QST

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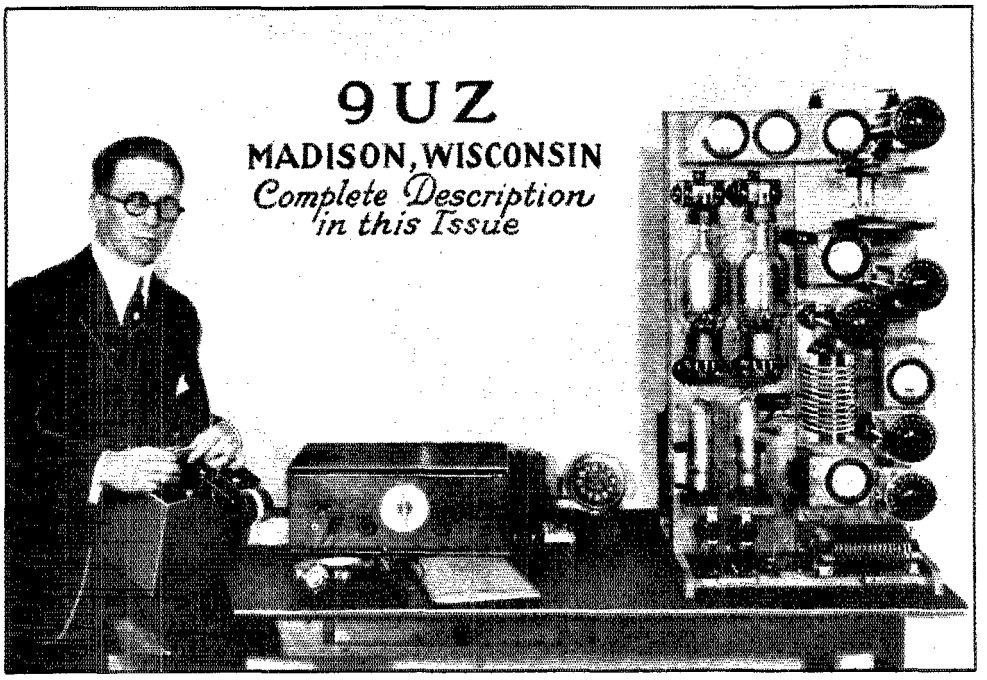

November
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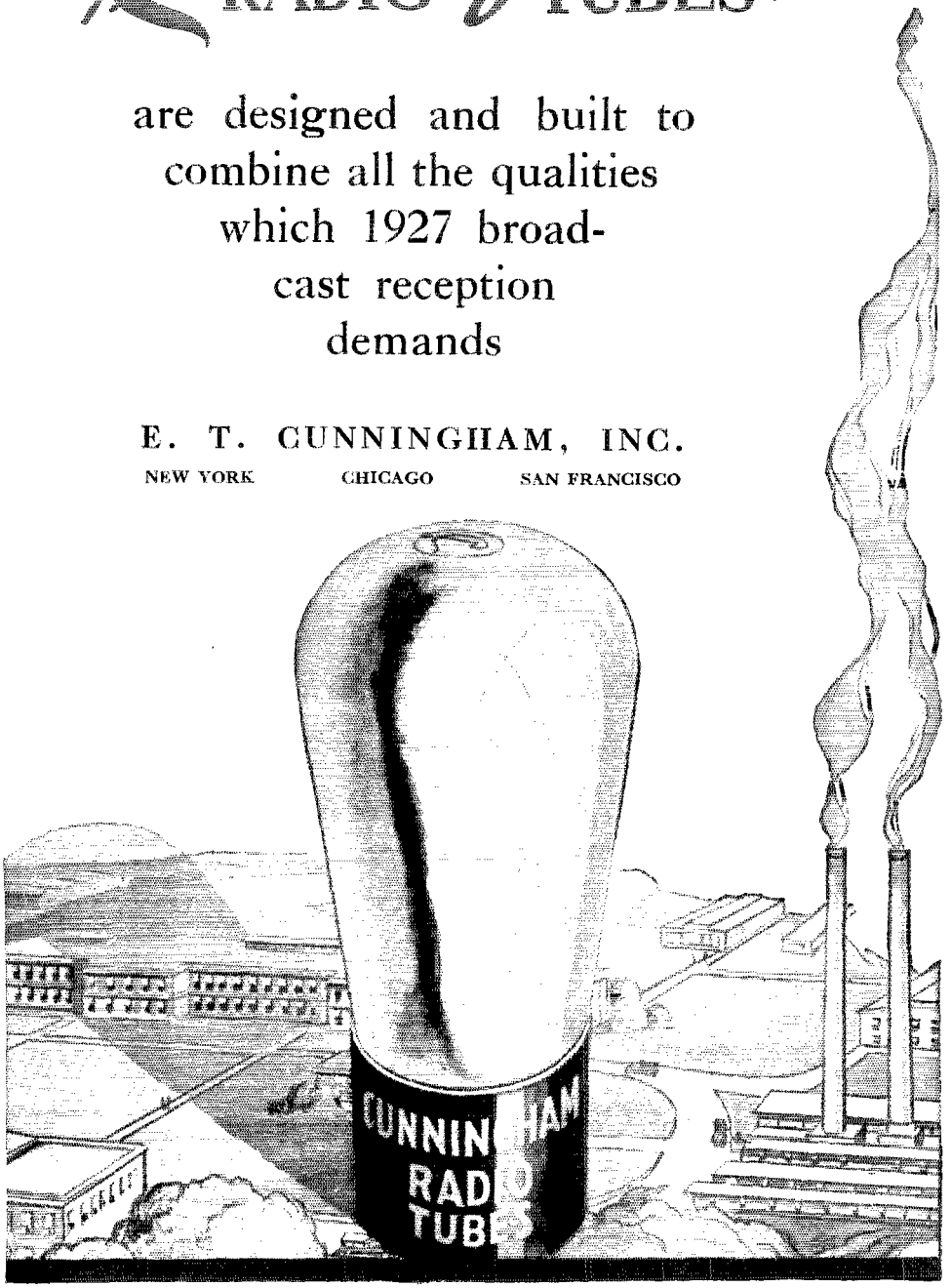

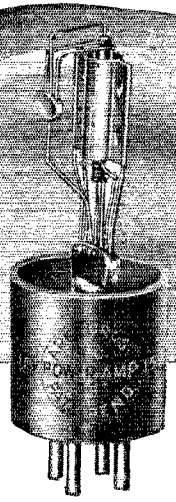

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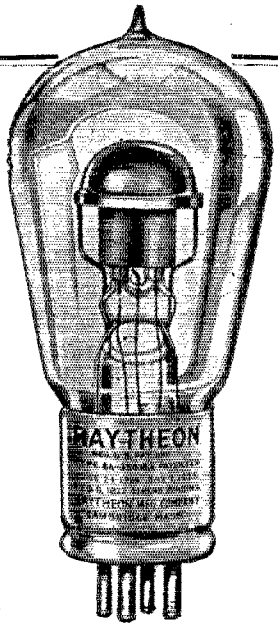

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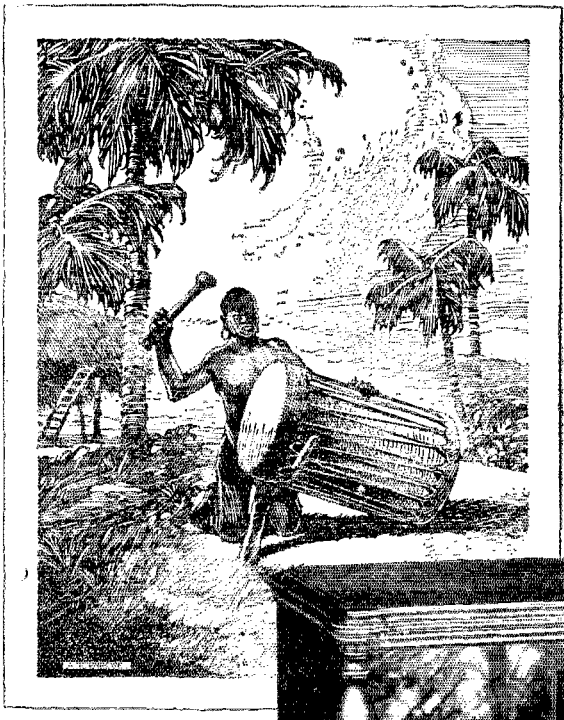

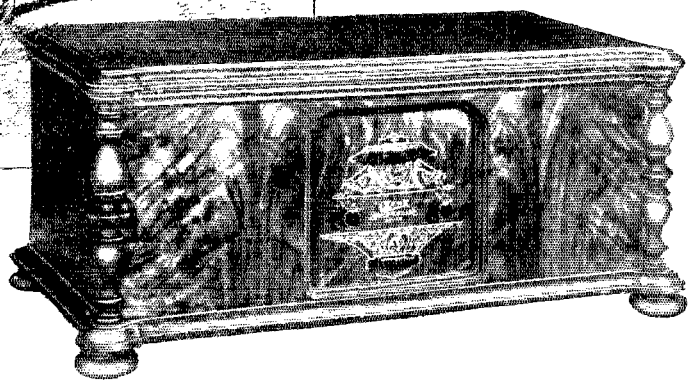

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QST

The Official Organ of the A·R·R·L

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F. Cheyney Beckley, Managing Editor and Advertising Manager

Robert S. Kruse, Technical Editor

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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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EDITORIALS

DID you ever stop to think that we amateurs are probably the only group of people on earth which finds the size of the globe a real restriction upon its activities? Can anybody think of any other group whose individual operations actually take in the whole globe and who can go no further because the world isn't any bigger? We think our position is truly unique in this respect.

If only we amateurs had a bigger world we could work farther, do more things, engage in more activities. We're absolutely held down now to the dimensions of this pigmy planet. Now if only this earth were the size of that great star Betelgeuse, whose diameter is so large that it takes forty-five minutes for radio waves to traverse it as compared with one-seventh of a second on this Vale of Tears, we would have some new fields to conquer. Imagine sending out a CQ for the Antipodes, going out for a leisurely lunch, and finding the time just about right upon returning to slip on the cans and listen for a reply. Yes, that would be a new field with a vengeance!

It not infrequently happens that in this particular little office we are quite convinced that the dimensions of our present earth are more than ample—that if there were any more problems to solve, any more business to handle, we would blow a condenser somewhere and go up in smoke. But it is an interesting thought that only the dimensions of our globe prevent our DX from being greater. When we work our present Antipodes that's all there is; there isn't any more.

IN certain parts of the country it would appear that the insurance folks are putting on a campaign to inspect and investigate radio installations and either eliminate those installations that they regard as a hazard or cancel the insurance. In the main, of course, such an effort is perfectly proper but in recent weeks we have received letters from several amateurs who have encountered a local agent who has been entirely unaware of the existence of such a thing as a "transmitting rider" and has accordingly informed the policy-holder that transmitting equipment is "out."

Not so, not so. The ordinary rider accompanying the usual form of policy gives permission to operate a receiving set when equipped with the usual lightning-arrester, etc., and says that transmitting equipment is prohibited. But don't you remember all those provisions in an underwriters' code about the dimensions of the blades in lightning switches, the height of stand-off insulators, and how lead-in bushings have to extend beyond the wall so many inches on each side, and so on? Those are the regulations for transmitting stations, and amateur stations that comply with them and are satisfactorily passed by an inspector from the underwriters' bureau can obtain an additional rider on their policy, permitting the operation of the amateur station, with no increase in rate. We know because we've got one.

So the agent isn't the final authority and he doesn't always know what he's talking about. Tell him about the existence of the special form to permit transmitting. Incidentally, every amateur station ought to be installed in accordance with these regulations and it is particularly worth the while of an amateur who owns his own home to see that his installation is inspected and passed and the necessary rider issued so that there will be no question about the validity of his insurance. A few of the regulations are a bit dizzy but in the main they are only sensible—requirements which every station should observe anyway—and in any event they are all easily attainable.

ANOTHER month passes and at this writing we are on the very eve of the big radio pow-wow at Washington with all of its dangers of international restrictions on amateur work and all of its glorious possibilities of an enlarged recognition and encouragement of amateur operation. The preliminaries are over, the main bout looms.

One of the difficulties of writing about current news in a monthly magazine is that it is pretty certain to be "old stuff" by the time it reaches print. By the date that these engaging lines encounter the eye of the American amateur there may be perfectly momentous news from Washington. It seems futile after a fashion to be engaged to-day in writing generalities and trivialities about this pending conference, but we do want to make the record complete and we believe that all the members

of the League are interested in the unfolding tale of the affair.

The only significant development during September in the American position, so far as concerns amateurs, has been a further indication of the intent of this Government to recognize its amateurs and provide liberally for them, and the specification of amateur bands at 5 meters and at 0.75 meter in the table of American waves. So far, FB!

We had an unusual opportunity this past month to go to Canada and assist Canadian General Manager Russell in his representations before the Canadian delegation on behalf of Canadian amateur radio. In recent years Canada has always granted her amateurs almost exactly the same privileges that we have had in the States, so that there would be uniformity on both sides of the border. Canadian amateurs desire the continuation of those privileges, so it was Mr. Russell's policy to urge his Government to support the proposals of the United States delegation. This he did most ably, and with a reaction altogether favorable, because Canada is just as sold on her amateurs as our country is. We feel sure that Canada may be relied upon to join forces with the United States in proposing the assignment of the present North American bands for amateurs everywhere, and that in any event she will see that her amateurs are adequately protected.

While we were in Canada we had the honor of meeting the British delegation, which was assembling there with the delegates from all the British dominions before proceeding to Washington. They were present at the meeting at which Mr. Russell addressed the Canadian delegates. They became quite interested in the amateur situation and asked many questions. They asked us how many amateurs there were in the States, and were almost dumbfounded to learn that there were 16,000—they had no idea of our proportions. They wanted to know what wavelengths our Governments gave us, and did not know that United States and Canadian amateurs had been using the 20-, 40- and 80-meter bands for four years. They wanted to know how we got along with our Governments. They wanted to know what the United States Government's attitude was towards us, and that gave us the opportunity to make a speech that sounded like a *QST* editorial. We told them that our Government valued the American amateur because of his advancement of the radio art, because he was training himself to be a skilled operator, because his stations formed a wonderful reserve communication net, and because he was doing much to advance world understanding by his contacts. The gentlemen were not at all unfriendly. On the contrary they were immensely interested. We consumed nearly an hour of their time with no sign of impatience on their part.

We were particularly struck by the fact that the British representatives did not seem to know anything about amateur radio. How does it come, we wonder, that our amateurs over there have been so backward about introducing themselves to their officials? It seems that our amateurs over there are "scared to death" of their officials and have just about never made any clean-cut representation before them. We don't know why this situation should exist. We thought them quite approachable and open-minded—they were not antagonistic, they were merely abysmally uninformed. They had no idea our Government regarded us favorably—*they didn't know!* There is, we believe, a profound moral in this for the amateurs of all nations.

We asked the British delegation for their favorable consideration of the United States proposal to make the 20-, 40- and 80-bands available for amateurs. Altho they were non-committal on this, they indicated that they were not at all opposed to the idea of short waves for their amateurs, and they did pledge themselves to see that their amateurs were given their own conception of adequate short-wave privileges. Compare that with their reputed attitude! And when we arose to leave, instead of having an opportunity to express our thanks for being heard, they thanked us for having spent so much time in coming to them and telling them this interesting story which would help them in their work as a delegation! This delegation consists largely of the folks who run radio in England. We hope that this account of our adventures with the delegation will simply make the hair stand straight up on the heads of British amateurs. Get onto yourselves, you fellows over there!

One more item in closing: Italy, which originally proposed that no special services (including amateurs) should have any waves below 100 meters, has amended its proposals and now suggests a number of short-wave bands for amateurs. They aren't our bands but that's not the point: they *are* bands, and they are short-waves. That, and the opening wedge in the British situation, are good omens as the October conference dawns.

K. B. W.

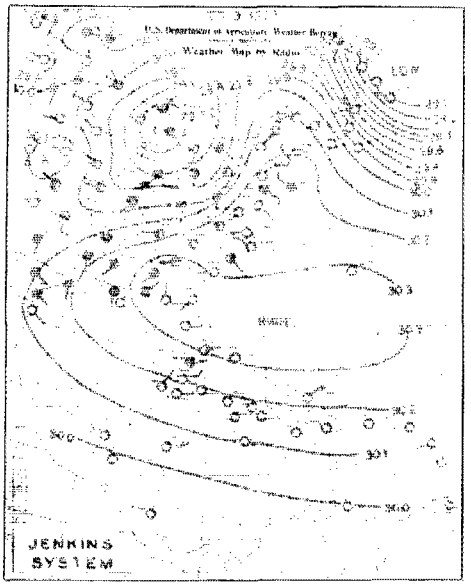
Weather Map Transmission and Reception

By Thornton P. Dewhirst*

AT a conference held in the offices of the Jenkins' Laboratories, during the latter part of last July, it was decided by those present (Professor Marvin, of the Weather Bureau, and Captain McLean and Commander Hooper, of the Navy) to run a series of experiments to determine the feasibility of transmitting weather information in map form to the ships at sea.

It was evident from the start that the simpler the machine the better, since it would be highly undesirable to produce a machine which could not readily be operated by Navy personnel. Of course, a complicated photographic machine might give somewhat better results, but the exactness necessary in good picture work is not required to put a map through the air to be received in ink aboard ship. Also, such a photo machine would require the operator to attend a school of instruction for a lengthy time, which again is unfavorable.

Therefore, with simplicity as the main requirement, the machine about to be described was developed from the many varieties of models to be found about the Laboratory.



A WEATHER MAP AS RECEIVED
The printed "base map" was placed on the receiving cylinder and only the actual weather information put on by radio.

It will be seen in the following description that very little knowledge not already possessed by the average radio operator is needed. A small quantity of good horse-sense applied here and there is sufficient.

The method of picture transmission has been described so many times that it is hardly fitting to go into details here. Let us say that fundamentally it consists in taking the picture to pieces at the transmitter in a certain linear manner, and at the receiver or receivers building it up again in the same manner. In this process it is necessary that the transmitter and receiver run in synchronism with each other. A more detailed explanation is given in *QST* for December, 1925.

THE BASIS

It was at once decided that a c.w. or i.c.w. transmitter would be the only practical transmitter to use since the machines were to operate over a considerable distance and in conjunction with the existing Navy radio stations. Therefore, both synchronizing signals and picture signals must be transmitted on the same wave.

From the mere fact that we are using a c.w. or i.c.w. wave, it is almost out of the question (though not entirely) to send a given frequency as the synchronizing frequency. A straight c.w. or i.c.w. impulse bearing a definite relation to the transmitting driving mechanism is, therefore sent, and the receiving machine's driving mechanism is made to run slightly faster than the speed represented by this impulse. The impulse is caused to operate a device which momentarily stops the receiving cylinder (these machines make use of the time-old cylinder idea), and releases it the instant the impulse is cut off at the transmitter.

It will be seen that although the synchronization signal does not operate continually, as it might be made to do, even though it is transmitted intermittently, it does correct the machine every revolution—that is, thee transmitter and receiver always start each revolution at the same instant. The error is, therefore, not collective or accumulative, and the greatest error possible is the greatest error that can occur in one

*428 Manor Place, N. W., Washington, D. C.

revolution of the cylinder. Of course, this error can occur in each and every revolution, but this is guarded against by running the receiving machine at as nearly a constant speed as possible. It takes a relatively considerable error to spoil a weather map. To make the machine operate as nearly constant as possible the motor is controlled by a governor. The method of control will be explained a little further on.

It is, of course, expedient that the transmitting machine run at a very constant speed. To maintain this speed the transmitter is run either with a synchronous motor or a tuning fork controlled motor.

SYNCHRONIZING

The manner of controlling the speed of a motor with a tuning fork is shown in Figs. 1 and 2 and is as follows:

In the field of a simple shunt feed d.c. motor is placed a resistance which will cause the motor to run at a speed greater than 1800 r.p.m. In the armature circuit is placed another resistance which will cause

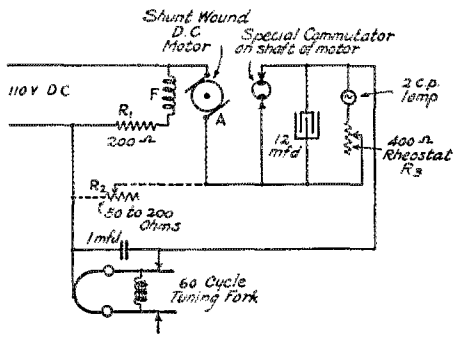
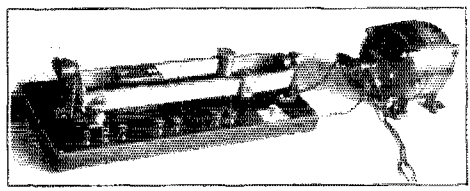


FIG. 1. THE SYNCHRONIZING DEVICE AT THE TRANSMITTER

The motor would normally tend to run a little above 1800 r.p.m. The armature resistance R2 tends to make it run slower. If the motor runs at 1800 r.p.m. exactly, the tuning fork contacts and the contacts of the special commutator will operate together, thereby cutting out the resistance R2 whenever the contacts are both closed. This speeds up the motor. If the motor tries to go too fast the contacts do not operate together, R2 is always in the circuit and the motor slows down again.

the motor with the given field resistance still in circuit to run slower than 1800 r.p.m. On one side of this armature resistance is placed one contact of a 60-cycle tuning fork, to the other contact of the tuning fork is connected one side of a special commutator mounted on the shaft of the motor (this commutator makes two contacts per revolution of the motor), and the other contact of the commutator is connected to the opposite side of the armature resistance. We, therefore, have the tuning fork and tail piece or special commutator in series with each other, and in parallel with the armature resistance. This armature resistance is made variable so as to make it possible to adjust phase position of the motor, and for ease in starting. See Fig. 1.

It will be apparent that if the motor runs at such a speed that the tuning fork and tail piece make contact at the same instant, the armature resistance is cut out and the motor will tend to run too fast. However, when it tries to run too fast the tail piece and tuning fork do not make contact at the same instant, and the only path for the armature



THE 60-CYCLE SYNCHRONIZING FORK AND THE MOTOR WITH TIMING COMMUTATOR

The fork is roughly adjusted to the desired frequency by means of the cylindrical sliding weights clamped on it near the bent end. Looking thru the eyepiece at the left of the fork the observer sights on the polished strip across the end of the motor shaft. He is looking thru a narrow slit which is open only during the midswing of the tuning fork ends. If the strip on the motor seems to stand still the motor is timed correctly; if it seems to turn slowly the motor must be adjusted.

current is thru the armature resistance. The motor, therefore, slows down and in doing so the fork and tail piece make contact simultaneously, and the motor again speeds up. It is, therefore, evident that in a short period of time the motor will be running in exact synchronism with the tuning fork. The special commutator or tail piece has on it a bar of polished brass which is observed through an eye-piece on the tuning fork. By stroboscoping this brass bar through the eye-piece of the fork, it is possible to detect synchronism between the two and by adjusting the armature resistance at the same time, the correct phase relation may be established.[1]

The fact that this control works in the armature of the motor has several advantages. In the first place, it is considerably faster in action than the same method would be if applied to the field. In the second place, the high inductive kick which is produced in the field coils when the control functions there, is to be avoided, especially if the apparatus is to be in operation near a high frequency receiver.

To reduce the sparking at the special commutator a 12 μfd. condenser is placed across it, and across the condenser is placed a 400-ohm potentiometer in series with a 2 c.p. lamp. By varying the potentiometer the lamp can be made to glow constantly

1. The meaning of this is explained in the label of the photographs of the tuning fork.—Tech. Ed.

when the motor is under control and it, therefore, serves as a visible indicator of the control's operation, and can be observed from any part of the room. If the control drops out the lamp will immediately begin to blink. The lamp and resistance also serve to discharge the condenser.

A slight modification of this device is made in the receiving machines. In place of the tuning fork and special commutator, a governor is substituted. This governor acts in a manner similar to the above mechanism —if the machine runs too slow it short-circuits the armature resistance and the motor speeds up. If the motor runs too fast the governor breaks contact and the current is fed the armature through the resistance and the machine slows down. (See Fig. 2.) This method is, of course, not so accurate as the control on the transmitter, but is sufficiently constant for the use to which it is applied since the cylinders are corrected each revolution by the synchronizing impulse from the transmitter.

One more diversion before entering upon the machines proper, and that in regard to the photo-electric cell used. It was decided that although the distinction to be made was between complete black and complete white only—that is, the transmitter was simply to be keyed in picture units—it would be best to use some form of photo-electric cell and not rely on a straight contact device. The cell, of course, would be far more reliable.

THE PHOTO-ELECTRIC CELL

The photo-electric cell used in the transmitter is called a "Thalofide Cell". The material of which the cell compound is composed consists of thalium, oxygen, and sulphur. This compound is fused on a three-quarter inch quartz disc and the disc

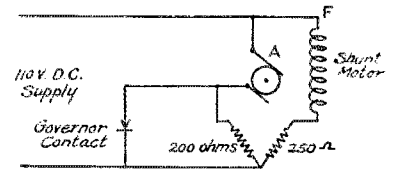


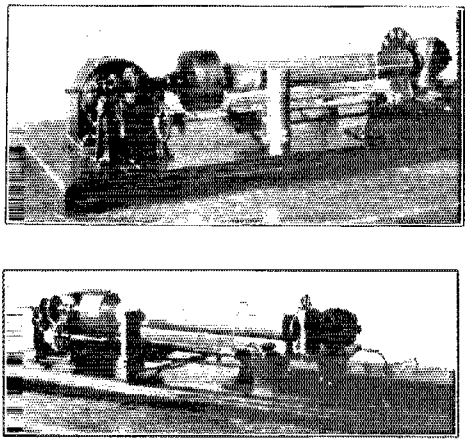
FIG. 2. THE SYNCHRONIZING DEVICE AT THE RECEIVER

The receiving motor simply runs under control of the governor which is set to give a small amount of overspeed. Once per revolution the receiving cylinder is halted for an instant until the proper received impulse releases it again in exact step with the transmitting cylinder.

mounted in a glass bulb, which is then placed under vacuum to prevent oxidation and increase the sensitivity of the photo-active material.

In placing the cell in the amplifier circuit, the cell and an artificial resistance (grid leak) are balanced so as to establish an equalibrium when the light falls on the button of the cell. A forty-five volt B battery is used as the cell voltage source. (See Fig. 3A.)

The potential of the battery is divided practically equally between the "Thalofide Cell" and the grid of the tube. The grid leak is made equal to the resistance of the cell when exposed to light. This gives a negative potential to the grid of the tube which reduces the normal plate current flow. When the light is cut off (by a light chopper to be explained later), the resistance of the cell rises immediately and the grid voltage drops to a very small value.



TWO VIEWS OF THE TRANSMITTER

A photographic film negative of the map or drawing to be sent is wrapped around the glass cylinder for transmission. A ray of light from the small lamp house at the right passes thru the motor driven slotted wheel which chops the light ray, thereby putting a tone on the signal. The light then proceeds along the axis of the cylinder until it meets the mirror or prism which sends it out radially thru the glass and the negative into the photo-electric cell which is located in the small pillar box at the front of the machine. As the cylinder revolves the lamp, chopper, mirror or prism and photo-electric cell are all moved endwise so that they take the picture apart into successive strips and transmit corresponding impulses to the radio transmitting circuits.

THE TRANSMITTER

In the map transmitter proper, a glass cylinder is mounted in a supporting frame and geared to the motor for rotation. Suitable reduction gears are provided so as to make the time of transmission for the given area (in this case of the weather map 8" x 10") either 25 or 50 minutes. One of these reduction gears is employed to rotate a threaded shaft upon which rides a half nut carrying the photo-electric cell. A shaft is connected between the cell carrier and a small truck. Upon the platform of this truck is mounted a light source and a small motor which drives a metal disc with holes in its periphery. This disc and motor serve as a light chopper which gives the light a

pulsating characteristic and produces a tone in the amplifiers which is readily amplified with standard transformer equipment. The light after passing through this chopper is carried by a system of lenses to a point inside the cylinder just opposite the photo-electric cell. A mirror at 45 degrees, or a prism, turns the light at right angles here, and it passes through the glass cylinder and the negative of the map placed on the cylinder, and through a small aperture in front of the cell which rides on the outside of the cylinder. Here the light rays are changed into electrical impulses and carried to the amplifiers.

A photographic negative is used here in preference to a positive because of the fact that in working from a positive, there are

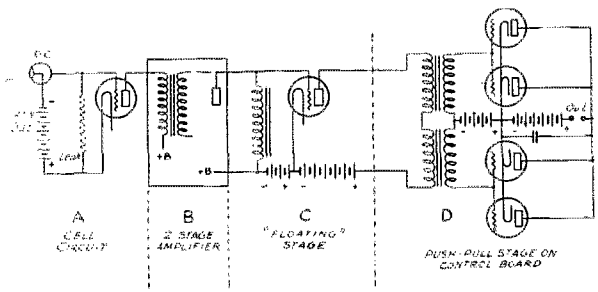


FIG. 3. THE TRANSMITTING CIRCUIT

P. C. is the "Thalofide" photo-electric cell. The current from the battery passes thru the cell and the grid leak in series; as the cell resistance varies with the received light, so the current changes and in turn changes the voltage drop across the leak—therefore the grid voltage of the tube. As the cell "explores" the map the impulses thus started are sent thru the amplifier system and to the transmitter.

times when the lines to be transmitted are the exact width of the aperture and under this condition the aperture is completely closed only a small fraction of the time, whereas, with the use of a negative the cell is activated for a considerably-longer and more definite period.

The cell aperture is about 1/60" in diameter, which makes the lines per inch sixty. This was found to be sufficient for the detail of the average weather map. The threaded rod spoken of is so geared that the cell carrier moves longitudinally 1/60" for each revolution of the cylinder.

THE RECEIVER

Let us leave the transmitter and jump to the receiver for a few minutes now. Taking for granted that we have taken the feeble electric currents produced by the cell and are controlling by wire the 40 Kw. 36 Kc. transmitter at Radio (Arlington), Virginia, in the desired fashion.

At the receiving end we have a 36 Kc. radio receiver of the conventional type, and have tuned in the desired signals and amplified them sufficiently so as to be able to convert them into d.c. "on" and "off" conditions capable of operating a stylus or relay. Never mind how we have done this, we will return to that shortly.

Now for the map receiving machine proper. Here, again, as in the transmitter, we have a cylinder geared to the motor in the same fashion. We also find the threaded shaft, but instead of carrying a photo-electric cell this time, it carries a stylus or pen box.

The amplified signals from the receiver cause this pen arm to operate and the map is built up line by line as it is taken apart at the transmitter. The synchronizing signal which is transmitted every time the joint in the map negative passes the aperture in front of the photo-electric cell at the transmitter is automatically switched from the ink recording box to a synchronizing box which causes a lever to grip the cylinder and hold it for a short period until the signal terminates. The cylinder is thus brought into exact synchronism at the beginning of every revolution. The cylinder of the receiver when running uncontrolled will, of course, run slightly faster than the cylinder of the transmitting machine.

It should be understood from the foregoing that we now have the receiver or receivers running in synchronism with the transmitter, and that the map is being torn down and built up piece by piece as the cylinders revolve in synchronism and the cell on the transmitter and the pen box on the receiver move along their respective threaded shafts.

SOME PRECAUTIONS

At this point it may be well to say a few words in regard to the placing of the machine on board ship. Naturally, with the ship rolling 30 to 40 degrees as is often the case, some precaution not observed on land must be taken. The point to be remembered in locating the machine on the ship is to so place it that the roll of the ship does not affect the governor to any great degree. The axis of the governor should be parallel with the length of the ship for best results.

One effect to be on the guard for on high frequency was also noted. The map machine worked beautifully when an abundance of signal was at hand such as was generally the case in the laboratory. However, when the signals were weak, as is sometimes the case, especially at a good distance from the transmitter, the results were not so excellent. In order to bring the signals up to their maximum, it was, of

course, necessary to turn the regeneration dial of the receiver down very close to the critical point. In doing so you were greeted by a continuous chatter of the pen arm. Upon cutting off the motor of the map receiver the noise disappeared. The disturbance was found to come from minute sparking occurring at the commutator of the motor. Although these sparks were not always (in fact very seldom) visible, they were audible in the radio receiver. Remember, this is at a frequency in the vicinity of the 6000 Kc. (50-meter) part of the radio spectrum. It seems possible that these sparks constitute very low power yet extremely high frequency spark transmitters which by means of the capacity between the different parts of the motor and machine are passed to the leads connecting the map machine with the radio receiver, and using these leads as antennæ proceed to oscillate and radiate their energy which modulates the incoming signal through the detector which is, of course, in an extremely sensitive condition when set so close to the critical point. Whether this is the case or not, small chokes consisting of about 10 turns ½" in diameter placed at the point where the leads leave the map machine help the matter considerably. Also, two microfarad condensers connected in series across the line and the mid tap grounded help matters to a degree. A pair of 40-turn choke coils of No. 20 wire 2½" in diameter will also eliminate a large portion of this noise.

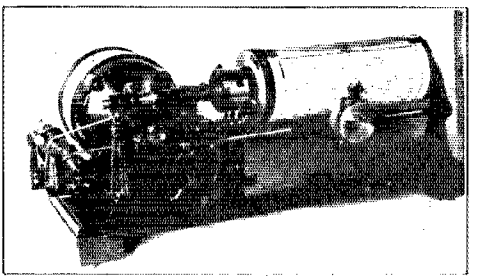
No precaution in regard to the above needs to be taken as long as the wavelength used is above 600 meters.

While on the discussion of the effects at high and low frequency, it might be stated that at low frequency a straight c.w. wave is considered best because of its excellent carrying quality and the fact that the heterodyne note can be chosen to suit the conditions and passed through an audio tuning unit and a large portion of the static lost. Also, the receiver can be set once at this frequency and then almost entirely forgotten. At high frequencies (short wave), however, it has been found that an i.c.w. note is more to be desired, since at high frequencies the general run of receivers cannot be set and left to function unattended as in the former case, and the side bands produced by the modulating of the high frequency wave are helpful in the finding or locating of the signal, as well as in holding the signal during the reception of a complete map.

Any variation in the transmitter or receiver is somewhat counteracted by the wave being spread out in this fashion. As a general rule in the reception of maps the regeneration control of the receiver is placed as near the critical point as possible without causing the signal to become unsteady.

This, of course, produces the loudest signal at the detector output. From the detector the signals are passed through a two-stage amplifier and then through an insulating stage. The purpose of this stage is to prevent squealing between the two-stag amplifier and the control board. (See Fig. 4B.)

The receiving control board consists of two blocked tubes connected up in a push-pull fashion. This unit functions both as an amplifier and rectifier, and supplies d.c. to the pen box. A control tube of this



THE RECEIVING MACHINE ON WHICH A MAP IS SHOWN COMPLETE

The small device at the extreme left is the belt-driven governor which operates as shown in Fig. 2. The mechanism at the left end of the cylinder is a combined clutch and switching mechanism which permits the stopping of the cylinder for a moment at the end of each revolution until the transmitting cylinder again releases it for another turn.

nature was described in the article on Practical Picture Transmission in the December, 1925 issue of *QST*, but it rectified only one half of the cycle. In the present control unit both halfs of the a.c. component from the amplifier are used. Two tubes are used and twice the amount of current is, therefore, available. The double rectification, of course, produces a d.c. output which is much easier to smooth out than the single tube output. In the unit used, a 1 μfd. condenser serves the purpose admirably. (Note C of Fig. 4.)

THE TRANSMITTER CONTROL

It looks somewhat as though we were ahead of ourselves, however, since we have gotten the signals through the amplifiers, and to the pen box before we have gotten them on the air. Let's see, we left the cell feeding a vacuum tube pulsating current in picture units. The a.c. component of the plate circuit is now passed through an ordinary two-stage amplifier. We chopped the light up for this very purpose you will remember. I said ordinary two-stage amplifier, but perhaps I should modify that since it is a very well shielded amplifier, in fact

all the amplifiers at the transmitter are thoroughly shielded, including the A and B batteries. Leads to each unit and the batteries are also lead-covered and grounded.

From the two-stage amplifier they pass through an extra stage similar to the one mentioned in the receiver, only here, separate A and B batteries are employed and the entire stage floats—that is, is not physically connected to the ground. (See Fig. 3C.)

The output of this stage passes to a control board similar again to the control unit on the receiver, except in this case there

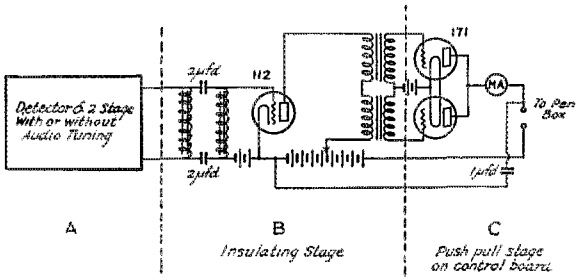


FIG. 4. THE RECEIVER SYSTEM

The inductance-capacity inter-stage coupling unit is designed to prevent squealing when the output of a receiver is fed into the control board as shown. Such a coupling is frequently helpful wherever additional audio stages are to be used. Note that the filament batteries are independent as shown here. A common battery with feed thru chokes might work satisfactorily in some cases. The push-pull output stage is used to keep the plate current out of the pen system.

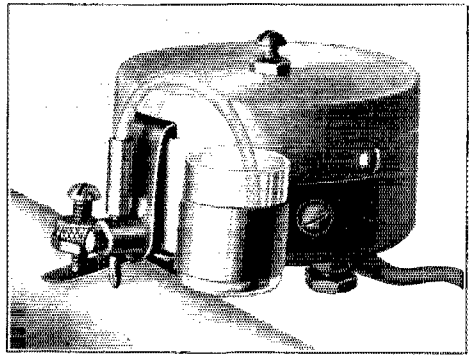
are two tubes on each side of the cycle. (Fig. 3D.) The plate circuit of this unit feeds into the relay of the set to be controlled or into a relay which controls a line terminating at the set. UX-171 tubes are used here, and by paralleling them in this fashion, the impedance of most relays can be closely matched and enough current obtained for clean and positive action of the same.

While on the subject of relays, it might be stated that we have found that a relay with a long arm is very useful in this type of work since if the transmitter itself lags in starting, or if the land lines are heavy we can make up the difference by adjusting the relay so that the long arm will bow and hence make contact for a longer period of time than it is actually actuated. This type of relay is essentially known as a high voltage relay and the long arm is generally made of bakelite. It requires about 200 mils at 40 volts to operate effectively. This is the type of relay employed at Arlington on the 36-Kc., 40-Kw. transmitter, and used by us at the Navy Department to control wire lines leading to Arlington and to Bellevue.

The Creed high-speed relays are also very good and require considerably less current to operate. This type of relay is used on the transmitters at Bellevue. It is somewhat more delicate of adjustment than the one referred to above.

In the control of the transmitter, grid keying is employed for obvious reasons, also as a general thing the keying takes place in a master oscillator since it is desired to control considerable power. The three methods shown in Fig. 5 are fundamentally the same, varying only in slight detail. In Fig. 5A, we have the keying system employed on the "Z" or 36-Kc. set at NAA. A tube supplying rectified 500-cycle as negative C at about 700 volts is connected to the grid of a 5 Kw. oscillator through a limiting resistance, condenser and leak, and a resistance to prevent high frequency oscillations. One side of the relay is connected between the limiting resistance and the leak and condenser and the other side of the relay goes to ground through a resistance which supplies the normal negative C when the relay closes connecting the grid to the filament through the ground and resistance and the 5-Kw. M.O. tube oscillates.

In Fig. 5B, we have the keying system used on the high frequency transmitters at Bellevue. In this method, the grid voltage is changed from a high blocking voltage to the operating voltage in a very similar manner. With the relay open, the negative C path is through the high resistance and its value is such as to completely block the tube. Little or no voltage drop is experienced through the high resistance since the grid does not take any appreciable current. When the relay closes, the larger part of



THE PEN BOX OF THE RECEIVER

The pen is fed with ink by the small siphon-wick and is operated by the electro-magnet in the housing. When used vertically the inkwell is naturally put in a different relative position.

the negative C supply is shorted by the high resistance, and the grid connected to the remaining C-voltage which is adjusted to the normal operating condition. Again, due to the high value of resistance, very little current flows through the resistance. The proper condition it will follow extremely fast keying.

The transmitter as a whole should possess the qualities required of any good commercial set which is to operate over a period of several hours. So-called key clicks and

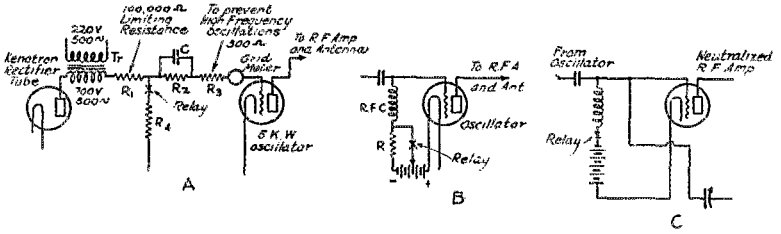


FIG. 5. CONTROL METHODS AT THE TRANSMITTER

A is the keying system used on the "Z" set on 36 Kc. and with 40 Kw. at NAA, Radio, Va. Rectified 500-cycle supply is fed by transformer Tr and rectifier tube at left to the grid of the oscillator at the right.

The transformer Tr and the rectifier tube supply a high rectified grid-bias voltage to the oscillator thru the resistances R1, R2 and R3, thereby almost completely blocking the oscillator. When the relay contacts close this bias is practically removed and there remains the normal bias caused by C and R2. The rectifier is protected from overload by the limiting resistance R1.

At B is the scheme used on the high frequency sets at Bellevue Naval Research Laboratory where NKF is located. When closed, the relay shcrts out part of the C bias, allowing the tube to oscillate. The C battery is shorted thru a resistance R and therefore is not injured.

C is a keying system used on one of the r.f. amplifier tubes instead of the oscillator.

high resistance also reduces the sparking of the contacts on the relay.

In Fig. 5C we have the grid of the amplifier free with the relay open and the operating -C voltage applied when the relay is *closed*. The grid is free to assume any voltage, and for this reason the circuit is somewhat delicate to handle, although in the thumps are of necessity avoided. A sharp clean wave is, of course, desired.

The above should furnish a broad general idea of the requirements for weather map transmission, and should also point out a few inferior details some of which are to be avoided, others to be employed.

Strays

The gang at one of the High Schools in Whittier, Calif., had been missing *QST* for several months and to their surprise, discovered that the Physics Teacher had been taking it home and reading it through. He said it was a "wonderful book". It sure must be to give a Physics Instructor such "taking ways".

Amateurs, both foreign and domestic, with new or reassigned calls are requested to send them in with the address and information on them as below:

Call	9HASH
Name	Will Q. R. Tee.
Address	Seekew, Ill.
Power	one UV-202
Wavelength	76.5 meters

This should be printed clearly so that no error will be made. A post card will do. Address it to the Information Service. Do *not* send this information in if your call is correctly listed in any present day call book. This has no connection with the QRA section in the Ham-Ads and does not replace that service.

Winthrop Bellamy, has a son, thirteen, who is getting acquainted with the code and who saw the issue with QRT on its back cover. He looked worried and said, "Say Dad! Why did they send that to you? Do you think anybody heard me pounding brass without a license?"

We are told by 7AIX-7AAY that after repairing his filament lighting transformer, he found that the note had a decided ripple in it that was not present before the transformer needed fixing. He had no potentiometer at hand to shunt across the filament and obtain a center and thought of using a reactance to smooth out the fluctuations. He tried some coils and found the primary of a G.E., 12 volt, bell-ringing transformer to help considerably. The accompanying circuit shows just where it goes.

A Winder for Celluloid-Supported Coils

By Porter T. Bennett*

MUCH HAS been said in the columns of *QST* about coils, all kinds of coils, coils full o' dope and coils that are fair, but nary a word about coils in the making. Always we are told to *use* space wound air core, air spaced, air supported coils.

All right fellows, just keep your seats and I'll tell you how to rig up a gadget and wind some of these coils for less cost at home.

First we must have a form. Refer to Figure 1. It gives the design and dimensions of one. I obtained a 3¼" x 28" square

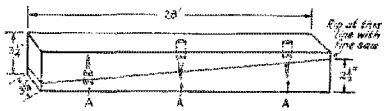
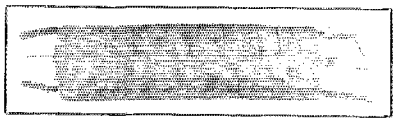


FIG. 1—THE FORM BEFORE TURNING

piece of good wood (sugar pine, birch, maple or any clear easily worked wood will do) and ripped it on a fine saw as shown. Next, 3 screws were countersunk and set as shown at A A A; this is in order to hold the piece of material together while working it on the turning lathe.

Now center the work in the wood turning lathe and turn it down to 3" diameter. After smoothing; remove and drill two ¼" holes as shown and insert therein two 3½" x ¼" bolts with necessary washers and wing nuts. Then remove the wood screws A A A. The detail of a mounting is shown in Figure 3.

Next procure two 3¼" automobile radiator hose clamps and you are ready to wind coils. The supporting material on which the coils are wound is common auto-curtain celluloid. This can be had in sheets about 50" x 20" for $1.00 to $1.50 per sheet and one sheet will supply a whole bunch of amateurs with support material. Place the



THE FINISHED PRODUCT

clamps at each end of the mandril and cut three strips of celluloid ⅜" wide x 28" long and slip the ends under one clamp 60° from each other and set the clamp on them good and tight. Pull the other ends out tight and clamp them.

Now, get some one to turn while you feed the wire on with a fish line spacer running between, after the mandril is full, secure the end of the wire and unwind the string, you should now have a mandril full of the most beautiful spaced-wound wire. And right here fellows is where we fix 'em up big of gluing down the wire in a permanent and satisfactory manner.

I read in *QST* that Doc Bidwell over at Washington recommends DuPont's House-

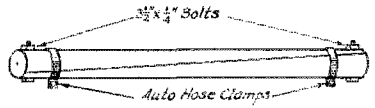


FIG. 2—THE FINISHED FORM WITH CLAMPS IN PLACE

hold Cement for the job. You're right Doc; I do too. We fellows here in Dallas have been using it for about two years now. Procure a tube of the above cement, which is a good thick liquid celluloid and squirt a thin stream of it down the top of the wire form over each celluloid supporting strip. *Presto!* The cement enfolds each wire in a firm embrace, flows down onto the celluloid strip through the interstices of the space winding, softens the celluloid and forms a part of it. After about two minutes take a knife blade and trowel and spread the cement by running the blade down the form. This causes it to cover more of the supporting strip and give a better bond. Use caution and don't waste the cement as a thin

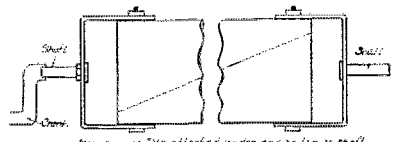


FIG. 3—A MOUNTING THAT MAY BE USED IF THE LATHE IS NOT AVAILABLE WHEN THE WINDING IS TO BE MADE

The rig may be carried in wooden bearings, or Babbitt metal bearings cast in wooden supports.

stream does the work as well as great gobs. In about one hour the coil is ready to cut and use.

I also find one may wind solid non-spaced forms and spaced and spread three lines of the cement on the outside 60° apart and cause the coils to hold very excellently.

In order to remove the form lift it from the mountings, remove the end bolts and slip the two sections out of the coil at opposite ends, being, of course, gentle and easy in order not to tear up a nice piece of work.

Various sizes of mandrils may be made to wind various coils and radio frequency chokes.

*2603 Madera St., Dallas, Texas.

"Motorboating" and Howling

By J. M. Thomson*

"MOTORBOATING" is the name given to the low frequency note or rattle which occurs in some receiving sets when used with certain B eliminators. "Motorboating" may also occur in some sets using B batteries. In the latter case the audible note is usually of greater frequency than an audio whistle or howl. To distinguish between these two cases, only the audible note obtained with B eliminators will be called "motorboating" while that higher frequency note occasionally encountered with sets using B batteries will be called howling.

"Motorboating" is generally due to one of two things:

1. Improper filter systems in the B eliminator.
2. Back coupling in the output system of the B eliminator.

The designs of filter systems have been improved so much in the last six months that motorboating from this cause has been very much reduced.

The audio output system of the receiver is now usually the source of trouble when motorboating is present. Motorboating will occur in audio amplifiers with resistance,

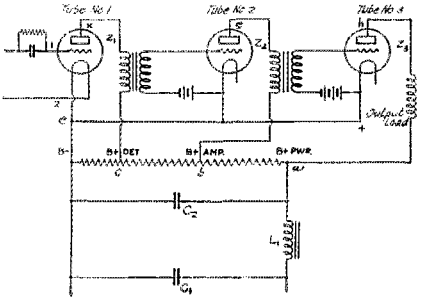


FIGURE 1. DIAGRAM OF A TYPICAL DETECTOR TWO-STEP RECEIVER FOR ANALYSIS WITH REGARD TO TENDENCY TOWARD MOTORBOATING AND HOWLING

Because most such problems involve a B substitute the set is here shown with such equipment and is to be compared with Figure 7 which shows battery equipment.

impedance and transformer coupling. The following discussion will apply particularly to transformer-coupled sets but will in general be applicable to resistance and impedance coupling.

It should be made perfectly clear that neither the B eliminator nor the set alone can be blamed for motorboating. If certain relations *between* the circuit constants exist, motorboating will result and it will not stop until these relations are changed.

No one expects anything but a squeal from a regenerative set when the coupling

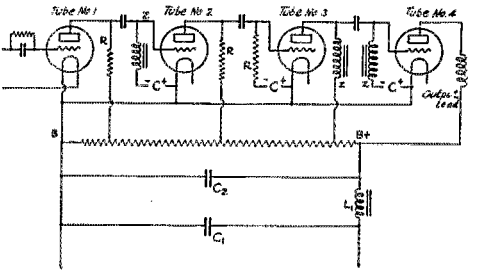


FIGURE 2. AN AMPLIFIER SYSTEM OF THREE STAGES WITH VERY SMALL TENDENCY TOWARD MOTORBOATING

is made too tight. Motorboating in a set using a B eliminator is as normal a condition as squealing in a regenerative set. If the conditions are correct for it to motorboat, the set will do so and nothing can stop it until the conditions are changed.

Consider the connection in Figure 1. Z_1 Z_2 and Z_3 are the equivalent primary impedances of the audio transformers including the plate impedances of the tubes. An alternating voltage impressed between points 1 and 2 is amplified by the tubes and transformers and is then impressed on the grid of the last tube. This voltage will cause an alternating current to flow in the plate circuit of the last tube. This current will flow in the path a-b-c-d-e-f-g-h. This alternating current flowing through the resistances c-d and b-d will cause an alternating voltage to be impressed back on the plate circuits c-d-e-k (tube 1) and b-d-e-l (tube no. 2). The alternating voltages V_{bd} and V_{cd} will depend on the currents and the impedances between the points c-d and b-d. This small voltage is *again* amplified and fed back and if the phase angle of the fed back voltage V_{bd} and V_{cd} is such that the original signal is increased by the feed back the alternating voltage will keep on increasing until the set breaks into oscillation and gives the characteristic motorboat sound. The frequency of this oscillation will generally be low because of the large inductances in the plate circuits.

*Ferranti Electric Limited, Toronto, Ontario, Canada.

One of the best ways of reducing the motorboating is to change the phase angles of the voltages V_{bd} and V_{cd}. In transformer-coupled sets the shift in the phase angle is obtained by reversing the primary or secondary leads of one of the audio transformers. In three-stage resistance-coupled sets the phase shift can only be obtained by changing to a combination of resistance and impedance coupling. One of the best combinations to use is to make the first coupling resistance-impedance, of next resistance-resistance and for the last stage impedance-impedance, as shown in Fig. 8.

In the above discussion the effect of the inductance L_1 and the condenser C_2 were

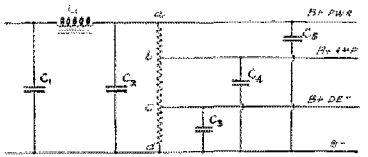


FIGURE 3. SEPARATE BYPASS CONDENSERS USED TO DECREASE LOSSES IN THE VOLTAGE DIVIDING RESISTANCES AND ALSO TO DECREASE THE TENDENCY TOWARD MOTORBOATING

neglected. The choke L_1 has usually a very large impedance to audio frequencies and will effectively block the alternating voltage out of the rest of the filter system. The condenser C_2 acts as a by-pass and in addition to its function as part of the filter by shunting some of the alternating current away from the resistance a-b-c-d reduces the feed back voltage.

As the resistances of the output system are fixed by the direct current voltage and current requirements of the set, it is not possible to make any great changes in this part of the set. In order to keep the alternating voltage drop across these resistances small, it will be necessary to reduce the impedance between these points. This can be done most conveniently with condensers. Neglecting the effect of the small leakage current, the impedance of a condenser is

$$Z = X = \frac{1}{2\pi fc} \text{ ohms; f being the frequency}$$

in cycles per second and C the capacity in farads. As an example: a 1-μfd. condenser has an impedance of 6360 ohms at 25 cycles and an impedance of 2550 ohms at 60 cycles. The condensers will be connected up as shown in Fig. 3.

In order to reduce effectively the impedance between the points c and d the impedance of condenser C_3 in ohms should be less than ¼ of the resistance between c and d. In some cases it may be necessary to make the impedance of condenser C_3 as small an 1/10 of the resistance between c and d but this is an extreme case and it will usually be cheaper to adopt some method of shifting the phase angles by reversing the polarity of the transformer. The impedance of the condensers should be calculated at 25 cycles and the above ratio will hold for all taps. 25 cycles is chosen as the basis for calculation because it is assumed to be the lowest note to be transmitted.

Another way to reduce the feed back is to use a number of separate resistances, one for each tap. The connection is shown in Fig. 4. In this way the feedback may be reduced and the motorboating stopped. It will usually be necessary to add some by-pass condensers.

If the motorboating is very bad it may even be necessary to use iron core chokes in the B+ tap leads in order to keep the alternating current out of the resistances. The proper connection is given in Fig. 5. The inductance of the choke should be greater than 10 henrys and the resistance should preferably be low. Usually only the detector lead will require the choke but occasionally every tap lead will require it. A little experimenting will soon show what is required to eliminate the trouble.

On further analyzing of the output circuits, mathematically it was found that the conditions for motorboating also depend on the amplification factors of the tubes, likewise the turn ratios, polarities and efficiencies of the transformers. The relations between these quantities and the plate and output impedances is very complicated and it requires a lot of laborious work before any definite results can be obtained for a particular set of conditions.

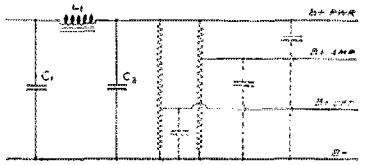


FIGURE 4. IN EXTREME CASES SEPARATE RESISTANCES MAY BE USED FOR EACH OUTPUT PANEL

These may have bypass condensers as indicated by the dotted line.

