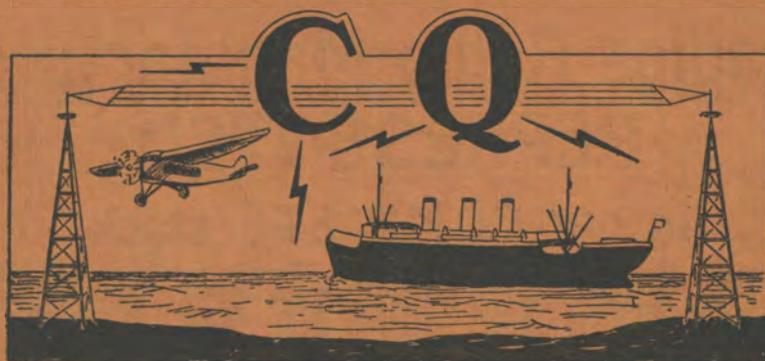


*Return to Lu*



A Magazine OF, BY and FOR Commercial Radio Operators and Technicians

Vol. 1

DECEMBER, 1931

No. 10

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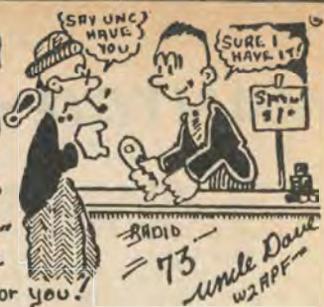
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Pam 19-20, uses U. X. 281, two U. X. 250, two U. Y. 227, list \$175; net price.....		Pam 19-20, uses U. X. 281, two U. X. 250, two U. Y. 227, list \$175; net price.....	49.50
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Flechheim 2 mid, 1500-v. por. ins. condensers.....		Flechheim 2 mid, 1500-v. por. ins. condensers.....	4.50
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.2 mid., 20,000-volt; 2 mid., 4000-volt; 3 mid., 3500-volt; 5 mid., 3300-volt, special, each.....		.2 mid., 20,000-volt; 2 mid., 4000-volt; 3 mid., 3500-volt; 5 mid., 3300-volt, special, each.....	20.00

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1 National precision dial.....	3.75
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R. C. A. licensed 233 D. C. pentode tube.....	\$ 1.65
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Arco sockets for 212-A or D tubes.....	3.50
Arco 2 mid, 1000-volt condenser.....	.70
Arco 3 1/2 mid, 1000-volt condenser.....	.90
Arco 4 mid, 1000-volt condensers.....	1.00
Above condensers are all unmounted but sealed in paraffin. Sturdy leads.	
2 mid, 1150-volt sealed in fiber box. Beautiful job.....	1.50
4 mid, 1250-volt oil impregnated condensers.....	3.25
Above condensers are working voltage, not D. C. rating, hi.....	
Arco 1 mid, 3500-v. transmitting filter condensers.....	9.50

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**UNCLE DAVE'S RADIO SHACK**

# WANTED—Intestinal Fortitude

By THE EDITOR

"It takes fighters to win any battle. If commercial operators are so lacking in **guts** and **backbone** why do you bother with them?" This question was asked recently by Colonel Clair Foster, newly-elected Director for the Pacific Division of the A.R.R.L., while I was telling him of the difficulty of organizing commercial operators. During the past year I have often asked myself the same question, "**Why bother with them?**"

—Why bother with men who are unable to think for themselves?

—Why bother with operators who are so dominated by **fear** that they are afraid to subscribe to CQ without obtaining permission from a station manager or marine supt?

—Why bother with men who are so buffaloed, dominated and subjugated by their superiors that they believe them to be almost holy?

"I like the idea of the C.R.P.A., believe it to be on the right track and would like to join, **BUT** I don't think I can at present because the Boss may find out and I will lose my job. You know, a fellow's first consideration is for himself and I cannot afford to do anything that will jeopardize my job." **Bunk**, you're scared and you know it! If you fellows think so much of your jobs why don't you do something to improve them? Why don't you help those who are trying to make your jobs better and more secure? Is it because radio and steamship company officials have you bluffed, or because you are **afraid**? Your employer is not going to go out of his way to help you obtain better working conditions or higher wages. He is out to get all he can for the least money. If another operator came along and offered to work for half the salary you are being paid do you suppose your employer would say, "No thanks, I like my boys and believe in paying decent salaries, even if I am losing money"? Hi. I know too many operators who have been working for \$35 to \$40 per week and have lost their jobs because some other fellows came along and took the same jobs for \$20 and \$25. You chaps who have jobs and think they're secure—What can you do when employers decide to cut wages, as many of them have done recently? Your only recourse is to **take the cut and like it**—or quit. If you are told you will have to work twelve hours per day instead of eight—What can you do? Say, "Yes Sir, that's fine," then go off and growl in a corner where you can't be heard.

Fellows, get wise to yourselves. **Stand on your own feet and do your own thinking.** If you want improved conditions **YOU** will have to get out and fight for them. No one is going to help you. You must help each other by unselfish co-operation—by **organization.**

A few days ago I was talking to a group of operators about improved conditions, one of them asked, "But what will the radio companies think?" My reply was, "Why should we worry about what the radio companies may think, **they are not bothering about our welfare but are looking out for their own interests,** it's time we forgot them and started worrying about our problems." What difference does it make what a few petty radio or steamship company officials may think or say? Most of the smaller fry, chief operators, station managers, marine superintendents, district managers and the like are in the same position as we are—they are just poor guys trying to get along as best they can. The majority can't change their brand of cigarettes without permission from the Main Office.

I divide all commercial operators into two classes—the **Sheep** and the **Goats.** The Sheep are **MEN:** Men who have the courage to stand on their own feet and say, "I know I'm getting a rotten deal and **I'm going to do something about it!**"; Men who think of others besides themselves; men who are willing to take chances to help their fellow operators; Men with courage, determination, perseverance and **GUTS**—splendid fellows, I'm proud to know them.

The Goats are those who are unable to do their own thinking, who must run to some marine superintendent or station manager for permission to leave the room, change their minds or subscribe to **CQ:** Rats who carry tales about their fellow operators in order that they may "stand in good" with employers; Kids who think only of themselves and are using radio operating for what they can get out of it, with no regard for the welfare of their brother operators; Excuses for men who are **afraid** of what some stuffed-shirt sitting behind a desk may think or say; Straddlers who are not men enough to face an issue squarely but must use **alibis, procrastination and argument,** subterfuges used by cowards to avoid taking sides. Postal laws prohibit me from expressing my opinion of the Goats.

I shall probably be called "radical," "disloyal" or "crazy" for writing this—names are harmless—if it starts a few of you fellows thinking I shall feel well repaid. As for being "radical"—whatever that means—if it's radical to want better working conditions, higher salaries, better jobs, greater protection and more security for my fellow radio operators, I plead guilty.—M.R.R.

