



JANUARY, 1917

TEN CENTS

IN THIS ISSUE

Dr. Lee De Forest

vs.

O. B. Moorhead

The New Proposed Radio Act

First and Only Wireless Magazine published on the Pacific Coast

THE ELECTRON RELAY

PATENT APPLIED FOR



The Electron Relay is a super-sensitive device for the reception of damped and undamped waves. This tube needs no introduction as it has been accepted as the standard vacuum detector.

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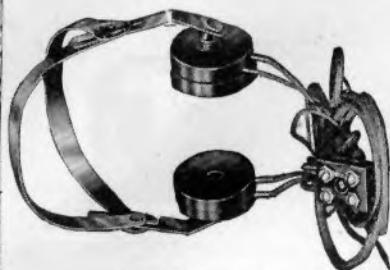
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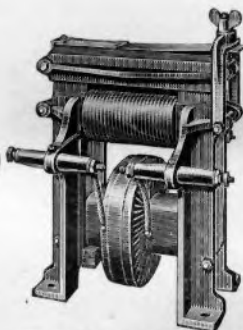
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Pacific Radio News

A Monthly Magazine of Radio Communication

Published by the San Francisco Radio Club

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L. O. FASSETT....Asst. Manager
 D. B. MCGOWN....Asst. Editor

Volume I

JANUARY, 1917

No. 1

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CHANGE OF ADDRESS—We should be notified promptly of any change in your address, giving both the old and new location. The Postmaster, as well as the Publishers, should be notified of the change.

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Pacific Radio News



The publishers hereby disclaim the entire responsibility of the statements made in this Magazine. We wish to state that the "Pacific Radio News" is an organ for the conveyance of knowledge or opinion from author to reader, and we will publish any and all sides of various controversies pertaining to the art of radio communication providing they are written in a presentable manner



JANUARY, 1917

Introducing the Pacific Radio News

REASONS FOR PUBLISHING THE MAGAZINE

A publication that fills the longest felt want has become a reality at last. How often have you wondered why a periodical related to Pacific Coast radio news had not been published long ago? How often have you longed for just such a magazine? The answer is the "Pacific Radio News", a magazine on radio subjects that has come to stay.

Very little Pacific Coast news is published in the existing radio magazines, mainly due to the fact that they are Eastern publications, and in order to publish Pacific news they would have to dig deep into their pockets. That is naturally to be expected; it would be just as hard for us to publish Eastern news as it is for them to publish Western news.

A magazine publisher cannot please the entire number of radio enthusiasts in this country with a single publication, thousands are bound to disagree with him in many respects, and again thousands will side with him to the very last. To publish a magazine even on the Pacific Coast is a great undertaking; we have to overcome a thousand and one difficulties, and, until these are thoroughly overcome, we cannot please the average reader of this publication. We will endeavor, however, to satisfy the demands of the great majority of readers, for we will publish news that will appeal to ninety-nine out of a hundred radio operators, and we assure you that this magazine will be one of the greatest of its kind in the United States.

PACIFIC COAST NEWS

Without the slightest doubt, an Eastern publication is in a better position to publish fascinating wireless news simply because the great manufacturing concerns, the leading Radio Telegraph companies, the great amount of foreign news, etc., is originated on the Eastern coast.

Let this not discourage you; quite the contrary, let it be of great encouragement to you because the news that we will publish will be equal in quality, equal in fascination and equal in instructiveness to that published in other radio magazines. An unlimited supply of the most interesting news can be published monthly, the Pacific Coast is overflowed with news and the wireless field has flourished as much on the Pacific Coast as it has anywhere else. But you do not know this, and it may be difficult to explain it to you, and the only way that we can prove this fact is to have you read the magazine monthly. The greatest radio engineers in the country will

agree with us, many having already given us their heartiest support and have assured us of an unlimited supply of interesting and instructive articles.

OUR UNBIASED OPINION

This magazine is not published by any existing radio corporation, it is published by one of the best organized radio clubs in the United States—the San Francisco Radio Club. The articles published will prove to be interesting and fascinating in all respects, for we will publish articles that will make the greatest radio engineers think, and assure you that they will be written so that the humblest amateur can understand them.

We are in a position to publish articles that other magazines dare not publish. They have their reasons, and it would be an act of great injustice to them to publish certain articles. This case does not apply to us, we are not incorporated with any manufacturing corporation, and therefore we can publish ABSOLUTE FACTS and give you BOTH sides of the story. We will publish articles that have never been seen or heard of before by the average operator, our unbiased opinion will lead us to certain victory.

LONG LIVE THE PACIFIC RADIO NEWS!
THE PUBLISHERS.

FACTS

A magazine of Western news,
A publication fine,
Has become a great reality
For once and all the time.
How often have you wondered why
A book you needed most,
Has not been published long ago
On our Pacific Coast?
The reason is, dear reader friend,
That no one had the "pep",
To give you facts, and only facts,
And take the first great step.
The problem has been solved by us,
We have the news galore,
So help us boost the "Radio News"
For once and evermore.
The San Francisco Radio Club,
Its members tried and true,
Will furnish all the latest news
That may appeal to you.
To finish then, we wish to say
The first great step was made,
To give you facts and only facts,
And facts shall never fade.

—H. W. Dickow.

"TO VICTORY"

(Reproduced from Herbert Kaufman Weekly Page now appearing in the San Francisco Examiner. Copyright, 1916, by Herbert Kaufman.)

They may doubt you,
They may flout you,
Block your plans and lie about you,
Deprecate your worth and vision,
Lash your projects with derision,
But the ultimate decision
Rests with you. If jeers can thrash you,
Every nincompoop will smash you.
Go on with your work—don't heed them;
Will and confidence don't need them.
Every man who has a mission
And remains true to ambition,
Downs the trifles that oppose him
And collects what mankind owes him.

The San Francisco Radio Club Publishers of this Magazine

Of all the great wireless organizations in the United States, it will be difficult to name one that has accomplished as much as the San Francisco Radio Club, considering of course, the length of time that the club has been organized.

A brief history of the club was illustrated in the 1916 edition of the "Year Book", but as a scant thousand wireless enthusiasts received a copy of this book, we think it advisable to publish another account of the proceedings of this well known organization. The club started its career during the early part of January, 1916, when a handful of local operators met in order to discuss the possibility of establishing a wireless organization.

The plans were successfully carried out, and the first steps towards founding the great organization were taken. The news spread quickly and effectively; many operators responded to the call for members, and the membership increased at a rapid rate as the months passed by. At the time the Year Book was published, only 36 radio operators possessed the club membership card, but conditions have changed greatly since that time.

The task of publishing the Year Book was thought to be an impossibility by other radio organizations, but our plans proved to be successful in all respects, the book was printed by one of our members and distributed among radio operators thruout the United States. Hundreds of letters were received from Eastern enthusiasts asking for copies of this booklet, and the supply was exhausted within a period of three weeks after the date of publication.

At a meeting of the club held several months ago, U. S. Radio Inspector, Mr. E. W. Stone, stated that the San Francisco Radio Club was the only organization that has undertaken the task of publishing a Year Book, excepting, of course, the great Institute of Radio Engineers. The supply of the book being exhausted, the members desired to publish a second issue of the proceedings on an enlarged scale, and the "Pacific Radio News" is the result.

It may be of no little interest to many radio operators to realize that an organization of our character is able to publish and finance a magazine of such proportions as the "News", but nevertheless it is a great reality. We have undertaken something that could not have been attempted by hundreds of other similar organizations in the country. The time was ripe for a great organization to come into the field in San Francisco; our city lacked nothing but a good radio club and a radio magazine.

In former years there once flourished a radio organization also entitled the San Francisco Radio Club, having a membership of about fifteen operators. This club was organized before the U. S. Government laws went into effect and disbanded shortly after the laws of radio communication had been passed.