The results are approximately as follows: The greater the amplification factor of the tube and the greater the turn ratio of the transformer, the smaller must the output impedance be in order to eliminate motorboating. The polarity of the transformer refers to the relative direction of the windings in the primary and secondary coils. It was found that in some cases, the easiest way to stop the motorboating

was to change the polarity by reversing the secondary leads of one or both of the audio transformers. This is due to the shifting of the phase angle of the voltages V_{bd} and V_{cd}. This is usually the best method of reducing motorboating and it should be tried before the changes shown in Figs. 4 and 5 are made. There is only one thing to watch when this change is made. Unless the output impedances are small when we reverse the leads, the amplification at some frequencies will be reduced and distortion will result. This can be made negligible if the output resistances are properly by-passed. Two μfds. on each tap will generally be sufficient. The more efficient the transformer the more likely the set is to *motorboat* but with proper care in the by-passing of the output resistances motorboating can be eliminated.

As a general rule it will require less total capacity to eliminate motorboating if *each* tap is by-passed. For example, in one B eliminator 2 μfds. across the 22½, 90 and 180-V. taps stopped the motorboating. It required, however, 8 μfds. across the 90-V. tap and 3 μfds. across the 180-V. tap to stop the motorboating when the 22½-V. top was not by-passed. These 11 μfds. were required to give the same results as 6 μfds. Fig. 6 shows the connections.

The problem of motorboating is too complicated to lay down any hard and fast rules but usually a little experimenting along the above lines will soon show what

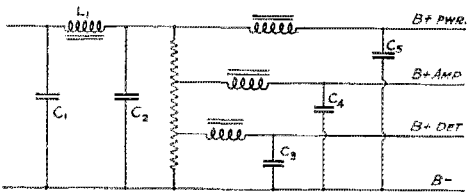


FIGURE 5. WHEN OTHER REMEDIES FAIL MOTORBOATING MAY SOMETIMES BE STOPPED BY IRON CORE INDUCTANCES IN THE OUTPUT LEADS OF THE B SUPPLY

The bypass condensers must naturally be on the set side of these coils.

must be done to eliminate the trouble. If the output resistances of the B eliminator could be eliminated entirely there would be no feed back and therefore no danger of motorboating. This being impossible it naturally follows that the set and the B eliminator must be adapted to each other and the constants of the output system of the B eliminator and of the set adjusted to reduce the feed back which is responsible for the motorboating. The term "output impedance" is used in this article when referring to the output system of the B eliminator.

HOWLING

Whistling or howling is generally caused by feed back in the B batteries and in the wiring of the audio frequency end of the set. (It is assumed that, if more than one stage of radio frequency amplification is used, the set is properly neutralized in these stages.) Examine the connections in Fig. 7 and compare them with the connections of Fig. 1. If the batteries are replaced by their resistances and the filter system is neglected the two connections are the same. If the resistance of the batteries is such that the feed back is great enough and of the proper phase, howling will result. The

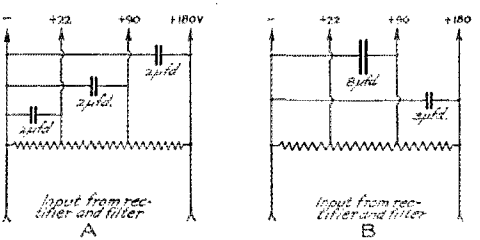


FIGURE 6. COMPARISON OF DIFFERENT BYPASS METHODS

In the circuits shown just enough capacity was used at each point to stop motorboating in a particular set. Figure 6B requires a total of 11 microfarads while the same purpose is accomplished in Figure 6B with a total of 6 microfarads. In general it is best to bypass all taps.

way, then, to stop the howling is to reduce the resistance in the B batteries or to change the phase angle of the feed back by reversing the polarity of one or both of the audio transformers.

The impedance of the B batteries can be reduced by connecting a one or two-μfd. condenser from each B+ lead to B minus. If howling develops after the set has been in operation for some time, it will generally be found that the B batteries have run down and the resistance per cell has increased to such a value that the feed back is enough to cause howling.

Due to the high capacity and the low resistance of the storage B batteries howling due to feed back in such batteries is not very common. The following results taken from a test on two stages of audio amplification may be of interest. The connections were made as per Fig. 8. The B blocks consisted of Exide storage batteries Type W.H. A resistance R and an inductance L were connected in series with the 24-V. block. The resistances of the batteries were assumed to be zero. The data in regard to the tubes and transformers were as follows:

Tube No. 1, UX-201-A

A = 5 B = 24 C = 0

μ = 7.5 R_p = 22400 ohms

Tube No. 2, UX-201-A
A = 5 B = 96 C = 4½
μ = 8.25 R_p = 9000 ohms

Transformer No. 1 Ferranti, AE3, $\frac{3\frac{1}{2}}{1}$ ratio

Transformer No. 2 Ferranti, AF3, $\frac{3\frac{1}{2}}{1}$ ratio

Condensers C_1 and C_2 were of 2 μfds. capacity

Direct polarity is marked by the arrows and the secondary of Transformer No. 1 was reversed when opposite polarity was desired. The connection is equivalent to one stage of audio amplification with a high ratio output transformer and it was

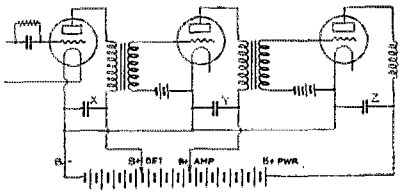


FIGURE 7. TYPICAL DETECTOR TWO-STEP CIRCUIT FOR ANALYSIS WITH REGARD TO TENDENCY TO HOWL

Compare with Figure 1 where a B substitute is shown.

used to check the calculated conditions for howling. The results of the tests with the inductances equal to zero are tabulated below:

Resistance R	Polarity Transformer No. 1	Condenser C_1	Condenser C_2	Oscillation
0	Direct	0	0	No
590	"	0	0	Yes
800	"	2	0	Yes
770	"	0	2	Yes
1100	"	2	2	Yes
0	Reversed	0	0	No
1000	"	0	0	No
6800	"	0	0	Yes
6800	"	2	0	No
6800	"	0	2	No
15000	"	2	0	No
15000	"	0	2	No

Where oscillation occurred the resistance value shown is that which would just cause oscillation to begin. For higher valves the set oscillated until such a high resistance was reached as to reduce the plate voltage of tube No. 2 greatly.

In all cases of reversed polarity the oscillation was very weak and of a very high frequency. Similar results were obtained with different values of inductance and resistance.

It should be noted in the above results that a very large resistance was required to give an oscillation with reversed polarity. Theoretically if the self and mutual capacities of the coils are neglected there should be no howling with reversed polarity. Apparently these capacities in this case gave a shift in phase sufficient to cause oscilla-

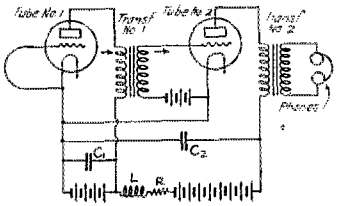


FIGURE 8. TESTS CIRCUITS TO SHOW THE EFFECT OF BATTERY RESISTANCE IN AGGRAVATING A TENDENCY TO HOWL

The resistance power was increased until the set broke into a howl. Figures given in the text herewith show that the amount of resistance necessary to create a howl varied considerably depending upon the transformer polarity and the size of C1 and C2.

tion. In resistance coupled sets the phase shift of the feed back voltage is obtained by using the resistance impedance combination recommended in the section on motorboating.

If the wiring in the audio frequency end of the set is not done properly howling may result due to the magnetic and electro-static coupling between the plate and grid wires. This can be eliminated occasionally by connecting a one or two μfd. condenser in the positions marked x, y and z in Fig 9. The result will depend on the relative values of the impedance of the B battery circuits

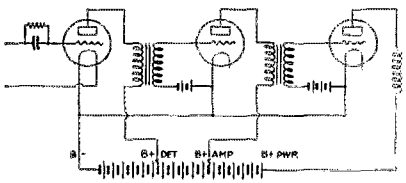


FIGURE 9. TYPICAL DETECTOR TWO-STEP RECEIVER FOR ANALYSIS WITH REGARD TO PREVENTION OF HOWLING BY USE OF BYPASS CONDENSERS

Compare this with Figure 6.

and the condensers. If wet Bs are used the condensers will have very little effect and it may be necessary to rewire the set. In wiring or rewiring a set the following points must be kept in mind. Make the grid and plate wires as short as possible and keep them as far apart as possible. If it is necessary to bring a plate wire near a grid wire, run the two wires at right angles to each other. If at all possible, do

not run a grid wire parallel to a plate wire. Start with the radio frequency input at one end of the set and work straight through to the output jack at the other end. If the set is to be used in one room and the B batteries in another, connect a two μfd. condenser across each tap as in Fig. 9. This will help to reduce the magnetic coupling in the long plate wires by by-passing some of the signal current. If it is not possible to connect the condenser in the set itself, connect them across the terminals of the set. If the condensers are connected across the battery terminals in the other room it will reduce the feed back through the batteries but it will not reduce the magnetic coupling in the long lead wires.

Occasionally a set will howl with one make of transformers and not howl with another make. This may be due to the different polarity of the transformers; or to the impedance of one set of transformers changing the phase angle of the feed back voltage enough to stop the howling. If the impedance of one transformer is very much lower than the other the set may be oscillating at a frequency that is above the audible range. In this case there will be no audible note but the quality of the reception will not be good.

As a general rule, it is rather difficult to tell by examination what wire or wires are responsible for the feed back. A little care in laying out the wiring along the above lines will eliminate the danger of howling and is well worth the time spent in doing it.

Representative Government

By Hiram Percy Maxim, President, A.R.R.L.

I ASKED my father once why the Puritans left a perfectly comfortable country to come over to the New World with its savage Indians and hard life. His answer was, "In order that they might be able to worship God according to the dictates of their own conscience—and prevent others from doing the same."

I have thought about that many times in A.R.R.L. affairs. It gets one down to the fundamentals of government. It's a good thing to get down to fundamentals every once in a while. It keeps one from getting off the road and becoming lost.

Our A.R.R.L. government is strictly Representative. Every two years our members in each of our fourteen divisions elect a man to represent them. These fourteen men are the directors of the A.R.R.L. What the majority of them vote to do is what the majority of the country thinks is best, and it is done.

These men select a President, a Vice President, a Secretary, a Treasurer and a Communnications Manager. They allow the President to vote to break a tie and they allow the Vice President to vote. All the other officers are hired men and they have no vote. The directors may hire or fire them at will. In other words, the directors, representing the entire country, are the rulers of the A.R.R.L. It is typically American.

The President may howl his head off for something. Unless he can convince a majority of the other fifteen directors that it is best for the A.R.R.L. as a whole, he is turned down.

A director may argue and threaten for something that his Division wants. Unless he can convince a majority of the other fifteen directors that it is best for the A.R.R.L. as a whole, he and his Division get turned down.

In other words, no man nor no local group of men can impose their will upon the whole. Nobody can "prevent others from doing the same."

That's Representative Government. The history of human affairs has shown that it's the kind of government that succeeds.

"My Phone Isn't Much, If Any, Broader Than C. W."

By Robert S. Kruse, Technical Editor

FOR the past four years that claim has been on the increase—and the claimers actually seem to be serious about it, and to believe it.

If we take the remark just as it is made, then it isn't so, cannot hope to be so, and if one is talking about amateur phones it isn't true within a pair of Texas counties, which are the same size as New England.

Don't reach for the asbestos paper and the acid ink! In the first place we have

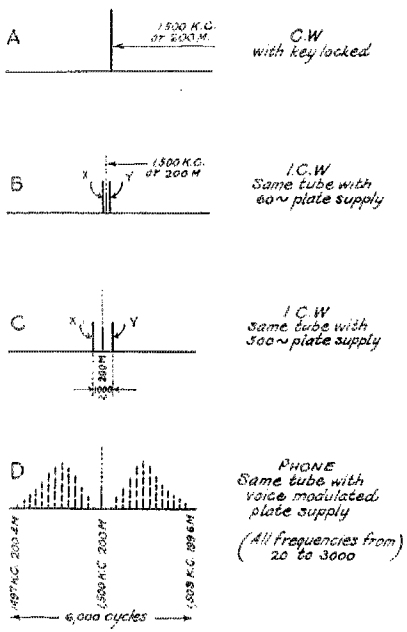


FIG. 1. SHOWING HOW THE SIDE FREQUENCIES AND SIDE BANDS CANNOT POSSIBLY ACCOUNT FOR THE BROAD PHONE AND THE BROAD A.C. TELEGRAPH SIGNAL

Note that even the phone signal, tho 30 times as broad as the 60 cycle telegraph signal, is very sharp as compared to the "universal wave" signals we often hear and which cover a large band on the tuner.

a firebrick lining in the *QST* mailbox and in the second place this particular letter would simply burn itself up, for it hasn't anything to attack but the truth, and the truth is very hard to ruin permanently.

Now with the stage all set for an argument we are going to drop the argument and try cold reason. The whole reason for introducing the argument was to make clear just what was to be talked about.

WHAT IS C.W.?

First of all—how many C.W. stations are there in the A.R.R.L.? Eight, isn't it? There were nine last week but Cushing is on a fishing trip and that makes it eight for the time being.

What about the other thousands? All of them *call* themselves c.w. What are they? I don't know *what* to call them. They use vacuum tube oscillators and they use telegraph keys and they turn out a signal that you must heterodyne or autodyne at the receiving end—but they are certainly not c.w. for that means "continuous wave", in fact it means a *smooth* continuous wave just as d.c. means a *smooth* continuous current.

THE HARMLESS SIDE BANDS

Let's see how it is possible for the output of a vacuum tube to be something besides c.w.

First, one may manufacture "side bands" and while this isn't the thing that makes some phones very, very broad, it is worth mentioning. Looking at Figure 1 we have at A the "picture" of a c.w. carrier which means that the oscillator is operating on d.c. and that the key (if any) and the microphone (if any) must *not* be working. We have set the carrier at 200 meters and for the sake of avoiding mussy figures we will say that is 1,500 Kc. If we put a.c. plate supply on the tube we will not have c.w. but will instead have, as shown at B, the 1,500 Kc. "carrier" with a "side frequency," which we will call X, 60 cycles away from it on one side and another "side frequency" Y, 60 cycles away on the other side. With very careful tuning our autodyne receivers will *just* be able to make out that there are three waves. No—with most transmitters it will not be able to make out anything of the sort for the "wabbulation" will cover up the whole business. More of that later.

Now if the owner of the station happens to be rich and uses 500-cycle plate supply, the picture will change once more and becomes that of Fig. 1C. This wave is a little broader and if by any rare chance the station *happens* not to be wabbulated we can very easily tune into three successive peaks of the signal. Try it on NAA.

Finally, if we supply the oscillator with voice-modulated plate power we get a picture like that of Fig. 1D. The "side frequencies" are now dancing about and have become a "sideband" on either side of the

carrier. We will suppose that this particular phone happens to have a good modulator system (*most of them do not*) and that it actually puts thru all the voice frequencies up to 3,000 cycles. Then we may expect some energy as far out as 3,000 cycles or 1/3 Kc. on each side of the 1,500 Kc. carrier. There will not be much energy that far out as the high pitches in the voice are weak but to give the phone as bad a name as possible we will say the side bands go out 1/3 Kc. as shown in Fig. 1D.

What of it? We find that this exceptionally broad phone is after all *entirely* contained within the region of 199.6 to 200.4 meters—there isn't a sound outside that region. Even if we have the receiver oscillating we will be able to get within 1 kilocycle or so of those boundaries without getting a beat note with any "punch" to it.

THEN WHAT DOES IT?

Now you know perfectly well that not one phone in a hundred is as sharp as that —*nor one telegraph station in a dozen. The sideband business utterly and entirely fails to explain the practical broadness of transmitters.* For instance, we have 27 miles from us, broadcasting station WBZ which has lots of power and is therefore able to make one notice tuning effects. This station *used to* operate so that at Hartford one got the impression that a "universal wave" was being used. The broadness was simply incredible from the sideband standpoint. At the same time (this is the point) if the microphone was not being used the carrier wave was as sharp and steady as one could wish. At that time folks said—"That's because they have so much power." But it wasn't. *The station today uses more power than ever, and it is sharp.*

Again—it is possible when using a.c. plate supply to make two very simple shifts in the telegraph transmitter at 1OA which will cause it to be reasonably sharp at the receiving end—or to take in the whole neighborhood the working wave.

Still again, any amateur with any experience at all knows that there is a very great difference in the sharpness of stations using 500-cycle plate supply, which means having the *same sidebands.*

Quite certainly—the sidebands are not at fault.

"WABBULATION"

Very well—if 1OA has the sidebands of Fig. 1B and can be either sharp or broad; NAA has the sidebands of 1C and is sharp but can be made broad, and finally, WBZ's announcer puts on the sidebands of 1D and used to be tremendously broad but now is sharp—then we simply *must* look to something else besides the sidebands.

This "something else" is our old friend "Wabbulation"—the shift in oscillator frequency when the plate voltage changes. For some reason or other this does not seem to impress either the telegraph or the phone fraternity, though it is often the thing that makes the difference between success and failure—between peace and war with the neighbors who would like to be able to listen to more than one station.

Suppose we look at Fig. 2. This is supposed to show what happens when the key is opened on a good oscillator and on a bad one. The good one, A, simply dies on the spot—weakens gradually and stops. The exact scientist will take exception to that claim and prove that "transient sidebands" are formed. Very well—what of it? Ordinary sidebands don't cause anything like the broadness of the next effect we will touch on—so let the scientist have his transients.

Meanwhole, look at Fig. 2B where we are opening the key on an ordinary run-of-mine amateur oscillator which is being asked to work on d.c. for the first time in its existence. You know what happens—but look at the picture just the same! The frequency takes a terriffic swoop—no mere 3 Kc., but far *across the tuner*—much further than merely out of hearing.

Now suppose we used *that* sort of an oscillator with 60-cycle supply at 1OA. We would have the usual sidebands that we showed in Fig. 1B, but you would not be able to tune to three peaks, for both the carrier and the side frequencies would be diving around the tuned at the frantic rate of 120 times per second—in and out for each time the plate voltage went up and down. Perhaps Fig. 3 makes this clearer; at any rate it will show that such a signal isn't very effective. It is like the rifle and the shotgun. The shotgun may be good enough for a bum shot at close range but a little ways off the "scattergun" has no authority whatever. The rifle picks out one course and goes a long ways on that course. *The shotgun attracts a lot more attention though!*

THE PRACTICAL TEST, AND A DEFINITION

Further back I said that WBZ used to be broad at Hartford, and that now with more power it is *not* broad. The reason is a very definite one. These days the carrier wave of WBZ is tied down by a master control and *cannot* wabble. It can sprout sidebands, but it must stay put. I do not know *how* the carrier is being steadied just now (both crystals and tuning forks have been used at different times) but I do know that the change in the tuning of the sta-

tion here was immediate and startling when the first control was installed.

Don't yawn at this point and drop the story because we have begun to get mixed up with crystal-controlled broadcast stations. We will drop both soon enough and get back to amateur stations—without crystals. Before leaving the crystal-con-

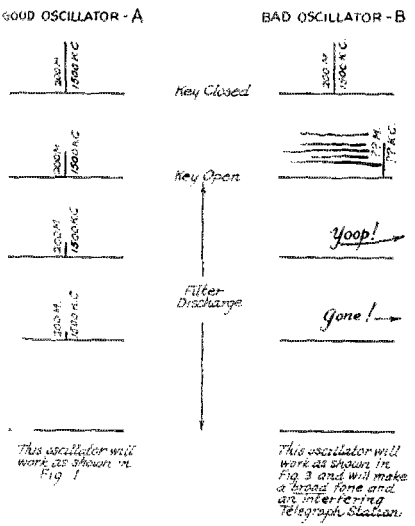


FIG. 2. WHERE THE BROADNESS COMES IN

trolled (or tuning fork controlled) WBZ note, the important point that *modulation did not make it broad to anything like the same extent as "wabbulation"*. The broadness was not only due to side bands alone but also to shifting of the carrier-wave every time the plate voltage changed. Whenever the microphone was idle, the plate voltage was steady—therefore the carrier stood still and tuned sharply. As soon as the microphone went to work the plate voltage began to dodge up and down and the wave began to jump around—and therefore to come in over a much wider band on the tuner.

It does not in the least matter if I am wrong in my guess that WBZ happened to be modulating the plate voltage of the oscillator itself in those days. It probably was, but the same thing would have happened to some extent with an ordinary oscillator if the modulation had not been put on the oscillator at all but on one of the amplifiers—because an unsteady oscillator will shift if one leaves the plate voltage alone and merely shifts the load—and one way of shifting the oscillator load is to change the *amplifier* plate voltage.

By this time it isn't necessary—but we may as well put down our definition and say that, "wabbulation is the variation of frequency which takes place in an unstable oscillator when the plate voltage is shifted by microphone modulation or by the use of a plate supply that is anything but d.c."

THE PURE AND HOLY D.C.C.W.

All this time the d.c. telegrapher is quite likely to be feeling very pious because *he* isn't doing anything of this sort. In a way that is true; there isn't anything like a real d.c. plate supply to show up a punk oscillator. The sort of foolishness that is cartooned in Fig. 2B can't possibly be overlooked when one is using d.c. supply and therefore the owner of the station struggles with the thing and finally gets the frequency soldered down. Then his signal starts to attract attention and he credits the d.c. supply with the results. My own notion is that the d.c. was useful mainly to make him steady the oscillator and that once it is steady the thing will be just as effective with "rectified and somewhat filtered" supply, which the operator on the other end will prefer to copy.

RADIOPHONE DEPENDS ON C.W.

For radiophone, the supply must be pure d.c. if it is to be any kind of a phone at all. Listen to some of the cheaper broadcasting stations and watch the way the generator hum chews the announcer's voice. It isn't hard for the operator to determine when he has a "pure d.c. note"—but how many times does he check up this wabbulation matter? Unless it is *also* a c.w. telegraph station it is a safe bet that he *never* does. That is why, in my estimation, no phone should be operated until it has been shown that the oscillator will stand up under the test of being keyed for telegraphy. If it does, then it is steady, and if 100% variation in plate voltage by the key will not cause "wabbulation" it is a fair bet that 50% variation by the microphone and the modulator tube will not cause "wabbulation" either—and then we can hope for a radiophone that is really not much broader than c.w.

DECENT TELEGRAPHY ALSO DEPENDS ON C.W.

At the same time—if the telegraph set will not stand the test of a d.c. plate supply (no matter what is ordinarily used) then it too is wasting power and creating interference. Try it on your set. Put the set on reduced power if necessary but feed it whatever d.c. voltage may be available and try keying the thing. Better not call anyone but disconnect the antenna and listen with a receiver in the room. After listening to the wild shrieks and whoops you will be glad that the antenna is off.

After that is cured—after you are *able* to make a c.w. signal, then there's time enough to decide what sort of plate supply is to be used. No matter what it is, the set will now be more effective.

AS TO CRYSTALS

Unfortunately the crystal-controlled transmitter is not as cheap or simple as we might wish. At the same time, the comparisons usually made are neither fair nor quite sensible. A crystal-controlled UX-210 feeding the antenna is quite as likely to make a good signal at the far end as is a wabbly 50- or 75-watt oscillator whose plate supply has been roughened up to cover the wild wailings that d.c. would disclose.

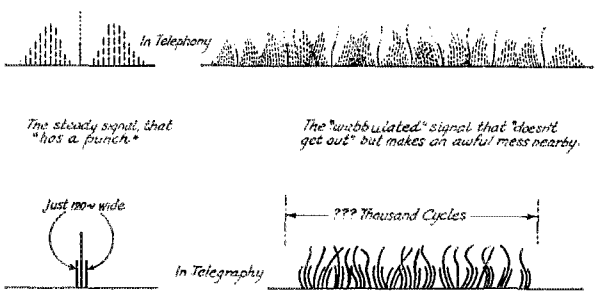


FIGURE 3

In the same way, an 852 oscillator built with steadiness as the main objective will probably put less into the antenna—but more of it will get to the receiving headset. Figure 3 attempts to show this. If we tune in the signal at the left, *all* of the energy will be within hearing, but we cannot hope to accumulate all the energy that is spread around over that shoebrush effect—and most of it is wasted. Look at it this way—if we shoot a rifle at a rabbit 150 yards away we will either miss that rabbit or else stop him, but with a shotgun we will not do any more than burn the rabbit's skin. *Nearby* the shotgun will be much more likely to hit the rabbit—also the neighbor's pet collie, the family pig and the old gray mare—and all of them will kick up a rumpus.

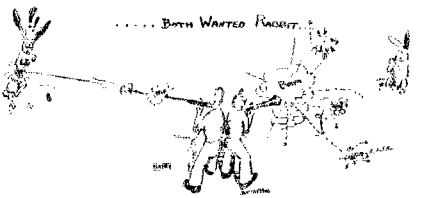
While the complete stability that can be gotten with crystal-control gives us the greatest possible effectiveness, we may find it desirable to approximate the thing in another way, and use a little extra power (and make a little extra local QRM) to make up the difference.

THE OTHER POSSIBLE WAYS

The other ways of steadying an oscillator have been referred to and are today about the livest problems in amateur radio. In general one can think them out this way: The unsteadiness of an oscillator is occasioned by the capacity feedbacks in the tube and the fact that they vary with plate voltage and filament voltage. If we can shunt those capacities with large external capacities we may be able to swamp out the effect. In addition to this our tuned circuits must be so arranged as to be very determined in their frequency. This in general also calls for large capacity. Thus the best circuits will be those that have plenty of external capacity directly across the most troublesome tube capacities and have those external capacities built into tuned circuits with very low resistance and small inductance. In practice this calls for Colpitts, Armstrong, Ultraudion or Hartley circuits with good big condensers and good coils. If one is aiming at phone it might be a good idea to start out with the thought of working at 175 meters and to use a capacity of *at least* 500 μμfds. If one is aiming at c.w. in the same band the capacity will naturally be the same and in the lower bands proportionately as much—or more capacity. It does not hurt to have a capacity of 300 μμfds. on a 40-meter set.

Of course capacity isn't all there is to it—but it is a good starter and the rest is mainly a matter of adjustment.

Some of the adjustments that are of importance are suggested by H. P. Westman,



The rifle hits one thing a long ways off—the shotgun hits a lot of things nearby.

(we edit each other's writing) as follows. Do not overload the tubes as this will cause alternate heating and cooling which materially changes the internal capacities and in that way causes wabbulation. In general, a high-resistance grid leak will help to steady the wave, partly by limiting the input so that at the maximum output adjustment the tube is still running cool. Too much grid feedback is a thing especially to be avoided as even a high grid bias is not able to hold down the input—or steady the frequency—if the grid is too closely coupled to the plate.

The Long Way 'Round

By G. C. Knight*

IN my article, "How far is it?" which appeared in the April, *QST* there was a printer's error, the figures 410 and 730 instead of 41° and 73° respectively. do not suppose that anybody was confused by this.

I have had some correspondence and more discussion about this article, from which it appears that I did not make some points clear enough. For example, the polar distance of both stations must be taken from the same pole, but it does not matter which. Thus, if A be in North latitude and B in South, you may work on the North pole in which case A's polar distance will be 90 minus his latitude and B's 90 plus his latitude; or you may work on the South pole and A will be plus and B minus. The result will be the same.

Another question was, "How do you calculate the long way around?" The easiest way is to calculate the short way by the formula given, and before converting the angular distance c. into miles subtract it from 360 and convert the distance 360—c.

Out of this arose the question of which way the signals go. Since the direct route between two points is a straight line on the map only if both points are on the equator or on the same meridian, it is just as impossible to tell the course by inspection of the map as to measure the distance, and one is liable to claim a "long way 'round" achievement when the signals have really gone a very short way. For example, suppose an amateur near New York, say 40° N and 70° W, worked just after sunset in mid-winter with one in Japan, say 40° N and 140° E he might claim that as there was daylight between them over the westward course of 150°, his signals had gone eastward 210°. But in fact his signals would have gone North very near the pole through darkness all the way, and quite a short way at that. So to show readers of *QST* how to find the course of their own signals and so avoid a similar error, I will work out this particular problem.

First, find the distance by the formula given. This works out at 6586 miles; the angle c. being 95° 23′. Now look at the figures. Fig. 1 represents the spherical triangle as it is. A and B are the angles at the two stations, C that at the pole: a and b are the two polar distances, and c the direct line between A and B, whose length we have just calculated. Now to find the course of the line c on the map we must find the values of the angles A and B. The same formula turned inside out will do it, thus:—

$$\text{Cos. A} = \frac{\text{cos. a} - \text{cos. b cos. c}}{\text{Sin. b Sin. c}}$$

$$\text{Cos. B} = \frac{\text{cos. b} - \text{cos. a cos. c}}{\text{sin. a sin. c}}$$

From this we get in the case we are working out A and B, both 24° 30′. (They will not always be equal.) Now look at Fig. 2. This represents the same triangle, not as it is but as it would appear on the map. The lines CA and CB are meridians, straight down from the pole. Now if you mark off at A a straight line making an angle of 24° 30′ with AC and at B one making the same angle with BC, you can draw by the eye a curve something like a parabola running into these two lines, and for

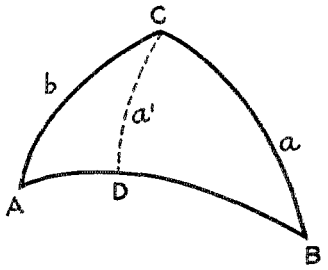


FIGURE 1

ordinary purposes this will be near enough to the true course of your signals. But to calculate the nearest approach to the pole marked D will help and fortunately this is easy. Calling the line CD in either figure á the formula is: sin.á = sin.A sin.b which in the case under consideration makes á = 17° 59′ or say 18°. As in mid-winter the polar darkness extends 23° down from the pole it will be seen that as already stated these signals would have gone through darkness all the way. The exact position of the point D has not been found but only its distance from the pole, but still that will help in sketching in the curve.

Further elaboration of this problem will probably not be of general interest, but if any member of the A.R.R.L. is sufficiently interested to write to me I will show him

*Primero de Mayo 412, Concordia, Argentina.

how to calculate the whole course of the curve.

However, it is not always necessary to calculate the course of your signals in order to be pretty sure of the way they have gone. If two stations are both in the dark

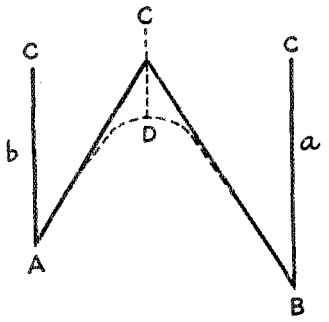


FIGURE 2

or in the twilight, the short line between them is all in the dark, no matter how it looks, on the map, and you may be sure the signals go that way. If both are in the light, the short way is all in the light. The long way may be mostly dark, but it contains two bands of twilight, and I should think it doubtful if signals go that way. The only case in which any calculation of the course is necessary is when one is in the light and one in the dark. In this case either way around includes some daylight and a band of twilight, and if ever the signals go the long way round it would probably be in a case of that sort.

Strays

Extry! Static completely overcome—amateurs allowed all wavelengths—1 Kw. tubes for ten cents! We know all these things must be true, for Don Mix is married!

Don, "the sleepless wonder of 1TS", the first operator of WNP, and more lately with the radio laboratory of the C. F. Burgess Laboratories at Madison (9EK-9XH and 4DM in Florida), was married on September 3d to Miss Josephine A. Schaub, who up to about that date was a stenographer with the Burgess Battery Co. They reside at Madison.

The *QST* Staff joins Mix's many other friends in congratulations and the best of wishes.

By bending the tongue of a Fahnstock clip out, a temporary clip for round wire helices may be had.—*5ACV*

Fixed Transmitting Condensers

THE Sangamo Electric Company are now making a series of condensers having much higher resistance to a voltage break-down than the standard receiving condensers. These are known as "Navy" type condensers and have the same physical dimensions as the better known units.

They come in three ratings according to the test voltages which they must withstand. One type will withstand a 5,000-volt d.c. flash test and is made in the usual standard sizes up to and including .002μfds. A second type must hold up under a 3500-volt d.c. test for one minute. These may be had up to and including capacities of .005μfds. The third receives a 1500-volt d.c. test for one minute and these are obtainable up to and including .01μfds. capacity.

The amount of current a condenser will carry without undue heating depends, among other things, upon its capacity and the frequency. All of these types will carry the following currents with a temperature rise of less than 10 degrees centigrade above room temperature at a frequency of 6,000 kcs. (49.9 meters).

.0002 to .00059 μfds. will carry 3 amperes.
.0006 to .00099 μfds. will carry 4 amperes.
.001 μfds. and larger will carry 5 amperes.

The measured capacity will be within 10% of the rated value and after being held at a temperature of 65 degrees centigrade for two hours and then cooled, the capacity will be within 2% of the original value.

When condensers are to be used for plate blocking, they should have a rated break-down voltage of over twice the working plate voltage. This is necessary because it is quite possible when using a rectifier for obtaining this high voltage to have the voltage across the transformer and rectifier rise considerably when the load is removed (key opened). It may jump to twice the normal voltage obtained when under load.

It is also possible that the radio frequency voltages present in the oscillating circuit may at times be double the plate voltage when the key is down and the circuit working normally. Therefore, for an ample factor of safety, pick a plate blocking condenser having a voltage rating of at least 2½ to 3 times the normal plate voltage applied to the tube with key depressed. The grid condenser should be capable of withstanding at least twice the plate voltage.

—*H. P. W.*

Rotten Broadcasting

Not by The Old Man

THIS is station Blah-Blue-Blah. Our usual Wednesday night program is about to be played by Mr. Mac. A. Noise, whom everybody knows. Mac is going to give his version of 'Poppa's Momma's Hot Daddy' in a collodion solo. Everybody knows the difficulties of mastering the collodion but Mac's done it. Lawse Ompah announcing."

Not counting a generous generator, silence fell and flopped feebly. Then the woeful monotone of the collodion broke thru. It was the sort of thing that makes people buy resistance-amplifiers and cone loud speakers (advt.) only to discover that there weren't any low notes except the generator hum anyhow. One expert suggested that the trouble is that one can't amplify resistance, but they put him in a plaster cast.

Mac. A. Noise finished and they called it a draw. He agreed to a return bout—no. wait. this is supposed to be a concert. Ompah is back at the mike.

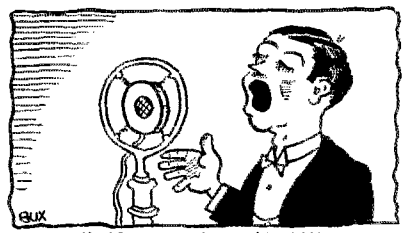
"We know you all liked Mac, for he's a favorite at this station. To accede to the numerous requests that have come in, his next number will be 'Pilvor Treads Get Very Old.' This is dedicated to Jasper Hapsnot, President of the Pilvor Tire, Rubber and Stopper Co., of Tobleedem, Ohio. Mac will play his faithful collodion and Miss Anjul will accompany him on the harp."

This was no draw; Miss Anjul was barely among those present. I'll admit she put up a pretty stiff fight but Mac led by something much longer than a nose—maybe his ears. Further behind than a protein chasing an electron the harp plunked desperately along, barely getting its last plunk in before Ompah broke in again.

"Dash it!", he objected, "we had counted on the Laughing Lizards Symphonic Ensemble tonight and at this moment; but since they are not here they must be late. If the numerous audience" (here the fellow with me got up and left so that I had to hear the whole thing alone) "of station Blah-Blue-Blah will not mind a slight change of order we will now answer the questions. This will be done by our station Radio Engineer, Mr. Ike N. Trigh."

"Good evening, folks. The first question is from a man who asks that his real name not be mentioned. He says, 'I want a hook-up of a crystal set to fit a cocoanut shell to cost fifty cents.' We are very glad of this opportunity to serve a listener. An excellent cocoanut—er, no, I mean a diagram will be sent for 50 cents which is less than the cost of printing. That concludes our questions.

"My technical talk for this evening is 'Shall I Use a Crystal or a Detector?' This is a very important subject. A hurried thought might cause us to declare that there is no difference. More careful observation of the engineering aspects brings different conclusions. We have to adjust the catwhisker on the crystal, it is exposed to the dust and inexpert determination of the sensitive point on the catwhisker will cause a heavy decrease in sensitivity. The



OMPAH IS BACK AT THE MIKE

detector on the contrary is a neat little cartridge, is not exposed to the air and the sensitive point is found in a highly equipped laboratory by expert lavatorians. It was received in excellent packing and—I beg your pardon—I mean that there is no comparison and the detector is much to be preferred. This will no doubt remove confusion from the minds of our large nightly audience."

Just then a whistle started and I muttered, "Well there're two of us now."

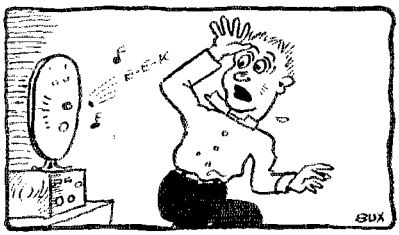
Ompah was mumbling on. "....and since the efforts of Mr. Trigh are so greatly appreciated we will have another of his enlightening talks on Wednesday at the same hour. Now at this time we will hear the Etube from Litzendraght, the famous composition of Lemin Sherbit. The Etube tells in music the story of a blushing pink sunset that accentuates to a deep and fiery red across which rushes a black and menacing cloud which settles the sunset as far as we are concerned. The Etube will be rendered by the Laughing Lizards who have finally appeared. Their Symphonic Ensemble is well known to our large audience."

"'Symphonic Ensemble!' Every little jazz band with a one-lung violin and a 7-gallon bass drum thinks it is a 'Symphonic Ensemble.' Oh well, what matter? The 5-dollar loud-speakers will never notice the difference."

The Ensemble started—on the left foot. The trombone mistook the carburetor for

the starter and pulled out the choke. He did something to E flat that was positively immodest, so I nonchalantly struck a match, showing that there's a bit of cruelty in the best of us.

From curiosity I stayed, nor was I disappointed. The only man that wasn't noteworthily false was the bass-drummer; but



I GOT UP AND WENT FOR A DRINK OF WATER

he made up for that by producing strictly fresh samples of time—bed-time, dinner-time, breakfast-time, all sorts of plain and fancy time—but certainly not the correct time. It was an immoral exhibition and just as they were finishing, the cabriolet chased a half-note out from behind a clef and up a couple of staffs into the corner of the last measure. What it did there I will not hazard but the thin shriek that came out froze my blood and brought tears of sympathy to my eyes.

"I know you have enjoyed the excellent rendition of the Etube from Litzendraght by the Laughing Lizards Symphonic Ensemble who will next play 'I Dowanna Low Ohm'."

I got up and went for a drink of water. Nevertheless I still felt dirty—and indecent—after that Etube. I renewed my belief in capital punishment. Murder's a medicine that should be tasted by its dispenser—and too bad that he can't be made to take it first.

When I got back the jazz was whining its last, making two cruelties by that gang in the same evening. In view of these things why do people talk about the crime record of Milwaukee—or is it Chicago? No matter—it is some place 'way off in the West.

"The next number on our program is tha—....Eh?....What? Migosh! Folks, something very serious has happened. Accidentally some of our wires have got tangled. The cabriolet player of the Laughing Lizards has just been accidentally electrocuted. Two thousand ohms just flashed—...Eh?...What?...Wait a little, folks, until I get this straight—Two thousand five-hundred....."

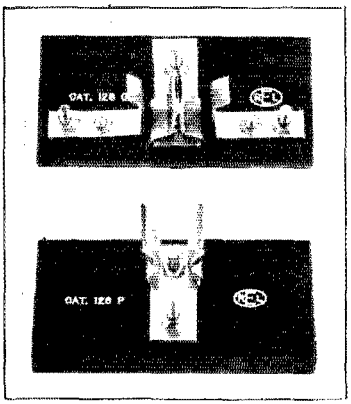
I pulled the switch. That is one of the real beauties of radio—a little click and you have silence, in small or large amounts, or by the gross. Right now I yearned for a gross.

Mounts for 250-Watters

WE are showing in the accompanying illustration a pair of mountings for the 204 and 204-A tubes. The bases are of machined bakelite and the plate one is somewhat thicker than the grid one to take care of the difference in the width of the tube prongs. The plate clip has a pair of lugs bent in toward the center to prevent the tube from being forced too far back.

The grid clips are solid in construction and support most of the weight of that end of the tube which should insure good contact. The filament contacts are made of lighter material and have plenty of spring to them. They should, therefore, be able to take care of any irregularities in the filament contact pin's position .

All the various clips and springs are held in place by two machine screws, one



of which extends far enough from the base to act as the terminal. They are deeply countersunk so as not to touch the material to which the base is fastened. The mounts may be fastened down by screws passing through two holes drilled for that purpose.

As you have probably noted from the trademark, they are manufactured by the Radio Engineering Laboratories of Long Island City, N. Y.

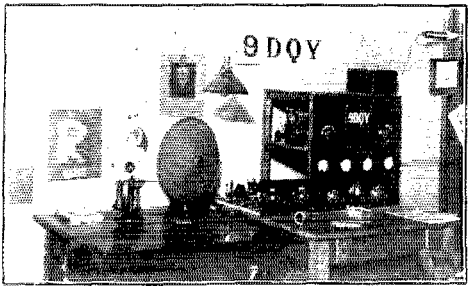
—*H. P. W.*

QSLL

By Harold P. Westman, Assistant Technical Editor

MOST of the QSL cards in circulation today are of the same type consisting chiefly of the station call letters printed in red or black, taking up most of the available space on the card. The report on the other fellows signal and a description of the transmitting station are spattered around the edges or act as background to the call letters. The degree to which they vary is small and is mostly in the type of lettering used or in being set in a box or in some other than a linear arrangement.

Many station owners are also amateur photographers who are used to doing their own printing. They are therefore in a position to print their own cards after they



A VIEW OF THE STATION

On the back of the card, (that portion reserved for correspondence) there appears a printed form to be filled in giving the report on the QSO.

have a suitable negative. This negative is the harder part of the job and some suggestions on its make-up will not be amiss. The following has been submitted by Mr. Leon C. Grove of nu7SM.

"First, draw a sketch and do whatever lettering is wanted on a piece of drawing paper. (Why wrapping paper will not do just as well, a graduate engineer may be able to explain.) After that, procure a piece of tracing cloth and fasten it securely over the drawing. To follow engineering practices, use thumb tacks on a drawing board. This time, the head cook will have to explain why the bread board will not do. Trace the border, sketch and lettering on the tracing linen with India ink.

"After the sketch is finished and dry, place it face up in a printing frame and cover with photographic film, face down. This, of course, will have to be done in a darkened room. Now, expose to an artificial light. The correct time for a seventy-five watt bulb placed about ten feet from the frame, is approximately one-half second. Just about the time it takes to turn the light on and off as quickly as possible. The length of the exposure is not at all critical and a good negative may be secured even though it be somewhat longer or shorter.

"After the exposure, develop the film in the usual manner. If you have not the facilities for developing it yourself, wrap it in a light tight package and take it to the local photographer. Your cards may be printed from the negative thus secured. The expense will not be very great.

1 piece of tracing cloth 8" by 10"	.10
1 (+?) 5" by 7" cut film	.12
Developing materials	.10
1 gross double weight printing paper	1.50
Developing materials	.25
Total	$2.07

"It is suggested that if you have had no previous experience with this type of work, that a half-dozen or a dozen 5" by 7" cut films that are used in a Graflex camera be obtained. They are heavier and easier to handle than the ordinary roll film although the latter is somewhat less expensive. You will probably need more than one shot to get the negative you want."

On the matter of making cards bearing a photo of the station, these suggestions of Mr. J. M. Fox, nc3DG will be of considerable help.

"If you have a plate camera of post-card size, the job is a lead-pipe cinch. A sheet of drawing paper cut to suitable proportions is painted with whatever lettering you may fancy and hung up on the wall. The camera is loaded with a plate or cut film and masked with a piece of black paper at one end to allow a second exposure to make a picture of the transmitter, tower or what have you? It is essential, of course, to mask the focusing glass to the same size of the plate so that the image can be located correctly before making the exposure.

"When the exposure is made, the plate holder is taken into the dark room and the mask removed and replaced by another at the other side of the plate. This second mask must be equal in size to the part already exposed.

"If a post-card size camera is not available, the job can be done with a 3¼" by 4¼" size but it is not quite so simple. Cut

film must be used, two pieces being trimmed to suitable sizes after development and joined together by passe partout strip stuck along the edges.

"In photographing a set with shiny panels, it is best to use a large electric lamp for illumination as it can be placed in a position which does not show reflections and if the exposure is not right the first time, a second exposure can be made without any guess work due to changed lighting conditions.

"If one has the patience, probably the best way to get a real contrast for black lettering would be to mount black cut-out letters on a white sheet and illuminate from behind, thus making a silhouette."

This type of card showing a view of the station is interesting to the other fellow who, after hearing your signal, would probably like to see what equipment you are using. It is much more desirable than the very common stereotyped phrasing concerning power, circuit arrangement and antenna dimensions which adorns most cards. We have heard those remarks so often that they hardly register as anything at all interesting or important but are viewed mostly as so much background to the report on our own signals. They are like last year's popular dance number, well worn out!

Another type of card carries in addition to the report, a picture, sketch or design of some sort to break the "all print" appearance of the card. One version of this is shown in an illustration. That portion of it devoted to the sketch can be used for many purposes. It can show a snap of the station, the mast, some neighboring landmark or anything else that may be fitting.

Of the many humorous cards that one sees, some have a perfectly good reason for existence although a large number are only mediocre. The average chap, unless he really knows how to draw, had better leave the make-up of this type of card to someone who knows how to do it.

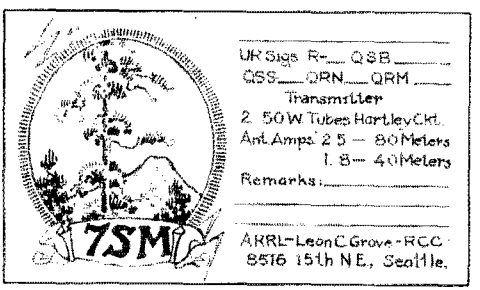
If yours is a traffic handling station, you may use a map of the surrounding state or, if in a big city, of the surrounding sections showing the exact location of your station. This may be of help to the stations with which you keep schedules. If you are fond of DX message handling you can expand the idea somewhat and show the location of your station in respect to the rest of the world.

There can always be some artistic design worked into a card. The amount of design may vary considerably from beginning just a border or to the point where it takes up most of the room. Both extremes are interesting if well done. If you are not sure of your artistic ability it would probably be better to lean more toward the simplest of designs.

Just what constitutes the necessities in a report, is opened to question. To start with, there should appear, the call letters of the station to which the card is sent and the date and time on which communication was established. It would be advisable to abbreviate the name of the month which can be followed by the day and year rather than writing the whole as a series of numerals. For instance, 8/1/27 will mean August first of 1927 to an inhabitant of these United States whereas our Australian friends would call that January eighth, 1927. Of course, we understand this when the card is received but we may not be so sure of it a year later. Better be safe.

There seems little doubt but that the two most important reports are on the audibility and character of the note. Other reports are rarely given during the contact and mention of such things as QRM, QRN, QSS, etcetera may well be relegated to that line devoted to "remarks". Incidently, why does that line have to be labelled? One will read any written matter that appears on the card and the space taken up by the "label" is valuable.

The most important reason why a report on the wave is not given is because the average receiver is not calibrated and it is a nuisance to have to drag out the wavemeter for each signal. After all, if the station is *within* the band, it is not so important to give his exact wavelength. If, however, he is *outside* the band, this should be pointed out to him. It is not very difficult to remember or mark on the dial, the limits of the band.



ANOTHER IDEA
This card is distinctive and has a touch of scenery to brighten up one's mail.

Needless and lengthy descriptions of your antenna system are not of prime interest to the other chap. Anyway, it will most likely be changed in a short time to try something different. Why not omit such details along with the type of receiver, audio amplifier, transmitting tube, rectifier, filter, antenna current, ad infinitum. If you must have a lot of printing these things may be included but its dollars to dough-

nuts, a snap of the "junk" would be more appreciated.

How often do you send a card to a station you only hear? That's a sport that seems to have gone out of style but which, nevertheless, has left its mark on the card. Why not have the card read that the station has been worked and save a stroke of the pen in scratching out the "heard" portion. The same thing applies to the c.w. and phone designations. A mighty large percentage of the stations on the air are telegraphing ones and they usually confine their activities to the working of other telegraphying stations. Leave off the phone reference and save another stroke of the pen. Of course, if you are operating a phone station, you will probably confine your efforts to working other phone stations. Under these conditions, it would be advisable to hang on to it.

The foregoing is but a number of suggestions and there are many other ideas that may be carried out. The use of a flag to indicate the country instead of the assigned intermediate helps make the card more interesting. The A.R.R.L. diamond is not to be overlooked, either.

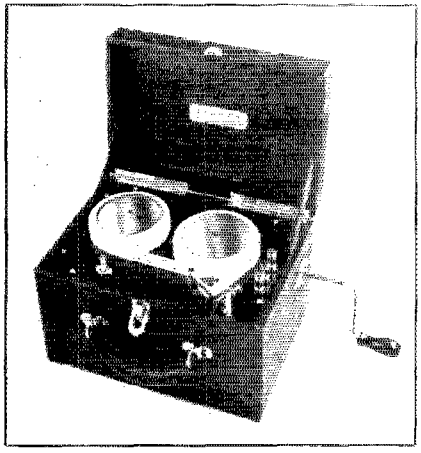
It might be a good idea, before spending your money for cards, to see your local Chamber of Commerce. You may be able to convince them that these cards offer an excellent opportunity of spreading the wonders of your city all over the country and the world. Quite a few of them have been convinced of this already. Such cards may show views of the city, its slogan, its manufacturing, agricultural or other possibilities, the official seal or many other interesting points about it. Its good advertising for the town and cheap cards for you.

Strays

When putting the plate milliammeter in a shunt feed circuit, be sure it is inserted between the radio frequency choke and the plate supply and not between the choke and the plate. If it's put next to the plate, it will be subject to the radio frequency currents generated in the tube and will probably be damaged or even completely burned open. This suggestion is for those who want it in the positive plate voltage lead. Usually when a simple oscillator arrangement (to differentiate from oscillator-amplifier circuits) is used, the meter may be put in the negative high voltage lead and will be nearer to ground potential. This is an advantage particularly if one happens to touch it when the juice is on.

An Automatic Sender

A MACHINE for automatic code transmission, which apparently overcomes most of the shortcomings of other devices for the purpose, has been put out by the Teleplex Company of New York City. Its two principal virtues are its use of records which are too long to memorize and its ability to transmit at varying speeds without distortion of characters. The records are in the form of perforated tapes which are cut on a machine which is controlled by hand sending. They are cut at various speeds and, while they may be run at any speed desired, they are beautifully like the sending of a good operator when run fairly close to the speed at which they were cut The result is that at all speeds the spacing and grouping are correct. The tape is used first in one direction and then reversed—two rows of perforations appearing on each tape. There are about 225 words on the tape in each direction making a total of 450 words per roll. Several rolls, cut at various speeds, are supplied with the machine and additional rolls may be had at any speed you wish. The fact that the tapes are so long gives the machine quite a varied repertoire; an advantage apparent to those who have used machines where the records are soon learned by heart.



THE PORTABLE TELEPLEX

The Teleplex is supplied in a leatherette-covered case. It uses a regular phonograph motor for power and contains the necessary batteries for operation of the buzzer.

We wish there had been some such device available when we were learning the code!

Full-Wave Self-Rectification and Crystal Control

A Description of 9UZ-NRRL

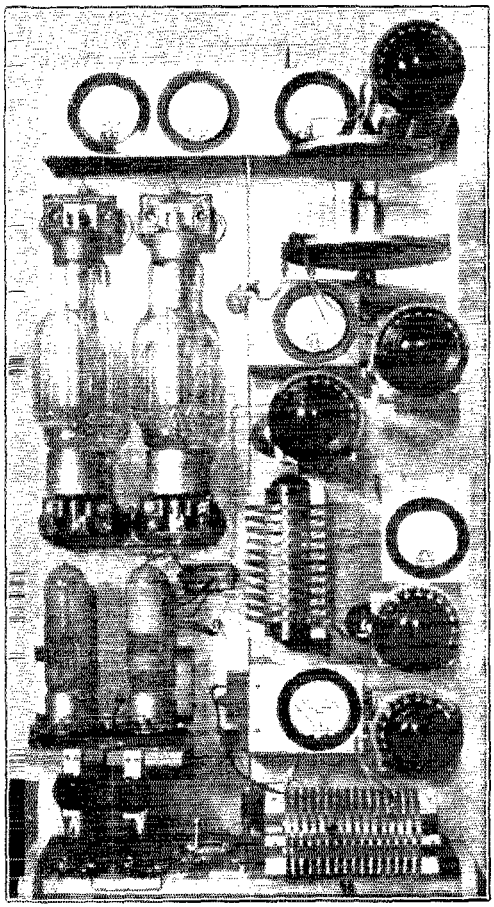
By F. H. Schnell*

WHILE on the NRRL cruise I learned a great deal about signals as most of the operating was done under conditions that tended to submerge all but the best of them. It might, therefore, be expected that I had some well-formed ideas as to just what sort of a transmitter I should like to have when I arrived back in Hartford.

This was the case; but before I was ready to go ahead with the construction of an outfit, I accepted a position with the Burgess Laboratories at Madison, Wisconsin, and consequently planned to build it after getting settled there.

In my mind I had pictures of this transmitter, but when I saw the design of a new transmitter at 9EK-9XH, which Hoffman had just completed, I got an assembly idea. A look at the photo shows the front of the panel and the full-view method of mounting the instruments. It is certainly a big advantage to be able to get at any part of the set without tearing the rest of it to pieces.

While I should like to have a nice d.c. note, a generator is an item of considerable expense and so it was necessary to fall back upon some method of full-wave rectification as the use of half-wave or "raw a.c." was out of the question. After thinking over the various types of rectifiers that are available and reviewing their many faults, I decided to use none of these but instead to employ full-wave self-rectification. Yes, it requires additional tubes, but think of the simplicity. No thingamabob to tip the mercury arc to get it started; no messy chemical jars to clean, and no synchronous contact bother, not to mention the filter difficulties that come after these other things. Close the switch, press the key, and away she goes on all six (tubes).



THE TRANSMITTER AT 9UZ-NRRL

Photos, including cover Photo, by A. M. Vinje, Madison, Wisc.

There were two other things open for decision. What about the note and what about keeping the frequency steady? Is it going to be one of the ether-hogs that eats out a hole in our limited band of frequencies and at the same time moves that hole up and down the scale? Full-wave rectification cannot be smoothed out readily and unless something else is done the note and frequency may be as bad as some of the others and probably worse because of the power. What is the answer?

Crystal control; that's what it is!

So we start off with these ideas: a transmitter of construction that entails simplicity and is easily accessible; has plenty of power, decent plate supply, a steady frequency and a good readable note. We must lay it out on paper first, being careful to design it so all parts will fit in their proper places when the time comes for assembly. The "bugs," or as many as possible of them, should be taken

*Lieut.-Commander, U.S.N.R.; 9UZ-NRRL, 1915 Sherman Ave., Madison, Wisc.

out during the paper work.

