QST

Amateur Radio
It is impossible to give in a small space a comprehensive description of the Radio Amateur's Handbook. The best we can do is to point out a few highlights.

It is the only really authoritative guide to Amateur Radio. First published in 1926, it has run through ten editions and fifteen printings. A total of over one hundred and ninety thousand copies have been sold. The current Tenth Edition is a complete revision. It has been almost entirely rewritten and it incorporates large amounts of new material and new illustrations. The Handbook has 440 pages and 280 illustrations. It is the work of the entire headquarters staff of the American Radio Relay League.

As an example of the thoroughness with which the Handbook treats each branch of the subject of Amateur Radio, suppose we examine the chapter headed, "Planning and Building Transmitters." We find the following subjects discussed: Types of Transmitters, Self-Controlled Oscillator Circuits, Frequency Stability and Efficiency, the Crystal Controlled Oscillator, Crystal Cuts and Grinding, the Crystal Oscillator Circuit, Crystal Mountings, from Oscillator to Antenna, Neutralizing, Transmitting Tubes, Planning the Transmitter, Building a Transmitter, Construction of the Set, Tuning the Transmitter, Coupling the Antenna, Using Two Tubes, a Push-Pull Transmitter, an Alternative Design, Building an Amplifier, Excitation for the Amplifier, Tuning and Neutralizing, Oscillator-Amplifier Combinations, a Crystal-Controlled Transmitter, Tuning the Crystal Transmitter, Operating the Doubler, a 100-Watt Transmitter, Other Combinations, a Single-Tube Amplifier, Push-Pull for High Power, Meters, Transmitter Assemblies, Other Bands, Condensers, Unsteady Signals. Forty-one illustrations appear in this chapter — and two tables, one of tubes and one of coil specifications.

TONIC COMPENSATION—pioneered by Allen-Bradley

Bradleyometer Volume Control with Tone Compensation

The Allen-Bradley Company has pioneered an outstanding improvement in audio volume control. It is the Toned Bradleyometer which does not attenuate all frequencies equally as shown in curve 3, and therefore sustains the loudness of the low and high frequency tones at reduced volume. See curve 4.

With Bradleyometer control, the receiver quality is sustained at low as well as high levels.

Allen-Bradley engineers will gladly cooperate with set manufacturers in designing low-level tone compensation systems.

ORDINARY Volume Control without Tone Compensation

Curve No. 1 illustrates how all frequencies are equally attenuated when the volume is reduced with the ordinary type of volume control. Due to the characteristics of the ear, the low and high frequency tones are reduced in loudness much more than the middle register.

Hence, at low levels a radio set with this type of control sounds thin and unsatisfactory—a common fault of most radio receivers.

Allen-Bradley Resistors

The Choice of the World's Largest Radio Manufacturers

BRADLEYUNITS

Bradley units are the solid molded fixed resistors used by the largest manufacturers of radio receivers. Their production represents years of pioneering research in the production of stable, fixed resistors.

Bradley units are made in five sizes, with or without leads, and are R. M. A. color-coded for resistance value identification. Do not risk the reputation of your receiver with poor resistors. Use Allen-Bradley resistors and forget your resistor troubles.

BRADLEY SUPPRESSORS

Bradley Suppressors are special solid molded resistors, used by prominent car manufacturers to provide individual resistors for each spark plug and for the common cable to the distributor on radio-equipped cars.

They increase the resistance of the high tension ignition system and minimize the disturbing oscillations in the ignition circuit which interfere with the radio receiver in the car. When used with suitable by-pass condensers in other parts of the circuit, shielded ignition cables are unnecessary.
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Four sets of coils (included) cover all bands from 20,000 k.c. to 1,500 k.c.

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Razor-like sharpness of the I.F. amplifier, in connection with a new tuned beat-frequency oscillator, gives the improved "PRO" a remarkable approach to "single-signal" selectivity. A quartz crystal filter is readily adaptable.

For greater output and complete elimination of hum, the new 2A5 three-watt heater-type pentode is now used in the output stage.

The above are exclusive features. Standard features include electron-coupled oscillators, band-spread tuning on all amateur, police, transport and similar bands; uniform 3/4-microvoltsensitivity and 10-kilocycle selectivity throughout the range; high signal to noise ratio; phone or loudspeaker operation; adaptable for either transmission line or standard antenna systems.

Built to professional standards for exacting services regardless of cost, the "PRO" is used by armies, navies and commercial companies throughout the world, and is giving faultless performance every day in the year.

These New Hammarlund "Air-Tuned" I.F. Transformers are available for replacement in former COMET models, or for markedly improving other super-heterodynes.

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Address .......................................... 
.................................................................... Q-4
devoted entirely to
AMATEUR RADIO

Editorials .................................................. 7
Cutting the Cost of Single-Signal Reception  James J. Lamb  8
Rotten Signals: How to Cure Them  George Grammer  13
Tubes of the Month 77, 78, 75 and 53  .................. 16
A Modulation Monitor for 'Phone Transmitters  James J. Lamb  17
World's Fair — Chicago, 1933  ......................... 18
Dakota Division Convention (Announcement)  .......... 18
Velocity Microphone Correction  ...................... 18
The Cruise of the "Northern Light"  .................... 19

strays .................................................... 20
For the Experimenter
Compact Doublets — A Handy Test Lamp — R. F. Control  22
On the SW3 — BCL QRN from 5 Meters  .................. 22
O.B.S. ..................................................... 22
New England Division Convention (Announcement)  .... 22
Weather Forecasting and Amateur Radio  ................ 23
Pacific Division Elects Culver  ........................ 24
To All Members Central Division  ....................... 24
April Fool Section ..................................... 25
Calls Heard ............................................. 34
New QSL System ........................................ 34
Communications Department  ............................ 35
I. A. R. U. News ........................................ 50
Correspondence Department  ............................ 52
Standard Frequency Transmissions  ..................... 70
New High-Frequency Blocking Condensers  ............. 72
Financial Statement ..................................... 74
Hamads and QRAs ..................................... 76
QST’s Index of Advertisers  ............................. 78

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<table>
<thead>
<tr>
<th>Section</th>
<th>Division</th>
<th>Name</th>
<th>Address</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ATLANTIC DIVISION</strong></td>
<td></td>
<td>Jack Wagenseller</td>
<td>210 Main St</td>
<td>Pensburg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harry Ginsberg</td>
<td>205 N. Paluski Ave</td>
<td>Baltimore</td>
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<tr>
<td></td>
<td></td>
<td>Gedney Riedy</td>
<td>412 2nd Ave.</td>
<td>Hackensack</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don Farrell</td>
<td>213 Hickok Ave.</td>
<td>Syracuse</td>
</tr>
<tr>
<td><strong>CENTRAL DIVISION</strong></td>
<td></td>
<td>W9WR</td>
<td>6618 West 34th St</td>
<td>Berwyn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9FPB</td>
<td>1321 Sorece St.</td>
<td>Indianapolis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9DF</td>
<td>7553 E. Roblinwood Ave.</td>
<td>Detroit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9H</td>
<td>2073 West 85th St</td>
<td>Cleveland</td>
</tr>
<tr>
<td></td>
<td></td>
<td>415 Grand St.</td>
<td></td>
<td>Milwaukee</td>
</tr>
<tr>
<td><strong>DAKOTA DIVISION</strong></td>
<td></td>
<td>W9DJCS-IFW</td>
<td>313 First Ave., S.</td>
<td>Jamestown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9DOQ</td>
<td>449 N. Mth St.</td>
<td>Redfield</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Norman Beck</td>
<td></td>
<td>Duluth</td>
</tr>
<tr>
<td><strong>DELTA DIVISION</strong></td>
<td></td>
<td>W9DB</td>
<td>2918 West 15th St</td>
<td>Little Rock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9DAS</td>
<td>1624 Allen Ave.</td>
<td>Shreveport</td>
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<td></td>
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<td></td>
<td>Kingsport</td>
</tr>
<tr>
<td><strong>HUDSON DIVISION</strong></td>
<td></td>
<td>W9LZ</td>
<td>12090 Helderberg Ave.</td>
<td>Schenectady</td>
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<td>W9AUB</td>
<td>7823 10th Ave.</td>
<td>Brooklyn</td>
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<td></td>
<td></td>
<td>W9AAM</td>
<td>28 Ampere Parkway</td>
<td>East Orange</td>
</tr>
<tr>
<td><strong>MIDWEST DIVISION</strong></td>
<td></td>
<td>W9WFT</td>
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<td>Salix</td>
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<td>Topeka</td>
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<td>W9WEG-HC</td>
<td>210 W. McCarty</td>
<td>Jefferson City</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9WAP</td>
<td>Green St.</td>
<td>Claris</td>
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<tr>
<td><strong>NEW ENGLAND DIVISION</strong></td>
<td></td>
<td>W9TCT</td>
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<td></td>
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<td>John W. Singleton</td>
<td>Wilmot</td>
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<td>Joseph A. Mullen</td>
<td>Ashton</td>
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<td>W9ASV-WIRB</td>
<td>33 Cortland St.</td>
<td>Springfield</td>
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<tr>
<td></td>
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<td>W9AVE</td>
<td>V. W. Hodge</td>
<td>Claremont</td>
</tr>
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<td></td>
<td>W9WLE</td>
<td>28 Phillips St.</td>
<td>Independence</td>
</tr>
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<td></td>
<td>W11DB</td>
<td>Roy Galle</td>
<td>Barre</td>
</tr>
<tr>
<td><strong>NORTHERN DIVISION</strong></td>
<td></td>
<td>K7PQ</td>
<td>Box 301</td>
<td>Ketchikan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9AVY</td>
<td>1011 East Jefferson St.</td>
<td>Bales</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9AAAT-7QT</td>
<td>805 Western Ave.</td>
<td>Red Lodge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9A3ZG</td>
<td>4835 N. Amerst St.</td>
<td>Portland</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9ARD</td>
<td>1921 Atlantic St.</td>
<td>Seattle</td>
</tr>
<tr>
<td><strong>PACIFIC DIVISION</strong></td>
<td></td>
<td>K9COC</td>
<td>Pearl City</td>
<td>Oahu</td>
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<tr>
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<td>W9RFD</td>
<td>1151 Buena Vista Ave.</td>
<td>Reno</td>
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<td></td>
<td>W9MM</td>
<td>Francis C. Martin</td>
<td>Arcadia</td>
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<td></td>
<td>W9RDA</td>
<td>Bruce Rome</td>
<td>San Jose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9NUM</td>
<td>S. C. Houston</td>
<td>Oakland</td>
</tr>
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<td></td>
<td>W9Z6U</td>
<td>Byron Goodman</td>
<td>San Francisco</td>
</tr>
<tr>
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<td></td>
<td>W9DEVE</td>
<td>Geo. L. Woodington</td>
<td>North Sacramento</td>
</tr>
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<td>W9JPE-WQOC</td>
<td>Bette Hendra</td>
<td>Pismo Beach</td>
</tr>
<tr>
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<td></td>
<td>K9AXA</td>
<td>Newton E. Thompson</td>
<td>Manila, P. T.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W5DGN</td>
<td>Roy A. Ambler</td>
<td>Sea World</td>
</tr>
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<td></td>
<td></td>
<td>W5DZN</td>
<td>R. 6, Box 425</td>
<td>Stockton</td>
</tr>
<tr>
<td><strong>ROANOKE DIVISION</strong></td>
<td></td>
<td>W9WJU</td>
<td>2303 Clark Ave.</td>
<td>Raleigh</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W9RUV</td>
<td>2817 Montrose Ave.</td>
<td>Richmond</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>126 Washington Ave.</td>
<td>Wheeling</td>
</tr>
<tr>
<td><strong>ROCKY MOUNTAIN DIVISION</strong></td>
<td></td>
<td>W9YBQ</td>
<td>1176 Gaylord St.</td>
<td>Denver</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>134 E. 3rd North St.</td>
<td>Provo, Utah</td>
</tr>
<tr>
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<td></td>
<td>W4EP</td>
<td>1068 Waverly St.</td>
<td>Tarrant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W4NN</td>
<td>329 East 1st St.</td>
<td>Jacksonville</td>
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<td></td>
<td></td>
<td>W4MS</td>
<td>1517 East Brainerd St.</td>
<td>Pensacola</td>
</tr>
<tr>
<td><strong>Gulf DIVISION</strong></td>
<td></td>
<td>W5RJ</td>
<td>Roy Lee Taylor</td>
<td>Port. Worth</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Edward J. Collins</td>
<td>Ft. Worth</td>
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<tr>
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<td></td>
<td>W5JWQ</td>
<td>Jerry Quinn</td>
<td>Fort Worth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W5AWW</td>
<td>69 Dublin St.</td>
<td>Halifax, N. S.</td>
</tr>
<tr>
<td><strong>MARITIME DIVISION</strong></td>
<td></td>
<td>W6DQQ</td>
<td>1614 St. Lonia Ave.</td>
<td>Ft. Worth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>W6OQ</td>
<td>1st Saloon Co.</td>
<td>Houston</td>
</tr>
<tr>
<td><strong>ONTARIO DIVISION</strong></td>
<td></td>
<td>W6NBQ</td>
<td>6726 Ave, Q.</td>
<td>Albuquerque</td>
</tr>
<tr>
<td><strong>QUEBEC DIVISION</strong></td>
<td></td>
<td>W6QVQ</td>
<td>518 W. Marquette Ave.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>W6LJQ</td>
<td>10806 125th St.</td>
<td>Edmonton</td>
</tr>
<tr>
<td><strong>VANALTA DIVISION</strong></td>
<td></td>
<td>W6ABQ</td>
<td>4865 Bienehl St.</td>
<td>Vancouver</td>
</tr>
<tr>
<td><strong>PRAIRIE DIVISION</strong></td>
<td></td>
<td>W79CO</td>
<td>Reg. Strong</td>
<td>Winnipeg</td>
</tr>
<tr>
<td><strong>SOUTHERN DIVISION</strong></td>
<td></td>
<td>W7B6Q</td>
<td>Wilfred Skalhe</td>
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<td></td>
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<td>W79DJ</td>
<td>284 Merston St.</td>
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<td>2040 McCaflill St.</td>
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</tbody>
</table>

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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.

A directory of the amateur societies affiliated with the League showing their times and places of meetings, is available upon request.

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Address all general correspondence to the executive headquarters at West Hartford, Connecticut
ALWAYS has QST been "choosey" in admitting advertisers to its columns. Many an advertising contract has QST rejected. As in any other business, there are bad practices in the radio trade. QST takes pride in avoidance of would-be advertisers who fail to meet its standards.

To follow such a policy during years of prosperity is easy. To judge the reliability of advertisers and products under abnormal depression conditions is difficult. To refuse advertising when advertising is scarce is heartbreaking. To judge always correctly is impossible.

An increasing number of letters from members of the League, which tell us of inferior or misrated merchandise or unethical business practices, has shown us the necessity for still more stringent requirements for eligibility. Accordingly, we will be even more strict, more "choosey," than heretofore.

From QST's new advertising rate card, effective with this April issue, we quote as follows:

"Advertising is accepted only from firms who, in the publisher's opinion, are of established integrity and whose products secure the approval of the technical staff of the American Radio Relay League.

Those who buy from QST are secure in the knowledge that each advertiser and each piece of apparatus is approved by the American Radio Relay League.

This cannot mean that QST guarantees its advertisers — all business transactions are subject to normal hazards. It does not mean that only apparatus of superlative quality and consequent high price may be advertised in QST — price is of course a factor in judging the value of any apparatus. But it does mean that we have investigated and are confident of the honest intent of each advertiser; that each piece of apparatus is known to us and in our opinion suitable for the service for which it is intended; that the American Radio Relay League conceives it its duty to do everything within its power to prevent the exploitation of radio amateurs by firms who sell inferior and misrepresented merchandise or whose business principles are not of the highest order.

Amateurs may buy with confidence from those firms who advertise in QST. They are fortified by the knowledge that the League will defend the buyer's interests. In self-protection, amateurs should buy exclusively from QST advertisers.

Approximately half of the League's support comes from the sale of advertising space. The continuance of this support for your League depends on your support of QST advertisers. Directly in proportion to your patronage is the extent to which they, by their QST advertising, will help support the League.

F. C. B.

MEMBERS are reminded that the annual meeting of the Board of Directors will be held in middle May. Your director will be glad to have your comments and suggestions on A.R.R.L. affairs.

April, 1933
Those who have followed the articles describing the development of the Single-Signal receiver will recall mention of several methods offering possibilities of providing the required high single-circuit selectivity, in addition to the quartz filter scheme used in the original receiver. One of these was the use of regeneration. In fact, a regenerative i.f. stage was given passing attention in the preliminary experiments but, as was related in the August, 1932, article, "Trial of this brought discouragement in the form of instability. It would give noticeable selectivity as between weak or moderate signals but immediately broadened out and became ineffectual on strong signals, where it was most needed. It was also tricky in adjustment and spilled over into oscillation on the slightest provocation."

True enough, the regenerative amplifier did give little encouragement in those first trials. However, the idea held promise in spite of its discouraging features. We recognized it to be basically sound. The problem was to iron out the "bugs," get a rationally operating circuit arrangement and put the thing to work in a simple-as-possible receiver that would give something like the grade of performance established by the original S.S. model. Without further preliminaries, it can be said that this has been accomplished.

**Selectivity with Regeneration**

Long experience with regeneration in detectors has served to familiarize us with its ability to give great gain or sensitivity and, to a lesser extent, with its value in providing selectivity. As has been stressed in several recent articles, the selective properties or regenerative circuits have been utilized but little in our operation of detectors. This has been particularly so in c.w. reception. The detectors have been used as autodynes, oscillating to give the beat note and, hence, having the signal frequency off resonance with the tuned circuit. But now we are interested primarily in using regeneration to give high selectivity, with gain as a secondary consideration. Of course the two are almost identical in fact, because the apparent high selectivity (response to desired signal frequency, discrimination against all others), is just the result of extraordinary amplification at the regenerative circuit's resonant frequency and only ordinary amplification at other frequencies. The desired signal is boosted away up and the others are left as they would be for the same circuit without regeneration.

This is an essential that differentiates the selective property of the regenerative circuit from...
that of a filter such as the quartz crystal. The electric filter passes the desired signal frequency, with relatively slight loss, and other frequencies with as great attenuation as possible. It's the contrast between one thing being high because it is raised up above its surroundings; and another thing being high because its surroundings are pushed down below it. An even more important essential difference between the two types is that the regenerative circuit is active or dynamic in nature, whereas the electric filter that possesses selectivity by virtue of its inherent properties of capacitance, inductance and resistance, is passive or static in nature. Contrasting the two types specifically, the regenerative circuit gives high selectivity because the resistance normal to the tuned grid circuit is cancelled by the negative resistance dynamically provided by tube operation; while the quartz filter gives selectivity by virtue of its extraordinary inductance. Since the measure of circuit selectivity is the ratio of inductance to resistance (frequency being equal), it is evident that selectivity can be improved either by lowering the resistance or by increasing the inductance. As it works out, the negative resistance obtained by regeneration can give an order of selectivity with coils and condensers approximating that given at the same frequency by the quartz crystal which has an inductance that is impossible in a coil-condenser combination.

![Plan View from the Rear](image)

**FIG. 1—THE SCHEMATIC ARRANGEMENT OF THE REGENERATIVE I.F. STAGE USED TO OBTAIN HIGH SELECTIVITY**

The tuned coupling transformers are orthodox except for the feed-back coil L4 of the input. R1 is the regeneration control, a 2000-ohm (or so) variable resistor serving as an r.f. attenuator. The blocking condenser in series prevents this resistor from shorting the 300- to 400-ohm cathode resistor R6. The circuit will be recognized as similar to that of a regenerative detector with tickler in the cathode circuit, and is similar to that of the electron coupled oscillator. It should never oscillate, however. R6 is the usual screen voltage dropping resistor of 50,000 ohms or so and condensers C1 are r.f. bypasses of 0.005 μfd. or larger.

Condensers approximating that given at the same frequency by the quartz crystal which has an inductance that is impossible in a coil-condenser combination.

For quantitative data, see Colebrook, "High-Selectivity Tone-Corrected Receiving Circuits," Radio Research Special Report No. 18. (Also referred to on page 35, March, 1933, QST.)

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**SETTING UP THE CIRCUIT**

Although it may seem almost heretical to associate regeneration with anything but a detector circuit, the present application ditches detector regeneration completely and promotes the feed-back feature to a preceding r.f. stage.
There are several sound reasons for doing this. The first is that we want the regenerative stage to operate in linear fashion. We want it biased to the middle of its curve, so that its characteristics will be as constant as we can get them. A detector can't operate that way and still be a detector.

The second reason for going to the r.f. stage is that we want to place the regenerative circuit near the front end, where the signal voltage will be small. When its grid gets a signal large enough to run it positive the selectivity is wrecked and the circuit is likely to break into oscillation. If there were two i.f. stages, the regenerative circuit would be the first one. There will be only one, however, because the one gives plenty of gain — and controllable regeneration with more than one high-gain stage . . . ! Still another reason for passing up the detector in favor of the r.f. amplifier as the place to put the regeneration is that, for the same gain, there is likely to be less noise with the regeneration in the strictly r.f. circuit. It is probable that noise accompanying regenerative detection is aggravated by audio modulation in the plate circuit of the r.f. fed back to the grid circuit. With negligible audio-frequency impedance in the r.f. amplifier's plate circuit, the noise should be considerably reduced. Experiment verifies this expectation.

One practicable type of regenerative i.f. amplifier circuit that has been worked out is shown schematically in Fig. 1. Essentially it is an ortho­dox tuned r.f. stage — with the exception of the

![Diagram of the circuit](image-url)
regenerative feature. This is provided by the tickler \(L_2\) in the cathode circuit, coupled to the grid coil of the input transformer. Regeneration, and hence selectivity, is controlled over the working range by the variable resistor \(R_3\), connected across the tickler through the blocking condenser \(C_3\). This control operates as a variable r.f. short across the tickler, thus controlling feed-back to the grid circuit. The blocking condenser in series with the resistor is necessary to prevent shorting the normal cathode resistor \(R_2\).

Since circuit elements other than the intended regeneration control also affect the regeneration, it is absolutely essential that they be stable. This applies especially to the tuned circuits. Therefore, the tuning condensers should be of the air-dielectric (midget) type, in preference to the Jess stable mica type commonly used in i.f. transformers. Transformers using air-condenser tuning are not difficult to make up, as the illustrations demonstrate, and need not be excessively bulky. The ones shown were “hand made,” but commercially manufactured models of corresponding characteristics are now available. Homemade versions can use the same primary and secondary coils as the mica-tuned type transformers, of course, with the assembly arranged to fit the shield cans obtainable.

A COMPLETE RECEIVER

As was the original S.S. model, and for the same reasons, the simplified version is also a superhet. The high selectivity amplifier is practicable only when it can work at a reasonably low radio frequency of fixed value, which means that it must be the i.f. amplifier of a superhet. And in this superhet era, who would have it otherwise? Several models of the present receiver have been built up, one being an elaboration of the s.w. converter described in the new Handbook (tenth edition) and another using as a foundation George Grammer’s “rationalized” autodyne, which was described in January, 1933, QST.

The latter will be used as the constructional example for this article because it demonstrates how a typical t.r.f. regenerative receiver can be remodeled into a cracking good superhet, thereby making the dope of the greatest value to the greatest number. With due allowance for differences in the high-frequency tuning systems, the same medicine is fully applicable to any regenerative receiver of the type, such as Ross Hull’s “unorthodox,” the National SW3, etc.

Surveying the schematic of Fig. 2, unconventionally laid out right-to-left to correspond with the actual arrangement of the receiver, we see that the tuned r.f. stage has become the first detector, that the regenerative detector has become the h.f. oscillator and that the audio amplifier has been replaced by the power-type second detector. The only real additions are the i.f. and c.w. beat oscillator components mounted on the chassis extension at the rear.

Running through the circuit, we find that the original tuning system is used for the first detector and h.f. oscillator. Even the same coils are used, the only change in them being the moving of the cathode tap on those of the oscillator. The gain control is still in the cathode circuit of the first tube — and the original 10,000-ohm variable resistor could be used although the smaller one specified gives somewhat smoother control. The oscillator grid leak is of lower resistance than that used for detection, of course, and somewhat different resistor values are used in the supply circuits. The oscillator coil winding formerly used as the primary, \(L_2\), is not used but need not be removed.

In this particular arrangement there is no r.f. stage ahead of the first detector to give pre-selection, which means that there must be greater liability to radio-frequency image interference. But it will be no worse than with other receivers that have no t.r.f. stage at the front end. The addition of such a pre-selector would be worth while, as a subsequent refinement, the circuit being simply that of a t.r.f. stage with coil and condenser identical with that of the present first stage. The first detector coil should have added to it a primary winding — just like the now unused one on the oscillator coil.

The method of coupling the oscillator to the first detector differs from the usual and deserves a little explanation. As shown, the plate of the electron-coupled oscillator is tied to the suppressor grid of the first detector. Both are shunt
f respective “B” through the h.f. choke. In contrast to the usual method of coupling the oscillator to the detector control grid, this method prevents oscillator output from escaping to the antenna, since the suppressor of the detector is shielded from the control-grid circuit. This is an improvement over grid-circuit coupling in that it prevents “blooping” interference to others and also eliminates the possible “dead spots” in the tuning that occur when the oscillator frequency happens to hit resonance with the fundamental or a harmonic of the antenna. Another improvement is that the selectivity of the input circuit is likely to be better than with grid coupling, and first detector hiss is likely to be less because there isn’t the liability of the local oscillator signal overloading the detector grid.

It should also be noted that the suppressor of the pentode-type oscillator tube is tied to its screen grid, a minor diversion that has been found a useful convenience. As indicated, either Type 57 or the new Type 77 tubes can be used, the 57’s for 2.5-volt a.c. filament supply and the 77’s for 6-volt d.c. or a.c. supply. For maximum sensitivity a 57 or 77 is preferable to a 58 or 78 in the first detector. With the “50” series tubes, the electron-coupled oscillator tube can be either a 57 or 77, as determined by the tickler and its approximately correct spacing from the secondary, the transformer can be temporarily connected up (unshielded) in a circuit like that of Fig. 1, with the regeneration control omitted. Then the tickler can be juggled until an adjustment is obtained where the tube just begins to oscillate, oscillation occurring at the drop in current indicated by a milliammeter.

After these preliminaries, the assembled transformer should be given a final tickler adjustment in the receiver circuit. This is done easily through a hole in the base-plate, immediately under the tickler coil. Further details of tickler adjustment will be given with the later instructions. Needless to say, the “hot” r.f. leads as well as the tuned circuits and tubes of this stage, and those of the other i.f. components, should be thoroughly shielded. The necessary shielding is indicated by the dash-line enclosures on the diagram.

The second i.f. transformer is “straight” and is identical with the first except that it has no tickler winding. It, like the first, should have the plate by-pass and r.f. choke inside the shield can. (Continued on page 68)
Rotten Signals: How to Cure Them

A Talk About the Essentials of Transmitter Tuning

By George Grammer, Assistant Technical Editor

FULLY half the letters intended for QST's Correspondence Department recently have dealt vehemently with rotten notes, especially of the 40- and 20-meter variety. In almost every case a self-excited transmitter is responsible—probably in most cases a transmitter using something bigger than a 210. Now a raspy r.a.c. note may be all right for the fellow behind the key; he doesn't have to listen to it. But it's all wrong for the other 90% who take some pride in putting out a clean signal; theirs are the ears that suffer. When the day comes that we all have single-signal receivers the rotten note problem will cease to exist— that type of the old rules had lost their effectiveness. As a matter of curiosity we built a typical self-excited transmitter, using a tube which by all indications ought to be one of the least satisfactory at high frequencies, and rediscovered, with much satisfaction, that the old precepts were quite up to snuff. Evidently the answer is that they're not being applied.

WHAT'S IN A TRANSMITTER?

A self-excited transmitter has four divisions: an oscillator tube and circuit; a power supply, an antenna system and a monitor. Some people have tried to get along with only the first three with results which are evident. The fourth is just as essential to a good transmitter as any of the others. It doesn't matter much what kind of monitor it is—it may simply be the station receiver if the latter is well enough shielded—so long as the oscillator in it is steady and capable of giving a beat with the transmitter. Therefore the first recommendation is: Get a monitor. Obviously, it's impossible to tell whether a change has made any improvement if there is no way of listening to the transmitter.