# THE C. R. P. A. CAMPAIGN FOR "BETTER DAYS"

"If your purpose is to provide the proper radio protection for the lives of seamen on American ships and to obtain for radio operators the rights and privileges enjoyed by other citizens I am 100 per cent for you. Apparently ship owners are not interested in protecting the lives of the men who work for them on deck and in the engine room. I believe the lives of seamen are just as valuable as those of passengers. Every possible safeguard that science is capable of developing should be utilized to afford the greatest possible safety for the lives of men who 'go down to the sea in ships'." This statement was made recently by Congressman Richard J. Welch, Representative from the fourth California district and a member of the House Committee on Merchant Marine and Fisheries, when asked for an opinion of the C.R.P.A. campaign for legislation which will provide adequate radio protection for the lives of passengers and seamen on American ships and greater protection for commercial radio operators.

At the present time members of the C.R.P.A. are petitioning their representatives in Congress for legislation incorporating the following provisions:

1. That every applicant for a license as a commercial or broadcast radio operator be required to be an American citizen at least 19 years of age;
2. That no radio operator or watcher be permitted to stand watch for more than eight hours per day in any marine or land radio transmitting station;
3. That no radio operator shall be placed in charge of any marine or land **radio-telegraph** station unless he has at least one year's experience in stations open to public correspondence and holds a commercial first-class radio operator's license;
4. That vessels carrying only one radio officer be required to maintain a radio watch of at least eight hours per day in accordance with the International Radio Watch periods;
5. That all ships maintaining a continuous radio service be required to carry not less than **three** qualified operators or certified watchers;

Other requests contained in the petition

are: that **all** passenger ships be equipped with radio and maintain a continuous radio service; that all cargo ships of over 1,600 tons be equipped with radio can carry at least one licensed operator and that all radio watches be maintained by properly licensed radio operators or certified watchers and not by Auto-alarms of other electrical or mechanical devices.

The C.R.P.A. Special Bulletin, accompanying the petition, explains the reasons for making the above requests and suggests subjects for operators to mention when writing to their Senators and Congressmen. The petitions, which may be signed by **any** registered voter, are now being circulated by more than 1,000 operators. If this campaign is to succeed it must receive **whole-hearted support** from a **majority** of licensed commercial operators. Those desiring to assist should send for copies of the C.R.P.A. Special Bulletin and Petition and contribute to the C.R.P.A. "Better Days" Campaign Fund.—M.R.R.

---

Francis M. Eastman is in charge of construction at the new Airways station, Pueblo, Colo. He was formerly at North Platte, Nebr.

H. Neipp of the GL steamer "City of Erie" is on the beach for the winter.

A. B. Currie is now at the Airways station, Hapeville, Ga., as "Airways Keeper Instructor, Atlanta Division," sounds like a good job.

R. E. Adams is now Senior Radio Electrician for the Dallas (Tex.) Division of the Airways Service.

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WHD, New York **Times** press station transmits press and stocks daily, except Sunday, on 26.64 meters starting at 2:00 p.m., EST.

\* \* \*

No radio operators are carried on the seven passenger-freight ships operated in the Intercoastal service by the Nelson Steamship Co. These vessels are: SS. "American Star," "Democracy," "Charles Nelson," "Fort Armstrong," "Sutherland," "Nelson Traveler," and "Sacramento." Each ship carries more than twenty in the crew and from five to fifteen passengers.

"I SAW YOUR AD. IN CQ." Tell this to our advertisers—it helps all of us.

## More Wage Cuts for Radiomen

Following is a communication sent out by H. M. Singleton, General Marine Superintendent of the Luckenbach Steamship Company:

"Below is new wage schedule for the Luckenbach Fleet effective October 1st, which does not effect any licensed officer or Chief Steward:

Radio Operator .....	\$95.00
Carpenter .....	\$64.00

Since the date of the above letter, two more communications announcing wage reductions, **not affecting any licensed officer**, have been sent out by Mr. Singleton; the latest announcement reduces Luckenbach operators' pay to \$85 per month. This is the fourth cut given to Luckenbach operators during the year, the pay was formerly \$105.

The U.S. Lines, which have now been taken over by the Dollar-Dawson-I.M.M. combination, have laid up two of their largest ships, the "Geo. Washington" and "America," for an indefinite period. Two small Army transports, formerly the "Cambrai" and "Somme" have been placed in service. These ships, which have been renamed the "American Exporter" and "American Importer," respectively, carry two operators who are paid \$105 and \$90. As a result of this brilliant move toward economy two U.S. Lines operators have lost their jobs and the men remaining are required to work four hours more per day for less money than they were receiving for eight hours' work.

The Grace Line is another concern that has "economized" at the expense of its radio operators. Until recently the pay for radiomen on Grace ships was \$100 for chief and \$80 for junior, plus press money amounting to \$20 and \$10 per trip, respectively, for twelve hours' work. Now the press bonus has been abolished and pay reduced to \$81 and \$61. The chief operators eat the same food given to passengers but the juniors eat in the petty officers' mess.

Other concerns cutting radio operators' wages during the past few months are: The Matson Steamship Company; the Richfield Oil Co.; the Pan-American Petroleum Co.; the Los Angeles Steamship Co.; the American-Hawaiian Steamship Co.; the McCormick Steamship Co.; the Nelson Steamship Co., and a number of smaller concerns. According to statistics compiled by CQ approximately eighty per cent of the radio operators on American ships have had their wages reduced from ten to forty per cent during the current year. Apparently owners of large American shipping concerns have never heard of the

word consistency; with one hand, they save money by taking bread from the mouths of their employees and with the other they spend millions for new ships. —M.R.R.

## Senator Couzens to Help Radiomen

Sen. James Couzens of Michigan, former partner of Henry Ford and the richest man in the U. S. Senate, has definitely promised to assist organized commercial operators to obtain the legislation they are seeking. In a letter dated November 24, Senator Couzens states: "I have your communication of the 17th inclosing a copy of a petition that members of the Commercial Radiomen's Protective Association are sending to their representatives in Congress.

"This matter has recently been brought to my attention, and I am now discussing the matter with the Federal Radio Commission to see what that Commission and this Committee might work out to improve conditions of which you complain. I will do everything that I can to submit to this Committee an acceptable program for remedying conditions."

The Committee to which Senator Couzens refers is the Interstate Commerce Committee which must pass on radio legislation before it is voted on by the Senate. Senator Couzens is Chairman of this Committee, the other members are: Senators James E. Watson, Indiana; Simeon D. Fess, Ohio; Robert B. Howell, Nebr.; Jesse H. Metcalf, R. I.; Otis Glenn, Illinois; Smith W. Brookhart, Iowa; Hamilton F. Kean, New Jersey; Daniel O. Hastings, Del.; Ellison D. Smith, So. Carolina; Key Pittman, Nevada; C. C. Dill, Wash.; Burton K. Wheeler, Mont.; Harry B. Hawes, Missouri; Robert F. Wagner, N. Y.; Millard E. Tydings, Maryland and Alben W. Barkley, Kentucky.

## Notes from the Capitol Radio Engineering Institute Bulletin:

G. K. Ashenden Jr. is on the MT "Dorchester," out of Boston.

Lester F. Miles, Chief Engineer of WHP, has completely overhauled that station since the first of the year.

