SCM, H. C. Storck, W8BYN — Well, gang, things are beginning to look like old times again. Ohio has three in the BPL this month, one making it two ways. FB! W8CMB leads the state with 289. W8CRI makes the BPL with 241. He reports that the RM work is coming along in great shape, and that the fellows are coöperating better. W8CRI, W8BBR and W8CMB are working hard to put Ohio on the map. W8CNO, with her first full month with the transmitter behind her, again blasts into the BPL with 208. Her schedule with K6BRA is one sure route to Hawaii, the Philippines, China and points that way. Traffic to Europe goes thru W8CNO, W8BBR or W8CRI. Traffic to Asia, W8CRI, W9ERU, W6EEO and points west. W8CNO can also handle traffic to Alaska. W8CMB comes forward with word that he can handle PY traffic nicely. Any others who can handle messages to foreign parts step forward and say so. Let our motto be "Land a message in Ohio, and it will reach the World." Hi. W8GZ is still getting his thru AA work. W8BBR puts a whole lot of you to shame with his 95. W8CWC took 40 from the Scranton, Pa., show and 20 from the Boston Show, sticking at the key steadily until 3 a.m. W8PL registers the old complaint of us all — that of getting Ohio stations to take Ohio traffic. W8AQ says he is on 3500 and waiting for traffic. W8BAC now has a monitor, and says it sure is "the berries." W8NP is surely working hard for ORS.

The Buckeye Shortwave Radio Assn. of Akron is conducting a 28 mc. contest, which will continue until January 1. Inquiries regarding the Club should be addressed to W8BZL, 961 Oakland Ave., Akron.

W8ADS handled some traffic for Europe. W8CFT is having QRM from college and football. There's a fine club starting around Clay Center, Ohio, gang. From what W8IF says, it is going to be *some* club. And, by the way, here's one more plea for news from all radio clubs in this section for inclusion in these reports. W8BKM is also making a living repairing BCL receivers. W8LI reports that W8CDO wondered if you use H-C gasoline in Hi C tanks. W8APC turns in a nice report, and is in line for schedules and traffic. Here's congratulations to W8CSS. His report is small because he recently bought rights to be called the daddy of an 8½ pound girl. W8CCS reports not much time to operate, and that his crystal rig is sure keen. W8ARW hopes to have a second op this winter. W8DBK will be an ORS soon. W8DVL is again on the air and going strong. W8BEA is still waiting for his filter condensers. W8DDK is too busy for traffic as usual. W8CFL reports that both his 210's died of old age, and he is using 201-A's now. W8DDQ only comes to life periodically. W8DHS reports his radio temperature is rising, and he will be back before next report. Well, W8DDF is gone, until next June at least, but he remembers the gang and wants anyone going to Purdue to look him up. W8DMX says he will have to do things soon because he is getting sore at himself. W8CNU says only that he is inactive at present. Watch your step, OM. Same applies to W8BKQ. W8AYO now has a commercial ticket. W8RN is on KFNN, and does not state when he will be back with us again. If you, each and every one of you, will only try to have just a little traffic to report each month instead of zeros, and will coöperate with W8CRI, W8CMB and W8BBR, there will be no doubt about Ohio leading them all.

Traffic: W8CMB 289, W8CRI 241, W8CNO 208, W8GZ 109, W8BBR 95, W8CWC 92, W8PL 74, W8AQ 55, W8BAC 32, W8NP 27, W8ADS 12, W8CFT 20, W8IF 19, W8BKM 15, W8LI 9, W8APC 13, W8CSS 9, W8ARW 6, W8DBK 7, W8DVL 4, W8BEA 5, W8OQ 2, W8DDK 1, W8CFL 1, W8BBH 1.

WISCONSIN — SCM, C. N. Crapo, W9VD — W9DLD is on the job again and on two transcontinental routes besides keeping a full quota of schedules. W9EBO says he has a new set and everything. W9DEK has increased his power. W9EFX has daily schedule with W9DLD on 3660 kc. W9AZN thinks he gets better results with his set self-excited than with C.C. W9FSS is on Monday, Tuesday and Saturday nights for Army traffic. W9DTK still talks about his 1-kw. water-cooled job. W9EMD is keeping schedules with W8CAT and W9FSS. W9DLQ has schedules with W9DLD, W9DEB and W5ZM. W9FAW is on 3500 kc. regularly and is looking for Minnesota schedules. W9BGT is taking a radio course and would like to hear from the boys. Address him at Stiles Dormitory, Valparaiso, Ind. W9BWZ says business is pretty rotten. W9SO is back on the air after the summer vacation with a new 4-valve screen-grid receiver and rebuilt transmitter. W9VD has installed Rectobulbs and shortened his Zepp — result 100% more kick.

Traffic: W9DLD 255, W9EBO 67, W9DEK 61, W9EFX 59, W9AZN 37, W9FSS 36, W9DTK 31, W9EMD 36, W9DLQ 21, W9FAW 10, W9BGT 9, W9BWZ 7, W9SO 6, W9VD 7.

DAKOTA DIVISION

SOUTHERN MINNESOTA — SCM, J. C. Pehoushek, W9EFK — The Radio Show at the Minneapolis Auditorium did a lot to aid traffic this month. Jabs, SCM of Minnesota, had his pretty (and also efficient) crystal controlled set there and many a BCL was initiated into the inner intricacies of amateur traffic handling. A total of approximately 400 messages were filed for destinations from Hopkins to India. Hi. The bulk of the traffic was sent to W9COS (by N. W. Airways plane), W9AIR, W9CTW, etc. W9COS is back on top as usual with the W6AD-P.I. sked going strong. W9BN, the U. S. Power station, is on both 7 and 3.5 mc. with an 852 remotely controlled for each band. Mears, W9BFI, Leach W9DH, Cottam W9BYA, Adams and Soules all operate there. W9DHP is back at the university after a summer on the lakes. W9AIR turns in a report brimming with news, likes 3500 kc fone, attended a hamfest at W9CTW and says W9BKX blew both power generators. W9AJU and W9CYA are on now and then. Let's hear from all you fellows that are so secretive about your activities, regardless of whether you are an ORS or not. W9DRG had a visit from W9GKO and has several skeds lined up. W9BHZ says some of Ben Franklin's playthings managed to get tangled with his antenna and took tube, meters, and condensers. W9DGH has a new xtal job on 7 mc. W9XI has installed a 250-watt xtal controlled set capable of almost instantaneous change to 3.4, 7, 14 or 28 mc. W9AMK and W9DOP are both at the University. W9EPD has just been assigned to a new man in Minneapolis. W9DBC, our old TC traffic hound, is back on 3.5 mc. with a 210. W9FLE has 400 volts of Edison cells to sell or trade. W9DMA is going strong with new xmitter and zepp. W9DGE says "three trips, then whoopee for 7000 kc." W9EYL is rebuilding and attending night school. W9EAH worked Belgium with his antenna lying on the roof. W9DGH, W9EAH, W9GKO, W9FLE, are all prospective ORS.

Traffic: W9COS 277, W9BN 130, W9DHP 26, W9AIR 25, W9DRG 18, W9BHZ 6, W9EFK 6.

NORTHERN MINNESOTA — SCM, Carl L. Jabs, W9BVH — Judging from reports and traffic, good weather is here. The SCM leads the Section in traffic this month. He had his transmitter at the Minneapolis Radio Show and originated a bunch of messages as a result. W9AH handled a bunch of msgs from the Duluth Radio Show. W9GIL had his station at the Duluth Radio Show. The station installed at the show by the new radio club of Duluth and Superior was a huge success. W9CTW has a 204A for his QTZ transmitter. He had a hamfest recently and the SCM had the pleasure of meeting the gang. W9DOQ says radio show traffic went off in good shape. W9EHI is installing a remote controlled transmitter and will be on regularly. W9ADS says VK and ZL are easy to work in the morning. He handled a message from WGDR (ship in Pacific) ordering a new propeller. W9GGQ, a new prospective ORS, reports. W9DPB has been experimenting with antennas all summer. W9BBT got a new ham station going at Raymond. We would like to get more reports on new stations that handle traffic. W9AH is old W9CF, his call having been changed recently. W9EGU was married on Oct. 4. On behalf of the section the SCM wishes you and the OW lots of luck and happiness.

Traffic: W9BVH 228, W9AH 94, W9CTW 85, W9DOQ 71, W9EHI 53, W9ADS 21, W9GGQ 8, W9CIY 7, W9DPB 4, W9BBT 1, W9AV 4.

SOUTH DAKOTA — SCM, Dwight M. Pasek, W9DGR — The reports are exceedingly few and far between even though it is the time of the year when most of the gang are in full swing. W9DB has a new 100% modulated fone, as well as an 852 on 7 mc. He says that W9FOQ is playing

football again. W9DNS reports renewed activity after a summer off the air. W9CKT, Ed Marquardt, Madison, is back on the air after several years inactivity. He was a whiz in old days so look for him, fellows. W9DGR though very busy with school, operates a little.

Traffic: W9DB 3.

NORTH DAKOTA — SCM, Bert S. Warner, W9DYV — W9DYA reports that he was QSO W9DHQ, a new station in this state, who is using one 210 tube. W9FCA is back on the air with one 201A using B batteries for plate supply. W9IK is high school principal at Chaffee, N. D., and has a radio class of new hams, who are constructing all of their apparatus as school work. FB, OM. W9BVF says he is QRL with college but manages to keep three skeds. W9CDO has a 50 watter going and expects to get out very well this winter.

Traffic: W9BVF 53.

DELTA DIVISION

ARKANSAS — SCM, Henry E. Velte, W5ABI — We have not been having as many reports as we would like to see come in. Some of the fellows will not report because they only have a small traffic total. Don't let this discourage you for every little bit helps. W5HN is still working on his phone set. W5JK at DeQueen has been appointed ORS. W5AQX reports working W1MK. W9FO remarks that W5IQ should have a good note due to the fact that he lives on "Battery" St. Evidently this is true because he is getting out with a pure DC note. W5LK is on with the aid of a 210. W5BCZ continues to get out very well with his 852. W5BDD has been off the air due to illness in the family. W5ANN is still servicing BCL sets. We are glad to note that our traffic total has taken an upward jump this month. With cool weather and vacation time over, we hope to see a larger total next month.

Traffic: W5AQX 44, W5ABI 20, W5JK 5.