CIRCUITS

In performance, the different circuits—Hartley, tuned-plate tuned-grid, and so on—are practically identical. Whether or not the results are good is entirely a matter of how the circuit is handled. There are only two objects in the adjustments one makes to a transmitter—power output and frequency stability. The last is just as important as the first.

Frequency stability is not a matter of a single adjustment or a single feature in the transmitter. There are at least four ways in which instability can get into a transmitter. The first is through changes in frequency caused by changes in plate voltage, or dynamic instability. If we plot a curve of oscillator frequency against changes in plate voltage we will find that as the voltage is increased from zero there will be a continuous frequency change until the final voltage is reached. The extent of this change is a measure of the dynamic instability of the transmitter. On a small transmitter with but 500 volts on the plate the change in frequency can be 20 kilocycles or more at 7000 kc. If the set is poorly designed and incorrectly operated. Naturally it will be worse if the plate supply is 1000 volts or more. With a poorly-filtered plate supply the
note from such a transmitter is going to be r.a.c. hash, because the frequency will be flitting gaily back and forth at the plate-supply ripple frequency.

The remedy for dynamic instability is to be found in the use of a large ratio of capacity to inductance in the oscillator circuit, and particularly in the plate tank circuit if the grid and plate are separately tuned. In other words, High C. This does not necessarily mean an inordinately large tuning condenser. We know that few hams operating 203-A’s and 852’s have high-voltage variable condensers with a maximum capacity of 500 µfd. But nearly all of them have 220- or 250-µfd. condensers, and those condensers are big enough provided the coils are cut so that the band is hit with the condenser plates practically all the way in. Paring down the coil is the first step toward eliminating dynamic instability.

OTHER CONSIDERATIONS

Once the coil has been cut down so that about 200 µfd. can be used to tune it, attention should be given to the excitation and the grid leak. Both—and they are not independent of each other—have far more to do with the final condition of the note than most amateurs realize. If the tube is to work at reasonable efficiency it must have high bias, which in turn calls for a high-resistance leak and plenty of excitation. The dynamic stability is improved under the same conditions. The excitation must be adjusted with a load on the oscillator. The setting which gives the least plate current when the oscillator is not delivering power to an external circuit is invariably the wrong one; the excitation will be insufficient under these conditions and the stability will suffer. As a general rule, the no-load plate current should be at least half the load plate current, although this depends somewhat on the frequency. The excitation is increased in the Hartley circuit by moving the filament tap nearer the plate end; in the t.p.t.g. by increasing the capacity of the grid tuning condenser. Since the adjustment is critical it is best to make changes in very small steps, watching the input and output and listening in the monitor. Listen especially to the character of the signal when it is keyed. If the circuit is High-C a key chirp is an almost certain indication of insufficient excitation, with the exceptions noted later on. Use the highest value of grid leak resistance that will permit the tube to oscillate stably with normal input—between 10,000 and 20,000 ohms for a single tube, usually. Too much leak is just as undesirable as too little. And remember that the higher the leak resistance the greater is the excitation voltage required, so every time the leak resistance is changed there must be a corresponding change in the excitation tap or condenser setting.

EFFICIENCY

A high C-to-L ratio brings with it large circulating currents in the tank circuit, hence the tuned circuit leads should be short and of heavy conductor. If the oscillator coils are plug-in, it is also necessary to be sure that the joints make good contact and have low resistance. Coils may be bolted in place or heavy plugs and jacks, lately made available for transmitting coils, may be used.

It is necessary at this point to make a distinction between tube efficiency and circuit efficiency. If the tube is running normal plate current under load and is correctly biased and excited, its efficiency will be as high as in any other circuit regardless of the L-C ratio. The circuit efficiency will be somewhat lower in a High-C circuit, however, because of the greater losses caused by the higher tank current. The distinction is important because it is necessary for the tube itself to operate at high efficiency if it is to stay cool in operation. And it is highly desirable for the heat dissipation in the tube to be well within the ratings because heat makes the tube elements expand, which in turn causes the interelectrode capacities to change. Since the interelectrode capacities are unavoidably a part of the circuit, there results the second cause of instability—a slow frequency change or “drift.” The greater the condenser capacity in the tuned circuit, the
less will changes in tube capacity affect the frequency. Therefore the same things which give good dynamic stability will also minimize frequency drift. High C1, a high-resistance grid leak, and correct excitation. In addition, the tube must not be overloaded. The plate should never show signs of color even when the tube is allowed to oscillate continuously for minutes or even hours at a time.

Frequency drift also can be caused by heating of the tank coil and condenser, another reason why the resistance in the tuned circuit must be low. Drift from this cause will be less when power is being taken from the circuit because the tank current decreases with increasing load.

MECHANICAL INSTABILITY

When the electrical features have been taken into account there remains the third cause of poor notes - lack of attention to mechanical details. Cleaning up dynamic instability and drifting are not in themselves the guarantee of a good note. It is when these things have been done that the smaller - but nevertheless just as serious - causes of instability become apparent. Mechanical vibration of coils, tube elements and condenser plates can utterly wreck an otherwise poor note. Self-excited transmitters should never be operated table and the whole transmitter does a serious dance whenever a little brass pounding is in order. The key is held down for more than a few seconds, the antenna and feeders become a part of the tuned circuit. A Hertz antenna suspended well in the clear can swing a great deal before there is much effect on the frequency, but the feeders are another story altogether.

One excellent way to turn a d.c. note into r.a.c. is to build the oscillator and power supply as one unit. Even the quietest of filter chokes and transformers will vibrate, and when the whole works is rigidly mounted on one frame or baseboard, the vibration is transmitted very efficiently to the oscillator tube and the tuned circuit. The power supply should be put off by itself, mounted on some sponge rubber or felt if necessary. If it is impossible to get a pure d.c. note with a power supply which by all the rules has adequate filtering, the chances are excellent that vibration is responsible.

ANTENNA AND FEEDERS

After all these things have been corrected there is still the fourth possible cause of instability — frequency warbles caused by a swinging antenna or feeders. As soon as the oscillator is coupled to an antenna or feeder system and power is taken out, the antenna or feeders become a part of the tuned circuit. A Hertz antenna suspended well in the clear can swing a great deal before there is much effect on the frequency, but the feeders are another story altogether. Zepp feeders especially are likely to be bad offenders, because the wires are relatively close together and hence have fairly large capacity to each other, so that if they swing back and forth the oscillator frequency may change considerably. For this reason the feeder wires should be spaced at least ten or twelve inches and should be liberally supplied with light-weight spacers. With light spacers the whole feeder system tends to swing as a unit in a wind, but heavy spacers, because of their greater inertia, cause the wires to whip back and forth. The antenna and feeders should be pulled up tight, of course.

Some capacity coupling always exists between the oscillator coil and the antenna coupling coil, especially when the coupling is tight. This capacity coupling is no value in transferring power to the output circuit, but does help along the harmonic output and makes the oscillator particularly susceptible to capacity changes in swinging feeders. Therefore it is advisable to couple to the "cold" end of the tank because the r.f. voltage is low and little energy is transferred through capacity coupling. The antenna will take power just as readily as when the coupling is to the plate end.

(Continued on page 69)
Tubes of the Month
The 77, 78, 75 and 53

When the 57 and 58 were announced we rather suspected that it would be simply a matter of time before corresponding types would be made available in the 6.3-volt series. Now we have them in the 77 and 78 — r.f. pentodes with the suppressor grid brought out to a separate pin on the base. The electrical characteristics of both types are sufficiently close to those of the corresponding 2.5-volt types to make the new tubes interchangeable with the old, except for filament voltage, in ham receivers. There are a few physical differences, however. It will be remembered that in the 57 and 58 there is no screen around the outside of the plate, and that because of this a special type of tube shield became necessary. The idea behind this was to cut down the output capacitance of the tube to make it better at high frequencies. Apparently this feature has not proved sufficiently valuable to be retained in the 77 and 78, because both these types have shields outside the plate in the familiar style of the 24 and 35.

THE 77

The 77 is a sharp cut-off tube suitable for use as an r.f. amplifier, detector and oscillator, and may be used with either a.c. or d.c. heater supply. It resembles the 57 in external appearance, having the same size and shape of bulb, a small 6-prong base and a grid cap on top. The pin connections are the same as those of the 57 (see March QST, page 30). The characteristics follow:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater voltage</td>
<td>6.3 volts</td>
</tr>
<tr>
<td>Heater current</td>
<td>0.3 amp.</td>
</tr>
<tr>
<td>Plate voltage</td>
<td>250 volts</td>
</tr>
<tr>
<td>Screen voltage</td>
<td>125 volts</td>
</tr>
<tr>
<td>Grid voltage</td>
<td>-3 volts</td>
</tr>
<tr>
<td>Plate current</td>
<td>10 ma.</td>
</tr>
<tr>
<td>Plate resistance</td>
<td>0.8 megohm</td>
</tr>
<tr>
<td>Mutual conductance</td>
<td>1500 micromhos</td>
</tr>
<tr>
<td>Grid voltage for plate current cut-off</td>
<td>-50 volts</td>
</tr>
</tbody>
</table>

In the 77 the shield outside the plate is connected to the screen grid — a desirable feature when the tube is used as an electron-coupled oscillator. For such use the suppressor grid should be connected to the screen grid.

THE 78

The 78 is a variable-mu tube and as such is especially valuable as an r.f. amplifier. In this tube the shield outside the plate is connected to the cathode — note the difference between the 78 and the 77 in this respect — and therefore is not as desirable as the 77 as an electron-coupled oscillator because the effect of the shielding is partially destroyed when the cathode is "above ground." The characteristics of the 78 are as follows:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater voltage</td>
<td>6.3 volts</td>
</tr>
<tr>
<td>Heater current</td>
<td>0.3 amp.</td>
</tr>
<tr>
<td>Plate voltage</td>
<td>250 volts</td>
</tr>
<tr>
<td>Screen voltage</td>
<td>100 volts</td>
</tr>
<tr>
<td>Grid voltage</td>
<td>-2 volts</td>
</tr>
<tr>
<td>Plate current</td>
<td>1.2 ma.</td>
</tr>
<tr>
<td>Amplification factor</td>
<td>90,000 ohms</td>
</tr>
<tr>
<td>Plate resistance</td>
<td>1100 micromhos</td>
</tr>
<tr>
<td>Grid voltage for plate current cut-off</td>
<td>-42.5 volts</td>
</tr>
</tbody>
</table>

The 78 has the same bulb and base as the 58. Pin connections also are the same.

THE 75

The 75 is a high-mu variety of the 85. It is a duplex-diode triode belonging to the 6.3-volt family and may be operated on either a.c. or d.c. heater supply. Physical appearance and pin connections are the same as the 85. The characteristics of the triode portion as a Class A amplifier are:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater voltage</td>
<td>6.3 volts</td>
</tr>
<tr>
<td>Heater current</td>
<td>0.3 amp.</td>
</tr>
<tr>
<td>Plate voltage</td>
<td>250 volts</td>
</tr>
<tr>
<td>Grid voltage</td>
<td>-2 volts</td>
</tr>
<tr>
<td>Plate current</td>
<td>1.2 ma.</td>
</tr>
<tr>
<td>Amplification factor</td>
<td>90,000 ohms</td>
</tr>
<tr>
<td>Plate resistance</td>
<td>1100 micromhos</td>
</tr>
</tbody>
</table>

The 75 may be used for any of the applications to which the 55 and 85 are adapted. The triode portion is designed primarily for resistance-coupled amplification. When used for this purpose the coupling resistor may be of any value up to 500,000 ohms.

THE 53

The 53 is a twin Class B tube of the 2.5-volt series, having an indirectly heated cathode. It has a medium dome-top bulb and a medium 7-pin base. Using the notation given in March QST, the pin connections are as follows: No. 1, grid No. 1; No. 2, plate No. 1; Nos. 3 and 4, heater; No. 5, plate No. 2; No. 6, grid No. 2; No. 7, cathode.

The characteristics of the 53 are as follows:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater voltage</td>
<td>2.5 volts</td>
</tr>
<tr>
<td>Heater current</td>
<td>2.0 amp.</td>
</tr>
<tr>
<td>Plate voltage</td>
<td>300 volts</td>
</tr>
<tr>
<td>Grid voltage</td>
<td>0 volts</td>
</tr>
<tr>
<td>Plate current, zero signal</td>
<td>12 ma.</td>
</tr>
<tr>
<td>Plate current, full signal</td>
<td>70 ma.</td>
</tr>
<tr>
<td>Optimum load resistance</td>
<td>10,000 ohms</td>
</tr>
<tr>
<td>Power output</td>
<td>10 watts</td>
</tr>
</tbody>
</table>

No information is available as to the driving power required.

We are indebted to Eveready-Raytheon for the information on the four types described above.

— G. G.
A Modulation Monitor for 'Phone Transmitters

By James J. Lamb, Technical Editor

The increasing improvement in selectivity of our receivers is revealing that all is not according to Heising in the modulation of ham 'phones. Time was when modulation that sounded better than average was classified as "just like a broadcast station," and everything that was broad was thought to be a product of frequency modulation. Receivers are more critical of quality in these days, however, and frequency modulation is a rare exception. Selective receivers, especially those of the s.s. variety, are showing that most of the broadness isn't the fault of frequency modulation and that even perfectly stable crystal-controlled outfits are taking up a lot more than the 6 kc. or so they ought to occupy. There's another monkey-wrench in the junk box besides frequency modulation. And we don't have to dig very deep to find out what it is.

Lopsided modulation, the same animal as the carrier shift pictured right at the beginning of the 'phone chapter in The Radio Amateur's Handbook, is the explanation. It is purely the result of improper operation of the transmitter and causes the generation of a flock of spurious sidebands that spray out kilocycles and kilocycles beyond the frequency range a good 'phone signal should occupy. High receiver selectivity is no proof against these sidebands of course, because some of them splash into tune even when the unwanted carrier is away off resonance. This kind of modulation is largely responsible for the "burpy" interference that is caused by too many 'phones — over 50% of those that were recently checked on the 75-meter band, as a matter of fact. When in tune, 'phones badly afflicted with this carrier shift or overmodulation are identified by a peculiar kind of distortion that damages their quality, too. It's a grating harshness of a "stringy" character that shows up on the peaks. So the trouble isn't only one causing interference. It prevents a 'phone from having real quality, too — in spite of all the swell microphone and speech equipment there may be in the shack.

What actually happens in the transmitter is that the upward and downward swings in the modulation cycle are not equal. The upward swings may be greater than the downward, or the downward swings may be greater than the upward. Either way, the results are the same. As a consequence, the average amplitude of the modulated wave varies at change-in-modulation-level frequency, which isn't the same as modulation frequency but is much slower. This might be looked at as simultaneous modulation at two different frequencies, one the voice frequency and the other the change-in-voice-intensity frequency, something like modulation of the modulation. This complicated process inevitably results in the generation of a whole flock of unwanted spurious sidebands, evidenced by damaging broadness and distortion.

Now the specification for proper modulation is that the average amplitude of the wave must remain unchanged. It should be the same with the carrier modulated as it is for the unmodulated carrier. Unfortunately, no meter ordinarily used in a transmitter will indicate directly whether or not this condition is being obtained. The antenna ammeter certainly will not do it. It shows effective current value, not average. It will kick up when the average is actually shifting down!

A volume level indicator in the audio system is useless. The plate milliammeter of the modulated stage tries to show something, by kicking either upward or downward when it should remain zero energy is transferred.

April, 1933
steady, but its indications are difficult to interpret. What we want is a simple gadget that will show us just what is happening to the carrier itself. We want a meter that interprets things directly in terms of average values. And we have it in the ordinary linear rectifier.

The most linear of so-called linear rectifiers that we know of is the self-biased type plate detector that has a resistor in the cathode circuit. It's the same type of rectifier as that used in the linear vacuum-tube voltmeter described by McLaughlin in May, 1932, QST. Look at the curves of that article and see how linear it is. The secret of its usefulness for our purpose is that the plate current is directly proportional to the average value of the a.c. (r.f.) input to the grid. In other words, as long as the average value of the input signal is constant, there is no change in plate current. If the average shifts upward, the plate current increases. If it shifts downward, the plate current also kicks downward. All we have to do is hook the thing up with a d.c. milliammeter of suitable range in the plate circuit and it becomes our modulation monitor. It is just the thing for listening monitor use, also.

The self-explanatory circuit of the one we have been using is shown in Fig. 1. It is essentially a one-tube receiver using a non-regenerative detector or, if you please, an r.f. vacuum-tube voltmeter. Take your choice. The resistor $R_3$ is not absolutely necessary but makes it possible to set the minimum bias so that nearly the full characteristic of the tube can be utilized. It is adjusted so that the tube draws almost zero current with no signal on the grid.

The best pace for the monitor is right on the operating table, where it can be seen by the operator, and shielded leads may be used to connect a coupling turn at the transmitter's output circuit to the monitor input. The coupling at the transmitter end and the resistor $R_4$ are then adjusted so that the milliammeter reads about 4/10 ma., assuming a plate voltage of over 180. The circuit $L_C_1$ should not be detuned from resonance.

After that it's just a matter of talk and watch the meter. When it shows a tendency to kick upward, overmodulation in that direction is taking place and the gain control simply should be backed off. But if it should kick downward, then something is seriously wrong with the transmitter adjustment and a check-up is called for. If the output stage is a modulated Class C one, it may be just a case of insufficient Class C stage excitation, overloaded modulator (excessive Class C stage plate current) or too much modulator bias. If there is a Class B linear stage, downward modulation may call for reduction of the excitation coupling to that stage — and so on, as per instructions in the Handbook and numerous QST articles that have dealt with 'phone transmitter adjustment.

Active 'phone men who are working for improvement in the conditions on the 'phone bands are urged to make use of this simple monitor and talk it up over the air. There's a lot to be done.

**World's Fair—Chicago, 1933**

The World's Fair Radio Amateur Council, the body in charge of amateur radio activities at the World's Fair, announces that the calls W9USA and W9USB have been assigned to the stations to be located in the Administration Building on the Fair Grounds. There will be four transmitters in operation and two receiving positions (with latest s.s. receivers). A club room will be available for visiting amateurs. Historical displays of amateur equipment will be one of the features of the exhibit in the Travel and Transport Building. All in all the Radio Amateur Council will have charge of 2000 square feet of floor space. W9USA got on the air in early March. The Communications Committee of the Council has charge of all operating, and only the finest operators in the Chicago area will be on duty. Reports on the progress of the amateur radio arrangements at the Fair are being transmitted regularly by specially appointed amateur stations throughout the U. S. and Canada. A special QSL card of attractive design will be sent to every station worked. It is hoped that twenty-four-hour operation can be maintained and that schedules may be kept with at least one station in each state. Watch out for W9USA and W9USB — World's Fair — 1933.

**Dakota Division Convention**

April 21st-22nd, Oxford Ball Room, St. Paul, Minn.

Under the auspices of St. Paul Radio Club. For particulars write Rex L. Munger, 2484 University St., St. Paul, Minn.

**Velocity Microphone Correction**

The drawing of the d.c. field type velocity microphone, Fig. 2, page 24, February QST, has occasioned some confusion among constructors because the overall width and thickness dimensions of the pole pieces (1) were incorrectly shown. These dimensions should be doubled; i.e., the pole pieces should be one inch wide and 3/8-inch thick. This becomes apparent when the drawing is checked, because each pole piece must have a half-inch hole drilled in it to take the yoke (3), and because the ends of the yoke would project beyond the pole pieces if the latter are only 3/16-inch thick.
The Cruise of the "Northern Light"

KGEG's Globe-Girdling Trip

By William A. Crabbe, Ex-W6ESW*

"The fellows have urged me to write something of the trip that was made possible for me by a bulletin sent out by QST telling of the job. . . . The Northern Light is 150 tons, 139 feet long, and is an auxiliary schooner. She made her maiden voyage to Wrangell Island in 1927. . . . I used to go over the hill to Carmel and work PMZ, WSBS and some of those other expeditions from W6HM. It inspired me to make a trip."

--- Editor

A TRIP around the world is a big thing to describe in a short article. Here are some of the incidents in regard to the radio.

The romance and adventure of the tropical islands, foreign ports and different nationalities is left to your imagination.

It was the real active hams at home that kept busy doing the real work delivering messages by telegraph, mail and telephone. W6HM, VS1AB, W2CJR, W6UC, W6CZX, W6ACL and W6ATJ kept faithful skeds and did the work that only the amateurs can do.

When I had the opportunity of joining the Northern Light (and snapped at it) I was surprised to find no set aboard and the sailing date near. With little time to spare and expense cut to a minimum, a set was put together and we sailed on April 2, 1931, with a self-rectified 75-watt t.p.t.g. transmitter and a high-frequency receiver. A telegram arrived giving us the CH11 letters KGEG. No one was worked until we were several days out.

The vibration of the engines and the grinding, crashing, buzzing sounds of various fans, generators, pumps, coolers and loose connections in the ship made enough noise to obscure the ordinary amateur station. Some of the noise was stopped, but still enough came through to cover any but the loudest signals. The d.c. SW-5 National set made it possible to use an antenna that picked up a minimum of noise.

After the first twenty days of such conditions, the Northern Light reached the Marquesas Islands. By that time, my ears must have become accustomed to the noise. At Nuka Hiva there was a severe quietude on the short waves, and while we were at anchor the signals pounded in from everywhere.

Most of us have our eyes open for antennas and radio towers when we are traveling. As I walked along the beach of Taio Hae Bay, I saw an antenna hanging down through the coconut trees to a tin roofed hut, and through the open doorway I saw a 75-watt short-wave set and a gasoline engine power supply. A French operator met me, but since French isn't one of my accomplishments, and his English limited to "yes" and "no," we had to use "Q" signals for our conversation.

We also visited Hiva Oa in the same group of islands. The radio operator on that island had been electrocuted. We sent several important messages to FPE at Tahiti for the people on the island. From there we went to Manahi in the coral atolls. There were no white people on the island but the dusky inhabitants of this enchanting place offered us fruit and live chickens.

Finally we reached Papeete, Tahiti. We had traveled 3800 miles. George Bambridge (old OOBAM, now F3OCD), dressed in a pareu, showed me his equipment with which he keeps regular skeds with various islands and California. Amateurs who have met him know that he seems to own half of the island, including nearly all of the automobiles, several plantations, an import business and some ships.

We left Tahiti for the Tonga islands and stopped at Neiafu on the island of Vavau. Among the trees rose two tall masts holding a heavy cage antenna. I went ashore in the afternoon to visit this large looking station. On the door of the shack was the word "Tabu." The operator was a native. He was sleeping nearby in a lean-to under a Mango tree. I was surprised when I found that the transmitter used one 201-A tube on 450 meters. A flashlight bulb in the antenna was used for a check when he called the nearby islands for weather and news. We went out into the jungle and his friends prepared a feed of Faya-Faya. When I left, they gave me some native 'fapa blankets. From there we went to Suva, Fiji. VPD, the commercial there, is operated on gasoline engines and uses a grass shack for quiet, cool listening.

We had no 600-meter transmitter, but I was making plans for putting one together. An operator on a trader gave me some long wave coils, but they played their part in a unique way when

*309 Junipero Ave., Pacific Grove, Calif.

(Continued on page 64)
The Wichita Falls Amateur Radio Club will hold its Annual Banquet Tuesday, April 18th, at 8:00 p.m., at the Wichita Club, Hamilton Building, Wichita Falls, Texas. All amateurs are invited. Plenty of entertainment for all. Bring the YF or YL. Make reservations no later than April 15th to the club secretary, Mrs. J. R. Martin, 816-10th Street, Wichita Falls (price only 75 cents). Don’t miss it!

Radio Short Course by Milwaukee Extension

A Radio Short Course will be given under the auspices of the Radio Department of the University of Wisconsin Extension Division in Milwaukee, April 10, 11, and 12, with sessions all day, every day. There will be inspection trips and exhibits by manufacturers. The topics for lecture and discussion will cover the new sets, new circuits, new tubes, testing equipment, interference, automobile radio, and amateur transmission and reception on ultra-short waves. The speakers will be specialists from the leading manufacturing concerns. The registration fee is one dollar which entitles the registrant to attend all sessions. This course will be of special interest to those in the radio business, but the public is invited as well.

A detailed program may be obtained by writing the University Extension Division, Milwaukee.

Amateur radio is developing an enviable country-wide broadcast coverage, with several new stations beginning the presentation of radio amateur programs recently. Here is a tabulation of the programs being presented in cooperation with A.R.R.L. headquarters:

- WMAQ 670 kc. 5:15 p.m., Saturdays 
  Chicago, Ill.
- " Ninth District Radio Amateur," Forrest P. Wallace, W6CRT
- WBZ-WBZA 990 kc. 11:15 p.m., Saturdays
- WXAS 6570 kc.
  Boston-Springfield, Mass.
  Presented alternately by East. and West. Mass. Sections
- WMDB 1440 kc. Midnight, second and fourth Saturdays
  Peoria, Ill.
- Peoria Amateur Radio Association
- KGKO 570 kc. 3 p.m., Saturdays
  Wichita Falls, Texas
  Wichita Falls Amateur Radio Club
- KXAA 720 kc. 4 p.m., Saturdays
  Seattle, Wash.
  John P. Gruble, SCM Washington
- WABI 1200 kc. Time of broadcast unknown
  Bangor, Maine
  Queen City Radio Club
- KWSC 1220 kc. Time of broadcast unknown
  Pullman, Wash.
  Rho Epsilon fraternity

A number of stations have given single broadcasts in the interests of amateur radio, among them WPTF, Raleigh, N. C.; KGDY, Huron, S. D., and CRGWN-VE9GW, Toronto, Ont. One of the stations now contemplating the production of an amateur program is KMMJ, Clay Center, Nebr.

Code lesson broadcasts, long a popular feature over the many dozens of stations which have carried them in the past, are now being presented over WPHR, Petersburg, Va., and CKPC, Galt, Ont., while a number of other stations have been supplied with the requisite material.

Fixing a screen-grid tube with a broken-off cap isn't entirely hopeless. First clean the old cement out of the cap and fill the latter with solder. Clean the glass tip of the tube and shine the remaining length of grid lead. Invert the cap on a flat surface, get the solder filling hot, plunge the tip of the tube in the cap, let cool, and the job is done.

With so many calls changing hands these days, it's a good idea for the new ham with a re-assigned call to check up on the listing in the latest call book to make sure of its correctness. If not shown correctly, the QRA should be given to other stations from whom cards are desired.

To make old bakelite dials look like new, scratch out the old paint in the engraving with a sharp-pointed instrument, spread on aluminum paint and wipe off the excess. The aluminum paint will remain in the grooves.

W2BKO's 20-meter 'phone can be heard on the B.C. receivers of four neighbors. But that doesn't mean BCL trouble in the usual sense — these people actually refuse to let BKO fix up the interference because they like to listen to the conversations! Since finding this out BKO doesn't get so much pleasure out of working the set. No privacy at all!
Compact Doublets

Almost all amateurs recognize the efficiency of a doublet antenna for receiving. It gives greater selectivity and less noise-to-signal-strength than the usual length of wire used in the average station.

One of the chief disadvantages of this type of antenna is the space required to erect it. For operation on the 40-meter band it requires a stretch of 66 feet, and to the ham living in a large city 66 feet is a lot of room. Usually the only way he can erect a doublet receiving antenna is to run it parallel to the transmitting antenna, and this will not increase the efficiency of the transmitting antenna.

The writer is located in a very noisy section of the city and found that a doublet antenna about 50 feet high was about 100% better than any other type of antenna. However, I had to run the antenna directly underneath the transmitting antenna.

With the following system the receiving antenna can be erected very high with a light pole and very little guyng. All you have to do is to wind two coils of No. 12 wire on a 3-inch form, mount the coils on stand-off insulators on a cross-piece of wood, fasten the crosspiece to the pole and put it on the roof. See Fig. 1. The total space required is about 3 feet. The size of coils for each band is as follows:

- 80 meters — 56 turns each coil,
- 40 " 28 " " "
- 20 " 14 " " "

The antenna works very well on harmonics.