Earl B. Janes is at WEEI, Boston.

Francis V. Long, PAA opr., has been transferred from Panama to Venezuela.

Roy C. Fell is back with WAE in Los Angeles, installing visual course indicators on 'planes. He expects to be transferred to Denver about December first.

Jack E. Bourke has been transferred from the Airways station, Winslow, Ariz., to the Airways station, El Paso, Tex.

V. L. Hoke, Signal Corps, Ketchikan, AAA, reports that the Signal Corps is planning to replace its Alaska cables with radio circuits. He is busy installing the new radio equipment.

# NOISY MIKES

By LOWELL WESTMAN

In this article the elimination of noise from the Western Electric Condenser Microphone, Type 47-A, will be discussed; however, the remedies suggested may be applied equally as well to other types and makes of condenser mikes.

If a 47-A mike becomes noisy the first place to look for the trouble is in the 394-W Condenser Head. If the noise is caused by electrical or mechanical defects the only course open to an operator is to replace the noisy unit with a spare, as elaborate laboratory equipment is required to effect repairs to this type of head. In most cases, however, moisture is the cause of noise in the 394-W head. Minute drops of water—collecting by condensation, which may be brought about by rapid changes in temperature or absorption of moisture from a humid atmosphere—collect on the inner surfaces of the diaphragm and insulation and form high resistance paths between the electrodes.

A method of eliminating noise produced in a condenser head by moisture is to dry the head in a simple dehydrator, consisting of a glass jar about six inches in diameter and six or seven inches deep and having a close-fitting cover. The bottom of the jar should be covered with a layer of calcium chloride crystals (commercial grade, obtainable from most drug stores for seventy-five cents a pound) two small blocks of wood should be placed on top of the crystals to keep the head from coming into contact with the dryer. The head should then be placed in the jar so that it rests on the blocks. In order to conserve the chemical (calcium chloride deteriorates rapidly when exposed to air), and provide an airtight seal between the jar and cover, the rim of the jar should be smeared with cup-grease.

Excessive plate voltage on the microphone amplifier will often cause trouble in a 394-W head, frequently starting an arc between the diaphragm and stationary electrode. Arcing not only breaks down the dielectric material but forms raised spots on the metal surfaces, if an arc persists for any length of time the raised spots will meet, forming a bridge of metal between the diaphragm and stationary electrode and short-circuiting the head. The original separation between the elements in a condenser head is only .001 inches and it is readily apparent that slight irregularities on the surfaces comprising the condenser will soon place a mike on the "sick list." For best operation the applied

voltage should be kept in the neighborhood of 180 volts.

Other causes of noise in the 47-A microphone assembly are two resistances, one of which supplies grid bias to the amplifier tube and the other a 200-volt potential to the 394-W head. Each of these resistances consists of a glass tube filled with a highly volatile liquid, having an electrode sealed in each end. Frequently, a slight leak in one of the seals will permit the liquid forming the resistance to evaporate, thus lowering its level in the tube and allowing one electrode to become partially or wholly exposed. When the level of the liquid drops so low that an electrode is completely exposed, or is only making intermittent contact, the microphone will become noisy. Obviously, the cure consists of replacing the defective resistor with a spare. Whenever a 47-A amplifier is removed from its case it is a good idea to scrape off the black impregnating compound surrounding the resistances and observe the level of the liquid, thus forestalling future trouble.

Another source of noise is the grid condenser in the amplifier. In the 47-A amplifier, however, the grid condenser is not so likely to become noisy as in the old D-85013 box type mike.

The last principal cause of noise in a microphone proper is the short cord connecting the 394-W condenser head to the 47-A amplifier. Announcers and artists have a habit of twisting or turning a mike head, this practice usually results in breaking the mike cord shielding, or partially severing the strands in the conductor. Defective cords often cause mikes to "cut out" or to be noisy in some positions and quiet in others.

An a.c. hum in a condenser mike is usually due to the lack of a proper ground, "high resistance" joints in shielding and ground circuits or inadequate shielding.

These notes were written solely for the purpose of helping BC operators who may be having "noise trouble" with microphones. No doubt most of you could have done a better job of writing. I am sure that many of you have note books filled with technical and operating data, which, if generally known, would assist your fellow operators with their work and help them to become more proficient. Why not write them up and submit them to CQ so that we may all benefit by your experience?

## OPERATING NOTES

**Operating Hours of Pacific Coast Stations**  
VAE, Estevan, B. C.:

Time Signals at 7:00 P.M. (PST) on 600 meters Spark.

Weather at 10:00 P.M. on 600 ICW, repeats immediately afterwards on 2400.

Press at 1:00 A.M. (PST) on 1750.

VAK, Gonzales Hill (Victoria), B. C.:

Time Signals at 10:00 A.M. and 7:00 P.M., on 740 meters.

No other broadcasts from this station.  
KPK, Portland, Ore.:

Does not broadcast anything to CQ.

Long-wave sked first fifteen minutes of each even hour, providing not busy.

KPE, Seattle, Wash.:

Does not broadcast weather except on request; can furnish KCI and KCK weather. On weekdays they usually have KCN and KCM weather, 8:00 A.M.

Long-wave transmits on 1840, listens on 2100 on odd hours on the hour—(9:00 A.M., 11:00 A.M., etc.).

Short-wave listens on 36 at night time; transmits on 34.7 on the half hours; 7:30 P.M., etc. In A.M. at 10:30, listens 26.7; sends on 27; same at 11:30. Then on 17.7; listens 18 until 3:30 P.M.

—T. J. FINDLEY.

Press reports are broadcast by the Dollar stations as follows:

**KTK**, Mussel Rock, Calif.

0100 GCT (5 p.m. PST) 18 and 27 meters.

1300 GCT (5 p.m. PST) 35 and 46 meters.

**KUH**, Manila, P. I.

0800 GCT (midnight PST) 18 meters.

**WPN**, Garden City, N. Y.

0300 GCT (10 p.m. EST) 35 and 46 meters.

**KPH**, San Francisco sends Press and Weather reports according to the following schedule:

0810 GCT (12:10 a.m. PST) Press on 2381 meters.

1700 GCT (9 a.m. PST) Weather on 640 and 2381 meters.

0418 GCT (8:18 p.m. PST) Weather on 640 and 2381 meters.

**VIS**, Sydney, N. S. W. sends Press at:

0330 GCT on 17.28 meters, GBR px 1000 on 48.47 meters.

1230 on 48.47 and 800 meters.

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	<b>\$3.60</b>	
Publishers' Price .....	\$4.50	Save 90c

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	<b>\$2.60</b>	
Publishers' Price .....	\$3.30	Save 80c

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Biography of Dr. Lee de Forest, "Father of Radio"  
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**CQ, 1725 Bedford Road, San Marino, Calif.**

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# Series and Parallel Circuits

By E. H. RIETZKE

President, Capitol Radio Engineering Institute; Member, Institute of Radio Engineers

## III.

The resistance of a tuned radio frequency circuit is also a large factor in the selectivity of that circuit. In Diagram 11(a) is shown a vector for a low resistance circuit, somewhat off resonance, showing the values of  $X$ ,  $R$  and  $Z$ .