LOUISIANA — SCM, M. M. Hill, W5EB — Activity for the section is booming with the cool weather. A real traffic net is now in force making QSP anywhere in the state possible within 24 hours. FB, W5WF is again top traffic man. He is also on the Dixieland traffic route which extends to Nicaragua and the Canal Zone. The new station, W5ANQ, comes in with a report of some skeds. His 210 in a high C circuit has a true 1929 whistle. W5ANA is a newly appointed ORS. W5BDJ received quite a write-up in the Monroe papers. W5BHV has placed posters and boxes in the post office and tourist parks requesting the public to deposit their messages. FB, W5BDY has rebuilt from top to bottom and now has a fine steady signal. W5AXS was QSO Dutch Steamer S. S. *Poegon* with call PXR. W5ACH bought so much crystal grinding equipment that his station suffers. He made W1MK a present of a crystal that is within less than 1/10 of 1% of W1MK frequency. HQ complimented him highly. W5BBO has dusted off the junk and bought some B batts. W5EB has a 4-tube screen grid receiver *à la QST* and she is all they claim for it and then some. W5UK says business takes most of his time. W5NS has renovated the 210 CC rig and is taking time off from the YL.

Traffic: W5WF 128, W5EB 64, W5AXS 59, W5ANA 40, W5BHV 21, W5BDY 13, W5BDJ 6.

MISSISSIPPI — SCM, J. W. Gullett. W5AKP — W5FQ is the owner of a new receiver equipped with two-step audio amplifier. W5QQ is off the air until he can secure two radiostats to replace the two that he borrowed from WCOC. W5GQ has moved to a new location and put up a voltage feed zeppelin antenna. W5AWP says phone DX is increasing these cool nights so he is on 3520 kc. from 11:30 p.m. until midnight every night and hopes to handle lots of traffic with phone. W5AZV says amateur radio activities are increasing in Jackson. W5BHL blew his UX-210 so he is using a UX-201A. W5AYE is moving to a new location. W5AED, a new ORS, is working on 7150 kc. W5BBX has schedules with W4JQ and W8BUA and works in the 7000- and 14,000-kc. bands. W5AAP reports some messages handled this month for the first time. W5AKP has his new station finished and as soon as he receives a new transformer will be on the air.

Traffic: W5AWP 22, W5AZV 15, W5AED 12, W5BBX 9, W5AAP 7.

TENNESSEE — Acting SCM, J. B. Witt, W4SP — Things are picking up all over the state since cooler weather has set in and we hope to have increased activities right along. W4VK shows greatest activity of any ORS, maintaining five schedules. W4RP also comes through with his report showing one schedule on 7-mc. band. W4CW contributes a report covering all activity in Memphis. W4AC has been away. W4AGW must be asleep, as we don't hear much from him. W4AHK and W4AKG are coming on with rectobulbs and 852's soon. W4CA has one of the best notes in town. W4HD has a new set and gets fine reports. W4OI is a new station. W4KH sold his 250 watter and is dropping back to a 210 with DC supply. W4DR is on his vacation. W4AIQ is working Aussies regularly. W4IV has a fine DC note. W4GH is op at GX9. W4CW is changing to DC. W4AFK is about ready with his 3-stage xtal set for 7 and 14 mc. W4AGV is on 7 and 14 mc. looking for traffic. W4WZ has worked all ZL and VK districts on 7 mc. and holds sked with NNFX every night. W4HK and W4FX are using single feeder Hertz and report them FB. W4SP is looking for traffic. Let's have more reports, as we want something in this space every month.

Traffic: W4VK 15, W4RP 14, W4SP 7, W4FX 3.

HUDSON DIVISION

NORTHERN NEW JERSEY — SCM, A. G. Wester. W2WR — A few stations who are not ORS reported traffic this month. All stations are welcome to send in their reports. W2CTQ is too busy with studies to operate his station. W2CJX was QSO a station in Hongkong. W2WR is on 7 mc. working good DX. W2APU has applied for an ORS. W2DV, an old timer, came thru with a report. W2AUP using an 852 crystal controlled xmitter is an initial reporter. W2AOP is a busy BCL service man. W2CP, our RM, is back on and wants to start up some real traffic routes again. W2AOS is pleased with the results of his new xmitter which he says is *à la* 1930. W2JF makes the BPL this month as a result of good skeds with W1MK and W8CNO. W2BY's aerial came down in several pieces. W2JG sends in a report after a long silent period. W2BDF finally got his 500 watt xmitter on the air.

Traffic: W2WR 2, W2CJX 16, W2JF 122, W2AOS 16, W2CP 17, W2JG 11, W2BDF 11, W2BY 2, W2AOP 7, W2AUP 20, W2DV 7, W2APU 44.

EASTERN NEW YORK — SCM, H. Rosenthal, W2QU — So many of the ORS have failed to report in the past six months, it has been necessary to start a general housecleaning and the following appointments have been cancelled: W2GK, W2PV, W2DD, W2AAN, W2LA, W2AAZ, W2BOW, W2AML, W2CYH, W2AHJ, W2ANM, W2APQ, W2BLN, W2JE, W2SJ, W2AUQ and W2AQL. W2AVS is building a new station for his high school. W2ACB has applied for ORS. W2ACY is going back to 3800 kc. W2LU handled all the Radio Show traffic. W2BKN is active on 7250 kc. W2BUW worked his first PY station. W2CC keeps a tri-weekly sked with Australia. W2ALI gets lots of traffic in the short time he spends at the key. W2OP has received his Army amateur appointment. W2CUF, W2AYZ, W2JE, W2BSD, W2BHV, W2UL, W2AYK, W2MA and W2QU have joined the Naval Amateur Reserve. W2ACD entertained W1AOF who is enroute to Africa with a short wave transmitter. W2AUQ is off the air with blown condensers.

Traffic: W2QU 226, W2LU 146, W2ALI 39, W2BUW 37, W2AVS 30, W2OP 13, W2ACB 13, W2BKN 8, W2ACY 4, W2BAE 9.

NEW YORK CITY AND LONG ISLAND — Acting SCM, V. T. Kenney, W2BGO — Manhattan: This section is led by W2SC. It looks as tho the Ft. Wood station will lead us thru the winter in traffic totals. W2BSZ has recently opened a new station. W2AJP has a large total and operates on both 14 and 7 mc. W2BDJ is still looking for skeds. W2AOY is now in the swing and ready for his share of traffic. He visited KFLF while that ship was in our harbor. W2BBY is again bothered by BCL QRM. W2BCB handled some flood traffic from the south. W2BNL is on the air, ex-4ACK will soon be on as a "2." Bronx: W2APV has been visited by NJ2PA. W2BPQ is resuming skeds with the northeast and south. W2AII has a new receiver. W2AFT has been looking for a sked with F8EB on 14 mc. nightly. W2AET claims everything is dull in his location. W2BBX-2FF QSO'd five foreign stations in an afternoon on 14 mc. including WFA. Brooklyn: The 7 mc. QRM is hampering the operations of W2CRB and W2CCD. We suggest a QSY to 3.5 mc. for their traffic skeds. W2BO is in the city again after visiting several first district stations. W2PF has his xtal working again using an intermediate amplifier on 3.5 mc. fundamental. W2BIV has experienced QRM from painters who knocked down all aerials. Long Island: W2AVP is busy creating interest in traffic in the L. I.

section. The Nassau Radio Association, a new ham club, will try to put some pep into L. I. We wish them success! W2AFU divides his time between W3JM, W3XS, W3KZ, W3BA and W3AFU.

Traffic: Manhattan: W2SC 558, W2AOY 46, W2BBY 19, W2BSZ 17, W2AJP 17. W2BDJ 14, W2BCB 7. Bronx: W2APV 82, W2BGO 44, W2FF 33. W2BPQ 19, W2AII 11, W2AFT 9, W2AET 3. Brooklyn: W2CRB 26. W2CCD 16. W2BO 14, W2PF 9, W2BIV 1. Long Island: W2AVP 147. W2AFU 51.

MIDWEST DIVISION

IOWA — SCM, H. W. Kerr, W9DZW — A fine bunch of reports was received this month. Thanks, gang! W9FZO leads with W9DEA, W9FWG, W9FFD and W9FQG trailing right along as a result of a radio show. W9DEA is rebuilding his MOPA. W9ESP has nice skeds and a good total. W9BRH, attending Univ. of Iowa, makes the BPL on deliveries. W9AUR is on the air at Iowa City college. W9EJQ resumed his daily with W9DLD on 3680 and is lining up other skeds. W9DWU gives us a nice total for golf but no schedules! W9FLK promises more when his skeds get working steadily. W9ELV is on 3500 and 7000 kc. W9DXP says his new keying system is absolutely clickless on any wave with BCL sets full volume in the same house. FB, W9APM is looking forward to an 860 like W9DZP's. W9EIT ground his rock too thin for 3500 kc. W9HD has new Zepp. W9CZC is on Mon., Tues., and Thurs. for traffic. W9BCA maintains his CAB and FX skeds. W9DNZ sends in his first report. He is AA Dist. C. S. W9FIF helps out the Sioux City totals. W9EOP reports from W. U. college at LeMars. W9GCP radios his report. W9FDL got excited when he saw W9DNC's xmitter. W9GKL shifted from TPTG to Hi C Hartley. W9DUN, another printer ham, brings Akron back on the map. W9DNC is moving to Muscatine, Box 326. W9EMK is another first reporter. W9CCE is busy with BCL sets. We want to thank every op that reports. W9DGW is the only Iowa man on the T.A.E. route. Get the Xmas greetings moving early. Give us your sked data — the RM and SCM can use it.

Traffic: W9FZO 341, W9DEA 265, W9FWG 216, W9FFD 214, W9FQG 212, W9ESP 175. W9BRH 165. W9DZW 155, W9EJQ 103, W9DWU 89, W9FLK 75, W9ELV 70, W9DXP 64, W9CZC 60, W9BCA 55, W9DNZ 55. W9FIF 23, W9EOP 21, W9GCP 19. W9FDL 12, W9GKL 9. W9DUN 8, W9EMK 4, W9CCE 3, W9DNC 4.