— George J. Quick, W3AZF

A Handy Test Lamp

A useful refinement for the ordinary flashlight lamp and loop so universally used for neutralizing and checking oscillation is illustrated in Fig. 2. The idea originated with T. S. Shaw, W6AVN. A wooden clothespin of the spring type serves as a holder for the usual lamp and wire loop and also as a clip to be snapped on a copper-tubing inductance. The coupling between the loop and the tank coil can be adjusted very readily — and will stay put — if the nose of the clothespin is carved down to a short stub as shown in the drawing. Besides keeping the coupling fixed at the value considered most desirable, both hands are free for the tuning operations.

R.F. Control on the SW3

The following letter from R. B. Fogarty, W9IST, should be of interest to SW3 owners who have been wondering about the possibility of using an r.f. gain control on the set:

"I was quite interested in the article in the January issue of QST on improving the selectivity of the autodyne receiver. As a result of that article I made some changes in my own receiver and the results have been so good that I have passed the dope on to other hams and thought perhaps you might be interested in passing it along to the gang.

I have a National SW3 and have made the following changes: The 500,000-ohm tapered potentiometer was removed from the circuit and a 1-megohm resistor put in place of the potentiometer, as shown at A, Fig. 3. In the first r.f. circuit I put in a control as suggested in the above-mentioned article. I used a Yaxley 10,000-ohm tapered potentiometer, mounted in the place formerly occupied by the 500,000-ohm volume control. It was not necessary to drill any holes, and the graduated R disc still serves its purpose. The circuit changes are shown at B, Fig. 3."
As for results— they are quite astounding! There is a station very near me that used to block out about ¾ of the band on 40 meters. Last night I worked a W3 within one point of this local ham! And he was as strong as ever because I could turn up the r.f. gain control and he would still block out the band as before.

"I have passed this dope on to five or six hams and they have been very pleased with their results. One is a phone man and he is working stations now he couldn't even hear before.

"I might add it works equally well on both sets—either 35 or 58 tubes. On the 58 set it is even better as it cuts down the tube noises so that weak signs come through much better.

"As for detuning the set—I have noticed that it throws signs off about a half degree on the dial. Personally I can't kick about that as I can work many more stations now thanks to this change."

In using a similar arrangement to give r.f. gain control on the SW5 it was found by W1BDI that changing the detector wiring to the circuit shown in Fig. 1, page 49, January, 1933, QST, helped to compensate for the detuning caused by the gain control. Probably such a change would be equally helpful on the SW3.

BCL QRM from 5 Meters

The following information was gathered after many experiments with BCL interference caused by 56-mc. phone stations to receivers located on the same premises as the station but working from separate power supplies. I am passing it on with the hope that it may help others.

When the antenna was connected to the b.c.l. set the interference covered the entire broadcast band and did not appear to be tunable, but disappeared when the antenna was disconnected. Various methods of elimination were tried, including grid suppressors and bypass condensers, but while the interference disappeared so did the broadcast program.

Finally a wave trap using a 20-µfd. midget variable condenser shunted with three turns of bus bar wound to a diameter of ½ inch with turns spaced the diameter of the wire was tried, and when tuned to the frequency of the station completely eliminated the interference.

This trap was inserted in series with the antenna lead-in of the b.c.l. set, but the lead from the trap to the set, while only 6 inches long, was sufficient to pick up the interference. This lead should be shielded and the shielding grounded to the chassis of the set.

This idea was tried on a completely shielded 10-tube receiver of the tuned-r.f. type and it completely eliminated all interference, except that on WABC it appeared to ride in on the carrier. However it was just barely understandable when no modulation was applied to the carrier of the b.c.l. station.

— C. M. Spengler, W2BXW

O.B.S.

The following is a supplement to the list of A.R.R.L. Official Broadcasting Stations in November QST (page 51):


New England Division Convention

April 28th-29th, Hotel Bond, Hartford, Conn.

Fee, $3.50— Special Price for the Ladies, $1.50. For further information write F. F. Howell, Secretary, Hartford County Amateur Radio Association, 3 Edgerton Place, South Manchester, Conn.

Strays

When high-voltage low-current fuses are needed, dig into the Xmas tree trimmings. The lead foil strips used for icicles are just right.

— W9TV
Weather Forecasting and Amateur Radio

By Howard S. Pleasants, W3DR*

We ALL like to talk about the weather. One hardly ever overhears a QSO in which the weather is not mentioned. But the possibilities of connecting amateur radio and weather reports in order to make our own forecasts have remained undeveloped. This article is intended to set forth the most elementary principles of compiling and interpreting weather observations in the interests of weather forecasting, and to suggest the combination of modern amateur radio communication with one of the oldest and most fascinating of all sciences.

At first thought it might appear unnecessary for anyone to take an interest in the weather besides those who are employed by the U. S. Weather Bureau, since this institution is well organized and is composed of able men with many years of experience. Nevertheless, there is still a field for the amateur forecaster. For instance, there are many small disturbances which are difficult to trace from such scattered points as the official U. S. weather stations. These minor disturbances include thunderstorms, fog areas, cloudbursts and unusual phenomena which can be classed as purely local. From this it can be seen that most of our contacts in this work need be made over comparatively short distances, no more than one hundred to three hundred miles.

The equipment for elementary work will consist of a barometer, a weather vane and an outside thermometer. Barometers are made in two types, mercurial and aneroid. The mercurial types are the most expensive, ranging from twelve dollars to seventy-five, and they are also the most accurate. This phase of weather forecasting is of calibration. Before using your barometer be sure that it has been compensated for altitude above sea level. Your altitude can be found on a topographical map. Using the principle that for every 900 feet above sea level the barometer falls one inch, compare your barometer with a standard, such as a column of mercury, and apply the necessary correction either by adding to the readings or by adjusting a compensating screw on the barometer.

An instrument of almost equal importance is the weather vane to indicate wind direction. This instrument is so easily constructed that there is little reason why it should be bought. The location of the weather vane is as important as the instrument itself, because it will give erroneous readings if there are any objects near it which might deflect the wind from its actual path. For this reason a good suggested location would be the top of the antenna mast. Check up on the weather vane after it has been located by watching smoke from locomotives, etc., and make sure that they both indicate the same wind direction.

In forecasting there is but one simple rule concerning the wind direction and barometer, that warns of a storm. If the wind changes in a clockwise direction (from S to SW to NW, etc.) a low pressure disturbance is leaving. But if the wind changes in the reverse direction (backs) the disturbance is approaching. Of course the barometer will indicate whether or not there is a low pressure disturbance. In simpler form we have the proverb,

"When the winds back and the weather glass falls, be on your guard against gales and squalls."

The thermometer is not an expensive instrument; the best cost but two or three dollars. They are of little use in forecasting and are merely indicators of the prevailing conditions. A very loose generalization which works sometimes in forecasting and which makes use of the thermometer, is, "When the barometer and thermometer go down together, . . . wet weather."

The next observations are purely visual. Clouds have long been known to have some value in weather forecasting. The present form of nomenclature for clouds is not absolutely complete, nor are the interpretations of cloud formations either fully developed or generally accepted as accurate. This phase of weather forecasting is still sufficiently undeveloped and "mysterious" to offer itself as a problem for amateurs to tackle.

A simplified classification of clouds follows:

* P. O. Box 34, Paoli, Penna.

April, 1933

23
The “Cirrus” are those very high streaky or wavy clouds that have a cobweb-like appearance and are often known as “painter’s brush,” or “mares’ tails.” They are found on the forward edge of a “low.” For this reason they are often said to be indicators of rain but actually they only indicate the approach of a low pressure disturbance which may or may not bring rain. “Cirro-stratus” clouds are similar to cirrus clouds but are much more conspicuous and sometimes completely cover the whole sky. They are actually a layer of cirrus clouds. Cirro-cumulus clouds are seen at the same altitude and are often mixed with cirrus clouds. They consist of small, white, globular masses arranged in rows and resemble the scales of a mackerel fish. Their interpretation is found in the proverb,

“Mackerel scales and mares’ tails
Make lofty ships carry low sails.”

Other members of the “cumulus” family include the “alto-cumulus,” “fracto-cumulus,” and “strato-cumulus.” The “alto-cumulus” clouds are made up of white globular masses, slightly shaded and packed so close together that they almost appear to be a single cloud. They have been seen both before and after storms and mean rain when coming in from the west and dark patches in them and are always accompanied by rain. In many respects the “nimbus” cloud resembles the cumulus except for its darker color, flatter appearance, and lower altitude. When small fragments of these clouds are seen skimming swiftly along the ground under altitudes they are called “alto-stratus.” Whether seen at the lower levels. When appearing at high altitude. Whether seen at the lower levels. When appearing at high altitude following a storm. They indicate clearing skies and fair weather. “Strato-cumulus” clouds are the small “torn” pieces of clouds seen during windy days following a storm. They indicate clearing skies and fair weather. “Strato-cumulus” clouds are much more conspicuous and some­times completely cover the whole sky. They are actually a layer of cirrus clouds. Cirro-cumulus clouds are seen at the same altitude and are often mixed with cirrus clouds. They consist of small, white, globular masses arranged in rows and resemble the scales of a mackerel fish. Their interpretation is found in the proverb,

“Mackerel scales and mares’ tails
Make lofty ships carry low sails.”

“Stratus” clouds are those grey sheet clouds seen at the lower levels. When appearing at high altitudes they are called “alto-stratus.” Whether high or low these cloud formations generally cover the sky completely and indicate rain soon. “Nimbus” clouds are the low, grey, rain clouds that have dark patches in them and are always accompanied by rain. In many respects the “nimbus” cloud resembles the cumulus except for its darker color, flatter appearance, and lower altitude. When small fragments of these clouds are seen skimming swiftly along the ground under the “nimbus,” the name “soud” is used to classify them. For additional descriptions and classification of clouds see the Encyclopaedia Britannica, which has an excellent chapter on the subject, with pictures.

In order to facilitate the transmission and reception of weather reports a standard form should be adopted. The following is a suggestion:

<table>
<thead>
<tr>
<th>(Locality)</th>
<th>(Time)</th>
<th>(Barometer)</th>
<th>(Temp.)</th>
<th>(Wind)</th>
<th>(Intensity)</th>
<th>(Sky)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berwyn, 8:00</td>
<td>A.M.</td>
<td>30.07</td>
<td>52 NW Gentle</td>
<td>Cirrus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Provided that the message is being transmitted from the station of origination and on the date of the report, the date may be omitted. However, if it is relayed or transmitted at a later date, the date should precede the whole thing.

The organization of groups of amateur meteorologists would take many months, but those who are sufficiently interested can begin immediately by practicing recording information and classifying cloud formations. As for weather forecasting, besides the few above mentioned methods, it is simplest to first find the wind direction, and then call stations in that direction (not too far away, less than 200 miles) and learn from them the clouds and temperatures to be expected. Do not feel that because you have no barometer or other instrument that you may not participate in this interesting game; just write “missing” in place of the report from the absent observation.

**Pacific Division Elects Culver**

S. G. CULVER, W6AN, has been elected to the A.R.R.L. Board of Directors by the membership of the Pacific Division in a special election brought about by the recent resignation of Clair Foster. His tenure is for the remainder of the 1932-33 term. He won over E. J. Beall, W6BXY of Newman, by the following count:

<table>
<thead>
<tr>
<th>Mr. Culver</th>
<th>Mr. Beall</th>
</tr>
</thead>
<tbody>
<tr>
<td>566</td>
<td>230</td>
</tr>
</tbody>
</table>

Director Culver has been prominent in East Bay amateur activities for many years, being secretary-treasurer of the East Bay A.R.R.L. section organization and having held an appointment as assistant division director under his predecessor. He is an engineer for the Key System and East Bay street railway companies, and resides in Oakland.

**To All Members Central Division:**

It has been the custom for the past two years to invite your suggestions and comments on League matters just prior to the annual Board meeting. Present financial considerations make it advisable to dispense with our questionnaire this year; and so your Director takes this means of soliciting expressions of your desires and your comments in A.R.R.L. affairs for the coming meeting of the Board of Directors.

**Loren G. Windom**

Director, Central Division

**Strays**

The new G. E. “detector” Christmas-tree bulbs are filled with neon, and while not quite as sensitive as the regular bulbs, are just the thing for ham use. — W6BXY (also W6ND)
Dil
(Pronounced "UGH")
Published just this once,
as its official mouth-organ, by the American
Delayed Kick League,
Ltd., Zrnp-Xaboflsky
Vijplvice, Pffft.

april fool!

lovingly devoted for the first and last time exclusively to
LIBERIAN DOG-APPLE GROWING

The American Radiator Delay League

"Of, by and for" the delayer, it numbs within its ranks
practically every worth-while amateur delayer who ever
successfully delayed a radiator, and has a history of glorious
achievement as the radiator-bearer amongst delayed amateurs.

Inquiries regarding membership are solicited. Ownership of
one's own radiators is not a perquisite, but a bona-fide interest
in delaying same is an exquisite qualification. Address all
correspondence to the Chief Pipe-Bender at Omponpanoosuck.

HELLION X-RAY LANDSLIDE, (Secretary, A.R.D.L.) Editor-in-Chief and Pipe-Bender-in-Chief; Big Chief Bender, chief bender; Frank Lee Nerts, Most Potent Delayer; I. M. Too, First Assistant Director of Delays; Hooie Loober, Director of Public Inconvenience and Stoppages; N. Whatinhell, Head Degilder; A. Punk Sigg, Vice-Strawboss in Charge.

Messages of the following type may be filed with any of The American Radiator Delay League Stations: CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ

Main Delaying Headquarters;
(For answer, see to-morrow's instalment)
WE RISE this month to remark that if we sat down and said nothing it probably would be less or more interesting. But what amateur radio in this country really needs is something or other. Whatever the subject, certainly there is something that need not be said about it. For instance, even if the topic is merely whether curfew should not have r1Ing last night, it does not necessarily follow that it makes sense. Even Alice could see that.

But the great question now squarely confronting the American amateur is this, and before you answer, let each of you look closely into your innermost heart and reply truthfully: Have you, or have you not, heard the one about the traveling salesman and the farmer's daughter? No? Well, it seems that the band, accompanied by the attached buglers (or if no band is present, the massed burglars), take position on the parade ground so that the left of its front rank will be twelve yards to the right of the rank of the guard when formed. At this stage the milliammeter should read about $12.91. Got that much OK? . . . Good; that's more than we ever could.

There are, as we see it, two things that we hams can do about this distressing situation: (1) Now stop, Major General, are negro jam pots won'? (2) Stiff, O Dairyman, in a myriad of fits! Embrace these propositions from either direction, we point out, and they spell Mother. It all goes to show, as we've often said in this column, that corporations don't pay huge dividends but cooperation ought to.

Oh, we said corporation, didn't we? That reminds us of our rights. As amateurs, we too have a great fundamental right. But if we lost it, we wouldn't have a fundamental left. Never forget that!

And now, you bums, bad dreams to all of you. Come and see us some time when you are in Chicago and we'll show you the slaughter-house.

Financial Misstatement

By order of the Bored Directors the following financial misplacement of the American Radiator Delay League is published for the delectation of the membership.

K. BILLIKEN WILDEPFLOOFS, Scrivener

On hand last report, not counting empty bottles $9.52
Fee from I.R.E. for supplying them with secretaries 12,345
Our share from "Keep-Tube-Prices-High" Campaign of Relentless Corp. of America 67,500
Sale of 4 channels to commercial interests 10,000,000
Less cut to Segal and Warner 11,000,000

Net loss on transaction Rubles 73,088,099
Membership Dues (Let's not count that; hq. gang need tobacco money) 12,345
Advertising Sales (Don't make us laugh!) 4 µµfd.
Grid-filament Capacity 1 µµfd.

Total Take The eyes have it.

DISBURSEMENTS
New Rolls-Royce for Budding 17,000 mH.
Hostesses for Visiting Firemen Hardly ever
Likker, XXXX-cut, quart ... 62
Appropriation for Spy System 4000.00
Appropriation for Washington A.R.R.L. Lobby No. 0.08
Ball money, stenographers fund ***4**

Balance before dividends 69.52
Dividend for Headquarters Hamburgers 69.00

Empty bottles on hand 52

"OOOH GRAMMA, THERE'S A HAM—I CAN TELL BY THE LOOK ON HIS MUG!"

We know that nobody believes it or gives a hoot anyway, but the combined radio experience of the personnel of "OST" totals 23,768,453,692 years, 7 hours, 2 seconds.
Unrelated Relativity
By Professor Valadod T urnonanoff

We are happy to present to QST readers a thesis by this well-known scientist. It is not generally known that the terms “on” and “off” found on electric switches are in recognition of his work in the field of applied electronics. — EDITOR.

MY COLLEAGUE, Trimski Korsakoff, has said that too little attention is given to distributed inductance, capacitance and resistance. It is true that these properties are related, yet relatively unrelated, which thought has given title to this treatise. I shall now attempt to explain in simple language the relation of the above-mentioned properties to band-spreading and steady signals. For purposes of measurement in terms of henries (not johnnies as some radiotrickers believe) let us analyze their various functions. Many of my listeners will at once bring to mind dielectric constants, condenser breakdowns and negative terminals.

Nothing should be further from their thoughts. As is generally known, this whole theory is closely related to the beat-note. A leading exponent of the skip-distance theory explains that any keep-alive circuit can safely be employed for good results. This does not apply to portable amateur stations, and a violation of this basic radio law entails a fine of $::!.47, which includes court costs. If the offense is committed upon the high seas, except off the coasts of Swedish West Africa and Jugovania, the offender is permanently known as a “lid” and no self-respecting amateur will ever attend his mast parties. Many of the broadcast receivers sold today are still not properly selective, but if the alternating current in your neighborhood has true sinusoidal wave form much can be done by impressing on the listener the importance of the application of the Ohm’s law. Fading, too, is usually less violent over long distances if the tubes of the speech amplifier are operated with a knowledge of electrode voltages.

What is electricity anyway? A true amateur likes to think of it as something he can divert from a power line before it passes thru a meter. If amateurs obtained their power thru a contrivance similar to the old-fashioned gas meter a shortage of lead quarters would soon develop. Some day the true history of unmetered power leakage will be written and, as usual, the radio amateur will take his place in the foreground. I hope you will pardon me for drifting to this subject, so dear to the hearts of you all. Relativity required the entire rewriting of electromagnetics, but, as the title of this article suggests, my subject is unrelated, and therefore requires no rewriting. The theory of cosmology has nothing to do with the Heaviside layer, nor has the isotrophy of crystals anything to do with quartz, nor has anything I have ever written been found to be true when put to actual test.

The Nertz Antenna
By P. Nertz, W2NERTZ*

The Nertz antenna was invented in the Nertz Factory by Chess Nertz. His almond eyes became saisty when he cracked it. The Nertz is linear rather than otherwise, running from one end to the other. Usually the Nertz is a wire. It may be a collect wire. If it is over a half it should not be accepted. It cannot be a quarter, which is odd, but you can’t get an odd quarter these days. Make it even and take the marbles. Don’t forget it’s for keeps. Anyway, both ends are free.

The Nertz antenna is often a dipole on account of there is a pole holding it up at each of the two (2) ends. Currently there is nothing at the ends but the poles (N and S). Or (E and W), as the case may be. Potentially the Nertz has great possibilities, progressively from the middle both ways. Further exploration is undoubtedly merited. But who the blazes wants to be a tight-wire performer?

(More about the Nertz on the nertz to the last page.)
Quiescent Autonomous Magnification
Superintendence

Or the Quintessence of Horseradish

By Egbert Algernon Wales, B.V.D., F.O.B., C.O.D., G2GIN

In furtherance of the complication of the simpler things in life, it is with the greatest of animosity that we offer the following momentous disclosure of the marvel of the age, unfortunately brought to us by our Albion correspondent, who chiseled it from the inventor at 1 cent on the dollar. — MORATORIUM EDITOR.

CONTEMPORANEOUS technological development in the dissemination of edifying entertainment by propagation of electromagnetic disturbances of predetermined periodicity in the cosmical medium necessitates application of decidedly rigorous technique in the superintendence of the magnification prior to conversion in the detection device. To this end has been developed autonomous means whereby rectified components are ingeniously utilized alternatively, as it were, to superintend the magnification of introductory circuits of the receiver by utilization of the transconductance characteristic of the valves, or to reduce the magnification essentially to nonexistence in the absence of suitable electromagnetic impulses. It is obvious that quiescent autonomous magnification superintendence is indicated.

Editor’s Note.—What he means is, we gotta have quiet a.v.c.

New Apparatus

NOTHING could give us greater pleasure than to announce the arrival of a new tube or something novel like that, but all we’ve got this month is a pair of cans. Made especially for the purpose of filling that need for an extra set of cans in the ham shack, they are particularly recommended for the use of those visitors who, after listening to your modest recital of your DX accomplishments, express polite but uninterested admiration and then begin a tale about all the DX broadcast stations they’ve heard. At this critical point the visitor should be requested to listen in a bit, on which you grasp one can firmly in each hand and with a rapid scissors-like motion clamp the visitor’s ears firmly between the two. This is guaranteed to cause an immediate change of subject.

Notwithstanding the fact that these cans fill a long-felt want, we predict that their popularity will be limited. Why? Oh, the manufacturer refuses to give more than 50% discount from the list price. Imagine a ham buying from a cheap skate like that!

Standard Shift Transmission

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Anybody that reports is just a nasty old tattle tale.

STRAYED

For Sale — QSL Cards of any country. Win your WAC without delay. Name your spot. We’ll send the card. We have no limits to super-DX. Some of the best stations use our cards to high-hat their friends. Box 88, Whoopee, Wisc.

Prize thought: More Hams should visit more radio stores. Then, while one bunch keeps the owner’s attention engaged, the others could walk off with more merchandise.
G
OOD news, fellows! After an interminable period of waiting, we can at last announce a few new chubes for the use of hams only. It must, in fact, have been all of four and a half days since the last preceding conglomeration came from the drill-presses (and only a measly 
34 new types then) so OST's daily bulletin on new tube types has been discontinued. But now!!!!
Out of the 68 new types announced today, we can only describe three in detail. These have been developed by the R.A.C. laboratories at the express request of OST (express because the request was too big to go by parcel post). Needless to say, all these new tubes have power to burn, especially the 254G63A13S, shown in one of the photographs.
The 254G63A13S is made only for ultra-high-frequency kitchen transmitters. The oscillations generated are very short in wave-length, but oh boy! is there hot stuff in that tank circuit!! Did you ever back into a hot radiator with its rear end uncovered? Well, then you know how we felt when we did the same thing. That explains perfectly the operation of this new tube.
We must admit a slight disappointment when we found the new tube had only two grids. That's hardly enough for a modern tube. However the second grid isn't really a grid, if you know what we mean. Actually it's the plate, wound in a spiral so no external tank inductance will be necessary. The cathode is a multi-hole affair with jet emitters. We don't know what the inner grid is for but the makers seemed to think it was necessary. A novel feature of the 254G63A13S is the two-piece cast-iron envelope. A secret process of manufacturing a clinging vacuum makes this new development possible. The importance of this cannot be overestimated for it provides for continuous rejuvenation of the tube. When the tube becomes sluggish in action, the door can be opened and the accumulated electrons cleaned off the grid and plate with a brush. The electrons can be saved and used over again if one wishes to be ultra-economical.
This tube is guaranteed to deliver plenty of red hot juice at short notice.

TWO NEW BOTTLES

Some interesting glassware has been added to the list in the 123456ZZXQ!& and the OHNO123UGH shown suitably juxtaposished in the second photograph. The XQ!& (for short) is at the right. It goes into oscillation with remarkable ease at any frequency, but unfortunately has a tendency to become unstable and get out of control if used continuously. Comes in several sizes, the largest variety being illustrated here. It packs a tremendous wallop and can be used with wonderful effect so long as care is taken to keep the operation below the spilling-over point. This depends mainly on the capacity of the tank. High C is desirable. A good-sized leak also is recommended.
The 123UGH (also for short) is a small but highly efficient bottle particularly useful as an exciter. Its specialty is the elimination of parasites. Experience with the 123-UGH has shown, however, that in spite of its high output it is prone to give a spattery a.c. note unless used with caution. A particularly good tube to give the young squirt in the next block who calls you at 2 p.m. when you're trying to work some DX.

YEPE, THE ARE OTHERS

For instance, we have the 273DYWL29F, 36ELGH39, EIGH29AHG, &c&178, A:EUC26, 38GH20, QCCH2837, QPW029, WM293 hypothetical, DKEIG29, 2937, WUYN &?, 29QODJ56w, A:EC395FG, QPD1563, 69ALC56, (Continued on page 97)
QUEEN ELIZABETH was seated on the edge of her round royal chair, jeweled fingers busy at the dials of a short-wave receiver. "Off wit his head!" she muttered fiercely. A power transformer hummed menacingly beneath the table, transmitting tubes gloved in readiness. "That wretch Essex said he'd call me at six sharp. Not a sign of him, the rat. It's treason. If he has gone to Fotheringay to see that Scottish witch, Mary Stuart!!! But this can't go on!" The Queen yanked the gold headphones from her ears----- caught them in her pearl necklace which showered to the floor. Then she slammed the 'phones on the table, breaking a couple of 50-watters.

Lighting a cigar, she leaned back and looked out the window. Pack-ice swept through the foggy air, and cold-looking, fried turkeys sat mournfully on the bare oak branches, newspapers over their heads to keep the rain off.

... "Well, if it hadn't been for Raleigh and his radio compass, Stuart would have escaped on that tugboat. But I've got her now—she'll jam my wave no more, the wretched little burlesque Queen. Do I make condenser oil out of her, or carbon for that new mike?" The very thought that Essex was in love with the beautiful Scot drove Elizabeth into a froth.

Presently a lackey sprang from behind the curtains carrying a tray and seventy-three bottles of fager.

"Back to your attic!" shrieked Elizabeth, biting the neck off a bottle. The wild-eyed lackey vanished, jittering. Just then the door opened and a pompous usher stepped in. Elizabeth looked at him over the top of the bottle.

"Modom," he stammered, "I mean er-r-r, pardon me, baby, —your Majesty, the Earl of Essex is here." Elizabeth glared and the 861 she flung crashed sickeningly against the wall by his head. Then in strode Essex covered with mud.

"Hello, you old battle axe. Fighting again?"

The Queen, by now frothing at the mouth, looked out at him from under her bushy eye-
brows. "Why weren't you on the air at six? I've waited an hour. Where have you been?"

"Well, you see it was this way. Mary Stuart and me, we went for a walk to try out my new portable receiver. We ran out of gas, and I slipped, Queenie. Tough on the clothes, eh?"

"Enough! I'll have your head for this—the two of you." Grabbing a 'phone, the Queen dialed the tower. "Hello, hello, Butch? Yeah, this is Liz. Dust off your axes—we're going to have a double header. Yes, Stuart and Essex tomorrow at 2:30 sharp. Give it to all the O.R.S. stations."

Essex began to tremble, quiver and shake, the Queen to tear apart transformers. The air was charged with grid-leaks. Then a knock came at the door and there stood Walter Raleigh, loaded down with watts, volts, and a box of five-cent cigars.

"My Walt!" bellowed the Queen, gently rushing at him. "What a swell QSL to have at this point. You're the one who helped me to first get across the pond. I've got so much to tell you. But first, toss that burnt-out tube, Essex, outa here."

"Nuts," said Essex.

"Off wit his head!" shrieked Elizabeth, jumping up and putting on her skates. "Off wit his head! Tie him all up in antenna wire and away with him!"

Howling, she skated through the closed door, --- Essex rushing after her yelling down the corridor. The Castle seethed into life, doors burst open —barbed wire entanglements went down, tear gas and pistols sprang into view.

"But you can't do it. It's so hard for a young man to get ahead these days, Liz. Wait. Two bits says you don't dare! Will you take me up? Will you take me up?"

But Elizabeth whipped on down the hallway, smashing the 250-watter lights with a hockey stick. "No," she shouted. "I won't, — the undertakers will!!! . . ."

—John M. Murray, W2AMD-W2ZZY
Devoted to paying the interest on the

INFERNO MORTGAGE FORECLOSURES UNION

MEMBER SOCIETIES

Amalgamated Pipe-Benders of Podunk Hollow
Clambake Society of Moronia
Liga des Paranoian Uggerumphs
Petruvian Radio Delay League
Radio Association of Kleptomania
Spitalian Brotherhood of Fried Hame
Union de Graustarkian Gravy Greasers

Conducted by Chief Debt Evader

AN ENTIRELY new development in the age-old field of date evasion made its appearance early on Christmas Day, vicariously July the 4th for it was then that the foreclosers declaration of the debtor's union was signed -- a development that will give us increased strength internally and infernally. So great is our strength increased, in fact, that our odor now rises to high heaven, and the fair name of the "Forecloser's Flop," as all mortgage sales averaging less than $2.16 shall be known, is bruit for all the egregious brutes in their palatial huts on the thither side of the railroad tracks to hear.