The panel is 20 inches wide and 36 inches high. It is made of hard maple ⅝ of an inch thick. It is assembled with brass

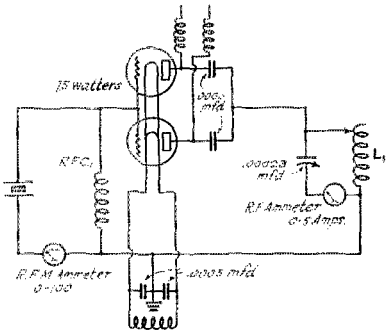


FIG. 1

screws, meaning that when working hard maple, each screw hole has to be drilled first and each screw soaped. The panel is supported by two horizontal pieces, one on either side. Each piece is 22 inches long.

Using full-wave rectification, we must have two tubes in each circuit; 2 CX-310 or UX-210, 2 203-A and 2 204-A tubes. The 7.5 watters will be oscillators in the crystal circuit; the 50-watters will be the frequency doublers and the 250-watters will be the power amplifiers. The crystal-circuit and arrangement is important. (Figure 1.) Since this is so important, it might be well to mention here some characteristics of this circuit.

No instrument by which the plate voltage on the crystal tubes may be determined, is provided, because this voltage is of little importance be comparison with the *current* flowing in the crystal circuit. It is far more important, if the crystal is to be operated

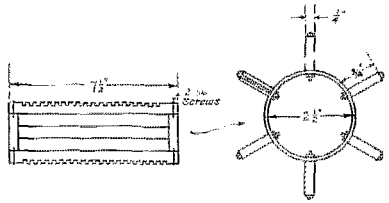
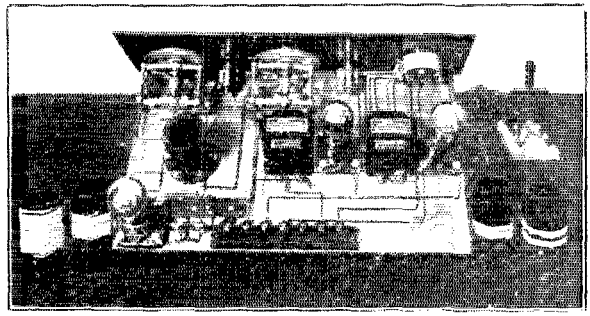


FIG. 2 INDUCTANCE MOUNTING

safely, to know the current in the crystal circuit as that is an excellent indication of the load on the crystal itself. A radio-frequency-milliammeter is connected between the crystal and ground to measure this current. This is the governor. As long as the current stays at 100 m.a. (not above that) when using a 7.5-watt tube, there is little danger of destroying the crystal unless something else goes wrong. Then, by using a voltage on the plate that is of the order of 400 to 500, fairly decent output can be obtained. It may be necessary to use a "C" bias with some crystals when using this voltage. In this particular case, the plate voltage is 350 to 400 with a plate current of 120 m.a.

The oscillator plate inductance (L1) is 4 inches in diameter, wound with 16 turns of 1/16" x ¼" copper strip. The supporting strips are hard maple ¼"x¾"x7½". These strips are secured to the bakelite tubing with 2-56 brass machine screws. The bakelite tube is 2½" in diameter and ¾" wide. The assembly is shown in Figure 2. Turns are spaced ⅛" with grooves cut into the maple strips to maintain the spacing. The length of the winding is 6 inches.

The inductance in the plate circuit of the 50-watt doublers is wound on the same size form—11 turns spaced ¼". Spiral or pan-



THE RECEIVER AT 9UZ-NRRL

cake inductances are used in the 250-watt amplifier circuit and the antenna coupling. The first has an inside diameter of 4 inches, 11 turns, spaced ¼". Antenna inductance has 9 turns, otherwise the same dimensions.

The crystal holder and mounting are as follows: A strip of hard rubber 3/16"x1"x 3½" is used to support two General Radio type 274P plugs, spaced 1¾". The crystal holder consists of a round brass plate ⅛"x2⅛" with ½" cut away and replaced by rubber, which acts as support for one terminal. Mounted on top of this brass plate is a round piece of hard rubber 3/16"x2⅛", in the center of which is cut a hole 1 inch square to hold the crystal in place. The top plate, or other terminal of the crystal holder is 63/64" square and 1/16" thick. A small spring made of No.

26 copper wire is soldered to the top plate and the other end is soldered to the terminal support. General Radio type 274J jacks are used for terminals, spaced to fit the plugs[1]. See Figure 3.

The crystal-holder plates should be plane, parallel surfaces. They can be ground with valve grinding compound and finished off on a new Pike No. 60 oilstone.

The rest of the parts are given in the list accompanying the complete circuit diagram. Most of them are standard on the amateur market and you will find them advertised among the pages of *QST*.

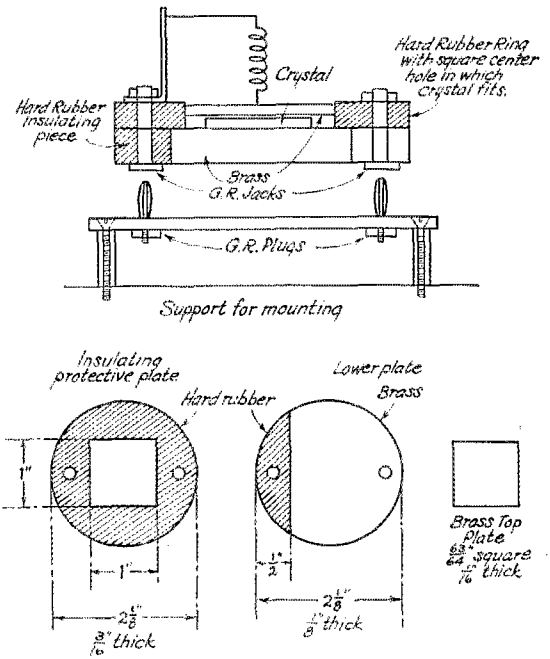


FIG. 3

The present crystal oscillates at a frequency of 3,976 Kc., (75.4 meters). When operating at the natural period of the crystal, the 50-watt doubler circuit is left out entirely by merely connecting the grid feed of the 250-watt amplifiers to the plate inductance of the crystal oscillator plate circuit.

The amplifiers are neutralized, a most necessary thing, otherwise there would be regeneration or "degeneration" liable to cause trouble in the crystal circuit, especially if the amplifiers break into oscillation. Neutralizing is very simple when using the following method. A loop about 4 inches in diameter, No. 14 wire, is connected around a 3-volt flashlight bulb or a thermo-couple galvanometer. If the galvanometer is used, a condenser must be connected in series with the loop. A lamp is best as a starter—not so expensive per burn-out. However, with care, there will be no burn-outs. The crystal circuit is tuned up for maximum efficiency and the filaments of the 250-watt tubes are on, but their plate leads from the transformer are disconnected. The amplifier is tuned to resonance—indicated by maximum brilliancy of the flashlight. Then the neutralizing condenser (C2) is adjusted (the tap off the inductance being found by experiment) until the lamp shows a dead spot—it goes out completely, but will light on either side of this condenser setting. For neutralizing 250-watt tubes (capacity about .000022 μfd.) the condenser has a maximum capacity of .000050 μfd.

Then the plate leads are connected and while the key is left open, a final adjustment is made. The capacity of the transformer must be accounted for, and calls for a slight change. When this final adjustment is made, the key is closed and the plate voltage increased until the desired input is obtained. If the set is not properly neutralized it will show up in the crystal plate circuit, the current increasing with regeneration and decreasing with "degeneration"—"degeneration" for lack of a better term. When making first adjustments, the lamp is held about 2 inches from the amplifier inductance, but close enough so indication is pronounced. Very fine adjustments may be made with the thermo-couple galvanometer.

It is unnecessary to neutralize the 50-watt doubler circuit but when it is used, the amplifier is neutralized the same way as when working at the crystal frequency. In passing, I wonder just what energy is dissipated in the filament of the flashlight bulb the very instant it goes west, which once happened when I closed the key after securing neutralization and neglecting to remove the loop and lamp.

The assembly can be seen in the photographs, details of which are of little importance. The only back panel mountings are a couple of chokes and plate condensers for the 250 watters. Transformers and batteries are on the table back of the panel. The rest of the table is used for a couple of keys, control switch and receiver. The receiver is the same as that described in *QST*, June, 1925.

The Zepp-type antenna is a single No. 12 enameled copper wire 56 feet long, horizontal, 55 feet above ground. A 12-volt, 3 c.p.

1. An excellent crystal holder may be obtained from the General Radio Co. if you are not particularly interested in building your own.

lamp shunts 12 inches of the antenna at the center and is used as a maximum current indicator. Feeders are 36 feet long spaced 14 inches, also No. 12 e.c. wire. Spacers are hard maple ¾" square.

The rear mast is made up of two pieces; one strip is 3"x3"x28' and the top section is 2"x2"x28' overlapped and bolted together, making a mast 55 feet high. Two sets of 4 guys each support it. Insulators break up the guy wires every 20 feet. The mast on the house is 20 feet long, being 2"x2" with one set of 4 guys.

Since early December, of last year, daily schedules (except Wednesdays) have been kept with Warner, 1BHW, with only an occasional miss. 9UZ operates usually on 37.7 meters (7,952 ks.) during the summer months and the higher waves during the winter months. In either case "KB" reports signals consistently R6, frequency steady as a rock and good readable QSB. Although I value the splendid (perhaps too enthusiastic) reports of hundreds of other amateurs, I must give more credence to the reports of "KB" since he has listened to these signals nearly every day for several months.

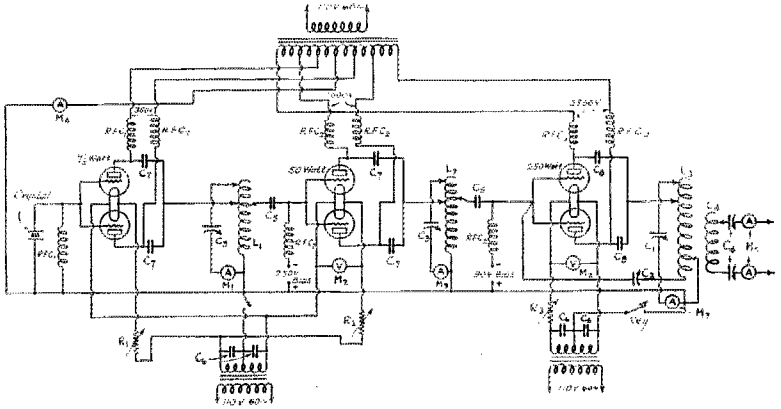


FIGURE 4

L1, L2, L3, L4 are described in the article.
C1 0.00045 mfd. National Company transmitting condenser, 3,000 v.
C2 0.000050 mfd. Specially double-spaced by National Company, 3,000 v.
C3 0.00023 mfd. National Company, 3,000 v.
C4 0.00045 mfd. National Company, 3,000 v.
C5 0.002 mfd. 3,000 v. Dubilier type 580.
C6 0.0005 mfd. 2,000 v. Dubilier type 577A.
C7 0.0005 mfd. 3,000 v. Dubilier type 577A.
C8 0.000025 mfd. 10,000 v. Wireless Specialty Model UC-1803.
R.F.C. 1, 135 turns No. 26 D.C.C on 2" bakelite tubing
R.F.C. 2, 135 turns No. 26 D.C.C. on 1" bakelite tubing used in doubler and amplifier circuits when operating on 37.7 meters (7,952 ks.)
M1 0-5 amperes (R.F.) Jewell pattern No. 64, flush mounting.
M2 0-15 volts (A.C.) Jewell pattern No. 74, flush mounting.
M3 0-10 amperes, otherwise same as M1.
M4 0-1000 milliamperes.
M5 0-1.5 amperes, otherwise same as M1.
R1 1 ohm—2 Frost 2 ohm rheostats in parallel.
R2 Radiocorp cost $5.00—you know the one.
R3 Special James Biddle, 0.48 ohm.
Thordarson 300-watt 12 volt center tap filament transformers.
Thordarson special plate transformer, supplying 350, 1,000 and 2,500 volts on either side of the tap.

The November Tests

AS WAS announced in the September issue, we are running a second International 5-Meter Test this month. The schedule is given below for those who have not seen the September issue.

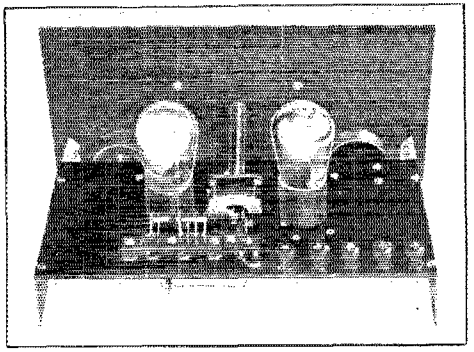
In addition to our own stations we have a chance of hearing some of the "2X—" stations of the General Electric Co. and the Radio Corporation which have begun to make tests in the vicinity of the 5-meter band since the thing was stirred up by the Experimenters' Section. One transmitter is rumored to be hung on one of WGY's tall masts so as to have a chance of giving the waves a "clear start" with a fair chance of arriving without encountering too many obstructions. It is at least hoped to reach those points that are high enough up to be reached by "straight line transmission". One might suppose for instance that there would be a good chance of hitting the observation gallery of the Woolworth building, though the chances of receiving signals may not be very encouraging if the present writer's experience with the New York City 5-meter noise level is of any value.

Regardless of the origin of the signals the reports on the 5-meter receptions should be made to Experimenters' Section, A. R. R. L., 1711 Park Street, Hartford, Conn. The test is open to all, regardless of enrollment in the Experimenters' Section.

SCHEDULE A
Starting Time and Day

DIVISION (each sends) (10 ½ hour)	LOCAL CLOCK TIME AS GIVEN BY NEW YORK WORLD ALMANAC *See note* ✣		LONDON TIME	NEW YORK TIME (Eastern Standard)
1 NEW ZEALAND AUSTRALIA OCEANIA, including HAWAII	MELBOURNE	8:00 A.M. Sunday	10:00 P.M. Saturday	5:00 P.M. Saturday
	WELLINGTON	9:30 A.M. "		
	HONOLULU	11:30 A.M. "		
2 ASIA AFRICA ASIA MINOR	ADEN	11:30 A.M. Sunday	10:30 P.M. Saturday	5:30 P.M. Saturday
	BOMBAY	4:00 A.M. "		
	HONKONG	6:30 A.M. "		
	YOKAHAMA	7:30 A.M. "		
3 EUROPE	PARIS	11:00 P.M. Saturday	11:00 P.M. Saturday	6:00 P.M. Saturday
	AMSTERDAM	11:20 P.M. "		
	BERLIN, ROME, STOCKHOLM, COPENHAGEN, — Midnight between Saturday and Sunday.			
	LENINGRAD AND ATHENS	1:00 A.M. Sunday		
4 ALASKA MEXICO SOUTH AMERICA CENTRAL AMERICA NORTH AMERICA	SAN FRANCISCO, U.S.A.	3:20 P.M. Saturday	11:30 P.M. Saturday	6:30 P.M. Saturday
	DENVER	4:30 P.M. "		
	MEXICO	4:54 P.M. "		
	CHICAGO	5:30 P.M. "		
	SANTIAGO DE CHILE	6:47 P.M. "		
	RIO DE JENEIRO	8:30 P.M. "		

✣ *If in any doubt figure from New York or London*
Schedule B is the same except just 12 hours later



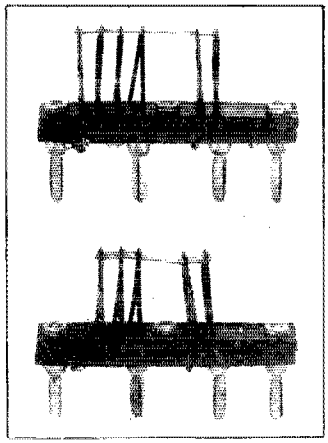
REAR VIEW OF THE PARMATER 5-METER RECEIVER
From left to right we have the filament rheostat, the tuning system and the regeneration control.

STATIONS TRANSMITTING

As far as we know now it seems probable that there will be stations transmitting in all districts of the U. S. A., several of the Canadian districts, Australia, New Zealand, Japan and most of the countries of Europe and South America. As in the April tests it is expected that a number of other stations will transmit without first notifying us. They should have a better chance this time as the 20-meter band seems to have returned to normal and semi-local 5-meter tests seem to suggest that this band is also back to normal. The chances are further improved by the fact that those reporting transmitters ready all say that the set is both better and more powerful than before.

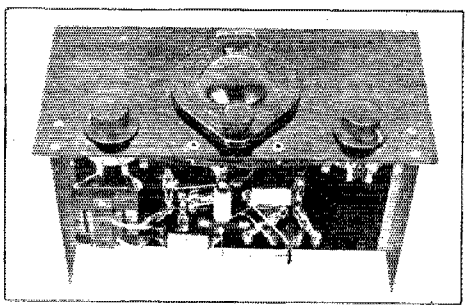
THE SCHEDULE

There will be transmissions on two weekends, each transmission being divided into two tests 12 hours apart so as to make the



THE COILS OF THE PARMATER RECEIVER
Each mount has a secondary and a tickler, the same primary being used. The two sets of coils cover the 5 meter band and a trifle more.

daylight chances more equal. To give a better chance for signals to fade, larger groups will send for longer periods than in June. It is suggested that where possible



FRONT VIEW OF THE PARMATER 5-METER RECEIVER, INVERTED TO SHOW CHOKES
The regeneration control is at the right and operates by putting series resistance in the positive plate power lead of the detector.

the transmitter be run by one man while another takes the receiver out and listens thru the *entire* test.

The whole test, accordingly is as follows.

Weekend of November 12-13, send schedule A and 12 hours later same schedule which is then known as schedule B.

Weekend of November 19-20, same program, that is schedule A as shown in table and repeat same schedule 12 hours later.

The following conditions remain almost unchanged from the former tests.

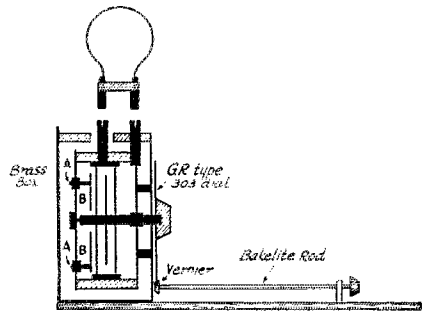
1 Prizes will be given for the best DX in the way of reception, provided that the reception is fully confirmed by some copy of what was said and all other details that can possibly be thought of.

2 For the best two-way contact arising from these tests there will be a separate award, providing the distance is over 600 miles. "Best" here means both distance and goodness of communication.

3 If there is any doubt on the awards a committee will be chosen to decide.

4 Be sure to operate your transmitter between 4.9 and 5.1 meters, using the best standards you have.

5 Call CQ *once*, put your intermediate in *once*, then sign *three* times and repeat. If any code letters are added think them over to be sure they will not be confusing.



A HOME-MADE WAVEMETER BY AUSTIN LIDBURY OF 8BAG
The condenser is a Cardwell 11-plate reduced to 1 rotary and 2 stationary plates with triple spacing. The extra plate B is supported adjustably by the screws A so that the condenser has a high but adjustable minimum, which prevents the usual difficulty of an excessive range. The shaded parts of the drawing represent the hard rubber insulation. The tuning range of the 4" coil of No. 8 wire is from 58 to 64 megacycles with a rotation of 20 to 90 of the condenser. Two other coils are used for ranges above and below the band.

6 When you copy anything notify A.R.R.L. headquarters at once by radio and wire, confirming fully and in detail by mail.

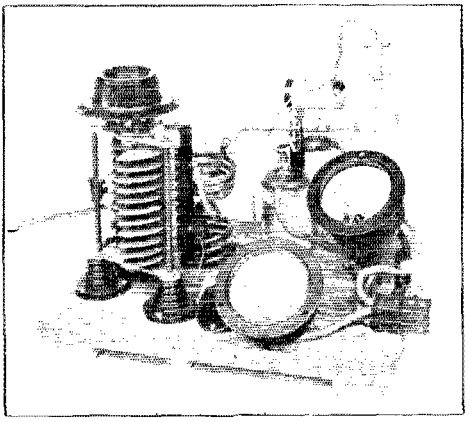
—*R. S. K.*

TRANSMITTER SUGGESTIONS

For those who still have not put a transmitter together it is suggested that first several hours be spent going thru the last 12 or 15 issues of *QST*. Next after this it will be well to keep in mind that if a transmitter is unsteady with d.c. supply the thing will be *very ineffective* with a.c. supply because the wave slides back and forth with each half cycle and hence is "all over

the tuner". This means that at any one tuning the signal is effective only at the very brief moment when it is whizzing across the tune—and most of it is utterly wasted. An ideal combination would be a battery or generated-operated master oscillator not keyed and feeding a *small part* of its power to an amplifier tube of the same size which could be keyed and which might have either d.c. or a.c. plate supply. Such a transmitter will be tried at both 2EB and 1OA.

Listening to the transmitter with one's own receiver is valuable but little is learned unless the receiver is so made that very gradual tuning is possible. If the thing covers the whole 5-meter band and does not have an exceedingly high ratio vernier the chances are that even a terribly broad signal will seem very sharp. Try it first with a small d.c. oscillator, battery driven. If it



TRANSMITTER MADE FOR USE AT 1AHG, SEYMOUR, CONN., OPERATED BY C. J. WITYAK

Though obviously built from what was at hand this set is sound electrically and mechanically and works well after much rough handling. It is semi-portable, not carrying a power supply but depending on picking this up at test points. The plug system at the right front provides for a 3-wire cable from the filament and plate supply. Since the circuit is the usual series-tuned Ultraudion the tuning condenser is insulated from the base. To avoid a bulky resistor the water-resistance is used as a gridleak. A small hole in the screw top can be corked when the set is not in use.

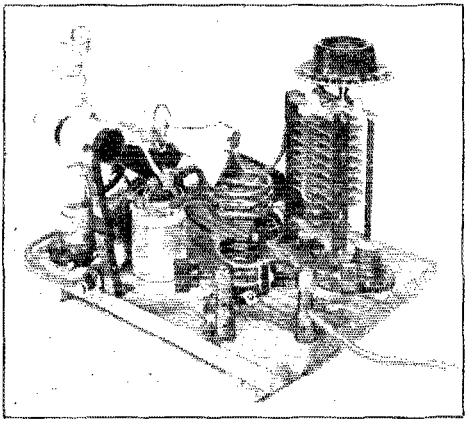
is not possible to slide the note up and down gradually (just as with a 40-meter signal) then the receiver is no good for estimating the operation of the transmitter—and not very good for reception either.

Naturally it is imperative that the tube run cool. If the plate glows the signal will almost certainly be unsteady and considerably less effective than if less power were used. Try this also with your receiver a half mile away.

There should be an automatic key by all means, so that you can leave someone to run the set and take the receiver out of your own interference zone, there to listen for other signals.

RECEIVER SUGGESTIONS

The receiver may be, as has been said before, a detector-audio combination, a super-



REAR VIEW OF THE 1AHG SET SHOWING THE ANTENNA FEED CONDENSER WHICH CONSISTS OF TWO DISCS CARRIED BY THREADED RODS

The heavy lead at the right front goes to the antenna.

regenerator or a superheterodyne, all of which have been described in past issues.

The Parmater detector-one-step receiver is now regularly available and photos of it appear herewith. The receiver sent us for test seems to operate very nicely and carries with it a calibration sheet showing two curves, one for each coil. These curves check well with the wavemeter at 1711 Park Street and also with the one at 1OA—two independent tests having been made. This indicates that the antenna does not throw things out too badly.

The Parmater receiver uses a curious form of series-tuned circuit which seems to be effective. There seems to be no reason why this is not a good receiver of its type. Where the noise-level becomes very annoying it may of course be necessary to resort to the superheterodyne which seems to offer no particular advantages except the one of supressing the noise somewhat as has been explained in past articles.

WAVEMETERS

The little General Radio wavemeter which originally "happened" because of our insistence that something of the sort was needed has become quite popular. A convenient way to mount it is on one end of a sort of wooden paddle, the dial being

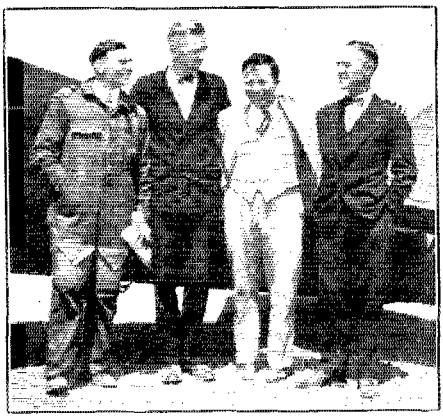
(Continued on Page 78)

Amateur Radio and the Pacific Flights

By J. Walter Frates* and A. L. Budlong†

IF ever a book is published chronicling the achievements of the amateur, no more thrilling chapter will be found than that describing the participation of A.R.R.L. members in the communication arrangements for the recent Pacific flights, beginning with the Honolulu-California schedules in connection with the Dole race and finishing with the installation of an amateur set on Captain Erwin's *Dallas Spirit* and the reception of its signals right up to the time of its tragic end.

It was a double triumph: first, for the efforts of organized amateur radio, which



Left to Right: A. H. Eichwaldt, Navigator and radio operator; J. H. MacLafferty, Jr., 6RJ; Capt. W. P. Erwin, pilot; T. F. Babcock, 6APA.

Photo courtesy the Post-Enquirer, Oakland, Calif.

furnished faster service to the world than even the commercial companies, and second, for the tremendous effectiveness of short waves over long distances when used from airplanes.

Probably the first schedules in connection with California-Hawaii flights were arranged between station 6CZR at Oakland, Cal., and 6AJL, at Lihue, Island of Kauai. Through this schedule went Hawaii's first news of the arrival of Chamberlin and Levine, and Byrd's forced landing on the French coast. News dispatches and personal messages in connection with the attempted flight of Richard Grace, the "broken-necked flyer", were also passed through the 6CZR-6AJL tie-up, but no dope on the Maitland-Hegenberger or Smith-Bronte hops could be handled, due to the untimely intervention of daylight.

By this time, however, the preparations for the Dole race were well under way, and simultaneously the amateur group became extremely active. Ralph Heintz of Heintz and Kaufman, installed one of his beautiful jobs on the *Pabco Pacific Flyer*, piloted by Major Livingston Irving. The set was tuned to 33.1 meters, and it was expected that it would be operated continuously on the flight, thus giving the world an hour-by-hour record of the race. Heintz also secured Fred Roebuck, 6AAK-exKFUH, and one of the best operators on the Coast, to man 6XBB-6GK, the Heintz-Kaufman station, for the purpose of keeping a continuous watch on the plane's signals. Roebuck asked a group of San Francisco Bay amateurs to assist him in this work, and requests also went out from 6CZR to 6AJL and 6CLJ, both at Honolulu, to handle the Hawaii end.

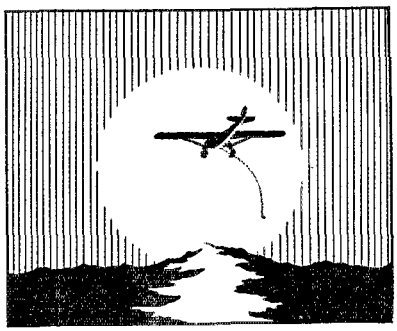
In the meantime, another group of amateurs, in coöperation with the Oakland *Post-Enquirer*, put up a station at the Oakland Airport, Ronald Martin, 6AYC, vice-president of the Oakland Radio Club, loaned his T.P.-T.G. transmitter, and the station, operating under the call of 6NO, was soon in communication with 6BUC at Honolulu, which in turn was linked with the Naval radio stations by phone.

With a number of Honolulu-California schedules working, and with a short-wave station on one of the racers, amateur radio was "sitting pretty" and ready to follow the race from start to finish. At this point, however, a severe disappointment came in the crash of Major Irving's ship and short-wave contact with the racers themselves was eliminated. Nevertheless, 6NO went into action with a bang, and gave one of the prettiest exhibitions of amateur capabilities seen on the Pacific Coast in years. A watch was maintained on 600 meters for the signals from KGGI, Goebel's *Woolaroc*, and for naval and marine reports on the flyers' progress. On several occasions new developments in the race were announced to the press and wire services minutes ahead of the commercial companies' announcements. A continuous twenty-four hour watch was maintained at the station by 6AYC, 6NO, 6RJ, 6APA, 6PR and Wallace Brainerd. Equipment was loaned by 6ARK, 6CCU and Leslie Joost. Traffic for the flyers was routed to Honolulu through 6BUC, where 6NL and 6DMM assisted, and was delivered by the operators of this station to Goebel and Jensen im-

*6CZR, 5368 James Ave., Oakland, Calif.
†Assist. to the Sec'y, A.R.R.L.

mediately upon their arrival. Reporters were on duty at the station constantly to get the news as it came through.

With the disappearance of the *Miss Doran* and the *Golden Eagle*, the station continued its work, the operators giving up time, sleep and food to carry on the work. When the unconfirmed report of the finding of the *Miss Doran* eighty-five miles from Hawaii came over the wire services, it was checked with Honolulu, and found to be false, both through 6NO-6BUC and 6CZR-6SH.



Captain Erwin's announcement that he would hop for Hawaii in an effort to locate the *Miss Doran* and the *Golden Eagle*, brought Ralph Heintz and Fred Roebuck into the flight again. These two, with the assistance of the gang at 6NO, persuaded Erwin that his best course was to install a short-wave transmitter, and the Heintz again installed the fifty-watt transmitter that had been on the *Pabco*, operating on 33.1 meters under the call of KGGA. The work on this installation was pushed through at great speed. Preliminary tests gave excellent signals and when the *Dallas Spirit* winged its way past the Golden Gate it was felt that it would be in contact with both ends of the course the entire duration of the flight. As the plane passed the coastline the gang at 6NO, and Fred Roebuck and Ralph Heintz at 6XBB, picked up the transmissions and prepared for the long watch. Prior to this, 6RJ had broadcast requests to all amateurs to stand by on KGGA's wave and all up and down the coast amateurs were tuned to the signals. 6DOK, 6CLJ, 6DCR, 6NT, 6NI and F. L. Dewley, district manager for the Federal Telegraph Co. at Los Angeles, followed the signals easily, Mr. Dewley furnishing the local press with bulletins. 6CKC kept watch also, and in addition maintained regular schedules with 7AAT and 6BAF with press announcements. 5ANC heard the signals, as did many other amateurs in the interior of the country, and 2UO, at New York City, copied the transmissions solid.

The story of the *Dallas Spirit* is now a thing of the past, but the gang that followed the signals up to the last SOS will never forget the drama and tragedy of that night. At no time were the signals of KGGA anything other than tremendously powerful. The strength even increased as the plane got further out over the Pacific. For hours the steady drone of the transmitter brought news of the progress of the plane, interspersed with the very human comments of Eichwaldt, the navigator and radio operator. For half an hour before the final crash, however, the note became unsteady, the frequency rising and falling at intervals, telling a tale of "bumpy" weather conditions and uneven speed. To those who could read the story of the varying note this caused considerable concern, which was only partially relieved by the jocular and unconcerned comments of Eichwaldt. Then, at 9 p.m., came the first SOS! It was almost immediately followed by a terse "Belay that", and the further announcement that the plane had been in a spin but had come out of it. Right on top of this news, however, came the second SOS and the announcement of the second spin, the rising and falling whine of the note telling its own story to those ashore. The second SOS was cut short by the crash, and although a continuous watch was kept from both the Honolulu and West Coast stations, no further signals came through.

Here we must pause a moment to pay tribute to the cold nerve and supreme courage of Eichwaldt, the operator. During the half hour preceding the crash, when the plane was bucking squalls one after the other, Eichwaldt continued with his unconcerned comments and jokes, although he could not have failed to realize the danger the plane was in. His first SOS, and the remarks immediately following it, were still in the same light vein, and showed no nervousness whatever. When the second spin came, and the plane started down to its end, Eichwaldt continued sending in the same even, unhurried manner that he had used during the flight. He stuck to his post to the end, sending calmly and evenly right up to the time the plane hit. With the note rising to a shrill shriek and falling almost to zero—denoting violent movements of the ship—the dots and dashes came through like clockwork until they were actually heard sputtering out as the antenna hit the water. To know that he was heading for his death, and then to stick by the key telling the world just what was happening right up to the last second required courage of the highest order. Eichwaldt preserved the highest traditions of the radio operating fraternity.

From the flight we get one big lesson, which is that short-wave transmitters are highly feasible and especially valuable for

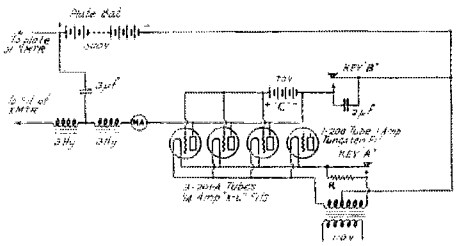
(Continued on Page 80)

More About Clickless Keying

By Blakely E. Cross*

AFTER reading the letter by M. W. Buening on page 70 of the September issue, I decided that it was the way out of my difficulties. Like most of the amateur world, 8ANX-8QU is surrounded by single circuit tuners, and while the storage battery plate supply of the transmitters caused no trouble to real receiving sets around here, it kicks up an unearthly rumpus in these "dumb-bell" tuners. No combination of chokes and condensers which has been tried at the transmitter has eliminated it, either.

The keying system was built up according to Buening's specifications, but when I tried to make two poor little 201-A's handle



IT WILL BE NOTICED THAT THERE ARE TWO KEYS

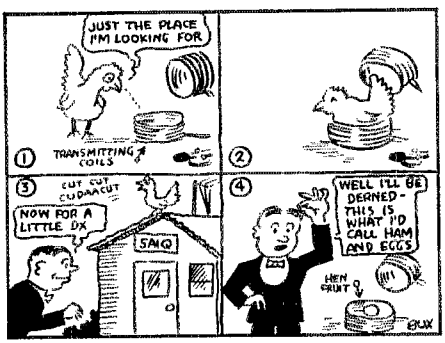
Key "A" operates the tube-keying system, but since this system fails when the 110-volt line fails, it is necessary to provide another keying method, as 8ANX-8QU strives to be an "emergency station." A storage battery on the relay filaments would take care of this difficulty. Emergency keying is done by key "B" which operates thru the same filter as key "A" and therefore retains some of the same advantages. This keying filter is not necessary with the tube-keying system, however. No switching is required.

seventy-two watts input, I ran into difficulties. The keying tubes would not light quickly enough to pick up the dots properly, and the dashes ended way up in the air. A resistance of sufficient value to keep the filaments warm, but just under the point where they began to pass current, caused the dots to pick up promptly, but the dashes still had tails.

There were plenty of sockets, so two more were drafted, and another 201-A pressed into service. An old 200 tube, with a one-ampere tungsten filament, was placed in the remaining socket, the grid and plate terminals being insulated before insertion. The heavy tungsten filament of the 200 soaked up the current when the key was raised, causing the 201-A relay tubes to go out immediately, thus eliminating the tails on the signals. A fixed resistance of the proper value should work just as well.

Still, the note of the transmitters were not the crystal-controlled notes 8ANX-8QU has been noted for, (if we may believe reports!), so it was evident that the relay tubes were overloaded. An increase in the grid bias on the keying tubes from 45 to about 70 volts cured this, causing the tubes to pass the full plate current immediately, instead of building up gradually. It is now possible to pass over 300 mils thru this system without any signs of heat in the plates of the 201-A's. Of course, any such overload shortens their life. In this connection, I have found that tubes with the filaments patrially de-activated work quite as well as good ones, and in addition, have less tendency to leave tails on the signals. The grid bias must be higher on old tubes, however. (A single 22½-volt block is sufficient for tubes which test 1.0 or better.)

The diagram shows how it is done. I welcome comments, for surely any method of keying which will do away with the clicks from a d.c. transmitter plate supply is badly needed, and others may discover better methods of using this system. It works well here, for the neighbors don't know when I'm home now. Hi! Buening asks us not to laugh at him, and I, for one won't. He discovered something!



*8ANX-8QU, 28 Elm street, Gloversville, N. Y.

Receiving Antenna Tuning Systems

By G. H. Browning*

A rather neglected problem is here attacked from the standpoint of the strength of the received signals. The author suggests further work for those experimentally inclined and readers may find it of interest to investigate further with a view to discovering other effects; especially that of the changes in selectivity when going from one system to another.

—Technical Editor.

AS FAR as the writer has been able to determine, antenna tuning systems have been neglected where exact measurements were concerned. Those designing sets have followed one of the conventional methods, as a general rule, with very little experimenting as to the relative merits of the different systems.

Because of difficulties encountered in taking measurements, the data given in the following are far from complete but some idea of the relative merits of the three common types of antenna tuning systems may be obtained from the curves given.

The voltage step-up of an antenna tuning device is a very appreciable quantity ranging from something less than 100 to as much as 500 in the case of a low resistance antenna and an efficient tuning system. So important is this voltage amplification compared to the gain derived from a tuned radio frequency transformer, which gain is seldom over 15, that efforts to use choke coils in the antenna and an additional stage of radio frequency amplification to secure single control have frequently resulted in an appreciable loss in signal strength.

Three common types of systems, shown in Fig. 1, were chosen as most representative of present day practice. The old single circuit with a condenser and a tapped coil in series with the antenna-ground system was not included for the reason that two adjustments are needed to tune it efficiently. Neither were loosely coupled systems included for the same reason.

It was thought at first that measurements could be made by means of a signal induced in the receiving antenna-ground system, using a shielded oscillator some distance away. The pick up as obtained in this manner was not satisfactory, however, due to the fact that a large percentage of the signal was *not* taken through the receiving antenna-ground system. The writer is almost certain that this method can be made to give satisfactory results by placing the oscillator a mile or so away instead of a few hundred yards. In the set of measurements taken, it was imperative that there be no delay. Daytime signals from four local broadcasting stations approximately six miles away were accordingly used, and the measurements are therefore shown for the broadcast wavelengths.

The method of measurement consisted of connecting a previously calibrated vacuum-tube voltmeter to points A and B in Fig. 1. All of the systems were fixed so that the operator could change from one to the other with the least possible delay. Of course, one could not be sure of the degree to which the signals from any given station were constant, even in the daytime, so that comparison between the systems for different broadcast signals had to be made. The

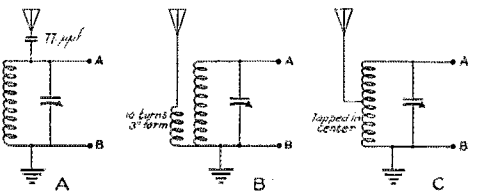


FIG. 1. THE ANTENNA TUNING SYSTEMS WHICH WERE COMPARED

A is a combination of conductive coupling with a series condenser which drops out of reckoning as the antenna is made smaller and thereby leaves a circuit equivalent to that of C with the antenna tap moved to the top of the coil.

B is close magnetic coupling.

C is close conductive-magnetic coupling.

modulation of the carrier in every case was such that the vacuum-tube voltmeter readings were not appreciably affected by changes from an unmodulated to a modulated signal at the broadcast station. This is probably the case with any station with high quality output. If the carrier is overmodulated, harmonic frequencies are introduced. Therefore, using this method an excellent comparison could be made, which seemed to be worth as much from the commercial standpoint as the exact voltage amplification of each system taken individually.

System No. 1 was chosen as the standard of comparison. Three different antennas (Fig. 2) were used, one 4 feet long, one approximately 40 feet long and a third 75 feet long. The forty-foot antenna M had a ratio of about one-to-one vertical to horizontal component, the 75-foot antenna L was about 75 percent vertical and the 4-foot antenna S was entirely vertical.

*President, Browning-Drake Corporation, 110 Brookline St., Cambridge, Mass.

Measurements were taken by reading the vacuum-tube voltmeter on systems A, B and C in as rapid succession as was possible. The readings of the voltmeter, thus obtained, were converted to actual voltage built up

FIG. 2. THE ANTENNAS USED IN THE COMPARISON.

Note that the short antenna S has a capacity small even as compared to the series condenser of circuit 1A and a length so short as not to load any of the circuits greatly.

across the oscillatory circuit and the ratio of the voltage on system B and system C compared with the voltage across the oscillatory circuit in Figure 1, system A. Thus if A gave a signal strength represented by .3 volts and B gave .15 volts, system B would, for plotting purposes, be represented as .5. This comparison was necessary in order to make a graph representing signal strength of the three systems inasmuch as the broadcast stations were far from being equal in signal strength at the location used.

Fig. 3 shows the result of this comparison. System A is considered as the standard of comparison. System B with the 40-foot antenna is designed as B-40, with the 75-foot antenna as B-75 etc. System C with the 40-foot antenna is designated as C-40, etc. The results are interesting because some general conclusions can be drawn.

System A shows up much better than any of the others at short wavelengths.[1] It was also found more efficient than any of the others when the short antenna was used. However, C gave more signal strength on the long wavelengths on both the 40-and 75-foot antennas. System B seems to be the least efficient of the three. In the case of the 40-foot antenna, the antenna-ground system together with the ten-turn primary seemed to have its natural period or a harmonic of the natural period in the broadcast range, for its response to 350-meter waves was considerably greater than that at other waves.

It is hoped that in the Fall when the exigencies of commercial work are out of the way, a more complete set of data can be

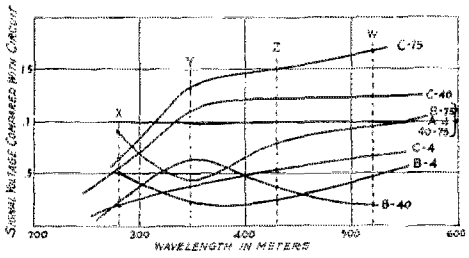


FIG. 3. RESPONSE CURVES FOR THE THREE CIRCUITS OF FIG. 1 WITH THE THREE ANTENNAS OF FIG. 2

The dots on the curves show the actual points found by using as drivers broadcasting stations on 280, 360, 430 and 520 meters wavelength. Since the stations were not of the same strength the effect was as if the points X were obtained with a driver of one strength, the points Y with a driver of another strength, etc. The X points can be compared with each other, the Y points can be compared with each other, but there is no comparison between X and Y for the same curve even, not to mention other curves. It was therefore necessary to draw the curves as comparison curves, using the performance of the A circuit in each case. The curves therefore do not show the absolute performance of the circuits but show how much B and C are better or worse than A. A does not give a flat response as a quick glance would suggest.

Note that as the antenna is made shorter the curve for circuit C tends to parallel curve A, as suggested in Fig. 1. Note also that curve B-40 shows resonance, probably to some harmonic of the 350-meter wave.

obtained. Because of the lack of information given, others who are equipped with a vacuum-tube voltmeter and a sufficient number of local broadcast signals over the broadcast range may be inspired to take a number of curves proving or disproving the conclusions of the author as to the most efficient antenna system among the three types shown.

1. This does not necessarily mean that circuit A is the best for short waves; it may mean that system A is best for waves that are short as compared to the tuning range of the system being used. Thus with tuning systems ranging from 20-45 meters we might find that system C was best at 40 meters but with tuning systems ranging from 40-90 meters we might find that A was best at 40 meters. Note, however that the comparison as made does not include selectivity against shock excitation such as that caused by power leaks and the like, in which the systems shown are known to differ noticeably. —Tech. Ed.

Experimenters' Section Report

SINCE inquiries are again appearing it seems worth while to repeat that this Section is informal and has for its purpose nothing more than the arrangement of anything that may help readers of *QST* to work together on experimental work.

More exactly, the Section keeps a list of men interested in different problems so that any member may at will write to the others working on the same problem. Outlines are prepared and sent to those who prefer to work with a definite start in the shape of an outline, such advice and references as we can offer are available, and problems are suggested to those who care for such suggestions. Several engineers and scientists act as unofficial advisers in helping those who are "stuck" on a problem. Transmission tests are arranged between members or in coöperation with other organizations, as for example the tests with the General Electric Co., which were reported in *QST* for November of last year. Various tests are now running—the 5-meter international, the observations on 2XS at 16 meters and several private tests inside the Section.

Lately, at the suggestion of the membership we are reporting the results obtained in the partial solution of problems. Many complete *QST* articles have been generated by the section and have appeared with credit to it.

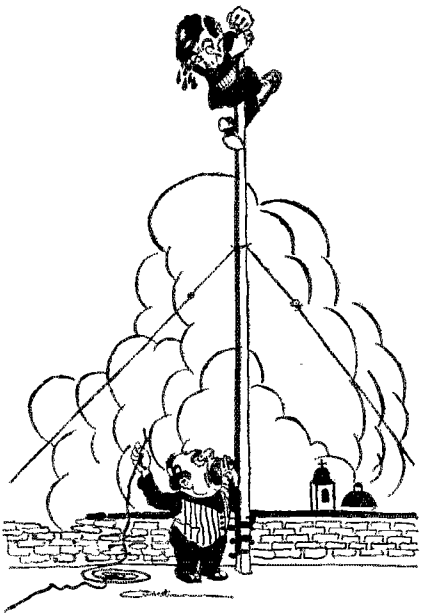
To do these things without an impossible amount of labor at the *QST* offices it is necessary to use a simple system, and those interested are accordingly asked to send for an enrollment blank, addressing the letter to "Experimenters' Section A.R.R.L., 1711 Park Street, Hartford, Conn." These blanks are received by Mr. Ross Hull who also writes the outlines and in general handles the activities of the Section. Please do *not* mix other things into a letter that concerns "X" Section activities as this causes delay and confusion.

SPECIAL PROBLEM 66 UNDER WAY AT LAST

After a great many unavoidable delays the special problem on the high-voltage aluminum rectifier for plate supply has at last overcome the several difficulties that stood in the way and has become active. Mr. Junius D. Edwards, Assistant Director of Research for the Aluminum Co. of America has gotten the material into shape and it has been distributed to those who are participating. This problem is one of the knottiest that we have at hand.

CONCERNING THE 5-METER RECORD

It is unfortunately necessary to state that the 5-meter record that was reported in September issue on p. 41 (last paragraph of column 1) has turned out to be the subject of a serious error. The following letter explains itself.



THE ABSENT-MINDED EXPERIMENTER AS RADIO REVISTA SEES HIM

"September 19, 1927
40 Magnolia St.
Suite 2, Boston, Mass.

Mr. R. S. Kruse
American Radio Relay League
Hartford, Conn.
Sir:—

In reply to your letter of Sept. 16; I would state again that there was no two-way contact between myself and 9EHT. As stated in my former letter and report, my transmitter was never reported except by my own portable field set and was used only to check up on receiving conditions etc.

I do not remember making any statement to the contrary in our conversation and I certainly had no ground on which to base such statement, however if I did make such a statement, or said anything at all that led you to believe that two-way contact

existed I am very sorry to have made it.

I do not wish credit for anything I did not do and it was with that in mind that I wrote you as soon as I had seen the last issue of *QST*.

9EHT was heard several times, both on the receiver at Lutesville (Mo.) and with the portable receiver at different locations.

Again I wish to state that I am sorry this mistake was made and that I assume all responsibility of the error and wish to offer sincere apologies and regrets to yourself, to Mr. Douglas and to the entire 'X' section.

Very truly yours,
Herb Clark Jr."

It is hoped that this letter will be received in the same frank manner in which it is written. The Technical Editor also desires to offer to the Section his apologies for having unintentionally made an incorrect report. It must be remembered also that the work of Messrs. Clark and Douglas continues to stand as excellent and in fact among the very best that has been done.

THE NOVEMBER TESTS

With radio conditions very much improved we have an excellent opportunity to check the previous series of international tests which ended so mysteriously. The schedule is given elsewhere in this issue and should be examined with care.

THE THREE "BREEDS" OF CHOKES

Mr. Lidbury's report on the choke coils in the last issue suggested that the single-layer choke is very much the better for transmission while the less extreme demands of the receiver can be satisfied well enough by a multi-layer or pie-sectional choke which will not be nearly as good as the best one-layer choke but will everywhere be good enough for receiving purposes. Putting it differently, the single layer choke could be made to be excellent over a limited region though with care that region might include our 20-, 40-, and 80-meter territory, which isn't so small after all. On the other hand, such a choke has small hope of working from 15 to 200 meters, as we expect receiving chokes to do—or even from 15 to 600 as some of us expect. For such a range the complex windings look better since they do *some* business at almost any wavelength. These two types were discussed by Mr. Lidbury.

There is a third distinct class of choke, the thing that we call a "tuned trap." Why it is so called is hard to say, for it also is an inductance-capacity arrangement with the difference that the inductance is small and the capacity is large and lumped in a condenser instead of being spread thru many turns of a coil. Such a "condenser-tuned" choke has a tremendous impedance at some frequency—and almost disappears off that frequency. If one does not change wavelength too much or too often such an arrangement may be very useful. It is here discussed from the transmitter standpoint.—Tech. Ed.

Condenser-Tuned Short-Wave R. F. Chokes

By A. Binneweg, Jr.*

EXPERIMENTS with tuned r.f. choke coils have proved very successful and there is considerable advantage to be gained by the addition of one of them in the high voltage positive lead in any transmitter. The chokes used in most amateur

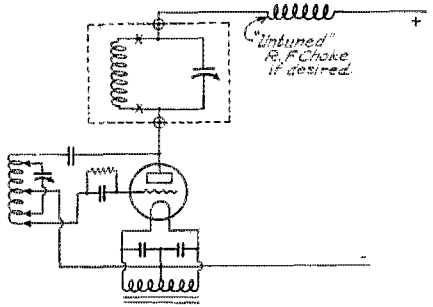


FIG. 1. A CONDENSER-TUNED CHOKE AS IT WOULD BE USED IN A SHUNT-FED HARTLEY OSCILLATOR.

The self-tuned or "untuned" choke behind the condenser-tuned one handles affairs while the condenser-tuning is being attended to.

stations are much too large for the purpose and are often so poor that their addition helps but little. A tuned choke can be made exceptionally effective and having its greatest blocking action at the particular frequency employed in the transmitter. A well-designed, properly operated, tuned choke will steady the signal, improve the note and often cut down harmonics. The results of experiments will be outlined. A typical oscillator with one of the chokes in position is shown in Fig. 1.

In tests at 6BX and later at 6BAP, with a rather low-loss choke consisting of a Lorenz winding in parallel with a good variable condenser, it was found that the *harmonics* as heard in a nearby receiver were *noticeably reduced* by tuning the choke properly. In a 250-watt oscillator, in which the r.f. voltage is higher than usual, a very good spark could be obtained from

*Experimenter's Section, A.R.R.L., University of California Radio Club, 6BX, ex-6XAA.

the plate whereas on the other side of the tuned choke, sparking was hardly noticeable or was entirely absent. Try the choke you are now using with a wooden-handled screw driver, as suggested; you will be surprised. By listening to harmonics in both the 20- and 80-meter bands, first, with a typical "ham" choke and then with the tuned choke, it was noted that the harmonics were reduced in intensity. Tests on the air showed the same thing. With

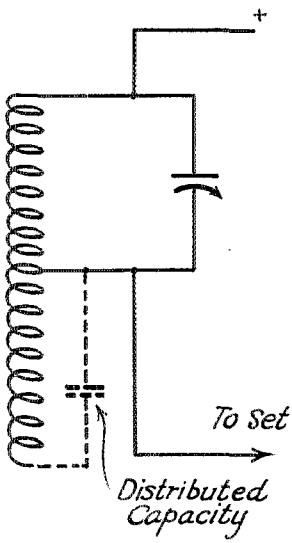


FIG. 2. A TAPPED COIL MAY BE USED TEMPORARILY BUT THE UNUSED PART, WITH ITS DISTRIBUTED CAPACITY MAY RESONATE TO SOME HARMONIC OF THE WORKING WAVE, BY REASON OF THE EXTRA TUNED CIRCUIT SO FORMED

This extra circuit is shown by the dotted lines.

the poor chokes, good harmonics of the 250-watter were heard at 10 and at 5 meters at 6BX but with the tuned choke these were absent. The note of the main-wave was improved.

These chokes act as wavetraps, excluding the frequency to which they are tuned and the theory of them demands a low-loss arrangement for best results. We found that an ordinary space-wound coil shunted with a double-spaced receiving condenser was just the thing. If in doubt as to the size of coil and condenser, about the same sizes as used in the receiver to cover the particular wavelength-range is about right.

Tune the choke until the plate current drops to a minimum and this tuning is not so sharp, allowing one to change the frequency of the transmitter without having oscillations cease. When the wave is once determined, the choke may be retuned. When the condenser is set at a higher capacitance than necessary, it acts as a by-pass and if set at a lower value the r.f. finds its way through the inductance. When one of these chokes is used, no wavemeter is necessary for use with the transmitter as the scale of the condenser can be calibrated for the range used.

It is suggested that the transmitter be tuned in on the receiver and the choke be first adjusted by clicking with the receiver as an ordinary wavemeter. Then when inserted in the plate lead, the setting will be correct.

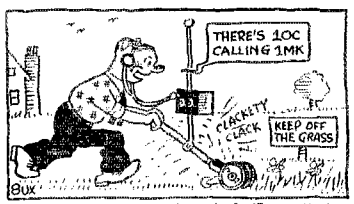
THE "NEXT BEST" SCHEME

A tuned-choke can easily be made by using a "tuning-coil" arrangement as shown in Fig. 2. Here, the distributed capacitance in conjunction with the inductance used determines a "parallel resonance" arrangement. It should be noted that the unused turns are in parallel with their distributed capacity and, should the natural frequency be near the frequency of the used portions, considerable energy would be absorbed giving an apparent increase in resistance (thus giving poorer blocking-action) and, of course, the resonant frequency of the used part would be somewhat different. The arrangement would act as two circuits closely coupled and there would result a response to two frequencies.

Actual tests have shown the condenser-coil arrangement to act as a highly efficient choke. The amateur would do well to incorporate one of these in his transmitter. The next-best arrangement would be a tapped-coil as described, with relatively few unused turns.

Strays

A *QST* advertiser who does a large mail-order business in radio apparatus has asked us to put a note in *QST* asking that people *please* use Money Orders or checks rather than send cash through the mail. Co-operation in this respect will prevent loss to either buyer or seller and will avoid the possibility of disagreement as to amount remitted.



TESTING OUT A PORTABLE SW RECEIVER UNDER SEVERE LOCAL INTERFERENCE CONDITIONS

I.A.R.U. NEWS

BELGIUM

THE summer holidays and a great deal of QRN has somewhat slackened the activities of our men but many are making necessary additions and repairs to their stations in anticipation of the coming winter season.

"The first contact between a Belgian and Hawaiian station was recently made by eb4WW who was in communication for three-quarters of an hour with oh6BDL. A regular schedule has been arranged between them and it is hoped they will be able to continue with these contacts. Since last May, eb4WW has been in communication with fifteen U.S.A. seventh district stations and fifteen in the sixth district. F.B!

"eb4FT who is our 'master of traffic' has just finished a month's trip in the U.S.A., having visited the first, second, third, eighth and ninth districts of the U.S. as well as some parts of Canada. Unfortunately it was an organized tour which left no time for a visit to Hartford or any amateur stations.

"In this wonderful land with its many big towns, amateur radio is a very small kid! You must fetch a very long time in a city like New York or Chicago to buy a copy of *QST*. It is also difficult to find a shop in which to purchase your big bottle (valve, triode, tube, etc.). Inversely, the BCL is everywhere, the same as the phonograph and strange enough, the latter has not killed the former. To the contrary we have the impression that the people are a little fed up on broadcasting."

—*Paul de Neck, President, Reseau Belge,*

CHILE

The accompanying photo shows the equipment at sc1CK located at Chuquicamata, Chile.