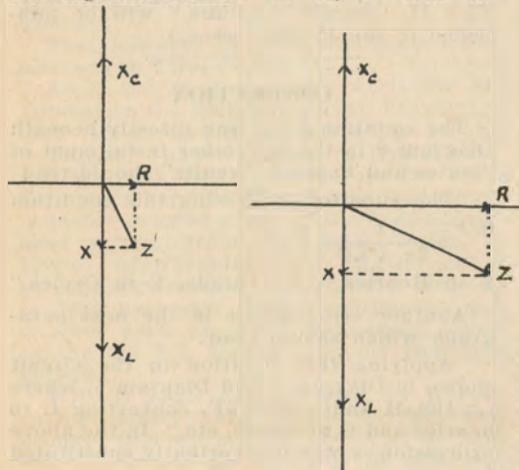


Diagram 11(a)

Diagram 11(b)

In Diagram 11(b) is shown a circuit of the same reactance characteristics worked the same amount off resonance.

At resonance, where— $Z=R$ , the current in the circuit represented by Diagram 11(a) would be large because  $R$  is small. When the circuit is worked sufficiently off resonance to produce the condition as represented in Diagram 11(a) the impedance will be increased about three times, the current therefore being decreased to about one-third. These effects would be indicated in the receiver circuit by a very strong signal at resonance and the signal cutting out sharply when the circuit is slightly detuned.

In the condition shown in Diagram 11(b), where  $R$  is about five times as large as in 11(a), the signal at resonance will be weak on account of the high resistance. When the circuit is detuned the same amount as in 11(a) the condition exists as shown in 11(b). The vector addition of  $R$  and  $X$  results in an impedance but slightly greater than at resonance. The signal, when the circuit is slightly detuned will be almost as strong as at exact resonance. This would show up in a receiver by

very weak signals from a distant station, lack of volume on signals from nearby stations, and very broad tuning on these nearby signals resulting in bad interference between stations.

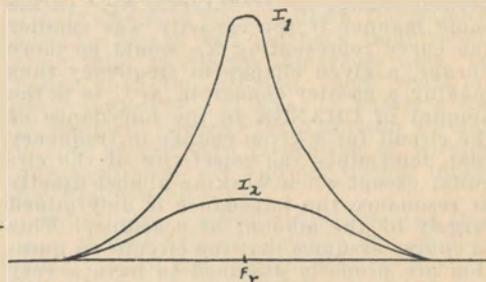


Diagram 12

Both of these conditions are shown in Diagram 12.  $I_1$  is the current curve for the low resistance circuit, the condition for which is shown in Diagram 11(a). The current is very high at resonance, falling off sharply as the circuit is detuned. The curve  $I_2$  shows the current curve for the higher resistance circuit for which is shown in Diagram 11(b). The current at resonance reaches only a small fractional part of the current in the lower resistance circuit and on distant stations the reception would be very poor. On nearby stations when sufficient amplification is used to obtain good volume the circuit would tune very broadly, making it impossible to tune in distant stations at frequencies anywhere near the local station without interference.

Another factor that enters into the determination of the selectivity of the series circuit is the ration  $L/C$ . In every circuit that is worked at resonance the resonant frequency is determined by a value called the LC VALUE. This value is the product of the inductance and the capacity of the circuit and must be the same in any number of circuits that are to be worked at the same frequency. However, in all of these circuits operated at the same resonant frequency the values of the  $L$  do not have to be the same; nor do the values of  $C$  have to be identical. The PRODUCTS of  $L$  and  $C$ , however, MUST BE THE SAME IN ALL OF THE CIRCUITS THAT ARE TO HAVE THE SAME RESONANT FREQUENCY. Thus one circuit may have a given amount of  $L$  and a given amount of  $C$ ; another

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circuit may have one-half as much L and twice as much C; another circuit may have twice as much L and one-half as much C, etc. If the PRODUCTS of L and C are equal the resonant frequencies of the circuits will be identical.

To obtain a high degree of selectivity the ratio of L/C should be kept as high as practical. The reason for this can be seen from an inspection of Diagram 9. If L is larger the slope of the line representing  $X_L$  will be steeper; this means that a given change in frequency will make a greater change in the value of  $X_L$ . In the same manner if the capacity was smaller the curve representing  $X_C$  would be more abrupt, a given change in frequency thus making a greater change in  $X_C$ . Is is the amount of CHANGE in the impedance of the circuit for a given change in frequency that determines the selectivity of the circuits; except when working almost exactly at resonance the impedance is determined largely by the amount of reactance. This of course assumes that the circuits in question are properly designed to have a very low resistance, a necessary requirement in all efficient radio frequency circuits.

How far the ratio L/C can be increased is determined by several factors. First, most of the resistance in a circuit, if the connections are so made that the losses are negligible, is in the inductance of the circuit; thus an increase of inductance will increase the circuit resistance. This means that L can only be practically increased to the point where a further increase will bring R to such a value that it will counteract the good effects of the increase in the L/C ration.

Second, most radio frequency circuits must be capable of being adjusted or tuned over a considerable frequency range. If the capacity used is very small an extremely small variation in this capacity will cause too great a frequency change and introduce mechanical difficulties in the construction of variable capacities and their controls for causing the variations in the resonant frequency of the circuit.

In some circuits, such as those used in broadcast receivers, too high a degree of selectivity is not desired due to the distortion in the musical programs that would result. All of these factors must be taken into consideration in the design of the series circuit.

The mechanical requirements will, as a rule, determine the limits to which L/C may be increased. If, with the circuit so designed as to take full advantage of the value of L/C permitted mechanically, the resistance of the circuit is found to nullify the effects of this increase in L/C it should be possible in many cases to redesign the inductance used to considerably lower the effective resistance. This may be done by

the use of a lower loss material for the framework on which the winding is layed, a better grade of insulation or less insulating material around the conductors themselves, or any of the many methods of decreasing the radio frequency of the coil or inductance of the circuit. Perhaps a lower loss type of condenser could also be selected. Any means of decreasing the resistance of the circuit will permit the use of a higher ratio of L/C and the combination of low R and high L/C will operate to increase the selectivity of the circuit.

(End of Part I—the first installment of Part II, "Parallel Circuits," will be published in the January issue.)

### CORRECTION

The equation appearing directly beneath Diagram 8 in the November installment of "Series and Parallel Circuits" should read:

"The equation expressing this condition is  $F = \frac{1}{2\pi \sqrt{LC}}$

L in Henries, C in Farads, F in Cycles."

Another error occurs in the next paragraph which should read:

"Applying this equation to the circuit shown in Diagram 1 and Diagram 5, where  $L=100\mu H$  and  $C=400\mu F$ , converting L to henries and C to farads, etc." In the above expression,  $\pi$  was inadvertently substituted for  $\mu$ .