(At this point, as we understand it, our Department Editor stumbled into his UighbaH, drowned himself. -- EDITOR.)

HAMADS

AT LAST!!!! A reel mike. Reduces effect of halitosis on listeners. If any, automatic loss control making swear words maximum volume. Guaranteed purpling of call letter or breath reduced. One enthusiastic user writes, "I hooked ten mikes in parallel across yours and the quality was no worse. Would have tried more but ran out of condensers." Still another unmalicious reply. "Have a new all-arc transmitter with no rectifiers or filters and listeners prefer my voice when using your mike to the monotonous power line modulants."

WANTED: Thousand mile wireless coil, rotary gap, zinc electrodes, electrolytic interrupter. Will trade Pope motorcycle, clarinet and five-bar magneto. Address B4 the war.

TOTAL LOSS ANTENNA INSULATORS - Light up brightly when you transmit! Demonstrates to the neighbors the correlation between light and loud speaker sounds. Other makes cause energy to oscillate back from antenna to transmitter again. With ours it never returns, which is what you want. Antenna lenses are desirable. Ultimate form of all energy is heat. Improve your severe winter climates with total loss antenna insulators. Buy their heat radiating corrugations. Ye shall know them. (See front cover February 1933 QST -- that ad cost us dough.)

QUARTZ! QUARTZ! Quarts everywhere but not a drop to drink! The Ploeyy QTS (for external use only and only after shaking well) will make you oscillate and how. Flooney cross-cut (X) crystals can be used on frequency or wavelength by appointment. Listen for our crystals on the air -- they have that extra something -- that distinctive two, three or four-frequency effect all at once -- carried to the right, carriers to the left, volleyed and thund- ered (but don't think about the rest of the quotation about, "Oh, what a charge they made.") Flooney Cross (X) Cut quarts Consolidated, Pennsylvania.

HAVE you made the J. J. Mutton Simple Signal Single Set? Well, don't! Or, anyway, if you insist, then get our knocked-about parts. See how long it will take you to get a single signal! Millions of amateurs write in hourly, "Youse guys in all we. You exaggerate. We get only half signals." Re another goat for this fad. Hook, Crook & Rooikum. No-Sig Corp. Address subject to change without notice.

April, 1933
Traffic Griefs

Mr. Brainard Field (at key of W1MK) was heard recently to remark, in reply to a request to take a message for Headquarters, “Nice we needn’t QSP. R R R QRM PSE RPT. NM NW BESTEST BEST 73SS ES SK. CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ CQ v W1MK.”

The cartoon below shows Quit Snooping Tom (QST).

Rules for Goof Operating

NEET — Used during lapses of memory while the sender is thinking of more to say.

BT, IT and Y — Similarly used during lapses of memory by the operator.

CQ — Used for testing and to check transmitter keying. Special benefits to operators with no receiver... they can call “CQ” and await answers via mail.

R — Used after a CQ to show confidence that one has already hooked the desired station.

C QRM — Used exclusively in Route Manager’s Parties — but often (truly) QRM answers.

 apparel — Used whenever in doubt, especially when operator is figuring how much of incomplete message to ask repeated.

ACCURACY — Discard entirely; you can send faster than the other fellow and he wants to sell his gear. (July) W2TSK got married. (Aug.) W2TSK is hard at it. (Sept.) W2TSK is off the air. (Oct.) W2TSK is still off the air. (Nov.) W2TSK is building. (Dec.) W2TSK is rebuilding. (Jan.) W2TSK says still QRL YF. (Feb.) W2TSK says... W2TSK reports the arrival of triplets. TSK TSK TSK. (May) W2TSK wants to sell his gear. (June) Once a ham always a ham — W2TSK is still as is.

PROVISIONAL REPORTS

Hudson River Valley — SCM O.M.S’law, W2RF — W2TSK reports — (Jan.) W2TSK has YLitis. (Feb.) W2TSK’s totals are slipping. (Mar.) W2TSK is in love. (Apr.) W2TSK missed the last club meet. (May) W2TSK was seen with his YL. (June) W2TSK failed to report. (July) W2TSK got married. (Aug.) W2TSK is hard at it. (Sept.) W2TSK is off the air. (Oct.) W2TSK is still off the air. (Nov.) W2TSK is building. (Dec.) W2TSK is rebuilding. (Jan.) W2TSK says... W2TSK reports the arrival of triplets. TSK TSK TSK. (May) W2TSK wants to sell his gear. (June) Once a ham always a ham — W2TSK is still as is.

SOUTHERN NEW MEXICO — SCM Im. A. Sparkgap, W6BANG — Very very glad. FB. Number reports nearly as good as expected. FB. 2 reports this month gaug. FB. Keep going boys. FB. 10 messages this month. FB. Not bad for a small Section. FB. W5BRAG promises better totals. FB. W5NOW says better total soon. FB. W5UPP reports tlc looking up. FB. W5SOO says watch his total next month. FB. W5OYBEH is hot after traffic. FB. W6STR is our star traffic handler. FB. W5NOW says better totals soon. FB. Boost ur Sec. with these men. FB. Write W5MUP our new Route Muffer for a sked. FB. Many brave hearts are asleep in the deep. FB. Total: FB. W5MUP 1 W5MUP 0 W5YBEH 00.

SOUTHERN IDA EGO — SCM I. M. CONFUSED, W6KKK — W6FALL reports his tlc took a drop (a whole bottle we think). HI. W6DROP reports his antenna took a fall. HI. W6BLOO blue his power transformer. HI. W6YFY was his by lighting. HI. W6NEW is a new ham. HI. W6RPT reports. HI. W6LOS died his 801 on concrete floor. HI. W6GRR has a rough signal. HI. W6SSS blue all tubes in his s.s. HI. W6WLF is still at it. HI. Yelling. HI. W6KL is a close-eiger. HI. W6MC is on 7 m. HI. W6JUL is shooting cigarettes in Alaska. HI. W8PYH is on fence again. HI. W6WHO blue his grid leak. HI. W6WHO dripped his grid pan. HI. W6OOO burned his grid out. HI. W6POO panned his drop out. HI. W6WT lost $200 in holdup with stuck-up man. HI. W6WCC has a new de. note. HI. W6ROPE smoked a cigar. HI. What is your trouble? HI HI HI HI. Write me HI HI HI HI HI HI HI HI. Blueray Valley. — SCM Dog Fish, W6SALT — This month the Section broke all past records: Originated 20, Delayed 0, Confirmed 0, Lost 0. Dell red reported as being d(c)ayed about town. W2SIO blew his 5-watt. No report. W2FST blew his 50-watt. No report. W2HII blue his 250-watter. Loud report!!
Washington, Apr. 1, 1933.

A.R.D.L., West Hartford, Conn.

Sirs: It is with pleasure that I write to thank you on behalf of your members for the forward-looking message handling work which has just come to my attention.

For your information I enclose confirmation copy of a message which my sister mailed to me in 1929, and also the identical message as delivered to me by your local representative today.

No such example of complete and thorough handling of a message has come to my attention before. I can but marvel that I received this message. I thank you and congratulate you on this exceptional and outstanding performance. It is such self-sacrificing painstaking, prompt and accurate relay work as this that typifies the spirit of amateur radio.

Thankfully and irrevocably yours,

Henry J. Swiggletree

The following message was filed in 1929 at one of your Official Delay Stations:

Scramdaler, Calectisota W7JAMB
nr 3795 March 16

Mr. Henry J Swiggletree,
28 Ninth Ave E.S.W.
Washington, D.C.

Dear Brother stop Why don't you write question Weather fair rain and snow have stopped stop We all send our love and kisses to you stop Hope hear from you shortly dear Brother Stop As ever

(Signed) Your loving Sister Edna

Three years later this message arrive promptly at our home after having travelled 23,564,765,853 miles. It read as follows:

Mrs. Henrietta I. Treeswiggle
228 Nineteenth Street W.S.N.W.
Washington

Dear brothers top Why question fair weather stop don't stop write you have stopped rain and hope stop we send love to all misses stop as ever from your dear mother stop shortly sig ned and edith

Febrooary 29th

Deer Edditor:
I'm gud and mad. Wy doant U tri 2 get tags strate. Mi surtificit of membership in arti got hr 2da and U got mi name spelt Egbert. This is a insult and am hiely irritated. Mi name is Elbert wich is kvite diferent. Kerrest at 1nce, Annuther tng. Last mnth qst div repts had mi el w8LIP. i canot imagin hw ts happend since i printd mi el vry karefully wen i sent mi rept to Som. It is W8LID. If thees erors contiuU i must be phored to rite u agn and i shud nt like it. Remaininge urs hamfully, 73s.

— Elbert Howe Kumm W8LID

Free Air

Editor, OST:

The other night I heard a three-cornered rag-chew between some of your U. S. hams. They were grumbling about the “bad air” that prevented their signals from getting out, in spite of the fact that they had the best stations in the world. True, you’ve got some of the best hams in your country, but you’re always blowing about something. For a country that is supposed to be perfect, you can find more things the matter than anybody I know. But this time it was the bad air.

Well, sir, that set me to thinking. Down here in Argentina we have the best air in the world, and lots of it to spare. I want to volunteer an idea for you W fellows. Get together, why don’t you, and raise a fund to construct a pipe line, say about six inches diameter, and run it from your country down here. That’s all the machinery you’ll need. Then get your Yank hams on the northern end of that pipe line and see how good you are. I’ll bet an Audiotron with one good filament left that if you W’s can suck as hard as you can blow, you’ll get plenty of good air.

None too hopefully,

Yougo Turnback

Buenos Aires

Editor, OST:

My hobbies consist of the collection of stamps, photography and astronomy. Do you think I should embrace amateur radio?

Signed: Omar Rentmaker

No, Omar, not until you learn how to spell the word amateur.
CALLS HEARD

(For new ruling on Calls Heard see March QST)

J1FP, Masaharu Okochi, 17 Shimigu-cho Yanaka, Shinjyua, Tokio, Japan
w6ags w6ax g6j w6bg w6ch w6gp w6pl w6ave
G2HJ, K. E. Brian Jay, The Quinta, Elm Close, Amersham, Bucks, England
(7-mc. band)

w6adp w6fwi w6wb

G6YL, Miss B. Dunn, Felton, Northumberland, England
(3500-kc. band, December, 1932)
w5em w5fbw g6dsj w6czk w6czl w6cex w5fga
w4je w6cgs w6pl
(7000-kc. band, January, 1933)
w6am w6nd

BRSAG7, D. A. G. Edwards, 19 Gravelly Hill North, Birmingham, England
(14-mc. 'phones, Feb. 5-13)
v6dm veldq veldv v6bsb v6cna v6faq w6aik w6aca w6allw w6j a w6j e w6j e w6j e w6j e w6j e
w6am w6nd

W1MK, A. R. R. L. Headquarters, 33 LaSalle Road, West Hartford, Conn.
(14-mc. band, Feb. 17)
tf7an
(7-mc. band, Feb. 17-24)
kalij j1fg j1eg j3eb j3ec j3uc
W4AIS, G. D. Tate, Forest City, N. C.
(14-mc. band, Jan. 1-15)
jldv vlem
(7-mc. band, Jan. 1-15)
kalo kally kaita

W5ARV, Will A. Shaw, 1815 St. Louis Ave., Fort Worth, Texas
(14-mc. band)
omltb v6kr
(7-mc. band)
hafia j6ur kaloj kallr omltb omltb p6koq k6not w6alb

W7BGG, Delbert Avery, 1218 E. Lewis St., Pasco, Washington
e6f b8pa b7vb b5rj g6aa g2kr g6fon g6yn g6nl g5of g5ob
sule sule

W8ACY, Bruce L. Kelley, Point Rock, N. Y.
(14-mc. band, Feb. 1-21)
jiff j1fe kalpa p6j6u v6nae v6naa v6uah y12b

W8ACY, 59 Congress Ave., Rochester, N. Y.
(7- and 14-mc. bands)
jek j2ex j2ex kalpa kalej kalrr kalig kalln kallq k6al kasts omltb v6gry sule

W8CDB-WSCO, Robert J. Wood, 1814 E. Colvin St., Syracuse, N. Y.
(7-mc. band, Feb. 6-24)
8jced j2ex j1ek j3ec kaleo a6noa
(14-mc. band, Feb. 6-24)
uu2a vu2ah u22a uu5ee j1dr

W9KXJ, Frank Ridgway, 508 W. Sixth St., Peru, Indiana
(7- and 14-mc. bands)
ha3b la3g suleex pl2emo

W9AFN, P. B. Lovegren, 7840 Euclid Ave., Chicago, Ill.
(Heard during January)
jido jlee v6kgy

The following amateurs report hearing one DX station:
w2gt heard yi6bz; w8dwv heard j1ct; w6dsm heard n68sn; w71d heard w3cxn on 1.75 mc. and w2au on 1.9-mc. 'phone

New QSL System

LICENSED amateur members of the League were advised in March QST of the inauguration of a new QSL-forwarding system which is being instituted immediately. Readers who may have missed that announcement are referred to the article on page 29 of March, 1933, QST.

We take pleasure in announcing the appointment of QSL Managers in the two remaining divisions, the Fifth and Third. Amateurs in these divisions should send their envelopes to the QSL Manager of their district.

Fifth District:
Mr. Shelton Stanton, W5ACA, 2627 Milan St., New Orleans, La.

Third District:
Mr. Edward L. Thompson, W3CQS, 312 College Ave., Salisbury, Md.

As this issue goes to press the final check-up of scores submitted in the 1932 Sweepstakes Contest is being completed. It is expected that the special "charm awards" will be in the hands of all winners by April 1st. The complete report on the SS, listing scores of all contestants, is scheduled for June QST.

Strays
THE COMMUNICATIONS DEPARTMENT

Our Traffic—Public Service!

By R. G. Martin, W6ZF-W6AYC*

In the beginning of Amateur Radio, the thrill of exchanging messages with our next door neighbor was like eating some of Grandmother's berry pie in other words—the biggest thrill on earth. Through these years of fight and determination to put the Amateur on top, Amateur Radio has been foremost in development of the whole radio art. Amateurs have distinguished themselves in numerous ways and identified themselves with acts of public service. Among this large number of amateurs are traffic men who handle traffic as seriously a whole radio art. Amateurs have distinguished themselves in numerous ways and identified themselves with acts of public service. Among this large number of amateurs are traffic men who handle traffic as seriously as inventors, budding engineers and class-A operators. Our commercial brothers sprang from the ranks of the amateurs, their traffic systems once were from rehashed amateur methods. In all, Amateur Traffic is a Public Service—Convenience and Necessity!

Our fold numbers well above thirty thousand members. Scattered from north to south, and east to west boundaries of these United States, hams are before their keys or microphones, exchanging checks, reports, traffic and what have you. These amateurs are the nucleus of a vast communications system—rendering service in time of National Emergency—in time of need, and always busy advancing amateur radio art. Among this large number of men are traffic men—who handle traffic as seriously as they would work in their vocations. The backbone of Amateur Radio is centered in these men—whom the Army and Navy have readily backed, forming nets for training in operating, encouraging traffic which constitutes "public service" and which develops highly skilled operating personnel!

What constitutes a good traffic man? A good traffic man is a human being who combines good common sense and judgment with good operating! Some amateurs do not realize the importance of these messages we handle. The messages are not important to us always—but to people who have relied on us to deliver them, they mean a great deal. Good judgment of how to route that message in order to have it delivered in the shortest possible time, common sense in how to handle it, is necessary to being a good traffic man.

How many men really sit and turn the dials of their receivers combing the bands for stations in the vicinity of the destination of their traffic? How many men CQ practically for destinations or nearby cities? One often hears operators CQing with QTC hr—but never saying where traffic is for. With a message for Chicago CQing in such aimless fashion may hook a station in Seattle, thousands of miles out of its way. Use common sense follows—handle that key as you would your girl friend! (H.L.) Too many waste power and time on the air with meaningless CQ's hoping to get rid of one or two messages—not caring "where" or "how" as long as they personally can move them. "It didn't stay on my hook more than twenty-four hours, did it?" Perhaps not—but it was placed in far worse position than if it had stayed on the hook longer and been moved intelligently. Traffic mishandled had better stay on the hook until it can be handled via a proper channel, rather than to Shin it around from one station to another "taking a chance" that so and so can work it through.

There is the beginning of some criticism of the speed and reliability of amateur traffic work. It is heard too many times by the hams. In fact it is about time every amateur did his part in a "better traffic movement." Try to handle your traffic carefully and well, as well as promptly. Improve your schedules and methods where possible! Can't everyone of you see that without traffic Amateur Radio would suffer greatly? Traffic constitutes the "major service we can perform in everyday life as an Amateur for the Public. Omit the "I don't care" expressions and do your part to accept responsibility for the messages that go through your station. Strengthen your amateur radio.

In the first place adopt standard operating procedure—put good clean stuff on the air—make a name for yourself as a good operator—whether you use a bug or a straight key. Good operating brings you a good audience. You will be surprised to find any number of hams who will always be right on tap when you get on the air—the same four or five scattered here and there over the United States who will always give you a call the minute they hear you. Why? Because it is a pleasure to work with some one who really can handle the ether like an "ole timer," one who uses his head and good judgment.

A certain W6, whenever on the air, never fails to work a certain W4, W8, W9 or W1, or perhaps works them all several times before signing off. He has built a reputation for himself as a good clean operator. When he combs his dial he invariably works "those particular" reliable operators from three to five times during his time on the air. Handle traffic? You should listen to them—a network in themselves—no traffic is passed unless to its destination or beyond a station in the same direction. "Back and forth," handling of traffic to run up big totals is disgusting. Some hams who run big totals every month if actually rated on the "usefulness" of their work might find their credits quite considerably smaller—if they handled traffic "legitimately" instead of merely an exchange for BIG TOTAL stuff—know who pays his total and who handles his traffic legitimately as it should be. Your operating tells how you go about it, gang! Don't forget that.

Good clean signals are important. To sit and listen to a

* Manager KUP, San Francisco, Cali.


‡ A chart suitable for posting in your station, with QSL, Redefinitions, abbreviations, and stressing the principles for getting most effective results from your operating work will be sent with a copy of the "R. & R." without charge. Request it by postal card or radio mail. Make yourself a "real 100%" amateur operator to be looked up to by other hams as such.
operators — the psychological effect might prove disastrous. With a number of good operators scattered here and there over the bands, it is something for the less fortunate to strive for. Let us all try to make our operating better. Instead of wasting power and energy on the air, interfering, and jamming someone else, listen more — use the dial on your receivers — it won't wear out — if so send the bill to side by the F. R. C. for Amateur use, but that doesn't mean the QRM 73 SK is abrupt and wrong where the operator could have truthfully said, “not going to be on” or “am restricted here.” Tell the truth if you can’t take the other fellow’s message. He’ll think more of you for it! To tell a man you can’t handle his message, and why, doesn’t make you a piker! He’ll appreciate it! Any good operator would rather have you tell him than to take it and perhaps have it on the hook for days just to ask for “one or two” messages to your total. The attitude shows clearly whether an operator accepts proper personal responsibility for upholding the standing of amateur radio, if he really has the true ham spirit, or if he is just a self-serving haphazard operator.

No doubt you wonder what forms of traffic you hear going on the air. In fact we hear all forms, messages with no numbers, no dates, sometimes so garbled it is hard to make head or tail of them. Frankly if a fellow tried to send a message like that on me — I’d probably blow up and ask him who he got it from and to shoot it right back and get it properly. I’d refuse to accept the responsibility of delivering it. If the message is garbled when you accept it — the station delivering naturally gets all blame for it, though in his mind he knows perhaps the message wasn’t right when he took it — copied word for word from the other station though, the addressee certainly would say a few bad words about the station delivering and how! You want someone you delivered a message to say, “Well, can you imagine that, I can’t read a word of it, the fellow who received this must have been terribly dumb!” And don’t worry there are a good number of men and stations throughout the United States that are hearing that, perhaps not directly, but indirectly, just

Relative Standings of the Ten Highest Sections — Jan.—Feb.

<table>
<thead>
<tr>
<th>States Reporting Traffic (25%)</th>
<th>Gain or Loss (Traffic Report) (25%)</th>
<th>Traffic Total (35%)</th>
<th>Standing Based on Average of All Four Ratings %</th>
<th>Section Communications Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Minn. 8428</td>
<td>Wash. +79</td>
<td></td>
<td>Michigan 57.5</td>
<td>Conroy, WB8YTH</td>
</tr>
<tr>
<td>Washington 7216</td>
<td>Los Ang. 9046</td>
<td></td>
<td>Los Angeles 47.5</td>
<td>Nahmens, W6FFT</td>
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<td>Washington 47.5</td>
<td>Gruble, W7RT</td>
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<td>So. Minnesota 42.5</td>
<td>Beck, W6REJ</td>
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<tr>
<td>Michigan 7967</td>
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<td>Nebraska 42.5</td>
<td>Wallace, W6FM</td>
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<tr>
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<td>Illinois 28.5</td>
<td>Hinds, W5APR</td>
</tr>
<tr>
<td>W. Va. 5932</td>
<td>K. N. J. +12</td>
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<td>West Virginia 22.5</td>
<td>Ellis, W5CTI</td>
</tr>
<tr>
<td>N. J. 25.5</td>
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<td>No. J. 22.5</td>
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</tr>
<tr>
<td>Arkansas 20.5</td>
<td>Mich. +9</td>
<td></td>
<td>Arkansas 22.5</td>
<td>Veite, W5ABE</td>
</tr>
</tbody>
</table>

**MICHIGAN** is the Banner Section for the January—February reporting month. Washington makes a new high “gain in traffic reports” with a +79, breaking L. A.’s previous +71 record. Los Angeles goes over the 200 mark in traffic reports for the third consecutive month, while Washington and Michigan are in the “over 100” class. Southern Minnesota leads all Sections in volume of traffic. The following Sections lead all other Sections in their Divisions, order of listing showing relative standing of their different Divisions: San Francisco, Michigan, Eastern Pennsylvania, Southern Minnesota, Connecticut, Northern New Jersey, Washington, Kansas, Virginia, Ontario, Southern Texas, Tennessee, Colorado, Georgia—S. C—Cuba. Again we report a new National high in “number of stations reporting traffic.” During the January 16th—February 15th month, #810 stations originated 28,081; delivered 25,874; released 103,940; total 157,904 (92.4% rel.) (71.4 m.p.s.).

*Section A.R.R.L. membership shown by ( ) % reporting traffic: Va. 40.5%, Wash. 35.8%, Los Ang. 30.4%, Mo. 29%, Mich. 20.6%, Ore. 20%, Wis. 15.9%, Conn. 16.4%, Ohio 9.1%, Ill. 8.5%.*
BRASS POUNDERS' LEAGUE

(JANUARY 16TH-FEBRUARY 16TH)

<table>
<thead>
<tr>
<th>Call</th>
<th>Org.</th>
<th>Del.</th>
<th>Del.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>W6M1</td>
<td>258</td>
<td>150</td>
<td>96</td>
<td>354</td>
</tr>
<tr>
<td>W6AOR</td>
<td>196</td>
<td>96</td>
<td>96</td>
<td>388</td>
</tr>
<tr>
<td>W6GTO</td>
<td>80</td>
<td>24</td>
<td>14</td>
<td>118</td>
</tr>
<tr>
<td>W6WKF</td>
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<td>96</td>
<td>96</td>
<td>388</td>
</tr>
<tr>
<td>W6GDI</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>216</td>
</tr>
<tr>
<td>W6F11</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>180</td>
</tr>
<tr>
<td>W6WKM</td>
<td>96</td>
<td>96</td>
<td>96</td>
<td>388</td>
</tr>
<tr>
<td>W6AFY</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>144</td>
</tr>
<tr>
<td>W6M9</td>
<td>18</td>
<td>96</td>
<td>192</td>
<td>296</td>
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<td>W6FL2</td>
<td>18</td>
<td>96</td>
<td>192</td>
<td>296</td>
</tr>
<tr>
<td>W6G1D</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>144</td>
</tr>
</tbody>
</table>

These stations "make" the NPL with totals of 500 or over. Many "rate" extra credit for one hundred or more deliveries. The following make the NPL for delivering 100 or more messages; the number of deliveries are as follows: Delivers.(count)

W6BXT: 250 W6W1: 150 W6KQ: 119 W6BAH: 107
W6WKF: 121 W6KQ: 119 W6BAH: 107
W6M1: 168 W6W1: 150 W6KQ: 119 W6BAH: 107
W6BXT: 121 W6W1: 150 W6KQ: 119 W6BAH: 107
W6AFY: 96 W6W1: 150 W6KQ: 119 W6BAH: 107
W6M9: 18 W6W1: 150 W6KQ: 119 W6BAH: 107

A total of 500 or more, or just 100 or more deliveries will place you in line for a D.P.L. Membership with reliable stations. Take steps to handle the traffic that you have for D.P.L. membership.

* Listing for these stations for December-January

because they accepted and delivered a garbled message. Make 'em come clean with good solid messages, and in proper standard form, every part of the message complete and accurate, gang!

Some messages arrive with no number, others with no call of city, name of origin, and very often an address. No matter how important the subject is, it is still self-explanatory - but taking a message for your files with no number, city of origin, call, date and address and garbled text is absolutely unanswerable. A fellow that accepts such a message certainly is not helping make traffic handling better, but worse.

Listen on the band you wish to work, cover it carefully, pick out your stations and then set forth to hook with them. If you hear a clear signal and good operator calling them, try irrationally answer. Less other splashing and more listening* will clear up a good number of problems that confront the amateur today in the traffic handling game.

Have a message file - keep it properly - in case you are called upon to trace a message that possibly went through your hands, you shall be able to give accurate information. Routing your traffic is as important as anything else in your station. Use the traffic nets when possible, make reliable schedules, keep them and refuse to handle garbled traffic by all means.

By creating better traffic we shall be placing our reputation higher in Public Service. The Amateur has ceased to be placed in the background - but today he ranks foremost as one of the United States greatest assets. Keep it that way - Our Traffic Public Service!

FLASH! First two-way QSO across the Atlantic on 1715-500k. band in nine years! At 1:46 0.m. E.S.T., Feb. 19, 1953, P. S. Rand, W1AGA, North Pomfret, Vt., USA, worked GFO (A. J. E. Forsyth, Newport, Monmouthshire, Great Britain). FB, OMA!! Hall to W1DBM.

The tests continue and we hope to record more details of across-the-pond reception and two-way working on this band very soon. Watch the heart count on this 160-meter band. Listen and send in the DX ones!

W1DBM's antenna consists of two 290-foot lengths of wire, one running east, and one running south, about 35 feet high, with current feed at the center. Input at W1DBM throughout December was 200 watts, while W1CLA and W1CPE were using 65 and 130 watts respectively.

ELECTION NOTICES

To all A.R.R.L. Members residing in the Sections listed below:

The following notice is supplemental to the notice issued the week of January 15, 1953. The present incumbent continues to hold his official position and carry on the work of the Section subject, of course, to the filing of proper nominating petitions and to the holding of an election by ballot or as may be necessary. Petitions must be in Hartford on or before noon of the dates specified.

Due to resignations in the New York City and Long Island, Northern Texas, North Carolina and Quebec Sections nominating petitions are hereby solicited for the office of Section Manager and Assistant Manager where no valid nominating petitions have been received from A.R.R.L. members residing in the different Sections in response to our previous notices, the closing dates for receipt of nominating petitions are set forth, the dates given here with, in the absence of nominating petitions from Members of a Section, the present incumbent continues to hold his official position and carry on the work of the Section subject, of course, to the filing of proper nominating petitions and to the holding of an election by ballot or as may be necessary. Petitions must be in Hartford on or before noon of the dates specified.

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Maine    

May 15, 1933  John W. Singleton  May 25, 1933

West -

June 15, 1933  C. S. Hoffman, Jr.  June 20, 1933

Virginia -

July 10, 1933  Ernest Mendosa  July 15, 1933

Arkansas -

July 10, 1933  Harry Ginsberg  July 15, 1933

D. C. -

July 10, 1933  Jack Wagenaeler  July 15, 1933

1. You are hereby notified that an election for an A.R.R.L. Section Communications Manager for the next two-year term of office is about to be held in each of those Sections in accordance with the provisions of By-laws 5, 6, and 7. You are, therefore, invited to vote in this election.