KANSAS — SCM, J. H. Amis, W9CET — The Kansas gang are all getting the deck clear for a big traffic season. W9CET pulled a fast one on the RM and made the BPL. W9FKD proves the old theory about skeds, keeping four and making the BPL. W9FZU had good luck with traffic this month. W9AES reports for the first time and keeps a sked with W9BJA. W9CFN is keeping 3 skeds; one with NNFX. W9BTG is helping organize the Nemaha Radio Club. W9HL is lining up a bunch of skeds so watch his smoke. W9DEB has replaced his 201A's with 210's with a marked improvement. W9ESL is installing xtal control on his fone with 100% modulation. W9CKV complains of a bad power leak. The leading xtal grinder of Kansas, W9BEZ, finds time to handle a few messages between grinds. W9GHI is going strong on 3500 kc. fone and worked all districts last month. W9SS would like to have more schedules in all directions. W9GFO has a new 750 volt M.G. W9BHR has been too busy writing bed time stories to work the old set. W9FLG, our RM, has been working 16 hours a day so was unable to be on much. RM nite will be started again soon. Watch for the dope. The SCM would like to see every station in the section keep a few skeds. Let's go gang, more skeds, more traffic!

Traffic: W9CET 233, W9FKD 206, W9FUZ 116, W9AES 91, W9CFN 82, W9BTG 77, W9HL 29, W9DEB 27, W9ESL 22, W9CKV 16, W9BEZ 15, W9GHI 9, W9FLG 9, W9SS 34, W9GFO 33.

MISSOURI — SCM, L. B. Laizure, W9RR — Those who have ORS are reminded anew of their obligation to report monthly. W9BEU and W9ZK pounded brass steadily, clearing traffic from three or more radio shows (St. Louis, Denver and Louisville). W9BJA gets his biggest portion of traffic from handling weather reports for the USWB (Aerological Division). You fellows located on or near air-routes are in a strategic position to coöperate with the Weather Bureau in the relaying of such reports. W9ZZ is the call of the new Volunteer Communication Reserve station in Kansas City. Most of its delivery total comes from mailing messages received on schedule from NDS, China. A triple watch is kept on the receiving end to avoid break in the copy due to QRM or QRN — one operator at W9ZZ, one at W9DQN, and a third at W9CFL.

Most of the gang are supporting Amis, W9CET, for Midwest Division Director. W9BMU is a high-power aspirant, now using a new 852. W9AMR was off temporarily while moving. W9FUN (and others) report the meeting in St. Louis when Mr. Hebert of HQ was enroute home. FB. W9GHG has a KDV5 schedule at 4 a.m. daily. W9DUD is teaching radio at high school. W9BEU reported by special delivery air mail. W9FTA is coming up for a new ORS. W9DAE, our old RM and traffic hound, is now at Rice Institute, Houston. W9FYM would appreciate a visit from the gang passing thru Brunswick on Highway 24. W9CDU says Nevada hams will hit the BPL yet — we are from Missouri, you've got to show us. W9EFR says everybody is QSA5 at his place. W9ERM, W9BKG, W9UI and the gang at KFRU are having a great time working DX with a WE212D. W9BJA keeps five skeds on the USWB work and three others for ham traffic. W9BKG will finish school this half and prospects are he will be a globe-trotter next summer. W9DHN is one of the consistent reporters of 1929 sigs. W9GBT keeps a daily sked at 6:45a.m. with W4VK. W9FBF reports W9ARA now attending M.I.T. at Boston. W9CJB is going to be an ORS soon. W9ALC does a regular trick at W9DQN. W9DQN is standing a regular guard watch for the NDS-W9ZZ USNR schedule. (Let W9ZZ know how you receive this stuff, gang, comments on sigs from both W9ZZ and NDS wanted. Address either W9RR 1st op at W9ZZ, or write Lt. Comdr. R. H. G. Mathews at 224 Sheridan Road, Winnetka, Ill. W9EDK has a regular operating sked planned now that he is back on the air. W9DZN is coming home to St. Louis and wants skeds. W9BHF rebuilt the transmitter and that made him ashamed of the receiver so now he has to build a new one. Hi. W9GCL had his license renewed. W2VQ visited in K.C. this month and met the gang. W9AWF was operated on this month and came out of it OK. W9EOG is a new Nevada station. W9EPX is still in Chicago operating at W9EPY. W6AM passed through Kansas City Oct. 22nd. The gang regret the failure of his telegram to accomplish its purpose in staging a hamfest at the Union Station between trains. It did not reach W9RR until W6AM had left the city.

Traffic: W9BMU 3, W9BEU 183, W9ZK 230, W9AMR 16, W9FUN 2, W9GHG 22, W9DUD 3. W9FTA 52, W9FYM 5, W9CDU 36, W9EFR 11, W9ERM 42. W9BJA 179, W9DKG 24, W9DHN 16, W9GBT 31. W9FBF 2, W9CJB 49, W9ALC 5, W9DQN 41, W9ZZ 122.

NEBRASKA — SCM, C. B. Diehl, W9BYG — W9ANZ is back again with crystal. W9QV has a crystal on 14 mc. and gets very fine results. W9DTH is back at work but cannot be on the air as much as he would like. W9DFR has two crystals so can change for QRM. W9DVR has a fine total. W9FAM is looking for schedules and prefers one on a coast-to-coast chain. W9DI is back at school. W9BOQ has eastern schedules and looking for a western outlet on 3500. W9CHB has a crystal and works 7000 kc. for traffic. W9CDB is putting in new power supply. W9BQR is very busy at the post office. W9EEW has a rush of business on his railroad so cannot handle much traffic. On Oct. 11th W9BBS became a member of the "benedicts." We all congratulate him and wish he and the OW many happy days.

Traffic: W9ANZ 9, W9QV 19, W9DTH 2, W9BOQ 13, W9DVR 27, W9CHB 59, W9BBS 4, W9DHC 55.

NEW ENGLAND DIVISION

MAINE — SCM, G. C. Brown, W1AQL — Well, gang, eleven out of sixteen stations reported this month. Let's make it 100% next report. The SCM regrets to report that due to the closing of the RCA station at Belfast, Maine is losing four mighty fine men, namely H. B. Morris, who has been transferred to Marion, Mass., John W. Ashmore, Carl Ericson and John Mundo, who have been transferred to Riverhead, N. Y. Good luck, boys! It is hoped that before next report the Queen City gang will have their club station all ready for business as work on a club house is coming along in a very encouraging manner.

W1ATO is high man this month, he reports 241 of his 327 messages being handled thru the short wave set at the Radio Show in Portland. W1CDX is second and reports some good schedules. W1ANH reports from Northern Maine this month with good total. Harry says that screen-grid detector is a sure fire outfit. W1AQD sends in a good report. W1QH is building a key thump filter to prevent a war with a BCL. W1KQ has schedule with Northern Maine. Mrs. W1AJC

still has a lead on the OM. It is sure hard to get ahead of the OW's. Hi. W1ACV has been transferred to Worcester, Mass. and has an xtal on the air. W1BFZ reports no traffic this month due to business activities. W1TB reports a falling off of traffic over in his part of the state.

Traffic: W1ATO 327, W1CDX 77, W1ANH 63, W1AQD 49, W1QH 44, Mrs. W1AJC 49, W1TB 39, W1AJC 34, W1KQ 29, W1AFA 21, W1AQL 17, W1AHY 5, W1ACV 3.

NEW HAMPSHIRE — SCM, V. W. Hodge, W1ATJ — W1IP made the BPL with a big total and is keeping a bunch of skeds. FB, LJ. W1APK wants more skeds with Maine and Vermont. W1AYN is employed by the Bell Tel. Co. in N.Y.C. W1AEF is back with a good punch, using B-batts. W1BFT is digging up a lot of traffic at N. H. U. W1AUY is on with a new fone, using an 845 modulator. W1BK and W1CEQ are working together at Durham. W1AUE is working nights so is unable to do much brass pounding. W1AVJ is still working DX on 7000 kc. W1BST has joined the Naval Reserve. W1MB joined the benedicts Oct. 7th. the YL being none other than the SCM's sister! Reports are that W1IP is the next to jump off! Naval Reserve drills were resumed with most of the ORS taking part. Anyone wanting information on the Reserve is requested to write the SCM.

Traffic: W1IP 337, W1BFT 114, W1AEF 70, W1APK 59, W1BK 10, W1ATJ 11, W1AUE 4, W1AUY 1.

VERMONT — SCM, C. Paulette. W1IT — It is very hard to make an interesting report for you to read if you don't let me know what you are doing. Only three stations report this month: W1AOO, W1FN and W1IT. W1AOO is to be congratulated, as he hasn't missed a single report all summer. W1FN reports that he is moving and will have a better set than ever. W1IT has one sked for every night. W1CGX has just got back home and is very active. He is the Chief Route Manager for the state and will gladly cooperate with you all to get FB skeds working. Hope I will get material enough next month to write out a real report.

Traffic: W1AOO 17, W1IT 1.

EASTERN MASSACHUSETTS — SCM, Miles W. Weeks, W1WV — This month has been one of Radio Shows and as result, traffic has shown a marked increase. Three stations make the BPL: W1ACH, W1WV and W1LQ. The Eastern Massachusetts Amateur Radio Association obtained a booth at the Boston Radio Show and W1ACH deserves great credit for the fine results obtained there during show week with his portable. An a.c. receiver kindly loaned by Sears, Roebuck Company was used with very good results. W1KH, W1KY, W1HE, W1JY, W1ACH and W1WV all had a turn at the key and all messages received were routed out before the show closed. Many amateurs from all points of the country registered as visitors at the booth and great interest was evinced by the public in general, few of whom had ever witnessed an amateur station in operation before. Among the visitors from New York City we were pleased to see the League's Advertising Manager whom most of us remember here as W1FL. It is with great regret that we announce the resignation as Route Manager of W1KY who has served us so faithfully and well in this position. A change in her business necessitates this step. W1KH as her successor will have the continued cooperation of the gang and we wish him every success. W1RY is building an outfit for college use which he hopes to have on the air soon with the call W1VG. W1ARS says no skeds. W1WU is working for a d.c. note. W1RL is studying at night school and does not dare to touch a key. Hi. W1BLD reports no hum using a.c. with 224's and 227's for receiving and that W1BVL can tell us how best to do it. Loosen up, Dick. W1BOB is rebuilding. W1CRA has installed a new Zeppelin and is putting the finishing touches on his new MOPA, besides having time for some traffic. W1ACA has a new SM screen-grid receiver and reports traffic improving. W1WV handled traffic from seven Radio Shows altho most of it came from W1ATO at the Portland Show. W1KH is working a weekly traffic chain to Honolulu on 7000 kc. via W8CNO to destination in one jump. W1AZE now has his WAC certificates and reports DX FB on 14 mc. W1LQ had to take third place this month but had his usual consistent total. W1ZZ was again QSO WFA on Oct. 13th and took a lot of messages. W1AAW has resigned his ORS and is now op on WXOI between Portland, Me., and Newport News. Sorry to lose you, OM. W1KY still has time to turn in a good total. W1AGS expects to complete his new high power xmitter soon. W1BZQ is out of the hospital and we are glad he is able to be on again. One of our youngest ops, W1TL, also reported Radio Show traffic handled. He is working for a commercial ticket. W1LM has resumed activity and turned in a good total. As a direct result of activities at the Boston Radio Show, the Oct. 16th meeting of the Eastern Mass. Amateur Radio Assn. was largely attended. The annual election held resulted in continuing the present slate in office with W1KH as president, W1ACH as vice-president, W1KY as secretary and W1WV as treasurer. The SCM again wishes to urge all stations in the section to report to him any traffic handled during the month and thanks those who have already done so. W1CPR reports by radio thru the SCM's station. Another report by radio thru W1WV says that W1CMZ is using a vertical Zeppelin and three 210's in parallel with fine results on DX and he is keeping daily skeds on 7000 kc. with CM2YB and TI2HV.