### PAUPER PAY

After many tales of heroism we have all heard about radio operators, isn't it lovely to learn that licensed radio operators are now sailing on some ships out of New York for \$30 a month!—Edward Mulligan in the *New York Daily News*, Nov. 17.

Why do so many stations broadcasting news items to ships persist in eliminating all punctuation? This not only makes it much harder to read, but oftentimes the meaning is not clear, and the addition of a comma or period will change it entirely. Operators of stations broadcasting "press" would do well to copy after KUP and WNU.—C. R. W.

The Editor of Great Lakes Notes would like to obtain copies of CQ prior to August. If any of you have extra copies of early issues it will be greatly appreciated if you will mail them direct. Money in payment for back issues will be forwarded immediately upon receipt of the CQ's desired. Address on page 15.

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# Pioneer Radio Operators

By Dr. Lee de Forest

The last of the 1903 yacht races were finally reported to the quasi-satisfaction of the Publishers' Press Association; and another all-important fact demonstrated, that a high-frequency spark, though faint, could get through where low-frequency signals, although ten times more powerful, were useless.

That Summer of 1903 was indeed momentous in wireless history.

As a result of our fine work for Sir Thomas on the Erin, the British Post Office that fall invited a demonstration of the "amazing" Yankee wireless system in competition with their own, across the Irish Channel, where Sir Oliver Lodge had shortly before essayed a trial of the Lodge-Muirhead system, from Hollyhead, Wales, to Howth, near Dublin. Mac Horton and I therefore assembled two sets and, trusting to find necessary engine equipment and another good operator in London, sailed on the old S.S. Majestic, on my first trip abroad.

With a single antenna wire, by Horton surreptitiously hung in the shrouds and brought into our cabin's port-hole, we held New York until the ship was 75 miles out—and were well satisfied thereat.

I'll never forget the hardships we endured on the cold bleak cliffs of Hollyhead that wet November, 800 feet above the raging Channel of St. George. Nor the nights with Horton and Cornish (our British operator), fighting off chilblains with the aid of 3-Star Hennessy before the roaring fire of the old Howth Bar.

It was no snap to get our English Fairbanks-Morse engine and the 120-cycle American generator up the rocky trail, and installed in a portable clapboard shack, whose roof we had to anchor down with ropes and rock to keep the winds from rolling our outfit over the brink of the cliff of Hollyhead.

At last the day of the test when the dignified silk-hatted official delegates from the G.P.O. in London arrived at each station to watch us do our Yankee damndest. They wrote out code messages which Horton and Cornish (who was exceptionally fast for an English-trained operator), ripped across "With looseness" at 35 words per minute in continental morse. The Lodge-Muirhead system had exhibited a maximum of 18 words per minute (when it functioned). Then the officials themselves gingerly donned the cans, the first time they had ever received code through

telephone receivers, and conversed slowly back and forth with no difficulty except that due to their inexperience in sound receiving by spark note. With sheer amazement they witnessed the ease and speed with which my two boys, eighty miles apart, slammed up and down the antenna transfer switch and got back their replies from their chattering American keys, far faster than the officials could write off their messages. It was, in short, a day of complete triumph for American wireless almost at the very birthplace of wireless telegraphy—an eye and ear opener indeed for Englishmen.

The tardy report of their tests and findings finally filtered through the cumbersome files of the British General Post Office—and there the matter rested and died. For Great Britain decided that any wireless system as simple and rapid as ours could not possibly be safe and reliable; the more dignified European methods of Marconi, Lodge and Slaby-Arco must be, by the very nature of their strictly scientific origins, "quite the best, don't you know."

However, it was not long thereafter before alternating current generator transmitters, self-restoring detectors and headphone receivers began to appear in certain British (and German) wireless stations.

Our bleak November labors had at least driven a nail into the coherer's coffin, and (unofficially) into official British concrete.

But definite good did result from that first American invasion of the European ether.

Horton and I returned on the same old ship, "Majestic" with Capt. Lionel James, famed War Correspondent of the London Times, en route via New York, for the Orient, where Russo-Japanese war clouds were then threatening. We learned of his presence as we sailed from Liverpool. Also that Prof. Fessenden, my greatest wireless rival was likewise returning to America. Whereupon Horton and I promptly made James' acquaintanceship and between us never left him alone for one waking hour, all the way across! By the time our ice-clad vessel sighted Sandy Hook, New Year's Day, 1904, we had thoroughly sold Capt. James the idea that his way to be up-to-date and scoop the entire press world was to take with him to Japan two complete DeForest wireless sets, like those we had so satisfactorily demonstrated across the Irish Sea.

(To be Continued)

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*December, 1931*  
*I tell you to put in a picture to get attention*  
*Attention to picture from the origin records and*  
*now is look to records*

*9*  
*from back to #6 record - 9 then return to this copy*

*Go on to p 11*  
*Mark April*  
*PA*

# CORRESPONDENCE SECTION

Signed communications only will be accepted for publication in this section, names of correspondents will be withheld on request. The publishers of CQ assume no responsibility for statements made herein by correspondents.

★ ★ ★

Editor CQ:

I am very much in favor of the proposed changes in operator's licenses as suggested by R. E. Lee in the October CQ. Radio, in the last few years, has branched out into several different fields and a great deal of knowledge is essential to understand each branch. Yet the Department of Commerce issues licenses covering everything, for instance, the First-Class license reads: "The holder of this license is authorized to act as chief operator at any licensed radio station." In my opinion each class of radio station should have operators trained to work and licensed to operate in these stations only.

At present a concern will invest as much as \$50,000 in a transmitter and then employ an operator just out of school (having no experience and perhaps six months' training) to operate it. This man may be incapable of properly operating the station, yet he has a license from the Government attesting to his ability to do the work for which he is employed. As a result of the mistakes of beginners many employers get the idea that all operators are incompetent nit-wits and refuse to pay decent wages. This condition can be easily remedied by raising the license requirements for all classes of operators, providing for licenses for each class, such as, Marine, Broadcast, Airways, etc., and requiring that only operators holding Broadcast licenses be employed in broadcasting stations, and so on.

73—George Krivitsky.

\* \* \*

Editor CQ:

The letter signed R. E. Lee in the October issue interested me greatly and moves me to speak my piece.

I certainly agree with Mr. Lee that a license rating such as he suggested should be put into effect. Such a change would make a fellow's knowledge worth something, then those without the essential knowledge could not masquerade under a "First-Class" ticket and fool all but those who know. It doesn't take any special knowledge to get a "First." A year on a ship and the necessary code speed.

Where would a marine op be if he suddenly found himself confronted by a tricky broadcast transmitter? Probably, in the same position as I would be if I found my-

self as chief operator on a large passenger ship, as I have never been a marine operator and never intend to be.

This brings up a ticklish question: "Is it fair to allow an old salty "Sparks" with a "First" to step in and grab a broadcast job when a broadcast op cannot work on a ship on a BC ticket?" Neither has been trained for the other's job, yet a sea-going op without BC training can take a BC job, while the BC op cannot return the compliment. In addition, I believe that a sea-going op is further out of place in a BC station than a BC op is on a ship.