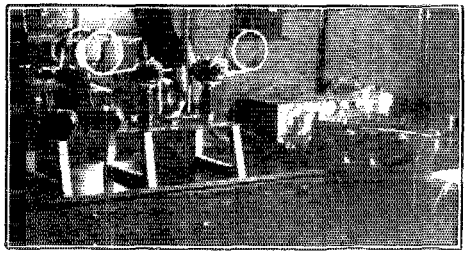
"My station has been carefully constructed to the last detail although several makeshift parts are evidence of the dearth of proper material. For instance, the grid leak is composed of two 110-volt, 2 watt switchboard lamps in series. All fixed condensers are home made as are the inductances which are of 3/8" edgewise wound coils silver plated and celluloid button spaced. The transmitting circuit is the tuned grid, tuned plate arrangement.

"The antenna and counterpoise are of ¼" copper tubing and are fed by means of a 12-foot, two-wire r.f. line, the spacing between wires being 6 inches. This line is of ½" phosphor-bronze tubing anchored at the lead-in end to a pane of glass by heavy bronze bushings which are rubber washered. The antenna is vertical and thirty-two feet long while the counterpoise is horizontal, twenty-eight feet long and nine feet off the ground. Both lines are tuned by 350 μμfd. receiving condensers. The heavy line is to prevent swinging and is stiff enough to accomplish its purpose even in a strong wind. No guys are used in any place."

—*C. K. Topping.*

CHINA

"Dr. Malcolm, Health Officer at Chefoo, N. China, has had a short-wave receiver for



sc1CK

some months which had been built for him by our star performer, Edouard Foucret of Shanghai. He had no transmitter and to amuse himself and get some key practise, he inserted a key in the 45-volt plate supply lead to the detector tube (201-A) and had some fun in working at anchor in Chefoo harbor.

"On the evening of June 18th, he sent out a CQ and immediately got a reply from xep1MA which he believed to be some boat entering Chefoo. Imagine his excitement when it turned out to be the Portuguese cruiser, "Adamastor" then at anchor at Macau about 1200 miles distant. 3MA's

(Continued on Page 64)

Calls Heard

oa-3ES, G. S. Yorston, Hawthorne Rd,, Caulfield, Vic., Australia

1aac 1aao 1adm 1bdi 1fs 1gh 2ahm 2apd 2avw 2bj 2crb 2cs 2cuz 2evs 2gk 2tp 3btq 3cjn 3ee 3ld 3lw 4ar 4bk 4cj 4fu 4km 4nh 4ok 4qb 4rm 4rn 4du 5abf 5aen 5afb 5afq 5agg 5ajs 5aka 5aky 5amo 5atf 5eb 5jd 5jf 5kl 5nw 5ok 5pi 5qj 5ql 5rg 5uk 5ux 5va 5mx 5wz 6abg 6acg 6adk 6adm 6afs 6ahp 6aiv 6ajm 6akp 6akw 6ala 6am 6biu 6atu 6avb 6awq 6aww 6aku 6ayj 6azs 6bhq 6bb 6ber 6bqb 6bhm 6bhz 6bia 6bkd 6bts 6bmy 6bnh 6bpg 6bq 6bry 6bux 6buy 6bvm 6bvt 6bvv 6bvy 6bxd 6bzf 6cel 6cer 6cet 6che 6ciw 6cmq 6css 6ctx 6cua 6cuc 6cus 6cux 6cwr 6cww 6cxy 6czi 6dag 6dck 6dfa 6dfe 6dfw 6ec 6gp 6he 6ix 6ja 6jn 6ju 6kb 6pv 6rm 6rn 6rw 6sm 6ta 6zat 6zi 7acb 7acf 7df 7ek 7fb 7fs 7gj 7sf 7mp 7ou 7pv 7tm 7uj 7uo 7uq 7vl 7vq 8ako 8adg 8afq 8aj 8ajn 8aly 8cjv 8bad 8bau 8bce 8bww 8ces 8dan 8deb 8bpl 8dld 8do 8gz 9abr 9adg 9adk 9adn 9aeg 9aek 9ahq 9arn 9auu 9axq 9asc 9ben 9bdj 9bib 9blu 9bqe 9buz 9bwn 9bwo 9caj 9cei 9che 9cia 9ck 9ecs 9ekf 9elr 9enj 9ev 9ecy 9exc 9cxz 9daw 9day 9dbp 9dka 9dlx 9dng 9drd 9dws 9dxm 9eag 9efk 9ej 9kb 9ln 9xi oz-iay oz-4ao oz-ife oz-3ac oz-4am oz-ifq oz-3ax oz-3au oz-2bx oz-iax oz-2bp oz-2gb oz-ifb oz-2ga oz-2gg oo--bam fs-ktc od-pk1 od-pk9 ac-8em bn-sk2 eg-2sh nc-5aj nc-8wah nc-4du nc-5gt nc-5go aj-ism aj-isk aj-jkzb ai-frj op-1dl ei-lay ef-8yor ef-8ix eb-4ww nj-2pz es-2nm oc-8xy ep-1ae x-cbz x-erio oa-3es.

I. D. Miller, 13 Bedford Cres., Dulwich Hill, N. S. W., Australia

1abm 1de 1fi 1xv 2all 2qs 3lw 4ar 4iv 4rm 4tu 5ain 5auz 5bze 5gt 5kj 5kl 5ql 5ua 6aak 6abg 6ajs 6am 6amn 6aof 6asi 6auw 6anj 6bap 6bbv 6bdc 6bgc 6bgv 6bhc 6bhi 6bhv 6bhz 6bia 6bis 6bsd 6bvm 6bvy 6bwk 6bxc 6bxb 6cbz 6cci 6cco 6cer 6ceg 6cge 6cgm 6chl 6chn 6csj 6cal 6ctd 6cuu 6cwi 6czt 6cgy 6cte 6dfe 6dfv 6dht 6dgb 6dp 6dxn 6ge 7abd 7abh 7gm 7il 7km 7gi 7ra 7tj 7vg 7wu 7xt 8ajn 8bau 8bpl 9adk 9adn 9ara 9cjr 9bmp 9ben 9cki 9ekt 9exw 9kr 9lk 9ekr 9ow 9st 9xn ac-8hb af-8fok af-hva aj-1sm aj-1sk aj-jkzb eb-4ac ec-car6 ef-8aro ef-8el ef-8eo ef-8ix ef-8jf ef-8jj ef-8ku ef-8qrt ef-8xo ef-8yor ef-ocdj eg-2od eg-6og eg-6ta eg-gfy ei-1uu ek-4yo el-1fe ep-1ae es-2nn fc-b2 na-7kx nc-5go nj-2pz nm-in nm-1j nm-ex nm-9a nn-1nic nr-2fg ny-rxy oh-6amu oh-6buc oh-6cxy oh-6dcu oh-6nl op-1au op-1bd op-1ad op-1cw op 3ac ank 8zw.

G. L. Hayman, Forfar St., St. Albans, Christchurch, N. Z.

1xv 1aqt 2awq 2byo 4rr 4tu 4ry 4hx 4pk 5kl 5zl 5ql 5ai 5je 6ge 5rg 6cu 6zd 6amu 6cua 6czy 6bb 6buc 6xi 6akt 6afs 6czu 6ayi 6csj 6cyu 6hu 6cco 6ahn 6cci 6ga 6cbz 6dhw 6dic 6dju 6bvi 6abg 6ce 6mm 6csw 6cxi 6cy 6cag 6bwk 6cae 6aes 6bxc 6bia 6bmo 6dgo 7sf 7xf 7sg 7ab 8al 9cu 9pr 9dah 9ekf 9cnu ss-2bn oh-6nl ef-ub aj-jkzb jes ea-gp knt lie vis p:o ddh jhl.

eh-4UU, Paul de Neck, 312 rue Royale, Brussels, Belgium

1dd 1af 1adm 1byv 1bhm 1asu 1cjh 1emf 1bux 1axx 1dm 1ajm 1bkp 1ry 1vw 1ii 1aal 2aue 2agn 2gvj 8ad 8aly 8box 8adg 3xan 9dws 9czv ne-1ap ne-1br nc-1ar nc-1bi nc-2al sb-1ad sc-2ah.

ef-8RLD. R. Liebaut, Dameleirere, Meurthe et Moxelle, (near Nancy) France

1adl 1mu 1bxn 1bca 1blw 1bgq 1bnu 1bp 1alw 1bus 1bms 1awh 1aul 1cd 1mq 1qo 1dq 1rp 1xu 1um 1hw 1ps 1ic 1dms 2ase 2ep 2xaf 2qi 2ue 2ce 2um 2blf 2id 2amj 2rn 2rr 2fs 3afu 3qt 3qe 3aef 3ajx 3sh 3pf 3alq 3wp 3bua 3oq 3ajd 3oz 3ld 3aim 4on 4ux 4oq 4rg 4hx 4co 4air 5awr 5lu 5ux 5lr 5au 6am 6bau 6xn 7ui 8aul 8bm 8bpl 8bbr 8ent 8iq 8cjb 8ol 8exd 8bwa 8jq 9ads 9caj 9bbt 9ko 9mn.

ef-RO91, C. Conte, 24 Allee du Rocher, Clichy-sous-Bois, (S-et-O) France

(20 to 44 meters)

1abd 1ads 1amg 1awm 1axx 1bat 1bbc 1bhs 1blf 1cgc 1cmf 1ctm 1cue 1dm 1fl 1mp 1pz 1ql 1sz 1uz 1vw 2abt 2afm 2afr 2ags 2agw 2aja 2ajb 2amy 2ate 2ats 2aue 2avr 2az 2bdn 2bdj 2bm 2gp 2gx 2ih 2mb 2qf 3afu 3afw 3aiv 3bct 3bhd 3bjy 3bms 3bqj 3bsd 3bwt 3cbt 3cgf 3ef 3gp 3ld 3lq 5pf 3pr 3qe 3sh 3wj 4ei 4fe 4iz 4jw 4lk 4ll 4no 4rn 4vh 4wa 4wo 5atp 5nl 5ux 5wo 8abw 8ame 8amt 8anc 8blc 8blp 8box 9bpl 8bqj 8bup 8bwz 8byn 8cdf 8cke 8cl 8cxd 8cxn 8dbe 8dea 8dgl 8dhx 8dpa 8dja 8im 8jr 8kr 8lt 8wk 9adg 9amo 9aue 8bcl 9beq 9bcl 9blt 9cke 9cnc 9cjr 9gx 9kg 9ra 9sa 9lz ne-1bi nc-1br nc-8dz nx-1xl nz-ez5.

eg-2BQH, G. G. E. Bennett, 26 Blenheim Park Rd., Croydon, Surrey, England

(20 meters)

1aba 1adm 1aff 1ajm 1akz 1asu 1awe 1bat 1bbm 1beb 1bhm 1bux 1byv 1byx 1ecz 1cjh 1cmf 1dl 1dm 1ll 1ro 1sz 1vw 2aef 2agn 2agp 2alw 2amd 2aol 2avb 2awx 2bac 2bce 2cjj 2dr 2or 2tr 2xad 2xg 2xr 3bzg 3ckl 3jx 3mv 3tn 4ft 4hx 4nj 4qy 4tu 5acl 5ara 5ax 5mx 5pt 6agr 6dcq 7gb 7rl 8acz 8adg 8aly 8avl 8aye 8ben 8bqf 8btr 8ces 8cfa 8cfl 8cfr 8cjv 8cip 8dea 8dhx 8dld 8dod 8dsy 8ve 9biw 9bmx 9bqy 9bzi 9cei 9cmv 9eso 9ef keb kzet wbu wtt ncn-cg nc-1ap nc-1br nc-3fc nc-9bz np-4pq np-4sa sb-spu si-hjg su-1cd ai-vwz oa-3bd od-anf fd-crha fd-crhc fm-8mb.

(40 meters)

1aao 1aba 1abd 1abs 1afx 1ag 1aiq 1amq 1anx 1ani 1anv 1arc 1atu 1avi 1avj 1axz 1bat 1bc 1ben 1bdn 1beb 1bgq 1bhs 1bko 1bms 1bqq 1bus 1bux 1bvl 1cjc 1cnz 1ctu 1cue 1de 1em 1fl 1fs 1kc 1kf 1kh 1mp 1mv 1nw 1po 1qi 1ql 1ry 1us 1uu 1uz 1xv 2aaw 2abt 2aby 2adl 2aeb 2aes 2ab 2afm 2afx 2agb 2agp 2ags 2agw 2akv 2amc 2amh 2ang 2aqw 2arn 2asc 2ats 2uua 2aub 2auk 2avq 2avw 2axh 2ayj 2ayn 2az 2bac 2bad 2bbc 2beb 2bco 2bdt 2bi 2bm 2bow 2bs 2bsc 2bzj 2ca 2ei 2cjd 2ckg 2crn 2cwm 2cxl 2cy 2em 2fs 2gx 2ih 2iz 2jt 2kr 2kx 2mt 2nf 2nm 2or 2qf 2qh 2qv 2rs 2ub 2ul 2uo 2xaf 3afl 3afu 3ajt 3ajx 3aks 3alh 3auw 3bay 3bms 3bnc 3bqp 3bqz 3bsb 3bsd 3bva 3cab 3cbt 3ced 3cfg 3cgf 3ckl 3dw 3dz 3ec 3ez 3gk 3ib 3ku 3la 3ld 3mb 3mv 3nc 3nr 3pf 3pr 3qe 3sz 3tf 3tn 3uo 3ut 3wf 3wj 4abc 4ac 4cf 4cl 4dx 4ec 4ei 4fe 4ft 4fx 4hx 4hz 4iq 4iz 4jd 4jw 4lk 4ll 4lp 4lq 4my 4nf 4nq 4ns 4ob 4oc 4ok 4pk 4qb 4qc 4rm 4rn 4rr 4sh 4to 4tp 4tu 4ux 4vs 4wj 4wo 5af 5afk 5ame 5amk 5amn 5auu 5di 5ek 5he 5jr 5kc 5kl 5lf 5mx 5ni 5qj 5uk 5ut 5ux 5va 5vx 5we 5wo 5yb 5zav 6xi 7fd 8aaj 8aec 8ag 8agi 8agn 8agy 8ahd 8ahu 8ako 8ali 8alo 8alu 8amb 8amu 8anc 8asf 8atq 8auq 8avi 8azg 8azh 8bad 8bal 8bas 8bau 8bbd 8bbs 8bek 8ben 8bes 8bg 8bja 8bjb 8blp 8bm 8bnf 8bou 8bpl 8brf 8bxc 8byn 8bze 8cau 8ceq 8cfr 8che 8chk 8civ 8cjv 8cnt 8cor 8cpc 8cpw 8ctg 8ctk 8cvs 8exc 8cxd 8daq 8dbm 8dcm 8def 8dxc 8dhx 8djb 8dke 8dkt 8dlb 8dnf 8dnu 8drv 8ew 8gl 8hx 8in 8jb 8jq 8kf 8mu 8pl 8re 8rh 8rt 8vj 8wk 9adk 9afx 9ak 9akt 9apv 9arr 9aue 9axo 9bbk 9bcl 9bcw 9bgq 9bgx 9bib 9bno 9bnp 9brc 9bvl 9cep 9cfa 9cmj 9cmq 9cmv 9cng 9crd 9crj 9cu 9cyw 9dah 9dds 9dea 9dga 9dgw 9dqy 9dte 9dud 9eas 9ebp 9eey 9efk 9efo 9egh 9ek 9eky 9eld 9ep 9fi 9jr 9kg 9lz 9mn 9pd 9sa 9sd 9so 9wr nibv wnp wobd aw5 nc-cf nc-vde nc-voq nc-ibl

(Continued on Page 84)

Correspondence

A Visitor

26 Jamieson Street,
Sydney, Australia

Editor, *QST*:

I would be pleased if you would put a small notice in *QST* to the effect that I am leaving on an extensive world tour October fifth next and would like to meet some of the hams in different countries.

I go first to Cairo and then up the Nile for a month or so till December fifth. From there to Marseilles and will spend a few weeks in towns of Southern Europe; possibly Genoa, Rome, Naples, Venice and Vienna. From Christmas 'till the end of February, I will be in Saint Moritz, Switzerland, for the winter sports. Most of March and April will be spent in Paris and Berlin and other continental cities. June and July, I will be in England and will then probably go across to America and so on home to Sydney.

The exact dates cannot be fixed, but any hams or radio societies who wish to get in touch with me could address letters c/o Thomas Cook and Sons, Marseilles, up to December 9, 1927, and Poste Restante, St. Moritz, from that date to the end of February.

—*Charles Maclurcan, oa2CM, President, New South Wales Division, Wireless Institute of Australia.*

Real Traffic

Keewatin, Minn.

Editor, *QST*:

The other day, we had some real traffic to handle. Some tourists, who had read our sign at the tourist camp came over to the station with a hard-luck story and wanted to know if we could get a message to Des Moines, Iowa. We were glad to help and so found out just what had gone wrong.

The tourists stated that they had been robbed of all their money, were broke and couldn't get back home. They spent their last pennies in sending telegrams asking for money from folks at home but these folks, apparently, hadn't received the telegrams which left them rather out of luck.

They wrote some messages for Iowa and gave them to 9CIY, 9ADS and myself. That night when I got home, I CQed Des Moines but without results. After trying it for a long time without any results, I listened for nines and looked their QRAs up in the call book. I heard 9AEP at Fort Dodge, Iowa, called him and he came back. I gave him the story about the tourists and also the long message asking for aid. 9AEP sure is a wonderful op and I gave him the message, or rather the letter, and he copied the whole thing single. FB! He got the message through and the tourists received their money via Western Union the next morning.

They were so glad, they didn't know how to thank us for doing the good work and stated they thought amateur radio to be a wonderful thing, particularly in time of need.

9LA, at Des Moines, helped us out after the money had been received by sending messages to the folks at home stating that everything was now all right and the happy tourists were on their way home.

I wish there was more traffic of this importance and not so much of the "73" type.

—*George Maki, 9CWA*

Directional CQs

34 Walnut Street,
Gloversville, N. Y.

Editor, *QST*:

Just a word about directional CQs. If my log could be likened to a ledger page, it would look something like this.

Plain CQs sent	286	
Answered	232	
Unanswered		54
Directional CQs sent	106	
Answered	4	
Unanswered		102

Now, I don't like to think that any of the gang are passing up these directional CQs but the above figures covering a period of eight months would make it look as though they were.

I sure do enjoy rag-chewing and DX work but have always tried to answer directional CQs that seem to fit skeds and location, but find in return that these same CQs are of no use to me in traffic handling.

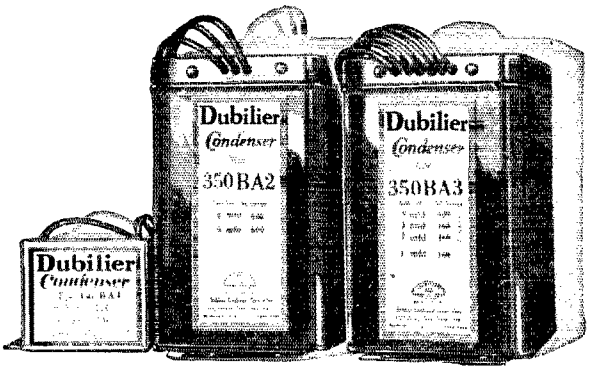
While the above figures cover a period of eight months at my station, the log for over a period of two years, shows an average of about the same.

Another thing that I notice about the gang in general, is that they all will take

Dubilier-

Veteran of Radio "Battles"

WHILE the master minds of radio have fought a hundred wars in their effort to prove the supremacy of one circuit over another, Dubilier has always been ready to meet each new theory and experiment with condensers of correct design, rugged construction and a dependably high factor of safety. These advantages are found today in every condenser marked—*Dubilier.*



The Official Condenser Block for Power Units

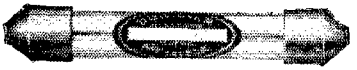
One of the most important and expensive elements of battery eliminators are the condenser blocks. Play safe and use Dubilier—the blocks approved by such well-known manufacturers as Raytheon, Acme, Thordarson, General Radio, etc. Sold by all the better radio stores. Circuit diagrams upon request.

No More Outdoor Aerials

Connect a Dubilier Light Socket Aerial to your set, plug in, and note the improved reception. Uses no current, requires no attention and completely removes the lightning hazard. Price **$1.50.**

Rely On Micadon

A compact, handsome and efficient fixed condenser for all small capacities. Moulded Bakelite case of modern design. Terminals adapted to screwed or soldered connections. **Price 45c to $1.50.**



The Dubilier Metaleak

A tubular grid leak you can bank on for accurate resistance value and noiseless operation. Your dealer has them in all values from 20,000 ohms to 5 meg. ohms. **Prices.....50c and 75c**

DUBILIER CONDENSER CORPORATION

4377 Bronx Blvd., New York

from one to three messages and then find that conditions will not permit of the reception of any more and after you have a stack of messages and have worked some time trying to raise some one to take them, it sure gets your goat to have a fellow give you an "R8 FB" report, take one or two messages and then tell you, "Ur sigs QSS out OM sori bt nothing more doing CUL 73 NG SK".

On the other hand, it sure makes a fellow feel good when a QSO such as the following takes place.

"GE OB QSR 24 msgs ur section?"
"OK OM oil ur bug es let's go"

The above has happened to me three times in two years and it sure made me think that some of the hams are real ops.

Now I've recited all my woe for the present but don't think that I am sore at the gang. Most of them are wonderful fellows that it's a pleasure to work.

Here's wishing the directional CQ a lot of luck as in my opinion, it needs it.

—*L. W. Matteson, 8BMJ-8CJC.*

P.S. Mr. F. C. Dence of SAPK just happened in and read the above. He says, "OK, me too."

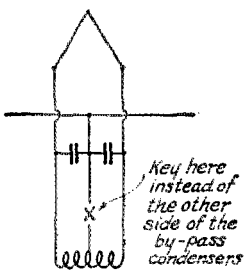
Another Suggestion on Keying

118 College Avenue.
Northfield, Minn.

Editor, *QST:*

Some time ago, I found it was necessary to change my keying method as my clicks could be heard for ten blocks around on any broadcast receiver. I had been keying in the so-called common lead, that lead between the center point of the filament bypass condensers and the filament tap on the inductance. This is, of course, a place where there is a certain amount of radio frequency energy when the tube is oscillating and any small arc in the circuit will send out a click.

Now, I thought, why not put the key on the other side of the filament by-pass condensers where there should be no high frequency currents and thus eliminate that much cause of key clicks. After this was done, the cussing of the ops at 9AAV, one

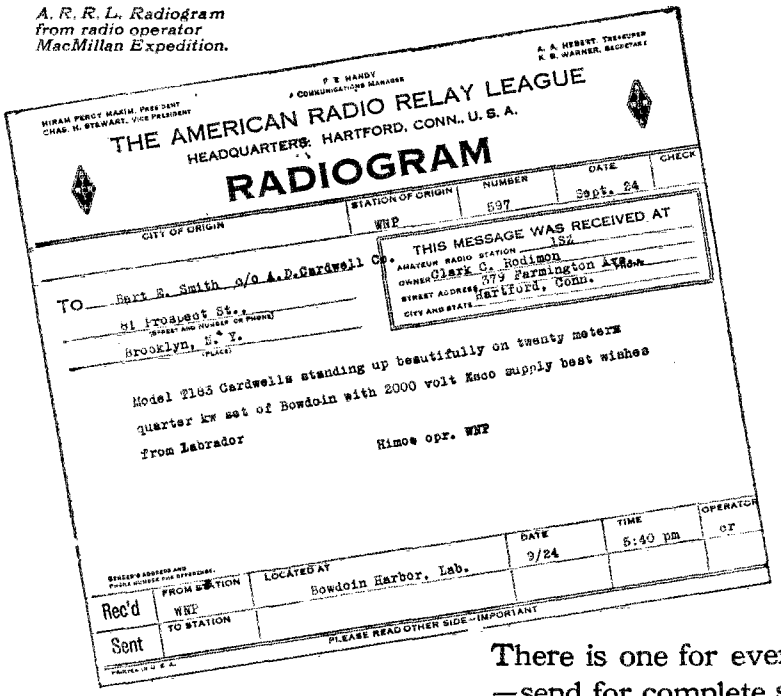


block away, stopped immediately. All that was left to bother anyone was a small thump which was audible on single-circuit tuners (yes, there are some left in this town) two blocks away at the most. In

Cardwell

"STANDING UP BEAUTIFULLY" --AS USUAL!

A. R. R. L. Radiogram from radio operator MacMillan Expedition.



HIRAM PERCY MAXIM, PRESIDENT
CHAS. H. STEWART, VICE PRESIDENT
F. E. HANDY, COMMUNICATIONS MANAGER
A. A. HEBERT, TREASURER
A. B. WARNER, SECRETARY

THE AMERICAN RADIO RELAY LEAGUE
HEADQUARTERS: HARTFORD, CONN., U. S. A.

RADIOGRAM

CITY OF ORIGIN	STATION OF ORIGIN	NUMBER	DATE	CHECK
	WNP	597	Sept. 24	

THIS MESSAGE WAS RECEIVED AT
AMATEUR RADIO STATION 1SZ
OWNER Clark C. Rodimon
STREET ADDRESS 379 Farmington Ave.
CITY AND STATE Hartford, Conn.

TO Bart E. Smith c/o A.P.Cardwell Co.
81 Prospect St.
Brooklyn, N. Y.

Model 2165 Cardwells standing up beautifully on twenty meters
quarter kw set of Bowdoin with 2000 volt Kenco supply best wishes
from Labrador

Himoe opr. WNP

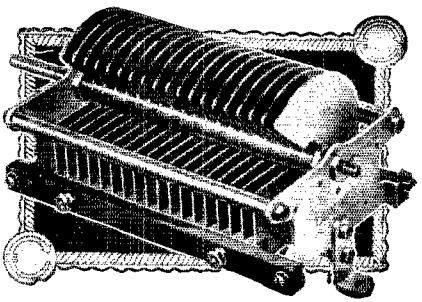
	FROM STATION	LOCATED AT	DATE	TIME	OPERATOR
Rec'd	WNP	Bowdoin Harbor, Lab.	9/24	5:40 pm	or
Sent	TO STATION				

PLEASE READ OTHER SIDE—IMPORTANT

"Standing up beautifully on twenty meters"—That is what is expected of Cardwell Condensers.

They are built to stand every strain that commercial or amateur use can produce. YOU CANNOT GET BETTER CONDENSERS than Cardwells, for *there are none better.*

There is one for every tube and purpose—send for complete specifications.



SPECIFICATIONS

Maximum Capacity	Air Gap	Price	Type	Spacing (between Stator Plates)	Plate Thickness	Number of Plates	Depth (back of Panel)
.00025	.030"	$ 4.00	141B	.110"	.0253"	11	2⅛"
.00048	.030"	5.00	123B	.110"	.0253"	21	3"
.00048*	.030"	7.00	156B	.110"	.0253"	21*	4"
.00096	.030"	6.00	137B	.110"	.0253"	41	4"
.00098*	.070"	10.00	197B	.190"	.0253"	9*	4"
.00011	.171"	10.00	T183†	.422"	.040"	23	6⅛"
.00022	.070"	7.00	164B	.190"	.0253"	21	4"
.00022*	.070"	12.00	157B	.190"	.0253"	21*	5¾"
.00033	.084"	10.00	T199†	.248"	.040"	45	6⅛"
.00044	.070"	10.00	147B	.190"	.0253"	37	5⅜"
.0003	.219"	75.00	166B†	.509"	.0625"	23	10¼"
.....	.....	150.00	1666B†	(Also made to special needs. Write for particulars.) Made especially to your specifications. Write for full particulars.			

FIXED CONDENSERS

.00025	.070	4.50	501	.....	.040	12	2⅛"
.00044	.070	7.00	502	.....	.040	20	3¾"
.00097	.070	10.00	503	.....	.040	42	5⅜"
.00025	.153	15.00	504	.....	.040	22	5⅛"

† Rounded and polished plates. * Two stators. Figures apply to each side.

Condensers

"THE STANDARD OF COMPARISON"

order to overcome this, I shunted a forty-watt lamp across the key and was rewarded with a better note and no trace of a key-thump. The bulb burns at about half brilliancy and I found that if I tuned up with it lit, I could tell when the oscillating circuit was in resonance with the antenna as this caused an increase in the plate current which caused the bulb to light brighter. It is a great help if one has neither a plate milliammeter nor an antenna ammeter. I am using a 203-A and if a 210 were used, the lamp should have a lower rating with its accompanying higher resistance.

I have been working quite a lot on 20 meters and it certainly sounds funny to hear stations from forty to two hundred miles away come in with good audibility at midnight. oz2AC is a good R8 here most nights.

—*Paul E. Griffith, 9DBW.*

Punk Operating

80 Beaconsfield Road,
Blackheath,
London, S. E. 3,
England.

Editor, *QST:*

It seems that bum operating is by no means confined to the ranks of the amateurs although it's a dead certainty that all QRM is immediately laid at the amateur's door by BCL's, and even by those in authority connected with the control of the ether.

The following are two "gems" picked up tonight over a period of two hours on the twenty-meter band alone.

1. A commercial station pumping out an interminable succession of code groups—this in itself is pardonable. After all, business is business. However, the station had an i.c.w. note which occupied exactly a band from 22.4 to 23.2 meters and this at DX range! So that everyone could enjoy themselves, the designers of this station had thought fit to key it by the spacer and marker wave method!

2. The second hound was a phone station who started well apparently with several kilowatts, and managed to get out, "Hello" a few times. After this it seemed as if the OW got on his track and he went away, but juice must be cheap, because he left the carrier wave on and it's been on for over half an hour without a break. Perhaps, they've all been struck dumb, anyway, they deserve it.

Yes, the ether sure *does* want clearing up a bit. Hi!

—*R. Bloxam, g5LS.*

Below the Band

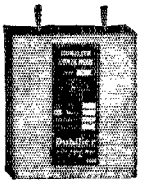
Dodge City, Kansas.

Editor, *QST:*

I have been following all the schedules from 9XL this summer, on their Standard Frequency Transmissions and wish to say that the number of ham stations below 37.5

HIGH VOLTAGE
FILTER CONDENSERS

Manufactured by Dubilier Condenser & Radio Corp.



1¾ mfd. 1000 volts rated D.C. Working Voltage Extra Special at **$1.35** each

7 mfd. 600 volts. rated D.C. Working Voltage Extra Special at **$3.50** each

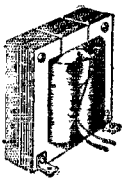
3.9 mfd. 900 volts rated D. C. Working Voltage Extra Special at **$2.70** each

Manufactured by Stromberg-Carlson Tel. Mfg. Co.

3½ mfd. 600 volts rated D.C. Working Voltage Extra Special at **$1.75** each

All of these High Quality Filter Condensers, are brand new, and guaranteed as rated. They are excellent for use in your Transmitter, Eliminator or Experimental Work.

FILTER CHOKES



50 Henrys—85 Mills.

These are very efficient chokes for use in Filter Circuits for your Transmitters, A & B Eliminators or Power Packs.

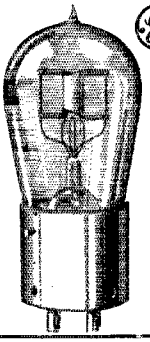
These Choke Coils are very well constructed and are made with air gaps to prevent magnetic saturation from direct current.

SPECIAL AT **$1.75** Each

KENOTRON RECTIFYING TUBES

(Type T.B.I.)

MFD. BY GENERAL ELEC. CO.



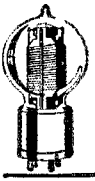
These rectifying tubes operate on a filament voltage from 8 to 10 Volts and draw 1½ amps. They will safely stand an A.C. input voltage up to 750 Volts and pass plenty of current and voltage for the plate of the Transmitting Tubes.

They are also very efficient rectifiers for use in "B" Battery Eliminators.

STANDARD BASE
NEW IN ORIGINAL CARTONS

PRICE ONLY **$1.25 Ea.**

Western Electric V.T. 2 Tubes (Rated at 5 Watts)



Fine for C. W. and Phone transmitting also Power Amplifying tube.
Filament 7½ Volts. Normal Plate voltage, 350 volts.
Oxide coated filament of pure platinum. New and standard base.

SPECIAL at **$4.50 Each**

These Are First Grade Tubes, Not (2nd Grade) Yellow Capped

OUTPUT TRANSFORMERS (1-1 Ratio)

MFD. BY GENERAL ELECTRIC CO.

Matches Speaker to tubes giving clearer and improved reception and prevents Speaker from being burnt out or demagnetized from high plate voltage. New.

List $13.50 Each SPECIAL AT **$4.00 Each**

MESCO WIRELESS KEYS

MFD. BY MANHATTAN ELEC. SUPPLY CO.

These keys are well balanced, fully adjustable and mounted on wood base. New. List $2.00 each. SPECIAL AT **95c Each**

G. E. and Ward Leonard Resistors (Heavy Duty)

Fine for Grid Leaks and for use in Eliminators.

G.E.—5000, 1600, 3200, 4000—(Tapped at 3380), 4000—(Tapped at 2600), 8500—(Tapped at 4250), 1100—(Tapped at 900), 1100—(Tapped at 700 and 800) ohms.

W.L.—2600, 7000, 1100—(Tapped at 300 and 400) ohms.

The General Electric wirewound resistors will carry 55 Watts and the Ward Leonard Vitrohm resistors will carry 60 Watts in continuous duty.

Your Choice at Special Price of **85c Each**

A FEW LEFT UV 217 High Voltage R. C. A. Kenotron Rectifying Tubes, A. C. input 1500 Volts—Filament 10 Volts. New. List $26.50 each. SPECIAL **$12.50 Ea.**

AMERICAN SALES CO. **21 WARREN ST., NEW YORK CITY**

meters is entirely too large. This not only spoils our foreign contacts but surely must react somewhat on the opinion of the amateur outside of the United States, giving us "nu" amateurs something of a black eye.

Our 40-meter band covers enough territory but these fellows take in even more.

I'd like to suggest that all of the amateurs in the U. S. check their receivers and at least mark the bottom end of the 40-meter band; the band stops at 37.5, not at 36 or 35.

When QSO with any station below our band kindly inform that ham of his fault. I have found very few that do it deliberately, each one makes a guess from the location of the others. When told about it they usually ask me to QRX for a QSY upward, which I am always glad to do.

This is just a suggestion but if we put it into more general practice we will have very few U. S. stations below 37.5, cluttering up foreign territory.

—*W. H. Balderston.*

Q S D?

936 Fedora Street
Los Angeles, Calif.

Editor, *QST:*

To me, one of the most unsatisfactory details in connection with QSL cards, is the failure of the time of QSO, as given on the card, to check with the time of QSO in my log. I, therefore, submit the following suggestion, hoping that it may result in greater uniformity along this line.

The scheme is this: To record, at the time of QSO, the moment that the stations make contact. This moment of contact, being, of course, the moment at which the station called answers the station that called him. When cards are exchanged between stations following this system, the dates on the cards and logs are bound to check after allowances have been made for differences in time.

It cannot be said of this system that it requires more time or effort than any other method of recording, as every operator has, or should have, a clock in his station and his log within reach of his hand.

I hope that this suggestion may meet with favorable consideration on the part of other operators.

—*Charles A. Hill, 6BRO.*

QSLL

1411½ Vista Blrd.,
Hollywood, Calif.

Editor, *QST:*

It might interest you to know that after several months persuasion I have finally succeeded in getting the Los Angeles Chamber of Commerce to try the experiment of furnishing amateur radio operators in Los Angeles County with *free* QSL cards. They have just placed an initial

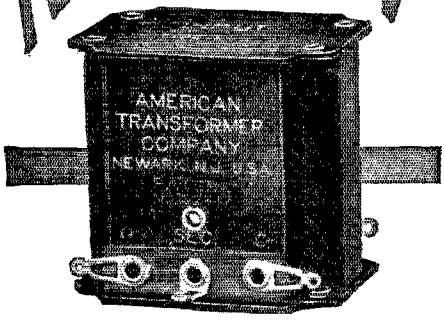
AmerTran Push - Pull Transformers are available in these types:

Push-Pull Input Type 151 —**$15.00** each

Push-Pull Output Type 152 (Impedance ratio 4:1), for two UX-210's or similar power tubes —**$15.00** each

Push-Pull Output Type 271 (Impedance ratio 2:1), for two UX-171 tubes connected push-pull—**$15.00** each.

AMERTRAN



Now!

AmerTran Push-Pull Transformers

A STAGE of AmerTran Push-Pull with power tubes, following a first stage AmerTran DeLuxe, provides even greater energy output to the speaker with less distortion than can be obtained with a single power tube. With push-pull amplification, tube distortion and harmonics are suppressed and the slight hum, caused by raw A C on the filaments of the power tubes, is eliminated.

The AmerTran Push-Pull Input and Output transformers use high permeability alloy cores with multiple windings so arranged and balanced as to give high inductive coupling and low capacity coupling. The Input transformer, which works out of the plate of one amplifying tube into the grids of two power tubes, has approximately the same primary impedance as the second stage AmerTran DeLuxe. It is suitable for use ahead of any pair of standard power tubes.

The plate impedance of two tubes connected push-pull is double the impedance of a single tube. Since various types of power tubes have different values of plate impedance, this company provides output transformers of different types to correspond with the power tubes and the speakers which are in most general use. The impedance ratios are calculated for the greatest transfer of energy at frequencies from 60 to 100 cycles, because at these low frequencies more energy is required to drive the loud speaker mechanism.

AMERICAN TRANSFORMER CO.

178 EMMET STREET NEWARK, N. J.

"Transformer Builders for Over 26 Years"

order for 20,000 of them. These are not just the ordinary QSL cards but are the finest (and I also think the most expensive) type of QSL cards that will be in circulation. Each card is a genuine individual photograph print. There are a series of five different cards and each card has six different typical views of life and interesting places in and around Los Angeles and Hollywood. Those operators in other sections of the country who are QSL hounds will certainly want to push their sets and work a Los Angeles or Hollywood station to get one of the cards to add to their collection once they see one of them, and then they will want to work several to get the entire series.

The experiment is a new one with the Los Angeles Chamber of Commerce and whether they will continue it or not depends entirely on whether the amateurs will go to the trouble to get them and actually put them in circulation. The cards are ready for distribution and are *free* for the asking to any licensed operator living in Los Angeles County; they can be obtained from 6BKJ, 1411½ Alta Vista Blvd., Hollywood, California, or the Los Angeles Chamber of Commerce. There is no advertising of any kind on the cards. I hope when interested amateurs in other sections of the country get one of these cards they will take the matter up with their local business association or Chamber of Commerce and induce them to furnish similar cards to their local station operators.

—*K. N. Ford, 6BKJ.*

It Is How Far?

Goldfield, Iowa.

Editor, *QST:*

Regarding the formula for calculating distances, which was given in April *QST*, also in the Handbook and I believe it has appeared once or twice in earlier numbers. Permit me to suggest a formula which I think is a decided improvement.

$$\tan N = \cot b \sec C$$

$$\tan B = \frac{\tan C \cos N}{\cos (a+N)}$$

$$\tan C = \frac{\cot (a+N)}{\cos B}$$

In which a= co-latitude of the place whose distance we wish to measure.
b= co-latitude of our own station.
C= longitude difference.
c= the distance wanted in degrees.

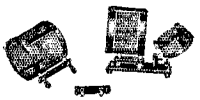
Now, that looks rather complicated, but really it isn't if one goes about it right. To use it, I first make up a supply of blank forms covering every step of the calculation. Then when a distance is to be found, I simply take up one of these forms, fill in the

3 New AERO Products You Should Know About!

Here are 3 new items recently added to the famous AERO line of transmitting and receiving inductances. Each is built up to the usual AERO high-quality standard and exactly fills an urgent existing need among radio amateurs.

Read all about this new AERO equipment so that you can make sure of even better performance by building these new chokes and transmitting coils into your new set or substituting them in your present equipment.

AERO Key 9018 Transmitter Kit



This new AERO Interchangeable Transmitter Kit has a range of 90 to 180 meters. The kit includes two mounting bases and two Aero Choke 248 coils.

This new kit is designed for use in the popular AERO Transmitter and is completely interchangeable with the Key 2040 Kit and the Key 4080 Kit, using the same mounting bases and the same choke coils. Every amateur who has built the AERO Transmitter will appreciate the extra working range offered by this new kit.

Code 9018-K ..... Price $12.00

The New AERO Choke 60

Modern circuits of high sensitivity demand the use of radio frequency chokes in certain parts of the circuit. The Aero Choke-60 is designed to have a uniform choking action over a wide range of wave lengths, including Broadcast bands and Amateur Short Wave bands as well. Many chokes employed on short waves have an unpleasant characteristic of showing so-called "holes" in the tuning range, which is present also on the broadcast band but in a minor degree. These faults are corrected in the Aero Choke-60.

Price $1.50

New AERO Choke 248

The Aero Choke 248 is especially designed for operation in Aero Transmitter kits 2040K, 4080K and 9018K, and other circuits. Aero Choke 248 presents a high impedance or choking action over the usual amateur wave lengths. It efficiently covers the entire transmitter band up to 190 meters. It is wound with a conductor sufficiently liberal to handle transmitters up to 100 Watts.

Price $1.50

A NEW SERVICE

We are now able to furnish complete Foundation Unit for the Aero Short Wave Receiver, the improved Aero-Dyne 6, the Aero 7, the Aero 4 and the Chicago Daily News 4-Tube Receiver, drilled and engraved on Westinghouse Micarta, at a very reasonable price. These fully finished panels greatly simplify construction of these circuits and are a great convenience for the home set builder. Detailed blue print and wiring diagram for each circuit included with every Foundation Unit. Write for prices and complete information.

You should be able to get any of the above Aero Coils and parts from your dealer. If he should be out of stock order direct from the factory.

AERO PRODUCTS, Inc.

Department 16 **1772 Wilson Ave.** **Chicago, Ill.**

necessary figures from map and tables, perform three simple additions and two subtractions and there's the answer. Compare it with the old formula, where in getting the result as shown, you must multiply five times and add three times. When one is using five place decimals, that multiplying is a tedious process.

Here is what the form I use is like. It is filled out for the distance between Portland, Oregon and Zanesville, Ohio.

Co-latitude a=50° 3′
Co-latitude b=45° 10′ log cot=9.99747
Longitude difference
C=40° 37′ log sec=0.11971

Sum=log tan N=0.11718
N=52° 38′ log cos N=9.78313
log tan C=9.93329

Sum=9.71642
a+N=102° 41′ log cos=9.32902

Difference=log tan B=0.38740
log cot (a+N)=9.33913
B=67° 43′ log cos B=9.57885

Difference=tan c=9.76028
c=29° 51′=29.93°
log c=1.47611
log 69.04=1.83910

Sum=log distance=3.31521
Distance in miles=2066

Two points in the problem may need explaining. First, when one has found log tan N, he finds several angles having this same tangent. Which to use? Since for our purpose b is always less than 90 degrees, N will be governed by C. If C is less than 90 degrees, then N is also less than 90 degrees; and if C is between 90 and 180 degrees, so also is N. If one is to apply this to general problems, we have another formula

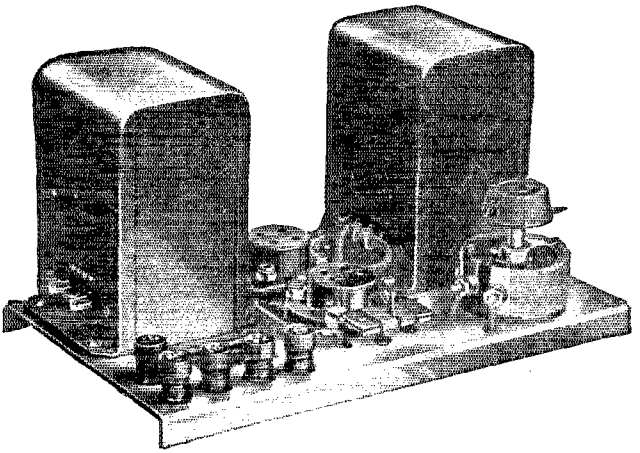
$$x \sin N = \cos b$$
$$x \cos N = \cot b \sec C$$

from which the sign and quadrant of N may be told at a glance without calculation by anyone familiar with Trigonometry. However, one does not have to understand it in order to use the blank forms as shown.

The other point is that in using logarithmic functions, we are chiefly concerned with the decimal part of the log and we add or subtract ten from the integral part as we go along so as to keep the number somewhere between zero and ten and thus avoid negative logs.

I have never seen this formula in a text-

PUSH-PULL AMPLIFICATION



IN a search for an amplifier combination which would give the maximum in quality and volume, the push-pull method has proved particularly satisfactory.

While push-pull transformer coupling does not increase the amplification per stage, the maximum undistorted power output is greatly increased. The reason for this is that distortion due to tube overloading cancels out, permitting a greater output from each tube than would be possible if the tubes were used as in other methods of coupling. A further advantage of push-pull amplification when using an A. C. filament supply is that hum voltages also cancel out, rendering the amplifier very quiet.

The type 441 unit with two type 171 power tubes having a plate voltage of 180 will give more volume and better quality than a single transformer coupled stage using the type 210 power tube with 400 volts on the plate.

The General Radio Type 441 unit is completely wired and mounted (as illustrated) on a brass base-board with conveniently located binding posts so that the unit may be built into a receiver or connected with an existing set as a separate unit.

The type 441 may be used with either the UX-226, UX-326, or UX-171, CX-371 tubes.

Type 441 Push-pull amplifier..... **$20.00**

The type 441 unit is licensed by the Radio Corporation of America for radio amateur, experimental, and boadcast reception only, and under the terms of the R. C. A. license the unit may be sold only with tubes.

Type UX-226 or CX-326 Amplifier Tube..... $3.00

Type UX-171 or CX-371 Amplifier Tube..... 4.50

GENERAL RADIO

Parts and Accessories

GENERAL RADIO CO. - - Cambridge, Mass.

If you are not located within shopping distance of a dealer stocking G. R. parts, remember that we will ship post paid anywhere in the United States any standard G. R. item on receipt of list price.

book of mathematics and do not think it is very commonly known even to teachers. I hope it may prove of interest.

—*R. P. Griffith, 9EJQ*

Pse QSL

101 Morien Hill,
Caledonia Mines, C.B. N. S.

Editor, *QST:*

The undersigned are four Canadian hams, who have come to look upon this QSL card business as a crime.

We have no particular desire to victimize any nationality, but it is our experience that the Americans are the worst offenders in this respect.

We liberally estimate that we only receive about one card in return for three sent.

This is nothing more or less than false pretense and as hams we strongly resent it. We feel sure that any real ham will QSL and others should do so, in order to preserve the high standing and integrity of the fraternity.

Some of the older hams and the high power birds probably don't need any more cards as wall paper, but they must and should reflect that they were beginners once and cherished these cards and we feel that they should extend to the newer hams and some of the older ones too, the courtesy of card for card.

Trusting that we are not imposing on your time and space, we remain,

—*J. J. Holmes, nc1BT.*
—*Archie McPhail, nc1DA.*
—*Stanley H. Appleton, nc1DM.*
—*Frank Miller, nc1BR,*

Backing

597 North James St.,
Hazelton, Penna.

Editor, *QST:*

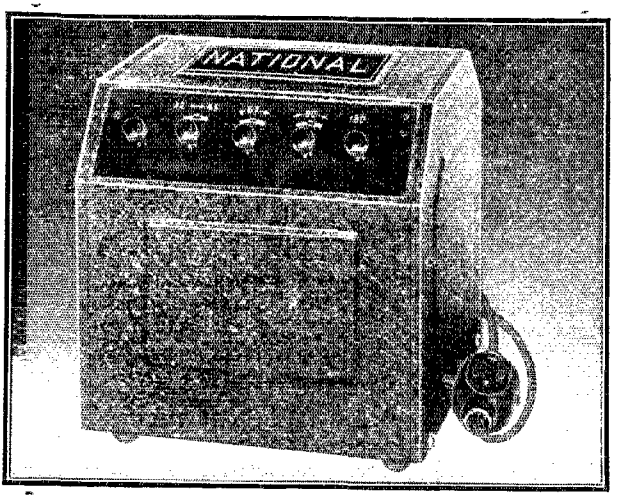
I just have to write you regarding "Correspondence" of 8BMW and 8CBM in the June issue, page 58. This same thing has been in my mind for some time. All I will say is that I hope you will wholeheartedly push this to the limit. Amateur phones have their place in radio, but in fairness to relay men, their place is most certainly not on 85 meters, let alone hashing up the entire band, as many of them insist in doing. DXing is on 20 and 40. Let us relay men have at least one band.

Mr. F. T. McAllister is backing my suggestion (re Oct., P. 49) on QSLL, so I must endorse it! I hope he starts it. Hi!

I was both amused and surprised at Mr. H. B. Richmond's letter of "Grafting". I will wager that not 1% of these "beggars" would personally walk in to Mr. Richmond and make these requests. Individual or organization, it is time to quit when it comes down to an alms proposition.

—*H. M. Walleze, 8BQ.*

NATIONAL



TONE FILTER
FOR BETTER TONE AND SPEAKER PROTECTION

FILAMENT TRANSFORMER
NO. 124 FOR THE NEW A.C. TUBES

THE ORIGINAL VELVET VERNIER DIAL TYPE A

R-28 BATTERY-CHARGER
1½ TO 5 AMPERES

IMPEDAFORMER
FOR QUALITY AUDIO

ILLUMINATED VELVET VERNIER DIAL TYPE C

AN ENTIRELY NEW AND UNIQUE HEAVY-DUTY *BETTER*-B

Supplies

Detector voltages, 22 to 45 adjustable; R. F. voltages from 50 to 75; A. F. voltages from 90 to 135; Power tube voltage 180 fixed.

An Exclusive Feature

Tubes and by-pass condensers are protected against excessive and harmful voltages.

Designed for lasting service with liberal factors of safety.

A Strictly Heavy-Duty Power Unit

Output rating is 70 mils at 180 volts. Uses R. C. A. UX-280 or Cunningham CX-380 Rectron.

Licensed under patents of Radio Corporation of America and Associated Companies.

For 110-120 Volts, 50-60 cycles A. C. List price with cord switch and plug, $40. Rectifier tube, $5.

Write National Co., Inc., W. A. Ready, Malden, Mass., for new Bulletin 124.

NATIONAL-B

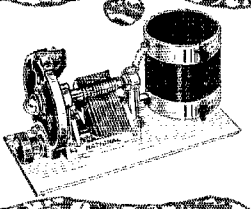
Type 7180

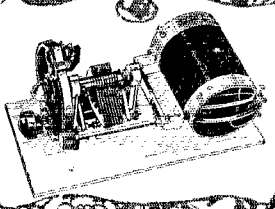
A "B" That's Built for Service

NATIONAL IMPEDAFORMERS, TUNING UNITS, VELVET VERNIER DIAL, CHARGERS, TONE FILTERS, TRANSFORMERS, FILTERS CHOKES, ETC.

POWER TRANSFORMER FOR PLATE SUPPLY UNITS

FILTER CHOKES TYPE 80





NATIONAL TUNING UNITS — THE HEAVENLY TWINS

More National Tuning Units have been used by set builders than all other similar components combined.

Standard since 1923 — *Approved By* — The OFFICIAL Design

BROWNING & DRAKE

I. A. R. U. News

(Continued from Page 48)

signals were reported R3 steady d.c. and not a single word was missed despite the usual China coast heartbreaking static condition. I have seen a letter from Gabriel Prior, radio officer aboard the *Adamaston* confirming the QSO. To show that it was not a freak, ac3MA called up xep1MA again on the 20th of June and again QSOd until 1MA had to break off to keep his schedule with nu6CDK.

"One would think that 3MA would be glad to save himself the trouble of messing around with plate supply, filters, r.f. chokes, etc. But no! Such is human nature! 3MA has tasted blood and his last letter to me says, 'I had my two tube ten-watter going and worked op3AC but I am now setting up a fifty-watt outfit and hope we will be going in a couple of days'."

—*G. W. Fisk, ac2FF.*

FRANCE

We have received word from Mr. C. Conte whose lists of "Calls Heard" appear regularly in *QST* and who does a great deal of listening in on short waves, states that reception during the month of August has been deplorable and that he has known nothing like it since 1924.

For ten days of the month, no American stations were heard at all while on the other days, signal strengths varied between R2 and R3 with the latter intensity as the maximum. The best results were obtained between the 14th and 18th when signal strengths of as high as R5 and R7 were had. All these remarks concern wavelengths between 30 and 44 meters. The 20-meter band is somewhat better and the QRK sticks around R4 to R6 fairly steadily.

GERMANY

"The main difficulty for the German amateurs is in obtaining new licenses. The Postmaster General will issue no new licenses until he knows what new international regulations concerning amateurs will be adopted at the Washington Conference in October.

"In spite of this, hundreds of amateurs are on the air even though they are only using extremely low power (3 to 5 watts) with which they are able to work stations all over Europe. Unfortunately, with the exception of Southern Germany, conditions for DX transmission are very bad as compared with those in Holland and England. Some of the southern German stations have done excellent work, though.

"The General Traffic Management of the D.A.S.D. (Deutscher Amateur-Sendedienst) is now located in Berlin and after overcoming many difficulties is now operating in a smooth fashion. The publication of the official organ, *CQ*, which appears monthly is under a large handicap as the men who make it up do so in addition to their usual vocations. However, each issue is better than the last and those who are responsible for it deserves much credit for their efforts.

"Unfortunately, the Berlin amateurs who all coöperate in the running of the H.V.L. (General Traffic Management) have been so busy with that organization that they were unable to spend much time with their sets."

—Dr. Kofes, ck4ADE, General Traffic Manager.

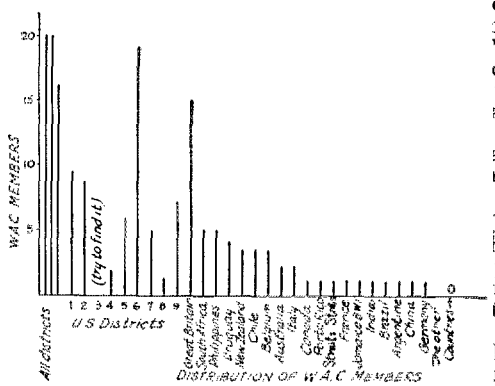
AUSTRIA

According to a decision of the Oesterreichischer Versuchssendererverband (Austrian Amateur-Transmitter League), all QSL cards for Austrian amateurs are to be sent *only* via Radiowelt, QSLL Bureau, Wien, III., Ruedengasse 11, Vienna, Austria. This QSL address will be referred to over the air by the code lettters "RW". It is requested that all take note of this and govern themselves accordingly.

WAC

It is most interesting to know where the "centers of population" of the membership of the club are located. An analysis of the list of the members as regards their geographical location brings to light some facts that would be expected and also several that were unsuspected.

As is expected, the United States of America has approximately half the members within its boundaries. Of these fifty-six members, eighteen are in the sixth district; nine in the first; eight in the second; seven in the ninth; six in the fifth; five in the seventh; two in the fourth; one in the eighth and none whatever to represent the third district. Why is the third district so backward in coming forward? Surely, at least one of the many active stations in that district must be interested enough in foreign DX to have made a try for membership. And for that matter, the eighth district isn't so far "out of the mud" that they can afford to do any loafing on the job.