Traffic: W1ACH 347, W1WV 314, W1LQ 203, W1LM 108, W1WU 99, W1CRA 72, W1KY 63, W1KH 52, W1ASI 37, W1BZQ 30, W1AEH 28, W1ACA 27, W1BKR 26, W1ARS 23, W1TL 23, W1BAQ 22, W1NK 20, W1AZE 13, W1AGS 8, W1BBT 5, W1BLD 4, W1CPR 32, W1CMZ 166.

CONNECTICUT — SCM, C. A. Weidenhammer, W1ZL — With this report the SCM sings his swan song. For the past year he has had so little time to devote to the duties of his office that he feels it imperative to resign in favor of some one who can be on the air constantly. He has appreciated the support and spirit of the gang greatly and his only regret is that he could not make time to serve them more fully. W1AOI is putting out a splendid signal on 3500 kc. W1CTI wants 3500-kc. schedules with Stamford, New Haven and Bridgeport. He wants the consensus of opinion of the gang on "CTNITES" for the winter. W1TD handled some New Haven Radio Show traffic. W1BI-W1BQH has just completed a 100 watt push-pull, TPTG transmitter. W1ZZA is back from his summer trek to the Pacific. W1VE, who should run for mayor in Havana soon, dropped in to see the SCM recently with W1ASC. W1FC, ex-8EX, is doing splendid work with a pair of 852's. W1CPO has a new Zeppelin antenna and gets better reports. W1BM is back on the air. He has hopes of becoming the champion pistol shot of Bridgeport but not Chicago! Hi. W1UE has innumerable schedules. W1AFB is delighted that more "old timers" are using 3500 kc. W1BJK decries the fact that his report was not in *QST* last month. (Sorry, OM, but it must have miscarried en route to Pennsylvania.) W1MK is still the perennial traffic, splendid performance, and "1929 signal" station. W1VB has started his fall traffic campaign with a will. W1AJB is on 3500 kc. Brother Gompert, W1AMG, helped engineer the T.C.R.C. annual "whoopee" party at the Hof-Brau. Needless to say, the party was a "wow." W1BOD has entered "Old Eli." (Good luck at Yale, OM.) W1IM and W1RP popularized the mysteries of radio with their splendid "ham" set at the Bridgeport Radio Show. The only discordant note was the presence of a microphone on the panel of the a.c. transmitter. Hi. W1AMQ in Milford has a new 3500-kc. Zeppelin antenna. W1ZL has a framed WAC certificate on the wall. W1UE, W1BOD, W1AJB and W1AMQ will be ORS when this is read. The best of luck, Connecticut ORS, and carry on!

Traffic: W1AMQ 2, W1BOD 80, W1AMG 105, W1AJB 81, W1VB 26, W1MK 653, W1BJK 19, W1AFB 143, W1UE 208, W1TD 35, W1CTI 116, W1AOI 122, W1RP 36, W1IM 50, W1ZL 35, W1AOX 10, W1AVK 34.

RHODE ISLAND — SCM, C. N. Kraus, W1BCR — The Radio Club of Rhode Island installed a 100 watt transmitter in an A.R.R.L. booth at the Electrical and Radio Exposition held at the State Armory in Providence. Over 900 messages were transmitted to all parts of the world. W1AJC took 24 messages in one string. W8DUE 22, W9BXK 15 and W1MK 12. The call was W1BCR and SCM Kraus and Thomas L. Siglin (W1CPH) were the ops. W1AMU, W1BIL, W1MO and W1BGA also helped move the traffic. We have two old ORS back with us again. W1BIL who is back from sea and who is chief op at WPAW; and W1AMU who has been off for the past year. W1AWE will be with us soon with an 852. W1MO is on 14000 kc. with his 250 watter. W1BLV has his station perking at his new location. W1CPH is on 14 and 7 mc. with a 210. W1AVH is about to go on 7 mc. with a 210. W1BQD has moved to an excellent radio location and should perk out FB. Kraus is looking for an operator to run the club station on Tuesday evenings for the Naval Reserve Net. How about it, OMs?

Traffic: W1BCR 902, W1MO 8, W1BLV 6, W1BQD 4, W1AWE 4, W1CPH 12.

WESTERN MASSACHUSETTS — SCM, Dr. J. A. Tessmer, W1UM — Considerable time and effort is being consumed in laying out the plans for the N. E. Convention. The Worcester Radio Assn. will appreciate letters from the

Worcester County hams pledging their support in the work necessary to make the convention a success. The rooms at 274 Main St. are open at 7:30 p.m. every Thursday evening. W1NS is working at the Edison laboratories in West Orange. QRA is Walter H. Kozacko, care of Mrs. Fuchs, 92 Grove St., Bloomfield, N. J. W1BWY has a new 3500-kc. outfit. W1AJP, Stanley Bulkin, is the new secretary of the Springfield Radio Assn. Everything is quiet at W1BSJ. W1BIV is busy with school. His new QRA is 9 Ruthven Ave., Worcester. W1BVR has a new transmitter on 7120 kc. W1AMZ is unable to be home except on a few week ends.

Traffic: W1BWY 4, W1BIW 4.

NORTHWESTERN DIVISION

OREGON — SCM, W. S. Claypool, W7UN — Wanted! One adding machine for the Oregon Section. Yes, we need one this month. Everyone seemed to be out for traffic and how! W7WP heads the list with a total of 332. Twenty-five stations reported and fourteen were non-ORS. FB! 2175 is this month's total and we think it is the largest this small section has ever made. By spending 22½ hours on the air daily, W7ABH made the BPL and worked Chile, Nicaragua, Canal Zone, P. I., Japan and Singapore on 7 mc. W7LT was on the air every day except two this month and has a nice bunch. W7WB is back in the game after a season of fishing. W7ALM, W7ED and W7WB ran W7AFP at the Clatsop Co. fair this year. W7PE is still plugging along. W7FH envies W7WP and his 210 DX. W7AMJ reported by radio. W7MY, W7IF, W7AMF and W7WL keep Coos Bay on the map. W7PP was so busy this month with work and code class for YLs only that he forgot to report. W7UB prays for a better receiving QRA as the SCM heard three VK and one ZL station answer one of his CQs. W7EO reports one message. Wonder if that is the number of deer he got this season. W7PL and W7CX report and say "Conditions in the eastern part of the state FB." W7AHA is the only active Eugene ham with traffic to report. W7JC wants some QSL cards so he can patch up the bullet holes in the wall where BCLs took a few cracks at him. The SCM would like to hear from any amateur interested in U.S.N.R. work in this unit. W7UN is now the Master Control Station for the Portland Unit and would like to get more to work with him. We also need several OBS, OO and a new route manager. Any one who feels he can handle any of the offices, please write immediately. Don't forget the SCM's new QRA, 1059 Greenwood Ave., Portland, Oregon.

Traffic: W7WP 332, W7ABH 325, W7UN 223, W7LT 207. W7AFP 178, W7AMJ 127, W7WB 107, W7PE 103, W7ED 69, W7ALM 55, W7AHA 67. W7MY 66, W7CX 53, W7AMF 48, W7WL 42, W7IE 41. W7FH 35, W7AIC 30, W7IF 11, W7ALK 6. W7UB 4, W7EO 1, W7MV 41.

WASHINGTON — SCM, Otto M. Johnson, W7FD — W7LZ and W7BB make the BPL. W7BB has bought an interest in the U.S. Mail. Hi. W7TX continues to do fine work. W7JJ says he will be in the BPL soon. W7AMO is up and around again. W7IZ and W7GP are new ORS. W7LZ keeps skeds with WFA and WSBS. He reports K7FQ is back in the States. W7ACA is back on the air. W7ABN is a newcomer in traffic ranks. W7AFO reports DX bum. W7AIX is now located at Kennewick. W7AFX is a newcomer at Snohomish. W7ACY, W7MW, W7PH, and others keep Everett well represented. W7AG is shooting QRM for City Light (free ad) but finds time to run W7AG and portable W7SL. W7BR is QRL taking in the BCL $$$ for 1931 radios. Talking about W7AG and W7BR reminds us that another Seattle-Tacoma-Everett and way points HAMFEST is in order. The SCM will be glad to hear from the gang regarding this. The new QRA of the SCM is 3846 31st Ave., West, Seattle.

W7AHR is in line for ORS. W7TK is a newcomer at Lake Stevens. W7UI and W7AGO are attending the Univ. of Washington. W7OI at Fort George Wright is anxious to make schedules for moving Army traffic to San Francisco and other points. Address Alex H. Sokoloff, Hq. Co. 4th Infantry, Fort George Wright, Spokane, Wash. The Spokane Radio Operators Club installed a short-wave station in a booth at the Spokane Interstate Fair which was held during September and many messages were accepted for transmission both from the station in the booth and other Spokane stations.