Marine operating is as remote from BC operating as the sun is from the moon and some distinction should be made between them. The BC man should be given a chance to sport his experience and knowledge on some sort of an advanced Broadcast ticket, just as a marine op can do with his "First" and "Extra-First" Class license. With an advanced Broadcast license the "dumb-head" with six weeks of radio school training would be quite out of place, even though the school could give him an exact copy of the questions asked for the advanced BC examination it would be quite impossible for it to supply those necessary years of experience.

By this time you marine ops probably know that I am looking at the situation from a BC operator's viewpoint, no doubt most of you will break forth with a 40db snort. Even so, I believe that the license situation is quite one-sided, in favor of the marine operators.

In closing I apologize to any marine operator whose toes have been stepped on; I know marine men with BC experience who are quite at home in BC stations, also I know some marine ops who don't know the difference between "crossfire" and "VI."

If other BC ops are all satisfied and have nothing to say, I suppose this discussion will end here; if not, let's have more "level" from the broadcast end.

\* \* \* 73—J. R. D.

Editor CQ:

Many of the unfavorable conditions with which commercial operators must contend at the present time were brought on by the operators themselves. For example: A few years ago I was employed on an Atlantic Refining Company tanker for \$90 per month. At that time all hands except the radio operators were receiving Shipping Board wages. With the permission of the local RCA supervisor, we wrote a letter to the marine superintendent, requesting

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that our pay be raised to \$105 per month. This letter was left in the RCA office in order that each of the sixteen operators employed by the company could sign it. When all the signatures had been obtained the letter was sent to the superintendent, who had already heard of this action on the part of the operators and approved of the salary increase. We never received the raise in wages. When the superintendent checked up, he found that only three of the original sixteen operators were still employed by the company. The rest had drifted off and were working for other concerns. As the operators, by quitting before the issue had been settled, displayed little interest in whether or not the wage increase was granted, the company—with this lack of interest as their only reason—refused the request. I think that they were right in doing so. 73 and success.

—N.J.B.

**MARINE OPERATORS.** Is there an accurate clock in your radio shack? If not, write to the nearest Radio Inspector asking that he require the steamship company to have a reliable timepiece installed in the radio room in order that you may observe the International Silent Periods. It's up to ship owners and not operators to furnish radio room clocks.

## SUBSCRIBE TO CQ

If you are a Commercial Radio Operator or an Amateur interested in Commercial Radio work, you should subscribe to **CQ** and keep posted on the latest developments in the Commercial field.

In addition to regular departments by Dr. Lee de Forest and one of a series of excellent technical articles by E. H. Reitzke, each issue of **CQ** contains many items of interest to Commercial Radiomen, both ashore and afloat. The next six issues of **CQ** will contain information of vital importance to all Commercial Radio Operators. Don't miss them. Subscribe NOW! Fill out the coupon below and mail TODAY. See special offer on page 6.

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# BREAKS

by  
**THE SKIPPER**

An Associated Press dispatch dated November 20 states that Western Union, in co-operation with Postal Telegraph, has decided to compete directly with A. T. & T. in the teletype field. The telegraph companies are advocating the use of "wired typewriters" as a means of direct communication and are prepared to install these machines in offices and private homes.

Due to the technical knowledge and ability possessed by most radio operators, it has been found that these men make desirable installation and maintenance men for teletype equipment. With the opening of the new teletype service by the two largest telegraph companies, there should be a demand for radiomen who know radio theory and have additional training in the operation, installation and repair of teletype apparatus. Operators desiring further information as to the opportunities existing in the field of Machine Telegraphy are advised to write to the Communications Institute, Box 505, Baltimore.

\* \* \*

When Hollywood went "talkie" many radio operators were given jobs in sound studios at salaries from \$50 to \$250 per week. I have received reliable information that television will be released to the public during the early part of 1932; if it is, there will be many well-paid jobs open to radio operators who know radio and electrical theory and are able to apply it. Fellows, if you want to take advantage of opportunities offered by machine telegraphy and television, you should study and fit yourselves for better jobs. The worthwhile jobs in radio go to the men with technical engineering training. If you want to prepare yourself for opportunities which are "just around the corner" you should begin by studying electrical, radio and television engineering as well as keeping up with current developments by reading worthwhile technical magazines such as **Radio Engineering, Electronics, QST**, etc.

I shall be glad to help by furnishing the names of good books, resident and correspondence schools and magazines.

\* \* \*

**Do your bit—Support the C.R.P.A. Campaign for "Better Days."**

(Continued on Next Page)

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## BREAKS

The Merchants Exchange, Portland, Oregon, no longer operates KPK, which is licensed as an RMCA station. Until recently, reports state, the Exchange has been paying RMCA a rent of \$1,000 a month, in addition to paying the power bills and operators' salaries, for the use of KPK. Beginning December first, Merchants Exchange messages formerly handled through KPK, will be routed through Mackay stations.

\* \* \*

### SOS CLUB NOTES

Here are two more suggestions for names for a mythical club composed of operators who have sent an SOS that saved human life: "How would SOS sound when converted into SUNKEN OPERATORS SOCIETY? The only drawback is that some of the gang didn't sink, hi." "The Cloud-busters use the name 'Caterpillar Club,' a caterpillar is symbolic of an aviator who can't fly. Why wouldn't **Starfish Club** be a symbolic name for a group of radio operators who can no longer go to sea on the ships from which they sent distress signals?" I think **Starfish Club** the best name suggested so far. Are there any more suggestions?

The first application this month is from Harry R. Cheetham, now in charge of the Somerville, Mass., Police and Fire Department station, who sent an SOS while on the tug "Cormorant," May 2, 1931. In addition to sending other distress calls, Cheetham has answered a large number and handled plenty of SOS traffic. He first went to sea as a radio operator in 1909 on the old "Admiral Dewey" and picked up Jack Binns' famous CQD from the "Republic" in 1910. He has held first and extra-first class licenses continuously since August 4, 1911.

On February 14, 1923, while operator on the "Ann Arbor No. 4," Ferris M. McKesson, now marine superintendent for the Wabash Radio Corp., sent an SOS which resulted in saving the lives of the crew of his ship before she foundered at the entrance to Frankfort Harbor (Michigan).

Claude E. Goodwin sent an SOS from the "Santa Clara," WBS, when she was wrecked on the Coos Bay Bar, 4:30 p.m., November 2, 1915. Nineteen lives were lost in the disaster. On December 25, 1920, he again signalled for help when the "Lakeside Bridge" lost a propeller 180 miles SW. of the Azores. The ship piled up on the Island of Pico on December 27; all hands were saved. Distress traffic occasioned by this wreck lasted for 42 hours.

\* \* \*

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### PERSONAL ITEMS

H. R. Wright, S.S. "Hilton," Searsport, Me., would like to get in touch with W. T. Chase, RM2, who was with him on F2D in 1925.

C. R. Ferguson, Mackay hi-power and point to point op, is laid-up in San Diego with a bum leg. Hope you soon recover, OM.