Looking at the other end of the line, we find the sixth district head and shoulders above its nearest competitor. One possible reason is that the most difficult contact

for the "6" is Europe which being well populated with amateur stations offers many possibilities for QSOs. On the other hand, the biggest jump for the eastern stations is to Asia, a continent having comparatively few stations and many troubles as far as getting QSL cards thru is concerned. After all, the much belabored QSL card is the only means by which we can check up on claims of having worked all continents and even if a difficult contact is made, it doesn't mean a thing to us unless the card is at hand to prove it.

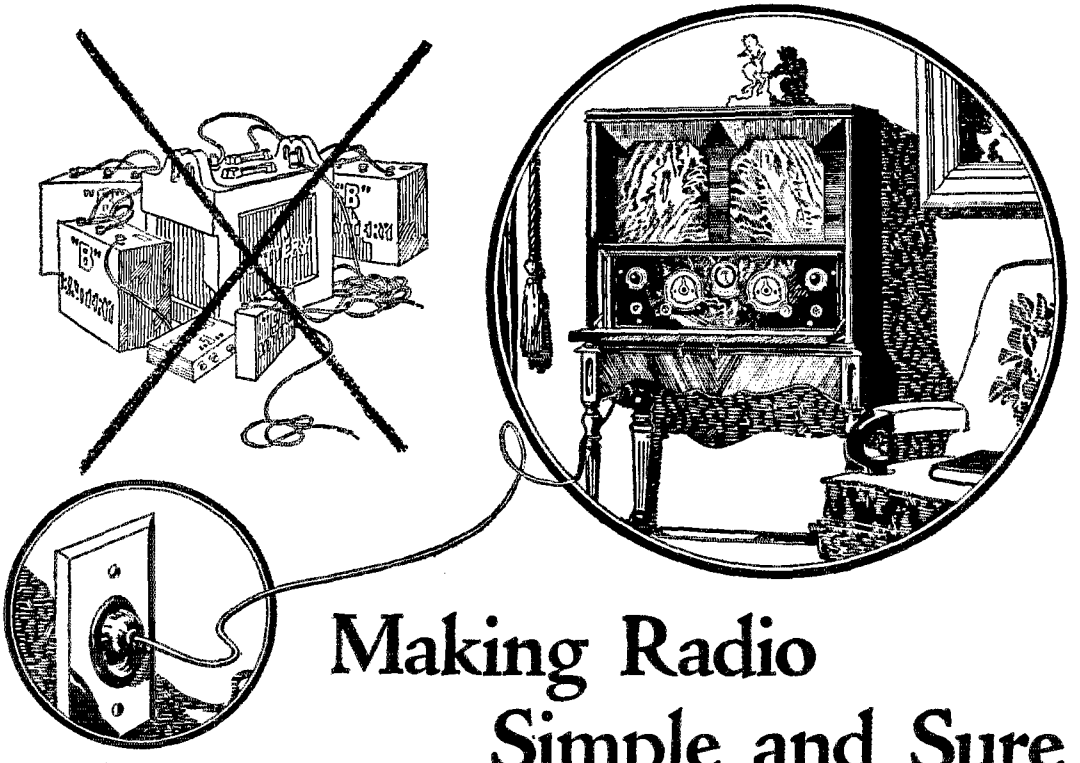
As "in betweens", the first, second, ninth, fifth and seventh districts hang well together and it would be expected that the fourth district being a small one would not be in a position above that which it holds. However, it cannot be denied that this list is somewhat of a "shock" to most of us.

When viewing the location of those members not within the boundaries of the U.S.A. we run into some more "upsets". Great Britain and Northern Ireland lead with a total of fifteen members. Second place is held by South Africa and (now for another upheavle) the Philippines who tie with five members each. We then find Uruguay with four and New Zealand, Chile and Belgium "neck and neck" with three members each. Then comes Italy with two members and (another surprise) Australia with only the same number. Those countries boasting of only one member each are Canada (don't ask us why), Porto Rico, Straits Settlements, China, France (another mystery), Jamaica, B.W.I., Germany, India, Brazil, Argentina and Chile. If anyone asks us why the A, B, C States haven't any more members, we'll bite!

We really couldn't refrain from making up one of those graffic charts showing the facts stated above. They show contrasts so well.

The following is a complete list of member stations and if anyone has been omitted or any error of any sort made, it would be appreciated if it is called to our attention. nu6OI, nu6HM, nu1AAO, nc4GT, np4SA, nu9ZT-9XAX, eb4UZ nu9DNG, op3AA, nu2APV, op1AU, nu5ACL, nu5JF, eg2IT, eg-gi5NJ, op1CW, fo1SR, nu1CMP, nu1CMX, eb4RS-3AA, nu7IT, nu1CH, sc9TC, nu5TW, nu6CTO, op1BD, nu9BSK, nu4SI-4TN, am-vs-ss2SE, eg5XY, sc2LD, ef8CS, nu2CRB, oa2SH, nu7VH-7TM, nu2MK, nu2AHM, nu2CYX, su2AK, su1BU, nu4BL, nu9BHT, nu6ZAT, eg5SZ, nu5QL, nu8ALY, eg5MA, foA5X, nu1VC nu6VZ, nu6CCT, nu7EK, eg6TD, sc2AS, nj2PZ, nu6VC, nu9ARA, eg2QB, ek4UAH, nu5AQ, nu1ALR, op1HR, ai2BG, eg5BY, nu6CKV, foA3Z, eg2NH, eg5KU, ac8HB, nu1PY, nu6NX, nu6CDW, oz4AO, oz3AR, nu7DF, nu1AZD, foA3X, eg5UW, ei1GW, nu7KB, oa2RC, eb4BC, sb2AS, saGA2, nu7RL, nu9CCS, foA4L, nu6BUX, su1FB, eg5HS, nu2APD, ei1RM, nu6AZS nu1ON, eg6YD, eg5YK, nu2GX, nu6BJL, nu5AUZ, nu2MD, nu6DFE, nu6AOI, su1CD, nu9AEK, nu6CAE, nu6AM and oz4AM.

As may be noted, Don Wallace is the



Making Radio Simple and Sure

No. 524 Stromberg-Carlson A.C. Receiver. Art Console.

Coils shielded. Equipped with new Audio-Power Unit containing audio-output system and supplying all "A," "B" and "C" voltages direct from house lighting circuit. Operates from antenna. Equipped with Voltmeter. Jack in panel for magnetic phonograph pick-up. Mahogany.

Price, with Audio-Power unit and 8 R.C.A. Tubes—but not including Cone Speaker,

East of Rockies . . .	$425.00
Rockies and West . .	455.00
Eastern Canada . . .	565.00

No. 502 Stromberg-Carlson Universally Powered Receiver.

Similar Cabinet. For use where 60-cycle current is not available.

Price, including tubes, but not including other accessories,

East of Rockies . . .	$303.75
Rockies and West . .	328.75
Eastern Canada . .	355.25

WITHOUT batteries—without acids or liquids, the new A.C. Stromberg-Carlsons are utterly free from the need of attention—always ready to be placed in use at the turn of a single switch.

Having the unfailing power of the house lighting circuit to supply the "A," "B" and "C" voltages, they operate at all times with maximum efficiency.

Furthermore, every Stromberg-Carlson A.C. Receiver has a wonderful new feature; note-worthy achievement of the Stromberg-Carlson Laboratories—it is arranged so that it may be used to play phonograph records through the audio system of the Receiver and the Cone Speaker.

To be "up-to-date" in Radio you should get a Stromberg-Carlson A.C. Receiver.

Stromberg-Carlson Telephone Mfg. Co.
Rochester, N.Y.

Stromberg-Carlson

Makers of voice transmission and voice reception apparatus for more than 30 years

only one to have a membership for stations located in two U.S.A. districts. He first obtained one with 9ZT-9XAX and then later on the Pacific Coast with 6AM. Congrats and FB!

QRA

A few new QRAs have been received and are given herewith:

ek4SAR—J. Kroom, Wackelberchtrasse 6, Saarbrucken, Germany. 33 meters, a.c. (by 2CUQ)

fl1AB—Gov't Station, Monrovia, Liberia, West Africa, operated by Sydney McCaleb and Mr. Osier. 34 meters, d.c. (reported by 3MV, 4SH-4JV and 4SI-4TN)

ngML—Guatemala, C. A., (by nu1AJD) Any more information?

xoa5MA—Barkentine E. R. Sterling, c/o Berry Barclay Co., 88A Leadenhal St., London, England. 500 cycles, 32 meters. (by 3MV)

XC51—Army station, Mexico City. (Aviation Dep't.)

XC52—Guadalajara, Jalisco, Mexico.

XC55—Estacion Ortiz, Sonora, Mexico.

XC61—Estacion Cajeme, Sonora, Mexico.

XC66—Magdalena Bay, Lower California, Mexico.

XC67—Guaymas, Sonora, Mexico.

XC68—Topic, Nayarit, Mexico.

The abov "XC" stations are all of the Mexican Army. (by 6AM)

QSL SECTIONS

Austria—Radiowelt, QSLL Bureau, Wien, III, Rudengasse 11, Vienna, Austria.

Belgium—Reseau Belge, QSL Section, 11 Rue du Congress, Bruxelles, Belgium.

China—c/o H. B. Wilson, P. O. Box 266, Shanghai, China. (*Under cover*)

Czechoslovakia—Ceskoslovensky Radioklub, Praha II, Slovansky ostrov 5, Czechoslavakia. (*Under cover*)

Esthonia—Mr. Olof Leesment, Parnu, Aiatan 6, Esthonia. (*Under cover*)

France—Robert Larcher, 17 Rue Fessart, Boulogne-Billancourt, (Seine) France.

Germany—Deutscher Funktechnischer Verband, QSL Section, Berlin W. 57, Blumenthalstrasse 19, Germany.

India—R. J. Drudge-Coates, Cambridge Barracks, Rawalpindi, India.

Ireland—Irish Radio Transmitters Society, Solent Villa, Kimmage Road, Terenure Co., Dublin, Ireland.

Italy—Associazione Radiotecnia Italiana, Viale Bianca Maria 224, Milano, Italy.

Great Britain—Radio Society Great Britain, QSL Section, 53 Victoria St., Westminster, London S.W.1, England.

"I know because I use them"—

Men actively interested in Radio manufacture and traffic are familiar with the many applications of Faradon capacitors and know that the product of the Wireless Specialty Apparatus Company can be depended upon to give unvarying, long-lived service. They know that the twenty years of Radio Condenser experience has produced in Faradon a product they may specify and recommend with perfect confidence. Units in regular production will take care of most requirements. Our engineers will be glad to advise with you regarding any unusual condenser problem.

WIRELESS SPECIALTY
APPARATUS COMPANY
Jamaica Plain : Boston, Mass., U.S.A.
Established 1907

Faradon

Electrostatic Condensers for All Purposes

1282

Netherlands—I.A.R.U., Hoogduin, Noordwijk, a/2, Netherlands.

New Zealand—New Zealand Association Radio Transmitters, Box 733. Auckland, N. Z.

Portugal—Rede Emissors Portugezes, Tenente Eugenio de Avillez, 15 Costa do Castello, Lisbon, Portugal.

Spain—Association EAR, Mejia Lequerica 4, Madrid, Spain.

Sweden—Foreningen Sveriges Sandaramatorer SSA, Svenska Radeaoklubben, Hamngatan 1 A, 3 tr., Stockholm, Sweden.

Uruguay—Casilla de Correo 37, Montevideo, Uruguay.

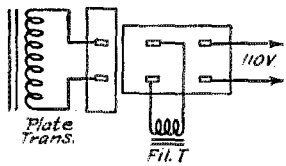
If those associations maintaining QSL sections which are not listed here will send us a card to that effect, their names will be included in the next list to appear. Notice concerning errors or changes in the status of any of the organizations listed above would also be appreciated.

Strays

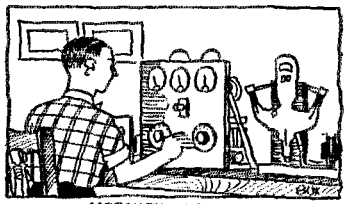
A simple switching arrangement whereby the filaments of the tubes are turned on before the plate voltage is applied is given by George P. Taylor of 9BAN.

"The parts needed are a d.p.s.t. and a s.p.s.t. battery switch and two brass strips 3 3/8" by 3/8" by 1/16". The switches must be of the type that have the movable blade held by a bolt rather than by a rivet.

"The arm is taken off the s.p.s.t. switch and the contact posts turned around a one-quarter turn. The blades and handle are



removed from the d.p.s.t. switch and the new brass strips are fashioned after the old ones. They are, of course, longer, and are bolted to the contact posts in place of the old ones. The handle is also bolted to them. The converted s.p.s.t. switch is placed in front of the d.p.s.t. one and with the switch closed, both are screwed to the table. The illustration shows the wiring arrangement."



MERCURY ARC

Warning!

There is still a great deal of misleading advertising appearing in the public press on radio. Unscrupulous advertisers take advantage of the fact that the vast majority of the public is unversed in the technical side of radio.

Following the popularity of Battery Eliminators, manufacturers and dealers saw the advantage of selling sets complete with power units; then there are the new A C tube sets equipped for use with a B-Power Unit and a Transformer for the "A" side.

Many advertisements of the above popular "All-Electric Radio Sets" carry such statements as:

"No Batteries, No Eliminators, Your Light Socket Supplies All Power"

Such statements are absolute falsehoods and are unfair to honest advertisers. No electric radio set has ever been built or marketed which does not require a so-called "B Battery Eliminator," better termed a "B Current Supply" or "Power Unit." The current as it comes from the light socket is totally unsuited to operate any radio set without the use of power units.

Buy your new electric receiving set and power unit, therefore, from manufacturers and dealers who tell the truth.

This advertisement printed in the interest of fair trade by GRIGSBY-GRUNOW-HINDS CO., Chicago, Manufacturers of Majestic Electric Power Units.

Northwestern Division Convention

ON September 2nd and 3rd Spokane was the center of ham activities in the Northwest. Every state in the Division was well-represented by delegates and there were a number of visitors from the outside in addition.

There was something doing every minute from start to finish. In between the interesting meetings and talks the gang operated local ham stations or visited the "shack" of the Radio Operators' Club to operate or talk. There were trips to the Telephone and Telegraph building, to broadcasting station KGA, to the aviation field, and to the plants of the Washington Water Power Co.

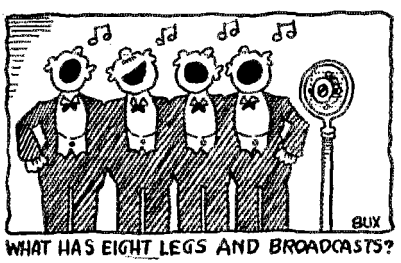
Features of the convention were an enjoyable traffic meeting, a red-hot business session (at which it was decided to have the next A.R.R.L. convention at Seattle), a showing of a movie of A.R.R.L. Headquarters, an interesting talk on radio interference by T. W. MacLean of the Washington Water Power Company, and a banquet with many unusual entertainment features and honored by the presence of Senator Dill, author of the Senate Radio Bill. Howard Mason's first-hand story of radio work and adventure in the arctic was especially thrilling and interesting and will be long-remembered by all. After the distribution of prizes generously contributed by manufacturers the gang were not ready to break up so a blackboard was obtained and following another technical session with a general discussion and talks by Mason and the writer the delegates bid each other good-bye until next year except for radio schedules.

—*F. E. H.*

Strays

5ACL tells us that the Faradon, 1750-volt filter condensers are made in two sections and that when one of these blows, the can may be ripped off and the bad section cut out of the circuit.

By screwing General Radio plugs into the threaded inserts in the Sangamo condensers, a good plug-in-grid-condenser may be had. A small piece of bakelite can hold the jacks for it and the grid leak mounting clips.



WHAT HAS EIGHT LEGS AND BROADCASTS?

Announcing

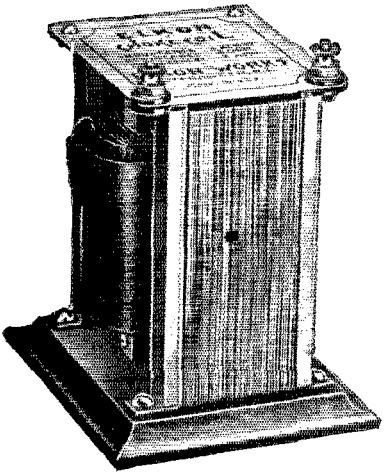
ANOTHER

REG. U.S. PAT. OFF.

ELKON

IMPROVEMENT

The ELKON CHOKE COIL



The Elkon Choke Coil

$6.00

made by the manufacturers of

ELKON TRICKLE CHARGER

The original silent bone dry Trickle Charger. 1 amp. capacity. Tapers automatically.

ELKON "A" POWER

Flawless filament "A" Power Instantly. No liquids, tubes or moving parts.

ELKON 3 AMPERE CHARGER

The silent rugged rectifier. Bone Dry. Recommended for use with the Elkon Choke Coil.

Plenty of reason for calling it an "improvement," not just another choke coil, for it possesses substantial advantages you will be quick to recognize.

For example, it is used, with its charger, ONLY DURING RECEPTION, having ample capacity for supplying undiminishing filament "A" power up to full capacity of the charger. Here are both economy and convenience.

Connected up with full wave rectifier it will provide filament "A" power of uniform high quality with any good "A" battery.

It's new, and your dealer may not have it in stock, but he will gladly order it for you, or we will send direct.

ELKON WORKS Inc.
Subsidiary of P. R. Mallory & Co. Inc.
Weehawken, N. J.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of *QST*, published monthly at Hartford, Conn., for October 1, 1927.

County of Hartford } ss:
State of Connecticut }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared K. B. Warner, who, having been duly sworn according to law, deposes and says that he is the business manager of *QST* and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, The American Radio Relay League, Inc., Hartford, Conn.: Editor, Kenneth B. Warner, Hartford, Conn.: Managing Editor, F. C. Beekley, Hartford, Conn.: Business Manager, Kenneth B. Warner, Hartford, Conn.

2. That the owners are: (Give names and addresses of the individual owners, or if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock.) The American Radio Relay League, Inc., an association without capital stock, incorporated under the laws of the State of Connecticut. President, Hiram Percy Maxim, Hartford, Conn.; Vice-President, Chas. H. Stewart, St. David's Pa.; Treasurer, A. A. Hebert, Hartford, Conn.; Communications Manager, F. E. Handy, Hartford, Conn.; Secretary, K. B. Warner, Hartford, Conn.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

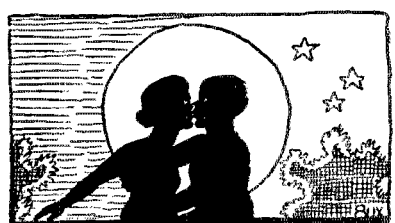
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear on the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustees is acting, is given; also that the said two paragraphs contain statements, embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct, or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceeding the date shown above is .....(This information is required from daily publications only.)

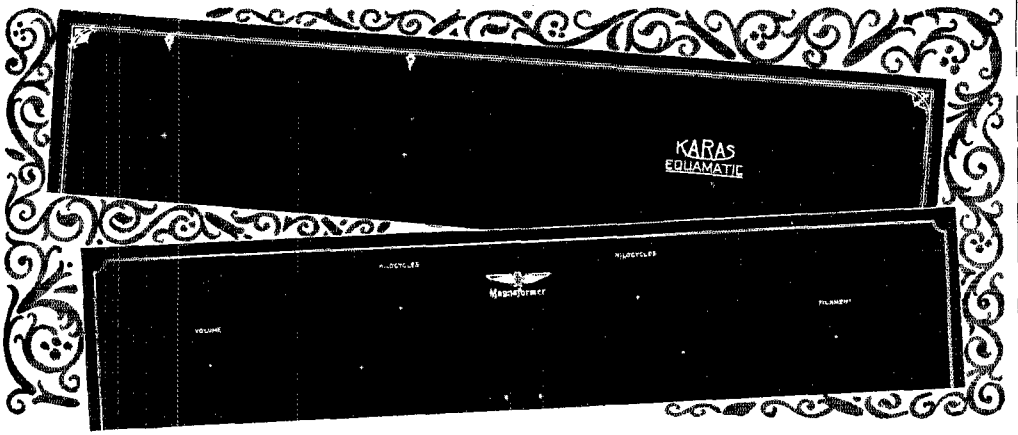
K. B. WARNER.

Sworn to and subscribed before me this 1st day of October, 1927.

Caroline S. Crisman, Notary Public.
(My commission expires February, 1931.)



THE OLD SPARK SYSTEM WASN'T SO BAD



Panels For Magnaformer and Other Kits

Formica is supplying handsomely decorated and drilled front and sub panels for the Magnaformer Circuit; also Tyrman front and sub panels, H.F.L. new hook-up; Karas new hook-up; World's Record Ten, Camfield Nine and Camfield Seven.

Other kits for which Formica panels are available are Madison-Moore; Melo-Heald, Victoreen, St. James and Infradyne.

These panels enable the home constructor to build a set equal in appearance and efficiency to the best manufactured receivers.

Sold by leading dealers and jobbers everywhere.

The Formica Insulation Company

4620 Spring Grove Avenue Cincinnati, Ohio

Any parts dealer or jobber can get Formica panels for you.

FORMICA

Formica has a complete service on insulating parts for the radio manufacturer.

The Rocky Mountain Division Convention

WITH "Roastmaster" Paul M. Segal in full charge the second annual convention of the Rocky Mountain Division was called to order at the Hotel Argonaut, Denver, Col., Friday, August 26th, and from then on till the closing late Saturday night every minute was filled with meetings or entertainments.

Ray Stedman, 9CAA presided over the Traffic Meeting, where good speeches were made by Communications Manager Handy from A.R.R.L. Headquarters, M. O. Davis, 9CDE, of La Junta and T. A. La Croix, 9DKM, and the first day ended with a "Weenie Fry" way up in the mountains which was much appreciated by all present, and especially the Y. L.'s. (Yes, Denver is a place where the Hams are not afraid to bring out the Y. L.'s and O. W.'s).

Good technical information was presented on Saturday by Glen Earnhart, 9CHV; H. M. Williams 9BXQ, Mr. Bonnelli of the Western Union and F. E. Handy and it was one of the best meetings.

While this Division is not large numerically it has the proper spirit as was well demonstrated by the good percentage in attendance and the whole hearted way in which the gang took part in the different contests, and after a real to-goodness-banquet for the closing event the delegates' tin whistles were heard sending CUL next year.

The November Tests

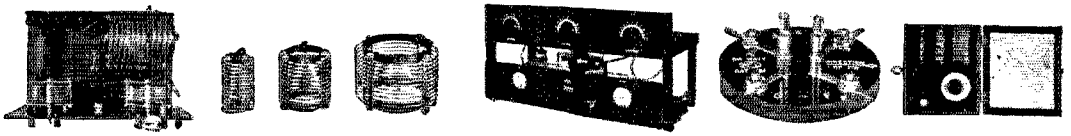
(Continued from Page 39)

turned by a small rubber friction disc on a separate shaft as shown in the Lidbury wavemeter shown in one of the illustrations. The paddle is held in one hand and the small knob on the extra shaft turned with the other. This is a convenient rig for any small wavemeter.

Resonance may be indicated by the usual "click" method when working on a receiver, by reaction on a meter when working with a transmitter or by a small lamp soldered to a 1" turn of wire, the whole thing being hung by 3 threads inside the single-turn coil of the wavemeter. Better make up several of these indicators while the soldering copper is hot —also buy the lamps by the dozen.

—*R.S.K.*

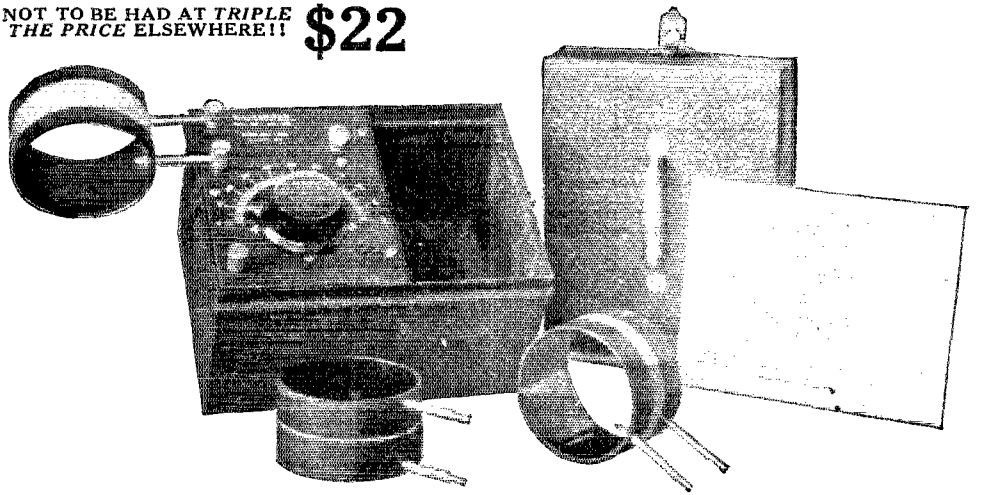
DRILLING YOUR PANELS



BEGINNER'S TRANSMITTER. TRANSMITTING INDUCTANCES – TUNED PLATE TUNED GRID '50 WATT SOCKET WAVEMETERS

R.E.L's. NEW WAVEMETER!

NOT TO BE HAD AT *TRIPLE THE PRICE* ELSEWHERE!! **$22**



FOR AMATEUR AND BCL USES

This is an ideal popularly priced wavemeter embodying the following exclusive features.

1. Handsomely finished, totally shielded metal cabinet that may be grounded.
2. Precision calibration from Quartz Crystal frequency standard.
3. Each instrument individually calibrated.
4. Neon tube gives sharp resonance indication.
   (Ordinary flashlight lamp not used)
5. Coils wound on grooved bakelite forms.
6. Dial scale engraved on panel. Indicator dial securely locked on condenser shaft to prevent possibility of loosening.
7. Large, very legible curve chart.

Wavelength ranges:—Coil No. 1: 15-55 meters
Coil No. 2: 45-160 meters Coil No. 3: 150-550 meters

A real wavemeter built in a cabinet, always at your service, year in and year out.

REL owns and operates experimental Station NU2XV on 15.1, 30.2, and 60.4 meters

Radio Engineering Laboratories

100 Wilbur Avenue, Long Island City, N. Y.

REL CHOKE COIL DE FOREST "H" TUBE HOLDER 50 WATT COUPLED HARTLEY UX-852 TUBE HOLDER SPECIAL SHORT WAVE COIL KIT

Kansas State Midwest Division Convention

INDEPENDENCE, Kansas was the meeting place for Kansas amateurs on September 9 and 10 and again there were several delegates registered from Oklahoma and other points outside the Division. Excellent talks were given, provoking a thorough discussion on the various points raised. Club organization, traffic handling and international communication, mercury-arc rectifiers, and constructing a crystal controlled transmitter were the subjects handled by Mr. J. H. Amis, 9CET; Mr. Fergus S. McKeever (S.C.M.), 9DNG; Mr. G. I. Jones, 9AEK; and Mr. J. B. Fronkier, 9DIH. Some important facts were brought out at the traffic and technical meetings conducted by the C.M. who was Headquarters' representative. The International Radio Conference and the Portland, Ore. and Wilmore, Ky. ordinances were discussed informally. After a roof-raising banquet and the distribution of prizes won at the various contests the gang dispersed after another of those friendly get-togethers for which the Midwest is so well known. 9OW won the prize for YL's showing how little call letters sometimes signify. 9JU and 9BUY, President and Secretary of the Imperial Brass Pounders' Club, were very much in evidence and a vote of thanks was given them and the Club for the fine time enjoyed by all.

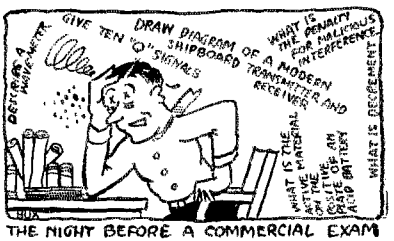
—*F. E. H.*

Amateur Radio and the Pacific Flights

(Continued from Page 41)

airplanes on long-distance flights. The signals of KGGA were at all times easily readable. They were copied all up and down the West Coast, in Hawaii, generally throughout the United States, in New York City, and in Italy. The last-named, it is believed, establishes a record for radio transmission from airplanes. When it is remembered that only a single fifty-watt tube was employed, and that the plane most of the time was fairly close to the surface of the water, the work must be considered as phenomenal.

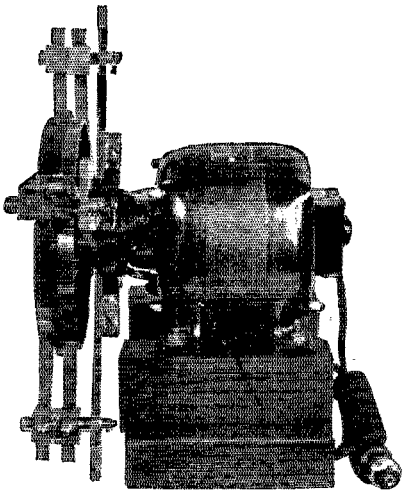
The second lesson, and perhaps an equally great one, is that of the value of the American amateur to the Government, to the public and the public services, and to whomever must rely on radio communication for the carrying out of any hazardous venture.



THE SUPER SYNC

The Synchronous Rectifier That Can Be Filtered

If you want your ham transmitter to rival commercial performance with the power available, we recommend crystal control with super sync plate supply. This combination gives you the ultimate in modern short wave transmission. By using such a method you obtain an output that only commercial apparatus can duplicate. Crystal control of your transmitter provided with super sync plate supply will materially reduce the



size and capacity of the high voltage filter. This is no small item when high power is used. The wave is of course steady to an unparalleled degree and the tone beyond comparison. Another advantage of this system is that it can be applied to either low or high power transmission. In other words by installing a super you have prepared your station for the future should you desire to increase power.

PAT. PENDING

Price Now $55 F.O.B. St. Louis, Mo.

MARLO ELECTRIC CO., 5241 Botanical Ave., St. Louis, Mo., U.S.A.

GROSS QUALITY APPARATUS

Transmitter Kits

Tuned Grid Tuned Plate Type

7½ Watt $47.50

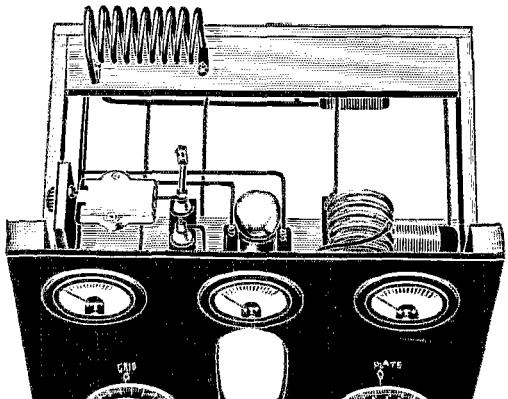
75 Watt $75.00

Plug-In Transmitting Inductances air-insulated wound with heavy plated tubing .....per set $6.75.

No C.O.D. Shipments.

QST—Listen for our Amateur station 2AUD operating on 39.5 meters. Code lessons for beginners transmitted on the Teleplex. Send stamp for schedules. Tests Invited.

Plate Transformers for the 75-watt UX-852 tube in stock.



Universal transmitter change from 7½ watt to 75 watt kit in few minutes. Plug in inductances for any wave length.

UX 852 tubes.....$32.50

Gross Receivers

2 tubes $19.25
3 tubes $23.75

with any one plug-in coil you select, 20-40-80-200 meters.

Extra Coils **$3.00** each

Gross Plug-in Receiver Coils, per set, 20, 40, 80 meters $11.50

GROSS WAVEMETERS

A high grade precision instrument at 1/3 the usual market price. Built into compact carrying case of genuine solid oak, leather handle on top with removable cover. Coils extremely low loss making a very low resistance wavemeter either the flash lamp or galvanometer type will easily respond to an oscillator using 50 volts or less on the plate of the tube. Coils fit into holder in the cover. Calibration better than 1% guaranteed.

Type 1—L—with flash lamp indicator for 20, 40, 80 meter bands $15.00

Type 2—L—with flash lamp indicator for 20, 40, 80 and 200 meter bands $18.75

Type 1—G—with galvanometer indicator for 20, 40, 80 meter bands . $30.00

Type 2—G—with galvanometer indicator for 20, 40, 80 and 200 meter bands $33.75

75 watt, UX-852 Tubes $32.50

J. GROSS & COMPANY, 30 Park Place, N. Y. City

Standard Frequency Signals From WWV

THE schedules for standard frequency transmissions of the Bureau of Standards station WWV for the period of October 20 to April 20 were unfortunately received so late that it was not possible to announce the first schedule at all, nor to bring the schedule of November 21 to our more remote foreign readers in time.

The precision of these standard frequencies is very high. The accidental changes in the ordinary wavemeter and the errors of reading the meter are greater than the inaccuracies in WWV's transmissions. Quoting from the Bureau's circular letter—

"The transmissions are by continuous-wave radio telegraphy. The signals have a slight modulation of high pitch which aids in their identification. A complete frequency transmission includes a 'general call' and 'standard frequency' signal, and 'announcements'. The 'general call' is given at the beginning of the 8-minute period and continues for about 2 minutes. This includes a statement of the frequency. The 'standard frequency signal' is a series of very long dashes with the call letter (WWV) intervening. This signal continues for about 4 minutes. The 'announcements' are on the same frequency as the 'standard frequency signal' just transmitted and contain a statement of the frequency. An announcement of the next frequency to be transmitted is then given. There is then a 4-minute interval while the transmitting set is adjusted for the next frequency.

"The signals can be heard and utilized by stations equipped for continuous-wave reception at distances up to about 500 to 1000 miles from the transmitting station. Information on how to receive and utilize the signals is given in Bureau of Standards Letter Circular No. 171, which may be obtained by applying to the Bureau of Standards, Washington, D. C. Even though only a few frequency points are received, persons can obtain as complete a frequency meter calibration as desired by the method of generator harmonics, information on which is given in the letter circular. The schedule of standard frequency signals is as follows:"

Schedule of Frequencies in Kilocycles

(Approximate wavelength in meters in parentheses)

Eastern Standard Time	Nov. 21	Dec. 20	Jan. 20	Feb. 20	March 20	April 20
10:00 to 10:08 p.m.	1500 (200)	3000 (100)	550 (545)	125 (2400)	300 (999)	3000 (100)
10:12 to 10:20 p.m.	1650 (182)	3300 (91)	650 (461)	150 (1999)	325 (923)	3300 (91)
10:24 to 10:32 p.m.	1800 (167)	3600 (83)	750 (400)	175 (1713)	350 (857)	3600 (83)
10:36 to 10:44 p.m.	2000 (150)	4000 (75)	900 (333)	200 (1499)	375 (799)	4000 (75)
10:48 to 10:56 p.m.	2250 (133)	4400 (68)	1050 (286)	225 (1333)	400 (750)	4400 (68)
11:00 to 11:08 p.m.	2500 (120)	4900 (61)	1200 (250)	250 (1199)	450 (666)	4900 (61)
11:12 to 11:20 p.m.	2750 (109)	5400 (56)	1350 (222)	275 (1090)	500 (600)	5400 (56)
11:24 to 11:32 p.m.	3000 (100)	6000 (50)	1500 (200)	300 (999)	550 (545)	6000 (50)

VITROHM Transmitting Grid Leaks and Rheostats now cover the entire line of transmitting tube circuits. ¶The prices on these amateur products are reduced materially. ¶Your dealer should stock Vitrohm Transmitting Products. ¶If you have difficulty in obtaining them, write us direct.

CATALOGUE NUMBER	PRODUCT	RESISTANCE	DISSIPATION	CURRENT	MAX. TUBE RATING	PRICE
507-2	Grid Leak*	5000 ohms	44 watts	90 m.a.	100 watts	$2.00
507-3	Grid Leak*	5000 ohms	200 watts	200 m.a.	1000 watts	2.80
507-4	Grid Leak†	50,000 ohms	200 watts	60 m.a.	1000 watts	6.50
507-5	Grid Leak†	20,000 ohms	200 watts	100 m.a.	1000 watts	4.25
507-51	Grid Leak*	10,000 ohms	200 watts	135 m.a.	1000 watts	4.00
507-66	Grid Leak**	15,000 ohms	200 watts	120 m.a.	1000 watts	6.00
507-63	Rheostat†*	50 ohms	50 watts	1 amp.		5.50
507-59	Rheostat*†	20 ohms	80 watts	2 amp.		5.50
507-83	Rheostat*†	12.5 ohms	60 watts	2.2 amp.		5.50

* Center-tapped
† DeForest P or R. C. A. 852 Tube
De Forest H Tube

** Steps at 5M—10M—15M
for R. C. A. 852 or DeForest P Tube
†* For Primary Control
*† Filament and Primary Control

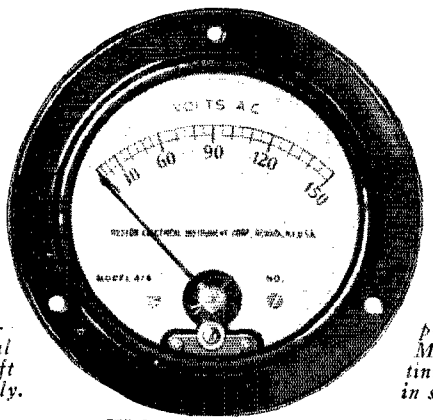
Ward Leonard Electric Company

37-41 South Street Mount Vernon, N. Y.

A. C. 3¼ inch diam.

476

This model, together with D. C. Model 301 and Model 425 Thermo couple instruments, offers a complete and uniform line for panel use. Scale length, 2.35". Guaranteed 2% accuracy on any commercial frequency. May be left in circuit continuously.



A. C. 2 inch diam.

517

This complete 2" diameter line, companion to D. C. Model 506 and 507 Thermo instruments, are also guaranteed for 2% accuracy. Ideal for small panel use. Scale length 1.5". May be left in circuit continuously. All are uniform in size and appearance.

Write for Circular J

When leading radio engineers choose Westons for important laboratory and commercial uses, the small operator can certainly profit by following their lead. Especially since these same superior instruments are now offered in completely matched lines, redesigned in small diameters for amateur use on A. C. panels. Flush type cases, metal or Bakelite, in all required ranges. Priced from $8.00 to $12.00.

WESTON ELECTRICAL INSTRUMENT CORPORATION

158 Weston Ave. Newark, N. J.

Weston
PIONEERS SINCE 1888
INSTRUMENTS

Calls Heard

(Continued from Page 49)

nc-2bw nc-3wab nc-5go ne-8af nj-2pz nm-5c nm-9a nm-1aa nn-1nic nq-2cf nr-2fg nx-1xl fm-8ma fq-pm oa-2at oa-2jw oa-2no oa-2rc oa-2ro oa-2ss oa-3am oa-3xo oa-4bd oa5ax oa-5bg oa-5hg oa-7cw oa-7hl od-anf oo-9aa oz-1ao oz-2al oz-2bg oz-2br oz-2ga oz-2xa oz-3ai oz-3aj oz-3ap oz-3ar oz-3au oz-4aa oz-4ad oz-4ae sa-fh4 sb-ptp sb-2ag sb-2ax sc-2bl sc-1fg su-1oa.

eg-2XV, G. A. Jeapes, "Chandos," Great Shelford, Cambs, England

(20 meters)

1bux 1bat 1byv 1ii 1aal 1vw 1big 1rr 1ajm 1aep 1beb 1nx 2amd 2or 2nm 2cvj 2ayp 2aib 2tp 8bqz 5agq 5mx 5dq 8adg 8ahc 8axa 8rh 8aly nc-1bt np-4pq sc-2ah sb-2ar wnp.

eg-5HS, M. F. J. Samuel, 16 Blenheim Rd., London, NW8, England

1adm 1aff 1ajm 1asu 1axa 1ayg 1bkv 1cmf 1dm 1ii 2agn 2aib 2aiu 2alw 2bg 8ads 3bgg 3hs 3mw 3nr 3tn 4io 4nh 4rr 5acl 5afb 5aga 5agq 5avs 5bh 5mx 5sh 5wz 6agr 6azs 6bam 6bgq 6bjf 6bjl 6bux 6bxi 6ccl 6cuc 6czq 6dfe 6gw 6hm 6rf 6vz 6zat 6zi 7de 7gb 7kf 7tm 7uq 7vh 8agh 8aro 8atv 8ben 8ve 9anz 9ara 9asc 9ask 9ayr 9bmx 9bqy 9cei 9cdw 9cmy 9cuy 9db 9dbz 9dce 9dkc 9ef nc-2al nc-3bt nc-3fc nc-3im nc-4du nc-4fv nc-5au.

eg-5MQ, E. Menzies, School House, Faakerley, Liverpool, Eng.

1ry 1bql 1zw 1on 1vc 1fs 1mv 1ic 1amu 1bat 1aci 1gh 1bqd 1bke 1alr 1bms 1ag 1atv 1cnz 1adm 1arc 1cjp 1xm 1aur 1rf 2iz 2cwm 2fg 2tp 2ats 2agn 2cuq 2awu 2cyx 2mz 2czr 2qf 2ard 2bbx 2crb 2bad 2azk 2bqh 2gx 2amf 2hc 2cvj 2gp 2ayj 2ajm 3ank 3aef 3mv 3sz 3qe 3tn 3sh 3jt 3hc 3ceb 3pf 3bva 3tm 3bn 4hx 4dx 4af 4aar 4rr 4iz 8jq 8cxc 8pl 8ut 8zae 8drj 8aks 8axn 8box 8ajn 8djp 8cnh 8alv 8anc 8djg 9za nc-1ad nc-1br nc-2bg nc-3ae nr-2fg np-4pq nz-ez5 sa-cb8 sa-fc6 sc-2bc sc-2ar sb-1am sb-1ao sb-1cl sb-1ar sb-1cg sb-1aj sb-1br sb-1ic sb-1ag sb-2ax sb-2as sb-2ag sb-2af su-2ak sh-bzl ardi.

Miss B. Dunn, Stock, Essex, England

(20-meter band)

1ads 1aff 1ajm 1arc 1aur 1axx 1beb 1byv 1cjh 1cmf 1dm 1ia 1ii 1nv 1ry 1vw 2alm 2avb 2bal 2bg 2cvj 2sy 2xad 2xr 3afl 3cec 3mv 4pi 4qy 7sw 8adg 8aj 8aly 8dgx 8dhx 9dkc nuw nc-cf np-4sa ef-8sis eu-4qy sb-2ar od-anc od-and.

(40 meters)

1bzc 1cjc 1ql 1xv 2aod 2cyx 2vd 2xaf 3cbt 3rf 3qe 3wj 4ll 4xe 5kc 8ajn ed-7lk ek-aeq ek-dep el-1ala op-3gb et-jach et-pbn eu-1kp eu-rkv eu-4qy eu-1ora fm-8ju sa-cb8 sb-1ao sb-4as nm-8a ss-2bn oz-1ac oz-1ax oz-2ar oz-3aj oz-4aa ea-Omp ee-ear70 ej-7xo ew-ki xel-tsb hzal suc2 1xr pjd xkp.

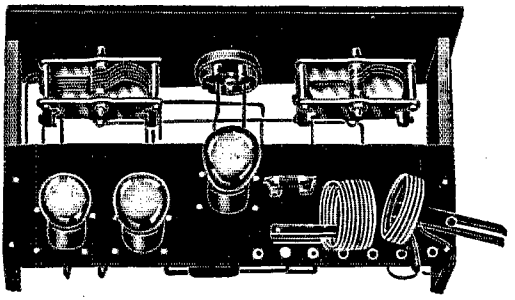
H. and W. Hazeldene, 23 Barry Rd., E. Dulwich, London, England

1aac 1abd 1aci 1acv 1afa 1aiq 1akm 1aks 1alr 1amu 1ani 1anv 1anz 1aoh 1aoi 1aor 1apu 1apv 1aqt 1arc 1asi 1atr 1atv 1avk 1awm 1ayl 1azd 1ban 1bat 1bbc 1bbl 1bcn 1beb 1bed 1bft 1bgc 1bje 1blf 1blw 1bqm 1bvr 1bxl 1bym 1byx 1cax 1cbh 1ccp 1ces 1cfr 1cjj 1ckj 1cng 1com 1ctm 1fl 1ic 1iu 1lw 1mp 1mt 1nf 1om 1qv 1sk 1vr 1vw 2abf 2abp 2aby 2acd 2ach 2adl 2afr 2afx 2agn 2agp 2agr 2agw 2ahb 2ahf 2ahg 2ahi 2aib 2aiw 2alj 2alm 2alv 2amf 2amj 2amy 2ang 2aow 2apc 2aqo 2asb 2atk 2ats 2aun 2avk 2avq 2awq 2axg 2ayn 2azk 2bad 2bbc 2bc 2bch 2bck 2bco 2bcp 2bcv 2bdj 2bgz 2bmj 2bmr 2bs 2bsc 2bur 2bvd 2bxj 2cc 2cjx 2cns 2cs 2csb 2ctm 2cwm 2cx 2cy 2di 2du 2dy 2ca 2ez 2fm 2fp 2fs 2ha 2hr 2ih 2iz

WOW! WHAT A BUY!

2 TUBE KIT
$9.95

Front Panel Drilled
Sub-panel Drilled
2 Cardwell Variable Condensers
2 Dials
1 Rheostat
1 Jack
2 Sub-panel Brackets
2 Sockets
1 Spec. Audio Transformer
1 Grid Condenser (Moulded Bakelite)
1 Pair Grid Clips
7 Binding Posts
1 Primary Coil (Antenna Coil)
1 40 Meter coil (Secondary Coil) (Plug-in-Type)
1 R.F. Choke



3 TUBE KIT
$12.75

Front Panel Drilled
Sub-panel Drilled
2 Cardwell Variable Condensers
2 Dials
1 Rheostat
1 Jack
2 Sub-panel Brackets
3 Sockets
2 Spec. Audio Transformers
1 Grid Condenser (Moulded Bakelite)
1 Pair Grid Clips
7 Binding Posts
1 Filament Switch
1 Filament Resistor
1 Primary Coil (Antenna Coil)
1 40 Meter Coil (Secondary) (Plug-in Type)
1 R.F. Choke

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SHORT WAVE KIT COMPANY
15 Park Row, New York City

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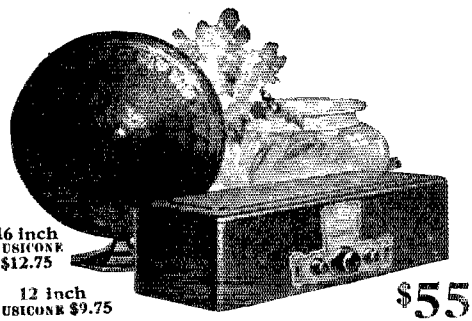


16 inch MUSICONE $12.75
12 inch MUSICONE $9.75

$55

The BANDBOX

Since Crosley is licensed to manufacture under nearly all important radio patents, this combination with Crosley leadership and experience, naturally produced an amazing radio—the "Bandbox" AC model using the new R.C.A. AC tubes and working directly from electric light socket through the Crosley Power Converter. $65. Power Converter $80 extra.

If you cannot locate a Crosley dealer write Dept. 18 for his name and literature.

The Crosley Radio Corporation

Powel Crosley, Jr., Pres. **Cincinnati, Ohio**

Crosley is licensed to manufacture under patents of the Radio Corporation of America and associate companies, also the Hazeltine Corporation and Latour Corporation only for Radio Amateur, Experimental and Broadcast Reception.

CROSLEY RADIO

NEUTRODYNE

Montana, Wyoming, Colorado, New Mexico and West prices slightly higher.

2je 2jx 2kn 2kr 2mu 2ns 2ow 2pp 2px 2qf 2qh 2sb 2sz 2tf 2ty 2ub 2vb 2vd 2vq 2wd 3acb 3add 3aef 3afl 3ag 3agc 3ahf 3aim 3ais 3ajx 3aks 3alh 3amc 3ank 3auw 3baq 3bco 3bdi 3bgj 3bgs 3bjv 3bms 3bn 3bqp 3bsd 3bz 3cbl 3cch 3ceg 3cgf 3ckj 3fh 3ga 3ge 3ib 3jx 3ku 3lb 3lp 3lq 3mb 3mi 3nc 3ow 3oi 3qm 3qw 3sh 3sz 3tc 3wq 3wj 3xan 3yh 4aae 4aao 4at 4af 4aba 4abc 4bp 4br 4cj 4ci 4co 4dd 4dl 4dx 4eg 4ei 4fe 4fg 4fi 4fu 4fv 4fx 4fy 4gl 4hl 4io 4jd 4li 4lk 4ll 4nq 4oc 4ok 4on 4oy 4pf 4qa 4qb 4rm 4rn 4si 4sp 4to 4tu 4vh 4wa 4we 4wo 5adz 5ae 5aip 5ajr 5ala 5anc 5ao 5aq 5aqf 5arf 5asc 5atf 5atp 5auu 5av 5axp 5ay 5bg 5ck 5di 5dl 5eb 5ek 5gq 5he 5hz 5ja 5jd 5jm 5jr 5jy 5kl 5lf 5lu 5mx 5nj 5nl 5pq 5qj 5rg 5ry 5tb 5uk 5ut 5va 5vf 5vx 5wo 6bjl 6chs 6cqz 6cyd 6ec 6nw 7fd 8aaj 8abw 8aec 8aef 8agy 8aha 8air 8aju 8alg 8alo 8alu 8amt 8anx 8apo 8aqh 8arm 8asf 8am 8ayf 8ayg 8azg 8azh 8bay 8bbl 8bcc 8bct 8bep 8bgh 8bgn 8bgw 8bl 8blp 8bm 8bnh 8bno 8boz 8bpa 8brf 8bru 8rx 8bsu 8bwa 8bwz 8bxc 8byp 8bzz 8cai 8cc 8cco 8edf 8cfl 8cfr 8ciy 8cjb 8cjv 8ckc 8cks 8cnh 8coa 8con 8cpc 8cpw 8crg 8crp 8cvs 8cwt 8cxh 8czk 8dbc 8dbe 8dbg 8dbj 8dbm 8dgh 8dgp 8dia 8djf 8djp 8dke 8dkk 8dmm 8dne 8dpa 8dqz 8eh 8ey 8hb 8hl 8hx 8im 8iu 8ks 8lj 8mq 8oq 8pl 8rh 8sf 9abr 9aco 9akt 9aqh 9arh 9aue 9auu 9avz 9axb 9axz 9azp 9bcn 9bdt 9beu 9bff 9bfv 9bhi 9bkl 9bmm 9bqc 9bu 9bwn 9cet 9cix 9cmj 9cmq 9cmy 9cnc 9con 9dah 9dbi 9dce 9dr 9eas 9eds 9eev 9efo 9ege 9ele 9ell 9fl 9qd 9qi 9rf 9sa 9sx 9uz 9za 9zd.

S.S. Wray Castle at Alexandria, Egypt. QSL to H. Edmonds, 27 Victoria Street, Newark Notts, England

1aae 1aya 1bca 1bep 1bms 1ccx 1cjh 1fbp 1fl 1gk 1gp gq 1kh 1mp 1nx 1pa 1vw 2aas 2abt 2agn 2ahi ahp 2amc 2avl 2az 2bur 2ca 2gx 2ie 2kr 2qf 2uo 2uz 3aef 3ag 3alq 3am 3auv 3bms 3bqj 3eab 3cbt 3ec 3ia 3id 3sh 3aj 4abc 4fa 4gi 4jz 4ka 4lk 4ll 4nq 4to 4wo 5aci 5adz 5ck 5dl 5ez 5mx 5nl 5oe 5rg 5wg 6wo 8aaj 8ac 8aey 8anc 8ary 8avz 8aze 8bno 8box 8hqm 8bsu 8ccs 8ced 8chk 8cng 8cxd 8dcm 8ey 8jb 8lj 8zi 9adg 9bhi 9ash 9crj 9kg.

sa-FC6, Dr. Julio J. Hiver, San Martin 3169, Argentina

(20-meter band)

1akz 1ahi 1anu 1asu 1aep 1aff 1byx 1byv 1bux 1bbj 1cmx 1aur 1cmf 1cm 1dm 1io 1nv 1sw 1ii 1xv 1xm 2aol 2atk 2ahm 2alw 2agn 2cxl 2cjj 2ece 2gx 2vg 3ag 3btq 3hs 3no 4au 5acl 5bf 5dq 5ie 5mx 5wl 6ari 6ann 6am 6agr 6bux 6bdj 6bf 6bil 6bq 6bzf 6czy 6cck 6cyg 6ckv 6csj 6dfv 6dch 6daq 6dck 6dhq 6dhj 6fr 6lh 6rn 6rr 6tx 6zat 8aj 8atv 8adg 8aly 8ba 8cmb 8ccs 8cau 8cfr 8csj 8dcm 8dsy 8djv 8gs 8ahc 8anz 9ara 9bjp 9bpm 9bzi 9cvn 9cei 9db 8dws 9dgx 9dod ef-8cl ef-8ix ef-8jm ef-8jt ef-8jf ef-8yor ei-2it ei-1ay np-4sa eb-4ww eb-4zz nc-1ar nc-3cs nc-3gg oh-6dbl sb-1aa sb-1ad sb-1ib sb-2ab sb-2ar sb-2ig sc-2as sc-8ag su-2ar.

sb-SQAX, Radio Sociedade do Rio de Janeiro, Pavilhao Tchecoslovaco, Av. das Nacoes, Rio de Janeiro, Brazil

2iz tbbc 2cuz 3pr 4ea 9act 9lg 9efo sb-5aa sb-sqmk su-1cg.

Alois Weirauch, Mestec Kralove, Czechoslovakia

1aao 1bzc 2ahg 2ang 2ayj 2czr 3gp 3sh 3qe 4ll aq-1mdz eu-10ra eu-15ra eu-ra58 eu-1nn fm-8ay fm-8ip fm-8ju fm-8kr fm-8wx nj-2pz nr-2fg sa-cb8 sb-1ah sb-1aw sb-1ca sb-1ic sb-2af sb-2ag sb-2ap sb-2ax sc-2ah su-2ak dnsc gkt glyk hbc nkp opq vwz wpo wsc wtt.

(20-meter band)

2amd 2ahm 8ahy 2xad 2xr.

S.S. Leerdam, J. Arends, operator. QSL c/o Radio Wereld, 250 NZ Voorburgwal, Amsterdam, Holland

(Between Antwerp and the Azores)

(20 meters)

nulach 1aci 1aep 1afl 1akz 1amd 1amz 1awe 1ayg 1bbm 1beb 1bjk 1br 1bvl 1bw 1byv 1ckk 1dm 1gr 1ii 1kl 1mv 1nv 1sz 1vm 1vw 1zl 2ab 2agn 2ahm 2aol 2ard 2ary 2ayj 2bac 2cub 2cvj 2dr 2mb 2mn 2nm 2rd 4tu 7sw 8adg 8alv 8aly 8aro 8ecq 8cfr 8cjv 8dme 8jq 9bov 9crv 9dqu 9lk 9sk 9za nc-1bt ne-8ae np-4wrh sa-da9 sb-1ac sb-1aw anf bjg.