Out of the fifteen members, twelve of them successfully passed the U. S. Government Commercial First Grade examination and were assigned as operators to various ship and shore stations along the Pacific Coast. The former President of the club, Mr. R. E. Cowden, is now working the second trick at the Seattle land station of the Marconi Wireless Telegraph Co., being formerly employed as operator aboard many ships equipped with Marconi apparatus. In a letter

received from him several weeks ago, he makes the following statement regarding the San Francisco Radio Club:

"I hear...that there is considerable activity in San Francisco in the wireless game; that there is quite a club in existence, being wide-awake and doing something useful.

"I also...hear that several of the original S. F. Radio Club members are connected with the new organization. Sounds like a revival of the spirit of the balmy old days."

Many of the original members are still employed by various wireless corporations on the Pacific Coast, while others have left the game for good.

The membership is divided into two classes: Full Grade Members, and Associates. Only Full Grade Members are allowed the privilege of holding the offices of President, Vice-President and Examining Officers. Examinations for Full Grade Members are held quarterly at the club room under the supervision of two Examining Officers.

The examination is equivalent in all respects to the U. S. Government examination for First Grade Commercial license and any member who successfully passes the examination will be sure to meet with equal success when he is examined by the Government Officers.

The club has been of material assistance to the Radio Inspectors of this city, as well as to the commercial land stations in the immediate vicinity. Reports of interference between amateur and commercial stations is rapidly decreasing; stations operated by members are tuned to comply with the law by means of accurately calibrated measuring instruments that the club possesses.

The task of tuning stations to resonance has met with great approval by the local Radio Inspectors, as will be shown in a statement made by U. S. Radio Inspector V. Ford Greaves, in charge of the local office at the Custom House. His statement follows:

(From a letter sent to the President of the Club, Mr. H. W. Dickow.)

"I am very much obliged for your letter of September 11th, and desire to congratulate you and the members of your club upon your excellent organization. I believe that your work will prove to the mutual advantage of this Department and your members.

(Signed) V. FORD GREAVES,
Radio Engineer."

Nothing but the highest praises are received from the various radio engineers in this city regarding our organization, and we can truthfully state that few, if any, organizations have accomplished as much as we have, considering the length of time that we have been organized. Many prominent speakers address the members at the regular business meetings, Radio Inspectors, Naval operators, Electrical Engineers, and others have delivered very interesting and instructive lectures on various subjects. The new club room is located on the northeast corner of Frederick and Belvedere Streets, and is amply large enough to comfortably accommodate 100 members. The membership of the club approaches very near the hundred mark, as our membership directory shows.

Commercial and experimental operators representing almost every wireless corporation on the Pacific Coast are members of the club, thus enabling the members to keep in constant touch with the many developments made by the various corporations.

The initiation fee for members and associates is one dollar, the membership card being supplied upon payment of the initiation fee.

The monthly dues for both grades of membership are twenty-five cents, payable at the first meeting of the month.

The large membership certificate is issued to all members who are in good standing, the appearance of the card having met with the utmost approval of the membership. It is similar in all respects to the membership certificate issued by other large wireless organizations and will fill a prominent position in any radio station. The regular bi-monthly lectures that are delivered by members of the club are sent in printed form to all members, no charge being made for this service. It is desirable that the Bay District commercial and experimental operators apply for membership in order that our club may become one of the leading organizations in the country. Any information regarding the club will be furnished by the Secretary-Treasurer, H. R. Lee, 1580 Grove St., San Francisco, Cal.

OFFICERS OF THE CLUB

H. W. Dickow.....	President
D. B. McGown.....	Vice-President
H. R. Lee.....	Secretary-Treasurer
T. J. Ryan.....	Sergeant-at-Arms
H. J. Malarin.....	Examining Officer
C. M. Heaney.....	Examining Officer

The New Proposed Radio Act

To Be Placed Before Congress At Its Next Session

GOVERNMENT OWNERSHIP OF ALL COASTAL STATIONS

Sec. 1. Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That wherever used in this Act the term "radio communication" shall be construed to mean communication by any system or method of electrical communication without the aid of wire or other conducting connection; the word "apparatus" to mean machines, devices, and all other equipment used in radio communication; the words "transmitter" and "receiver" to mean the sending and receiving apparatus, respectively, used in radio communication; the word "radiogram" to mean any message, communication, or signal, transmitted or received in radio communication; the term "radio station" to mean a place where apparatus is used for transmitting, or for transmitting and receiving, the signals used in radio communication; the term "Government land station" to mean any radio station on land, or on a permanently moored vessel, controlled and operated by any department of the Government; the term "Government ship station" to mean a radio station on any ship of the Government controlled and operated by any department of the Government and not permanently moored; and the term "Territory of the United States" or the word "Territory" to mean

any Territory, District, Zone, insular possession, water, or other place subject to the jurisdiction of the United States, and not within any State.

The word "person" as used in this Act shall be construed to import both the plural and the singular and to include a corporation, co-partnership, company, or association; and when construing and enforcing the provisions of this Act, the act, omission, or failure of any director, officer, agent, or employee of such corporation, co-partnership, company, or association acting within the scope of his employment or office shall in every case be deemed to be the act, omission, or failure of such corporation, co-partnership, company, or association, as well as that of the person acting for or on behalf thereof.

Sec. 2. Radio stations are divided for the purposes of this Act into the following classes:

1.—Coastal station, a station on land or on a permanently moored vessel used for the exchange of correspondence with ships at sea. Coastal stations include (a) those open to general public correspondence, and (b) those open to limited public correspondence. Coastal stations of class (b) transmit and receive public messages to and from certain stations

(Continued on Page 29)

Dr. Lee De Forest vs. O. B. Moorhead

By O. B. Moorhead

The subject of Vacuum Tube detectors has been very well covered in the past year and reference to any publication dealing with radio will reveal a mass of technical data covering the operation, circuits and characteristics of the various types of these devices. Therefore I have eliminated all matter dealing with this phase of the subject. A summary of the suit recently heard in the U. S. Federal Court and the Opinion of Judge Van Fleet shall be the subject of the following article.

On the fifteenth day of February, this year, the De Forest Radio Tel. and Tel. Co. filed a complaint against Mr. Hyde and the writer, who are co-inventors of the Electron Relay, alleging infringement upon seven of his patents. The defense of this suit was immediately taken up and local radio experts were called upon to submit testimony in our behalf. Mr. Haller, of San Francisco, filed a lengthy affidavit regarding the action of all types of vacuum detectors. No trouble was spared to collect data for this affidavit. Pages from the writings of authorities on this subject were copied and incorporated in his testimony and the completed deposition largely offset the showing of Mr. John Stone of the De Forest Company. Mr. H. R. Sprado, of San Francisco, prepared a valuable affidavit touching upon the theory of vacuum tube detectors. Mr. Hyde filed evidence covering the manufacture of the Relay, while the writer submitted several depositions on the operation and manufacture of the tube. The firm of White and Prost was retained for the defense and Mr. William K. White prepared an argument which dealt with all types of detectors showing the advance and difference in each.

After this evidence was filed, the

De Forest Company brought forth several counter affidavits in which they attempted to show how little radio men upon this coast knew of the subject. It was also charged that the defendants were operating in a secretive manner. This was done to create an unfavorable impression of the defendants. The De Forest Company was partially successful in this, as Judge Van Fleet mentions an unfavorable impression made upon this mind as to the manner in which the defendants practiced their rights in the devices they were manufacturing. The only reason De Forest was successful in this, was due to the fact that we were struggling along with very limited capital and our companies were not well known. However, when our asserted rights were contested we were quick to come forth and defend them.

Of course the prosecution endeavored to surround the question of infringement with so many petty issues that the actual question was hard to decide. Judge Van Fleet made a very fair decision, under the circumstances, by merely requiring a bond from the defendants in order to insure our appearance at the final trial.