The following licenses are hanging on the wall at KPO, S.F.: Curtis D. Peck, Ch. Eng.; Edward Manning, Ch. Opr.; Thomas M. Watson; Jack A. Wiehr; Arthur O. Dingle; Addison Eldridge; Orrin H. Brown; George B. Dewing.

Fred L. Dewey has been promoted from City Manager for Mackay in S.F., to Mgr. of the Metropolitan District, which includes all the Bay Cities and San Jose. How about a job FL?

Arthur E. Bartelson and Purdy B. Mosher are operators on WADW, otherwise known as the "Ruth Alexander" described in the SS Co. literature as a "palatial and commodious super-express coastwise passenger liner." **Super-express** means 11 knots in fair weather.

Richard H. Olsen, ex-"City of LA" SY "Casiana," KFOX, etc., is now with Paramount sound in Hollywood. He would like to get in touch with "Willie" Sommers (last reported in Albuquerque with TWA) and E. F. Wilmhurst, who is with NBC, Hunter Dulin Bldg., S.F.

George Kolbe, Chief of the "Prexy Harding" when she rescued the "Ignacio Florio," is now at WSL, Sayville, L.I. The other two ops who were on KDWK during the above-mentioned rescue are also at coast stations; Stedman at WCC, Chatham, Mass., and Wycke at WSL.

Charles Siebold, ex-WMH and Isthmian ships is now at WBAL Balto. Siebold is also Balto representative of Mackay Radio.

(Continued on Page 14)

## Port of Philadelphia

The Port of Philadelphia, while one of the largest on the East Coast, has seldom been mentioned in this magazine; yet so many of the marine radio men are assigned from here that a few words on the local situation should not be amiss.

In proportion to its ocean traffic as a whole, at least that part under American registry, Philadelphia is pre-eminently a tanker port. Disregarding occasional chartered trips to other countries, the tanker trade is mostly coastal and intercoastal.

While many trans-Atlantic freighters make this a port of call, it cannot be regarded as a regular terminus or base for such services. New York and Baltimore remain the best ports for foreign run, the former, of course, to a greater degree than the latter.

Other shipping services include the coast-wise passenger ships of the Merchants & Miners and the ships of several smaller companies. Most notable among the last named are a few sugar boats or molasses tankers running to Cuba.

As in most ports, the marine terminals of the large oil companies are rather remote from the center of the city.

The Tidewater, Pure and Sun Oil Companies dock their ships at Marcus Hook, some twenty miles below Philadelphia, on the Delaware River. Vacuum Oil activities are centered at Paulsboro, along the Jersey side of the Delaware, above Marcus Hook. Less remote are the terminals of the Gulf and Atlantic Refining Companies situated along the Schuylkill River, which joins the Delaware below the Navy Yard.

Philadelphia has long been the stronghold of Radiomarine, although the four new Export Liners recently built at Camden, across the River, were equipped by Mackay as to communication apparatus, the RMCA merely being commissioned to install the direction finders. The most notable installation job in recent years was on the "Malolo." Activity in shipbuilding has been keeping yards in the Philadelphia district busy, most of the ships emerging from the ways with RMCA apparatus aboard.

Memories of war-time activity are evoked as one passes by the ruins of the Hog Island shipbuilding plant, where so many ships running today were built in record time.

Except for the watch-and-watch grind demanded of the men on the M & M passenger ships, working conditions and the wage situation seem fairly equitable.

All the oil companies pay \$100 a month or more, save one. The Atlantic Refining Company has for years paid only \$90. The

(Continued on Next Page)

# RADIO ~ TELEVISION

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.....(Dec. CQ)

"I SAW YOUR AD. IN CQ." Tell this to our advertisers—it helps all of us.

M & M pay \$100 for senior operator and \$80 for junior.

In affording junior operators' jobs, the Merchants & Miners ships have provided many a green man a painless entrance into marine operating. At one time, at least, the senior operators were regarded as post graduate instructors of the youths fresh from the local radio school, since taken over by R.C.A. Institutes, Inc.

As ships go, it must be remembered that tankers are often to be desired as jobs. Living conditions and food are usually of a higher standard than on other types of ships, although one does not get ashore very often.

It is the opinion of some of us that the situation marine radio operators now find themselves in—discounting the predicament resulting from universal economic depression—is mostly their own fault.

Generally speaking, a man gets no more than he is worth, and certainly a good proportion of radiomen afloat are no models of industry.

It is inherent in the work itself, perhaps, that habits of indolence are acquired, especially on tankers and freighters where the radio work is almost nil. At one time the tankers were invaluable to the coast stations because of their active co-operation in relaying, but since so many ships have been equipped with short-wave transmitters, the importance in this respect has diminished.

It is wondered if any readers remember the excellent relay work done by WSBY, KDWN and others, a few years ago, in the inter-coastal run?

It seems very doubtful that we will ever get much more than \$100 a month for radio work alone. One hundred dollars a month at sea is worth, to the single man, \$150 a month ashore, and there were very few jobs paying more than that to skilled Morse men, even before the "printers" put them out of a job.

It remains for marine radio operators by active campaigning to induce the steamship companies to employ them in the dual capacity of operator and ship's clerk if they ever expect to earn more money. As long as we are content with performing the negligible amount of radio work demanded of us, we may look in vain for greater recognition by the steamship companies.

Written from the viewpoint of a "tanker man," this letter may have neglected many controversial points relating to other classes of ships, but in principle the views expressed relate to all.

Unless we attach a little more energy to our jobs at sea, is it any wonder that steamship officials never think of the radio operator as an instrument of greater usefulness to the ship?—C.H.H.

## A New Radio Magazine

# MODERN RADIO

Edited by Robert S. Kruse  
and L. W. Hatry

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101 Allyn St., Hartford, Connecticut

## BREAKS

(Continued from Page 12)

W. Donald Thomas has transferred from the "City of Norfolk" to the "Munargo," running between NY, Nassau, Miami and Havana. Tough grind OM.

A. B. Swarts, ex-USL op, is chief on the "Excambion." Mike Rotunno from WSL is still on the "Excalibur." Morris Welte, ex-"Creole," chief on the "Exochorda," and Don Decker on the "Exeter," his junior is Kirshmann, formerly of WPR, Ensenada, PR.

"Sam" Christie, former asst. Supt. for RMCA, 75 Varick St., is now on the Yacht "Arcadia," which is laid up in Miami. V. P. Vellandre now hires and fires ops at 75 Varick, assisted by Lena Michelsen. "Flo" Levy continues to be the big coast-tax and landline lady of New Yawk.

RCA Photophone in NY recently laid off 40 per cent of its personnel.

Did you ever look under the stern of the "Stella Lykes"—now don't get excited, she's only a ship. If you do you will find: "Stella Lykes New Orleans," she isn't the only one.

Elmer Stenman would like to QSO Robert M. Carter, ex-I.W.T. opr.

"I SAW YOUR AD. IN CQ." Tell this to our advertisers—it helps all of us.

## Great Lakes Notes

Edited by C. L. HOPPER

(All contributions for this department should be addressed to C. L. Hopper, S.S. Ann Arbor, No. 7 Frankfort, Michigan.)