(40 meters)

nulabd 1ag 1amd 1azd 1bwc 1ej 1mg 1ic 1lc 1lx 1rf 2amj 2aun 2ayj 2bbb 2bdn 2beo 2bxu 2crb 2cuq 2hr 2mb 2tm 3aef 3aio 3auv 3cx 3hs 3pf 3rf 4af 4ap

od-1GR, Paul M. Hargis, Dolok Merangir, Sumatra, Dutch East Indies

6am 6azs 6bda 6bjx 6che 6cqj 6hm 6pv 6jc 6zi op-1dl op-1hr op-1bd op-1at op-1fr op-1ah op-1rc op-xc3 oa-4ea ac-2ff ac-8hb vs-1ab vs-1ac vs-8ab aj-2bjk aj-jkzb a--2kx ailbk xac-1jc ae-1hh sb-1ap sb-1ar od-pa2 ep-1ma fm-tun2 gi-6mu eb-4au anc anf aud acg agb hva hzal hvn hvee idx pkp vps jyz ocdj olq dl4 1xr 1bk 2bk 2xt 5by 8eb wuay wuk.

ss2BN, QSL via nc2BN

1avj 1atv 1azd 1bhs 1bjk 1cjc 1dl 1mv 1vc 1xv 2aeh 2aes 2ag 2amj 2and 2asf 2bo 2bs 2cty 2czr 2fg 2gx 2ty 3afu 3aih 3bms 3chg 3ckj 3gi 3hw 3sh 3tf 4ac 4af 4gp 4hl 4hx 4js 4km 4kz 4pi 4ut 5ae 5aj 5ao 5av 5agu 5atf 5ce 5fs 5hz 5ie 5kg 5ok 5qj 5qq 5uk 5vx 5wz 6aaf 6aak 6adk 6agr 6ahn 6aiv 6aiw 6ala 6alz 6amn 6ato 6aqx 6awy 6bam 6bap 6bax 6bdn 6bgb 6bgo 6bhv 6bik 6bis 6bjd 6bjv 6blw 6bmw 6bob 6bq 6bts 6bvh 6bvm 6bwk 6bws 6bxc 6bxd 6bxi 6byz 6bxc 6bxd 6bxi 6byz 6bzc 6cae 6cbz 6cdy 6cej 6chl 6chs 6cnx 6cqh 6cqm 6csj 6csw 6cua 6cub 6cur 6czk 6czu 6dbh 6dcu 6dfr 6dh 6dhr 6dht 6djw 6dkd 6dkj 6dlj 6dqh 6etw 6fh 6jn 6js 6ju 6kn 6ks 6pv 6rn 6ta 6vc 7abh 7add 7adr 7alk 7bb 7fh 7jv 7mf 7mh 7ok 7pv 7tl 7tj 7vq 8ajn 8akv 8aly 8auc 8auq 8bbw 8bja 8bki 8brf 8bsu 8ben 8blp 8bth 8bxi 8ced 8cjv 8cpq 8ced 8crp 8cwt 8dbm 8dcm 8djf 8djp 8ey 8gl 8iq 8pl 8vx 9adm 9adn 9aeb 9arr 9ajv 9apa 9avz 9axo 9baz 9bcn 9beq 9bmm 9bpm 9bqe 9btb 9bwj 9bwl 9ccv 9cei 9cks 9cmq 9crj 9cvn 9cxg 9cxq 9czh 9dah 9dcb 9des 9dfz 9dma 9dud 9dpw 9dr 9dxg 9ecs 9ehn 9efk 9ek 9ekf 9ekw 9fi 9fs 9nk 9pc 9pu 9wj 9wk 9wr 9xn oa-2uk oa-2hh oa-2rc oa-2yj oa-2ss oa-3jk oa-3jw oa-3vp oa-3xo oa-5bg oa-5bk oa-5by oa-5dx oa-5lf oh-6dcu oh-6dju oh-6dv oz-2bg oz-2bp oz-2br oz-2ga oz-2rx oz-3ap oz-3ar oz-4aa oz-4ac na-7kn nc-2be nc-2al nc-2bg nc-3hp nc-4bt nc-4fv nc-4fy nc-4gt nc-5ad nc-5 aj nc-5go nm-1j ns-1fmh nr-cto ef-8aro wnp wbny.

ed-OIK, S.S. Lituania, QSL Wireless Operators, SS Lituania, Holbergsgade 2, Copenhagen, Denmark

1aot 1aci 1anz 1aep 1asu 1anv 1auk 1bw 1ba 1beg 1bzq 1con 1qcz 1cd 1ef 1ff 1kh 1mo 1nf 1po 1sz 1uz 1zd 2amj 2avl 2ami 2az 2aby 2agn 2abt 2avb 2apa 2bo 2bc 2bfw 2bxu 2cvj 2jc 2md 2qs 2rs 2uo 3adm 3afx 3aio 3ais 3bej 3bwt 3hms 3cau 3pr 4af 4io 4jl 4kf 4kd 4ll 4oh 4ru 5aiq 5afb 5atf 5ane 5hh 5ba 5jp 5lf 5ms 5wz 6amm 6amn 6aaz 6aek 6bjt 6bq 6cja 6cww 6dha 6pv 8ak8 8axa 8alu 8aov 8baw 8bpd 8bxr 8bpz 8bor 8ent 8cmb 8cau 8dia 8djv 8dld 8jq 8im 8qv 9afa 9avy 9afl 9ajj 9aex 9adq 9beq 9bwn 9cf 9crd 9ckv 9cnq 9cld 9dqy 9dqu 9dsh 9dpb 9dr 9ecl 9eey 9ees 9hm 9lb 9rf 9wo ea-ky eb-4ar eb-4bf eb-4uu eb-4ww ed-1hm ed-7jo ee-car7o ef-8nn ef-8fbm ef-8fr ef-8er ef-8maud ef-8mmp ef-8kp ef-8vvd eg-2nk eg-2oq eg-bby eg-5dh eg-5ku eg-5mq eg-6ia eg-6cl eg-6hp eg-6mu eg-6ms eg-8yd eg-6yv eg-6za ei-1cr ei-1cy ei-1au ei-1no ek-4adc ek-4dbs ek-4kbl ek-4uz ek-4uf ek-4vr ek-4xf ek-4xz em-smua em-smzf em-smuk en-0hc en-0ga et-pao ew-aa oz-2ac oz-3aj oz-3ap oz-3bq oa-7hl sa-feb sb-1aa sb-1ad sb-1ah sb-1aw sb-1ax sb-1br sb-2ar sb-2ay sb-2ax sc-3ag su-1oa sad sgt scp sfv sab sjb atc gkt ocxs wnp wvr vde bo.

S.S. Charles Christenson, operator, Aleck Sienkowski, 65 Geer Ave., Norwich, Conn.

Aug. 16-29

1are 1bcz 1cnz 1aci 1ql 2az 2ayv 2zl 2arx 2abt 2jx 8afi 3bms 3lq 3mb 6cgm 6cww 6chs 6dbc 6bhv 8dhx 8asm 8dld 8ctk 8dfo 8wd 8amb 8bwn 8cau 8dbm 8dnu 8jq 8asm 9ada 9bca 9dej 9dma 9lf 9aio 9beq 9bpd 9bvp 9cxc 9dud 9efo 9ju 9lz 9bof 9cmq 9ecl ef-8cp eg-5mq eg-5by ss-2bn oo-kflf ek-4uah eb-4ww sc-2bl oz-2ac oz-1ao oz-3ap oa-2jw.

KDRX, Joseph Kazokas, c/o Independent Wireless Tel. Co., Box 66, Wall Street, New York City

1ag 1als 1anw 1atv 1awm 1axa 1azd 1bat 1bca 1bch 1bhs 1bke 1bvl 1byv 1cb 1ccz 1cdp 1ckk 1cr 1cue 1fl 1gh 1ic 1lv 1mf 1mo 1mv 1sz 1uz 1xv 1zz 6aal 6agd 6agg 6ahm 6ajl 6akm 6akx 6amm 6bau 6bb 6bhj 6bhv 6bjv 6bmo 6bts 6bxj 6bxn 6cae 6cdy 6cmw 6cpy 6csj 6ctd 6cuw 6cwk 6dag 6dap 6dhq 6djw 6dkj 6dkx 6dlj 6dow 6gw 6hj 6rb 6rj 6vc 7bm 7jc 7jj 7mf 7my 7po 7ti eb-4ww eg-2xy ek-4abg nc-1ar nc-1co nc-1dd nc-2al nc-3cs nc-3dz nc-4cm nc-4fv nc-5go nc-voq nd-hik nm-9a np-4ach nq-2cf nr-2fg nz-ez5 oa-2yj oa-4by oa-4yn oa-5hg oh-6dba oz-2gc oz-3aj oz-4ac sa-cb8 sb-1ao sb-1cg sb-2ay sf-dcz ss-2bn oic oik sjb wcl wnbt xam.

4it 4js 4mi 4ob 4rn 5ajk 5av 5ql 5uk 5zav 8agi 8bbs 8bxr 8cbd 8cjv 8cxi 8dcb 8dcm 8in 8jq 8pk 9beq 9cn 9crj 9dzl 9wr eb-4ck eb-4ww eb-4zz ed-7zm eg-5mq ei-1dy ei-1no en-0wj ep-1ae ne-8rg nq-2cf nq-7cx nq-8kp fi-1ab sb-1ah sb-1ar sb-1aw sb-2ib sb-5aa ss-2bn oa-2no arcx lgn vyg.

(Between Bermuda Ids. and the Azores)

(20 meters)

1aal 1aav 1anw 1avy 1nx 1xv 2aue 2bdk 2cxl 4tu 5aot 5sh 8abw 8aj 8bpq 8brc 9baz 9bsk 9bxi 9cei 9dka 9dws 9ln nc-1br nc1bt nc-3fc sb-2ar eb-4zz en-ovn wnp.

(40 meters)

nu-1aci 1bux 1ckp 1clf 2amh 2ago 2avr 2bad 2bcu 2bow 2fs 2ub 2xi 3sh 3wf 4rr 4ut 5av 5kc 5sh 6am 8asf 8bno 8cko 8crp 8rt 8wk 9bjg 9cye 9ek na-7kx nc-1ar nc-2bg nn-1nic nq-2cf nr-cto nr-2fg sb-1ar sb1aw sb-2as eb-4ac ef-8cp ef-8co ef-8hu ef-8jf ef-8oeo ef-8xix eg-5uw eg-6og ei-1dm ei-1no ei-1uu ek-4af ek-4oa ek-4uah ek-4yo ep-3fz oa-2ij oa-2jw oa-2yi oa-3vp oz-2ac oz-2ae oz-2bg oz-2xg oz-3ar oz-4aa nezb oely voq wnp wuwr wyj.

(Between Azores and Bermuda Ids.)

(20 meters)

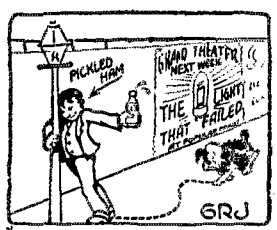
nu1ad 1aiq 1amc 1amu 1awe 1bjk 1bux 1byv 1hh 1ii 1vw 2amd 2ary 2jn 2md 2nm 2vs 3akw 3ank 3chg 4km 4nh 4qb 4rn 4wh 5aot 5wz 6eet 8ail 8aly 8aro 8axa 8bdp 8bju 8cfr 8ckc 8cug 8dds 8dld 8jq 9az 9bqy 9bsk 9crd 9crv 9cu 9cug 9dmb 9dpw 9duw 9dws 9ef 9mo nc-2al ne-8ae eb-4rs eb-4ww sb-1aw oa-2me sc-3ag.

(40 meters)

nu1abo 1acg 1abd 1aiq 1amu 1anz 1are 1asu 1axx 1ayi 1bkv 1bqs 1cez 1cub 1etj 1ic 1im 1fl 1fs 1lc 1mp 1vw 2aed 2agu 2agw 2ahi 2ajb 2asi 2avb 2auh 2awi 2bdj 2bm 2bxu 2cty 2cyx 2dp 2fg 2fs 2fx 2gx 2md 2nf 2qh 2qu 2wj 3afl 3afu 3afv 3ag 3alq 3ank 3apn 3bqj 3cab 3chg 3ec 3hs 3lz 3qe 3su 8sz 4aba 4ac 4af 4co 4ec 4li 4tk 5ahm 5ame 5ayl.

(40 meters)

nu5ki 5qi 5ql 5wo 6adm 6bjv 8aje 8agy 8auc 8bbc 8bbo 8bep 8bhz 8bjb 8bju 8blr 8bnh 8byh 8cxd 8dgl 8dhu 8gn 8ho 8jq 9as 9avg 9baz 9bbs 9beq 9bgq 9bhi 9bsy 9cya 9dcb 9crd 9crj 9cue 9dkk 9dma 9dqn 9dqv 9dvw 9ekt 9fl nq-2cf nq-7cx nq-2ro nr-2fg nc-1ak nc-1ar nc-1br nc-2be nd-hik nz-5ez ef-8cf ef-8jf ef-8wz ek-4dbs en-0qq sb-1ah sb-2al sb-snni oz-1fb oz-3ap oz-4ac oz-4ae oz-4am oa-2sh oa-2yi oa-3es ftj knux xwab glky.



"A LITTLE UNSTEADY, BUT EASY TO FOLLOW"

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 every issue. We would like to have you become a full-fledged member and add your strength to ours in the things we are undertaking for Amateur Radio, and incidentally 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.

.....1927

American Radio Relay League,
Hartford, Conn., U. S. A.

Being genuinely interested in Amateur Radio, 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. This entitles me to receive *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.

.....

.....

Station call, if any .....

Grade Operator's license, if any .....

Radio Clubs of which a member .....

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!

HAM-ADS

NOTICE

Effective with the July issue of QST the policy of the "Ham Ad" Department was altered to conform more nearly to what it was originally intended that this department should be. It will be conducted strictly as a service to the members of the American Radio Relay League, and advertisements will be accepted under the following conditions.

(1) "Ham Ad" advertising will be accepted only from members of the American Radio Relay League.

(2) The signature of the advertisement must be the name of the individual member or his officially assigned call.

(3) Only one advertisement from an individual can be accepted for any issue of QST, and the advertisement must not exceed 100 words.

(4) Advertising shall be of a nature of interest to radio amateurs or experimenters in their pursuance of the art.

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

(6) The "Ham Ad" rate is 7c per word. Remittance for full amount must accompany copy.

(7) Closing date: the 25th of second month preceding publication date.

THE life blood of your set—plate power. Powerful permanent, infinitely superior to dry cells, lead-acid, Bs, B eliminators. Trouble-free, rugged, abuse proof, that's an Edison Steel-Alkaline Storage, B-battery. Upset electrically welded pure nickel connectors insure absolute quiet. Lithium-Potassium solution (that's no lye). Complete, knock-down kits, parts, chargers. Glass tubes, shock-proof jars, peppy elements, pure nickel, anything you need. No. 12 solid copper enameled permanently perfect aerial wire $1.00, 100 ft. Silicon steel laminations for that transformer 15c lb. Details, full price list. Frank Murphy, Radio 8ML, 4837 Rockwood Rd., Cleveland, Ohio.

TO licensed amateurs only—Aero Short Wave Kit, $8.13; Ferranti $12.00 audios, $7.80; $25.00 Browning-Drake Kit, $16.25; $85.10 Loftin-White Kit, $51.06; $10.00 Ensco 36" cone kit, $6.68; $31.00 Modern Compact B Eliminator, $19.50. Latest, original packages. Discounts on Cardwell, AmerTran, Jewell, Thordarson, Benjamin, Samson, Ward-Leonard, 35%. On Sangamo, Daven, Marco, Karas, Aero, Hammarlund, Acme, Kodel, Silver-Marshall, Tyrman, Camfield, Abox, Bodine, Magnaformer, Yaxley, Pacent, Ceco, 40%. Prepaid. Our weekly data sheets give more dope than all radio magazines together. 20 weeks, $1.00; 52 weeks, $2.50. Over two pounds, catalog, data, circuits, prepaid, 25c. Fred Luther Kline, Kent, Ohio.

PURE aluminum and lead rectifier elements holes drilled brass screws and nuts, pair 1/16", 1"x4" 13c, 1"x6" 15c, 1¼"x6" 17c, 1½"x6" 19c. Sheet aluminum 1/16" $1.00, lead $1.00 square foot all prepaid. Silicon transformer steel cut to order .014" 10 lb. 25c, 5 lb. 30c, less than 5 lb. 35c per lb., .022" thick 5c less per lb., Not cut, strips 2-7" wide. Edgewise wound copper ribbon, 7 sizes, see Jan. *QST*. 15 cents lb., minimum 10 lbs. Postage extra. Air pocket insulators blue glazed porcelain 8" leakage path fine for transmitting, 4 for $1.00 prepaid. Geo. Schulz, Calumet, Michigan.

FIRST $22.50 takes Omnigraph No. 2, 15 dial new. All inquiries answered. 2AGN.

WANTED—500 cycle motor generator in good condition for DeForest "H" tube. 9BWD, 2131 Fair Ave., St. Louis, Mo.

ESCO motor generator new sell or trade for dynamotor. Norris Preston, Armstrong, Mo.

WESTON 0-1 Thermo Ammeter $6.00. 0-100 milliammeter $4.50. Jewell 0-15 A.C. volts $4.50. Two CX310s $4.00 each. All for $24.00. All new never used. 8BET, 4014 Asbury Dr., Toledo, Ohio.

FOR sale or exchange—Edison transmitting cells. 1AWW.

HAMS—Get our samples and prices on printed call cards made to order as you want them. 9APY, Hinds, 19 S. Wells Street, Chicago, Ill.

TWO and four cylinder gasoline engine power units generating 50 volts 750 watts DC also 500 watts 500 cycles AC. Motor generators any capacity to 5KW. Navy portable transmitters complete with power units. Navy Wavemeters $45.00 Sangamo Ampere meters designed for battery use $10.00 CN 240 1,000-10,000 meters $45. Westinghouse 27.5-350 volts .08 amperes $18.00 ½ KW 500 cycle transformers $12.50 Henry Kienzle 501 East 84th Street New York.

FOR sale—GE 24/1500 and Esco 12/500 25 watt dynamotors and also GE 8/600 double current generator. All in good condition. Cheap. K. P. Chai, P. O. Box 199, Kohala, Hawaii.

DODGE Radio Shortkut fixes signals in mind to stick. Users report rapid advance to 25 per. Also state Intensive Speed Practice (as follow up) most efficient speed booster known and Morse Shortkut eliminates code mixup. 8BEO Kinnan "Shortkut best and easiest method known. Had previously tried phonograph records, automatic senders, also buzzer without success." 6BTY Cacho "Shortkut produced license for me in two weeks—present speed 25 per." Reports on request. Radio with Appendix and Better Key Work $3.50. Speed Practice $2.50. Morse $2.50. Money Order. Foreign add fifty cents. No C. O. D. C. K. Dodge, Mamaroneck, N. Y.

"S" Tubes, Omnigraphs, Vibroplexes, Teleplexes, Natrometers, Transmitters, Receivers, Chokes, Meters, Transformers, 50 watters, Motor Generators, Bought, sold, exchanged. L. J. Ryan, 9CNS, Hannibal, Missouri.

BARGAIN—Short wave transmitting and receiving apparatus. Send for list. B. L. Hinnant, Wilson, N. C.

1000 WATT 40 volt generator, perfect, ring oiled, $40; 1500 volt dynamotor, extension shaft, new $40; Jewell filament voltmeter; 2 mike condensers 75c; microphone $1.50. E. W. Reiss, O'Fallon, Illinois.

POSTPAID to licensed hams, set builders, and A.R.R.L. members. General Radio 358 Wavemeters—14 to 224 meters—extra special $18.25. Aero 20-40 or 40-80 meter transmitting kits $9.20, Aero shortwave receiving kits $6.50. Jewell flush mounting for 3" hole alternating or direct current voltmeters up to 50 volts $5.80, thermo coupled ammeters, any size, $9.50, Abox "A" eliminators $24.25, Majestic "B" eliminators any type 30% off list price. Special prices on Thordarson, Acme, Cardwell or anything you want at greatly reduced prices. M. L. Potter—9DMI—4410½ Drexel Blvd., Chicago, Illinois.

SELL—Parts of transmitter. Write for list. 2BAV 3812 Waldo Ave., New York, N. Y.

HAMS—Discount 25% to 40% on parts, sets, and tubes. Myron Martien, Galion, Ohio.

BRAND new $6.00 Pyrex insulated .0005 General Instrument SLF condensers easily double spaced $1.25. New R.C.A. UV202 fivers now $2.25. James Marinell, 725 Oak Street, Youngstown, Ohio, 8BEP.

POWER transformers—100 watt 350-500 each side $8.25. 250 watt 550-700 each side $10.25. 700 watt 1000-1500 each side $14.25. 700 watt 2000-2500 each side $18.00. 1 kw 2000-2500 each side $30.00. 150 watt filament transformer for 50 or 7½ watters $8.00. Guaranteed. C.O.D. or cash. 9CES, F. Greben, 1927 S. Peoria St., Chicago, Ill.

QSL cards, two colors, government post cards $1.90 per hundred, white cards $1.00. Real ham stationary at $1.40 per hundred sheets and envelopes, pad form. Postage 10c. Free samples. 8DTY, 257 Parker Ave., Buffalo, N. Y.

TESTED Stromberg-Carlson 3½ MFD. "B" eliminator filter condensers. $1.25 each. Fred Neuhardt, 208 Union St., Schenectady, New York.

JEWELL Meters, new, 25% discount. We stock Acme, Thordarson, National, Cardwell, General Radio, Nathaniel Baldwin, Crescent Lavite, Lynch, Tobe Deutschmann, R. E. L., Allen Bradley, Yaxley, Philco, Signal, Bakelite, Samson, Raytheon, CeCo, Pyrex, R. C. A., Grimes RGS, Browning-Drake, Fleron, Branston, All-American, Ferranti. Aero Products, Acme Wire Products, Ward Leonard, Westinghouse, Eby, Victoreen, Lincoln, Precise, Hammarlund, and many others. We allow discounts to Hams, custom set builders and dealers only. Tell us what you want. A complete line of Ham and BCL apparatus. Specializing in the best parts only. No junk. Roy C. Stage, Montgomery & Burt Sts., Syracuse, N. Y.

1000 V. 300 W. Esco motor 110 V. single phase $95.00, 400 V. 100 W. Esco coupled to 220 V. 3 phase A.C. motor $25.00 400 V. 100 W. Generator only $8.50. 1500 V. 100 W. Western Electric motor generator. 2500 V. 2 kilowatt Generator double commutator, coupled to three phase 220 V. 1750 speed motor. 2500 V. 600 W. double commutator generator coupled to 110-220 V. 60 cycle single phase motor 1750 speed. Also many others. 1 mfd. Western Electric condensers 50c. New ¼ H.P. 110 Volt 3500

speed alternating current motors $8.50. Prices f.o.b. Chicago. James J. Smat, 1734 Grand Ave., Chicago, Ill.

ENAMELLED Magnet wire for Transformer and Filter Choke winding. No. 33, 85c pound. 30, 80c. 28, 75c. 26, 65c. Choke Cores complete as specified on page 137 of Radio Amateurs Handbook, any ½ inch core $1.00, ¾ inch $1.50, 1 inch $2.00, 2 inch 25c pound, 3 inch 20c pound. All cut from .014 Silicon Steel. Silicon Transformer Steel .014 thickness, less than 10 pounds 18c. 10 or over 15c pound. Add postage. Transformer cores 50 to 1500 Watt, wire for winding Primary and Secondary, prices quoted promptly on request. Nat G. Scott, New Albany, Mississippi.

LEACH relay wanted. State price. Vincent Rosso, Plaquemine, La.

110 volt transformers $3.50 each. 550 volt or 275 each side for plate. 10 volt for UV203. 7½ volt for UX210, 5 volt for UX171, 2½ volt for UY227, 1½ volt for UX226. 6 and 190 for UX201A. Low voltage transformers to your specifications $4.50. 50H or 30H—85 MA chokes $2.50. 50H or 30H — 125 MA choke for transmitters, $5.75. All parts to build "BH" Raytheon eliminator, $16.75. Write for details and lists of meters chokes, etc. M. Leitch, South Park Drive, West Orange, N. J.

SOME more of those five by twenty six hard rubber panels $0.75 each, postpaid. Fine for base boards, transmitter panels, etc. Complete sets of 28 different size drills, $3.00 set postpaid. Western electric power amplifier, $25. Maynard J. Columbe, 8ITY, Plattsburg, N. Y.

QSL cards—two colors, 150 $1.20; Government cards, 150 $2.50. Your advertising on 1/3 of address side, 75c extra. H. M. Selden, Cranesville, Penn.

WILL sacrifice—Westinghouse 750 volt M.G. with field rheostat. Almost new and in perfect condition, $40. 9CNM, Chicago, Ill.

SELL—Short wave receiver, transmitter, wavemeter, fifteen dial omnigraph; parts. Roger Curran, Dundee, N. Y.

PUREST aluminum, already cut into strips for use in chemical rectifiers. Send for circular. 2EM.

ALL Postpaid and guaranteed brand new. R.E.L. Transmitting Inductances, double unit with glass coupling rods and clir , Type L, $8.90. R.E.L. 50 watt sockets, $2.00. R.E.L. mountings for "H" tubes, $2.00. R.E.L. radio frequency chokes, $1.00. Vitrohm center tapped gridleaks, 5000 ohms, for 50 watt tubes and less, $2.10. Dubilier 2000 volt stopping condensers, .002 mfd., $2.25. R.E.L. short wave coil kits, 10 to 110 meters, $4.50. General Radio wavemeters, Type 358, $19.25. G. F. Hall, 535 West Hortter St., Philadelphia, Pa.

QSL cards two color $1.00 per hundred. Free samples on request. F. L. Young, 9CKA, Corwith, Iowa.

COMPLETE 10 watt transmitter parts $40. Dynamotor 12-350 v. $8. Amrad wavemeter $4. Will ship C.O.D. T. C. Lightfoot, 6923 McPherson Blvd., Pittsburgh, Penn.

NEON tubes, best indicator obtainable for wavemeter, except expensive thermo-galvanometer. This offer makes it possible for any ham to have a wavemeter which gives extremely sharp readings. Will stand greater overload than meters or flash lamps. Used for oscillators, locating stray R.F. and laboratory work such as telephotography and synchronization. Type "A" small tube, 85c; type "B" ultra-sensitive, has sealed in electrodes for positive connections, $1.50; special low voltage type "C", for low power transmitters, $2.00. All new and guaranteed. Dope with each, $8.00. List Dudlo wound chokes. 50 Henry, 150 milliamperes weight 5 pounds. $2.95. Please include postage. G. L. Lang, 2AWH, 1134 Springfield Ave., Irvington, N. J.

FILTER condensers. Flechtheim, special, 1000v, 2 mf, $2.25; 1000v, 4 mf, $4.50; 2000v, 1 mf, $2.65; 2000v, 2 mf, $4.25; 2000v 4 mf $6.75. All unconditionally guaranteed; Corwico enameled antenna wire, No. 12, 90c 100, No. 14, 70c 100, 1/16" aluminum $1.00, lead square foot. Ammonium phosphate 50c lb; Famous Meyers tubes, detector, amplifier, oscillator, Plate and grid leads at opposite ends, excellent for high frequency oscillators and receivers. With mounting clips 95c; Genuine bakelite panels 10x14 $1.50; Few trickle charger relays, suitable for remote control $2.00. Westinghouse 0-300 mil D. C. meters, 6 division scale, no numerals, 95c. Please enclose postage. D. L. Moon, 3344 Boulevard, Jersey City, N. J.

QSL Cards that are really different $1.00 per 100—Real Ham stationery 200 sheets and 100 envelopes $1.00 Free samples 9WV 4110 Wayne, Kansas City Mo.

GENERATORS, new 275 volt dc 120 watt gives up to 500 volts $8. General Electric new double current 600 and 8 volts dc $18. 6 volt input dynamotors output 400 volts $15. Slightly used 500 cycle generators 200 watt $10. ½ KW $15. Crocker-Wheeler new motor-generators 120 volt dc, drive 500 cycle ½ and 1 kw, vt 1 $1.25. ½ kw gasoline engine 500 cycle power units type CQ-910. ½ kw and 1 kw 500 cycle transformers Dubilier .004 condensers 12000 volt $15. R. Wood 46-20, 102 St. Corona N. Y.

SURPLUS receiver parts. All good as new at bargain prices. Send for list. W. Lyle Holmes, Jr., 409 Shoemaker Road, Elkins Park, Pennsylvania.

ARRL sweater emblems should be worn by all league members. They are yellow and black, 5"x8" diamond, felt letters and embroidered symbol, only $1.00. Same emblem sewn on yellow felt 6"x10". Suitable for framing and will beautify your station, $1.50. C.O.D's 15c extra. Eric Robinson, Jefferson Road, Webster Groves, Mo.

S TUBES—4 S tubes $8.00 each with socket. F. O. Dixon, Knoxville, Iowa.

QSL hams: Winter's here. Also neat, clean cut and reasonable cards. Samples on request. 1NQ, 206 Metropolitan Ave., Roslindale, Mass.

WANTED Esco motor-generator 2000 volt, 1000 watt. Also new 204A. Sell new Jewell 1500 voltmeter. Gordon Brown, 192 South Goodman Street, Rochester, New York.

BRAND new radio apparatus for amateurs. Lowest prices—Prompt service. UV202 5 watters, only $2.25. Latest General Radio Wavemeters, all bands, $19.95. Karas Harmonic AF transformers, $4.75 each. Aero short wave coil kits, only $9.75. REL basketweave receiving coils, all bands, $4.25. Acme 800 volt filter condensers 2 mfd. $3.25, 4 mfd. $4.95. This is but a fraction of our bargains. Let us quote you on more. All items postpaid. Bernard C. Mitchell, 3520 Sheriden Rd. Chicago, Ill.

EDISON element storage "B" battery headquarters. Parts, supplies and service. Type "A" elements with welded connectors, 5c per pair. Type 3-G 6c. Type 5-G, 3000 milliamp 9c. Prices include separators. ¾"x6" flat bottom containers, paraffined tops, 3c. 1"x6" 4c, Potash-Lithium for 5 lbs Edison solution 85c. Nickel wire, separators, etc. in stock. Send for list. Special, 90-volt 3-G battery complete with charger, $10.95. 180 volt 3-G battery with charger $18.00. 140 volt type 5-G, 3000 milliamp battery in steel case, $16.00. Prices F.O.B. Philadelphia, J. Zied, 904 N. 5th Street, Philadelphia, Penn.

FOR sale: Thordarson 900 watt plate transformer, 1000-1500 volts each side midtap, $18.00, 2 Cardwell 80 meter transmitting condensers $10.00, General Radio wavemeter $7.50, Aero plug in T.G.T.P. 40 meter coils $6.00, Type S REL transmitting inductances with glass rods $8.00, 10 1mfd, 1000 volt Faradon filter condensers $1.50 each. Slightly used 204-A tubes $60.00. All parts new. L. H. Wood, Box 367, Charleroi, Pa. 8CJB.

FOR sale—1 copper edgewise inductance. H. Brown, Greeneville, Tennessee.

READY soon, a new Hamalog, the original ham catalog. Bigger and far better than ever before. Ask for a free copy. Our silver plated inductances are selling fast—see description elsewhere. Our No. 20 stand-off insulator is replacing other types because of its superiority and low price, only 20c. New transmitting filter condensers are ready, 1 mfd., 2 mfd., and 4 mfd., for working voltages of 600, 1000, and 2000 volts D. C., tested at double voltage—the first complete reliable line available. Write for prices. New Citizens Amateur Call Books are here, 75c postpaid. E. F. Johnson, 9ALD, Waseca, Minnesota.

RCA UV202s, $3.05. Foreign 10 watter $4.90. 50 watter, $9.00. Cunningham CX310s $6.90. Sonatron UX210s $6.00. Power transformers, Silver Marshall for UX210s, 7.5v and 600 v center-tapped 6.25 for 50's 12 volts and 1100 volts center-tapped $9.00. R.F. chokes, 100 mil, 80c. Milliammeters, 0-100, $2.00, 0-300, $3.00. A.C. voltmeters, 0-15, $4.95, 50 watt sockets, $1.00, completely assembled all band receivers $18.00. Transmitters $26.00 Kenotrons, $2.05. Rectifier elements, aluminum, lead, pair 1"x4" 7c, 1"x6" 10c. Calibrated wavemeters, 17-160 meters, $6.00. QSL cards, two colors, $1.00 per 100. William Green, 207 Cathedral Parkway, New York City.

THE new Jeffries plate transformer. 1000 watts, 4400, 3300, 2200, 1650, 1100 volts, all voltages have center taps. Price $19.00. Write for descriptive folder. Carl Schwenden, 7427 Alameda Blvd., Los Angeles, Calif.

CURTIS-Griffith 250-watt power-filament transformers 350-550 each side $10.50. Thordarson power-filament transformers for 7.5 watters $6.90. Thordarson power transformers 350-550 each side $11.00; 1000-1500 each

side $16.00. Edgewound Inductance 6-inch turn 12c; 4-inch 10c; 2-5 inch 7c. Aluminum square foot 85c; Lead square foot 85c. UX-852 75-watters $52.50. "Ham-List" 4c. James Radio Curtis, 5-A-Q-C, 1109 Eighth Avenue, Fort Worth, Texas.

HEADQUARTERS for hams:—Immediate deliveries on Mueller 150-watt input tubes $15.00. RCA 5-watters $3.15. 15-dial omnigraphs $20.00. UV-203A $15.00. Aerovox 1000-volt tested 1-mfd Condensers $1.75. Citizens Amateur Callbooks 85c. Potter 2000-volt 1-mfd Condensers $2.50; 2500-volt 1-mfd $3.25. Robert Curtis, 1109 Eighth Avenue, Fort Worth, Texas.

Q R A SECTION

50c straight with copy in following address form only:

1AQP—Hugh Pollock, 98 Oriole Ave., Pawtucket, R. I.

1WV—Miles W. Weeks, 40 Norfolk Road, Brookline, Mass.

2AFR—Reginald G. Austin, 967 Columbus Ave., New York City.

3ALU—John B. Knight, Jr., Box 404, Prospect Park, Y. M. C. A., 357 Ninth St., Brooklyn, N. Y.

2VQ—Gilbert E. Mears, 388 N. Grove Street, East Orange, N. J.

3KP—4828 N. W. 16th Street, Washington, D. C.

4DP—49 West 4th Street, Atlanta, Ga.

4ES—455 N. E. 28th Street, Miami, Fla.

6DLE—Robert M. Riculfi, 2 W. Drachman St., Tucson, Arizona.

6DLW—J. Kenneth Brown, 6511 Romaine Street, Hollywood, Calif.

6DOR—C. M. Green, 915 Hyde Park Blvd., Inglewood, Calif.

6SM—A. E. Ekdale, 159 S. El Molino Ave., Pasadena, Calif.

8BJX—Celeste Yob, 163 W. Main Street, Massillon, Ohio.

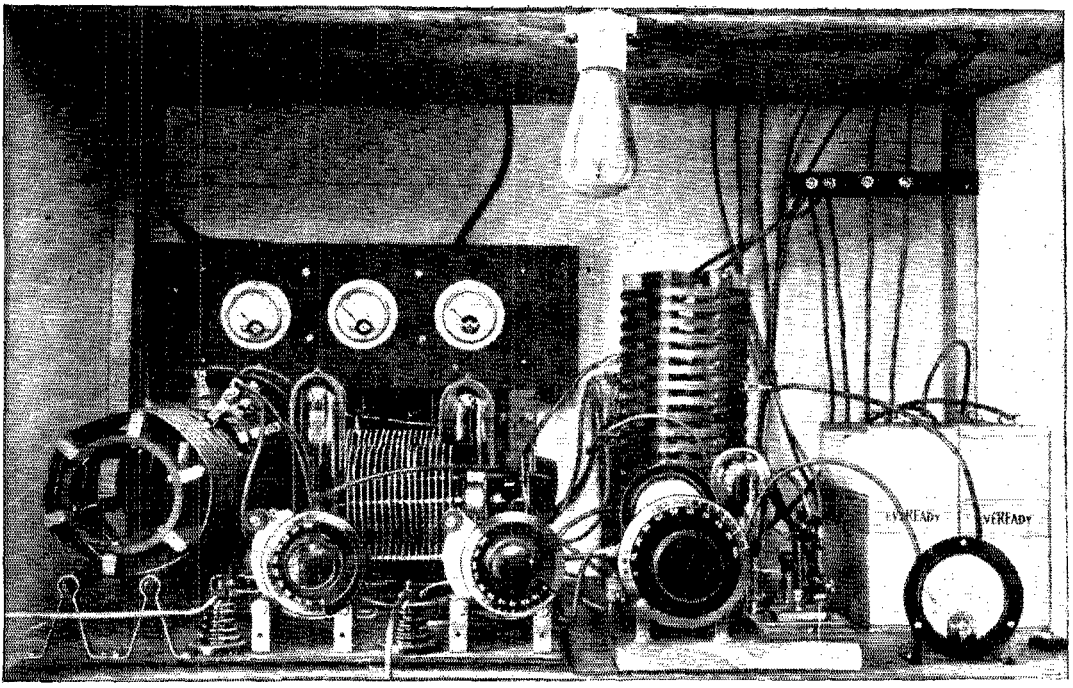
8RD—C. H. Vincent, Packard Motor Speedway, Utica, Michigan.

9SH—Willard North, Golden City, Mo.

The following stations belong to members of the A.R.R.L. Headquarters gang. Mail for them should be addressed care A.R.R.L., Hartford, Conn. When operating 1MK they use personal sines as indicated.

1MK Headquarters	1BUD A. L. Budlong "bud"
1AL H. P. Westman "ws"	1ES A. A. Hebert "ah"
1BAO R. S. Kruse "lq"	1GO L. A. Jones "lj"
1BDI F. E. Handy "fh"	1KP F. C. Beekley "beek"
1BHW K. B. Warner "kb"	1OA R. S. Kruse "lq"
1BIZ C. C. Rodimon "cr"	1SZ C. C. Rodimon "cr"

FOR YOUR CONVENIENCE QST'S INDEX OF ADVERTISERS IN THIS ISSUE



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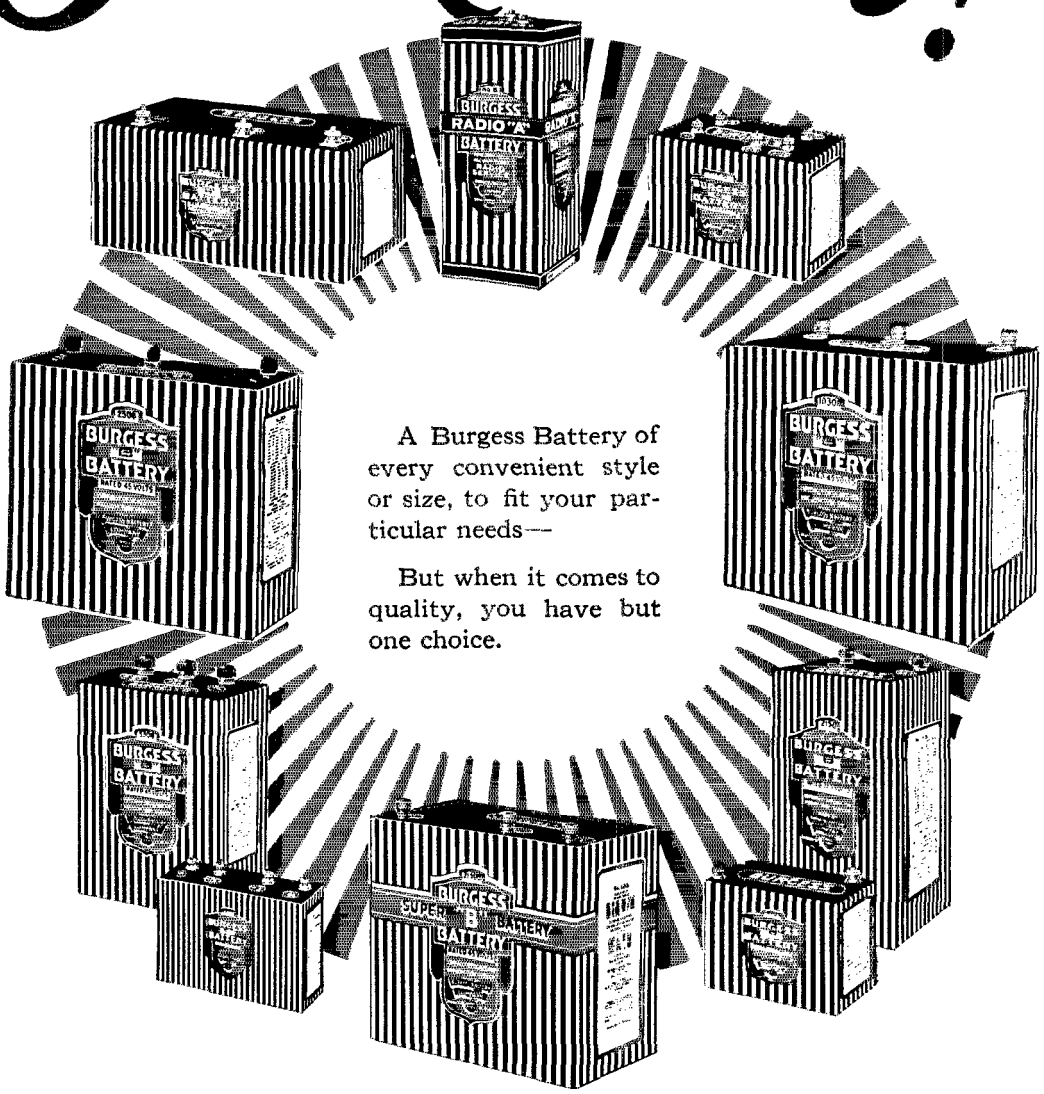

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The Communications Department

F. E. Handy, Communications Manager
1711 Park St., Hartford, Conn.

About Non-Delivery and "Rubber Stamp" Messages

By Blakeley E. Cross, 8ANX-8QU

A MESSAGE might better never be originated than die on the hook or go wandering around the country like a "weary Willie" for months. Perhaps more attention should be paid to deliveries and less to the quantity handled.

A disease which seems to afflict some stations is the inability or unwillingness of the operators to pay postage for message delivery in their vicinity but out of personal or phone delivery range, and which for various reasons cannot be forwarded by radio. 8ANX-8QU handles a lot of these, especially late at night. Some bird about three states away will call me with a nice report (R9 plus wid FB DC OM!) to get me feeling good when I know very well he's lying—not because I never get a good report but because I've been working that vicinity all night and know what to expect. Then he will proceed to unload messages for points within a shouting distance of his station. I hate to think these ops are all tight-wads unwilling to finish a job after accepting a message for delivery but it looks peculiar to say the least.

There have been bright spots to be sure. The other night 8CFV at Gouverneur, N. Y. asked me to QSR Buffalo. However, on learning my location and finding that he was as near as I he told me that he would get them off nearer their destination. May his tribe increase! The notation of good percentages of delivery in the B.P.L. comments is FB. Why not give as much credit for fifty deliveries as now for one hundred total, tho? Wouldn't it speed delivery? (We hope so and shall try it. Note change of B.P.L. policy announced elsewhere in this issue.—Ed.)

8ANX-8QU is always ready to handle messages and in accordance with the requirements of an O.R.S. If it is not possible to relay effectively in quick time, messages are promptly mailed. So far this month my score is one originated, two relayed and thirteen delivered. Not a fine score or anything like it, but enough to illustrate my point.

From time to time I have noticed suggestions for eliminating "rubber stamp" traffic. Contrary to the general belief it has been my experience that many of these messages originate with the operators of some of our best stations. Invariably the text consists of such hog-wash as, "Did you get letter. Hope QSO soon. 73" with slight variations to several addresses. Far be it from me to howl about friendly messages but why not put some "meat" in 'em. Then we wouldn't need editorials on the subject of non-delivery, and that's not a rap at them either.

Let's all see if we can improve our practises and thus improve general conditions.

In the case of a fragmentary message it often requires less transmission to ask for a fill on a substantial part of the mesage instead of asking for several very short fills. It may also be pointed out that there is less possibility for misunderstandings between operators in getting substantial fills. 3QM brings this point out and adds also. "On this much-discussed subject of using CQ let me say that I get as many answers to a short call as I do when I send a gross or more. I have, therefore, adopted a policy of never sending *or answering* an unduly long call."

About Expeditions

ANOTHER month of good contacts has rolled around. The *Radio*, WOBD has returned from the North. Additional reports on her sigs were received from KFZQ, nbBEM, nu9CCH and J. Bernfield, London, Eng. The *Morrissey*, VOQ, has also returned, arriving at Sydney N. S. Oct. 1. The *Bowdoin*, WNP, will remain in winter quarters and continue to need amateur contact for many months to come.

WNP

Hr msg fm Anatalok Bay Labrador WNP nr. 633 Oct. 1 (via 1SZ) to A.R.R.L., Hartford, Conn.

"During September the *Bowdoin* has ridden peacefully at anchor here in Bowdoin Harbor, northern Labrador, known to the Esquimos as Anatalok Bay, while work was carried forward on the scientific station ashore. In a few more weeks, our station will be completed and we will be living snug and warm in our double walled house waiting for the big winter snows.

"The *Bowdoin* will freeze in the ice about a quarter mile from the scientific station. Radio WNP will remain set up on board ship all winter, making a hike through the snow and across the ice necessary to reach the main transmitter.

"Expect to have receiving equipment for all waves between 15. and 25,000 meters and a low power battery twenty meter transmitter, also under call letters WNP. The main transmitter aboard ship will be operated all winter in daylight on twenty meters with occasional evenings on 36 meters. I expect twenty meters to be a big help in making night operation unnecessary. As the *Bowdoin* will be practically unheated, the gang need not expect to hear WNP often in the wee small hours.

"September traffic moved largely through schedules with 1SZ, 1FL and 9AFA. These three stations did excellent work taking our traffic and keeping the members of the expedition in touch with folks at. home. 1KL also was a great help with New Englnad traffic until he took a job with WCSH and had to cancell schedule. Traffic totals for September: Sent 1143, Received 106, Total 249, *all on twenty meters.*

"I would like to take this opportunity to thank the gang for their fine cooperation and many offers to make schedules for QSR of traffic. The policy at WNP has been to route all messages via schedules in order to receive answers with minimum delay and I am sorry that more schedules cannot be kept. At present schedules are daily with 1FL, 1SZ, 9ADG, 9AFA, eb4WW and weekly with 1CKP, nc8AZS, nc1DD.

"Operations of WNP this winter will be primarily to move traffic. Many QSO's in the past have not been very social and this winter they must be made even more brief. WNP will gladly answer all calls and give QRK but then I will QSU if no traffic. This policy is necessary only because a radio transmitter burns up oil and our oil has to last during eleven months more of operation.

"In arranging future schedules, only stations will be considered that can handle traffic smoothly without unnecessary signals. 8BFA's article on traffic procedure which led the Communications Department of September *QST* is a peach. I'm with him heart and soul on this QSZ business. A suggestion I would like to make from commercial practice is the use of AA for 'all after' and AB for 'all before', in asking for a fill. 'Aa John' meaning 'please repeat all after the word John'.

"Stations worked during September on 20 meters: 1aba 1abx 1ach 1acp 1aff 1aiq 1ajm 1akz 1aqt 1asu 1axq 1ayg 1bhs 1bjk 1bkp 1bw 1byv 1ccz 1cfo 1clm 1cmx 1com 1cti 1dl 1fh 1fl 1kj 1kl 1nv 1qv 1ry 1sz 1vw 1wz 1zl 2aib 2aiu 2amh 2aol 2bac 2bev 2cvj 2gp 2md 3adm 3ahr 3akw 3bgg 3bqz 3caq 3hg 3jm 4qb 4rn 5apo 5ago 8ahc 8ail 8akc 8alg 8ayo 8ben 8bfa 8bgn 8bkm 8bpq 8buh 8ccq 8ces 8cfr 8cjv 8cmb 8cpq 8cvj 8dea dhx 8dwv 8dmx 8jq 8ve 9adg 9adn 9aex 9amv 9ant 8dhx 8dwv 8dmx 8jq 8ve 9adg 9adn 9aex 9afa 9amv 9ant 9dpw 9eag 9eau 9bzi 9ef 9efh 9lb 9pc 9ux 9za nc-1dd nc-2al nc-4dp nc-4dw nc-4fv ef-8hip eg-2nh eg-5ml eg-5yk eg-5yx eg-6td eg-6vp gi-2it eb-4ww eb-4rs wobd.

40 meters: 1bms 1cd 1ckp 1mv 8cjv 9baz eb-4zz fo-a9a wobd. Best regards to all.

(sig) Himoe WNP."

nu1CD reports working WNP thru bad QRM. eg (gi) 6YW, BRS 25, BRS42 gFNB, efR390, nu6BZS, nu7ACS, M. R. Orell (Springfield, Mass.) and Edwin Lofquist (Portland, Ore.) addressed reports on WNP's signals through A.R.R.L. Headquarters in addition to many other reports—one from nearly every station listed above as "worked".

VOQ

We are grateful to 8DME for the fairly complete story of VOQ communication during September which follows.

VOQ was unheard from Sept. 4 to Sept. 11. On the 12th, a 20-meter contact was too poor for traffic work but at 8 p.m. VOQ hooked 2UO on 32 meters and some great relaying was put through. Manley shot about 2,000 words of press fast, single and with out breaks. 2UO got it all. Messages were handled through 8DME on the 13th, 14th, 15th, 16th and 17th, 8CVJ relieving Heiser at the key on the 14th. On the 18th VOQ and 2UO again clicked for a traffic bout. Northern lights at times cut sigs from R6 or R7 to R2.

The 24th of Sept. was the banner night of the whole summer, the messages going through fast and single with plenty of rag chewing on the side. Good work was also done on the 25th and 26th while the *Morrissey* was anchored in the Strait of Belle Isle riding out a gale. On Sept. 28th some rush messages were handled by 8DME while VOQ was underway and pitching wildly in heavy seas. The next day more rush messages were handled on 20 meters in daylight so that answers could be sent through 2UO on the 40-meter 6 p.m. schedule. One reporter who wanted to interview members of the expedition "by amateur radio" through 8DME had to be turned down due to the New York Times contract for all the news by radio—a good stunt and too bad it couldn't have been pulled off. A solid QSO for five hours was made at this time.

nc1BT deserves a lot of credit for hard work in trying to get through to VOQ as the *Morrissey* neared North Sydney, N. S. It is believed that he finally got the probable time of arrival there by copying VOQ or 8DME so that the information could be passed to Mrs. Putnam awaiting the *Morrissey* there.

nu2GP, nu3JM and nu4RN report good QSO's and traffic work with VOQ during September. 3JM took a couple of 70-word messages and the R8 he got on his 20-meter signal proves pretty conclusively that high power isn't always necessary to do good work—he uses a single UX210. 8AQH, 6BFP, 9CCH and nbBEM copied VOQ and forwarded cards thru Hq. nu1BW handled traffic on "20" including a message for Headquarters. nu9AVY worked VOQ on Oct. 3.

8DME says, "Manley has been taking a much needed rest on shore (at Sydney) after one of the most exciting and interesting trips ever made by an expedition. I have greatly enjoyed my trip (by proxy) to the Arctic and sure will be glad to greet my friends on the expedition when they return."

Just as we go to press a message direct from VOQ is received. When the *Morrissey* was five hours out of Sydney, she lost her propeller so it was necessary to return to Sydney for repairs. Suppose this had happened in the middle of Fox Channel? The message is given below as received.

Schooner *Morrissey* (in dry dock at Sydney, N. S.) VOQ via 8DME Nr 416, Oct. 6.

"A.R.R.L., Hartford, Conn. I am writing this report on deck in the warm sunlight with the temperature at 55, it's a great change for us after the summer with its 8 clear days in the 60 we spent west of Cape Chidley and its day in and day out temperatures of 32 to 40.

"Our route this last month has taken us from our farthest north to Sydney, N. S. We left Fury and Hecla Strait the 31st of August, reached Cape Dorchester Sept. 3 and Cape Dorset, entrance to Hudson Strait, Sept. 5. We spent Sept. the 7th to the 13th in Chorkbok Inlet, Baffin Island and left the Strait the 16th. Belle Isle came into sight on the 24th and Sydney was reached Oct. 1st.

"September showed a continuation of the bad weather of the last half of August, on the second I finally cleared the last of Captain Bartlett's press telling of our reaching Fury and Hecla Strait. The next day we picked up the whaleboat at Cape Dorchester with over 1300 words on the hook. It was impossible to even send out a position report until 9BEQ took a short message on the tenth. On the eleventh and twelfth the story of the whaleboat party went to 2UO; over 1000 words were cleared on the twelfth, this was in middle Hudson Strait, the latter part of the 14th and the 18th were no good but otherwise the nights have been satisfactory for communication.

"South of Mugford, Northern Labrador, signals increased greatly in strength. I can appreciate now what a difficult place Fox Channel was for radio and how much weaker all signals were in that region. Contact with 8DME was kept up and a great many personal messages were handled by the faithful Heiser. He took a 700-word message sent by Don Cadzow, the anthropologist, on Sept. 25th, with only one word repeated.

"Twenty meters was used and considerable traffic sent on that wave even when the ship was rolling heavily. The effect that blanketed signals on 40 meters extended to 20 and no signals were heard even in the daytime. I want to thank all stations handling traffic for me. We are nearly home now so 73 fm VOQ

(sig) Manley."

KFLF

The *Ripple* is expected to return to Los Angeles in mid-October. Operator L. Elden Smith, (6BUR) sends word that a list of calls heard will be forthcoming for the gang next month. He reports communication with the U. S. A. perfect from Papete, Tahiti thru regular schedules. nu1ABA copied KFLF 500 cycles, R5, 40-meters, in early September. 4SL took a msg for Hq. reporting KFLF on 33.5 meters.

8CQU and 9AUE report contact with the Motor Yacht *Robador* KFZQ which uses a wave of 37 meters with 500 cycle plate supply. QSL's to the *Robador* should be addressed to the yacht's base care Indian Harbor Yacht Club, Greenwich, Conn.

9BLD tells us by radiogram (thru 1LX and 1AUB) of working the whaler *Hazan*, VNK, Aug. 25. VNK was then 300 miles east of Japan bound northwest with a steady 32-meter signal.

9AUE worked the *Sumanco*, KDDH, first on August 11 and kept two daily schedules with her until she docked at San Diego. The *Sumanco* uses 40-meters and plies between California ports and the Canal Zone.

8DLD reports another new one. xoa5MA is the barkantine *E. R. Sterling*. She left Australia three and one half months ago and is now along the coast of Africa near the Cape Verde Islands. Cards should be addressed to *E. R. Sterling*, care of the Berry Barclay Co., 88A Leadenhal St., London, Eng. A 500 volt dynamotor with one UX210 is used on 32.5 meters. 8DLD says most of the traffic is for Seattle, Washington. He has kept a nightly schedule with xoa5MA and says the traffic is in code groups of ten letters each, four groups to a message. xoa5MA usually comes on about 0400 Greenwich

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7AAT has been QSO consistently with WXR, the U. S. Cableship, *Dellwood*, which left Seattle, Wash., for Skagway, Alaska a while ago. Mr. Henderson, operator of WXR gave 7AAT the following information: "We will be in Skagway 12 weeks. We are to repair a break in a submarine cable off coast of Skagway in 1200 fathoms of water." WXR operates on 42-43 meters, and has m.g. plate supply.