John H. Miller, for Plaintiff.

William K. White, for Defendants.

The Court (orally): I fully recognize the value and propriety of the general rule that the question of infringement, if at all close should not be prejudiced by determining it even potentially on a hearing of this kind. I think affidavits, being wholly ex parte, are very inefficient as a medium of reaching the best results on any close question of fact to be deduced from evidence. The introduction of evidence in open court in the usual manner, where the right and privilege of cross examination may be had is much more efficient for bringing out the full truth; that is so essential frequently in determining the somewhat refined questions arising in cases of this character; and

I am inclined to think that the showing here is not such as should induce the court to depart from the protection of that rule, there being here no showing of a former validation of this patent, nor, to my mind, any such general public recognition of its validity as would meet the necessities of the court in the exercise of its discretion in favor of granting an injunction. But as I have doubtless indicated by my suggestions to counsel for defendant in my comments upon some features of this showing, there has been made upon by mind a very unpleasant impression as to the character of some of the circumstances under which the defendants have initiated and practiced the rights they assert to the device complained of. It may be that their claim is the result of perfectly honest discoveries by the defendants who have put forth this alleged infringing instrument.

Now that the aspect of the showing here on the part of the plaintiff has not to my mind been sufficiently met and dissipated by the defendants' showing, and while, for the reasons stated, I do not think it is a case for an injunction, I do think that the case is a proper one to require the defendants to furnish an indemnity bond to the plaintiff, at least until such time as the case under submission in New York may be determined,—that they will respond, should their device be declared an infringement, in any damages that they may cause the plaintiff in the meantime by continuing to put their device upon the market; that is, of course, unless they prefer to let an injunction issue. If the defendants prefer to have an injunction to giving a bond, I will grant the motion. The only difficulty is the amount of the bond. There has been no sufficient showing as to the extent of the traffic. (To Mr. White.) Do you know anything as to the extent of their business?

Mr. White: No, your honor; but I do know that Mr. Hyde makes all of his bulbs himself.

The Court (to Mr. Miller): Have you any basis on which to estimate the extent of the injury that you think you will suffer?

Mr. Miller: Our affidavits show that the damage is very extensive, because the publications of advertisements of these devices and their sale have been very extensive. In one instance there were nearly two hundred

sales, nearly all of the defendants' devices, and consequently the sales of our device were curtailed to that extent, and I would refer your Honor on that point to certain advertisements. Here is the "Electrical Experimenter" and on page 282 we find, "New Price. Detector Amplifier and Oscillator \$5.25," our price was \$7.50 when this litigation started. Now we have had to reduce our price. It is signed at the bottom "Audiotron Sales Company, San Francisco." Then on another page in this same magazine, on page 273, we find the same thing. "Improvement Notice." It says it is an improvement, but the cut shows that it is the same device. "Double filament \$5.50; Single filament \$4.00." And this is signed the "Pacific Laboratories Sales Company, 534 Pacific Building, San Francisco." That is Mr. Moorhead, the other defendant. After the split up he began manufacturing them under the name of the Pacific Laboratories Sales Company. Then further along, on page 289, we find another advertisement. "Double Filaments"—

The Court: Well, Mr. Miller, this doesn't furnish me with any idea of the demand for the article. What is the demand?

Mr. Miller: Oh, the demand is very great. The demand is mostly for amateur wireless operators. They buy one of these things. They don't last forever, and they have to buy another one. There are thousands of wireless operators. All of them take these papers to see what is coming out every day. I spoke with the attorneys, or conferred with the attorneys, in regard to this matter in case the court should decide that it was most too stringent a course to require a bond, and they said that they thought the bond ought to be \$15,000. Apprehending that there might be some questions in regard to the matter, I asked those questions of them and that is the answer they gave. I think a bond in about the sum of \$10,000 would be about the right sum to give, because you can get a bond for \$10,000 practically as easy as one for \$5,000. They would be liable on the bond only in case the court should find there was infringement. If there has been no infringement, as they so confidently assert, they won't be out anything except the premium.

The Court: Of course if there is no infringement they would be enti-

tled to recover the amount of the premium from your client as proper costs or disbursements.

Mr. White: You would have to put up a collateral security to get a bond. To make a large size bond is the same thing as to grant an injunction which I understand the court does not wish to do.

Mr. Miller: A bonding company always requires some kind of a guarantee. You can't expect a bonding company to give a bond without some kind of security to themselves.

The Court: Are these various defendants all offending in the same way?

Mr. Miller: No, but Moorhead and Hyde and Cunningham are all in the same boat.

Mr. White: No; Moorhead sells only the bulbs that he makes himself. Hyde makes the bulbs for Cunningham.

The Court: Well, of course I am bound by the showing as to what the situation was at the time the suit was brought.

Mr. White: Well, at the time the suit was brought there was no connection between Moorhead and Hyde.

Mr. Miller: Why, your Honor. Their own affidavits show that Moorhead and Hyde were the joint inventors.

The Court: If Cunningham sells them for Hyde, he is a sort of secondary infringer.

Mr. White: Mr. Moorhead sells only his own bulbs. Hyde and Moorhead separated in the spring of last year.

Mr. Blum: May I say a few words your Honor, in regard to the other defendants?

Mr. Miller (to Mr. Blum): I was just going to take that up with the court. (To the Court): In regard to the Haller Electric Co. and G. F. Haller. Mr. Blum here represents those two defendants. They have a little retail store down here on Market St. in which they sell Electrical Appliances, and among other things they have secured these bulbs and sold them, and for that reason they are joined in the suit; but I understand that they have discontinued selling the bulbs since this suit was brought, and that they do not intend to sell any more of them until this matter has been determined. I think that as to them a small bond, say in the sum of \$500, would probably cover what

the court has in mind. But as to the other defendants, Moorhead, Cunningham and Hyde, and the Auditor Sales Company, I think that the bond against them ought to be in a sufficient amount to show that this is really a serious matter and not a mere matter of paper and insignificance, and I think that a bond of \$10,000 would not be excessive, because I really think that we have sustained more damages than that.

Mr. White: If the Court please, as showing the disposition of counsel to ask for excessive bonds, I will say that in the Sherman Clay case counsel asked for a bond of 500,000 dollars, and your honor granted a bond of \$5,000.

Mr. Miller: You can't draw analogies of that kind.

The Court: I suppose counsel is merely referring to the general tendency of attorneys to exaggerate.

Mr. Miller: Furthermore, counsel is wholly mistaken in regards to his facts. I consented to the amount of the bond in the Sherman Clay Company case. The case where the \$500,000 bond was asked was in the Columbia Graphophone case.

Mr. White: That is all the more favorable to us, because the Columbia Graphophone Company is a larger company and sold millions of devices, and in that case your Honor only required a bond of \$5,000. As I say this is a small business carried on by Moorhead and Hyde.

The Court: I will require a bond at the hands of Mr. Hyde in the sum of \$4,000, and the same in the case of Mr. Moorhead; and from Mr. Cunningham a bond in the sum of \$1,000. I don't think the other calls for a bond,—that is the Haller.

Mr. Miller: I suppose the order will be in the usual form.

The Court: Unless the bonds are given within a certain period, an injunction will issue.

Mr. White: I ask that that period be reasonable time—for five days.

The Court: Very well.

Mr. Miller: In regard to Cunningham, I would like it understood that if I can obtain data showing that our damages will be much larger than the amount of the bond as fixed by the court, that I may make a motion that the amount of the bond be increased.

Mr. White: That is double liability. Cunningham simply handles the

bulbs made by Hyde, and Hyde will be under a large bond.

The Court: That may be understood as to all the defendants. If you can furnish me with data showing that your damages will not be covered by the bonds as fixed, I will entertain a motion to increase the several amounts.