2. The elections will take place in the different Sections immediately after the closing date for receipt of nominating petitions as given on the form of nomination suggested. The ballots mailed from Headquarters will list the names of all eligible candidates nominated for the next two-year term of office by A.R.R.L. members residing in the Sections concerned. Ballots will be mailed to members in the closing date specified above, for receipt of nominating petitions. There is no limit on the number of petitions that may be submitted.

3. Nominating petitions from the Sections named are hereby solicited. Five or more A.R.R.L. members residing in any Section have the privilege of nominating any member of the League as a candidate for the position of Communications Manager for this Section for the next two-year term of office.

(Place and date)

Communications Manager: A.R.R.L.
38 La Salle Road, West Hartford, Conn.

We, the undersigned members of the A.R.R.L. residing in the above Section of the Atlantic Division, hereby nominate, as candidate for election Communications Manager for this Section for the next two-year term of office,

(Place and date)

F. E. Handy, Communications Manager

ATLANTIC DIVISION

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA - SCM, Harry Ginsberg, W3NY. W3BAY, 5. L. Hudson, RM. W3BWT, E. W. Darne, Chief RM. W3CJS and W3CQS are new ORS. W3BYE was killed Feb. 11th - age 17. W3CFW and 13 other 1.7-m. 'phones QSOed each other, and sent flowers. The Institute of Radio Conference held their monthly meeting at Johns Hopkins University Feb. 16th, with 85 present. The Frederick Amateur Radio Association have given 100% c.c. The Westminster Amateur Radio Club entered the SCM at a recent meeting. The Washington Radio Club continued their QSOing. W3DG and W3HR are awaiting an Experimental Station license. District of Columbia: W3CXL continues to lead the Section. W3BWT will be at the helm to insure 100% delivery in c.c. traffic. W3CJS reports W3CJZ, W3CPL, W3CJF, W3CJP, W3CJX continue to report. W3CDQ is all set to help in G.P. W3AJL is chasing bugs out of new c.c. rig. Maryland: W3CDQ leads Maryland. W3CJS made BPL. W3BBX reports for first time. W3CTD divides time between traffic and ragchewing. W3LA gets over 50% efficiency out of his 1 kw rig. W3AVD is awaiting ORS test. W3SM wants to be our 'phone OBS. W3BHE awaits ox paper ed. The paper is now op at W3SN. Delaware. W3BAY is hitting the old strade. W3CPG is working the gang on 1.7-7 phone.

Traffic: W3CXL 1546 BW7 635 CJS 240 BAK 591 CDG 387 CQS 240 SN 195 AOS 142 BXX 69 CTD 56 LA 50 ADO 49 BGI 43 CMS 56 BRS 24 BCS 21 CIV 14 BHR 201 BAK 4 NA 4 WN 2.

SOUTHERN NEW JERSEY - SCM, Gedney M. Rigor, W3QI - A new radio club was formed in Wildwood with W3AXY, prof., W3BYR, vice-prof., W3BVO, secy., and W3CWF, trena. W3UT is high man this month. The South Jersey Radio Association has awarded their trophy to W3QJ, W3BHE and W3BVI received honorable mention. W3ASG uncovered many illegal stations. W3BVI reports off-frequency stations. W3AVJ applied for ORS. W3RI is RM in Trenton. W3VQ engaged in ragchewing. W3VAN was in two days. W3BQT and W3BF are DXing. First report from W3ZJAW, W3BLY and W3BTL. W3ANK is showing activity. W3BDL is in local contests.

W3PC is trying 14-mc. 'phone. W3BBD finished new transmitter. C. H. Thrasher forgot his call on report card. Following are reported as active: W3CRC, AWJ, L.T., ARK, JGK, AGJ, TH, CB, AIU, CCT, CBP, W8CFZ, W8CBL, ATL, ATI, AUM, RAC, RBC, RCM, W3DAD, WMWI, W3ANZ, W3UJ, W3BCC, W3GCR, W3QUS, W3CHU, W3BEQ's totals continue to grow. W3AEI, W3CHU and W3WJF report via radiogram. The University of Pennsylvania is on the air with W3ABT. W3CCL and W3AXL make BPL. W3BRI is to be ORS. W3GFT got telephone call from Chicago when he missed schedule with station there. W3MC is QRL YLs. W3BSK, Beeck College, Harrisburg, reports. W3OK will soon have OW QRM. W3CHL reports in person. W3ANA's antenna blew down. W3BFE just missed BPL. W3BOL reports from Florida. W3ARK is putting a new transmitter and building power supply. W3BKX has been QRL A.A.R.S.

Traffic: W3CFA 66 BK7Q 1735 AHG 316 ABT 82 AVI 1 CJA 11 AJS 20 CHU 75 FY 28 CL 549 BHR 300 BHC 9 QP 14 BXG 32 UY 27 CM 361 HIS 125 ADX 16 BRR 3 TX 24 TLL 5 AME 475 BY 2071 QL 246 CQG 144 CTT 32 AAX 5 BYL 514 BXK 8 EME 5 CRS 12 ABK 217 BF 43 AZT 8. W8JW 176 CFF 172 AUE 22 PLA 74 EOH 107.

WESTERN NEW YORK - SCM, John Hopkins, W8DAM. W8BVP - New OBS; W8TX, W8CYC. W8BEQ's totals continue to grow. W8AEI, W8CHU and W8WJF report via radiogram. The University of Pennsylvania is on the air with W3ABT. W3CCL and W3AXL make BPL. W3BRI is to be ORS. W3GFT got telephone call from Chicago when he missed schedule with station there. W3MC is QRL YLs. W3BSK, Beeck College, Harrisburg, reports. W3OK will soon have OW QRM. W3CHL reports in person. W3ANA's antenna blew down. W3BFE just missed BPL. W3BOL reports from Florida. W3ARK is putting a new transmitter and building power supply. W3BKX has been QRL A.A.R.S.

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WESTERN PENNSYLVANIA — SCM, C. H. Grossarth, W9CGU — W9ER reports the highest total report for ages. W9YA has been appointed Patrol Leader for the Pennsylvania Storm Patrol. W9HJG makes the BEP. W9KSG and W9LPG make the DX. W9EQG has a new call. W9RDL has Pittsburgh schedule. W9CCD reports for W9FPPD. W9EIS says, "Skip kissing skulls easy crazy." WM RAJJE is available for portable call for Sea Scout boat. W9CGU was honored with a visit by W9BCG and W9DYL. W9CIR is rebuilding. W9STN-Q is unhappy in the light bill! W9BSS is on frequency. W9BPQ was on 7 mc. W9AVY is awaiting good fishing WX. W9QYH is trying to schedule Y2NP.

Traffic: W9ER 2251 YA 652 HOG 577 DK2 204 EDG 160 CUG 133 CCD 126 EIS 125 A8C 92 FKU 75 FPD 57 DYL 43 VI-GN 44 FRA 42 DLG 49 YF 29 CMP 28 AZG-DLV 18 EL8 10 DRO-CFR 10 DVZ 9 ABG-HAD 4 EJIZ 3 FCV 2.

CENTRAL DIVISION

KENTUCKY — SCM, Carl L. Pfimm. W9QX — W9KEG leads state. RM W9BJA is active. W9BAZ gets new job selling whiskey. W9JOY and W9CIM are new ORS. W9USA and W9BV are new members of World's Fair ops at W9USA. W9IVF works break-in. W9EM operates under W9LPG. W9JQO has new ORS. RM W9BWJ bristles with activities. W9HAX is QRM. W9MM schedules HSLFQ. W9DHK is U.S.N.R. W9JQO will hold a ham/est on April 8th and 9th. Registration booths are set up at W9JQO's place. W9ERS is active in hamming. W9ERH applies for ORS. W9AUH, W9BKH, W9CMR, W9EMZ, W9IF, W9KKT, W9MDT will be on ORS. W9MRS moves to Lexington. W9KCL is interested in ORS work. W9ORT will help W9JQO with State Net. W9ABW is QRL work. W9EXL is on Scout Net. W9CRZ has a ham. W9FEI contacts a few 'phones before going to work. W9JJO has a DX rig ready to go. W9CIR is going strong on traffic. W9LPI leads state. W9CIN is on frequency. W9BPQ was on 7 mc. W9KCL is on frequency. W9EMZ is reduced to low power. W9JJO is on 14 mc. W9AAI and W9MQ get on for a few QSOs. W9DOD is interested in ORS.

Traffic: W9VS 1304 ENH 806 FRA 512 BTT 387 DOU 367 TVF 537 FCW 398 IYA 247 CIV 211 YJO 176 IEP 133 SWN 126 DNO 116 HKC 111 ORS 67 DJG 61 KAL 60 AMO 56 DDE-FO 53 JUC 41 ALB-APY-CZL 35 IFP 34 AFN 31 HOS 28 FHE-HQ 27 KER 26 ACE 22 HUX 20 AND-ILG-IWZ 19 AVB 18 ERD-JUS 17 OHU-HU 16 LFI 15 EMN-JKN-JSL 11 FGD-JLK 10 KVQ 9 SG 8 FON-DOU-HPK-PK 7 BRX-DCI-GDI 6 ABP-BBR-BYZ-FTEX-LBK-FCN 5 DJG-JTP 4 CEO-HEQ-HQF 3 HVA-RO 2 DIN 1. W9GNY is on QSO with W9USA. District No. 1: W9QGVL is using low power. W9FSS has visit from W9KXX and W9KQB. W9EXY is QRMing the YLA. W9AFW is building rack-panel for 50 mc. W9UBI worked a Mexican. W9K'W's neighbor was gone. W9BSQ is an addition in WIL. District No. 2: W9EGG leads section in Traffic. W9HTZ got 150 points in ORS Party. W9EQH handled QRRT from Minn. to Ind. W9AMB-PAT is going after traffic. W9ERH is coming to life. W9JJO will have '52 c.q. W9ERZ is building a new schedule with W9USA. W9MM is making SS receiver. W9JJO is laying for DX. W9FXH will soon be QRMing VKA. W9JVD has new power supply. W9GVF is back from Cali. W9DUG finds DX good. W9KTY is trying hand at traffic. W9EMF is 56-mo. pioneer. W9JJO is QRMing. W9DUG is detailed with W9JJO. W9MM is building rack-panel for 56 mc. W9JJO is about ready to get ORS. W9DUG is building low-power phone. W9FV spent time on 14 mc. W9KNS is on 7 mc. W9IBH is on 14 mc. W9AVM is on 7 mc.

Traffic: W9HJA 718 AUX 694 CVG 302 BSH 181 1DP 185 FAA 128 AYT 128 PXZ 126 KRG 102 CPG 63 ZY 62 HMS 63 EY 50 DXV 52 JNU 45 EQQ-DIT 40 FSB 29 AMB-DRO 28 IQW-HDP 25 IFP-FAV 23 JCH 21 YL 19 JCW 18 EQK-CFC 15 EDF 30 EDH-DA 14 HFA-DNU 11 RH 18 PFT 8 GPP 4 FBC 3 FQL 2 W9IBH is QRMing the traffic. W9KS and W9HIJ is waiting for new license. W9GNA changed QRA. W9KFB and W9KQB are waiting for new license. W9FSS has visit from W9KXX and W9KQB. W9EXY is QRMing the YLA. W9AFW is building rack-panel for 50 mc. W9UBI worked a Mexican. W9K'W's neighbor was gone. W9BSQ is an addition in WIL. District No. 2: W9EGG leads section in Traffic. W9HTZ got 150 points in ORS Party. W9EQH handled QRRT from Minn. to Ind. W9AMB-PAT is going after traffic. W9ERH is coming to life. W9JJO will have '52 c.q. W9ERZ is building a new schedule with W9USA. W9MM is making SS receiver. W9JJO is laying for DX. W9FXH will soon be QRMing VKA. W9JVD has new power supply. W9GVF is back from Cali. W9DUG finds DX good. W9KTY is trying hand at traffic. W9EMF is 56-mo. pioneer. W9JJO is QRMing. W9DUG is detailed with W9JJO. W9MM is building rack-panel for 56 mc. W9JJO is about ready to get ORS. W9DUG is building low-power phone. W9FV spent time on 14 mc. W9KNS is on 7 mc. W9IBH is on 14 mc. W9AVM is on 7 mc.

Huckley Short Wave Radio Assn. officers: WSBSR, pres.; W8PGY, vice-pres.; W8FCG, treas.; W8SDKG, secy. W8BSR and W8CHP report School and orchestra QRM WSBSK. W8DSZ has pair 100-watt tubes. W8FVQ, HW8QV, W8ZJC have new receiver at W8FSA. W8DSWY reports by radio. Hello, W8QCG. W8DGW by radio with W8DSI, reports W8WEW. W8UW is A.A.R.S. NC6. W8FO reports nice total for his portable W8SHG. RM W8BCH leads his district. District No. 3: New officers W8LQ, leads the state, District No. 4: New officers W8FSV, vice-pres.; W8PQF, treas.; W8RLO, secy., reports for W8FQY. EJ, DIA, CIT, GCV, AAG, AHW, NOS. W8PO reports nice total for his portable W8SHG. CEJ, BKV, FFM. W8GUC schedules 'em! W8GRN wants W8BVG for prestige for a diamond! W8NQ is cutting jig-saw puzzles! W8FQV is advertising to trade his station and ports. W8JSS is in Bowdle, Minn. W8AIR sold c.c. job to W8IIA. W8CSW works A.A.R.S. Central Y.M.C.A. W8QW the BPL. W8HCN is after 'em. W8SLF is QYL. W8FWT is experimenting. W9HDX is building transmitter with e.c. oscillator. W9WQ works both coast on 1.7-mc. 'phone. W9GWR has trouble with bauder! W9BHZ reports via 'radio. W9ELW is after DX. W9JMV is in Rochester, Minn. W9KZL is in Paynesville gang. W9EHI and W9CDV are on QST'• opr. ticket. W9GWR is doing well at W9HBA is knocking down F'B DX. W9GPB is going country on '71A. W9EHI is keeping schedules. W9GWR has trouble with 'radio. W9KZL is in Rochester, Minn. W9FKL is awaiting renewal. W9BLZ is in Rochester, Minn. W9FKL is awaiting renewal. W9EHI is keeping schedules. W9GWR is doing well at W9HBA is knocking down F'B DX. W9GPB is going country on '71A. W9EHI is keeping schedules. W9GWR has trouble with bauder!
second. W4AFM is a close second. W4AFM has extra first ticket. W4FK changed QRA. W44BY is RMlc, U.S.N.R. W4AMW is proud going to make the BPL or bust!

83 BBT 54 FR 48 RO 46 BQK 24 OV 18 MU-ARP 15 IPN 12 DJW 5 BAR 15 BBL 6 JJL 18 KKQ 5 KJT 3 <·veived in ham radio. W50DQ is pounding at W5AQY. W500L is a new call, W4BRP, for the West Tenn. Teachers

Traffic: W4HA leads the traffic ranks. W4AFM is a close second. W4AFM has extra first ticket. W4FK changed QRA. W44BY is RMlc, U.S.N.R. W4AMW is proud going to make the BPL or bust!

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C.C. RIA: Perking, W2CBB had 100 deliveries. W2ASG changed receiver. W2AHO in all run fifty-fifty at W2QM. W2AZV is working on the schedules 99.99%. W2BPJ is trying 56 mc. W2EGA is W2DRG put new tubes in receiver. W2DQW runs W2CHK built seven rigs in one month. W2LB tried to report enroute on the R.R. W2CY enjoys visiting BC.

Traffic: W2CBB 555 WP 355 DBQ 266 CHK 125 ASV 117 ABO 106 BGO-DQW 79 BPJ 49 DQK 46 QM 42 DUP 38 LB 35 FP 34 BV 30 DJY 25 ASG 22 CYX 117 AHO 106 BGO-DQW 79 BPJ 49 DQK 46 QM 42 ELK 9 DXL 7 AWT-AQL 6 COO-DJO-EEF 5 BMH-DUP 38 LB 35 PF 34 BVL 30 DJY 25 ASG 22 CYX-AAK-HY 5PU-9EFJ-9CNL, have consolidated. W9BWP will soon be atatioUB. W9GBP leads the state in traffic. W9CYV is reported Wichita Club activity. W9EMB is working with C.C. W9AKG is operating a skating rink in Ark.

Traffic: W9DRN 585 FRO 295 BHC 245 AWF 200 1CV 197 128 HSN 127 EFE 122 JOL 112 CVK 100 KCR 78 COA 63 KDO 56 DEB 43 BTG 36 KTG 32 CFN 28 BE 26 LFN-GHA 25 BYM 24 EKI. 22 LMB 21 JVC 20 BY 19 EY 18 AW 12 BY-CSV-FN 11 IQV 10 HWW 9 FET 7 BGL-JQI-AWE 6 CVY 4 JPD 4 ORC 1 CYP 2 KRG 113 CGL 20 UF 56.

MISSOURI - SCM, C. R. Cannady, W9BEG - W9MA and W9FTA. RM's. W9BMA leads the Section with W9FWV the usual second. W9HGR remained the leader for the year's standing in ACTIVITY CUP RACE. W9CCZ is using 7 and 5 mc. W9LJN and W9WEF use 1.89 mc. W9HVN has 50-watt o.e. rig. W9GUE, W9CIL, and W9U1Z are 1.69-mc. 'phone. W9U1L is QRL. W9HAF is trying 3.9-mc. 'phone. W9FAB is pulling extra first into use. W9SBR is now in St. Louis. W9KIR takes 7 mc. W9AEF reports good DX. W9KIX in St. Louis. W9EHN has o.e. 50-watt. W9LEQ is new St. Louis ham. W9AP7 is on 7 and 14 mc. W9FTA reports hamfest on Feb. 11th with 72 in attendance. New club, "Mound City Radio Amateurs," has been organized. W9AC applies for code license. W9FRE is state director for the American Legion Feb. 12th. W9IDB and W9KXM are new stations. W9GBP leads the state in traffic. W9CYY enjoyed visit with W8BTN, W9FRC put in p.p. 46a. W901 reports for Winfield Radio Club. He and Anson Carr, ex-SPU-9EFJ-9CNL, have consolidated. W9WPW will soon be on and W9KGM is operating a skate rink in Ark. City. W9AWP reports Wichita Club activity. W9EMB handles traffic from the restaurant. W9LBF has no time for schedules. W9GWO is having less transmitter trouble. W9DEL is returning to the fold. W9DFM uses 45E in parallel. W9DWO is trying to get the '45E to kick a fifty. W9JBY blew some '81s. W9BCY attended meetings of the WARC. W9IWK is using the P.P. ex-W9AYE gave a talk on Tele­vision at WARC. W9AXK has returned to Oklahoma City. W9DSD blew high voltage transformer. The Loether brothers of W9EQAQ have returned to Frederica. An official emblem has been adopted by W9EQAQ from a drawing by W9GAY. W9CET is trying 14-mc. 'phone. KVRG is preparing for the big convention this fall. Save your pennies!

Traffic: W9DRN 585 FRO 295 BHC 245 AWF 200 1CV 197 128 HSN 127 EFE 122 JOL 112 CVK 100 KCR 78 COA 63 KDO 56 DEB 43 BTG 36 KTG 32 CFN 28 BE 26 LFN-GHA 25 BYM 24 EKI. 22 LMB 21 JVC 20 BY 19 EY 18 AW 12 BY-CSV-FN 11 IQV 10 HWW 9 FET 7 BGL-JQI-AWE 6 CVY 4 JPD 4 ORC 1 CYP 2 KRG 113 CGL 20 UF 56.

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Traffic: WIAKF 204 BFP 72 BZD 54 DXH-BD 41 CBW 33 BAS 9 ERI 8 BCK 2.

MAINE — SCM, J. W. Singleton, WICDX — The SCM leads this month. WIOF handled 450 messages in the last month. WICDX reports that a QRL USNR, WIEF is building new outlet. WIDHH plays checkers with WIDRZ via 1750-ke. phone. WIAFR and WIDSO are in together. WIBNC and WICFP are new ORS. WICFP and WICFG now have jobs. WIAQW has VL QRM, WIDRZ reports. WIAFX wants schedule with Aroostook. WICRP will be at it again soon. WIFOW is a new ham. WIAQL and WIQH have been on 7 me. WIVF has scheduled WIBNL for three months. WIBCL and WICHR are new ORS. WICLP and WICFQ are on 3.5 me. WIDRA is DX hunting. WIDRI is QSL. WIFBZ is on 3.5 me. WIDBM is building a crystal oven. WICBA has a new crystal on 3700 ke. WIDCP and WIDCF are new ORS. WICIP and WICFG are new ORS. WIAVE3.

Traffic: WICDX 214 BOF 195 ATO 194 CFG 152 EF 118 DEH 108 APR 99 BNC 57 CIP 46 DZ 40 AX 4 MYC 27 CRP 23 OR 34 BEU-DEQ 33 PB-BOXX 32 AEP 29 CIP 19 TO 14 DGIJ 10 BSO 8 AXX 7 BZ 3 CBU 2 BAJ.

RHODE ISLAND — SCM, N. H. Miller, WICAE — WICAB is trying to make a good Navy. WIAK, ESD, GBM, CMQ, DCP, EBD, and DOP are QSL. WIDAZ and WIDQY Oregon are DX hunters. WIFBZ handles a few. WIDAH wants ORS. WIBQD is unemployed. WIBUX is building a c.q. job. WIBOP, AXS, BML, and EOF are on with Navy drills. WICGO is using WIEU's spare '10. WIAFL has three schedules. WIAQW is QRL. WIAUW is c.q. on 3.5-me. band. WIAKJ has been rebuilding. WIBOS is building a c.q. job. WIAUW, ELU, and BAD bust up the air in Pawtucket. Traffic: WIASZ 26 EFO 14 CGO 11 DDT 10 BTP 10.

CONNECTICUT — SCM, Fred A. Ellis, Jr., WICTI — WICJD puts on an interesting broadcast every Sunday at 1300. WICAQ and WDCMO are ON. WICBA and WICHA are not W2EOA. WICMQ's total, 215 were QSP on 56 me. WICAQ and WICLM are second and third high. WICMQ has been working '70' on 3.9-mo. 'phone. WIBNM is getting PAC reports on 7 me. WICPN has c.q. on 3.5-mc. DX. WIMD works with a pair of '45•. WICQM is handling traffic with 'phone. WICO is building a crystal oven. WICBA has a new crystal on 3700 ke. WICDF, WICZE, and WICAQ are on 1.7-mo. 'phone. WICAQ has a new rig. WIAJH is building new outfits. WIAK and WIBOL are on 6 me. WIBOT is on between service calls. WICPQ has '10 TONT. WIAL is on with high power. WICO is using a pair of '45•. WICQ is "The Daniel Boone of the Yankee Network." WILD is a new 8 pound YL op. WIDBE expects to go c.w. WICQP is DX hunting. WIDBB wants to be on DX. WIDO is burning up the telephones down Plymouth way with his stray RF. The South Shore Radio Club is planning a hamfest. The North Shore gang are assisting the SCM with their Official Broadcast. WIBQD is DX hunting. WIBQD has a '04A. WIDO does a lot of rag chewing. WIAQG had a long spell of rebuilding. WEEE is represented this month by WIER. WIFB is suffering from OM QRM. WICWF is talking phone. WIAKJ has a new rig. WIVA is getting PAC reports on 7 me. WIDBJ is DX hunting. WIDAQ is DX hunting. WIAK and WIDBJ are DX hunters. WIDQJ reports Boston to Canada. WIBU is DX hunting. WIMEN has c.q. going PB. WIBUN is on 56 me. WIMEM and WIBFZ are on 1.7-mo. 'phone. WIBO is a 90° mop working. WIBEL is getting PAC reports on 7 me. WICSM has c.q. on 7 me. WICZQ has low power. WIBA has the bug again. WIAG moved from Reading. WIDSR is a new man. WICLQ has gone Shakespeare. WICM has realized his dream of a 50-watter. The Boston Legal Observer is a number of transmitters on the air with WBTS, WIDU is studying commercial transmitters. WIBBB's transmitter is hidden in the cellar disguised as a pile of ashes. The SCM is the guest of the ham club at Mass. Radio School at their 2nd meeting. WIAJA and WIBO may be heard jabbering away on 3.9-mo. phone. WIDNL has been working '70' on 3.9-mo. phone. WICFD built a single signal job. WIBON may be heard on 3.9-mo. phones.


WESTERN MASSACHUSETTS — SCM, Earl G. Hawthorn, WIASY-RB — WIAJD leads the section. WIAZJF just found out there were traffic prizes! WICBX heard HC1FG and KYF on 5.5 me. WIAUI is working 3.5-me. DX. WIDM has dynamon against OM. WIFON is looking for afternoon schedules. The SOM has the bug again. WIBNL is DX hunting. WIAUQ is new. WIBLO is using a pair of '45•. WICQM is building the 56-me. outfit. WIFWQ is National a.o. SW3. WIERU worked 7 me. WIBAV works good DX on 14 me. WIBSD has new receiver. WIBQC lost all but one schedule. WIBLO says traffic will be larger next month. WIBMM is building new outlet. WIAUK is DX hunting. WIAFL has been DX hunting.


EASTERN MASSACHUSETTS — SCM, Joseph A. Mullen, WIAF — Of WIAFS's total, 215 were QSP on 56 me. WIAF and WILM are second and third high. WIAF has 30 transmitters; WILM has 25. WIFL has schedule with INR. WIAFL is DX hunting. WIAFK has been working "70' on 3.9-mo. 'phone. WIBNQ is building a crystal oven. WICLA has a new crystal on 3700 kc. WIAE reports traffic. Those interested in a 55-me. traffic net please get in touch with WIEFPW at Milidale. ExWIBQIIC says to the Vermont news last month was working on an '04A job for DX Contest. WIDRZ and WIDNM are DX hunting. WIDBRZ and WIDNB are back at work. WIDBRZ is DX hunting. WIDKL is on between service calls. WICPQ has '10 TONT. WIAL is on with high power. WICO is using a pair of '45•. WICQ is "The Daniel Boone of the Yankee Network." WILD has a new 8 pound YL op. WIDBE expects to go c.w. WICQP is DX hunting. WIDBB wants to be on DX. WIDO is burning up the telephones down Plymouth way with his stray RF. The South Shore Radio Club is planning a hamfest. The North Shore gang are assisting the SCM with their Official Broadcast. WIBQD is DX hunting. WIBQD has a '04A. WIDO does a lot of rag chewing. WIAQG had a long spell of rebuilding. WEEE is represented this month by WIER. WIFB is suffering from OM QRM. WICWF is talking phone. WIAKJ has a new rig. WIVA is getting PAC reports on 7 me. WIBO is a 90° mop working. WIBEL is getting PAC reports on 7 me. WICSM has c.q. on 7 me. WICZQ has low power. WIBA has the bug again. WIAG moved from Reading. WIDSR is a new man. WICLQ has gone Shakespeare. WICM has realized his dream of a 50-watter. The Boston Legal Observer is a number of transmitters on the air with WBTS, WIDU is studying commercial transmitters. WIBBB's transmitter is hidden in the cellar disguised as a pile of ashes. The SCM is the guest of the ham club at Mass. Radio School at their 2nd meeting. WIAJA and WIBO may be heard jabbering away on 3.9-mo. phone. WIDNL has been working '70' on 3.9-mo. phone. WICFD built a single signal job. WIBON may be heard on 3.9-mo. phones.

Traffic: W1UN 1046 FEX 554 BAC 141 DNG 75 APK 46 DMI 43 CCM 31 BEO 30 EZT 21 EES 6 BMN 5 IP-AUY 4 EWF-BGK-SK 3.