WOBZ, the yacht *Mimi*, cruising in and around the waters of the Gulf of Mexico, will CQ from time to time on 111 meters, and listen for answers on 40 meters. The station is experimental, and wishes to communicate with amateurs. QRA is B. S. Shields, ex5AJJ, 207 City Hall Annex, New Orleans, La.

CONVENTIONS AND HAMFESTS

At the quarterly meeting of the Los Angeles Section, A.R.R.L. (Sept. 13) about sixty amateurs were in attendance. Carl Zint, operator of KNT, Zane Grey's yacht *Fisherman*, gave a very interesting account of fishing for half-ton swordfish as well as telling about other incidents and features of his trip. Mr. George Wilson, owner of the *Ripple*, KFLF, gave a fine talk about yachts and their doings. 6BJX and 6CMS gave a report of the work at the A.R.R.L. booth at the Radio Show. Over 1800 messages were filed at the booth. 500 were cleared from the booth station and amateurs needing a boost for the B.P.L. were given 100 messages from the show. Other interesting talks were given by 2AKO, 6CHZ, and oz3AI. 6AM functioned as chairman and is indebted to 6AVJ, 6BJX and 6CHZ who planned and arranged the program. The next A.R.R.L. meeting is to be arranged by the Pasadena Short Wave Club and the succeeding meeting has been turned over to the Whittier gang who asked for the opportunity.

D. C. W.

Staging one of the most successful hamfests of its career, the Santa Clara County Amateur Radio Ass'n was host to nearly 130 amateurs from the East Bay Section on Sept. 29. A program of entertainment which started with six professional acts was arranged by 6BHY. Talks by Supervisor of Radio Bernard H. Linden and by Ralph Heintz proved of great interest to every man there.

P.W.D.

The biggest event in the Illinois Section in August was the ham-fest conducted by 9EAI at Kankakee. A rip roaring good time was had by the 123 who attended. Governor Small personally welcomed the gang and the entire town was turned over for the event. These get-togethers are held several times each summer for the purpose of promoting good fellowship and are non-technical. White (9EAI) is to be complimented for the 100% way he put this meeting across. The gang all want to thank him. Incidentally, this is a good suggestion for other Sections—hamfests and social get-togethers go well at any time of year.

NEW B. P. L. POLICY

With the good traffic season here and many more stations on the job than before it becomes necessary to raise the requirements for the Brass Pounders' League. Plentiful traffic makes it just as easy to make the B.P.L. as ever, particularly if you go about it by establishing a few regular schedules with the most reliable stations that you hear.

Effective with December, *QST* the B.P.L. will be made up of stations *whose message totals equal or exceed 200* OR *whose deliveries* made either in person by phone or mail within 48 hours *equal or exceed 50*. Note that *either* a total of 200 or proof of 50 delivered messages is sufficient to rate the B.P.L. It is necessary to keep the message file ready for call by the S.C.M. at any time but not necessary to send messages to him unless called for. Please remember that messages held at your station for more than 48 hours don't count in the total at all. All set for some snappy work? Let's go!

CLUB ACTIVITIES

Full information on what the active radio clubs are doing is sent in bulletin form regularly to the affiliated clubs—or to any members interested in club work on request. Club secretaries are requested to send in any material they would like to see in the bulletin. Here is a chance for a discussion of your club problems and a good medium for the exchange of ideas between clubs.

Another thing before we get off the subject, articles of general interest about clubs are wanted for *QST*. "Finding a Concealed Transmitter" appearing on page 111 of September, 1926, *QST*, and "Some Consideration in Organizing a Radio Club" on page 51 of July, 1927, *QST* are good examples of what is needed. What is your organization doing that is new and different and interesting? Information for both our new club bulletin and for *QST* is needed so that all our clubs can grow and profit by each other's experience.

BRASS POUNDERS' LEAGUE

Call	Orig.	Del.	Rel.	Total
6CVE	1842	—	—	1842
6AVW	825	—	—	825
6AJM	121	7	646	774
8EU	38	66	346	450
6BHI	110	50	266	426
8AVK	31	35	350	416
6BZC	14	23	301	338
6RJ	20	44	262	326
8DHX	96	16	194	306
9AAU	294	—	—	294
6ZBJ	6	9	252	267
2CEP	47	26	192	265
8CMO	26	23	216	265
6BJX	94	103	60	257
8CDC	27	7	198	232
oh6BDL	47	12	167	225
6BZN	2	6	216	224
3QY	78	33	113	224
8AKC	73	7	143	223
8DNE	90	15	105	210
8CGZ	2	4	202	208
7UO	10	9	184	203
8DME	31	68	102	201
8GI	13	33	142	188
8CDB	47	18	118	183
2AMJ	—	—	178	178
9ZK	37	12	124	173
6CMQ	3	11	158	172
6CAG	12	22	134	168
8CEO	13	30	111	154
6QL	9	4	134	147
6DAU	10	5	130	145
8DOQ	23	16	104	143
9CEI	11	117	13	141
9CIA	12	31	94	137
8RQ	30	11	96	137
1IP	28	22	84	134
7BB	10	123	—	133
7AM	57	48	24	129
8DED	65	17	44	128
1ACH	21	13	93	127
1FL	14	30	74	118
6BFP	67	2	48	117
9DKK	38	42	34	114
9BAT	70	2	41	113
6ALZ	10	9	94	113
9AEG	16	46	50	112
9DLD	19	19	72	110
9DUD	50	20	40	110
8BAU	21	14	74	109
9DXZ	12	21	76	109
8ADE	27	5	76	108
6DKX	71	6	28	105
6BQ	5	—	98	103
8DBM	24	59	19	102
6AM	5	3	94	102
9DBZ-DZI	28	10	63	101
9PU	27	9	65	101
6BXN	19	4	78	101
1KL	5	95	—	100
9BEQ	10	6	94	100

Some of the "Radio Show" stations take the honors this month. You can tell 'em by a look at the huge number of originated messages handled. More about A.R.R.L. booth-stations will appear in these columns next month.

The "regulars" are all on deck as usual and the "whopping big list" we asked for last month seems to have arrived. FB!

Note elsewhere the new requirements to "make" the B.P.L. With the abundance of traffic and good fall conditions most of us can easily keep up our B.P.L. membership in spite of the higher total of 200 *or* 50 *deliveries* necessary. We are thinking of listing the stations consistently in the B.P.L. separately also—to give credit to those who keep up the good work 3 months and more at a stretch. How about it? Anyway, let's see you here next month, OM. *Schedules* will do it!

20-Meter Reports

9EF (Hammond, Ind.), "After a year on 20 meters I have come to the definite conclusion that this is the best band for intermediate and long distances that the amateur ever had. On 40 meters it was difficult to QSO Europe, but now on 20 it is common to get R8 reports. I have worked five continents on 20 including eb, eg, ef, ei, en, fm, sb, su, sc, oa, oz, oh, na, nd, np, and nh besides many ships. It is pleasant to take 10 msgs at a sitting from oh6BDL without having to be up all night. The majority of 'dead' periods that some of the gang notice seem to me to come between 7 and 12 p.m. I have seen few days when signals did not come thru. Local weather conditions seem to make no difference. At any rate I am sure that the gang may look forward to a very good winter on the 20 meter band."

1SZ (Hartford, Conn.), "Twenty meters was much better during September—not a single day but what some stations came thru. Signals from Europe are fine each week-end. Worked twelve eg's on one Sunday alone. Still keeping daily sked with WNP. Tests with eg5ML show that 20-meter European siganls are just as loud at 1300 GCT as six hours later. Why don't more eg's come on the air at that time?"

6CPV (Knowles, Calif.), "Am on '20' entirely now and it's great! Tell the gang it is sure FB. eh4WW, eb4ZZ, oz1AX, WNP, CR10, nc4CP, saDA9, oh6BDL, oh6CLJ, na7KN and all districts *any* night."

3BGG (York, Pa.), "For a month 20-meter signals were poor and foreign stations few. Since Sept. 19 it has been better tho, and I have worked saDA8, oz2AC and WNP lately giving 2AC the dope on getting the 'fight'. Nc, nf, nr, np, sa, sb, sc, eb, ef, eg, oa, oz and oh are some of my DX on '20'."

8BAG (Niagara Falls, N. Y.), "Re the reports in Sept. *QST*, you ought to tell eb4RS that he doesn't get east coast stations on '20' in the morning (0600 Greenwich) because such of the poor beggars as are not in bed at that time haven't tumbled to the fact that there ought to be as good QSO on 20 with Europe when the light-dark line is between us as when the dark-light line is between us. When the early morning gang begin to realize this there will be something doing."

9BZI (Ackley, Iowa), "Twenty is sure FB for good traffic jumps. I can take it from the 1st dist. and pass it to the 6th nearly any time of day between 10 a.m. and 8 p.m. CST. Have worked France and Belgium as early as 12.10 p.m. All stations are coming thru better than a month ago. '20' is the coming band, all sigs are getting more steady and the notes are better. Yours for 20 meters!"

9AWB (Montrose, Iowa), "Have noticed the same inconsistencies 1SZ refers to. Usually, East coast signals go out about 8.30 p.m. C.S.T. and Western signals begin to come up. During fair weather the change takes place later while in or just before a storm it's earlier. Notice the same on 40 meters in a smaller degree. Let's not count our successes on '20' but record the failures and find out why they are such."

1BYV (Framingham Center, Mass.), "After 10 p.m. E.S.T. it's like a graveyard until oh, oz and oa stations come on—they pound thru fine at this time. That boy se8AG has some fine traffic schedules with 2OR and 9EK on '20'. FB! Have worked 24 different 'eg's and 17 'ef' stations. Have had good sport listening to 'eg's call our 9th district stations between 5 and 6 p.m. E.S.T. and fail to hook 'em. Some of these 9's have never worked a foreigner and get a great thrill when I tell them about it later on. Hi! Most 9's say they didn't know there was anything above 22 meters. At present the eg's work between WIK and HJG but eg5YX tells me that the Post Office will soon make them go back up to 23 meters. QSO's will be better then due to fewer harmonics and mush up there. Worked gw18B Oct. 4 thru bad QRM from WGT. nr2FG was heard down on 21.5 meters the same date. They are all coming down slowly but surely."

OFFICIAL BROADCASTING STATION

Changes and Additions

(Local Standard Time)

5ANC (40) 8:30 pm Sun. Tues. Fri. Sat.: 5YD (37.95) 2 pm Sun., 8 pm Wed., (18.97) 8 pm Sun., 5 pm Thurs.; 9DQN (41) 9:30 pm.; 8EQ (38.75) 6 pm Wed. Sat.

NOTICE

This month we are sorry to have to mention the resignation of the S.C.M. of the Philippine Section of the Pacific Division. Mr. Felizardo, op1AU, has left the Philippines to attend Cornell University at Ithaca, New York appointing Mr. Jose E. Jimenez, op1AT, 835 San Fernando St., Manila, P. I. as Acting S. C. M. until members of the Section choose his successor by nomination and election. Good reports are coming regularly by radio from the Philippines and all active stations there are requested to cooperate with Mr. Jimenez in keeping the Section at the front in A.R.R.L. affairs. All good wishes from "the gang" attend Mr. Felizardo in his post graduate work at Ithaca.

Due to this resignation and to vacancies in our line-up previously existing, *nominating petitions for Section Communications Managers are hereby solicited from the following Sections:*

	Petitions to be valid, must be filed on or before Noon. January 7, 1928
Philippine Section	
East. Mass.	Noon, November 5, 1927
Hawaii	Noon, November 5, 1927
Del.-Md.-D. of C.	Noon, November 5, 1927
Eastern New York	Noon, November 5, 1927
Montana	Noon, November 5, 1927
Washington	Noon, November 5, 1927
Alaska	Noon, November 5, 1927
Manitoba	Noon, November 5, 1927

The closing dates for receipt of nominating petitions in the Sections listed is given above either as previously announced or extended when necessary due to the failure of members in filing petitions in certain Sections. Petitions must be filed at A.R.R.L. Headquarters on or before the time announced to be valid. The proper form for nomination was shown on page 45 of April 1926 *QST*. The candidate and five signers of a nominating petition for Section Communications Manager *must* be members of the A.R.R.L. in good standing and the signatures on the petition must be authentic or the petition will be thrown out as invalid. Members are urged to take initiative immediately, filing petitions for the officials of each Section now operating under temporary officials, so that the work of organizations can go forward everywhere without further delay.

—F. E. HANDY, Communications Manager.

With the Route Managers

By Lawrence A. Jones*

EVER since this Route Manager's business started we've been plotting and scheming to beat the band, trying to figure some way in which this column could be arranged in order to give the traffic-handlers at large the benefit of knowing our schedules. It's a mighty hard job, because our space is so limited, and there are so many schedules, but at last we have hit upon an idea. How good it is remains to be seen.

Here's the idea. All schedules, of course, are valuable, but there is nothing like a daily one for clearing traffic in the most efficient manner possible. And so daily schedules are the ones that are going to be shown here in the magazine each month. In order to make things a bit easier, we will define daily schedules as schedules kept at least five times per week, thus allowing two free days to those who need them. The five days must always be regular, though. Now here's what we have this month:—

80 meter band

Williamsport, Pa. 8EU with
- 8GI Ellwood Cy. Pa.
- 8RQ Hazleton Pa.
- 8CGZ Wmsprt. Pa.
- 3BWT Washn. D. C.
- 8DHX Deposit N. Y.
- 8CMO Wmsprt. Pa.

Williamsport, Pa. 8CMO with
- 8AVK Montoursville Pa.
- 3LC Phila. Pa.
- 1KY Cambridge, Mass.
- 8DOQ Huntington Pa.
- 8EU Wmsprt. Pa.

Montoursville, Pa. 8AVK with
- 8RQ Hazleton Pa.
- 8CMO Wmsprt. Pa.
- 3CFG Cranbury N. J.
- 3AWT Phila. Pa.

* Assistant to the Communications Manager.

Ellwood Cy., Pa. 8GI with	8EU Wmsprt. Pa.
Claremont, N. H. 1ATJ with	1LM Chelmsford, Mass.
Jefferson, Wis. 9DLD with	9LV Milwaukee, Wis.
Huron, S. D. 9DGR with	9DBZ Rapid Cy. S. D.
Pierre, S. D. 9DWN with	9DBZ Rapid Cy. S. D. 9DGR Huron S. D. 9BKV Akron, Ia. 9BVF Jamestown N. D. 9CZC Blencoe Ia. 9CEH Chicago Ill.
Milbank, S. D. 9DB with	9DBZ Rapid Cy. S. D.
40 meter band	
Newport, R. I. 1BQD with	1BVB Westerly, R. I. 1AZW Pittsfield, Mass.
Jacksonville, Fla. 4DU with	nq5AZ Matanzas, Cuba.
4NE with	nq5AZ Matanzas, Cuba. 4VH Concord, N. C. 4AAO Homestead, Fla. 4RK Miami, Fla.
4TK with	4UO Atlanta, Ga.
Miami, Fla. 4CK with	nr2FG San Jose, C. R. nq5BY Matanzas, Cuba. 4BN Tampa, Fla.
4RK with	4NE Jax, Fla.
Tampa, Fla. 4BN with	4CK Miami, Fla. 4RK Miami, Fla. 4AV Atlanta, Ga.
Hartford, Wisc. 9DLQ with	9BJY Racine, Wis.
Coffeyville, Kans. 9CWW with	nn1NIC Managua, Nic.
San Diego, Calif. 6AJM with	6RJ Oakland, Cal. 6JZ Santa Barbara, Cal.

That's all that have been reported this time. You'll notice that certain parts of the country are very well covered, and that other parts are not even in the picture. If you are in a part that is not covered as well as it should be, get busy and make some daily skeds, reporting them to your RM as soon as you have kept them for a week or two, to be sure they are reliable.

Last month we announced that 4NE was forced to resign his position as RM, due to illness. It's a pleasure to be able to tell you now that Webb is enough better that he will be able to carry on his excellent work, and Florida will therefore continue to have an active RM. In a recent letter, he says, "Another thing I have been trying to push, is the stunt of swapping messages locally, so as to speed up delivery. My idea is to use the other fellows' skeds where they will speed up QSR." It's a good idea, and it *does* work. Ask 8EU!

8DED tells us, "80 meters surely has a bunch of skeds working. Every night I hear 10 or more in action. Very FB." Yes, 80 meters is probably about the best sked wave there is, although 40 has advantages when comparatively great distances are to be covered. However, 80 is the least tricky and freakish band of any of 'em, and deserves to be the most popular for schedules. Those of you who have been on forty and twenty exclusively for quite a while have a surprise in store for you if you will try eighty for an hour or so in the early evenings. Believe us, the air sounds as busy as a W. U. office.

9DLD seconds this motion with, "There is plenty of traffic on eighty, and it is an excellent wave for short-distance skeds. Many fellows are talking about skeds on 40, but I don't hear much traffic there. Other fellows say that 40 still is no place for the traffic handler." We are inclined to believe the "other fellow"!—except, of course, in the case of foreign skeds.

1BQD, together with his SCM, 1BVB, has been sending some FB mimeographed letters to his ORS each month, trying to pep them up. More power to you! He is of the opinion that both 40 and 80 meters should be stressed over 20 as traffic and sked waves, as 20 is a bit too unreliable. Those of you who have worked on twenty for any time know that a few dead days spoil the fun every now and then.

3CEB says that he is going to run all his skeds on 80 meters as usual, and try to set an example for the rest of the Va. traffic handlers.

Guess that ends things for now. Take some of these suggestions to heart,—and remember that this column is not only for the RMs, it's for *everyone*. 73.

ARMY-AMATEUR NOTES

SECOND CORPS AREA—2SC, the CANCS resumed its schedules on Sept. 26. The NCS of the various Nets are: West N. Y., 8HJ; East N. Y., 2ASE; Bronx, 2CYX; Manhattan, 2EV; Brooklyn, 2PF; L. I., 2AVB; N. J., 2OU; NJNG, 3HW. Anyone who has constructed a short-wave receiver and transmitter for use on airplanes is requested to communicate with 2PF to arrange a test of same.

THIRD CORPS AREA—3DBT is a new AA station in this area. Schedules were kept during month between 3SN, the Signal Corps station, and 3AHJ, 8BPD, and 3HI. 3SN is glad to communicate with any A.R.R.L. members calling them between the hours of 7 and 11 P.M.

FOURTH CORPS AREA—The following stations have recently been designated AA stations: 4TX, 5AX, 4LX, 4GS, 4GL, 4BU, 5TX, 5TC, 4KZ, 4EI, 5AEN, 6ATN, 4SJ, 4HM, 4EA, and 4OC.

EIGHTH CORPS AREA—The NCS, 5AIN, has been moved to a new location. 5ZAE, the AA Representative expects to get some kind of a Net organized in the state of Colorado.

TRAFFIC BRIEFS

5NW is a telegraph and radio op for the Humble Oil Co., whose wires cover several of the big cities of Texas. He sez when he gets an important enough ham message he can shoot it over the company wires and get the telegraph op at the other end to deliver. Nice for deliveries, eh?

You fellows who allow your schedules to misfire occasionally, read this: 8BNW recently kept all his skeds while having his eyes treated. His eyes were in such condition that he could not distinguish writing, but he got his mother to read the messages to him while he hammered the key. Where there is a will there is a way, in most cases.

The Chicago Radio Traffic Association Cup and a prize of two sets of Chi-Rad coils will go to the amateurs handling the first, second and third highest number of messages for three consecutive months. The contest is open to all Illinois amateurs who are A.R.R.L. members. Get busy, gang. Also remember that Nov. 5 is the date of the annual C.R.T.A. anniversary banquet with an elaborate entertainment program and speakers that no ham will want to miss.

2JC, the club station of the Bloomfield Radio Club, was the first U. S. station to establish communication with fl-1AB in Liberia, having worked this station on Aug. 7 and 8. Seven messages were handled. 1AB is being operated by Archie Hosier and Sidney McCaleb, two Americans who are doing radio work for the Liberian Government. Mr. McCaleb will be remembered as one of the ops with the Rice expedition to South America.

A number of you have probably worked ne-8AE recently. The QRA of this station has been the Grenfell Mission, located at St. Anthony, Newfoundland. The operator, Fred Dearlove, moved, however, to Northwest River, Labrador, where he will soon be operating his new station ne8WG on 46 meters, and also in the 20-meter band. Thanks are due 2HV and 3AG for this information.

8XAM

During its flight with the National Reliability Air Tour, the Ford plane, 8XAM, was worked by 5ACL, 5SI, 8ALK, 8CAU, 8KS, and 9CKV, according to reports we have received. 8BQM and 9CJT report copying signals from 8XAM, but no QSO. Although the plane passed through their cities, 8BI-CXL, and 8AXS say they were unable to hear any of its transmissions. A messages from the plane sent soon after leaving Dallas, Texas, was received at HQ through 8AHC. 8ALK, 5ACL, and 5SI each handled a number of messages for 8XAM, and kept good contact for quite a time. 5SI established communication with the plane when it was 50 miles from his city of Pine Bluff, Ark., and relayed all dope by phone to the flying field where it was posted on a bulletin board for the benefit of the waiting crowd. FB work on the part of everyone deserves thanks and congratulations.

Our Section Managers

W. J. PICKERING

SCM Saskatchewan, entered the game in 1918. He at present operates and owns nc4FC, and is mainly out for traffic. Mr. Pickering was born in England, and is 22 years old. He works in the Dominion Lands Branch of the Department of the Interior.

ROBERT S. MORRIS

SCM North Carolina, entered amateur radio in 1921, and holds the call 4JR. 4JR has participated in practically all Traffic Department tests. Bob is 23 years old, and is bookkeeper in a music store.

DAN LAMB

SCM Arizona, had the wireless bug in 1919, and entered amateur radio in 1921. 6ANO has always been the call of his personal station. Dan earns his bread and butter as a "Movie Projector," but expects to give this up for commercial radio before long. He is 20 years of age.

DEAN F. COTTAM

SCM So. Minn., first entered amateur radio in 1914 under the instruction of Dr. A. Hoyt Taylor. During the war Dean acted as instructor at the U.S. Navy Radio School, Cambridge, Mass. He has operated at WLP, has held pre-war DCL and post-war 9MX, and now has 9BYA on the air. His age is just 30, and he is mighty proud of his two youngsters. Dean is a dispatcher in the Northern State Power Co.

F. J. QUEMENT

SCM Santa Clara Valley Section, first became interested in amateur radio way back in 1914, when he was coaxed by a friend to listen to time signals from NPG. His station, 6NX, was one of the first USA stations to be heard across the Pacific, and has been very active since its beginning. Mr. Quement has held various A.R.R.L. offices previous to his present one. He is 27 years old, and became a married man the early part of this year. He works in the Sales Department of the Standard Oil Co.

E. A. SAHM

SCM of So. Texas, is 32 years old, and a graduate of Southwest Texas Teachers' College, and the University of Texas. He first entered this game of ours in 1919, has held 5YK and 5XAV, and now owns and operates 5GW. Mr. Sahm is very active in local civic and social organizations, and is Principal of High Schools. He has held several A.R.R.L. offices before his present one.

G. R. MOIR

SCM No. Dakota, entered amateur radio in 1916 with the usual spark outfit. He has always had the same call, 9EFN. "Rufe" does radio repair work for the Radio Equipment Corp., and incidentally holds a 1st grade Steam Engineer's license. He tells us that he also has a marriage license which he has held down for 16 years, hi!

FERGUS S. McKEEVER

SCM Kansas, is well-known through his call of 9DNG. 9DNG came on the air in 1923, and has never been off for more than a month at a time since then. DX traffic work is the main interest. Mr. McKeever is a radio salesman for the RCA.

RICHARD S. BRIGGS

Former SCM East Mass., has just resigned his position and is operating at sea. He got the wireless bug back in 1916, but did not receive his first license until 1921. He owns and operates 1BVL, and has operated 1XM at M. I. T. He is a graduate Mass. Tech., with a B. S. degree in Electrical Engineering.

D. J. ANGUS

SCM Indiana, has been in the radio game since 1907, and joined the ham ranks in 1920. 9CYQ, his present station, is on the air for traffic and experimental work. Mr. Angus is Chief Engineer and Treasurer of the Esterline Angus Co.

DIVISIONAL REPORTS

ATLANTIC DIVISION

WESTERN NEW YORK—SCM, C. S. Taylor, 8PJ—The reports this month show a decided increase over last month. 8CPC has a class for beginners and things are beginning to sizzle all around. 8UL, 8DE, 8NT, 8BAG, 8PB and others have pledged themselves for the coming year to make amateur radio more interesting than ever before. Amateurs in Niagara, Erie, Chataqua Counties are requested to get in touch with 8UL for membership. The Rochester gang with its RCTA have also been busy and things around Monroe County look very bright. 8KS has been experimenting with a portable set. 8ABX will be in Rochester soon. The Mohawk Valley Brass Pounders are busy lining up new members so things down state will soon be buzzing in that direction. 8BQK handles traffic. 8CVJ and 8DME handled a load of messages. 8DME says VOQ is near home again. 8CVJ handles traffic with WNP and VOQ and starts Army schedules this month. 8BYE says business is dull. 8TH, 8CPC, 8AOM, 8UL, 8AYB, 8GJ, 8ADE and 8NT are keeping Buffalo alive. 8CDC makes the BPL this month. FB. 8DHX has a good total. 8BCM handles many too. 8CNT is also busy with traffic. 8ANX and 8BMJ are working tooth and nail to get in the BPL again. 8AYU should get a RCC certificate, having worked 12 stations holding communication one hour at a time with each station. Herkimer has been kept on the map by 8AIL, 8BLI, and 8CNH. Hudson Falls still has 8BIW whose efforts have come to the front. 8BAG and 8DKQ are very active. 8ABX, 8BLP, 8DDL, and 8KS reported. 8BZP is back again. He is going to start a class for beginners so we can expect radical changes. 8BFG works Australia with R6 audibility. 8CNX and 8CDB are very active, the latter making the BPL this month. 8AHC has kept Union Springs alive throughout the season. 8AKC and 8DNE have both hit the BPL this month.

Traffic: 8AHC 6, 8AIL 1, 8AKC 223, 8ANX 29, 8AYU 52, 8BAG 8, 8AOM 43, 8BCM 69, 8BFG 6, 8BIW 10, 8BLI 30, 8BLP 18, 8BMJ 86, 8DQK 14, 8CDB 183, 8CDC 232, 8CNX 86, 8CNT 23, 8CPC 13, 8CVJ 8, 8DDL 35, 8DHX 306, 8DME 201, 8DNE 210, 8PJ 14, 8UL 12, 8TH 4.

EASTERN PENNSYLVANIA—SCM, H. M. Walleze, 8BQ—Well, men, we were THE traffic pushers last month. Fine work and many thanks. Keep it up, but be careful of bum tfc. The Phila. gang is coming to the top fast. Don't forget we have two good RMs trying to serve you on lining up skeds. 3ADE came back strong and works 20 on the side. 8BQE is busy with his books again but keeps on the air too. A 5 and 10 cent "tank" condenser keeps 8CGZ's QSB good when better ones chew it up. Tfc sure picked up nicely for 3BFL. College don't slow 3NP much. 3ZM has his 80 m. xtal rig perking again. Our new ORS, 8RQ, starts in with BPL credits. 3KN is a newcomer on 40. 3QM sticks to 40, too. 8AVK built a new ham a receiver. The new arc is working at last at 8CMO's. 8EU put an auto starter on his. 3QP deserted 40 and is out for an ORS on 80. 8CCQ is back at 8XE for the winter. Break-in is FB for 3QY and traffic better. 3AKW handled a load of them with WNP. A 50 watter is popping off on 40 FB for 3BVZ. 3AWT says he will be in the BPL next time. A new Oakland roadster has 3SM's time taken up now. 20 was bum for 3BGG until the last of the month. College is taking most of 3NF's time again. 3HD still has to work too darned hard at work. Tuff, OM. 3BLP blossomed out with his xtal rig rebuilt in FB shape. 3HH is doing hi-speed work with 3QY. 8AVL is building a 100 watter for 5 meter work exclusively. 3AKB is a new one reporting and did nice work. 3CDS is trying hard to get lined up on 80. 3NJ popped his Tobe 2000 volt condensers on 1000. 8WJ was off awhile due to the death of his father. Sorry, OM. 8AFR is coming back after a long vacation. Trouble troubles 8ADQ again. This time his platexformer blew up. 8WH lost his nice call and had 8BYZ wished on him. 3LQ is working for a WAC on 40. 8CW is back at college and works WJBU-8DQG. Business kept 8BIR off the air most of the month (YLs I guess—SCM). A raft of skeds is doing wonders for 3AFJ. 3AIY almost forgot to report. 3AFA has some very good skeds working, he says. 3LC is doing his part and 3BMS is QSO VOQ on 40 handling traffic. 3AFX is active. 3CBT wins the booby prize with his failure to report on time.

Traffic: 8EU 450, 8AVK 416, 8CMO 265, 3QY 224, 8CGZ 208, 8RQ 137, 3ADE 108, 8DQE 98, 8BQ 71, 3QP 54, 3SM 46, 3AFJ 43, 3BSM 37, 8CCQ 34, 3AKB 31, 3BFL 29, 3AKW 27, 3AIY 25, 3HH 23, 3LC 20, 3BVZ 20, 3HD 19, 3NP 17, 8CW 17, 3AFA 15, 3QM 15, 3BLP 13, 3NF 12, 3AWT 11, 8BIR 10, 8BYZ 9, 3BGG 8, 3ZM 7, 3CDS 6, 8AVL 5.

WESTERN PENNSYLVANIA — SCM, G. L. Crossley, 8XE—A number of the stations being rebuilt will be in operation near the end of the month or by the time this report is in print. All of the ORS in this Section will have received a letter from the SCM and RM and it is hoped that all will do what they can to get the necessary information to the RM so he can get these schedules fixed up and the maps made up as well, so we can get going by early fall. 8AGO has been doing his bit of good work on 20 and sent in a complete scheduled list to the SCM for use of the RM. 8AMU has been QSO South America. 8VE is QRW at the Medical School but is all set for 20 over the weekends. 8DFY and 8APC have new transmitters on the air. 8CRK, 8DNO, 8CES and 8GI are rebuilding. 8GI never leaves the air during this work. 8ARC has a blown transformer and sync, both being repaired. 8CWT is helping newcomers to get started. 8OJ blew his filter. 8CYP says QRW and no DX. 8CFR has plenty of DX and fair traffic. 8BGW is one of 4 live hams at New Castle. 8DOQ has a number of good schedules. 8GK is on 20 meters. 8AGQ wants to arrange schedules with other High schools. 8DBL will be on the air soon. 8CEO has a schedule that he has had for nearly four years with 4JR. 8XE has prospects for a very good year with a number of operators back from last year and with a number of freshmen here that were amateurs at home.

Traffic: 8GI 188, 8CEO 14, 8DOQ 143, 8AMU 43, 8CWT 42, 8CFR 42, 8DFY 35, 9XE 23, 8DKS 20, 8AGO 19, 8VE 18, 8CYP 13, 8GK 10, 8BGW 10, 8OJ 8, 8CRK 8, 8DNO 4, 8APC 3, 8DIP 2.

SOUTHERN NEW JERSEY—SCM, H. W. Densham, 3EH—Only three men reported their traffic and operation this month—3ZI, 3CO and 3SJ. Listen, fellows, let's get on the job. We can't let our percentage get a kick like this. Every man make it a point to have a report in to the SCM by Oct. 26.

3ZI has two complete transmitters working now, one on 20 meters and one on 38.5 meters. Separate antenna are used on these sets. 3SJ is temporarily off the air due to transformer and rectifier trouble. 3CO's signals are welcome on the air again after a dull summer.

Traffic: 3ZI 6, 3CO 2.

MD-DEL-D. of C.—SCM, A. B. Goodall, 3AB—3ALF is still using low power and is kicking out FB. He experiments some with fone. 3CAB has a pretty good total. Why not make the BPL, OM? 3CFG reported via radio. Good work and keep it up! 3CFX is changing his plate supply to raw AC. 3ASO says his xtal transmitter is the berries. 3CGC has been off the air the past month but expects to be on in the early evenings now. 3CE has been doing some good work on 20 meters. Is QRW school now, tho. 3BK is now on the steamer "Chilore", KFIW, and listens in whenever possible for the gang. Give him a call, fellows.

Traffic: 3CAB 62, 3CFX 12, 3ASO 32, 3CGC 5, 3CE 7.

CENTRAL DIVISION

INDIANA—SCM, D. J. Angus, 9CYQ—9EGE, RM for the 5th Dist., has his District reporting a higher percentage of his stations than any other in the state. It is up to all the RMs to wake up the stations that are lagging and to get new ones started as well as to insist on reports from all that are in regular operation. 9BZZ is on 38 meters with two 310s in parallel. 9EJU is on regularly and reports that 8AA of Lima, Ohio has moved to Muncie and put in a 50 watter. 9AYO is going to install a 50 watter soon. 9DPJ returned from a trip to NYC and is on regularly now. 9CNC has a new Zeppelin antenna and is getting out better than ever. 9CVX is back from Calif. and on again regularly. 9EEY has a new transmitter but blew the transformer. His YL is winding a new one for him. 9EKW has installed a new 852, 9AIN has two regular ops on duty now. 9AGW has rebuilt and is getting out fine now. 9CMQ is using a new 852 and reports fine work. 9AEB is going to put in a mercury arc rectifier. 9DBA is now

on the air with a 150 watt DeForest tube. 9EAA has his application in for ORS. 9CSP has application in for ORS and is getting his share of traffic on 80 meters. 9ASX is on 20 hunting DX. 9CLO has some new ideas regarding grinding crystals and is off the air while putting them into effect. 9CYQ has installed crystal control on his set. 9DSC is experimenting with low power.

Traffic: 9BZZ 51, 9EJU 16, 9AYO 5, 9DPJ 21, 9CNC 20, 9CVX 21, 9EEY 3, 9EKW 21, 9EGE 33, 9AIN 6, 9CMJ 19, 9CMQ 18, 9AEB 1, 9DBA 22, 9EAA, 6, 9CSP 13, 9ASX 8, 9DSC 10, 9CRV 10, 9DWE 1, 9CLO 1, 9CYQ 34.

KENTUCKY—SCM, D. A. Downard, 9ARU—9BAN and 9CRD are new ORS. 9KZ is all set to work on 40 meters after having finished rebuilding his xmitter and erecting a new 60 foot mast. 9OX-9WR continue to work outside the U. S, with two 210 bottles, Hartley and a current feed Hertz. 9BWJ says he hooked up with oz-3AP on the night of the D-T fight and gave him the results. FB, OM. 9ABR is RM so please all ORS note change of location. 9BAZ is getting R8 from France. The size of this report is due to the non-reporting of ORS not mentioned. Failure of the same ORS to report next month makes you an ex-ORS.

Traffic: 9BAN 34, 9BAZ 30, 9WR 20, 9MN 10, 9OX 9, 9BWJ 2, 9KZ 2.

MICHIGAN—SCM, Dallas Wise, 8CEP—8ZZ has been trying keying systems for crystal control sets but has not hit upon the ideal one as yet. 8DED made the BPL this month and is our star performer when it comes to traffic. 9CSI is using a 7½ watter in tuned grid and plate circuit on 20 meters and says its the best wave. He was also QSO WNP. 9ANT is also on 20 to stay. He was QSO WNP using a Zepp antenna which he tunes by the burns. 8SY does great DX with his 7½ watter having been QSO 16 countries. He also spent part of his time as one of the ops at BG2 Camp Grayling. 8ACU was not very active during the warm weather but wants the fellows to be on the lookout for him now. The warm weather slowed things in Pontiac, 8DIV being QRW work and 8BRS busy helping a new station. 8CYT get ready for the fall rush. 8AUB is busy again altho one of the ops is at M. S. C. and pounds the key at 8SH. 8DQB and 8AUB held a meeting at 8AUB's and invited all the Grand Rapids hams and those interested and have a real live outfit on the way and promise that you will hear much of G.R. from now on. 8BCV is selling out as he is leaving Grand Rapids. 8BNC is busy flying and stirs the ether by riding thru it. The Detroit gang are busy with Radio Show and had a nice exhibit. The old time Rock Crusher was much in evidence but was not used. It was 8ZZ's hy tone, the famous 375 meter set.

Traffic: 8MF 12, 8SY 21, 8ZZ 24, 8AUB 26, 8BRS 9, 8ACU 2, 9CSI 45, 8CEP 13, 8DED 115.

OHIO—SCM, H. C.. Stork, 8BYN—As announced in last *QST*, we are going to have a traffic contest of our own, the prize being donated by 8ALU, our own RM at Massilon, Ohio said prize being a UX852. The rules are simple, but strict. All ORS in Ohio are eligible—you must be an ORS. Consequently, you fellows who are not ORS and have put off getting a certificate, apply at once. This is not only to stimulate traffic but to put Ohio on the map for *good* ORS. There are many hams in Ohio who would make good ORS but have never applied so hurry up. The messages handled must be bona-fide messages—all with a semblance of rubber stamp type will be discounted. Messages must be turned in at time of report each month and sent to 8ALU, Dr. J. A. Carnes, 515 Plum St., Massillon, Ohio for check while reports go to SCM as usual. All messages to be handled in correct A.R.R.L. procedure and marked from whom received and to whom sent, dates, etc. Messages held over 48 hours will not count. Every message originated, delivered, received, sent, or mailed will count as one message for this contest ONLY. Don't turn them in that way on your monthly report to the SCM. Messages originated that bear the stamp of having been originated in order to pad the total will be deleted. Originate only good messages. The Ohio ORS who turns in the highest total for three *consecutive* months wins the Traffic prize. Any of the U. S. amateur bands may be used but any ORS reported out of bounds or for any misdemeanor will lose his total for that month. 8BAU has kindly volunteered not to compete because of unfairness to those who have less time on the air than he, because of his illness. A very FB spirit, OM. The SCM and the RM, 8ALU are not going to compete either but all are going to do our best to get all the traffic we can. LET'S GO and may the best traffic man win!!! 8BAU comes highest this month in traffic handled. 8DBM comes next making the BPL after a year's absence. 8CQU did good work with Europe. 8BNW comes next but is going to school now. 8DJV, a non-ORS, handled 67. 8OQ handled much traffic west from the Buffalo Radio Show. 8CMB blew his plate transformer and is getting out with 4 watts input to a 350. 8ALU wants you fellows to cooperate with him in the RM work. 8CAU is surely going FB for traffic and is looking for more. 8AKO is QRV for traffic at 8HB. 8ATL delivered a message personally to a YL, hoping to get a kick out of it. He did—she was 'cullud'. Hi! 8DSSY was on only two days but handled 27 msgs. 8AEU is too modest to say anything about himself. 8DJG traded his 210 for 8BTH's 50 and BTH made him trade back. 8AVB is QRW college. 8CNO, our own OW, operator, is now on with an 852. 8APB is runner-up for ORS. We are sorry to lose 8BEV, another good ORS. He will op at 1YS for a while. 8CFL doesn't say anything about his station. The gang have crowned 8BHZ as the "CQ King of Columbus". 8AVX wasn't on much because of moving. 8BSR handled 8 on 20 meters on an 852 with indoor antenna. 8PL is mostly after 'furriners'. 8GL only says QRU. 8AQU has been vacationing but has his set going again now. 8DQZ is back again but will be QRW school. 8ARW has been having tough luck but will be on consistently soon. 8DIA is on with an 852 now. 8BKM blew his 50 and is on with two 5 watters. The SCM is going to follow the rule of no traffic no mention in report but don't forget to report if you don't want your ORS cancelled. 8RN will be with us again this winter. 8AGS is also leaving us. Sorry to see you go, OM.

Traffic: 8BAU 109, 8DBM 102, 8CQU 86, 8BNW 76, 8DJV 67, 8BYN 64, 8OQ 51, 8CMB 42, 8ALU 42, 8CAU 38, 8AKO 29, 8DSY 27, 8AEU 22, 8DJG 19, 8AVB 18, 8CNO 15, 8APB 15, 8BEV 11, 8CFL 9, 8AVX 9, 8BSR 8, 8PL 8, 8GL 8, 8AQU 7, 8DQZ 6, 8ARW 6, 8DIA 4, 8BKM 4, 8ABK 1.

WISCONSIN—SCM, C. N. Crapo, 9VD—9LV is still Milwaukee's best traffic handler. 9DLD now uses a UX852 and keeps nine schedules. 9BPW reports things picking up now. He has a sked with 9DLD and one with 9DES. 9BWZ keeps schedules and keeps traffic moving through his district. 9SO is now using voltage feed Hertz. 9SO is getting ready for a big winter. 9EK-XH has skeds with 9DLD and sc-3AG. 9EFC has been on for about three months now with a new set. 9EMD had RM 9DLD for a visitor at his station Sept. 25. Ex9ACM is on the air again with the call 9DHH on 160 meters. 9BWO worked ef-8ER, nq-2RO, nn-1NIC and others in the U. S. and Canada. 9EHD has skeds with 9EMD and 9ABM. 9ABM, ex9AGV expects to be on more steady now. 9AFZ is on 40 as often as he can get on. 9EEF has a new pole up and is building a new xmitter for winter. 9BJY has just made some skeds. 9EGW has a low report due to moving the set. Will be on again soon with an 852.

Traffic: 9LV 73, 9DLD 110, 9BPW 61, 9BWZ 54, 9SO 40, 9EK-XH 30, 9EFC 21, 9EMD 20, 9BWO 17, 9EHD 14, 9ABM 13, 9AFZ 11, 9EEF 8, 9BJY 6, 9EGW 5.

ILLINOIS—SCM, W. E. Schweitzer—9AAW—This is Illinois' largest traffic report to date. Congrats, gang, and keep up the good work. 9AEU is on the air now as power mains have been installed. The station was formerly using B batteries. 9AEG is using a full wave rectifier using 2 216B tubes. 9AFB has been traveling through the country visiting the gang along the line. The YL at 9AFF has the call 9QV. 9AHJ was not in operation this month. 9ALK blew his transformer again so will be off the air for awhile. 9ALW had the station working nicely when school started. He will pound the key at 9NV. 9AMO is a new station reporting. 9ANQ promises to handle lots of traffic next month. 9APY reports his schedules going to pieces because many of the operators are going to school. 9AQA had a total of 33 msgs this month. 9AVP reported the owner of his plate transformer wanted it more than he did. 9AWX will be operating on 40 meters now. 9AXZ reports 20 meters FB for the west coast in the afternoon. 9BBA is on in the afternoon and attends the Friday and Saturday nite ham tours.

9BNA will operate 9NV this winter. 9BPX has schedules with 9BQH, 9HL, 9OQ and 9EGE. 9BPX will attend Armour Institute this year. 9BVP operating on 38 and 85 meters. 9BWL finished a RF

amplifier set and promptly burned up the tubes. 9CCZ is operating on 80 meters. This is his first report. 9CEC will be on soon having moved to a new location 800 ft. above sea level. 9CEH has schedules with 9BQH and 9LV. 9SIA handled the most traffic for Illinois this month. 9CN was on but little. 9CNB has been too warm to pound brass. 9CNY reports it easier to QSR west and south because of new stations coming on. 9CSB had empty socket trouble. 9CUH is a new station in Waukegan. He attended a hamfest in Kenosha with 9CHS. 9UY is still off. 9BBR is not on much. 9CWC has been away most of the month. 9CYN is going to change his QRA, but is doing a little operating at 9IZ. 9CZL is going full blast now. 9CZT is using a Hertz and tickling it with a lone 210. 9DAF only started again this month. 9DBI is using AC but is building a chem rectifier. 9DDE is attending Northwestern Univ. 9DGA reports sigs pounding in FB during daytime on 20. 9DKK is back from his vacation and is amusing a Zep antenna with a 210. 9DOX is regaining his health and will be on soon. 9DSO is operating on 40 with two 210's. 9DSU has skeds with 9CFN and 8AMU. 9DWP is pulling in big DX. 9DXG is back at school again. 9DXZ holds schedules with 8DBM, 9APY, 9BWN and 9CYQ. 9DYD says his new mast was sure worth waiting for. 9EAI suffered from the hot weather. 9EDS had trouble with his rectifier. 9EGC is off the air. 9EGX blew his 210 and is on the air with a 201A tube. 9EHK is busy getting back on the air. 9EJO is working all districts consistently. 9IZ is going out for a commercial ticket. 9LL gets DC reports on 20 with a chem rectifier. 9PU has 9MI on the air at U. of Ill. 9MR is also at Illinois U. 9PU is temporarily closed down but did very fine work during the summer. 9QD has been inactive. 9UX has a sync rectifier. 9WJ sent his report by radio and it was delivered to the SCM by two different stations.

The CRTA is going to hold its annual banquet Sat. Nov. 5. Get in touch with 9DYD who has the reservations in charge. Be there, gang, for a grand and glorious time.

Traffic: 9CIA 137, 9DKK 114, 9AEG 112, 9DXZ 109, 9PU 101, 9APY 88, 9CEH 76, 9AWX 61, 9EAI 61, 9AMO 57, 9WJ 55, 9CSB 45, 9AXZ 42, 9DSU 40, 9ACU 40, 9AQA 33, 9CNY 28, 9CNB 26, 9UX 23, 9DGA 22, 9DDE 17, 9BNA 17, 9LL 17, 9CUH 17, 9MI 15, 9EJO 15, 9EDS 15, 9BVP 14, 9CN 14, 9DBI 13, 9AFB 11, 9BBA 10, 9IZ 10, 9DXG 9, 9ALK 6, 9EGX 6, 9CZT 5, 9CCZ 4, 9ANQ 4, 9AFF 3, 9DYD 3, 9DWP 2, 9BPX 2, 9CWC 2, 9BWL 2, 9DOX 1.

DAKOTA DIVISION

SOUTH DAKOTA—SCM, F. J. Beck, 9DB—9DZI-9DBZ made the BPL in one week's operation using separate transmitters in the 20, 40 and 80 meter bands. 9DWN is back in Pierre and keeps a bunch of skeds on 80 meters. 9BQV finds 80 meters fine and turned in a nice traffic report. 9DES is on consistently. 9AJP nearly has his new xmitter going. 9DGR did some good relaying when his Dad went to Chicago. 9ADG, a new station at Yankton, has put in a fine message report and is in line for an ORS. 9DB put a gutter pipe antenna up on top of his house and gets out FB on 80. 9CJS has a TP TG layout now. Also has 3 stages audio so he can hear DX. 9DIY is on early in the morning. 9BKB is at school of Mines with 9DBZ and DZI. The 9DWN-DBZ-GR-DB combination is working nicely on 80 but can use more stations to complete our state net. Write 9DWN and he will arrange times. Plans are being made for our annual convention now.

Traffic: 9DBZ-9DZI 101, 9DWN 70, 9BQV 40, 9DGR 35, 9ADG 24, 9DB 22, 9CJS 18, 9DIY 1.

SOUTHERN MINNESOTA—SCM, D. F. Cottam, 9BYA (9EFK Acting)—This has been another month for tourist hams, many having visited the Twin City and surrounding stations. Hamfests at 9AJU, 9CYA, 9DGE, 9EFK and 9AIR have been the order of the past month. 9DGE had nc-4BT, 9AEX, 9AMK and 9DBW visit his station. 9BIY has left for school. 9EFO sends two reports and will be QRW school. 9EFK's op, Bob Thornton, is now RD, Wauban Plant, Schriever, La. 9DBC will be on consistently next month. 9ELA-9BTW have incorporated at 617 Univ. Ave., S. E., Minneapolis and are both going to the U. of M. 9BYA reports business QRM severe. 9BHZ has turned BCL repairman. 9AIR is going to install a 500 watt, 500 cycle transmitter. 9DBW has also gone to college. 9DMA worked 275 stations during vacation on 7.5 watts. 9DHP wants a 20 meter schedule with a 2, 5, or 6 at 7:30 am CST. 9DSH is back in Minneapolis. 9CBE will be on the air again soon. 9CMB has left for Dartmouth College. ex9ELJ will be back with high power and a new call. ex9DUL is now 9RB. 9BXV, 9BZP and 9AUJ are all inactive.

Traffic: 9DGE 35, 9BIY 25, 9EFO 25, 9EFK 19, 9DBC 19, 9ELA-9BTW 12, 9BHZ 6, 9DBW 6, 9AIR 6, 9DMA 3, 9DHP 1, 9BYA 8.

NORTHERN MINNESOTA—SCM, C. L. Barker, 9EGU—9AOK is back on regularly and is knocking them dead with his new 75 watter. 9ABV has returned to the ether after a summer of considerable ND and promises great work for this winter season. 9EGU finally got started back on the air by rebuilding. 9CWA has been monkeying a lot with 180 meter phone but has had hard luck. 9CIY is also trying 180 meter phone. 9AKM, our northern-most ORS, has got new fall schedules perking again and shows up fine as usual. 9EGN says he is going to the U and to Dunwoody Inst. so will be more or less QRW but will be on the air whenever he can. 9CTW blew an 852 but has fallen back on the old faithful 210 and DC. 9BBT has just got on the air again after a summer of working. 9BMR says he is dusting off the old transmitter and intends to make things hum this fall and winter. 9EGF is doing his usual fall rebuilding. Incidentally, a lot of us are doing this same thing and no doubt, it would be a very good idea for all of us to take a day off and spend it dusting things off and getting all set for real consistent QSO's throughout the winter months without trouble.

Traffic: 9AOK 33, 9ABV 31, 9CWA 16, 9CIY 14, 9AOK 10, 9AKM 9, 9CIY 7, 9EGN 3, 9EHO 2.

NORTH DAKOTA—SCM, G. R. Moir, 9EFN—The SCM is planning to visit most of the amateur stations soon. 9CDO has been QRW for the last two months. Has rebuilt his transmitter. 9DKQ is QRW and not on much. 9BVF keeps lots of schedules on both 40 and 80 meters. 9DYA is going back to 80 meters as QRM on 40 is terrible. 9BJV has been off quite a bit but promises to get going soon. He would like a sked with a Canadian 4th dist. station as he has quite a bit Canadian traffic. 9CEI will be off the air for the next month or so while the owner goes east to get a degree, law this time.

Traffic: 9BJV 5, 9BVF 40, 9DKQ 3, 9CEI 141.

DELTA DIVISION

ARKANSAS—SCM, W. L. Clippard, 5AIP—The Little Rock fellows enjoyed the recent visit from our CM, Mr. Handy but due to the SCM's absence from the city until his arrival, I was unable to notify out of town members. Sure regret it, fellows, but hope we can make better connections next time. Our RM had a bad spell of malaria and consequently has been inactive. 5JK is high point man and going strong. 5ABI had his vacation and went home. 5CK worked Australia but handled no msgs. 5AVA, 5AJY and 5SS are three new ORS and are very proud of their certificates. 5AFR is leaving us for a few months. 5AKF must have had some more bad luck. What have the YLs done with 5AQM and 5ER. The school marms have 5ABD well under foot. 5PX worked Honolulu and a ship in one evening on a lone 5 watter. Let's start in earnest this month, OMs, and see if we can't lead our Division again.

Traffic: 5JK 40, 5AVA 29, 5AJY 17, 5AIP 4, 5SS 2.

LOUISIANA—SCM, C. A. Freitag, 5UK—5AQF says that his messages were few due to his being out of town most of the time. 5ABT is reported away on his vacation while 5WG has returned from pounding brass on the SS Roanoke but has left again for school. 5AQF has arranged skeds with him. 5EB says he has changed his Hartley circuit to a TP-TG and signals are very much steadier. 5NS reports his 852 getting out fairly well. 5AOZ says things at his station have been slow until some excitement caused by his 5 watter going west. It has been replaced, however. 5ASL is a new ham just getting started. 5KH has been down on 20 meters with two 7½ watters. 5WY is operating aboard the SS Hustler on the Red River. 5UK is still handling nightly press schedule with SS Wawa of the Standard Fruit and Steamship Line. 5QJ seems to have a hard time deciding whether he will use a motor-generator this winter or stick to the old slop jars. 5UT is now getting his station into shape for the coming season. 5LV has applied for ORS. 5FX is

QRT college QRM. 5APA has a wonderful radio job with a seismograph party surveying geologically on the Mississippi coast. 5KH lacks only one more continent for WAC certificate. 5WY and 5ML are QSO Australia.

Traffic: 5IE 50, 5NS 43, 5EB 40, 5UK 25, 5KH 12, 5AQF 3, 5LV 7.

MISSISSIPPI—SCM, J. W. Gullett, 5AKP—5FQ has just returned from Chicago and he said that the town was so large he didn't find a ham there. (Mississippi country boys should stay away from big towns. Hi.) 5AIQ and 5AQU are freshmen at Miss. A. & M. College now. 5AGV and 5TC are seniors there and are the old timers who have operated 5YD for the last three years. 5AFV and 5KR are on the air now. 5ANP has moved, rebuilt and is going strong now and threatens to turn in a real report next month. 5YD says he moved the set over to the textile building and operated a few days but the steps in the tower have been condemned so he is looking around for another place now. 5QQ will pound brass from 5YD for the next nine months. 5AJJ has applied for an ORS certificate and sent in his old one to the SCM. 5AKP has finally finished his shack with the exception of a little painting.

Traffic: 5YD 2, 5API 5, 5ANP 4, 5FQ 9, 5QQ 15, 5AKP 19.

HUDSON DIVISION

NEW YORK CITY AND LONG ISLAND—SCM, F. H. Mardon, 2CWR—Manhattan: 2KR is kept very busy between business and his YL but is putting his time with her to good advantage, teaching her the code and a YL will soon be second op. at 2KR. 2AWU keeps the station going at 2AWU is at sea on KGDC. 2EV has been at the Radio Show in N. Y. helping the rest of the gang to get the sigs from 2AMJ's transmitter out of Madison Square Garden which is an all steel bldg. 2BCB is back home again and going strong. 2ANX is back for a while, rebuilding slightly. 2AMJ was very busy at the show.

Bronx: 2BBX still gets along on the same 210's. 2FF will op from 2BBX. 2CYX is going strong again. 2AET is back after a visit to the 3rd dist.

Brooklyn: There sure was a sudden spurt in this section this month in the number of stations reporting. 2AVR is back after a vacation but doesn't expect to be on much this winter on account of school. 2BRB manages to let us hear from him once in a while. 2APB is going strong. 2AMI has been off the air all month but will be with us again soon. 2BO has been very busy handling tfc with an s/s 600 miles of S. of N.B.A. 2PF has been very busy with the amateur end of it, at the Radio Show. 2CRB is still alive and going strong. 2CTY is trying hard to get tfc but all he gets is QRU. 2ADZ got mad at his small set and used brute force on it which sent it all over the adjoining lots. 2ABP is back from the seashore and says he was really homesick for the brasspounding. 2BAZ has had a very inactive month but is going to get at it again now. 2ALU is a new station in these parts but an old timer under the calls of 4DX, 3PS-3AHE and several other calls. 2BDA, a new station, is now reporting and promises to be a real live wire.

Long Island: I guess this will be the last month old 2AWX will be heard from under that call. He is resigning his ORS and going to school in Ohio. Sorry to lose you OM and the best of luck. 2ADA is still on with the motto "traffic first." 2AGU has been very QRW work but manages to get on the air at times. 2AWQ is still alive and making himself heard. 2BSL recently worked 225 miles with 22½ volts on the plate with his portable station. 2AYS blew his old 5 watter.