Traffic: W7LZ 323, W7BB 223, W7AMO 54, W7TX 48, W7JJ 35, W7ACY 33, W7IZ 22, W7AG 21, W7AFO 20, W7ACA 14, W7ABN 11, W7MW 5, W7AIX 1.

MONTANA — SCM, O. W. Viers. W7AAT-QT — W7AAW is coming to the top like a balloon. FB, OM! W7DD reports a new C.C. 50 watter on 3515 kc. W7ZU has departed for Palo Alto, Calif. Good luck, OM. W7HP reports a new station throughout! W7AEM, W7DJ and W7TB, all of Hardin, are planning for a good season this winter. W7AAT will soon be on with two new transmitters, new receivers and antenna systems and intends to knock 'em dead. W7FL is the proud owner of a Chevvy Coupe. The SCM wants to hear from W7EL, W7FL, W7ANT, W7AHN, W7AFM and W7CC at once.

Traffic: W7AAW 44, W7HP 41, W7DD 23, W7FL 11.

PACIFIC DIVISION

LOS ANGELES — SCM, D. C. Wallace. W6AM — The A.R.R.C. again meets weekly on Wednesday nights at 5428 S. Broadway, L. A. At the meeting of the Associated Radio Amateurs of Long Beach held Oct. 18th they had their semi-annual election of officers. The Pasadena Short Wave Club still hold their regular meetings with a good attendance. The A.R.R.L. held a Rally Banquet Oct. 18th in the Chamber of Commerce Bldg., L. A.

W6LM is sending on 1765 kc. every evening from 9:30 to 10:30 for beginners. A Pep Fest of the A.R.R.C. for the convention was held Oct. 18th. 100 were present. Dr. Swinnerton, W9IL, gave interesting talk. Entertainment was furnished by W6AVJ, W6BJX and a YL from Long Beach. Sandham gave a talk on convention. A small cup was presented to W6BZR who was the only entrant in the best station contest. W6EVA reports that the local club installed an expensive radio fone at the L. A. County Fair at Pomona. From Sept. 17th to 22nd 807 messages were originated. W6AKW's regular QRH is 7100. W6CHA reports that the new rectobulbs are O.K. W6CBW just got down to 14 and 28 mc. W6EGH handled messages for British ship *Menelaus*, call XG2XC, in port at Vladivostock. Fine work, W6EGH. W6ETJ makes the BPL on deliveries. W6EQF is in the BPL for third successive time. W6UJ has been making a new field meter, monitor and "modulometer." W6FT reports that W6EGX is coming on with crystal control. W6BZR has been working a lot of DX on both 7 and 14 mc. W6BCK reports for the first time. W6CUH is at Calif. Tech. during the week but manages to keep 852's warm during week-ends. W6DKV's regular QRH is 7150. W6DHM reports that their seven-and still has a voice of an 852. W6AWY reports that after settling down to married life, traffic is picking up. W6EKE is building two 852's soon. W6ESA rebuilt his transmitting and antenna system entirely. W6ACL is building a monitor. W6AM reports water-cooled tube and 6-phase rectifier. W6EHX has been on 7 mc. all the while to date but is rebuilding and arranging to use 14 mc. He handled a 132 word msg from K1PW with no repeats.

W6ASE was heard on Sept. 19th by EU2CG at Moscow U. S. S. R. W6DPY is trying to get station at S. C. W6EAF is making SW super het per *QST*. W6HT reports traffic low on account of QRM from grandmother. W6EAU just finished a new shielded screen grid receiver. W6ZZA went east to Dayton and north to Washington this month. W6MA reports no schedules with W6ZZA missed in over a year. W6DLK's regular QRH is 7000 kc. W6BJX reports a new YL. W6ASM says "Let's keep the L. A. section on top even though we lost the best SCM in the A.R.R.L." W6DZI's regular frequencies are 7230-14130. W6BFI, W6BRO, W6AEC, W6COT, W6HS, W6FJ, W6EFA, W6ALR, W6DLI, W6DYJ, W6CUI, W6AKD and W6ANN all report.

Traffic: W6EVA 815, W6AKW 359, W6CHA 218, W6CBW 184. W6EGH 176, W6ETJ 125, W6EQF 112, W6UJ 110, W6FT 100, W6ANN 96, W6DYJ 69, W6BZR 64, W6BCK 62, W6CUI 63, W6CUH 47, W6DKV 40, W6DLI 31, W6DHM 31, W6AWY 28, W6EKE 27, W6ESA 24, W6ACL 23, W6AM 22, W6EHX 19, W6ALR 14, W6AXE 12, W6DPY 11, W6EFA 9, W6EAF 8, W6FJ 8, W6HT 6, W6HS 4, W6EAU 3, W6ASM 2, W6COT 2, W6BJX 2, W6DLK 2, W6MA 2, W6ZZA 2, W6DZI 1, W6AKD 34.

EAST BAY — SCM, J. Walter Frates, W6CZR — W6EIB, RM for Vallejo and the country north, sprang into the lead for traffic work during the past month through some FB skeds with K6DTG and K1HR. W6BIW gave W6EIB a close race for leading honors and is holding skeds with W6ACJ, W7MY and W6BIP. W6ASH, a new ORS, was third through consistent sked work with W6ETJ, W6BIP, W6EPT and W6DQH. W6BI made the BPL on deliveries. A QSO with NIJN put him over the hump on deliveries. W6IP has moved his station to the Naval Reserve Armory and is beginning to pound out traffic again.

W6ETA, former Grass Valley YL, is catching up on her traffic work and will soon be an ORS. W6ALX is busy initiating a new class of neophytes in the mysteries of ham radio and changing his 3750- and 7200-kc. transmitters more to his liking. W6NM, the Naval Reserve station, is putting over some FB traffic work with the various other Reserve stations of the district. W6CGM has just finished exchanging transformers with W6CZR and expects to knock the P. I. hams dead with W6CZR's rectifier buster. W6ATT has been getting the tin hat of a neophyte or lid at the Oakland Radio Club to rest on the top of his massive brow and while worrying over the coming club initiation pounded out a sizable traffic total. W6EDK is back on the air on 3500 kc. sending out the league broadcasts and snaffling much traffic from live skeds and the Army network. W6CTX maintains a sked every evening with W9-ZZE. W6AWF says his traffic total was so small this month he was ashamed to report. (Privately, he is the official chaperon for W6ETA.) W6BMS is coming up in his traffic work and within a few months should be among the leaders. He is working a sked with W7AMF on 3800 kc. W6EDO of Pope Valley expects to start a whole series of skeds in about 30 days. W6BPC is still holding his sked with K7ANS and running about 1000 words on each sked. W6RJ is working Seattle on fone with less than 28 watts input. W6CZR spent his vacation in Sacramento with portable W6DPT and maintained FB skeds with W6BIW and worked W6EDR, W6CFD and many other stations. He met most of the Sacramento gang and attended a meeting of the Sacramento Valley Amateur Radio Association. W6BHF, a new man in Berkeley, sent in his first traffic report this month. FB, OM. W6EDR says he is having less success getting out with more power than he did before. W6DXH has been thinking up things for the ORC neophytes to do before the initiation. W6BZU is being praised for his FB signals on 7200 kc. W6EJA reports things slumping slightly at Point Richmond. Houston, under his new call of W6AQ, is making the arrangements for the exhibition of ham equipment and demonstration of ham radio at the East Bay Merchants and Manufacturers Exposition at the Oakland Auditorium. W6DTM will be on the air as soon as he can build an MOPA. W6ALV is just back from Alaska, where he operated at K7AIN. W6GQ has been getting his first DX thrills by working P. I. and Jap stations. W6BSB has been elected treasurer of the Oakland Radio Club. W6ZD, our Division Director and a member of the East Bay Section, has been seriously ill in a San Francisco hospital following an operation.

Traffic: W6EIB 250, W6BIW 225, W6ASH 210, W6BI 183, W6IP 180, W6ETA 132, W6ALX 117, W6NM 100, W6CGM 97, W6ATT 71, W6EDK 65, W6CTX 67, W6-AWF 30, W6BMS 44, W6EDO 43, W6BPC 34, W6RJ 21, W6DPT 14, W6BHF 13, W6EDR 10, W6DXH 7, W6BZU 6, W6GQ 3, W6EJA 2.

HAWAII — SCM, F. L. Fullaway. K6CFQ — K6DTG, the star station of the Hawaiian section, again handled a big bunch of messages. He has been appointed RM for the Hawaiian section so you fellows that want skeds please see him. K6CJS has a 50 watter on the air. K6BJJ reports again. He has a pretty DC note. K6AVL is on the air every night from 5:30 p.m. until way late and is crying for more schedules. K6CIB reports a few messages. K6DWS at Schofield reports for the first time. He is on 14,000 kc. with a fifty-watter. K6BRA did some noteworthy work in getting the dope on a Honolulu doctor who was taken seriously ill in Australia. The work called forth several newspaper articles and one editorial on the usefulness of the A.R.R.L. Fine work, OM. K6CFQ is going to California this winter but will be back the end of January. NIJN-K6CFQ has had contact with WFA. The SCM requests all stations to report their activities.

Traffic: K6DTG 241, K6CJS 171, K6BJJ 68, K6AVL 51, K6CIB 17, K6DWS 11.

SANTA CLARA VALLEY — SCM, F. J. Quement, W6NX — A large number of ORS reported this month and it is apparent that interest in this section is keen. W6DQH, newly appointed ORS, topped the list of traffic handlers with 66. W6AME and W6DCG are the newly elected officers of the Modesto Radio Club. W6AMM is resuming his daily schedules with K1CE. W6YG, the Santa Cruz High school, is another new ORS. W6BMW is getting ready for 3750 kc. operation. W6BHY is looking for Hawaiian and midwest schedules. W6ESW dropped from 3.5 to 7 and 14 mc. W6JU will soon start up with skeds. W6ALW maintains a 14,000 kc. sked with W2AAL. W6-BAX is entering for the Wouff Hong Trophy. W6AME is QRL power leaks. W6CTE is QRL on account of school. W6BNH changed from 50 to 7½ watts.

Traffic: W6DQH 66, W6AMM 53, W6YG 42, W6BMW 28, W6JU 27, W6BHY 26, W6ESW 25, W6ALW 22, W6-NX 19, W6AME 6, W6CTE 4, W6BNH 2.