NORTHWESTERN DIVISION

OREGON — SCM, Raymond L. Cummins, W7ABZ — W7ACF keeps on leading in traffic. W7AJD, W7AJX, and W7AWI and YF, had with the SCM and YF. W7BDN puts 250 watts into couple 10s. W7BKV has MOPA. W7BDJ heard 30-mc. phone. W7CGX will soon be on 30. W7AIJ reports eight times to get on 14 mc. W7KR is batting the .32. W7BEE is on 1.7-mc. 'phone. W7BMW is Pendleton Club station. W7BDK visited Pendleton Club. W7DP reports station. W7EO is on 10. W7EJ, W7EN and W7EN are going strong on 3.9-mc. 'phone. W7AKW, W7CIL and W7CAB report through W7BGW. W7MF has been working DX. W7ANB is new portable. W7BDU and W7BRU wouldn't buy a grid lens at the fire, haulin. W7BQF is on 1.7-mc. 'phone. W7QW melted the modulator tube. W7KL Club station. W7BDK added 1.7-mc. 'phone. W7AIJY has key clicks. W7AZZ is entertained the SOM. W7BEK has a pair of '52s. His mother, W7AGT, is active. W7QX's wife is an operator at KGE. W7BCF is on 3-mc. W7CLX returns with traffic. W7CQG asks if VE5 is foreign DX. W7ABD had some notable visitors. W7CMK is in hospital with route traffic. W7CIC is awaiting call letters for Seattle. W7RIV is a better ham than a woodchopper. W7BFR is on 7 and 3.5 me. W7BKS new ORS. W7WY had a twenty-hour continuous QSO. W7BDG is on 119 operator at KGE. W7BVT, W7APS is on 7 and 3.5 me. W7BEK reports 185 QSOs in one month. W7RT reports contacting 170 different stations in 186 QSOs in month. W7AJ continues receiving traffic during selective RSQ. W7AKD is sending reports from W7AND. W7BTV's new rig is being built. W7EX uses 300 watts. W7AHW and W7CUD are new men. W7BGL burns the ether with '46s. W7BVY plans 1.7-mc. 'phone. W7CLH has c.c. receiver. W7ATA has new 2,50 watt. W7BQG powers 'phone. W7CJS, JZ, BEY, CPK and K7ALT are among visitors at W7RT. W7BEX reports on Walla Walla activity. W7BSX schedules are punctual. W7CBA are sole reporters from Wenatchee. W7AHF operates W7CRH. W7AFS is hitting the VKs in line for ORS. The Spokane gang have a livewire traffic. W7AGT is disgusted with the way some lids are operating. W7BGO works east regularly. New station is W7CSS. W7BBD has condenser mike trouble. W7ANY is planning 'phone. W7BMV has YLitis. W7BBP visited W7CPK. W7ALZ has 50-watter. W7BBQ is awaiting license renewal. W7ALE, W7BWS and W7CHZ are in line for ORS. W7WY is building s.s. super.

Traffic: W7AYE 26 CSW 15 JULY 15 ATN 9 BLT 6 BRD 4 59 2 118 BEY 3 8 W7BMN

WASHINGTON — SCM, John P. Gruble, W7RT — 70 reports gained over last month! W7IQG and W7BHH lead. W7JJ makes BPL. W7TUU is parked on a certain BC station's harmonic. W7AZP is new station. W7CSA is on schedule. W7WTG and W7EF are new receivers. W7QAP is experimenting. W7ALY and W7ATN are on 56 mc. W7BAR is building s.s. super.

Traffic: W7AYE 26 CSW 15 JULY 15 ATN 9 BLT 6 BRD 4 59 2 118 BEY 3 8 W7BMN
SAN JOAQUIN VALLEY — SCM, G. H. Lavender, W6DN — W6BRV staged a royal comeback. W6AME is building a high power transmitter for W6COJ. W6FFU got promoted in U.S.N.R. W6FYN is now ORS. W6GKE reports troubles. W6GEZ moved to Porterville. W6BIL is improving transmitter from W6GFK. W6TE is fine, W6TCH has 1.7-mc. phone. W6CCW is doing FB work. W6YBK works all bands. W6BIK is located at Camp 27, State Highway, and is snowbound. W6AHO-W6YE steps up with FB report. W6ENA and W6EXI have good traffic schedule. W6QW was on 10-day cruise. W6DVI has new 902. W6HBI reports much snow. W6CVA wants traffic. W6FBH is a proud father. W6XBD joined A.A.R.S. W6FAN is taking the fatal step. W6AOZ got his transmitter neutralized. W6GSF has new n.s. super. W6DZEN and W6FIA transmitted a board checker game for the Stockton American Legion and the Firth, Idaho, Checker teams. W6FAG made successful trip to the KL.

Traffic: W6BRV 508 AHO/YE 306 BRR 233 EXH 232 EFTU 86 GKE 64 DZN-ENA 63 AME 57 CVA 46 BUV 42 DVI 39 AOZ 24 DQJ 22 CYY 21 BRL 19 DQJ 18 DQJ 15 EQX 14 GXE 13 FYM 12 CVT 9 ASV 6 EYT 5 FBR 4 GCF-GQK 2 GUZ I.

PACIFIC DIVISION

PHILIPPINES — Acting SCM, Newton E. Thompson, W6BFH — New c.c. transmitters at K6 and W4 on 3670 kc. W6CVW gets R9 from J, KA, VK and ZL. W6CEC-W6BCC-W6BVN are moving to new quarters W6BFH is a proud father. W6BXB is clearing to K6. W6DSZ worked all continents but Europe. W6BBF wants the Santa Cruz gang to route K6 traffic through him. W6QW has six schedules on 1.7-mc. phone.


SAN FRANCISCO — SCM, Byron Goodman, W6BFN — Taking Electrical Engineering course in Los Angeles. W6BIL is chief of staff. W6DUX-W6DKX (W5RM-W5ZZZ) has Altoona, Penna., as his new headquarters. W6BFJ and W6BFN are planning on taking radio course with KOY. W6DRE finds c.c. '52 satisfactory. W6DOW, W6DRE and W6ANS have consolidated. W6BMS has a YL! W6EDR has been sending the OB. W6HYA is servicing BCL sets. W6BY is reported on the verge of matrimony. W6BZC has been off due to bad cold. W6DZD and W6BSF. W6DCT (W6EGM) has good luck with DX.


ARIZONA — SCM, Ernest Mendosa, W6BFJ — W6CDU, ZZBC, and FQZ make the BPL. W6BRV schedules W6ER and W6NG. W6GBN works W1, W2, W3 and W4 on 3070 kc. W6CWV gets R9 from J, KA, VK and ZL. W6ECG-W6CO-CB-W6BBN are moving to new QRA. W6QF is pushing an '03A. W6AAY has c.c. W6CLL sold TRF receiver to W6EUT. W6EUT has a couple 40-foot masts. W6FIP will reenlist in the Army, April 1st. W6FEN is taking Electrical Engineering course in Los Angeles. W6DZZ is chief of staff. W6WHS-W6DKX (W5RM-W5ZZZ) has Altoona, Penna., as his new headquarters. W6BFJ and W6BFN are planning on taking radio course with KOY. W6DRE finds c.c. '52 satisfactory. W6DOW, W6DRE and W6ANS have consolidated. W6BMS has a YL! W6EDR has been sending the OB. W6HYA is servicing BCL sets. W6BY is reported on the verge of matrimony. W6BZC has been off due to bad cold. W6DZD and W6BSF. W6DCT (W6EGM) has good luck with DX.
station license. W6ANO is heard again. W6CKF has
much success on 56 mc. W6EKU and W6AEK work
two-way duplex. W6AAD promises activity. W6EBP
and W6PKXX constructed a public address system.
W6DVJ has new QSL cards. W6GFS is QRL Telephone
Company. W6HEU is rebuilding. W6Z5Z is portable at
Phoenix. Traffic: W6CDU 455 FZQ 213 ZZZO 101 BRI 30 GBN
25 CVF 21 CEC 18 BLP 16 GFE 15 DJH 12 BVM 8
QSP 2 BYD 1.
NEVADA ~ SCM, Kenton L. Ramsey, W6EAD ~
W6EAD is high in traffic. W6AJP is QRL U.S.N.R.
W6AXX is QRL school. W6GYX is proving to be a traf-
fic hound. W6F0U is rebuilding. W6BYS is building con-
denser mike. W6UC is on 1.7-mc. 'phone. W6GLG is
building rig with PP '10s. W6FMS is QRL broadcast
Phoenix. Building rig with PP '10s. W6FMS is QRL
broadcast. Bogue of W6NF is QRL U.S.N.R. W6DEP is erecting
rig at W6BGN. W6DNF is back on air. W6DMF is study-
ing full blast! New receiver at W6ACL. W6FMK re-
ceived card from ZS5TJ. W6AM built ½-k.w. c.c. rig for
playing checkers with YL W7NH. W6CJZ got RS
QSL. Traffic: W6AUS 28 AJP 50 AXX 34 GYX 24 FUO
19 CE 18 DSD 12 EAD 11 ORF 8 GTJR 3 GZH 1.
LOS ANGELES ~ SCM, Hal E. Nahmens, W6HT ~
Our Section was awarded the honor of being the most
progressive Section in the A.R.R.L. for the year 1922.
Conrats, gang. This is our last report as your SCM, and
it is not without a certain amount of regret that I turn
over the reins of the Section to your new SCM, Mr.
Francis B. Martin, W6AG. Our Section has grown
in the same rapid fashion that the Section will soar to
higher heights! New reportes: W6BBW. W6CID, W6AEF, and W6HBS. Los Angeles County: W6ETL. W6EDW, W6BFU, W6EKZ and W6AQR make the
BPL ! Regular schedules keep W6FGT at the top.
W6GXM qualified for ORS. W6BVZ gets big kick out
of 14 mc. W6ATJB is coming to front as a traffic man.
B7,F
W6BERL is accumulating parts for "·· rig. W6ERL is
craving an '03A. W6DJM and W6KA are on 1.9-mc.
phone. W6DKT is on 14 mc. W6FUS has unorthodox
activity. W6DQN . . . F. W6BBR is new reporter. W6AMO is pre-
ting ready for DX contest. W6BHV is taking out ORS.
W6DQG-DZI-BHP-BCF 1.
HAWAII--- SCM, C. D. Slaten, K6COG --· Several of
OARC members gave hand to defending forces of Hawaii
during recent Army-Navy maneuvers, including K6AIU,
K6AGI, K6AO, K6BIH and K6ENE. K6AGI has been
presid.; K6AGI. secy. and treas. K6GUA is handling good
traffic. The Hilo Club is going strong. New officers of OARC:
K6BIH, K6AHP and D9 18th country. W8GB is
W6DQG-DZI-BHP-BCF 1.
WHERE YOUR MEMBERS ARE HEAR_.
Traffic: W6ODU 435 FZQ 213 ZZZO 101 BRI 30 GBN
25 CVF 21 CEC 18 BLP 16 GFE 15 DJH 12 BVM 8
QSP 2 BYD 1.
SAN DIEGO ~ SC..M, H. A. Ambler, W6EOP ~
W6BMC leads the Section. W6GUV is second high.
W6DQN has six schedules. W6EFK is an ORS. W6BUG
leaves in July for China. W6FQU worked K6, W6EOP is on
'Trunk Line ', P. ' W6BBR is new reporter, W6AMO is get-
ing ready for DX contest. W6BHU is taking out ORS.
W6WJY is back. W6FQI and W6GNI all have new rigs.
W6EIP is on 'phone. W6DAZ is QRL work. W6BEY
has transmitter in the radio store. W6BAB is A.A.R.
W6AJG climbs poles in day time. W6CKN is heard regu-
larly. The Imperial Valley Radio Club are planning on a
Booth at mid-winter fair at El Centro. W6CTR reports
via radiophone. W6CTP lost antenna in wind storm.
W6CF8 received new ORS-A.R.R.L. pin. W6YD, EOP.
DNW, DNS, GCT and DIJ met at W6DOL.
W6AOR has transmitter at 745 DTS-DEME 10. CNO.
FEX-DFO-FMI-CHI-EV-GM-JFN-QM-BGW-EFQ-
DQG-DZI-BHP-BCF 1. W7ZKK 40.
ROANOKE DIVISION
WHERE YOUR MEMBERS ARE HEAR_.
Traffic: W6WJY is back. W6FQI and W6GNI all have new rigs.
W6EIP is on 'phone. W6DAZ is QRL work. W6BEY
has transmitter in the radio store. W6BAB is A.A.R.
W6AJG climbs poles in day time. W6CKN is heard regu-
larly. The Imperial Valley Radio Club are planning on a
Booth at mid-winter fair at El Centro. W6CTR reports
via radiophone. W6CTP lost antenna in wind storm.
W6CF8 received new ORS-A.R.R.L. pin. W6YD, EOP.
DNW, DNS, GCT and DIJ met at W6DOL.
W6AOR has transmitter at 745 DTS-DEME 10. CNO.
FEX-DFO-FMI-CHI-EV-GM-JFN-QM-BGW-EFQ-
DQG-DZI-BHP-BCF 1. W7ZKK 40.

46

QST for
W8XBG may be heard from WSGKK. If you want to QSO schedules at W4AOE. 28-mc. experimentation at W4ZH. sets. W4GW is going strong on U.S.N.R. W4BMG and days from 11:00 a.m. to 2:00 p.m. on about 3700 kc.

W8CHP is changing to c.w. W8CZ and W8EIK announces a QSO party for the Division. WSELJ teitur Radio Club boasts 35 members. W8IB is going on with U.S.N.R. W8EIP's wife died. W8HSA reports WSAAI going c.c. on 3.5 me.


ROCKY MOUNTAIN DIVISION

U TAH-WYOMING — SCM, C. R. Miller, W6DEJ — Utah: W6BTX reports several schedules. Good totals at W6AFN and W6DEU. YL retards activity at W6EXL. W6QQR rebuilt. W6QOU just out because of school. Wyoming: W7ARE-WCT1 sends 73 from Buringame, Calif. Over six feet snow at WATAW.

Traffic: W6DFJ 148 DEU 55 AFN 50 BTX 41 EXL 26 GFJ 18 FAE-DTB 6 GQJ 1 W7COV 1 COH 10.

COLORADO — SCM, R. B. Tarbell, W7ATE — At the last meeting of new club of Denver officers were chosen: Earl Haupt, pres.; W9BYK, vice-pres.; Bill Gundlach, easy-treas.; W9RTO, sergeant-at-arms. W9ESA sends usual traffic. Licensing to thehetto this month.


TEXAS— SCM, W. E. Lett, W5KCI — Texas: W5RTP is in on the first flight recently. W6ATO has failed schedules. YL is on 3.9-mc. 'phone. W9FDP is going strong. W9CLX will be on with '52s.
is doing good O.O. work. W4WS sends high total. W4BOO is new ORS-OB. W4BSI is working plenty. W4BAM hopes for more traffic. W4BOG is new ORS. W4BAM is making a reputation as a traffic man. Reports indicate that W4ANS' call is being bootlegged.


W4BSH reports via W2CC. K4RJ is on 7 me. K4BSE is new ham. K4BU is building in Pensacola.

K4BU reports OBS schedules. W5CAL is working plenty. W4BAM is building peddling electricity. W5QA blasts the air. W5SP has given up hopes of W5KX WA4. W5PCP has been rebuit. W5RJ has been in the "5 and 10" district. W5TT is handling good traffic. W5BCW still pounds them out. W5SE has a new total. W5AEF is back in Oklahoma. W5BOP burned up a plate transformer. W5TR is QRL A.A.R.S. W5BET rebuilt specific ham receivers. W5QW and W5BP have busy schedules. W5BU-CEZ sends 204 BLM 214 ALH 120 BDX 75 BOE 46 AXA 33 AYF 6 AVN 4 ALE 3 AND 3.

Traffic: W5BMM and W5CEZ tease this month. W5BPM sends nice total. W5AFD installed new rig. W5BDDX is directional Qs. W5AKX is back in Oklahoma. W5AEF is on 7125 c.c. W5AEW-W5BSX has incorporated with W5AF, W5WCR rebuilt. W5BOP burned up a plate transformer, W5TR is QRL A.A.R.S. W5BET rebuilt specific ham receivers. W5QW and W5BP have busy schedules.

Traffic: W5BPU-CZ 1366 MN 158 BKE 145 YH 101 YL 60 BNJ 60 PF 24 BUV 214 DS 12 BKY 7 BYQ 4 ES 20 ON 3 BHO 9.

NORTHERN TEXAS -- SCM, Ray L. Taylor, W5RU -- W5ARE is in the section. W5AUL has a good reputation. W5ARS advises that the W.F.A.R. will hold its annual banquet, April 18th, at 8 p.m. W5BQG is making a come-back. W5ANU is doing mighty fine work. W5IT is handling good traffic. W5BCW still pounds them out. W5SE has a new total. W5AEF is back in Oklahoma. W5BOP burned up a plate transformer. W5TR is QRL A.A.R.S. W5BET rebuilt specific ham receivers.
Traffic: VE3BHU 276 JUL 215 ARS 185 H3Q 100 ANU 112 IT 97 BWO 69 AOX 60 BNF 48 ABG 48 AFQ 23 OFA 19 ARX 15 CIH 79 AID 22 IA 64 CAM 22 AERV 5 NW 4.

NEW MEXICO — SCM, Jerry Quinn, Jr., VE3AWU — W3CP0 has new MOPA. VE3CR will be with us soon. VE3CPY is QRL VE3AUX has been QRL service shop. VE3AU7 is QRL work. VE3AZM says 1.7-mc. ‘phone is the berries. VE3ZU has a few schedules.


CANADA

MARITIME DIVISION

NOVA SCOTIA — SCM, A. M. Crowell, VE1DQ — VE1ER is our new RM. VE1BV has gone in for DX. Join in on the Sunday afternoon 3.5-mc. c.w. rag-chaw parties. VE1EP hooked FM11H and K3A. VE1ER landed CM2MG. VE1AX will soon have Class B ‘phone. VE1AS is giving 14 mc. a try. VE1EK works 7 and 14 mc. VE1DM is making the old 14 mc. ‘phone kick out. VE3AWU reports new VOs active; VE3A, SP, SW, SYY, SAB, SS, S.


ONTARIO DIVISION

ONTARIO — SCM, H. W. Bishop, VE3DB — Winners of the Ontario QSO Party were VE3GV7, first; VE3CE2, second. QSO Parties will be held on the last Sunday of each month; stations worked within 15 miles radius will not be counted. Ontario RMs are: Chief RM, VE3GT; RM3, VE3MMA, VE3PM, VE3OP, VE3PIR. VE3PS is looking forward to traffic handling. VE3GY is rebuilding his shop. VE3BAU wants to QSO announcers and ops. VE3CXX blew his dry electrolyte. VE3LY is ORS applicant. VE3FW is thinking of QRO. VE3QGS wants a pal for a 75-watt. VE3QGK got out FB. VE3GHU is in Toronto. VE3H3N is making use of GT and HA schedule. VE3DXL is coming to life. VE3Z0 schedules VE3WF. VE3LY works west. VE3BO is new ORS. VE3BU lacks power. VE3BT is getting interested in traffic. VE3QD and VE3MG are ORS. VE3HI will soon be on. VE3GLA sticks to 7 mc. VE3GJ3 has MOPA. VE3H3U is heard daily. VE3GIC has been QRL flu. VE3GPG is op. at CKOC. VE3CT is back on 3.5 mc. VE3QNO is never on ‘phone, but gets “lotsa” ‘phone cards. HARA is showing pep. VE3EKM schedules Grimsby and St. Catharines. VE3BB is a “regusted” with low power. VE3EHE says the SCM is “on dry” to raise. VE3G0 reports for first time. VE3XR works alternately with VE3SA. VE3H3J is handling traffic for Naval Amateur Net. VE3HI has 1.6-mc. ‘phone. VE3NIX gets good results. VE3QLQ gets but little DX. VE3RPH and VE3FVY are new ones. VE3H3C is rebuilding. VE3QML promises a visit to London. VE3EUV has good time on 1.75-mc. ‘phone. VE3OS is making his move. VE3G3U has new QT receiver. VE3G00 worked his first DX. VE3LNL has high-power craze. VE3FM is QRL serving drugs to sick hams. VE3HRL is QRL other activities. VE3BF is studying 50 mc. VE3L6T ran afeol of Buffalo cops! VE3CMSQ flamed a few. VE3WM is looking for new location. VE3HKC has good snack. VE3GCG has new rig. VE3FDP has Class B modulated ‘phone. VE3E1L is on 3.9-mc. ‘phone. VE3BHB tries ‘phone. VE3DWM jumped into the SCM unexpectedly! Anyone wanting schedules with Border cities, get in touch with RM VE3WEX. VE3QK gets out FB. VE3WJ has a new alias, “Slutteclock.” VE3ABC is QSO Parties will be held on new traffic work. VE3BFY loaned his transmitter to Frontier Radio Club. VE3BBW is QRL CROK. VE3CC is QRL starting cars in cold WX. VE3OH is rebuilding to handle traffic. Everybody in Border cities is busy on Convention plans and hopes to see all VEs on May 19-20-21, 1933. VE3L7 worked a G5.


QUEBEC DIVISION

QUEBEC — Acting SCM, J. C. Stadelier, VE2AP — The South Shore Radio Club had a fine hamfest. VE2CA’S MS score in BERW might give him the cup. VE2EU is training a second operator. Welcome to VE2GK! VE3FE2 has a 211 in last stage. VE3SAV has January QST receiver. VE3EM and VE2DXX keep ‘phone band busy. VE3BC will soon move more to better QRA. VE2AB reports for Quebec region. VE2BF and VE3CU are on 3.5-mc. ‘phone. VE3DB, VE2DD and VE2AB are rebuilding. VE3BY is on 14 mc. VE3QG and VE2DWW are active on c.w. VE3GM is a newcomer. VE3CS worked Africa and Europe. VE2BE wants to know if there is anything to call to his attention for the Directors’ meeting.

Traffic: VE3FYD 7 DR 12 BO 16 CX 49 FE 61 AP 97 CO 12 BG 15 BB 47.

VANALTA DIVISION

ALBERTA — SCM, C. H. Harris, VE4HM — VE4BV is contemplating c.c. VE4A0Q is on steady. VE4DNT is busy buying wheat. VE4EA works all W districts on 14-mc. ‘phone. VE4EAU, W5AIC is out of hospital. VE4ER is back on air. VE4FR has new super. VE4G7T works the old station. VE4QY has numerous schedules. VE4HH is second op at VE4LE. VE4IZZ has lots DX. VE4QH helped start ham club at Vegreville. VE4HL has qndy note. VE4BH and VE4PA1 are taking VE4HLY is new ham. VE4GQD is on 7 mc. VE4IT and VE4GZ sold station. VE4H5V is on occasionally. VE4J1 is opr. at CFAC. VE4E QE is QRL school. VE4IQ is building ‘phone. VE4JD is building set for Navy. VE4IJ3 has MOPA. VE4IJKQ is 1.7-mc. ‘phone. VE4IGC has new outfit. VE4MG and VE4KQ hope to be on soon. VE4C5Y and VE4CUQ are rebuilding.

Traffic: VE4DIT 416 JQ 46 DQ 41 GY-I5 15 HQ 10 CY 8 EZ 7 JK 4 EQ 3 DX 2.

BRITISH COLUMBIA — SCM, J. K. Cavalsky, VE5AL — VE5K9Q leads traffic. VE5G9Q is rebuilding. VE5QAL QSOed the Canadian Genl. Mgr. VE5BV has reduced power. VE5GS and VE5AI are increasing theirs. VE5GR is using ‘phone. VE5EX is looking for place to hang skywire. Portable of VE5BHR was heard in Germany. VE5CT is on his way to Vancouver. VE5D9Q has new heap. VE5EZ is DXing. VE5IY schedules Vancouver.

Traffic: VE5H1P 199 PG 48 GT 44 EC 10 HO 15 AC 50 AL 19 FE 27 1S 8 BZ 9 EQ 22 CG 4 G3 3 EB 4 DF 84 JO 2.

PRAIRIE DIVISION

MANITOBA — SCM, Rex Strong. VE4GC — VE4AG holds traffic banner. VE4FPT wins M W E A DX Trophy. VE4IC is ex 4DL. Heard on 3.5 mc.: VE4XH and VE4ARC, VE4AI1 and VE4A4 are active. VE4IP is building c.q. rig. VE4BG handled QRL. VE4C6P has swell signal. VE4DXX schedules east and west. VE4KN will be back soon. VE4G6C plans four band operation. VE4AWK believes the early bird works the DX. VE4ALL is at Nor­ way House with Western Canada Airways. VE4MW applies for ORS. VE4IF was heard. VE4NX schedules Toronto. VE4CG1 wins the Cummings Award for best round station.

Traffic: VE4MW 32 CI 27 FT 26 GC 18 DK 12 LN AN 11 KU 2 FP-CS 1.

SASKATEWAN — SCM, W. Skaife, VE4EL — The Moose Jaw Club is doing nicely. Welcome to VE4MT. VE4BB reports improvement on 7 mc. VE4KA is DXing. VE4XH has hung a bottle on the wall. VE4MA and VE4MB are doing nicely. VE4IV, VE4FD, and VE4J4 are pounding away. VE4BF works V6s and Z6s. VE4JI has p.d.c. note. VE4EZ-VE4BG ia oven for traffic, CQ

Traffic: VE4MW 58 PG 48 GT 44 EC 10 HO 15 AC 50 AL 19 FE 27 1S 8 BZ 9 EQ 22 CG 4 G3 3 EB 4 DF 84 JO 2.
I.A.R.U. NEWS

Devoted to the interests and activities of the
INTERNATIONAL AMATEUR RADIO UNION

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

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

MEMBER SOCIETIES

American Radio Relay League
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Nederlandse-Indische Vereeniging voor Internationaal Radioamateurisme
Deutscher Amateur Sende-und-Empfanges Dienst
Exponenterende Danske Radioamatorer
Liga Mexicana de Radio Experimentadores
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Reseau Belge
Reseau Emitters Français
South African Radio Relay League
Swedish Radioamateurklubben
Union de Radioamateurs Españoles
Union Schwede Kurzwellen Amateur
Wireless Institute of Australia
Wireless Society of Ireland

Conducted by Clinton B. DeSoto

Official:

Two changes, nominally in name alone, have been made in the I.A.R.U. membership. In Spain, the merger during January of the Asociacion de Radio Experimentalistas and the Red Española into the new common society, the Union de Radioamadores Españoles, has cleared up the disturbed condition existing in that country for some time. The vote for fusion was unanimous among the amateurs of Spain; for this and other reasons the new Union is regarded as the successor to the Asociacion in I.A.R.U. membership, the change being accepted as in name only. The president of the new society is Angel Uriarte, EAR12; vice-president, Jose Merce, EAR219; secretary, Francisco Bellon, EAR110. The new headquarters is at Jacometrezco 1, Madrid; the mail address Apartado 262, Madrid.

In Poland, a gradual but notable change in the general character of the Lwowski Klub Krotkofalowcow since the time of its acceptance into I.A.R.U. membership in 1930, as a result of which the Klub become merely one of a number of regional groups subordinate to the parent national society, the Polski Zwiazek Krotkofalowcow, brought about the decision to consider the P.Z.K. the present Polish member, without direct action other than in the name of change. The headquarters address of the P.Z.K. is Sukadewich 23 m 14, Warsaw.

In the world of business, mergers of amateur radio societies seem to be occurring regularly, resulting in the strengthening of organized amateur radio in the countries concerned, and the world in general, as well. In Czechoslovakia, the two competing amateur societies, the S.K.E.C. and the K.V.A.C., recently merged into one common society, the Ceskoslovenstvi Amateri Vystraci. In the December Calendar of the Union, the C.A.V. was proposed for membership from Czechoslovakia. If existing members accept this proposal, it means that united national amateur action has again functioned to strengthen amateur radio internationally.

Not yet formally proposed, the application of the Latvijas Radio biedrība, as Union member from Latvia, is now in correspondence and being given formal consideration.

Two amendments to the I.A.R.U. Constitution have been voted by the membership, as announced officially in the December Calendar. Section 6 of Article IV was amended to provide for the submission of annual reports by member-societies not later than December 15th of each year. Section a of Article IV was amended to provide that actions of the Union, except amendments to the Constitution, are be determined by a majority of those members voting within five months after the date of the proposal, provided at least half the membership has voted. As a part of this amendment, Section 3 of Article II was amended to conform.

QSL:
The following corrections to the QSL Bureau list beginning on page 55, February QST, are to be noted:

In New Zealand, the annual change in headquarters location has caused the transfer of QSL activities from the N.Z.A.R.T. at Box 25, Ashburton, to: N.Z.A.R.T., Box 517, Dunedin, New Zealand.