Richmond: 2CEP has rebuilt the whole outfit except the xmitter. 2ABO is after an ORS and I guess he will get one with the new batch that will be issued in about three weeks now. 2AKR is home from sea and still likes to pound brass with the ham.

Traffic: Manhattan: 2ANX 9, 2BCB 17, 2EV 62, 2AWU 32, 2KR 33, 2AMJ 178. Bronx: 2CYX 42, 2BBX 17, 2AET 1. Brooklyn: 2BO 74, 2PF 2, 2CRB 21, 2APB 12, 2BRB 2, 2AVR 8, 2APB 8. Long Island: 2AYS 7, 2AIZ 65, 2AWQ 12, 2AWX 2, 2AGU 13, 2ADA 33. Richmond: 2ABO 3, 2CEP 265, 2AKR 39.

NORTHERN NEW JERSEY—SCM, A. G. Wester, 2WR—The month of Sept. was the poorest in traffic that ever was recorded in this Section and the SCM hopes for a greater increase in traffic and number of stations reporting. Next month will find a few ORS missing their certificates for non-reporting. 2CW keeps things active in Caldwell and reports on all amateurs in his territory. 2JC handles traffic with WNP. 2KA is the proud father of a new YL in his family. 2ASZ gets fine reports on his new 50 watter which steps out FB. 2ALM fools around circuits but likes TP-TG best. 2ANB attended the CMTC and had a great time. 2CQZ helped WEAF get their new super-power station in action and in his spare moments, talks with oz-4AC. 2CTQ pushes signals to all remote points on 20 with a 210. 2CJX has the misfortune to blow his tubes. 2GV is now in a new QRA at 94 Mountainview Place, Newark which will be his permanent QRA. 2BIR has a new 203A and will be heard more often. 2AVK blew up his transformers when trying to use 500 cycles on 60 cycle transformers. 2QI had the power company fix up a leak transformer which made reception impossible. 2ADL is back from Atlanta and started off by working three continents on 38 meters. 2JX is very QRW BCL work. 2AOP is attending the Radio Inst. of America to obtain a commercial ticket. 2RY is a new YL station located at Ridgewood, N. J. who is on with a 201A. 2AAT works his Hertz on 40 with a 210 which steps out FB. 2CJD handled some traffic for WGY, reporting the Tunney fight R8 in England on the 24 meter band. 2ARC has left the ranks to attend college. 2AUH has a 250 watter perking on 40 and 80 but will not be on much due to college work. 2AGN received a report from ai-2KT on 20 meters.

Traffic: 2CW 11, 2EY 3, 2JC 4, 2KA 2, 2ASZ 10, 2ALM 9, 2ANB 1, 2CQZ 6, 2CJX 6, 2AVK 13, 2QI 2, 2ADL 12, 2JX 7, 2AOP 15, 2AGN 14, 2CJD 16, 2AAT 2.

EASTERN NEW YORK—SCM, Earle Peacox, 2ADH—2APD is the only station reporting. What is the matter with the rest of E. N. Y.? Let's see some action, fellows!

Traffic: 2APD 97.

MIDWEST DIVISION

IOWA—SCM, A. W. Kurse, 9BKV—Traffic has increased considerably this month and the SCM certainly appreciates your fine cooperation, fellows. Next month will find Iowa a well organized traffic state and going strong. Let's keep up the good work, gang. It is with deep regret that we announce the death of Donald Shoen, 9GU (ex9CNB) formerly of Goldfield, Iowa. He was killed in an airplane accident near Goldfield Sept. 14. 9BAT is doing excellent work on all bands. 9BWN will be going stronger than ever this winter. 9DZL visited the SCM recently, and found the junk heap at 9BKV scattered all over the house. 9BKV has been rebuilt and is now handling traffic on 76 meters as usual. 9CVU is doing nice work on 40. 20 meters is used a lot at 9BZI and he reports a good total and some nice DX. 9CZC is QRW arranging schedules by radio. FB. 9DEA is back with us again after a long vacation. 9EHN and 9AED continue to hammer away on 40 and 80. 9DOA left for school Sept. 12 and won't be on much until Xmas vacation. 9AMG sports a new Hertz antenna. 9DPL says his tuners never work. Better build a Schnell tuner, OM. They never fail.

Traffic: 9BAT 113, 9BWN 50, 9DZL 46, 9BKV 45, 9CVU 27, 9BZI 20, 9CZC 19, 9DEA 18, 9EHN 12, 9AED 11, 9DOA 6, 9AMG 2, 9DPL 1.

KANSAS—SCM, F. S. McKeever, 9DNG—Quite a few ORS and many other Kansas hams were present at the state convention at Independence Sept. 9 and 10 which was the big affair of the month. Several new ORS are on the way as a result of this convention. Among them are 9BPL, 9DUG, and 9EFE. 9CFN leads in traffic this month. 9CKV, 9CNT and 9CFW are all finding traffic scarce on 40. The latter is very QRW at college. 9BGX gives another plead for cooperation from the gang. How about it, fellows? 9BUY is still hitting it hard. He reports a new ham in the making. 9JU was on little due to moving his QRA. He managed to work Australia and be reported in England. 9CET has prospects for a replacement on his burned-out 250. Good luck. 9CLR has returned from a trip to sea. 9LN is going on 20 and 40 as usual. 9DNG is to rebuild soon and have higher power and a couple extra operators.

Traffic: 9HL 8, 9BII 6, 9CFN 56, 9DNG 11, 9LN 12, 9CKV 19, 9CNT 14, 9BUY 7, 9JU 2, 9BGX 7, 9CFW 3.

MISSOURI—SCM, L.B. Laizure, 9RR— St. Louis hams reported in fine style this month with 9AAU,

9ZK, 9DUD and 9BEQ making the BPL. Director Quinby's station is going at least and he is QRV schedules. A big radio show accompanied by the usual St. Louis style ham participation boosted traffic totals remarkably. 9DOE reports he is still on board WNX on the Lakes and will stay until navigation closes in Dec. 9DAE is again on the air on 40, and is arranging some skeds. 9DHT has been shifting his hook up and getting started on 40. 9LJ is back on 40 and handling what traffic he can rake in. 9ARA is working all three bands. 9BQS just got back on the air with a new xmitter and receiver. We welcome another addition to our shut-in fraternity in the person of 9ASV of Jopline, Mo. who is working a 5 watter. He is confined to a wheel chair and would like to QSO the gang, requesting QSLs and QSOs. 9WV in Kansas City is also a member of the shut-in gang. 9LI arranged a sked with 9CNY and will be an ORS next month. 9BUL applied for an ORS and has BPL intentions. He has a sked with 9DKG of Columbia. The Kansas City gang held a hamfest and banquet at the City Club on the night of Oct. 1st. Capt. Birkhard of WVC, Fort Leavenworth, 9DXY, our Director, 9ZD, the master of Ceremonies and a number of others spoke to the gang.

Traffic: 9AAU 294, 9ZK 173, 9DUD 110, 9BEQ 100, 9DXY 25, 9BUL 12, 9DKG 11, 9LI 10, 9ARA 7, 9LJ 17, 9DAE 34, 9DQN 7.

NEBRASKA—SCM, C. B. Diehl, 9BYG—9CJT is still tinkering and not doing much traffic work except RCC. 9CNN plans to increase his power. 9QY says since his crops are all harvested, he has no ambish. 9EEW is having his busy season on the railroad and not much time for radio after a session in the office. 9BYG is pounding his flatirons quite a bit and steps out occasionally. 9EHW has a dandy BCL business worked up and also QRW with his music. 9BOQ is installing a new dynamotor and says that when it gets going, it will knock our ears out. 9DAC is putting up the stick again and will be QRV in a short while. 9DUB has now been on for a month but expects to bust out shortly. 9BBS is experimenting with ORS rectifier tubes. 9BQR says the extreme heat of August, overtime on account of vacations at the office cause him to be QRW but to look out soon. 9CJI also blames the dent in his traffic total to the August heat. 9CDB sent us a nice report this month.

Traffic: 9QY 4, 9EEW 2, 9BYG 5, 9BQR 1, 9CDB 6, 9CJI 3.

NEW ENGLAND DIVISION

RHODE ISLAND—D. B. Fancher, SCM, 1BVD—Not much to report this month again. We have a new ORS this month in the person of 1AQP. He keeps a schedule with 9CMI and has all the "ear marks" of a good relay man.

Providence & Pawtucket:—1AMU is QRW at a BCL store and at WFCI but sends in a good total just the same. 1AQP, our new ORS, sends in a fair total for a starter. 1AWE is still on 20 and says that he can't find any traffic. 1MO is sure getting out but has been busy so hasn't handled much traffic.

Westerly:—1BVB has built a new rectifier and overhauled the junk heap for the winter and reports are much better now. 1AAP is going to devote most of his time this winter to experimenting. Good Luck, OM.

Newport:—Activity seems to be increasing in Newport. Several new stations are being constructed and it keeps 1BQD busy coaching them all. Hi!

Traffic: 1BVB 59, 1BQD 32, 1AMU 31, 1MO 13, 1AQP 11, 1AWE 5.

Eastern Massachusetts, E. L. Battey, 1UE, Acting SCM.—This writing finds the gang getting down to business, making preparations for the coming cold weather. Nearly all O.R.S. reported this month—that's what we want fellows! Traffic figures are rather low, probably due to rebuilding and overhauling. 1ACH and 1FL lead in traffic. 1ACH, 1NV, 1RY and 1ABA all worked WNP. 1RY reports several new hams in Taunton. R8 to R10 reports from nines' are something freaky sez 1NV (but he continues to get 'em). 1OG says no traffic from 12:30 to 6. A.M. Any of you W. U. men want schedules with him? 1ADM is on 80 handling traffic and experimenting with fone. 1LM promises to increase speed of his activities as wx gets cooler. The Eastern Mass. Amateurs Radio Asso. opened the season's meetings at 1KY's shack—she served watermelon, cake and drinks. 1RF's C.C. set still going strong. 1NK and 1YC are rebuilding. 1BDV is back at M.I.T. for the winter. 1GP is back on the air with a 75 watt outfit. 1ACH kept a fine list of schedules. 1AGS installed a 2200 volt pole transformer and is putting 2000 RAC on a 203A. 1APK has moved but is still in Melrose. 1ACA says he nearly lost interest last month in the ham game—don't do that, OM, we need good tfc men. 1AKS of Chatham is attending Mass. Radio School. He lives near 1AHV now and they YX together at night. What? 1FL says that 1BYV has a YL at last, and he adds that that is *real news*. 1WV is kicking out FB. The Boston Radio Show is in full swing. The amateur booth run by members of the E.M.A.R.A. and furnished by the Boston American is keeping the gang busy. The traffic totals next month should be very large at the rate the BCLs are sending "free radiograms". Hi! 1FL, 1ALW, 1SL, 1RF, 1AHV and the rest of the fellows will be glad when it's over. FL says if some pretty nice YLs do not appear at the booth he will be mighty disappointed. Cheer up, Don, there will be plenty. 1BVL left for southern waters on a United Fruit boat. We all wish him luck as commercial op and hope he is back with us soon. 1RL of Wollaston is getting ready for active winter. He joined U. S. N. R. F. and will take part in the drills during the coming months. Well, gang, let's all send in our reports next month and make this the star section.

Traffic: 1ACH 127, 1FL 118, 1KY 85, 1UE 18, 1LM 66, 1ADM 28, 1RY 26, 1ACA 23, 1NV 22, 1AHV 8, 1RF 7, 1WV 8, 1ABA 4, 1APK 4, 1GP 3, 1BDV 3, 1PB 8, 1OG 3, 1NK 2, 1ON 2, 1AIR 3, 1ASI 9.

Vermont:—C. T. Kerr, 1AJG—Things are opening up fine boys as we have three new stations in operation. There are now two of them going in the southern part of the State, 1EZ and 1NH of Pownal. Welcome fellows and thanks for writing me. 1BEB is on early evenings. 1BBJ sez good report will follow next month, fb. 1IT, our CRM, sez that he is going to start something PDQ. 1BJP gets the star with 34 messages, FB. OM. 1AC and 1AEY of Poultney are now on the air working together at ex1AEY's home. 1AJG is on now for the winter. Let's hear from you other boys who are not mentioned in this report.

Traffic: 1BJP 34, 1IT 4, 1BEB 6, 1EZ 22.

Connecticut—H. E. Nichols, SCM, 1BM—1CTI worked overtime to keep up the work of the southern part of the state and leads the list for this month. 1ADW has been exceptionally active with schedule work and in spare time, he worked three Australians and Belgium within a short time of each other which is quite an enviable record. 1BHM has returned from his vacation and is planning to operate regularly on the 80 meter band and hopes to get everything running smoothly before the winter season gets here. 1ACH kept a fine list of schedules. 1AGS installed a work and are very anxious to get some good stations lined up for this work. 1AOI and 1ALF have been very active in keeping schedules and have been a most reliable outlet for their section and are to be congratulated on their fine spirit of co-operation. Both will be ORS men before our next report and it is a real pleasure to welcome them to our operating staff. 1QV at Mystic, has promised to get things going up his way. 1ATG had the pleasure of a Navy cruise on board a ship equipped with a 2KW set that radiated 35 amperes of current into the antenna. 1ZL reports doing considerable foreign work and handled some traffic with WNP recently. 1CJX and 1BCA report that school qrw is putting them out of business and we shall miss your traffic totals. Can you not recommend someone to fill up the gap, OM, as it would be a real service and help us to keep your section active?

Traffic: 1CTI 86, 1ADW 75, 1BCA 36, 1ZL 35, 1BM 28, 1QV 22, 1MK 16, 1ATG 12, 1BJK 9, 1AOX 10, 1ACD 8, 1OS 4, 1BGC 2, 1TD 4, 1BHM 2, 1BQH 2, 1BCG 62, 1VB 56, 1ALF 51, 1AMC 14, 1AEB 8, 1BWM 6, 1ASD 6, 1VE 4.

Maine—Frederick Best, SCM, 1BIG—1BIG was extremely busy for the better part of the month painting up the house and getting everything ready for a busy winter. As a result he did not make the BPL. 1AIT says the Maine gang have vanished from the 80 meter band, and that he has gone to 40 for a while so as to keep in practice. 1FP worked entirely on forty meters. He has been very busy, but hopes to be on more during the Fall and Winter. 1AQL reports working 9BQH on 80 metres, handling traffic. 1COM reports a new schedule with 1CBH. He worked WNP, and his transmitter is now going full blast on 20, 40 and 80 meter bands. 1QY of Auburn, is sponsoring a Maine Ham Get-together and is hard at work at the present time clearing up the tangle in-

cidental to putting the thing across in good shape. Fine work, Mac! 1BNL sent in a report via radio which was certainly appreciated. One does not have to be an ORS to report, OM, so send us a report every month for *QST*! 1KL is now operating at WCSH, and has forsaken the ham game. 1ATV is selling insurance, and has had to be off most of the past month getting his business in shape. 1AUF has returned to Eastport, and is working a little traffic now and then. 1CDX reports traffic picking up in Norway. He plans on joining the Naval Reserve in a short time.

Traffic: 1KL 100, 1BFZ 77, 1BIG 50, 1AIT 33, 1FP 19, 1AQL 17, 1COM 9, 1BNL 18, 1CDX 8.

New Hampshire—SCM, V. W. Hodge, 1ATJ—Traffic figures show quite a decrease this month, perhaps due to school and business QRM. Mr. Louis Jacob, 1IP, 150 Merrimack St., Manchester, has been appointed R-M. He earnestly solicits the aid of the gang in arranging reliable schedules. 1AOV, sent in his first report. 1ANS sent in a good total but didn't have much to say. School QRM cut 1AOQ's traffic. 1JN has been off due to change in QRA. 1OC is on week-ends. 1ARF sent in a big total. He has an emergency transmitter using a 210 and "B" batts. 1IP has done fine DX on 20 with a 201 A.

Traffic: 1IP 134, 1AEF 84, 1ANS 51, 1AOV 27, 1OC 22, 1AOQ 22. 1ATJ 11, 1JN 4.

WESTERN MASSACHUSETTS—SCM, A. H. Carr, 1DB—We are pleased to introduce to the gang two new ORS. 1ANI of Worcester who gets the good start of three schedules and a fine message total for this month and 1AQF of Springfield who also hands in a good total. 1AGA was at the hospital with typhoid for quite a while but is better now and will soon be pounding brass again. The Worcester bunch did not forget him while he was at the hospital. Worcester is going to have another one of its good hamfests, on Sat. Nov. 12th and probably at the Hotel Warren. All who are interested and want to get in on a real live A.R.R.L. time are invited. Tickets can be procured from A. W. Hyde, 1GR, 19 Caro St., Worcester who is Secy. of the Worcester Radio Assn. under whose auspices the feast will be held. 1AAC informs us that the old 50 has passed out and that he is trying to do business with a 210 on 40 meters. 1AAL has got his crystal control going on 38.6 and 77.2 meters. 1AJM handled some fine traffic with WNP. 1AKZ says he finds conditions on 20 meters better now than last month. 1AMS says that 1OS and 1AEQ were in Pittsfield for a visit. 1AMZ is back at college but will be on the air on an occasional week-end. 1AOF is going on a moose hunt for a month in N. B. as a guest of nc-1DU. He will be off the air 6 weeks. 1APL has overhauled his station so was off the air a week. 1ASU keeps up his untiring interest in all things appealing to hamdom. 1LC handled 4 msgs for WOBD. 1EO has a 20 meter set going and says he is enjoying himself. 1UM just got back from Germany and tells many fine things about the hospitality of the German hams. He has written an article for QST about it and I hope all read it. 1WQ says he had a fine time with the Army junk at Fort Monmouth, N. J.

Traffic: 1AAL 58, 1AJM 63, 1AKZ 3, 1AMS 2, 1AMZ 13, 1AOF 14, 1APL 70, 1ASU 1, 1AWW 12, 1DB 8, 1EO 12, 1UM 5. 1WQ 21, 1ANI 52, 1AQF 18, 1LC 14.

NORTHWESTERN DIVISION

IDAHO—SCM, Henry H. Fletcher, 7ST—Our old friend 7JF is back and is coming on with a new set. He is chief RM now so line your skids with him. 7YA is just getting lined up for tfc. 7GW reports gud luck on 20 bt doesn't like it. Hi! 7ACN is off air making money to install 75 watter. 6AKM is on at Jerome. 7QA moved back to Nampa. 7ABB is Boise's wx man. 7QP is op at 7YA. 7JW gg to college but ops week ends. All you fellows who have never written to the SCM please do so at once and give me all the dope. We have a lot of stations in Idaho that no one ever heard of.

Traffic: 7YA 4; 7GW 3.

MONTANA—O. W. Viers, SCM, 7AAT—7FL arose from deep "Spring Fever" and reported just in time to save his ORS ticket. He and 7ZU at the State College at Bozeman report that they are going to try and get 50 watter on 40 meters using the call 7XBB and the gang is requested to report their signals if heard. 7AFP is still up in the Beartooth Mountains with a small portable set. He will be on from Red Lodge again this winter with a 7½ watter on 40 meters. 7AHG the new Red Lodge station is too busy with school to think much of radio now but will pound from the SCM's station, when he has the time. 7QV has moved to Washington to attend the U. so asked to have his newly won ORS ticket cancelled. Sorry OM. 7CK seems to be losing interest and has some apparatus for sale. 7AAT-QT has been going strong with the 50 and has been working nearly every thing hearable. He had the pleasure of meeting Mr. Handy, Labor Day.

Traffic: 7AAT-QT 82, 7DD 14.

OREGON—R. H. Wright, SCM, 7PP—Those who didn't take in the Spokane 7th District Convention certainly missed the time of their lives. From all appearances, fall activities have started in earnest. Many of the boys have rebuilt entirely, others have increased power, and improved their sets in general. 7AEK is celebrating the first anniversary of his 250. He sez shi's still faithful altho' most of the boys want her. 7ABH has been on regularly and in addition is experimenting with directional effects of zep and fundamental antennas. 7GQ, an old timer, has returned from Alaska and will blossom out soon on all Ham bands with crystal control (FB, OM!). 7MF works OA, OZ and OH regularly, and will, in all probability, this Fall handle traffic through his portable at Corvallis. We lose a good Ham in 7JC who is going East to be a nine, however, ex9GI has moved to Portland and has taken out the call letters 7AHS. He will combine stations with nc5BF and be on with 150 w. 7AIX is going back to O.A.C. and will have his set in operation there. 7VP has been very QRW YLs until school started, but between he and 7ACG keep the latter's station open for traffic. 7MO is installing a new 1000 V. M. G. 7FE has been on occasionally and will have 50 w. going soon. 7MV is going to install two 852's (if the wallet holds out) using 3000 to 4000 on the pair. 7AEJ is a new station using M. G. 7ND is back on the air. 7MH has gone to college but will run his portable. 7AJN is on regularly with a new rectifier system. 7YG, the O.I.T. school, was represented at the recent radio show and cleared traffic for the patrons. 7PF is a new ham and wants traffic. Although new at traffic handling, 7LT will do his best with his 50 watter. 7OI used a 25-20 rifle to drill a hole for an antenna lead, he sez it's fb, Hi!

Traffic: 7YG 75; 7LT 26; 7MV 16; 7AEK 9; 7ACG 9, 7ABH 8. 7PP 8, 7FE 6, 7NP 2, 7AIX 1, 7MF 7, 7MO 10.

WASHINGTON—SCM, Otto Johnson, 7FD—Three of the boys made the BPL this month, 7UO, 7BB and 7AM being the high men. Active stations are on the increase throughout the state. Everybody evidently is bent on making the winter of 1927-28 the best yet. The number of new stations coming on the air are showing a welcome increase. Many hams are now at WSC and the U. of W. and getting xmitters going. The fellows are all enthused, due perhaps to the annual get-together at the Spokane Convention. A reorganization in the ranks of ORS is now under way and all dead material is being weeded out and live stations put on the list. Fellows who have been lax in getting reports in, please take note!

Traffic: 7UO 203, 7BB 133, 7AM 129, 7ACA 44, 7AFU 44, 7TX 30, 7MG 27, 7MZ 18, 7ACB 16, 7AEV 14, 7FD 8, 7VL 4, 7DF 3.

PACIFIC DIVISION

PHILIPPINES—SCM, (acting), J. E. Jimenez, op1AT—This report by radio from op1AT via nu-6ANO nu-6BJX—1HR leads again as usual with regular skeds north, south and east. He put up a new transmitter with lots more punch. 1DR is second best traffic handler. He was QSO fo and eg. 1DL tries hard to keep skeds with 6RVY left by op1AU. Also has skeds with ac-1CRS. 1AT has not done much as he is very QRW. 1GZ sent a 250 watter west so is silent at present.

Traffic: 1HR 436, 1DR 220, 1DL 88, 1AT 31, 1GZ 10.

HAWAII—SCM, John A. Lucas, oh6BDL—This report by radio via oh6BDL, 9CEI and 1EO—6DJU says his rectifier rectifies as he is getting DC reports from Nu. 6DCU is QRW school again but is going to get around that by using 20 in the afternoons. 2CFQ reports having had a nice time on the coast and having met a lot of the Bay district gang. 6BDL worked Op stations while nu6BJX was on vacation so has a big total.

Traffic: 6BDL 226, 6DJU 37, 6DCU 18.

LOS ANGELES—SCM, D. C. Wallace, 6AM—Thirteen stations made the BPL this month, with 6CVE, the Los Angeles Radio Show A.R.R.L. Booth in the lead with a total of 1842. 6BHI was kept busy

with traffic this month and his total shows it. 6BZC tried to drill some glass for his xmitter, but broke every piece. 6ZBJ handled a gob of traffic for the L. A. Radio Show, the San Diego County Fair and the State Fair. 6BJX QSO'd KFLF several times. His YL, on account of college QRM, was forced to choose between giving up radio and him, and she chose to give up radio. 6BZR rebuilt his receiver and got in the way of the Radio Show traffic. 6CMQ's total was high this month due to Radio Show and Fairs. School has started in and he can't devote so much time to radio from now on. 6BHI says that 6CMQ is a real fellow ham and traffic man who knows what good operating means. He got great pleasure from a recent QSO. 6CAG had oh-6DBA for a visitor. 6QL is going to be OP in the local BC station but will be on 40 and 20 same as usual. 6BFP tried 20 but NG. 6ALZ has moved back to Whittier for the winter. 6DKX had a very bad power leak at his location for three weeks of this month and finally ran it down with a portable set in his car and had it cleared. 6AM has a good total. 6CTO is using 7½ watts now and is instaling a new super 50 watt station. 6BXD put in some very good work at the L. A. Radio Show. 6BTS was QSO nine Australians, 4 Zedders, also six Hawaiians and gave Alaskan KHT the latest news on the Fight. 6BVM has some skeds with OA and OZ. 6CQM increased power to 75 watts and had sked with 6ZI but had to break it. 6CQP denies the fact that he is some kind of a movie actor, he's just a camera man. 6AGR helped out with the Radio Show messages. 6CLK says his best report was R7 in Australia. 6BRO operated 6WH at the Radio Show and is planning to attend the San Diego Convention. 6AIO tried to QRT the game but after three weeks, was ready to come back. 6NW spent most of his time locating power leaks and having them fixed. 6CXT would like to arrange a sked with someone in Chicago. 6AKW can take care of any experimental traffic to Aust. and New Zealand, routed his way. 6BHR rebuilt his receiver and it sure works hot now. 6CHT had his Ford stolen but recovered it. He had a visit from oz3AI at his station. 6BGC is installing a 250 WE tube and with his Marlo Super Sync, it should be QSA in Mars. 6OR is back for the winter. 6RF is taking his transmitter up to Stanford. 6PY is being transferred around a good deal. 6BUX has moved to Napa County. The quarterly meeting of the Los Angeles Section took place on Sept. 13 at the Elk's club and began with a very fine banquet. Director Babcock was not able to be present as he is on a cruise to Mexico and possibly South America. Carl Zint, operator of KNT, gave an interesting account of their trip to Tahiti. George Wilson, owner of the Yacht Ripple, on which L. E. Smith, former SCM, is now operator, gave an interesting talk about yachts and their doings. 6AVJ, 6BJX and 6CHZ planned and arranged for the program.

The Los Angeles Radio Show, was very fine and the A.R.R.L. booth, station 6CVE, was operated by ORS 6BJX and 6BXD and other operators for short shifts. Approximately 500 msgs were cleared over the air. 6ALH won first prize for the best knowledge of CW theory, for the best bug fist and for the fastest copying in head and on paper at the recent American Commercial Operator's Union contest. 6AM has received his WAC certificates—the only station having held that certificate in two districts.

Traffic: 6CVE 1842, 6BHI 426, 6BZC 338, 6ZBJ 267, 6BJX 257, 6BZR 224, 6CMQ 172, 6CAG 168, 6QL 147, 6BFP 117, 6ALZ 113, 6DKX 105, 6AM 102, 6CTO 75, 6BXD 67, 6BTS 62, 6BVM 52, 6CQM 50, 6CQP 47, 6AGR 45, 6CLK 31, 6BRO 29, 6AIO 22, 6NW 18, 6CZT 14, 6AKW 10, 6BHR 6, 6CHT 5, 6BGC 5, 6OR 4, 6RF 3, 6PY 2.

SANTA CLARA VALLEY—SCM, F. J. Quement, 6NX—Letters have been sent to all stations not reporting regularly and unless each and every station reports, the district cannot function as it should. Let's have 100% cooperation next month. 6BMW with xtal control and water cooler rectifiers led the Section this month. 6CLP, the old reliable, is leaving for Chicago and closing his station. Good luck to you, OM. 6BNH is another station using TPTG with good results. 6AMM started the new month by taking 100 msgs from 6BVY for P. I. route. 6BYH had to resign as OO. This job is open to anyone who can qualify. 6AZS finally received his WAC certificate.

Traffic: 6BMW 62, 6CLP 6, 6BNH 2.

SAN DIEGO—SCM, G. A. Sears, 6BQ—During the past month, the Silver Gate Radio Assn, installed a crystal controlled transmitter in the main building at the San Diego County Fair and handled traffic for any wishing to send msgs to any part of the world. The transmitter was built and installed by Wm. Burnett, 6BAS and made use of one of his own crystals. 6AJM has had his hands more than full with the program for the coming Convention. It's to be the best ever! 6AVW, the County Fair, led in traffic, about 20 of the gang helping out. 6AJM handled the bulk of traffic this month. 6DAU is back again and piled up a nice total. 6BXN made the BPL for the first time. 6BXI is QRW at 6AAP's radio shop. 6DCT is trying out ultra audion circuit. 6FP is on a three weeks vacation visiting 6AWQ. 6BAS is snowed under with traffic this month. 6BWI is bothered with QRM. 6QY works regular skeds with op3AC. 6BFE says no circuit works—is now trying MO. 6BAM shot his last fiver and is QRV for a fifty now. 6CNK works late nights since 6OP went to college. 6SJ moved to 3605 Utah St., San Diego and is working in L. A. 6AKZ is still busy with BCL sets. 6CTP promises a good total for next report.

Traffic: 6AVW 825, 6AJM 774, 6DAU 145, 6BQ 103, 6BXN 101, 6BXI 67, 6DCT 63, 6FP 31, 6BAS 26, 6BWI 16, 6QY 12, 6BFE 10, 6BAM 9, 6CTP 8, 6CNK 4, 6SJ 2.

SAN FRANCISCO—SCM, J. W. Patterson, 6VR—6CCR finds little time to be on the air these days since he has entered the business world. 6DAM is a converted TPTG fan now. 6ASI has his 852 working with only 33 watts input. 6PN is a hard man to locate, one month he is here and the next—where? 6CXI is still knocking holes in the other. 6WS is back in college again and boasts of a Zep antenna. Many a YLs heart has fluttered since 6PW has been on with voice—let us in on the secret, OM. Old 6BUF himself is back again for good, we hope. 6DDN is rebuilding for the winter work—what's the idea, Bill, Woolworth selling 50's now? Hi. 6BIA is seriously planning on a second op. We wonder? 6HH has five ops; the school station is to be operated daily. 6GW is an aviator—just ride with him once and watch the telephone poles fly by. 6VR is rebuilding for the winter. 6DDN take note.

Traffic: 6ADM 86, 6CCR 78, 6PW 68, 6GW 47, 6WS 19, 6CXI 15, 6BIA 11, 6VR 10, 6BUF 10, 6DDN 10, 6ASI 8, 6HH 4, 6PN 2.

EAST BAY—SCM, P. W. Dann, 6ZX—Well, fellows, only six cards received this month, perhaps because some of you didn't know that the SCM has taken on his duties again. Kindly make all reports to P. W. Dann, 1821 Chestnut St., Berkeley, Calif. He also wishes to thank J. H. MacLafferty, 6RJ for the assistance lent him as Assist. SCM, during Apr., May, June and July. He did a splendid job. 6APA, due to ill health and other duties, has resigned as Chief RM but says he will keep things going until a new one has been appointed. There will be another A.R.R.L. meeting at the Alden Branch Library, 52nd & Telegraph Ave., Oakland on Oct. 27, Nov. 17 and Dec. 29, 1927. Those who missed the meeting of Sept. 22 sure missed some meeting.

You can't expect the SCM to manufacture news so send in your reports, OM. Some of the old timers are coming back again such as 6IP, who has a new Jr. op three weeks old. 6ALV reports very QRW with speed-boat but is going to try 20 soon. 6APA has a 20 meter sked with oh6BDL. 6AKC has 20, 40, 80 and 5 meter sets and carries on experiments on all waves. 6CTX has the new set now perking at his new address in Berekley and has worked eh-4WW. 6CZR says traffic down this month due to bad QRN and construction work. 6RJ says QRW traffic San Diego Fair from A.R.R.L. booth.

Traffic: 6RJ 326, 6APA 55, 6CZR 22, 6ALV 18, 6CKC 12, 6CTX 8.

ARIZONA—SCM, 6BWS lost a dollar to 6RTS on the Dempsey-Tunney fight. 6BJF reports a new ham under 6CXW going on the air soon with 7.5 watts. 6BJF has been working good DX. 6CDU had to grind the valves in his gas engine which he is using with a generator for supply. 6CBJ reports a new ham, 6DLE with an H tube. 6CBJ is sorry to quit the ham game now. (YLs have sent many a good ham west—SCM). 6AZM just put MOPA on the air and reports indicate very steady RAC. 6ANO built a new receiver which is working FB. 6YB will soon be on the air again now that School has opened. 6DIB is doing good work with the 7.5 watter. 6DIE was in L. A. for the Radio Show. 6BJI is still off due to change in QRA. 6CAP is heard occasionally.

6CUW is planning on a new 75 watter. 6CUW's ORS has been reissued. 6DCQ is heard on 40 and 20 every now and then.

Traffic: 6ANO 71, 6BJF 36, 6CDU 60, 6AZM 8, 6BWS 62.

SACRAMENTO VALLEY—SCM, C. F. Mason, 6CBS—6FQ at the State Fair Grounds, handled 387 messages, in a week. 6FR is on the World Cruise.

Traffic: 6FQ 387, 6ER 97, 6CKA 62, 6CDK 58.

NEVADA—SCM, C. B. Newcombe, 6UO—6ABM is back on 80. He has been away for some time but will have some skeds working soon. 6BTJ would like an 80 m. sked at 7:30 pm.

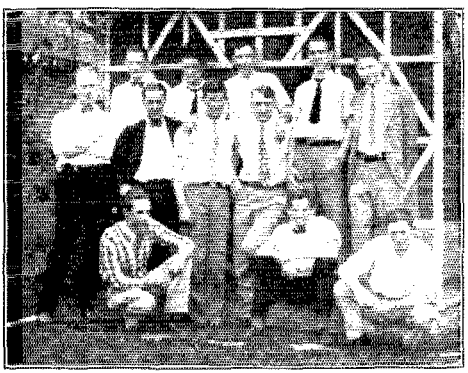
Traffic: 6ABM 7, 6BTJ 7.

ROANOKE DIVISION

NORTH CAROLINA—SCM, R. S. Morris, 4JR—Only three ORS reported this month. Something is going to be done, fellows—watch your step. We must have cooperation, gang or somebody else will be SCM. 4OH is still off the air most of the time same as last month. 4SJ has been appointed Army-Amateur station. 4OC has added another stage to his crystal control set and reports it FB. 4AB is dismantled till Christmas holidays. 4HV has been experimenting with low power on 20 meters. 4JR is trying to decide between his crystal control and the straight Hartley. Just now, the crystal has it.

Traffic: 4AB 31, 4SJ 19, 4JR 17, 4OC 10, 4OH 5.

VIRGINIA—SCM, J. F. Wohlford, 3CA—3CEB reports ham activities getting over summer slump and radio club waking up. He has been changing



Some of the amateurs who attended the Huntington hamfest. Left to right, back row: C. N. Lawter, 8DKB; D. J. Young, Jr., 8DJN; E. L. Murrill, 8OK; A. J. Aveningo, 8AWM; Andy Timberlok, 8LI; Stanley Hines. Middle row: Freemont Purdy, 8VJ; F. D. Reynolds, 8VZ; C. S. Hoffman, Jr., 8BSU. Seated: Jesse Boyd, 8AFB; Cecil Lamont, 8EL; Jack Reeder, 8DCM.

his xmitter and arranging for some skeds this winter. 8KU has rebuilt the rectifier and receiver after getting back to the old shack from summer vacation with 3AEE. 3JT is now a Papa—says the new one comes in very QSA. 3WM worked ei-1ZA. 3TN worked ek-4YAE. 3WS is using two 210s with 150 watts input. 311 is still making alleged music for the benefit of BCLs. 3UX is working on a new transmitter and receiver. 3AG was QSO nq-5RY, ei-1ZA, eg-5BY, ef-8LMS, ne-8AE. 3GX has just landed back at the old shack and expects to have the set perking in short order now. 3NM is using TG-TP circuit. He has written a bunch of fellows for skeds and expects to make a big showing this winter. Says he just missed the BPL by one hundred. 3RL is on the air again on 40 meters. 3KG continues to suffer from YLitis. 3BGS uses a five watter and gets on as often as possible. 3BZ was out of the city and didn't get a chance to work the set. 3CKL still reaches out and is trying out xtal control now.

Traffic: 3KU 22, 3AG 19, 8BGS 6, 3RL 2.

WEST VIRGINIA—SCM, C. S. Hoffman, 8BSU—Although summer still seems to have the gang, a few DX QSO's have been hooked and still less traffic. 8AUL is trying out Zeppelin antennas. 8CDV is working with a 202 on 80. 8BSU's antenna blew down so he will be off for a while. 8AGO visited the Wheeling gang. 8DPO with a 5 watter works su-1CD and every U. S. and Canadian district. He is very anxious for an ORS appointment. 8ADI is a new ORS in Wheeling. 8AWV gave up his ORS on account of school. 8BJG is going to the University of Cincinnati, 8CAU. 8CNZ keeps fine schedules with a number of stations. 8DCM is on daily at 6 p.m. on 37.7. 8BJB has a new 50 watt set. Parkersburg hams are quite broken up over the death of 8CUP. 8DNN of that city is quite active using two 201A's.

Traffic: 8DCM 20, 8BJB 18, 8CDV 4, 8AWV 1, 8CNZ 29, 8BBM 1.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, C. R. Stedman, 9CAA—This report goes to Headquarters by air mail. The SCM held it as long as he dared with the result that several reports were received that otherwise would not have made it. Let's get them in a little earlier, hereafter, fellows. 9CNL has resigned as RM in favor of 9BQO who resumes the duties at once. 9CAA has a regular schedule with 9CZC in Blencoe, Iowa, which is continuous to the east coast. The schedule with 6CLQ will be resumed as soon as Stedman rebuilds the high voltage xformer that went west a short time ago. 9DSY works 9ENM, a new station in Pueblo, every Sun. morning on schedule. 9CAA works 9BYC in Boulder at the same time. 9DWZ and 9DED have requested their ORS cancelled as school work keeps them too busy. 9DWZ has also resigned as OO. 9DQD is on regularly and desires schedules. 9BNB is a new station in Durango. 9CAT moved his station to the State Fair grounds and handled a lot of traffic but forgot to tell how much. The Pueblo fellows have started a radio club and report about 5 prospective hams there besides the ones already licensed. Pueblo promises to be a live man center. 9DGJ is QRW at college but gets in a little radio on the side. 9EAM is getting started again. 9CCM, the YL, handled a little traffic for a change and got quite a thrill out of it. 9CDE is on as usual. 9EJW is QRW school.

Traffic: 9CAA 52, 9EJW 49, 9CJY 18, 9EAM 10, 9DGJ 7, 9DQD 6, 9CCM 4, 9DSY 20, 9CDE 12.

UTAH-WYOMING—SCM, D. C. McRae, 6RM—Everything in this Section is coming along nicely and more interest is being shown all the time. More of the gang were able to be on the air this month and we expect to make a good showing for the coming winter. The radio club is putting on an exhibition booth at the state fair which should create a good deal of interest. The SCM's station 6RM will be used with that of 6RR and other members of the gang. 6RM will be signed. 6BTX did the best work in pushing the traffic thru this month and reports good results with his two 210s. 6CLQ also did good work keeping schedules with 9CAA, 6CDU and 6BWT. 6RV is working on the 40 meter band and managed to put thru a few. 6BAJ has a new 203A. 6AIK put thru a few and continues to hold Ogden down. 6CQL had the misfortune of stepping in front of a car and getting layed up for a while. 7DA has been put on the inactive list for the present as he has gone to Nebraska to school. No other Wyoming stations reported. 7GR has applied for ORS and will make another new station for Wyo. Let's keep stepping on it, fellows.

Traffic: 6BTX 55, 6CLQ 25, 6RV 16, 6AIK 5, 6RM

SOUTHEASTERN DIVISION

FLORIDA—SCM, C. E. Ffoulkes, 4LK—Traffic in Fla. was very light this month but the SCM is glad to see the way the fellows are keeping up their reports. He would like to hear some suggestions in regard to a Fla. Hamfest. 4CK is the 'oscillating thing' in traffic this month. 4NE has had to cancel all of his skeds by the Doc's orders. 4BN has a hot sked with 4AV-Ga. Tech. 4TK is very conversant with Latin. 4DU kept a sked with oa5HG. 4RK is in the radio business and is very QRW. 4AAO has had a quiet month this time. 4OB has worked 34 different Aussies. 4HY's UV852 eats 300 volts and likes it. FB, OM. 4MS is coaching a football team in his spare time. 4LK blew his 50 so no

traffic. 4TR has been on 5 meters and would appreciate reports on his sigs. The members of the Fla. Section extend their sympathy to 4CJ in the death of his wife. 4FM handled Paris-Miami traffic for Am. Legion with his 852.

Traffic: 4CK 83, 4NE 28, 4BN 27, 4TK 22, 4DU 16, 4RK 16, 4AAO 9, 4OB 8, 4HY 5, 4MS 5, 4LK 5, 4FM 24.

GA-SC-Cuba-Isle of Pines-Porto Rico—SCM, H. L. Reid, 4KU. So. Calif.—4EI lost his 203A and claims that the 852 is some tuber. 4KZ is doing nice work and sends in a good traffic report. 4AAM has been troubled with his set so is buying a new outfit. Porto Rico: OM 4KD as usual looks after the PR gang. 4JE burned out Gen armature and is on with RAC and an 852. 4KT lost his H tube due to hen trying to lay in the transmitter. 4OI is busy burning out AF transformers. 4SA is going full blast. 4JA turned commercial and installed WGI in San Juan. 4BJ is busy fishing. 4UR is waiting for new armature. 4RL YLs 999999999. Mayagues gang all on 20 now and 4KD same as usual. Georgia: 4UO in Atlanta is hot after things and is going to make us a nice addition to the gang. 4GY is the most reliable station now for traffic for Atlanta. 4RN has his set in tune with the lights and claim it takes all his DX power. 4NQ is hot after Atlanta and Macon fellows for not being on for short traffic jumps.

Traffic: 4EI 8, 4KD 5, 4UO 25, 4RN 3, 4GY 17, 4NQ 23, 4KZ 19, 4AAM 92.

ALABAMA—SCM, A. D. Trum. 5AJP—5JY is pounding the ether every nite for several hours and is very consistent with foreign DX. 5AJP is on the air again and is stepping out fine. 5ADA saved up enough for a 6/400 V. dynamotor plate supply and you ought to listen to his pure DC sigs. 5NL has one of the prettiest transmitters and receivers in the South which perks just as well as it looks. 5ABS has been having plenty of trouble with YLs, BCLS, and his xmitter and says that he doesn't get on as often as he would like to. 5ANE left for Ga. Tech. on the 20th but turned in a good report, anyway. 5DI also left for Auburn. This leaves Selma short two good ops but 5AV and 5VX will keep up the good work. 5AV is on regularly, working consistently and handling traffic galore. 5VX is on most of the time but is having some trouble in getting out. 5AQW is now at Auburn and says that he will be on the air there soon. 4AQW states that the most active stations in Birmingham now are 5ARG, 5AXN, 5WQ, 5DT, 5MI and 5AX. 5ARG is an old ship op who is on with a 210 and a good RAC note. 5AXN is on now with a good DC supply and a 210 bottle. 5DT is on once or twice a week with his old 204 and still going strong. 5PD is a Jonah on bottles, having sent West half a dozen 210's and several H tubes. He is now on with an old 202. 5MI is now finding more time for hammering the key now as WBRC is settled in the Temple Theatre. Well, fellows, this is all this month and I hope that all the hams in Ala. will cooperate with me and send me a fine report the 25th of next month.

Traffic: 5ADA 10, 5AJP 11, 5ANE 16, 5ABS 15, 5AV 12, 5AX 24, 5NL 45, 5JY 53, 5VX 6.

WEST GULF DIVISION

SOUTHERN TEXAS—SCM, E. A. Sahm, 5YK—Reports are rather meagre this month. School has opened and the summer slump is still with us just a little. Fellows, let's all get our reports in next month and make a better showing. Remember your column in *QST* is going to contain just as much as you send to your SCM. He has not the ability to manufacture news. 5MS worked 15 Australians this month as well as OZ, EF, EB and Dutch and Danish ships. Anderson handled some Mexican Army messages. 5AMG of Houston asks to transfer his ORS to this Section. Send me your reports, OM, and your certificate and I will ask Forrest to make the transfer. 5ALA is inactive at present. 5EW says school QRM will keep him away from Radio some but his report is very good just the same. He still has his 250 going. 5AHP reported via WU. He reports 5OX at Houston back from Europe and that 5AJS has gone back to the West Indies. There is little from San Antonio this month. 5WP moved to Amarillo and 5RR is in New Orleans in radio school. 5HS who is reporting this says that as soon as parts arrive, he will be back.

Traffic: 5AHP 6, 5EW 24, 5ARF-5AVI 82, 5MS 34.

OKLAHOMA—SCM, K. M. Ehret, 5APG—Route Manager 5FJ is back with us ready to do his share. 5AMO says 12 bucks per day looks good to him and that he will stay in the oil fields until Jan. 1st but expects to have a set going there. 5VH reports that his QSO with nc-4CU is his first foreign DX. 5ABO is still working 180 meter fone at Tonkawa and says the Mayor, 5AS, has a 50 watt fone on 80 and 170 meters. 5ANT rebuilt his transmitter but since ordering a 50, will have to rebuild the 7½ watt transmitter for 20 meters and put the 50 on 40. 5AAV is getting out good with third harmonic on 40 meters. 5AFX is distributing the ether with 5APG's 500 cycle. 5QL is still doing good DX when little 5QL doesn't keep him awake nights too much. 5MV is ready to go on the air with 15 watts using Esco on 40, 80 and 180.

5AHT, formerly of Breckenridge, Tex. has 2200 volts mercury arc RAC on two DeForest RO tubes using TP TG circuit and operating on 40 and 80 meters. 5ANI is completing a splendid station but the lattice tower is not up yet. 5BF is rebuilding his outfit. He has been working splendid DX on 20 meters. 5AQE is the only station in town in the UX210 class but gets out with the best of them. In 25 consecutive mornings, he worked 18 Aussies, 4 Zedders and 1 Hawaiian.

Traffic: 5AAV 13, 5AFX 9, 9APG 7, 5ANT 40, 5ABO 7, 5VH 15, 5ZAV 4, 5SW 7.

NORTHERN TEXAS—SCM, W. B. Forrest, 5AJT—5AIV, 5SX, and 5PN have "phones." 5OE and 5KI are two new and active stations at Ennis, Texas. 5AXQ is a new station for Comanche, Tex. 5AHU of the same place will be off for a while due to college work. 5AYD and 5RO are active now in this Section, also. 5RG just returned from a trip to the west coast, visiting several 6's and 9's enroute, also, he had the pleasure of meeting 6AM and pounding the brass at his station. 5AXO is back with the gang again, located in Dallas. 5JD is active now with a 250 watter. 5ADT handled his two msgs. in 15 minutes. 5AMK is with us from Beeville, Texas. 5AQ is in California on vacation. 5ACL was QSO with 5RG while latter was in Frisco and Salt Lake City on his vacation trip. 5AXF formerly 5AO of Hamilton, is now with the Dallas gang. 5AMY, 5QS and 5IP are also on the map at Dallas now. 5AXO reports a new station being organized at Southern methodist Univ. at Dallas by the classes in E.E. at the Engineering School. FB, OMs.

Traffic: 5ACL 6, 5RG 21, 5AHU 8, 5HY 15, 5SH 13, 5JD 5, 5AXO 8, 5ADT 2, 5AMK 12,, 5ATR 37, 5ACL 4, 5KI 29, 5OE 6.

CANADA

MARITIME DIVISION

NEWFOUNDLAND—SCM, Loyal Reid, 8AR—(Via radio from 8AL) 8BZ has changed location and thinks he will get out better now. 8BC is plugging away but has made no DX yet. 8MC reports being heard in Belgium with new transmitter. 8RG is also getting good distance. 8AR reports coming back on the air soon. 8AW is building a new transmitter for 20 meters. 8AE is reaching out also, as is 8BD. 8AF is the star station this month with a good total.

Traffic: 8AF 22.

PRINCE EDWARD ISLAND—SCM, F. W. Hyndman, 1BZ—1CO reports schedules with Brazil and has worked Argentina and Italy as well on 20 meters. 1AP is also on 20 and reports working eg-2OQ on a bed spring for a counterpoise. He has a daily schedule with 2BR in Montreal.

Traffic: 1CO 13, 1AP 23.

NOVA SCOTIA—SCM, W. C. Borrett, 1DD—1CC, who made a start two months ago in Dartmouth, has been transferred to Truro, N. S. where he expects to start up again soon. 1AR who has been the main relay station for VDE spends most of his time on top of the 40 meter band at 9 pm. 1DD has been QSO WOBD on 37.5 and handled quite a few msgs from him. He has a sked on 20 with WNP every Sun. at 4 p.m. 1DD has just returned from a trip to Montreal where he has arranged with some of the 2's for skeds and visited the Montreal Radio Show. Halifax is talking of a radio show—if it comes off, the SCM will write all Maritime hams personally.

VANALTA DIVISION

BRITISH COLUMBIA—SCM, E. S. Brooks, 5BJ—Hope to see greater activities this fall, gang, so fix up the old heap and let's hear what you can do. Your SCM wants every station to send in a report each month not later than the 15th. 5AV is closing down and coming to the coast to attend school. 5BR says QRM and YLs keep him off the air. 5CT still has the old complaint. 5GO sends in a good traffic total, reports one mast being down and has to use fundamental. 5CO sends in the report for the Victoria gang: 5CJ has gone to N. Y. 5CE sold his MG to 5GW. 5CO was heard in Bermuda on 40, hooked with KMK (QRA?) but QSS too bad to copy. 5AR is still at Militia Camp. 5CC is too QRW to pound brass. 5CA is a newcomer. 5GF is testing with a 201A xmitter. 5AL keeps the BCARA station, 9AJ, on the air. Say, fellows, when you send the SCM your QSL cards to forward, don't forget the stamp, I'm always broke. Hi!

Traffic: 5GO 31, 5CT 3, 5CO 1.

ALBERTA—SCM, A. H. Asmussen, 4GT—DX conditions are now improving and the contest is now on between the South and North halves of this Section. 4CU worked Hawaii taking a msg that originated in China. 4CL is now back attending university and we hope he will continue the splendid DX and experimental work he started last season. 4BC is busy on 20. 4HM has worked Hawaii again—what will he do with his quart bottles? 4FF sure is stepping out, having worked Hawaii. 4GT is now on with a hay-wire antenna. The AREA is doing good work. 4AG is rebuilding. 4EB is getting active. 4IO has power trouble. 4CC is doing his stuff at Nanton. 4DQ is QRW but will be going strong soon. 4AF is looking after the South half and wires in the report. 4BV means business and is doing nice work.

Traffic: 4CU 14, 4HA 7, 4GT 3, 4FF 1.

ONTARIO DIVISION

ONTARIO—SCM, W. Y. Sloan, 9BJ—A general increase in activity is evidenced this month by the response of the various ORS and others in the way of reports. Many of the stations are attending prayer meeting again on 52.5 meters each Wed. night at midnite, and some very good work has been done.

Southern Dist: There are some new stations coming on the air soon in this vicinity and activity is bound to increase with the advent of Fall and cooler weather. 3DZ reports that 3XI is back again and is hoping to be on soon with a new set. 3MM is now in Sarnia. 3UD is about ready to sit up all night and do some DX at his new QRA. 3CS says there has not been much doing in his shack lately. 3DH is off to college and says that he will not be on the air for about six months. 3IA forwards the reports as usual but does not say anything about his own brasspounding. 3CB has been on the air and handled some traffic.

Central Dist: The winter DX season was started by a gathering of 24 of the gang at 9BJ's summer home on Toronto Island for our annual get-together. In the evening, the gang gathered on the beach and enjoyed a nice marshmallow roast over a roaring fire. On the way home on the Ferry, the fellows conceived the idea that a CQ would sound delightful in the middle of the Bay if the ship's whistle were used and a very daring member executed the idea and the CQ. 3AZ has returned from his sojourn in the North Woods as op of one of the stations of the Ontario Forestry Service but as yet, we have not had any detailed report from him. 3CJ and 3DY returned from their vacation and installed and operated a short-wave transmitter and receiver at the Toronto Tech. School's Exhibit at the Canadian Nat'l Exhibition. About 30 msgs were handled from 3ED, the call signs used. nu-8DRQ visited 3CJ not long ago and while there hooked nu-8BHZ who proved to be a cousin and a two-hour rag-chew was held. This shows the excellent work some of the Canadian stations are doing. 3EL has been using 20 meters and worked nc-4CP in Moose Jaw, Sask. on that wave with a fiver. 3DB has been very busy earning a living but has had time to work DX occasionally. 3BK now has a 50 on the air and works an odd nu-5 and handles some traffic. 3CC is in Toronto from Hanover and intends staying there. 3BT rebuilt his receiver and it's worse than ever now. 3CT, 3DV and 3DC are active but there are no details. 9BJ is still off the air as Bill is still at the Island. 9BZ is again active and doing great work on 20, 40 and 52.5. 9BZ hooked the first OZ station this season on 20. 9AL has his generator again in commission and has been working hard to make up for lost time. 3FC spends every available moment on 20 meters.

Northern Dist.: 3NI, the pioneer station in this district, is going to Montreal where the owner and operator is being moved by his employers. 3HP has had an active month and has also had several visits from other amateurs.

Traffic: 9AL 13, 3HP 48, 3EL 5, 3DB 1, 3BK 15, 3DY 10, 3CJ 18, 3ED 30, 3CB 5, 3CS 4, 3DH 1, 3BL 16, 3FC 20.

QUEBEC DIVISION

Quebec—SCM, Alex Reid, 2BE—Attention this month is focussed on the coming radio show to be held in Montreal. The Division will have a booth as usual where they will have a modern and ancient transmitting set in operation. Messages will also be accepted for transmission. We also hope to increase *QST*'s subscription list at the show. 2AX suggests that during the coming winter, we hold a competition open to all members of the Division. The contest is to see which station can work the greatest number of miles in two months. All stations stand an equal chance, it simply means that the fellow with the low power will have to stick to the key longer than the fellow with greater power who occasionally works foreigners. Each one hundred miles will count for one point. The SCM will mail a circular to each station with full details. 2BR, one of our new stations, is the star for the month. 2AR is also doing some real fine DX. 2AX is home from the country and has the old crystal working again. 2HV has kept a weekly sked all summer with Pro. Smitz, C. A. S. Canary Islands carrying on many experiments. Also handling traffic. 2HV reports perfect contact except during a thunder storm. 9AM kept a perfect sked with VYG. 2AL and 2BE have worked many foreigners on 20 meters. Nu-2BEN called on 2BE during the month.

Traffic: 2AL 9, 2BR 37, 2BE 4, 2BB 10.

PRAIRIE DIVISION

SASKATCHEWAN—SCM, W. J. Pickering, 4FC—SCM Pickering is on his vacation now so the report was forwarded by Hartt, of x4DGEX. 4CB is the only station reporting. 4FA is now working for the D. of C. Forestry Branch and is stationed north of Prince Albert. Please report any QSO's with him to the SCM.

MANITOBA—nc4BT handled two. SCM Rutland has resigned and reports go to C. G. M. Russell. See notice.

"DO YOU LOVE ME, DASH?"
"I'LL SAY I DO, DOT!"