Since the above decision, De Forest has withdrawn the original complaint in which he alleges infringement on all seven patents and has filed a new complaint, in which he asserts infringement on one patent only. Had the case been left in the original form some very interesting questions would have been discussed. Even as it is, a very delicate point is to be decided, that is the difference between a gaseous medium and an Electronic Emission. De Forest says in the patent upon which he claims infringement, "The objects of my invention are to increase the sensitiveness of oscillation detectors comprising in their construction a gaseous medium by means of the structural features and circuit arrangements which are shown herein."

In the Electron Relay we claim a modification of the pure electron current flowing between the hot cathode and the relative cold anode by means of a grid interposed between the cathode and anode.

The difference between the Audion as patented by De Forest and the Electron Relay can be demonstrated practically in this manner:

If a De Forest Audion is exhausted to the degree of vacua to that which the Electron Relay is carried, the result is that the Audion is so insensitive that it may be called in-operative. The same applies to the Electron Relay when exhausted to the limited degree so as to procure a gaseous medium as patented by De Forest, the Electron Relay in that case being in-operative.

We can produce any number of Re-

lays that display practically the same operating characteristics. This is impossible with the Audion.

In the Electron Relay we have incorporated metals which involve the theory of photo electric discharge. What part this discharge plays in the operation of the tube is exceedingly complex and rather tentative. But, if the plate and grid elements are manufactured of other materials that occupy different positions in the Electro-Chemical series, a great difference in the operating characteristics is observed.

There is no doubt that the Electron Relay and the Audion differ essentially in the mode of operation, but, it is a delicate matter to decide inasmuch as we can detect the electron only by the effects produced by it.

RADIO CONSTRUCTORS LEAVE MARE ISLAND

The radio crews named for installation of the new equipments at Point Loma and Eureka Naval Radio Stations will leave Mare Island November 27. Ten men will be sent to equip the Pt. Loma station, while five will be sent to Eureka.

Among the engineers appointed to install the Eureka set, is Mr. G. S. Hubbard, formerly of the Marconi Construction Department in San Francisco and who has been in the employ of the Mare Island Radio Laboratory for many months.

EXTRA COPIES OF THIS MAGAZINE

Extra copies can be purchased from the publishers at 10 cents per copy.

Only a very limited number remain on hand and you will have to act quickly if you wish to obtain extra copies of this issue.

All subscriptions will hereafter start with the current issue; no subscriptions will be started with back numbers.

Sealing the Radio of Belligerent Merchantmen

By V. L. Woolman, Elec. 1st C., U. S. N.

The method of sealing the radio sets on the ships of the belligerent nations when they enter the harbors seem to be little known even among the operators of our coast. This article will outline the duties of the operator on neutrality duty.

To preserve our neutrality every ship belonging to the belligerents



Mr. V. L. Woolman at the Key of a Radio Set Aboard One of Uncle Sam's Warships

must be boarded immediately on arrival and the radio sealed in places where it would be impossible to either receive or transmit without breaking a seal; the penalty of which is very severe and might in extreme cases forbid the clearance of the vessel at fault.

During the time the writer has been on Neutrality Duty only Japanese and British vessels have arrived in San Francisco; although one German steamer, the "Serapis," has been interned since the outbreak of the war.

The manner in which the apparatus is sealed must of a necessity vary with the make of the sets. There also seems to be a difference in the methods of the officials of New York and

those of this coast. For instance when a vessel enters New York harbor it is boarded, the aerial lowered, the vital parts of the receiver and transmitter sealed, and the office itself sealed against admittance. In San Francisco, which very fortunately is situated far from the present scene of warfare, the apparatus is sealed as securely; but the aerial is not lowered or is it often found necessary to seal the office.

The British vessels which have entered San Francisco have as a rule carried some style of the old Marconi set, although a few are proud possessors of an old style Telefunken equipment. The sealing of the British vessels is usually very simple as they carry their motor-generator, transformer, spark gap, condenser, the aerial connection and all spare parts in a small closet. The aerial is disconnected and grounded, the motor is disconnected or short-circuited, and both sets of head 'phones are placed inside the closet and the room is sealed.

The Japanese vessels carry a system which they claim for their own and is known as the "Teishinsho System." The aerial connection descends thru the roof of the office thru a heavy porcelain insulator and is connected to the sending and receiving switch by a heavy brass rod which is removed and the overhead connection sealed. The transformers are disconnected and short-circuited and the primary of the receiver is drawn out as if for an extremely loose coupling and the head 'phones sealed to the primary in this position.

When the sealing has been completed it is inspected by the Neutrality Officer who is an officer in the United States Navy. The ship is also boarded and inspected at unexpected periods by the Neutrality Officer.

The End of the Bear

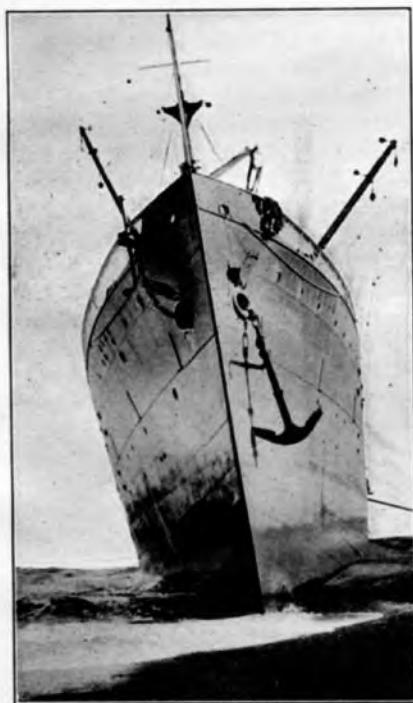
By H. W. Underwood



A GIANT COMBER WREAKING HAVOC WITH THE "BEAR"

Amidships, just where the metal keelson takes the strain of the engines and boilers, the "Bear" broke in two on Nov. 16th, according to confirmed

ran aground near Eureka on June 14th, 1916, at 10:22 p. m., thus adding another disaster to the already overcrowded list of Pacific Coast tragedies.



HIGH AND DRY

dispatches from Eureka. This stopped very suddenly a promotion scheme for the salving of the vessel. The "Bear"

The first distress signals sent from the vessel were picked up by Operator Williams at the Eureka Marconi station. The operators on the Steamer "Grace Dollar" and the U. S. S. "Oregon" also heard the call for assistance and at once started for the scene of disaster. A full account of the wreck has already been published in various magazines but little, if anything, was said regarding the salving operations that took place during the previous months. Marconi Operators Grabow and Woods, of the "Bear," returned to San Francisco. The wrecking steamer "Iaqua" of the Union Iron Works was sent north to carry out the salving operations.

As is always the case, the incident was soon forgotten by the general public and but little attention was paid to the salving operations. Mr. H. W. Underwood was assigned to the "Iaqua" which left San Francisco on the night of June 15th and arrived on the scene of the wreck on the morning of June 17th. No time was lost in laying the mooring anchors and placing the towing appliances aboard the "Bear." After ten days of unsuc-

cessful efforts, during which time the sand shoaled up to a height of ten feet on the seaward side of the ship, the "Iaqua" was ordered to return to San Francisco.

On June 28th the salvage operations were resumed upon the arrival of the British wrecker, "Salvor" of the British Columbia Salvage Company.

Upon the arrival of the "Iaqua" at San Francisco, Mr. Underwood was assigned to the "Bear," traveling overland and re-installing the equipment which had been removed in the meantime. He arrived at 9 a. m. on July 7th and had the main set in operation at 4:30 p. m., this being an accomplished feat of no little importance.

Although the water had flooded the engine and boiler room to a considerable depth, it had not yet reached the dynamo room or the donkey boiler. Thus the main set was placed into immediate operation and communication with Eureka was once more established.