The N.V.I.R.'s QSL address, as distinguished from the headquarters address, is not Post Box 150, The Hague, but remains: N.V.I.R., Post Box 400, Rotterdam, Netherlands.

One addition to be made to the list, that of a QSL Bureau for Lithuania (LY, and old RY)
being conducted by the Lietuvos Radio Mege jai. The address: L.R.M., Post Box 100, Kaunas, Lietuva (Lithuania).

The Czechoslovakian QSL address has been changed from the C.A.V. headquarters address, Post Box 551, Praha II, to that of QSL Manager Alois Weirauch, and is as follows: C.A.V., Post Box 69, Praha II, Czechoslovakia.

The confused address given for Argentina in February QST, the result of a mistake in last minute change via inter-office mail, should be disregarded and the following address used: Radio Club del Argentino, Rivadavia 2170, Buenos Aires, Argentina.

Kenneth S. J. Rancombe, given as the QSL Bureau for Iraq, has left that country and is now variously reported as in Egypt or Palestine; in the latter country he uses the call ZC6KR. Cards for Iraq can be sent either through the R.S.G.B., or to L. A. C. Hamblin, Y66HT, Wireless Section, R.A.F., Shaibah, Basra, Iraq.

New stations seem to be springing up in northern Africa every week or so. Some of the new calls are FF8SUD, FS9DJJ (formerly UH1AA), CNSYBQ (Casablanca), and CN5RYO. It is impossible to keep up with the QRA's, which are usually secret and divulged only in confidence, anyway, but cards can generally be sent via FS8RJ with fair assurance of their being delivered. The address is: Guy Grossin, Villa St. Jean, Savigny-sur-Aisne (Ardennes), France.

Tests:

Quite a number of 28-mc. tests are being and will be run off during coming months. In France, the Section Experimentale of the R.E.F. is conducting a series of tests during the week-ends of March and April. The test periods run from 1300 G.C.T. Saturdays to 2400 G.C.T. Sundays. North American stations are transmitting the first ten minutes in each even hour, other continents picking up succeeding periods in westerly rotation. This allows for ten minutes transmission and 50 minutes listening on each continent. The odd hours are reserved for attempts at two-way communication.

Baron P. D. Hoyningen-Huene, AC2BHJ, Tientsin, China, is conducting receiving tests on this band for 15 minutes in every two-hour period from 0200 G.C.T. to 1400 G.C.T., every month on the 15th, beginning March. AC2BHJ is also doing special listening on the 3.5-mc. band, in an effort to hear unusual DX. His receiving equipment is excellent, and he promises to QSL all stations heard. The time scheduled for this listening will be from 0830 to 0900 G.C.T., the 15th of every month.

G5FV, W2ACN, W2ALW, W6FPU and W2JN are among the stations actively testing on 28 mc. at the present time, although but little in the way of noteworthy results has so far been accomplished. Another active group is the Associated Radio Amateurs of New South Wales, Australia, of whom VK2FQ is a leader.

Plans for the R.S.G.B.'s 3.5-mc. tests during the first two week-ends in April are now being completed, reports J. Clarricoats, Secretary of the R.S.G.B. International contacts on this band during the tests are earnestly desired, so stand by, 3500-ke. DX'ers.

General:

From the N.R.R.L., via cable: LMZ, the Norwegian Riiser-Larsen Antarctic Expedition, will work on approximately 10 mc., listen for amateurs in the 14-mc. band . . . . No work will be done on 21.4 meters, as has been stated elsewhere . . . . The latest list from the S.R.A.L. shows 203 licensed stations in Finland—a splendid showing . . . . One by one the VK DX-men fall . . . . This time it's VK3JU, joined in double harness recently . . . . Interest in amateur radio in Sweden has increased enormously, says Erik Malmberg, Secretary of the S.S.A. . . . . A constant succession of tests is being run, stations are improving technically, numbers are growing . . . . The key to it all was the opening of the 3.5- and 1.75-mc. bands . . . . V08MC is no more . . . . Rev. W. P. Stoyles was forced to abandon his well-known Newfoundland station upon his transfer to Mount St. Francis, St. Johns . . . . During February all Mexican telegraph operators went on a nationwide strike . . . . The Mexican Government promptly requested Mexican amateurs to handle the emergency traffic, radios F. Castro Herrera, Secretary of the L.M.R.E . . . . The idea of an International Field Day, originally advanced by the R.S.G.B. in connection with their own national field day June 10th and 11th, is gaining momentum . . . . With the A.R.R.L. and other societies announcing supplementary plans for their members, full international cooperation in making such a project a success is assured.
Bouquets

2522 Norfolk Road, Cleveland Heights, Ohio
Editor, QST:

December, nineteen thirty-two, another radio station is prepared to join the ranks of the "thirty thousand." Equipped with the most modern apparatus an erratic pocketbook can provide, it has nothing of interest to divulge.

Nevertheless, the builder and owner of this station, four short months ago knew as little of radio as the next man. Hearing in a school course a little of the phenomena of wireless, he journeyed to a near-by bookstore. Armed with numerous well-known radio magazines, he returned home thinking he had obtained all there was worth obtaining concerning radio station construction. But he was sadly disappointed. His progress was slow and stumbling, until by chance he fell upon the real article — QST.

Since then, advances have been rapid, until the final climax has been reached, and next month he is prepared to pass his operator's license exam.

The point of this letter, as it may be clearly deduced, is in praise of QST. True praise as the writer has fully realized is hard to get no matter how much the individuals are deserving it, and it is with this thought that he is complimenting QST and its supporting Handbook, without which no person can expect to reap full benefits of amateur radio. Suggested as a new simile for 1933: As superior as QST is over its competitors.

— Frank Fretter White

Carelessness

20 N. Ashland Blvd., Chicago, Ill.
Editor, QST:

A recent newspaper item telling of the death of a youth who was tinkering with a supposedly harmless radio set brought to mind the oft repeated warnings in our magazine, QST, about the hazards underlying the handling of radio equipment. I wonder if the boys really realize the danger they are exposed to whenever they enter the operating room?

At present I am attending a college of physicians, and the results of the burns and shocks to which we hams so often pay little attention impress me greatly. By virtue of human nature we are possessed with a variable amount of carelessness, but why can't we use the old cranium and minimize these dangers?

Some individuals can safely pass quite a bit of current through their bodies and show no ill effects; others "jump" when a "B" battery gets mixed up with their anatomies. The reasons are, first: the conductivity of the skin, which depends upon moisture, oils and thickness of the skin, and second: the subject's irritability to electrical stimulation.

We therefore see that many factors are involved in the extent of our injuries. Of course the frequency is important. Sixty cycles, for instance, does not recognize the skin effect law to a great extent and has a knack of penetrating the deeper layers.

The results of shock may be injury of tissue, both muscular and that of the organs, or it may involve nerve tissue. Sometimes a severe shock may injure remote structures. Electrical burns are sometimes deep and painful, requiring long recuperation, and leave nasty scar tissue.

Not so long ago, I had the "pleasure" of utilizing my own six-foot one as an instrument of power consumption with a potential energy of five hundred volts. Outside of a good shaking up I was still able to copy ten w.p.m. Not long after, I worked over a chap who came in contact with the same voltage and equipment, but who was unfortunate enough to have received the full force of the current fatally. It is the old story of difference in contact.

The following rules may be of some help toward a neater station, greater safety and many years of DX:

1. Ground every piece of cable with voltage in it.
2. Install a double-pole line cut-out switch and use it! Although there may be no current flowing to the transformer, contact with the line and a ground connection may cause death. Single-pole switches may leave the "hot" side just where you don't want it.
3. Ground all power and filament transformers. Insulation leakage may put the plate voltage on the frame and the entire works above ground.
4. If using the "one hand" method for testing where the power cannot be shut off be sure the feet and rest of the body are away from grounds.
5. Keep the high-voltage power supply off the floor and rest the feet on something more comfortable.
6. Last but not least, high voltage utilities lines absorb r.f. and also become peeeved when they see a No. 14 antenna wire striving to attain higher spheres.

— Ed. Johnstone, W2CBM
Send for your copy!

This 56 page book gives complete information on 26 different Western Electric vacuum tubes for use with amateur radio telephone transmitting equipments.

It describes the various uses of each type—gives tables of electrical characteristics with associated notes—contains drawings showing shape, internal construction and outside dimensions of each tube—diagrams indicating where the various leads appear in the base prongs or other connections—gives code numbers of Western Electric or similar type sockets with which tubes may be used.

All Western Electric tubes are made to Bell Telephone standards of precision. That’s your assurance of quality and long life. Send the coupon for your copy of this valuable book.

GRAYBAR ELECTRIC CO.,
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Gentlemen: Please send me the 56 page book describing Western Electric Vacuum Tubes for use with amateur radio telephone transmitting equipments.

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THE NEW NATIONAL

THE FB-7

Designed specifically for the amateur, but embodying professional design details, this exceptional receiver offers a number of unusual refinements. Strictly single-control tuning and front-of-panel coil changing for swift and convenient operation — full vision dial and panel-mounted calibration curves for fast logging — efficient — compact — and inexpensive.

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We invite you to inspect the FB-7 and to compare it with any other H. F. Receiver on the market. We are confident of your approval, for by every nicety of design and mark of fine craftsmanship, the FB-7 reveals its heritage from the "AGS."

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Single Signal Reception, the new and important advance in communication engineering, has proved to require X-cut resonator crystals of special selection for best results. Some crystals — either X or Y cut — which are perfectly satisfactory oscillators may still be quite useless as resonators or "mechanical filters."

NATIONAL Company laboratories have developed special equipment for the selection of crystals to meet the peculiar requirements of Single Signal Reception. All FB-X Single Signal receivers are furnished complete with such crystals.

The FB-X is the standard FB-7 to which has been added the crystal (in dust-proof plug-in holder), the adjustable phasing condenser, the split rotor selectivity control variable condenser, the "series-parallel-out" switch, and the knob-adjusted beat frequency control, so as to provide for true Single Signal operation.

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PRECISION
RADIO PRODUCTS
FB-7 RECEIVERS

FB-7 SPECIFICATIONS

THE CIRCUIT
- 7 tubes: one 57, two 24's, two 58's, one 56, and one 59.
- Electron Coupled Oscillators.
- Separate Oscillator for CW beat frequency giving "semi-single signal" or "offset" tuning.
- High efficiency Litz-wound IF Transformers.
- Class A Power Pentode Output.
- R-39 Coil Forms with grounded metal shield handles.
- Bend Spread Coils available for 20, 40, 80, and 160 meter amateur bands, each covering 100 full dial divisions.
- Standard coils for continuous coverage from 20 MC to 1500 KC.
- No frequency drift.
- Double Shielding.
- May be used with either conventional antenna or "doublet" with transposed transmission-line lead-in.

THE CHASSIS
- Single Control Tuning. (No trimmers.)
- Full Vision Dial with SFL 270° condensers.
- Front-of-panel coil changing, without disturbing shielding.
- CW Beat Oscillator Switch on panel.
- Front of Panel Switch for "cutting" B voltages during transmission.
- Phone Jack, connecting ahead of final audio stage.
- Calibrated Volume control located under tuning knob, for one hand operation.
- All fixed adjustments, such as I. F. peaking, accessible from top without removal of chassis from cabinet.

SINGLE SIGNAL OPERATION
- Both the circuit and the chassis layout have been designed for ready addition of mechanical filter (quartz crystal) when desired for full "single signal" operation.

THE POWER SUPPLY
- May be operated from a filament transformer and B batteries, the new National 5887 low price Power Supply, or the standard National 5880 Power Supply (as used with the SW-3). R. C. A. Licensed.

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For those who prefer the Analyzer Method, the Weston Service Kit containing Oscillator, Tubechecker and Analyzer is recommended.

Rotten Signals: How to Cure Them

(Continued from page 15)

Some Other Things

Even after these four causes of instability have been given the right kind of attention, it is still possible to have a modulated and chirpy signal if the r.f. is not kept where it belongs. Chokes sometimes do not do their duty as they should, allowing r.f. to get into the power supply, which certainly is not helpful. Sectional slot-wound chokes, sectional honeycombs, and plain single-layer chokes all are good when they have low distributed capacity and have no resonance spots near the amateur bands. A neon bulb is still about as good as ever for testing a choke. If the bulb glows when touched to the supposedly "cold" side of the choke some experimenting is in order. A poor choke decreases the efficiency as well as sometimes being responsible for a poor note.

But r.f. in the power supply is not always a sign of a poor choke. Direct pick-up of r.f. from the oscillator circuit is often more than just a possibility. Power supply leads to the tube should be kept out of the r.f. field as far as possible. Shielding the leads when they come near the oscillator is worth while if the shielding is connected back to the filament-center-tap at the filament by-pass condensers. A ground on the center-tap is advisable if it is short. At 14,000 kc., however, a ground lead sometimes does more harm than good if it approaches a quarter wave in length — a matter of but sixteen feet. The only way to find out is to try it, using the neon bulb and monitor.

Under certain conditions there may be no sign of r.f. in the supply leads with the antenna disconnected, but it appears immediately when the oscillator is delivering power. This is the result of pick-up from the coupling system. It is particularly likely to occur with parallel feeder tuning because of the high voltage at the transmitter end of the feeders with that tuning system. If this happens, move the supply leads out of the field of the antenna coil and feeders or add enough length to the feeders so that series tuning can be used. With series tuning the voltage at the coupling coil and at the transmitter end of the feeders will be low and the electrostatic coupling consequently less.

This brings up the subject of antenna coupling. The right degree of coupling is almost automatically settled if the tube is not going to be overloaded. Simply use the loosest coupling that will make the tube draw its rated plate current with the antenna or feeders tuned to resonance. The character of the note and the keying should be checked in the monitor when the antenna coupling is being adjusted. So long as the monitor says the note is good the coupling may be increased and more power taken from oscillator, for after all it is the signal that is the important thing and not the method of getting it. Put the antenna coil at the "cold" end of the tank for close coupling. Take as much out of the set as you can — but use the monitor constantly.

Wir bitten darum, sich auf QST zu berufen — Sie weisen sich dadurch aus und unterstützen dadurch gleichzeitig QST.
After all, it's **PERFORMANCE** that "brings home the bacon"

Not long ago, in a contest participated in by a host of competent and keen minded Amateurs, a contest which involved the best and most efficient Amateur radio equipment that ingenuity could devise, it was a "CARDWELL condenser" transmitter that won the highest award—the Hoover Cup—for the best DX communication. The winner had many makes of condensers to choose from but he took no chances—he used CARDWELLS and "brought home the bacon."

Unless you are a CARDWELL user you cannot fully appreciate the value of CARDWELL condensers until you have compared them, point for point, and for performance with other types that appear to be similar, but if you believe that the judgment of the best Engineers and the foremost Amateurs is worth something, mark this: You will find them almost universally recommending the CARDWELL.

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(QST-4-33)
(Books sent on approval in U. S. and Canada only.)

POWER SUPPLY

The remaining member of our four transmitter divisions is the power supply. A good power supply - well filtered, and having good regulation - is always desirable with any transmitter; it is absolutely essential with a self-excited set. A poorly-filtered supply cannot possibly produce a d.c. note. And if the regulation is poor the signal is bound to be chirpy, because in spite of all the things we may do to improve the dynamic stability of the oscillator there will still be some frequency change with changes in plate voltage.

Use a separate filament transformer so that keying will not affect the filament voltage. There is only one way to get good regulation in the plate supply - use a filter with choke input and put in a bleeder which will drain off about 10% of the total current to be taken from the system. Besides having the advantage of good regulation a choke-input filter decreases the peak rectifier current, which increases the life of the rectifier tubes and makes it possible to draw considerably more output current from the transformer and rectifier than is possible with condenser input.

The only disadvantage is that the output voltage is lower than with condenser input at light loads, a disadvantage that rapidly disappears as the load increases and which in the end turns out to be helpful because it cuts out a lot of the strain on the filter condensers. If you have only one filter choke put it next to the rectifier tubes and parallel all your filter condensers on the output side. The filtering will be just about as effective either way. And don't forget the bleeder.

None of the things we have pointed out above are hard to do, in fact, it is no trick at all to get a thoroughly satisfactory note simply by paying attention to details. Possibly it may be necessary to sacrifice a little power output to get a good signal, but that is of little consequence. It takes a big change in power to make an appreciable difference in signal strength, and the small amount that is used up in the interests of having a 1933 signal will never be missed. Neither will the r.a.c. hash the good signal replaces.

Cutting the Cost of Single-Signal Reception
(Continued from page 18)

The second detector grid leak and condenser also should be in the transformer shield, as shown in Fig. 2.

SECOND DETECTOR AND BEAT OSCILLATOR

The second detector used and recommended is a power pentode of the indirectly heated cathode type, such as the 2A5 or 59 for 2.5-volt filament supply, or a 42 for 6-volt supply. The reason for using this type of detector is that it gives real audio power output, enough to work a speaker on the stronger signals. The output obtained is approximately equivalent to what is usual with an ordinary detector and a good audio stage. Preliminary experiments with pentodes showed that grid-leak detection gave much greater sensitivity and output than bias detection, and also showed that the power pentode gave considerably
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West Hartford
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A bona fide interest in amateur radio is the only essential qualification for membership

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West Hartford, Conn., U. S. A.

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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

60
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This, in turn, reduces the positive resistance in the regenerative circuit and tends to increase regeneration. The interlocking of these two controls is no inconvenience, however, especially if both are connected so that their rotation is corresponding. That is, the resistance of the regeneration control should increase as that of the gain control decreases, for the same direction of rotation.

The high r.f. selectivity obtained is not only useful for c.w. but, as in the case of the first S.S. receiver, is extremely useful for 'phone reception as well. As was suggested in the previous article on filter adjustment, intelligibility is all that is necessary. Sideband cutting to the point where intelligibility is lost is an asset rather than a liability, since interference that would ruin intelligibility anyway is cut simultaneously. It is surprising to what extent high r.f. selectivity can be carried in 'phone reception, let arm chair theorists say what they may. Try it on 'phone and find out for yourself.

**WHAT IS SINGLE-SIGNAL SELECTIVITY?**

In comparing the performance of this receiver to that given by other superhet, it is necessary to have in mind a definite picture of what we mean by single-signal selectivity. Stated briefly, single-signal selectivity is that order of radio-frequency selectivity which virtually eliminates audio-frequency image response in c.w. reception. It means that an equal signal giving the same beat note pitch as the resonance frequency signal, but having a frequency different from resonance by twice the beat frequency, can cause no appreciable interference. It does not mean that the response to the desired signal can be just somewhat greater than the image response. There must be a tremendous difference between the two.

In quantitative terms, the image response should be at least 40 db down, barely audible when the peak is R9. To our knowledge, at the present time the only receivers that give this kind of performance are those patterned after the original S.S. model (using the quartz filter) and the present one using the regenerative i.f.-amplifier. Receivers of the “straight” superhet type that we have examined, while they give an “approach to single-signal selectivity,” do not give true s.s. selectivity as we understand it.

As we conceive it, the true s.s. type receiver can be identified by the following features:

1. Controllable r.f. selectivity such that response at least 40 db down can be obtained at 2 kc. off resonance. With not more than two transformer-coupled i.f. stages of usual frequency, this order of selectivity is practicable only when there is a high-selectivity single circuit such as a piezo-electric (quartz) filter or one using negative resistance. The high r.f. selectivity obtained is not only useful for c.w. but, as in the case of the first S.S. receiver, is extremely useful for 'phone reception as well. As was suggested in the previous article on filter adjustment, intelligibility is all that is necessary. Sideband cutting to the point where intelligibility is lost is an asset rather than a liability, since interference that would ruin intelligibility anyway is cut simultaneously. It is surprising to what extent high r.f. selectivity can be carried in 'phone reception, let arm chair theorists say what they may. Try it on 'phone and find out for yourself.

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Radio W 10 XAJ—Portable field equipment—can be set up anywhere in less than five minutes—two way range 3 to 50 miles depending upon height of stations.

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Written FOR BEGINNERS ONLY

...“How to Become a Radio Amateur”

- It must be good! It is the textbook of new amateurs everywhere.
- It has interested thousands in amateur radio. Its 32 pages outline the entire field of amateur radio, clearly, concisely, thoroughly. It, unaided, will enable the rawest beginner to pass the license examination.
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$5.00

Powerful oscillators, in the 80 and 160 meter bands, “X” or “Y” cut, your approximate frequency, our calibrations guaranteed accurate to within .001 %. We Can Guarantee This Accuracy Because OUR CALIBRATIONS are made with a General Radio frequency standard — checked with Bureau of Standards Transmissions and U. S. Naval Observatory Time Signals.

40 METER BAND, Random Frequencies in the Band ........................................ $8.00
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Crystals of All Descriptions Made to Order — Prices Upon Request

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NEW Antenna Insulators Feeder Spreaders "Tiny-mite" Stand-offs

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Wavelength
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No Charts—No Tables
All solutions in direct-reading answers immediately
See mentions on page 76 June, '32, and on page 18 August, '32, QST
Light cardboard—50c Heavy cardboard—$1 Postpaid

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Say You Saw It in QST — It Identifies You and Helps QST
THE BEST EQUIPMENT IS NO BETTER THAN ITS POWER SUPPLY

Your transmitter and amplifier require the best in power supply to get the most out of them. Good power-supply parts were once so costly that only wealthy amateurs could buy them, but now all new Acme-Delta Power Supply Parts are designed to be RIGHT and are priced to the average amateur pocketbook.

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MODERN FILTERS

1. Protect the rectifiers from dangerous current peaks.
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4. Provide maximum results from minimum material by proper design.

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IMPROVE YOUR POWER SUPPLY — A substantial improvement may be made in your present power supply by using a Delta Swinging Choke with the proper value of input condenser.

A sketch of your power supply circuit giving part ratings, D.C. voltage, D.C. current, and whether used for phone or CW, will bring the recommendations of our engineers. No charge, of course.

SEE PRECEDING ISSUES QST FOR STANDARD A.D. PARTS

SUCCESSORS TO ACME APPARATUS CO.

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ANNOUNCEMENT

The production on the National SW-3 has reached the point where it is possible to completely write off the original tooling and engineering cost.

Now every amateur may possess a genuine National H.F. Receiver, as the saving is being passed on at once. The new low list price of the SW-3 is $24.50 less coils. The band-spread coils are $4.75 per pair.

(Unusual trade discounts apply)

NATIONAL COMPANY INC.
61 Sherman Street
Malden, Mass.

---

volume on the short-wave set with long-wave coils plugged in.

Lyttleton, the port for Christchurch, was our next stop. A gang of the 3rd district fellows came over to the dock led by ZL3CC. Another fine time was had by all!

Dunedin was our final port of call on the schedule of violin concerts in New Zealand. In the harbor at Dunedin the W8's came in on 20, 40 and 80 meters. W8DFE and W3BFH were QSA5 on 80. ZL4AO, of Byrd expedition fame, was working a schedule each night with England on 40. The gang held an impromptu meeting at Peggy and Ewen Cameron's (ZL4CL and ZL4BJ respectively) home. I was glad I was a ham, since being one brings such welcome friends in foreign lands.

We crossed the Tasman Sea again and went south from Sydney to Melbourne, Australia. VK3YX, VK3WG and VK3YL made things interesting, which included a loop and tailspin in the club's radio equipped 'plane. VK3WG made a crystal controlled monitor for KGEG. The gang down there nearly all have crystal control, D.C. Back to Sydney once more, and, oh, what a trip! Eight days it took us to make the 880 miles. Our bearings burned out, and exhaust caught fire. VK2JO and a passenger ship kept watch on our wave, we were in danger for a while.

On December 12, 1931, we left Sydney for the Dutch East Indies. On the way up through the Great Barrier Reef, we passed the weather bureau island where VK4SK is isolated for two years.

We made many stops around the islands to the north of Australia and in the Dutch East Indies, Bali being the most interesting one. A powerful Russian station just inside the band was causing lots of trouble. W6HM and W6UC pushed through with the best W signals and carried through almost to Ceylon; W6HM gave the last message as we lost contact with California.

A visit to VSIAB at Singapore was especially interesting, he having visited W6HM a few years ago. VSIAB's 50-watt 'phone on 7000 kc. carried all the way to W6HM at Carmel and W6CZX at Monterey, where friends and relatives heard our voices for the first time in many months.

At Jeddah, in the Red Sea, W2, W3, W4 and W5's started to come in around the other way, the fours mostly. No more hams were visited, because we kept off the beaten track.

Cruising through the Mediterranean Sea from Port Said, we visited Jugoslavia, Greece and Sicily.

W2CJR held the sked all the way across the Atlantic. He QSP'd the traffic by telephone to the owner's mother and we had replies in a few minutes.

Thousands called KGEG on the Atlantic, but the radio operator was also on duty in the engine room and frequent oilings made it necessary to cut the QSO's short.

We finished the trip at New York after traveling 36,000 miles in 15 months.

Oh, yes, Ken Hiler, W2CJR, came aboard the
HERE IS NEWS!!

How Would You Like to Win One of These Prizes?

FIRST PRIZE:
A real ultra-modern commercial type amateur transmitter — built by Radio Engineering Laboratories — capable of 175 to 200 watts output in the antenna! An xmitter that emits a pure DC crystal control type of note and may be operated on 20, 40, 80 or 160 meters! Constructed on the new rack type style, standing 6 feet high.

SECOND PRIZE:
A NATIONAL "AGS" Communication type receiver.

THIRD PRIZE:
A Hammarlund "COMET PRO."

AND MORE THAN A DOZEN OTHER PRIZES!

Send in for full particulars
We will forward you, absolutely without obligation, a circular carrying the picture of the prize transmitter, and the other awards.

Remember, your chance to win is as good as the next man's!
Do you have to travel to take the License Examination?

Don’t take any chances on flunking out! Prepare yourself—get a copy of the new reprint of QST’s popular articles, “Passing the Government Examination for Amateur Operator’s License.” Typical questions, and their answers—covering every point in the amateur first class examination—are given in full.

Originally these articles appeared in the January and February, 1930 issues; so popular were they that the entire back copy supply of these issues was exhausted within a year. Rewritten, they were again published in October and November, 1931, and reprints prepared for distribution. This supply has again been exhausted, and now—

Revised in terms of latest amateur practice, with complete information on the new amateur regulations, a new reprint of the “Passing” articles is ready for distribution. In convenient, economical pamphlet form, you can find the answer to every exam question in it. 20c per copy postpaid. No stamps, please.

The American Radio Relay League
West Hartford, Conn.

Standard Frequency Transmissions

<table>
<thead>
<tr>
<th>Date</th>
<th>Schedule</th>
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<th>Station</th>
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<tbody>
<tr>
<td>Apr. 2</td>
<td>C</td>
<td>W1XP</td>
<td>May 3</td>
<td>A</td>
<td>W1XP</td>
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<tr>
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<td>A</td>
<td>W1XP</td>
<td>May 5</td>
<td>B</td>
<td>W9XAN</td>
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<tr>
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<td>B</td>
<td>W9XAN</td>
<td>May 10</td>
<td>B</td>
<td>W6XK</td>
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<td>B</td>
<td>W9XAN</td>
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<tr>
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<td>B</td>
<td>W9XAN</td>
<td>May 15</td>
<td>B</td>
<td>W1XP</td>
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<td>W1XP</td>
<td>May 19</td>
<td>BB</td>
<td>W9XAN</td>
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<tr>
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<td>May 20</td>
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<td>C</td>
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<td>May 26</td>
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<td>May 28</td>
<td>C</td>
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<td>May 31</td>
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STANDARD FREQUENCY SCHEDULES

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<td>6:00</td>
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<td>3500</td>
<td>7000</td>
<td>4:08</td>
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<td>4:24</td>
<td>7300</td>
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<tr>
<td>8:32</td>
<td>4100</td>
<td></td>
<td>4:32</td>
<td></td>
<td>14,400</td>
</tr>
</tbody>
</table>

The time specified in the schedules is local standard time at the transmitting station. W1XP uses Eastern Standard Time, W9XAN, Central Standard Time, and W6XK, Pacific Standard Time.

TRANSMITTING PROCEDURE

The time allotted to each transmission is 8 minutes, divided as follows:
2 minutes — QST QST QST de (station call letters),
3 minutes — Characteristic letter of station followed by call letters and statement of frequency. The characteristic letter of W1XP is “G”; that of W9XAN is “O”; and that of W6XK is “M.”
1 minute — Statement of frequency in kilocycles and announcement of next frequency.
2 minutes — Time allowed to change to next frequency.