\* \* \*

### Silent Period Violators Suffer Suspension of Licenses.

Several Lakes operators have had their licenses suspended as a result of transmitting during the International Silent Periods. Government officials are demanding strict observance of Section 17 of the Washington Convention of 1927 requiring the suspension of traffic for two three-minute periods each hour. Operators are reminded that they should stop transmitting at exactly 15 minutes and 45 minutes after each hour and remain off the air for three minutes during each Silent Period, during this time a sharp watch should be maintained on 500 kcs (600 meters).

The usual penalties for violating the SP law are: suspension of operators' licenses for 30 days for the first offense, 60 days for the second, 90 days' suspension and a possible permanent revocation for the third violation.

Operators who have to depend upon dollar watches or "Big Ben's" for the time should check their timepieces at least once a day. Incidentally, in some ports, Radio Inspectors will require steamship owners to install accurate clocks in radio rooms if operators call the RI's attention to the fact that they are unable to meet with the requirements of the Silent Period law due to lack of suitable clocks.

\* \* \*

Great Lakes freighters are laying-up rapidly at present, 25 having tied up with the storage of grain at Buffalo. A majority of Lake vessels will be out of service by December fourth.

\* \* \*

The Reiss S.S. Co. continues to employ Deckhand-operators at deckhands' pay with nothing extra for operating. A few other companies on the Lakes are following the same policy. According to reports these concerns are finding it difficult to employ and keep competent operators. As a result, some vessels are running without operators and the radio service on others is not at all reliable. Operators on vessels equipped with RMCA apparatus have not, as yet, been required to work on deck.

\* \* \*

Due to the short seasons and the impossibility of obtaining work on sea-going vessels during the winter months, many Great Lakes operators are finding it difficult to get enough service on their licenses. A large number will be unable to obtain license renewals without re-examination.

\* \* \*

CQ and the CRPA are being given en-

## "CQ" CLASSIFIED ADVERTISING

CQ will accept classified advertising from licensed radio operators and persons employed in allied services at the special rate of five cents per line.

(1) Advertising shall pertain to radio and shall be of interest to professional radio operators.

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(3) The rate for advertising of a commercial nature is three cents per word.

(4) Remittance in full must accompany copy, closing date for classified advertisements is the first of the month preceding publication date. Provisions of paragraphs (1) and (2) apply to all advertising in this column, regardless of which rate may apply.

**BAKELITE PANEL ENGRAVING**—Radio and technical; finest workmanship. Established five years. Request price lists. A. L. Woody, Engravers, 19 South Wells Street, Chicago, Ill.

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**CQ CIRCUIT DIAGRAMS**—A complete set of five diagrams acceptable for first and second class commercial license examinations. If you are studying for a commercial license examination you cannot afford to be without these diagrams. Each diagram is complete, every part numbered and described. The complete set costs only 75 cents. Order yours today from CQ.

**WANTED**—Copies of all back issues of CQ. Our supply of the March, April, May, June and July numbers is completely exhausted. Will pay 15 cents for copies in good condition. MRR, care CQ.

**WANTED**—Commercial Marine Receiver, with or without detector or amplifier, prefer Kennedy or SE-143. Hubert Broyles, 3044 Warren Blvd., Chicago, Ill.

**WILL EXCHANGE** complete file of CQ in perfect condition for back copies of Electronics or Under Control. C. Houston Barnett, The Traymore, 523 So. Rampart Blvd., Los Angeles, Calif.

**WANTED**—Commercial Operators to act as Authorized Representatives for CQ and the C.R.P.A., in New York, Boston, Philadelphia, New Orleans, San Francisco, Seattle, Chicago, and other large cities. Liberal commissions on subscriptions, advertisements and memberships, paid promptly. Applicants must furnish reliable references and surety bond for \$1,000. Cost of bonding paid by CQ.  
CQ, 1725 Bedford Road, San Marino, Cal.

thusiastic support on the Lakes judging by the mail received from other operators. The CRPA is going over the top and going over in a big way. Those who haven't joined should get in touch with a CRPA member and get all the dope, or better yet, subscribe to CQ and receive the latest CRPA news each month.

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**Through the Courtesy of a Number of Leading Radio Stores,  
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- SEATTLE—Wedel & Co.,\*  
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- PORTLAND, Ore.—Wedel & Co.,\*  
443 Washington St.
- SAN FRANCISCO—Warner Bros. Radio Co.,  
428 Market St.  
I. S. Cohen's Sons, Ltd.,  
1025 Market St.  
Offenbach Electric Co.,  
1452 Market St.
- LOS ANGELES—Radio Manufacturers Supply Co.,\*  
1000 So. Broadway
- SAN PEDRO, Cal.—H. I. Corning & Co.,  
305 Avalon Blvd. (Wilmington)
- BOSTON, Mass.—Ben's Tremont Electric Supply Co.,  
228 Tremont St.  
Ben's Radio Shop,  
70 Stuart St.
- ALBANY, N. Y.—Uncle Dave's Radio Shack,  
115 No. Pearl St.
- NEW YORK CITY—Blan, The Radio Man,\*  
89 Cortlandt St.
- PHILADELPHIA—M. & H. Sporting Goods Co.,  
512 Market St.
- INDIANAPOLIS, Ind.—Kruise Radio Inc.,  
29 West Ohio St.
- MILWAUKEE, Wis.—Radio Parts Co., Inc.,  
313 West State St.
- CHICAGO—Chicago Radio Apparatus Co.  
315 South Dearborn St.

Purchase your radio equipment from these concerns and mention  
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\*CQ Circuit Diagrams on sale in stores marked with asterisk.

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## The Commercial Radiomen's Protective Association

has prepared several thousand petitions addressed to U. S. Senators and Congressmen requesting legislation which will provide adequate radio protection for passengers and seamen on American ships and *improved conditions for ALL licensed American Commercial Radio Operators.*

Whether or not you are a member of the C. R. P. A., **YOU** should help obtain laws which will raise the standards of your profession and make **your** job more secure.

If you have not already received a copy of the C. R. P. A. Special Bulletin and Petition, send for one **TODAY**. Help obtain an eight-hour working day, American citizenship and an age limit for holders of commercial licenses, an apprenticeship for license applicants, and greater radio protection for persons traveling or employed on American ships.

In order that a maximum number of petitions may be distributed, it is requested that you enclose ten cents (stamps or coin) for each petition desired.

### Contribute to the C.R.P.A. Campaign for "Better Days"

Do your bit to help secure legislation, publicity and organization which will benefit **you** and every other licensed Commercial Radio Operator and Technician.

Executive Secretary C.R.P.A., 1725 Bedford Road, San Marino, Cal.

I enclose \$..... for.....copies of the C.R.P.A. Special Bulletin and Petition and an additional \$.....for the C.R.P.A. Campaign for Improved Conditions. Please acknowledge my contribution by publishing my (name)—(initials) in CQ.

Name.....

Address.....

Station ..... (CQ—Dec.)



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