SAN DIEGO — SCM, H. A. Ambler, W6EOP — W6-ACJ leads the section this month with fine total and makes the BPL. He is a west coast station of a chain between the east and west coast. W6EPZ turned in a nice total. Our old friend, W6ANC, is back with us and says he is the most low down radio announcer in the world (El Centro, Calif., 52 ft. below sea level). W6EPF is now chief Route Mgr. so get in touch with him and get skeds lined up for the winter. W6BAM has rebuilt his receiver and says it works fine. W6VT has applied for ORS. W6CTR is coming on soon with a new 50 watt outfit. W6CNK reports a good QSO with Alaska. W6EOM says he is coming on strong as soon as football season is over. W6BAS a xtal station is all ready for winter traffic. W6BGL will be on soon with a 75 watter in a new shack. W6BFE reports DX coming in good. W6CTP worked CE with a 112A and B batts. W6AKZ is on with a 112A. W6DNW has a new shack. W6AJM has been working some fine DX on 14,000 kc. and will be on 7000 kc. soon to handle some traffic. W6EOP wishes to thank all the gang that elected him SCM and will do his best to keep this section up and coming. W6QY reports and expects to be on soon. All but three reported this month. FB, fellows.

Traffic: W6ACJ 293, W6EPZ 58, W6ANC 43, W6EPF 16, W6EOP 14, W6BAM 11, W6VT 11, W6CTR 6, W6-CNK 6, W6EOM 2, W6BAS 2, W6BGL 1, W6BFE 1.

SAN FRANCISCO — SCM, C. F. Bane, W6WB — Our old friend, W6AD is back again in full swing and leads the section, making the BPL. Fine work, OM. W6ERK comes a good second and also makes the BPL. W6BIP reports with his usual good total and takes a place in the BPL. W6WN reports his xtal working very nicely. W6CIS is now running a Philippine sked in addition to his regular W1MK sked. W6DFR hands in a good bunch due to Army-Amateur work. W6DBD, the RM, has a surprisingly good total considering he has been building a MOPA. W6DSS finds little time for traffic due to business, etc. W6AC reports taking traffic direct from China. W6DYB is QRL with school work and resigns as ORS. W6EPT has applied for ORS and sure will get it. W6EEG is now the proud papa of an eight and a half pound baby daughter. Congrats, Walt! W6WB has the old rock perking at last and wouldn't use anything else. W6PW is rebuilding his xtal for 14 mc. and lower. W6AVQ is sure stepping out with his layout. W6BGI is about to blossom forth with xtal after a long absence. FB. W6FK reports a QSO with VK with the Aussie using fone. W6EMH is getting ready to come back on the air with bigger and better power. W6DEK has closed his station. The A.R.A. of S. F. have started their regular meetings and are going great.

Traffic: W6AD 638, W6ERK 403, W6BIP 340, W6WN 52, W6CIS 85, W6DFR 86, W6DBD 38, W6DSS 8, W6AC 6.

PHILIPPINES — SCM, S. M. Mathes, KA1CY — This report by radio via W6AKW, W2BO and W1MK. This is our first report under the new SCM — let's make it bigger and better each month. KA1AC has established U. S. contact. KA1AF maintained nightly except Sunday schedules with PMZ and W6AKW. Contact is reported with CF2AB, South America, thereby entitling KA1AF to a WAC certificate. KA1AU reports a good traffic total and maintains a schedule with W6BVY on 7300 kc. KA1CE has been putting a good signal across the pond. KA1CM has not been as active as when Gisel operated. KA1HR is keeping the usual schedules. KA1JR is experimenting with low power phone on 3500 kc. KA1MC has a pretty signal with his crystal controlled transmitter. KA1PW has had generator trouble. KA1ZC is again active. The Army-Amateur Net is now completed in this section and work will soon be started under Captain Rives. KA1AF has attained fame for his work with WSBS and we feel that he has brought credit to the section. The usual report on Chinese activities come direct to HQs by radio via W6TM. Shanghai hams are all working together trying to influence the Chinese Government to become interested in amateur radio. AC8-TJ will soon be on the air at Shanghai. AC8AG is building ACSTJ a transmitter. AC3MA reports two newly hatched hams, AC3JS at Chefoo and AC3CO at Tengchow. AC9GH has made excellent progress. AC2AY and AC2FF are the

active Tientsin hams. AC2CK has gone to Canada. AC2-AA is taking a rest. AC8RV is Communications Manager of the I.A.R.A.C.

Traffic: KA1HR 616, KA1AF 294, AC8RV 152, KA1AU 61, KA1CY 25.

ARIZONA — SCM, H. R. Shortman, W6BWS — For failure to report, all Official Relay Stations in Arizona, with the exception of W6BJF, W6DTU, W6EAA and W6BWS are cancelled. This makes it necessary for a complete reorganization, and the SCM requests all men eligible for ORS appointments to file applications immediately. W6-BJF has been appointed Route Manager for northern Arizona. W6DTU reported direct to HQs. He makes the BPL both ways. W6EAA is QRL with school and BC service shop work. W6BWS has been on the air very little due to a lot of college work. Ex-W6CSO is back on the air after a few years' absence with call W6DRE. W6DIE is still pounding away. W6CDU is collecting apparatus for his new "he man" station. W6ANO is moving to Las Vegas, Nevada to operate for Western Air Express. We hate to lose Dan, for he was the best SCM Arizona ever had. Dale Hammersly, ex9EH, and W6BWS are working on a new quarter kilowatt station which they plan to keep on the air all the time. W6CWI, a new man, is doing excellent work on 7000 and 14,000 kc. using a 210. W6EH is still doing commercial operating at KGTL in Kingman, Ariz. The SCM had a visit from W9LK who has moved to Phoenix. Welcome, OM. W6DIB is back from Mormon Lake. W6AUI is still on the Phoenix police force, for which the gang are very thankful. Hi. W6ADW is a new man in Mesa. W6EFC is back on the air with 281 power supply. W6DCQ had some trouble with his receiver so is building a new screen-grid job. W6BWS received a card from W6OJ who is over in "darkest Africa" with a motion picture company making the picture "Trader Horn." He is FK6CR over there.

Traffic: W6BWS 41, W6DTU 256, W6BJF 79.

ROANOKE DIVISION

NORTH CAROLINA — SCM, Hal S. Justice, W4TS — During the Radio Show held in Asheville, Oct. 8th to 12th, the Asheville Radio Club had a booth with a complete amateur station. Thousands of visitors had their first "close-up" of an amateur station and hundreds of messages were filed for transmission. W4TO leads the Section this month, making the BPL on traffic filed at the Radio Show. Buck had concluded a long period of "resting up" and is now busy servicing BLC sets. "Doc," W4VZ, also handled a lot of the Radio Show traffic. W4ABV has made application for ORS appointment. W4AEW is now on 3500 kc. most of the time and keeps six skeds. W4AFW is rebuilding for higher power. Captain W4EI, formerly of Georgetown, S. C., will soon be coming on at Fort Bragg with his old xtal rig we knew so well. Welcome, OM. W4OC says ND. W4WI is attending the Ashville Junior College. W4ACI is using a 50-watter, but may drop to lower power in order to get a d.c. note. W4JR is looking for a few good skeds. W4AIW sends in his first report. W4TS is rebuilding for the fourth time since summer, and the new set will be a 30-watt MOPA push pull xmitter d.c. note. W1AJL (W8DYM) has organized an amateur radio club at Duke University. The club has seven members at present and has been assigned the call W4HP.

Traffic: W4TO 318, W4VZ 99, W4ABV 39, W4ACI 38, W4JR 30, W4AEW 26, W4WI 23, W4TS 22, W4AIW 12, W4AFW 1.

VIRGINIA — SCM, J. F. Wohlford, W3CA — W3KU says he's quitting the sea about Dec. 1st and will get back on the air. W3AER, ex9BCF, is still doing good work with UV-204A and rectobulbs. W3WM has worked about 50 countries now. W3II has gone astray again — too much YLitis. W3JT let his station license expire. W3TN is at sea somewhere on the west coast. W3WD is on occasionally. W3KU attended the Radio Show in Boston and met W1AAT, W1CDG, W1ALG and W1ARR. W3ARU reports meeting W3MO and W3MT and having a big time. He also went down to see W4TY and W4AA and had a royal time at WNRC. W3ARU has skeds with W4AIW, W2CXL, W3UN, W3BWT and W8DC. W3APT is building a new 8' by 10' radio shack. W3IE opens with a bang at University of Virginia and has W3APO, W3QX, W4ABE and an 8th district ham with them using call W3ABV, W8ACT, located in college, should be on the air soon. W3NM graduated last June and immediately made the fatal leap — matrimony. W3ALS has QRM from his work. W3ASA had a neat layout. W3IB is the YL operator at W3ASA. W3HY just returned from Europe and will resume operation along with his studies at Danville. W3TJ is using 280 tubes for his rectifier. The SCM rounded up W3CEL, W3ASA, W3IB and W3TJ in Richmond on a recent visit, and had the usual rag chew. W3KR will operate with W3HY this winter. W3AG blew up YLs! W3ASI has joined the Navy. W3APR will be on the air again this winter. W3BZ is about ready to resume operation. W3WO, a new station at Fincatle, Va., worked W8BFT with a 112 as a starter. W3BDZ changed positions and will be on the air shortly. W3CKL threatens to bust all the cans in the universe. W3CA handled a few messages. W3ZA is still hitting the high spots with his phone.

Traffic: W3ARU 136, W3APT 9, W3ALS 26, W3CKL 72, W3CA 5.