As the Eureka station is situated but 25 miles from the wreck, it was unnecessary to use the main set and for this reason the auxiliary set was resorted to and rendered satisfactory service for many weeks. In this manner it was only necessary to run the ship's dynamo every ten days in order to re-charge the storage cells. The traffic with the Eureka station and the steamer "Salvor" ran into the thousands of words each month but no delay or trouble of any kind was experienced with the spark coil or other apparatus.

A few words in regard to the salvage operations would probably prove interesting to a great many readers. In the case of the "Bear" three large anchors were placed approximately 1,500 feet from the ship and from one to two hundred feet apart. Large steel towing cables were led from each anchor to the stern of the ship and thence thru a system of blocks

and tackles to the steam winches. Another steel cable was attached to the port bow and thru a block and tackle to a large donkey engine on the beach. On account of the heavy swells which are so common on the Mendocino coast, preparations for heaving on the numerous cables were not completed for nearly two months, it being necessary to await the high tides and complete the cargo discharging.

With the combined efforts of the "Salvor" and wrecking appliances, the vessel was moved but twenty feet, the sand soon banked the ship in such a position that she was high and dry on the beach. The next attempt to float the "Bear" was also unsuccessful, large sand pumps being employed to wash the sand away from the ship. To cap the climax a heavy nor-wester set in on the night of Sept. 10th and obliterated three weeks' work in a single night. Fourteen days later the powerful seas pounded the ship with such terrific force that a hole twenty five feet by twelve feet was torn into the lower hold near the engine room, the sand quickly washed in and all means of saving the ship were abandoned.

A wireless operator's life aboard a wrecked ship is not as fastidious as it would probably appear, but to those who are willing to disregard such little inconveniences as making your own bunk, cleaning your room, cooking part of your meals, packing water up the many companion ways, copying press during the wee hours of the morning, and being allowed to leave the ship for only two hours daily, and trying to walk on a deck with a 14 degree list there are many new and varied experiences to be gained while doing salvage work.

The extreme hospitality of the people in the vicinity of the wreck will never be forgotten as well as the many happy hours that were spent with the most congenial crew imaginable.

AMERICANS IN TOKYO SEND WIRELESS GREETINGS TO PRESIDENT WILSON

The San Francisco-Japan wireless service was established on the morning of Nov. 16th, by the Marconi Wireless Tel. Co. Messages were exchanged at seven o'clock, Pacific Time, favorable atmospheric conditions prevailing. A message of greetings was sent from President Wilson to the Emperor of Japan, offering felicitations on the new means of communication between the two countries.

The Marconi stations at Marshalls, near Bolinas, at Kahuku, Hawaii, and Funabashi, Japan, were used for the initial service. The message was relayed by the Hawaiian station but it is expected that direct communication with the Japanese station is only a matter of time. Mr. G. S. DeSousa, Traffic Manager of the Marconi Wireless Tel. Company, and Mr. A. H. Ginman, General Manager of the Pacific Coast division, supervised the inauguration of the service.

Jiro Tanaka, director general of posts and telegraphs in Japan, inaugurated the wireless communication from the Japanese station by sending three messages to the United States via the Marshalls station. The wireless telegraph plant used in sending messages from the Japanese side was erected primarily for the use of the Japanese navy but it is hoped by Japanese officials that regular round-the-globe communication will be established at the conclusion of the war.

A message of greetings to President Wilson was sent by the largest gathering of Americans which has ever assembled in Tokyo. The meeting was held to celebrate the opening of the new communication service, the message to the President expressing the desirability of co-operation between the two nations for the promotion of commerce and tightening the bonds of friendship.

INSTITUTE OF RADIO ENGI- NEERS ORGANIZES SAN FRANCISCO BRANCH

At a meeting of the Institute of Radio Engineers held in the Mechanics' Building in San Francisco, Tuesday evening, Nov. 21st, at 8:30 o'clock, the necessary steps toward organizing a San Francisco section of the Institute were taken.

Announcements to this effect were sent to all members residing in San Francisco and vicinity, requesting a large attendance in order that the local branch could be organized.

The names of 35 members are necessary in order to organize a section, the full number of endorsements were received and the organization of the section became a reality.

Mr. V. Ford Greaves, local U. S. Radio Inspector, acted as Secretary-Treasurer, while Mr. W. W. Hanscom of the National Radio Telephone Company filled the office of Chairman.

An election of officers was held, Mr. W. W. Hanscom being elected Chairman for the season, while Mr. V. Ford Greaves was elected Secretary-Treasurer.

Mr. H. G. Aylsworth, of the Aylsworth Agencies in this city, was the successful candidate for the Executive Committee.

It was decided that meetings are to be held monthly in the Mechanics' Building, the meeting hall being at the disposal of the Institute without charge.

The monthly meetings are to be held on the Tuesday evening of the month nearest the middle of that month. Announcements to this effect will be sent to members monthly.

For the convenience of members who reside in the Bay Cities and are unable to be present at the appointed meeting hour, arrangements have been made for dinner service in the clubroom.

(Continued on Page 28)

Splashes of Static

MALICIOUS INTERFERENCE

(From an Amateur's Viewpoint)

There's a station out of Crocker Tract that holds the air all night,
He always tells the "kids" to break and nearly starts a fight.

He's always starting trouble, he never cracks a smile,
He tells you with his furious spark, to keep out for a while.

The amateur is frightened stiff, and dashes for his key,
"O.K., Old Man", he answers, "A good boy I shall be".

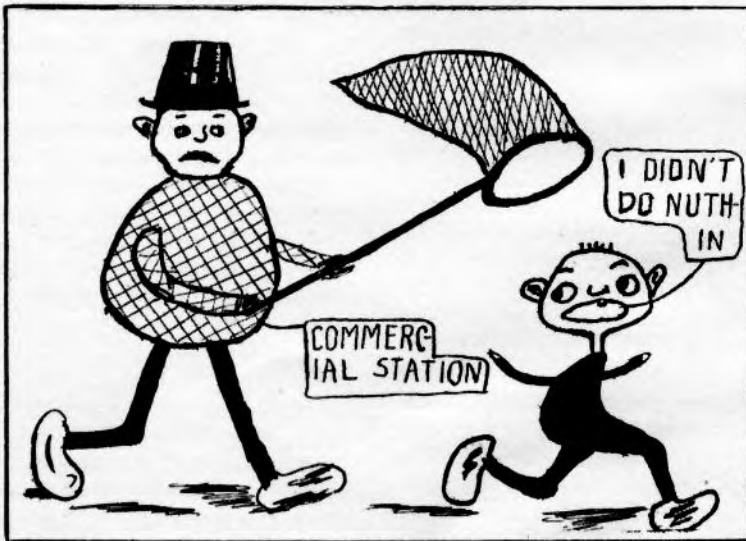
The Commercial Man forgets the days when he once was a "ham",
He never thinks of looking back, for he's a grown up man.

There used to be a time when he was once a kid,
No better than the rest of us, malicious things he did.

He laughed and yelled quite loudly when he was told to quit,
He kept right on a-sending with his sassy little "mitt".

And now he often wonders why the kids do as they please,
They keep on interfering, like a bunch of busy bees.

And when he asks them for their call, they jump right on their key,
They tell him quite politely, "My call is B. V. D."



THE RESULT OF INTERFERENCE

JOHN HAMMY'S FIRST COMMERCIAL EXAMINATION

He sat before his tuner, a stogie in his mouth,
The 'fones clasped tightly to his ears, listening to the South.
He copied Point Arguello, NPL came strong,
But Johnny's eyes grew heavy and he slept right on along.

He had a dreadful Radio Dream, the kind that ne'er comes true,
"To the Custom House I'll go," says he, "and show what I can do."
"The first Commercial Ex I'll take, I'm sure I cannot fail,
The percentage they will give me will make the rest look pale."