THE TRANSMITTING STATIONS

W1XP: Massachusetts Institute of Technology, Round Hill Research, South Dartmouth, Mass., Henry G. Houghton in charge.
W6XK: Don Lee Broadcasting System, Los Angeles, Calif., Harold Peery in charge.

REPORT BLANKS

Blanks for reporting on the S. F. transmissions will be sent postpaid upon request. Just send a card or message to Standard Frequency System, QST, West Hartford, Conn., asking for s.f. blanks.

Northern Light at the New York Yacht club on the East River when we arrived and figuratively gave me the telegraph key to New York.
The HAM SUPER

MAKES ZEDDERS AND AUSSIES R7-R8 IN EARLY EVENING

Already the new Ham Super is making records for other ham receivers to shoot at, and it was introduced only last month. Read a bit of what WCYE, George Miller of Chicago says of it after two weeks' operation:

"The new Ham Super is undoubtedly the best receiver for sensitivity, selectivity and single signal tuning that I ever heard of used. Its performance is remarkable on all Amateur frequencies, band-spread or coverage, CW or tone, and it is a real pleasure to carry on communication with such reliability, without the usual QRM and heavy background interference so common to most receivers today. The sensitivity is so high that I bring in New Zealand and Australian stations much earlier in the evening and with more signal strength. Some of their R7-8 signals could easily be mistaken for stations on this continent before they give their call letters. Another surprise was to hear west coast stations fairly consistently over a period of two weeks up until 10:30 A.M. (C.S.T.) and as early as 1 P.M. (C.S.T.) on 7 megacycles — rather unusual reception for this frequency band.

That novel idea of changing frequencies is such an easy operation and works great. I am thoroughly satisfied. It does all that you said it would."

If you want a really advanced, up-to-the-minute Ham receiver, find out about the Ham Super. Good — it's got to be good to do that, and it was designed by amateur authorities for whom you have the greatest respect. Send in a stamp for complete details of the Ham Super, the new electron-coupled frequency meter-monitor (all A.C.) and other hot ham transmitting and receiving specialties.

McMURDO SILVER, INC.
1136 W. Austin Ave. Chicago, Ill.

"W2MU" Your cell letters on a heavy bevelled glass plate 9" x 3". Silver colored letters 2" high. Holes drilled for mounting.

$1.00 Add postage 2 lbs.

WILLIAM H. SCHICK—W2MU
135-44 Kew Gardens Rd., Richmond Hill, N. Y.

In 3 to 7 months we train you to secure government license. Course consists of Wireless Code, Radiophone, Microphone-Studio Technique, Television, Service, Police, and Aeronautical Radio. We are authorized to teach RCA Institutes, Inc., texts. Return coupon for details.

PORT ARTHUR COLLEGE
PORT ARTHUR, TEXAS

Say You Saw It in QST — It Identifies You and Helps QST
OSCILLATING CRYSTALS

"Superior by Comparison"

WHY YOU SHOULD USE SCIENTIFIC RADIO SERVICE CRYSTALS

1 Since 1925, we have been specializing in producing Piezo Electric Crystals exclusively.

2 Since 1925, Scientific Radio Service Crystals have stood the test and are recognized the world over for their Dependability, Output and Accuracy of Frequency.

3 Since 1925, owners of Broadcast and Commercial Short Wave stations have found that no chances can be taken in getting the cheaper grade of crystals and that invariably they call on Scientific Radio Service for the Best.

4 Since 1925, we could be depended upon to make Prompt Shipments. This coupled with a crystal Second to None considering Output and Accuracy of Frequency has earned during these years a reputation which we jealously guard. Therefore, Get the Best.

Price list sent upon request

SCIENTIFIC RADIO SERVICE

"The Crystal Specialists"

124 JACKSON AVENUE, UNIVERSITY PARK
HYATTSVILLE, MARYLAND

METERS

New and Used

WESTON • WESTINGHOUSE • G. E.

NO OTHER MAKES

MILLIAMMETERS — All ranges from 0–50 to 0–500 — New — Bakelite Cases — Projection Panel Type 3½"

$2.00 each

MICROAMMETERS — 0–1000 — Square Case — Laboratory Type, New

$4.25 each

R. F. AMMETERS — THERMOCOUPLE

0–1–3–6–8 Amps, New ........ $3.50

• OTHER METERS AT PROPORTIONATE PRICES

KALTMAN & KENNYHERTZ

62 Court Street Newark, New Jersey

ALL POSTPAID NO C. O. D.'S

WWV 5000-KC. TRANSMISSION

The 5000-kc. transmissions of the Bureau of Standards station, WWV, are given every Tuesday continuously from 12:00 noon to 2:00 p.m., and from 10:00 p.m. to midnight, E.S.T. The accuracy of these transmissions is to better than 1 cycle (one in five million).

— J. J. L.

New High-Frequency Blocking Condensers

A NEW group of high-voltage fixed condensers for blocking and r.f. coupling, using flint glass as the dielectric, has recently been brought out for amateur use. It is claimed that the dielectric losses in the new types are much lower than in mica condensers of the same capacity. The photograph shows one type of construction.

To prevent trapping of air bubbles between the metal and glass plates of the condenser, the glass plates before assembly are coated with a wax compound; after assembly the unit is heated above the melting point of the wax and placed under pressure, forcing out the air and surplus wax. Air bubbles, if allowed to form, permit corona discharge with a resultant loss of efficiency and possible danger of dielectric failure.

The condenser shown in the photograph, known as the Type A3, is rated at 5000 volts and will carry 0.5 amp. at 56 megacycles. It is made in the following capacities: 75, 100, 150, 200 and 250 μfd. Two other types, the A1 and A2, are of similar construction but are completely enclosed. In the Type A1 capacities up to 0.0025 μfd. can be obtained; in the Type A2, up to 0.00125 μfd.

The condensers are manufactured by the Leichner Electric Company, Fort Wayne, Ind.

Strays

When amateur exams were held in Houston recently, the place was the civil service room in the post office, but since the building was undergoing some construction the air was pretty well filled up with the deafening rattle of pneumatic riveters, hammers, etc. After an unsuccessful attempt to hear the buzzer, several hams asked to be allowed to move closer to the R. L.'s desk.

"What!" said the R. L., "you call yourselves hams, and you can't copy through that!!!"
ARE you proud that you are an amateur — proud of your A.R.R.L. membership? Then proclaim it! Let the hams who meet you on the street, in the radio store, or traveling, know it. Wear your A.R.R.L. emblem! The distinctive League emblem comes in three different forms. Its use by members is endorsed and encouraged by the League. Every member should endeavor to display the insignia of his organization in every possible way.

THE PERSONAL EMBLEM, in extra-heavy rolled gold and black enamel, just 3/8" high, supplied in lapel button or pin-back style, is recognized as the sign of a good amateur. Wear your emblem, and feel proud of having taken your rightful place in the radio fraternity. Either style, $1.00, postpaid.

THE AUTOMOBILE EMBLEM, heavily enameled in yellow and black on sheet metal, will gain you friends. On the road, traveling, it identifies you as a real amateur. 5 x 2 3/4", holes top and bottom. 50c each, postpaid.

THE EMBLEM CUT, a mounted printing electrotype, the same size as the personal emblem, is for use by members on amateur printed matter, letterheads, cards, etc. $1.00 each, postpaid.

Emblems for Communications Department Officials, 3/4" size, $1.00 each.

Special red color for the S. C. M... Special green color for the Route Manager... Special blue color for the Official Relay Station appointee.

Note: Red and green colors in pin type only. Blue emblem available both in pin and lapel button types.

The American Radio Relay League
West Hartford, Connecticut

NEW SUPER-HET NATIONAL
Get the dope, fellows. A wow! And a bargain! Designed for amateur needs.
IF IT'S NATIONAL WE HAVE IT
HATRY & YOUNG 203 ANN ST., HARTFORD

WE BUILT AND INSTALLED
W9USA COMPLETE!
ALL W9USA PARTS CARRIED IN STOCK
Write for our bargain bulletin
MID-WEST RADIO MART
520 South State Street, Chicago, Illinois

WARD LEONARD MIDGET RELAYS
Their use permits sending and receiving from any spot, without reference to location of working equipment. They are made single and double pole, single and double throw for both A. C. and D. C. Send for the new FREE booklet D507 that tells all about these relays and that other equipment you want so badly.

SEND FOR NEW D507 LITERATURE
WARD LEONARD ELECTRIC COMPANY
41 South Street, Mount Vernon, N. Y.
Please send me a free copy of booklet D507.

NAME ...........................................

STREET ...........................................

CITY AND STATE ..............................

CALL SIGNAL .................................
Good News for Amateurs

Single-Signal Filter Unit for Use with Any Good SuperHet $30

Our Engineering Dept. announces a new Single-Signal Filter for use with any good Super-Heterodyne. If you have a Scott, a Comet or a "Pro" that needs additional Selectivity of S/S Reception, use this new M. & H. Filter and make your set a SINGLE-SIGNAL SUPERHETERODYNE. Only four wires to connect. Simple in operation. Write for detailed description. Wired and tested, $30.00.

Weston Model 301, Milliammeters 0 to 100 MA, D. C. Purchased from U. S. Navy $3

All in perfect condition and tested. First come, first served. Only limited quantity.

The New National Super in stock, less Coils $26.46

M. & H. Tungsten Contact Keys ........... $0.95

The prettiest Monitor ever made, wired $14.00

Disbolier 304 Mfd. 12500 volts, Mica Condensers $3.00

RCA Porcelain 30 watt sockets, limited quantity $1.50

Thordarson Special Plate Transformers, Type T 5448, 800 volts, each side center tap at 120 MA, insulation 4000 volts, special $2.95

Thordarson Special Chokes, Type T 5450, 15 Henrys at 120 MA, insulation, 2000 volts, low resistance $5.53

M. & H. Special Plate Supply Transformer 720, 1000 and 1500 volts, each side — center tap at 200 MA, insulation, 5000 volts. $11.50

M. & H. Special Filament Transformer 2.5, 5 and 7.5 volts, 4 amps each winding. Insulation 2500 volts $6.25

Thordarson Class B 600A Transformers, per set $17.04


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Financial Statement

BY ORDER of the Board of Directors the following statement of the income and expenses of the American Radio Relay League, Inc., for the fourth quarter of 1932 is published for the information of the membership.

K. B. WARNER, Secretary

STATEMENT OF REVENUE AND EXPENSES FOR THE THREE MONTHS ENDED DECEMBER 31, 1932

REVENUE

Advertising sales, QST .......... $10,627.89

Newdealer sales, QST .......... 10,082.40

Handbook sales .................. 7,335.00

Advertising sales, Handbook ... 1,425.00

Beginners booklet sales .......... 252.50

Membership dues ................. 13,747.22

Membership supplies sales ...... 2,118.15

Interest earned .................. 298.06

Cash discounts earned .......... 148.10

Bad debts recovered .......... 6.92

Deduct:

Returns and allowances .......... $5,193.82

Cash discounts on sales .......... 11.11

Exchange and collection charges 46.87

Net revenue ..................... $46,637.14

EXPENSES

Publication expenses, QST .......... $10,618.01

Publication expenses, Handbook .. 2,942.00

Publication expenses, Booklet .... 78.08

Membership supplies expenses .... 1,048.01

Salaries .......................... 17,959.77

QST forwarding expenses ........ 535.76

Telephone and telegraph ........ 452.41

Postage .......................... 1,572.56

Office supplies and general ex-

penses .......................... 1,831.22

Rent, light and heat .............. 1,027.28

Traveling expenses .............. 800.02

Provision for depreciation ....... 307.31

Communications Department field expenses .......... 186.63

Headquarters station expenses .... 65.46

Federal tax on checks drawn .... 7.58

Bad debts charged off .......... 1,971.57

Total expenses ................... $43,740.70

Net gain from operations .......... $4,892.44


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Strays

The Institute of Radio Engineers announces the election of Dr. Lewis M. Hull as President of the I.R.E. for 1933. The Vice-President is Dr. Jonathan Zenneck of Meunchen, Germany. Five new directors elected were: R. A. Heising, F. A. Kolster, H. M. Turner, C. W. Horn and M. C. Batsel.

Under the new postal regulations the domestic rate on postcards remains the same as before—one cent for cards conforming to the standard Government size. You fellows who have been sending out cards under the impression that two cents required might as well save the extra stamp.

Radio Operating Radio Servicing—

Prepare for the new Government Radio Operating license examinations; Radio Operator, Marine and Broadcasting. Also Radio Amateur Telegraph and Telephone. Resident courses. Write for booklet "Opportunities in Radio."

West Side YMCA Trade & Technical Schools 4 West 63rd Street, New York City
HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their lines of work.

(2) No display of any character will be accepted, nor can any advertisements be accepted in any script or capital letters be used which would tend to make one advertisement stand out from others.

(3) The Ham-Ad rate is $1.50 per word, except as noted in paragraphs 4 and 5 below.

(4) Remittance in full must accompany copy. No cash or order for cash will be accepted.

(5) All advertising must be received by the 24th of the month preceding publication date.

(6) The amount of space will apply to advertising which, in our judgment, is obviously non-commercial in nature. The rate for news items of the American Radio Relay League. Thus, advertising of bona fide amateur radio supplies and apparatus for exchange or advertising for special equipment, if by a member of the American Radio Relay League, takes the 75¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is considered advertising.

SSENSATIONAL microphone value—Universal Model "Y"—Experimenter's single-button, watch model type. 200 ohms. Priced at $1.25. Only $1.25, including valuable 1933 general catalog with diagrams. Universal Microphone Co., Ltd., Inglewood, California.


CALLBOOK—March 1933 number of Radio Amateur Call Book has thousands of new amateur stations, late calls and changes, from all countries. Price, post and weather schedules. Twelve cents. $1.00 per year. 75¢ postpaid.


CRYSTALS—Write for new price list and guarantee. Bellefonte Radio Engineering Lab., Bellefonte, Penna.


WANTED: leading amateurs to distribute popular brand of 75¢ crystal. Trade agreement with J. R. Baker Engineering Laboratories, Fort Wayne, Indiana.

WANTED—leading amateurs to distribute popular brand of 75¢ crystal. Trade agreement with J. R. Baker Engineering Laboratories, Fort Wayne, Indiana.


WOODEN feeder splicer complete, 10 size 5¢ each. Other sizes made to order. Harry W. Jones, 715 E. Commerce St., Shanksink, Pa.

CRYSTALS, Brazilian quartz, c. o. d. 1750 to 4000 kc. Guaranteed excellant oscillators, 160 or 80 meter type. See page 65.

CRYSTALS—California grown, finest. turquiose, blue, red, white, black, etc. O. B. Wilmington, Delaware.


QSL cards that get returns! World's finest! Stamp for sample.

LEADPRINTS for any purposes. W8AYW.


CRYSTALS—12" square. Approximate frequency 1720 or 3000-ke. bands. $1.35. One-tenth of 1% specified frequency, $1.50. Ernest Roland, Natick, Mass.

QSLs. By QST's cartoonist. Samples. "Gf!" Cartoon Service, West Hartford, Conn.

QSLs, stationery. Samples free, Radio Press, Monroe, N. C.

TRADE Conn slide trombone for low power phone, cw or phone. Sent c. o. d. R. C. A. Radio Lab., 113 Riegel St., Dayton, Ohio.


CRYSTALS—10s class B, $4.50 pair, 200A's, class B, 9.95¢ pair, something new, 70 watts of audio from 46's. Write for circular. W8UD, Douglas, Mich.


QSL cards that get returns! World's finest! Stamp for sample.

LEADPRINTS for any purposes. W8AYW.


QSL cards that get returns! World's finest! Stamp for sample.
TRADE — ex-mitting apparatus for good outboard motor and boat. Have 250 and 60 watts, meters, motor generator, transformers, etc. W6EXP, Sutherland, Nebr.

QSL cards, message blanks, stationery, snappy service. Samples free. Write today. W1BEF, 16 Stockbridge Ave., Lowell, Mass.

203As brand new, Westinghouse or GE $12.00. Class B transmitters, pair $210 — $5.50; for 203As — $3.50. Counterbalanced carded W160Bs — $2.50. New RCA UX256s — $1.75. Weston type 301 milliammeters (some new, all new condition, most all ranges) $1.75 204As — $9.00. 212Ds — $16.00. Diaphragms installed in WE mixes $8.00. List, Want 881a, etc. Ewing, 1037 Pratt Blvd., Chicago.

FREE QSLs, WBVE, Prospect Park, Franklin, Pa.


VELOCITY microphone kit, $5. A. C. bandstopper, $10.75.

WSAL, Cincinnati.


NATIONAL ACSW5 with power supply and speaker, coils 15—6000 meters. Complete perfect shape, cheap.inn, 715 E. 4th St., Brooklyn, N. Y.


TRANSMITTING filter condensers, black dialed metal. All voltages DC working potentials. Tested 50% overload. Real commercial jobs! 3000 volt 2 mfd. $3.95; 4 mfd. $6.25, 3000 volt 2 mfd. $9.95; 4 mfd. $11.95. 4000 volt 2 mfd. $9.95; 4 mfd. $18.00. J. H. Huffman, W5AUB, Tupelo, Miss.

CARDS — yellow with 1 1/4" black letters, very commercial $1.75 — $3.00. Samples. W1ALJ, Church Street, Pease, Dale, R. I.

247 TNT transmitter, 500 volt pdc power supply, tubes, key, filter, etc., $30. Arso calibrated monitor, 20, 40, 80 meter, $2. Harold Finley, Box 104, Bosworth, Missouri.

EX-OPTERATOR organizing classes for code practice in New York, beginners and advanced. All speeds. If interested write name and address to Hart, 3647—34 St., Astoria, L. I.

FOR sale two five-meter transmitters and receivers in aluminum cabinets. Excellent condition. Duplex phone record 75 miles. Best offer — will sell at less. John M. Murray, W2AMD, 1470 Yale Station, New Haven, Conn.

W1MK, A.R.R.L. Headquarters

R. B. Parmenter, Chief Op “rp”

The following calls and personal signs belong to members of the A.R.R.L. Headquarters gang:

W1AKW-W1KCP Clyde J. Hodgson "ch."
W1EBT W1EKP Ted, "ted." W1BDF "Fred" "th."
W1HDG W1FEP Charles "DeSoto "dc."
W1JL J. J. Lamb "llu."
W1GG M. W. Grammer "ftr."
W1HR R. B. Warner "ron."
W1IISS A. A. Ritter "ah"
W1JRF C. E. Rocheley "beek."
W1RP R. B. Parmenter "tp."
W1KCB C. E. Rocheley "rd."
W1UEL J. E. Lahey "ev."

Having made no investigation of the advertisers in the classified columns, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products advertised.
Your nearest dealer is entitled to your patronage. You can trust him. He is equipped with a knowledge and understanding of amateur radio. He is your logical and safe source of advice and counsel on what equipment you should buy. His stock is complete. He can supply your needs without delay. His prices are fair and consistent with the high quality of the goods he carries. He is responsible to you and interested in you.

Patronize the dealer nearest you—You can have confidence in him

<table>
<thead>
<tr>
<th>CHICAGO, ILLINOIS</th>
<th>NEW ORLEANS, LOUISIANA</th>
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<tbody>
<tr>
<td>Mid-West Radio Mart</td>
<td>Rose for Radio</td>
</tr>
<tr>
<td>520 S. State Street</td>
<td>129 Camp Street</td>
</tr>
<tr>
<td>All standard lines carried in stock</td>
<td>Complete stock quality radio parts</td>
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<thead>
<tr>
<th>CLEVELAND, OHIO</th>
<th>PHILADELPHIA, PENNSYLVANIA</th>
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<tbody>
<tr>
<td>Northern Ohio Laboratories</td>
<td>Eugene G. Wile</td>
</tr>
<tr>
<td>2073 West 85 Street</td>
<td>10 S. Tenth Street</td>
</tr>
<tr>
<td>W8BAH serving Cleveland and greater Cleveland Hans.</td>
<td>Complete Stock of Quality Merchandise</td>
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<tr>
<th>CLEVELAND, OHIO</th>
<th>PORTLAND, OREGON</th>
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<tbody>
<tr>
<td>Radio Servicemen's Supply Co.</td>
<td>Guy B. Paine Company</td>
</tr>
<tr>
<td>206 Prospect Street</td>
<td>391 Stark Street</td>
</tr>
<tr>
<td>Wholesale Distributors catering to Amateurs, Dealers, Servicemen</td>
<td>Transmitting and Receiving Parts</td>
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<tr>
<th>DENVER, COLORADO</th>
<th>PROVIDENCE, RHODE ISLAND</th>
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<tbody>
<tr>
<td>Vreeland Radio Corporation</td>
<td>W. H. Edwards &amp; Company</td>
</tr>
<tr>
<td>1639 Tremont Street</td>
<td>32 Broadway, Room 23</td>
</tr>
<tr>
<td>Amateur Radio Headquarters in the Rocky Mountain Region</td>
<td>A full line of reliable Amateur Equipment &amp; Supplies</td>
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<tr>
<th>DETROIT, MICHIGAN</th>
<th>ST. LOUIS, MISSOURI</th>
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<tbody>
<tr>
<td>Radio Specialties Company</td>
<td>Walter Ashe Radio Company</td>
</tr>
<tr>
<td>171 E. Jefferson Avenue</td>
<td>1100 Pine Street</td>
</tr>
<tr>
<td>Ham Supplies — National &amp; Hammarlund Sets and Parts</td>
<td>W9FIS in charge of the oldest and largest parts store in St. Louis</td>
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<tr>
<th>HARTFORD, CONNECTICUT</th>
<th>ST. PAUL, MINNESOTA</th>
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<tbody>
<tr>
<td>Radio Inspection Service Company</td>
<td>Lew Bonn Company</td>
</tr>
<tr>
<td>227 Asylum Street</td>
<td>2484 University Avenue</td>
</tr>
<tr>
<td>Complete line of guaranteed parts</td>
<td>Rex L. Munger, W9LIP, Sales Engineer</td>
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<tr>
<th>INDIANAPOLIS, INDIANA</th>
<th>KANSAS CITY, MISSOURI</th>
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<tbody>
<tr>
<td>Kruse Radio, Inc.</td>
<td>Burstein-Applebee Company</td>
</tr>
<tr>
<td>33 West Ohio Street</td>
<td>1012-14 McGee Street</td>
</tr>
<tr>
<td>Everything for the radio amateur and servicemen</td>
<td>&quot;Specialists&quot; in supplies for the Amateur and Servicemen</td>
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<tr>
<th>KANSAS CITY, MISSOURI</th>
<th>SAN FRANCISCO, CALIFORNIA</th>
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<tr>
<td>Radio Laboratories</td>
<td>Offenbach Electric Company, Ltd.</td>
</tr>
<tr>
<td>1511 Walnut</td>
<td>1452 Market Street</td>
</tr>
<tr>
<td>Amateur Headquarters — Complete Stock — Quality Parts</td>
<td>&quot;The House of a Million Radio Parts&quot;</td>
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<tr>
<th>KANSAS CITY, MISSOURI</th>
<th>SCRANTON, PENNSYLVANIA</th>
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<tbody>
<tr>
<td>Radio Laboratories</td>
<td>Radio Service &amp; Supply Company</td>
</tr>
<tr>
<td>1511 Walnut</td>
<td>608 Linden Street</td>
</tr>
<tr>
<td>Amateur Headquarters — Complete Stock — Quality Parts</td>
<td>The only &quot;Ham&quot; Supply Store in N. E. Pennsylvania</td>
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<tr>
<th>MIAMI, FLORIDA</th>
<th>SPRINGFIELD, MASSACHUSETTS</th>
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<tbody>
<tr>
<td>Pan American Radio, Inc. formerly Fessenden-White</td>
<td>T. F. Cushing</td>
</tr>
<tr>
<td>1809 NE Second Avenue</td>
<td>345 Worthington Street</td>
</tr>
<tr>
<td>Everything in Radio</td>
<td>An amateur, endeavoring to sell good parts</td>
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<tr>
<th>MILWAUKEE, WISCONSIN</th>
<th>SYRACUSE, NEW YORK</th>
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<tbody>
<tr>
<td>Radio Parts Company, Inc.</td>
<td>Roy C. Stage, W81GF</td>
</tr>
<tr>
<td>332 West State Street</td>
<td>Complete stock of standard Ham &amp; BCL parts</td>
</tr>
<tr>
<td>Complete stock nationally known products</td>
<td>Standard Discounts. Free technical service by WBAOW</td>
</tr>
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<tr>
<th>NEWARK, NEW JERSEY</th>
<th>UTICA, NEW YORK</th>
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<tbody>
<tr>
<td>Kaltman &amp; Kennyhertz</td>
<td>Vaeth Electric Company</td>
</tr>
<tr>
<td>62 Court Street</td>
<td>701 Varick Street</td>
</tr>
<tr>
<td>Drop in for an over-counter QSO</td>
<td>Complete Stock of Radio Parts at Lowest Prices</td>
</tr>
</tbody>
</table>

This advertisement is paid for by the firms listed above. Qualified dealers are invited to apply for rates, etc., to Advertising Department, QST.

Say You Saw It in QST — It Identifies You and Helps QST
The League's Endorsement

"Advertising for QST is accepted only from firms who, in the publisher's opinion, are of established integrity and whose products secure the approval of the technical staff of the American Radio Relay League."

Quoted from QST's advertising rate card.

For Your Own Protection,
Buy Only From
QST Advertisers

• See Editorial in this issue of QST
April 1932 was a "Humdinger" for LEEDS Radio Bargains—April 1933—will be still Better

**NATIONAL—SW45**

100 Lucky "Hams" will thank us for this buy of the year.

Absolutely perfect SW45 in factory sealed cartons. A.C. 5-tube sets—employing two 35's, two 45's, one 27 tubes. These receivers have never been sold below $40.87. Now for this group of 100, first come first served.

Complete with 4 sets of coils ranging from 14½ to 115 meters. Special ... $26.50

Coils from 9 to 2000 meters available at our regular wholesale discount of 40% and 20%.

Extra Special "LEEDS" humless SW45 power supply, with 7" Dynamic speaker ... $13.50

R.C.A. 280 tube for this supply ....... $1.75

Complete set of 5 genuine R.C.A. tubes for these sets, net .... $3.75

MAIL ORDERS FILLED SAME DAY

C. O. D. Orders Must Be Accompanied by 10% Deposit

These Special Prices for April Only

**MAIL ORDERS FILLED SAME DAY**

C. O. D. Orders Must Be Accompanied by 10% Deposit

These Special Prices for April Only

Say You Saw It in QST — It Identifies You and Helps QST

79
Two New Collins Transmitters
32 A and 32 B

At New Low Prices!

In addition to retaining the distinctive features of construction and design which have made Collins Transmitters outstanding, these two latest units embody many new refinements. The 32 A and 32 B are fully described with circuit diagrams in a free bulletin. Write for it before you rebuild your present outfit.

Collins Radio Company
Cedar Rapids, Iowa
The NATIONAL Air Dielectric Tuned I. F. Transformer described in the 10th Edition of the A.R.R.L. Handbook has been completely redesigned.

- Micrometer Tuning — Velvet Vernier Type
- All Peaking Adjustments at Top of Shield
- Double Bearing Precision Condensers
- Self Locking Rotors
- Isolantite Insulation
- Adjustable Coupling
- New Type of Litz Wound Coil
- 450 to 550 KC Tuning Range
- Non-resonant Aluminum Rotor and Stator Plates
- Electron Coupled Beat Frequency Oscillator Units with Genuine Velvet Vernier Knob Tuning
- Standard Mounting

Standard Equipment on the Single-Signal AGS and available for the Standard AGS, the FB-7, and the FB-X; it is completely interchangeable with the standard unit and may be substituted at any time.

For replacement or set construction

List price $5.00
(Less usual trade discount)
COMPEL'ITORS CAN'T DODGE THESE FACTS

You'll dodge a lot of grief if you side-step the fancy, 100% plus claims being made about "performance . . . power . . . capacity" for less money than a Burgess SuperB Battery costs.

Burgess is a pioneer in making "B" batteries. They have made them for years and their batteries have been used by every important scientific expedition, because experience proved that no other battery was as dependable under the most severe extremes in temperature. Wherever human life has been at stake, Burgess Batteries have been used. Ask any radio engineer.

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