WEST VIRGINIA — SCM, F. D. Reynolds, W8VZ — This was a pretty good month for West Va. More stations reported than for some time. Quite a few reports came thru by radio. Wheeling has come to life and now has four stations going. W8DPO sticks to 14 and 7 mc. and continues to work DX. W8BWK, an old timer, is on with an 852. W8HD has his 250-watt outfit running OK, and may be heard on 3500 kc. most any night. He passed his exam for extra first amateur ticket. FB! W8BTV is a newcomer using a 210. W8AUL has given up the racket and is selling out. (Sure sorry to hear this, OM.) W8CDV has enough trouble with school and can't find time for radio. W8DNN of Parkersburg keeps daily schedule with W9AZY. W8BR of Elkins is attending school in Virginia and operates at W3AVB. W8AYI has a 201A which packs a punch equal to a 210. W8DFP is another old timer returning to the ranks. W8SP will be kept busy for the next few weeks with Xmas holiday business. W8DCM changed his QRA from Huntington to Chicago. W8OK has QRM from work. W8CSR needs a rectifier to make things hum. W8BCN is now using self-rectified supply. W8BUB is now operating and promises good reports. W8TI works good DX with low power. W8CLQ's senior operator, Alfred Herk, has a job in Pittsburgh. He left the station in charge of his brother. W8AIC returned from a trip through Yellowstone Park. W8DPD continues to do good work on phone. W8BDP is attending West Va. Univ. W8CCN now owns an 852. W8ALG is too busy for radio at present. W8JM was only on for about a week of this reporting month but had quite a few messages. W8ACZ now has his W.E. 250 watter blasting away on 3500 kc. and comes through with a nice report. W8VZ managed to get an 852 parking on 3500 kc. and picked up a few messages.

Plans for the West Virginia Party on 3500 kc. resulted in W8CAY, W8CLQ and W8VZ being the only ones present. Perhaps we can get some more fellows for the next one.

Traffic: W8ACZ 76, W8VZ 72, W8JM 40, W8BTV 41, W8DPO 28, W8CAY 24, W8HD 23, W8CLQ 21, W8OK 12, W8BCN 11, W8TI 7, W8DNN 6, W8AYI 10.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, C. R. Stedman, W9CAA — W9CVE leads the traffic list this month. W9CAA is second but lost a couple of rectobulbs in the course of things. W9FXW moved to 3500 kc. which should show up favorably next month. W9CDW claims he is going to quit the game and won't be heard on the air any more. (The last statement sounds a bit broad to the SCM, knowing W9CDW as he does.) W9EAM spent the month on the 7000-kc. band. W9CWX is on with his new 250-watt crystal controlled out-fit. W9CSR has his superhet all done, and is raring to go. W9EUR and W9DQD are resigning their ORS on account of school work. W9EBF says he is almost ashamed to report. W9EDM is getting out fine since he got a tube that would hold what he had to offer it. W9ECP has moved to Limon and is on the air there. W9DNT pleads inactivity due to heavy school work and lack of finances. W9EFD is still waiting for more parts to arrive. W9CHV is back in Denver and will soon be on the air. W9CDE is still on 7000 kc. W9BQO couldn't make a TPTG circuit work so he changed to Hartley. W9DOC, a new station at Aurora, is on 7000 kc. W9CHK is working a transmitter which he hopes to have on the air very soon. W9AAC is a new Denver station.

Traffic: W9CAA 92, W9EAM 18, W9CDE 9, W9EDM 9, W9DQD 2, W9CVE 108.

UTAH-WYOMING — SCM, Parley N. James, W6BAJ — W6BTX turns in a nice report and is all fixed up for a lot of traffic this winter. W6EKF is rebuilding his receiver so he can hear DX better. W6DPO is back again but is going

to school now. W6BAJ found time to handle a few. W6DPJ is in Salt Lake going to school.

Traffic: W6BTX 58, W6EKF 19, W6DPO 8, W6BAJ 7.

SOUTHEASTERN DIVISION

ALABAMA — SCM, S. J. Bayne, W4AAQ — W4AX has found himself in the midst of business QRM with the coming of fall. W4WS is getting splendid reports with his new xtal outfit. W4LM is reported QSA5 regularly on the west coast. W4AAH is finding more time to pound brass. W4VC is again active with his good 1929 signal. W4UV is operating on the S.S. *Wildwood*, a coast-wise vessel. W4AKM is building an MOPA fone outfit with buffer amplification as per *QST*. W4ALG has about the strongest signal in his vicinity. W4AKM and W4AKZ have pooled their interests. W4AJB, W4AKP and W4JX send in their first traffic reports and we hope to hear from them regularly. Tuscaloosa boasts the following stations: W4AKM, W4AKZ, W4AKP, W4AIK, W4JX, W4ALG and W4AJB, all of whom are doing nice work. W4TI is getting out nicely on 3500 kc. and is the section's newest ORS. W4LT has a splendid fone on 3500 kc. as have W4IA, W4EW, W4ZI and W4VY. W4JQ's report was lost enroute. W4AHP has the prettiest xmitter in Montgomery. W4AJR says his xmitter is perking better than ever. W4AHR is building a screen-grid receiver. W4AHO was heard on 3500 kc. recently. W4AKB is hard at work with school duties. W4HB is getting fine reports with fone. W4AAQ is also using fone with 100% modulation (maybe) in conjuuction with CW. Reports from the North Alabama fone hams are conspicuous by their absence this month. W4OA is back with us on the 3500-kc. fone band. The Montgomery Radio Club has been organized with W4AAQ, Pres., W4AHP, Vice-Pres. and W4AHR, Secy-Treas.

Traffic: W4AHR 74, W4LM 31, W4AJB 29, W4AKM 22, W4JX 18, W4AAQ 22, W4AKP 17, W4AHP 9, W4TI 8, W4UV 6, W4LT 6, W4AJR 3, W4HB 1.

FLORIDA — SCM, Harvey Chafin, W4AII–W4PAW — W4QL, a new ORS, leads the gang this month. He sure handled some traffic during that hurricane. During a flood in the Everglades, W4WT and W4NB were kept in their houses due to high waters. W4AGP is the call now being used by W4MS at the U. of Florida. W4MS's "XYL" is at Pensacola, Fla. W4AGN, W4SD, W4GD and W4AGP did USNR work during the hurricane. W4AGN is using rectobulbs on 3500 kc. and has a FB note. W4HY reports that his traffic was from Ft. Myers, Fla., during the storm. W4IG is still on the sick list. W4AKA, a new comer, reports. W4AGR is a new ORS. He has four skeds at present. Sure glad to have old W4CK back with us. W4SY has the parts for a 50-watt transmitter. W4WT reports seven messages this month. W4UY is on with his 50 and is doing some good "dx" on 14 mc.

If some of the ORS do not report more often, their appointments will be canceled. W4ACK is wandering around in New York and writes that he wishes he had his transmitter and receiver with him. W4JV, please get in touch with the SCM at once. Without reports your SCM cannot tell the world what's going on within our section. New stations are asked to report.

Traffic: W4QL 59, KDV5 43, W4AGR 33, W4AII 30, W4TK 12, W4AGP 11, W4CK 9, W4SY 8, W4WT 7, W4AKA 6, W4HY 5.

GEORGIA – SOUTH CAROLINA – CUBA – ISLE OF PINES — SCM, J. G. Cobble, W4RM — This will be the last report of the SCM, as he has resigned at the request of the Atlanta Radio Club. J. W. Alexander, W4RZ, has been nominated as my successor. My thanks and 73 to all the gang. CM2JM was printed last report as CM2JM through error. W4EI has moved to Fort Bragg, N. C. W4CL handled traffic in flood work assisted by W4AJK in Fla. They also handled Fla. storm traffic. We regret to announce the death of W4SI's father. W4VP is QRL with BCL work.

Operating plans for the Convention in Atlanta, Dec. 27th and Dec. 28th, are coming along under the guidance of W4KU, W4AZ, W4ZA and others. W4PM has been nominated for director to oppose W4ZA. W4GO is old W4AAE and is very active again since his marriage. Hi. W4KL and W4RM are managing W4PM's campaign for Director. W4PX is on some. W4KV is active and in competition with W4RZ for DX honors. Well, fellows, if you want your name in these reports, write your SCM, as he is no mind reader.

Traffic: W4SI 7, W4VP 6, W4CL 17, W4RN 3, W4RM 17.

PORTO RICO-VIRGIN ISLANDS — SCM, E. W. Mayer, K4KD — This report received by radio at W1SZ. K4AAN has taken over the duties of OBS on 7 mc. at 6:40 p.m. EST on Tuesdays and Fridays. Let him know we appreciate his good work. K4KD maintains daily schedule with K4AAN and schedule with W2FN 3 nights weekly on 7 mc. K4UR was entertained by K4KD. K4AKV has been appointed ORS and is arranging schedule with K4KD to handle Ponce traffic. K4UR has new transmitter and Zepp antenna. Two new stations, one at the Naval Radio Station, St. Thomas, the other at Naval Radio Station, St. Croix, will be on the air shortly. Welcome, OMs. Interest is slowly picking up and the outlook is hopeful, at least.

Traffic: K4AAN 19, K4KD 12, K4AKV 11.

WEST GULF DIVISION

OKLAHOMA — SCM, W. J. Gentry, W5GF — W5FS and W5ATA are back from a summer trip. Most of the Tulsa gang went and made the R. I. for a first class ham ticket. Hi. W5IH is a DX hound. W5ASQ and W5AEE took the exam for a commercial ticket. W5ZAV is waiting for rectobulbs. W5CB is high traffic man. W5AAV and W5AUV are getting fair traffic reports now. W5GF has been promoted to Supt. of Service. Let's see W5BIZ get going. W5QL has a super-fine screen grid receiver. W5JB is off for a while. The O.U. gang at Norman is going to have W5VM on the air soon. W5ADK will be going soon. The Imperial Brass Pounders, an organization of Oklahoma and Kansas hams, held their quarterly meeting at Oklahoma City on Oct. 20th. About 60 members were present and an excellent program was carried out. The next meeting will be at Wichita, Kans.

Now all together, gang, with more "news" and "reports."

Traffic: W5CB 29, W5AAV 15, W5AUV 15, W5BEE 9, W5ASQ 6, W5BIZ 5, W5GF 3.

NORTHERN TEXAS — SCM, J. H. Robinson, W5BG — W5WW leads in traffic and is keeping six schedules. W5RJ is also hanging his cap in the Brass Pounders' galley. FB, OMs. W5BAM has moved to 4251/2 Neches St., Dallas, Texas. He is keeping schedules with W5BBF, W5QL, W8ML and VK5HG. W5BAM is the newly elected president of the Dallas Radio Club. W5EV has moved to 2209 Cole Ave., Waco, Texas. He is the Route Manager for this section. W5AAE has moved to Clifton, Texas. Gosh, the callbook will be all wet as regards the QRA of Texas hams. W5BBF is building a new transmitter and antenna system. W5BAD is keeping schedules with W5OE who has moved to Houston. W5GZ has his new Aero set about ready to do some good work. W5BG, the SCM, traded part of the xtal set for a good BCL receiver. W5DF has a new receiver and transmitter perking. W5HY has had MG and heart trouble but all OK again. Sorry to see so many of the applicants for amateur operator's license missed the code test recently held. The SCM believes it was the stiffest test he has ever witnessed. We hope for better conditions next time.