A reference book was opened, its contents read with care,
"I know that dope," he shouted, as he rose up from his chair.
A taxicab he mounted, the Custom House his goal,
"Stop down the street," he ordered, "close to that wireless pole."

The Taxi Driver saw the pole, and the Custom House white walls,
"Two dollars, please," he murmured, but Johnny Hammy stalls:
"I cannot spare it, driver, I have but fifty cents,
The Notary Public must I pay for legal documents."

"But listen, Taxi Driver, the bill that I shall pay,
Will bring you more than what you ask, some bright old Summer day,
A millionaire I'm bound to be, brass buttons I shall wear,
Enormous pay I shall receive, your bill I'll pay quite fair."

He walked into the Custom House, and questioned the Director,
"What elevator must I take to the Radio Inspector?"
"Number Four," he shouted; Johnny trotted in,
His face grew white with fright, as tho of some great sin.

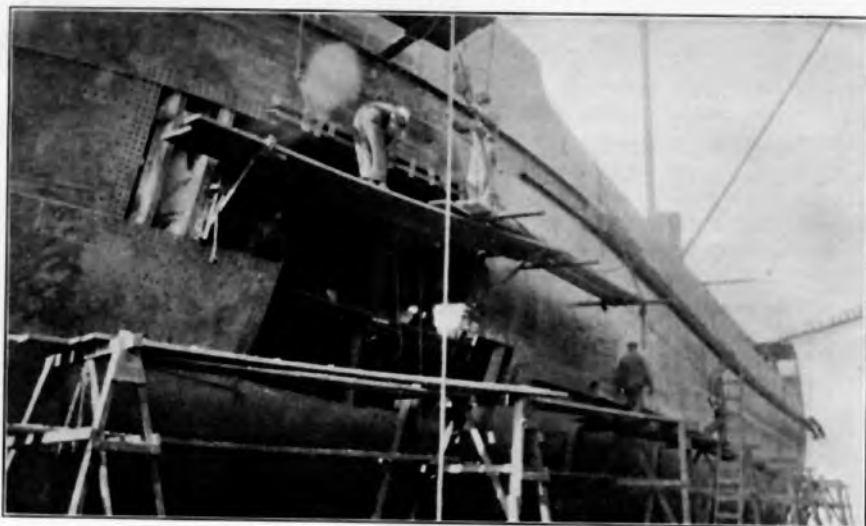
The Inspector's office he entered, with expressions of despair,
"An application Blank," he whispered, as he sat down in a chair.
His excitement grew intense, his face grew paler yet,
The application finished, the speed test he must get.

The Inspector viewed him fiercely. "Look here, you Ham," he said,
"Twenty words I'll send you, to copy in your head."
"My only means of copying," said little Johnny Hammy,
"Is on a piece of paper, that's the only way I can."

"Don't talk so much," the Inspector said, as he grasped the buzzer key,
"If you have your doubts of passing the EX, at school you ought to be."
John Hammy trembled fiercely, his end had come at last,
"I'm going home to study first, for another chance I'll ask."

"Three months from now I'll come again," he trembled as he spoke,
He left the office in a hurry, his heart was nearly broke.
"WAKE UP", somebody shouted, as he tumbled from his chair,
"It's time for you to go to school," said a voice from up the stair.

By "ONE WHO KNOWS."



THE "PROVIDENCIA"—"HUMBOLDT" DISASTER

[The following account of the "Humboldt" disaster was related by Mr. W. M. Griffith, formerly Secretary-Treasurer of the San Francisco Radio Club and employed by the Haller-Cunningham Electric Co., of San Francisco, as wireless operator aboard the S.S. "Providencia," formerly the "Olson and Mahony". The vessel was equipped with a $\frac{3}{4}$ K.W. Hy-Tone quenched gap transmitter and the standard cabinet type "HALCUN" receiving set.—Ed.]

We left San Francisco on Friday, August 25th, for Port Gamble, Washington, to load props for Mexico. Upon nearing Port Townsend the weather became very foggy, so we laid in that port from 1 a. m. until 6 a. m. on August 29th. At 6 a. m. we proceeded on our way to Port Gamble. The weather was still very foggy.

I was standing on the after deck when I heard three blasts from our whistle, and the engine bell rang. Looking forward I saw the "Humboldt" coming thru the fog. I grasped the railing and waited for her to hit. It seemed a full minute before the excitement happened, but at last she came crashing into our port bow, denting five plates. It was exactly 8:15 a. m. The impact threw the "Humboldt" apart from us, only to have her come crashing back

again into our port side, tearing off the guard.

The life boats were immediately swung out and everybody was ordered on the boat deck. The captain, who was on the bridge when the accident happened, ordered me to find out how the "Humboldt" was. I called her and asked how they were making out. The operator on the "Humboldt" (WHX) said he did not know how they were, that they had all the life boats swung out and for us to stand by. He also asked how we were. I replied, saying that we were all right and would stand by. Meanwhile all the boats in the vicinity were asking "What's up"?

We swung around and stood by for about three minutes, when the captain yelled that they were not taking any water and were all right. The "Humboldt's" bow was

badly damaged and her stem was completely broken off.

She proceeded to Seattle under her own steam, the "Providencia" following, as a convoy. The "Humboldt" was bound for Alaska with forty passengers and a large amount of freight. We arrived in Seattle at 1 p. m., and after a two weeks' stay for repairs, proceeded to Port Gamble.

LACK OF FUNDS PREVENTS LIGHTSHIP INSTALLATIONS

(From the S. F. "Call")

The United States life saving service and the federal radio service will co-operate to report by wireless the arrivals of incoming ships off the heads and save the customs and immigration departments much wasted time and money if Congress can be made to see the economy of spending a small appropriation for equipment.

Congress will be asked at its next session to provide money to install and operate a wireless plant on the San Francisco lightship, and to install a receiving plant in the headquarters of the radio service.

Despite the use of wireless these days, the time of arrival of incoming ships is uncertain. Even the big passenger liners do not arrive as predicted.

There are frequent times when the entire boarding staffs of the customs and immigration departments, numbering some thirty men, climb out of their beds a half hour ahead of the sun and get down to Meiggs wharf, sans breakfast, at daybreak to board an expected liner, only to wait anywhere from two to six hours until it really enters the harbor. Then there are ships without wireless that are always uncer-

tain. With a wireless on the lightship, ten miles outside the heads, a message can be flashed in when any ship starts for the Golden Gate. This would give an hour's certain notice of its arrival.

The life saving service wants to put a plant on the lightship, but it hasn't the money. It has a radio outfit on the tender "Sequoia," but there isn't even a fund to pay an operator, so it is idle. The opinion is that the protection to life which the wireless would give would alone be worth the expense.

RADIO STATION AT THE U. C.- WASHINGTON FOOTBALL GAME

Under the supervision of the University of California Radio Club a complete transmitting and receiving equipment was set up on the field at the football game held in Berkeley, Calif., between the University of Washington and the University of California, on Nov. 18th.

The transmitter used consisted of a five kilowatt, sixty cycle equipment, with a fixed spark gap, operating on five hundred and thirty meters (the standard press wave length). The results of each quarter's plays were sent out broadcast, and also the final score at the end of the game. The signals were picked up by many operators, who were unable to attend the game; most operators within a two hundred mile range being able to pick the signals up. The apparatus was operated by Messrs. C. S. Mundt, W. W. Maynes, G. F. McMullen and W. Leland.

THIS MAGAZINE WILL BE ON SALE

on the fifteenth of the month in San Francisco and will be ready for distribution on or about the 21st of the month in Eastern cities.

Pacific Radio News

The First and Only Wireless
Magazine Published on
the Pacific Coast

H. W. DICKOW, Editor
P. R. FENNER, Business Manager

\$1.00 per Year in U. S. and Mexico
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Single Copies, 10 Cents

Photographs, good drawings and
articles are highly desirable.

Pacific Radio News

50 Main St., San Francisco, Cal.

Vol. I JANUARY, 1917 No. 1

EDITORIAL

The object and purpose of the Pacific Radio News has already been placed before you, and little remains to be said on this subject. As this magazine goes to press, an enormous amount of correspondence is received from Radio Engineers from one end of the Pacific Coast to the other. Faithful support is promised by these men and they have urged us to make the "Pacific Radio News" a monthly magazine, due to the fact that an unlimited supply of the most fascinating news is available in this part of the country. The more that they hear about this publication, the more they think of it, and the greater support they offer us. This is what we need—co-operation. We need the assistance of every radio enthusiast on the Pacific Coast. The humblest amateur may be in a position to support us, as well as the highest class of Radio Engineers. This magazine had to be published; we have reasons for making this liberal statement, and within a short time we will tell you just what

our reason is. This great publication will restore the old-time spirit on the Pacific Coast to a surprising degree. The publication is based on **ABSOLUTE FACTS**; the statements published will be authentic in all respects.

We will publish news that no other radio periodical in this country can, or will, publish. They have reasons for not publishing certain articles which may do them a great injustice. The "Pacific Radio News," will give you these facts, they will be written so that everybody can understand them, nothing will be left undone to make this magazine prove its worth in the wireless field.

We have representatives in numerous cities on the Pacific Coast. Our news will not be local as regards the city in which the magazine is published, quite the contrary, we will keep you informed of every notable step made in the radio field in this part of the country. By so doing, we are not opposing any existing magazines, as is the case with other radio publications. The news that this publication will give you will be something added to what you have, it will be the news that you desire most, we can give it to you, and it shall be published in an unbiased manner. The first issue of this publication may not meet the approval of most of our readers, but we want you to place the utmost confidence in us.

Thousands of radio enthusiasts were grafted by a well known radio publication some years ago, bearing a name similar to ours. Perhaps thousands of enthusiastic experimenters and operators received but several copies of this

publication, that was the last that was ever heard of it. We may be enforcing our principle a little too strong for a newly organized publication, but, as we stated before, we are going to give you the **FACTS** and only the **Facts**. Few, if any, radio publications have started in the field with such an interesting future as we have.

The San Francisco Radio Club is one of the best organized clubs in the country, and it is this great organization that is publishing the "Pacific Radio News". We therefore have the reputation of every member of the club behind us, and we can assure you that an unlimited supply of news can be furnished to our readers. Our next issue will contain a number of articles that will set the greatest Radio Engineers in this country thinking; yet they will be written so that everybody can understand them.

If we receive the support of the required number of experimenters thruout the country, the "Pacific Radio News" will be published monthly and the size and quality will grow with surprising speed. We would like to have you bear in mind that this publication is not strictly devoted to either the commercial or experimental radio field, it will be a magazine that can be read with interest by all classes of radio men. Certain existing publications are far too technical for a great amount of radio enthusiasts; others are just the opposite, far too uninteresting for the advanced class of radio men. Our magazine will be classed with neither, our principle is decidedly different and the only way to prove this statement is to have you read this magazine every time it is published. Criticisms will be plentiful as regards

the principles of this publication, and in order to publish a magazine that will meet the approval of every reader, we would be attempting something beyond our means. We will always appreciate suggestions, we need them in order to please the majority of our readers, and, therefore, we trust that you will not fail to comment on this publication. Each and every comment will be considered, the magazine will improve, and finally we can publish a periodical that will meet the demand of almost every radio enthusiast in the United States.

EDITOR.

SIMPLICITY

Wireless Operator aboard ship places head telephone on inquisitive passenger and says: "Here, Mr. Travelogue, listen to a wireless message. Do you hear that weak buzzing?"

Mr. Travelogue: "Yeah, Oh Yeah, you bet I do, it must be one of those Alaskan stations way up there in the ice fields."

Ship Operator, smiling: "Why, what makes you think so?"

Mr. Travelogue: "Because his spark is shivering and trembling, that's a sure sign it must be dreadfully cold up there."

OLD TIMER RE-OPENS STATION

Mr. F. A. Arnberger of Alameda, Cal., will re-open his powerful amateur station on Garfield Avenue within a few days. Mr. Arnberger is well known among both amateur and commercial radio operators on the Pacific Coast and his station is without a doubt one of the neatest and most efficient in the West. His call is "6FA."

CLASSIFIED ADVERTISEMENTS

In the February issue we will inaugurate the Classified Advertisement Column. All advertisements will be published at the rate of two cents per word with a minimum of ten words, including address. Forms close on first of month preceding date of publication.

The Radio Laboratory of the University of California

The accompanying views show the radio apparatus which is installed in the electrical engineering department of the University of California, at Berkeley.

The transmitting equipment, as shown in the photo, consists of two separate and distinct units. The one shown, which is of modern type, consists of a five KW 500 cycle quenched spark transmitter. With the exception of the generator, which is a five kilowatt 165 volt five hundred cycle Kilbourn and Clark machine, and the five kilowatt open core transformer, the entire equipment was designed and built in the college shops.

The generator, as above described, is located in the main dynamo room; the driving power being a 25 HP. D.C. motor, driven from the Campus supply, which also supplies the field excitation current for the generator. The motor and generator are operated by remote control devices operated from the station switchboard; thus the noisy and dirty motor generator is excluded from the operating room. The current from the generator, broken by a heavy capacity key, flows thru the primary of the transformer. The secondary voltage of the transformer is 11,000 volts. The primary condenser is made up of a twelve plate series multiple connected, glass plate condenser. The oscillation transformer in use is built upon the general design of a magnified loose coupler. The primary consists of ten turns of $\frac{1}{2}$ inch aluminum wire wound on a rubber insulated mahogany frame twenty inches in diameter. The secondary is made up of twenty turns of $\frac{3}{8}$ inch aluminum wire, on a sixteen inch diameter mahogany frame. Two helices, of the spiral pancake type, make up the aerial inductance. The quenched gap, which is of a modified Telefunken type, was designed, after much experimenting, in the laboratory. Twenty plates, of copper alloy, are used for the gaps. About seven or eight gaps in series are used at most times. The other transmitter, which is not shown in the photo, consists of a plain two KW 60 cycle spark transmitter, with a rotary spark gap, giving a spark pitch of about 400 sparks per second.

There is, at present, no provision made in the receiving equipment for the reception of undamped waves, altho some experiments have been performed with ultraudion receivers. The receiver installed is made up of a Blitzen tuner, with a galena detector, the signals from which are amplified by a specially designed audion amplifier. The installation of an ultraudion receiver is contemplated in the near future.

The aerial in use at the present time, which is shown in photo, is constructed of four number ten copper wires, on a fifteen foot spreader. This antenna runs from the pole shown in the photo to a nearby building, giving about four hundred and fifty feet of spread to the wires. The pole, which supports the highest end of the antenna, gives it a geometric height of about one hundred and forty feet. The free end being lower, the average height of the antenna is only about ninety feet. Its fundamental wave length is close to seven hundred meters.

The ground connection for the station is made thru a six inch copper ribbon, about No. 20 gauge in thickness, which is brazed to the steel frame of the building. The steel frame forms a most excellent ground connection.