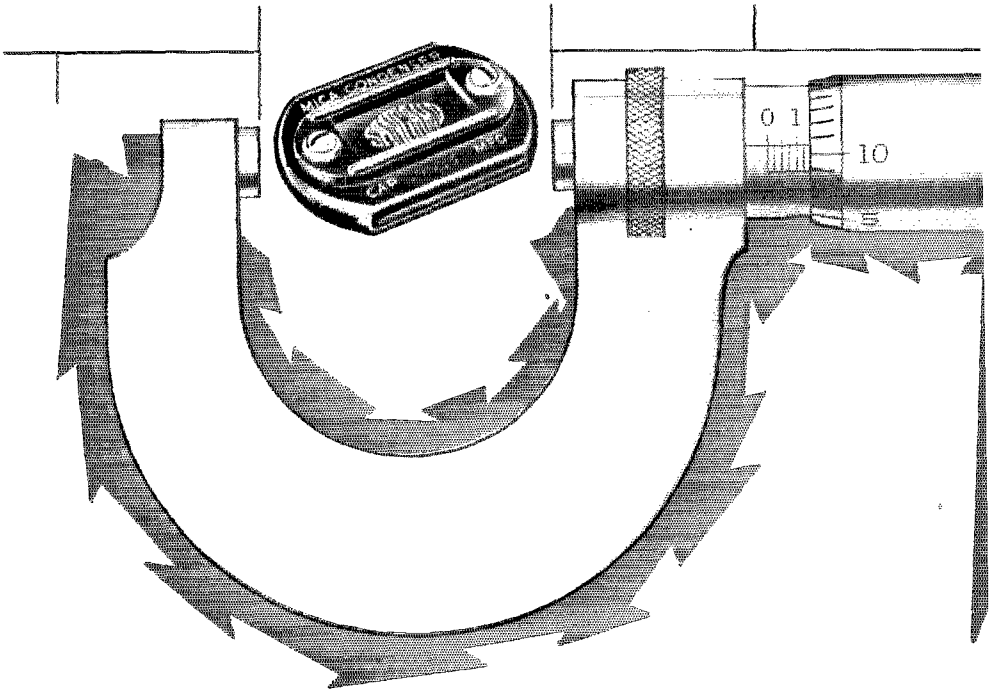
Traffic: W5RJ 181, W5WW 212, W5BAM 35, W5EV 20, W5AAE 16, W5BBF 3, W5BAD 1, W5HY 11.

NEW MEXICO — W5TT is at State College. W5EF (ex-W9CDE of La Junta, Colo.) is back on the air again. W5AOD is having QRM from school and work. W5AOU is a new ham at Clovis. W5BGN is getting out FB with a 210. W5BHY is with us on 'phone. W5AGX (ex-W9EAE from Trinidad, Colo.) is located in Clovis. W5AJL intends to be a WAC by Christmas. W5TV ran up a high total using 270 volts of B batteries. He is on a newly-organized coast-to-coast chain.

Traffic: W5TV 192.

SOUTHERN TEXAS — SCM, Robert E. Franklin, W5OX — It makes the ole SCM feel good to see the reports come in as they have this month. We have two colleges on the reporting list and the promise of another. FB, W5AHB is a new ORS and makes the BPL. W5AJD, another new ORS, turns in a nice report. W5AQY is the station of the Texas A. & M. College. The boys have formed a club with W5IE as their secterary. W5AB is on the air at Schreiner Institute, Kerrville, Texas, using his portable. W5MS has been having trouble with his new 1929-type receiver. W9DAE, former Route Manager of Mo. is going to Rice Institute now and contemplates getting the Rice ham set perking soon. W5NW has two new rectobulbs and an 852. W5AEA has an 852 going on both 14 and 7 mc.

Traffic: W5AHB 225, W5AJD, 128, W5AQY 86, W5BBY 46, W5MS 12, W5AEA 5, W5NW 3.



What price micro-farads?

You can buy mica condensers at almost any figure! Your Purchasing Agent can shop around till he finds some source of supply at his own price.

But has he really made a saving?

We have known such "savings" to actually result in ultimate costs totaling several times the price of better condensers—cases where "book" savings meant actual losses.

We have seen several cases where ratings which "didn't mean anything" have kept inspection departments working nights. We have seen production tied up because excessive rejections depleted the stock of usable condensers to a point lower than requirements.

In the imposing list of nationally known radio manufacturers served by Sangamo Condensers, we are gratified by the knowledge that rejections due to inaccurate rating or other causes have been negligible. Buyers have been able to place orders for the quantity needed, without an over-allowance for "rejects."

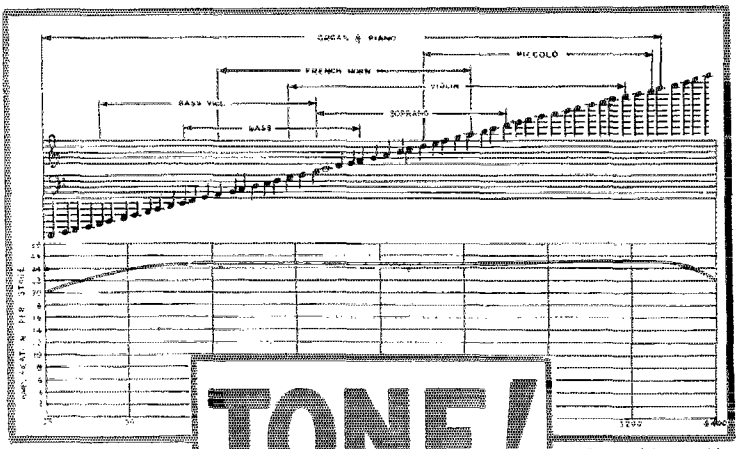
You can rely on the capacity rating of Sangamo—we will let your own inspection department prove it. You can depend upon the reliability of Sangamo as a source of supply, because Sangamo will not open accounts beyond the ability of its already large production capacity. No old customer is ever slighted in order to get a new one!

A case in point

A nationally known manufacturer found mica condenser rejects running in excess of 50%. The specified 5% rating "didn't mean a thing." An emergency order of 8000 Sangamo Condensers showed 22 rejects out of the entire shipment.

SANGAMO

See reverse



TONE!

Curve of Type "A" or Sangamo Straight Audio Transformer showing uniformity of amplification at all audible frequencies.

BETTER Transformers

for every radio need!

"X" Line Transformers

Type AX straight audio amplification . . . . . list price, $6.00

Type BX Push-pull Input unit . . . . . list price, 6.50

Type CX-171 Push-pull Output Transformer, for 171 or 250 power output tubes for cone speaker . . . . list price, 6.50

Type DX, same as CX except for 210 and 112 power tubes . . . . . list price, 6.50

Type HX Push-pull Output for 171 or 250 Power Output tubes to match the impedance of moving coil of Dynamic loud speakers . . list price, 6.50

Type GX, same as HX except for 210 and 112 power tubes . . . . . list price, 6.50

Type E output choke to match impedance of the various type power tubes . . list price, 5.00

"A" Line Transformers

Similar to X Line but with special core metal to give greater amplification at low frequencies

Type A straight audio amplification . . . . list price, $10.00

Type B Push-pull Input Transformer for all tubes, list price, 12.00

Type C-171 Push-pull Output, for 171 or 250 type power tubes with cone speaker . . 12.00

Type D-210, same as C except for 210 and 112 power tubes 12.00

Type H-171, Push-pull Output for 171 or 250 power tubes for Dynamic Speaker . . . . . list price, 12.00

Type G-210, same as type H except for 210 and 112 tubes 12.00

Type F Plate Impedance for use as a choke to prevent oscillation and for impedance coupled amplifiers, list price, 5.00

PIN THIS TO YOUR LETTERHEAD AND MAIL

SANGAMO ELECTRIC CO., Springfield, Illinois, U. S. A. Dept. 0422

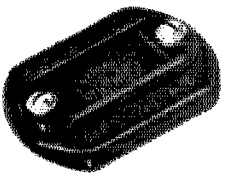
☐ (*For manufacturers*) I am interested in engineering data regarding your transformers and condensers.

☐ (*For dealers*) Please send data on Sangamo Condensers.

☐ (*For set builders*) Please send circulars describing your apparatus and latest audio hook-ups.

SANGAMO

SANGAMO Condensers



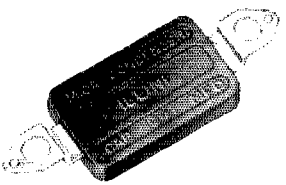
No item can cost so little and cause so much trouble in a receiver as a fixed condenser. This fact is especially appreciated by the manufacturer with an eye to the service problem. Likewise experience has shown that a fixed condenser is not necessarily a good condenser just because it is moulded in Bakelite.

The immunity to thermal changes and to mechanical damage rendered by the Bakelite enclosure is supplemented in Sangamo Condensers by accurate rating and sound construction of the mica condenser within the Bakelite casting.

The standard line of Sangamo Fixed Condensers leave the factory tested to maximum variation of 10%.

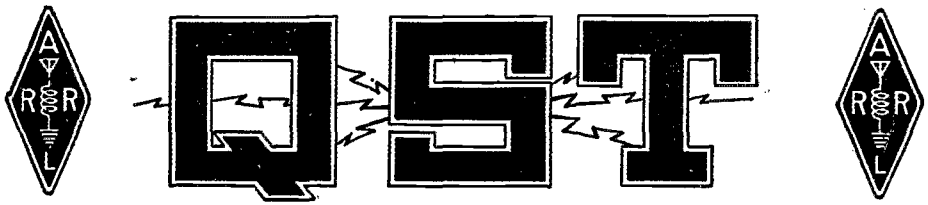
NEW!

Condensers *for* Manufacturers



While the Sangamo Condensers shown *at the top of the page* have always been popular with manufacturers, there has been a demand for condensers of the same quality of a size and shape more suitable for factory set design and production. For manufacturers use only we have designed the Sangamo "Illini." The connecting lugs may be bent to any position required without impairing the condenser.

Prices on request



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