The best results obtained from the station were noted in the winter of 1914-15, when a much larger and better antenna was in use; this antenna had a fundamental of about 1100 meters and an average geometrical height of about 250 feet. Signals were obtained on the receiver above described, every evening, from low power German stations located, respectively, in the Caroline and Ladrone Islands.*

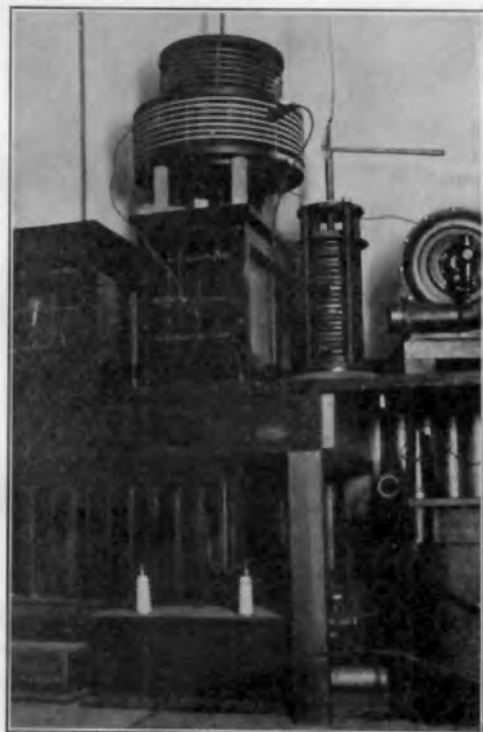
Altho these stations were but 1200 or 1500 miles apart, they experienced great difficulty in carrying on communication with each other, yet, at practically all times both of these stations could be copied at the college station, which is located about 6000 miles from these places.

Very little transmitting has been done with the equipment, for it was not desirable to cause interference with nearby stations. Signals were once exchanged with NAR (Key West, Florida). No sending has ever been attempted on the present antenna, but signals from spark stations on both the Atlantic and Pacific Coast stations come in loud and clear. Signals of easy readability have been received, on the ultraudion above described, from POZ and OIU, and most of the Atlantic Coast Arc Stations were copied.

*Since destroyed, due to the war.




The Aerial and Station at the University of California



5 K.W. 500 CYCLE TRANSMITTER

Shall Radio and Electrical Questions Be Answered In This Magazine?



We think that this puzzling question has been solved by eliminating all questions and answers in the "Pacific Radio News". This may be somewhat of a surprise to our readers, but we have viewed the questions from all sides and finally came to the conclusion that the space in this magazine can be better devoted to startling radio news. Let this not be a discouragement to you, we feel assured that you will agree with us after giving the matter a moment's thought. Pick up a wireless or electrical magazine, turn to the Query Department, read some of the questions and answers carefully, and then form your opinion of this section of the magazine. Do you not think that most of these questions can be answered by consulting any good book on radio communication? Would you not have four or six pages of added interesting news in your magazine than a large number of questions and answers? We think so, and here are the facts: Consider the number of queries pertaining to aerials, wave lengths and range records; how many of these questions are satisfactorily answered? Very few indeed, as the U. S. Govt. Asst. Radio Inspector, Mr. E. W. Stone, states. Read his remarks carefully and then form your opinion of the question.

[The following comment was made by Mr. E. W. Stone at a special meeting of the San Francisco Radio Club. He delivered an instructive lecture on "Decrement", acknowledged by all members as the best lecture on Radio Communication that has ever been delivered in San Francisco.]

"The question of determining the exact wavelength of an aerial by mathematical formulas or measurements other than by the use of a wavemeter, is one that has caused a great amount of discussion. The practice of determining the wavelength of an average aerial by multiplying its length by 3 and dividing the answer by four, is erroneous.

"It is almost an impossibility to calculate the wavelength of an aerial unless it be located in such a position that no obstacles are in the vicinity of the aerial.

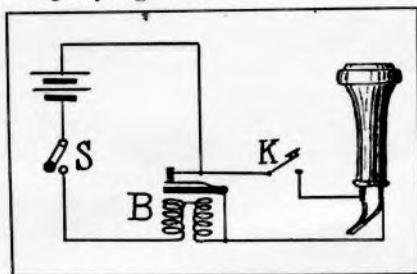
A tree or other structure a block away will have an effect on the wavelength, the guy wires, spreaders and even the pole itself must all be taken into consideration when such calculations are made."

Yes, there are a number of very useful answers published to some of the questions, they are of great benefit to many readers, but does this apply to all classes of radio operators? No, it does not. The questions asked originate in the experimental field and are sent by men who want advice on something that can be obtained from most any good book on radio communication. In order to please those readers who wish to ask certain questions, the proposition has been placed before the San Francisco Radio Club's Examining Board, and all questions asked by readers will be answered by these officers without charge. To cover the burdensome mailing charges a two-cent postage stamp should at all times be included. All correspondence should be addressed to the Examining Board of the S. F. Radio Club, 350 Frederick St., San Francisco, Cal.

HANDY HINTS

WIRELESS (?) VIA TELEPHONE

On party telephone lines it is often desired, as is well known, to preserve secrecy between the people using the 'phone. A very handy and interesting scheme is shown diagrammatically in the accompanying cut.



The buzzer B is controlled by the switch S, inserted in the battery circuit. Across the buzzer contacts the receiver of the telephone is connected. This circuit is broken by a common telegraph key, K. To operate the outfit close the buzzer switch, thus setting the buzzer into operation, then send with the key, as you would do under ordinary circumstances, and this will result in signals being reproduced in the receiver, and in the receiver of the distant phone. If the signals are too loud for comfortable reception a small condenser may be connected in the circuit in series with the key.

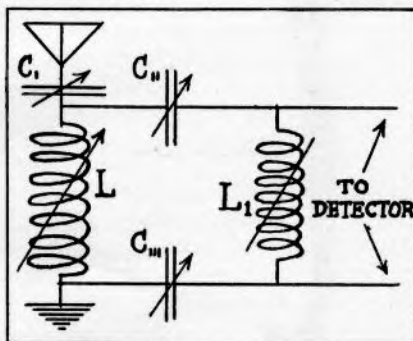
The operation of such a radio (?) system over any phone will be of considerable use when it is desirable to keep secret anything which passes between the parties at the end of the line, as well as causing the undesired listener,

unless by remote chance he knows the code, great curiosity as to what is passing over the line. This system is used by one of the large wireless companies on the coast to send messages direct from the station to the office, it having been found that it is much more accurate and rapid to send the business in this way than it is to carry it on by word of mouth.

A CAPACITY COUPLED RECEIVER

By D. B. McGown

A most interesting field of experiment is opened to radio experimenters, who wish to experiment with new types of tuning devices. The Cohen capacity coupled receiver is a most interesting and instructive subject for research work.



The circuit used, which is shown in the accompanying diagram, is almost self explanatory. The condensers, C_1 , C_2 and C_3 , may be any high capacity variables; it is desirable that C_2 and C_3 shall have the same capacity, altho this is by no means essential.

The writer used three Blitzen condensers in the circuit shown. The inductances L and L₁ should be of approximately the same amount of inductance. Coils about four inches in diameter, wound with No. 24 DCC wire to a length of about 24 to 30 inches, fitted with dead end switches will be found very efficient. The coils need not be variable, if the user desires only to receive on the higher wave lengths, but as the only changes in wave length which can be then effected by the variations of the condensers this does not give a very great range of wavelengths.

Using the above described apparatus, on an antenna having a fundamental of about 700 meters, signals from the German stations have been copied on the Pacific Coast; and Austin ultraudion detector being connected as shown, to the points marked "detector."

AMATEUR ARTICLES

For the benefit of our amateur readers we will publish monthly a section pertaining to the construction of various radio apparatus.

These articles will be original in all respects and have never before been published in any radio magazine.

MARCONI SUPT. RESIGNS

Mr. G. J. Jessop, who held the position of Marine Superintendent of the San Francisco Division of the Marconi Company, resigned on November 15th.

The office is being temporarily filled by Mr. Horsman, who formerly supervised the "Ocean Wireless News" department of the San Francisco office.

Mr. T. M. Stevens, of the Gulf Division, will succeed Mr. Jessop as Marine Superintendent.

INSTITUTE OF RADIO ENGINEERS ORGANIZES SECTION

(Continued from Page 17)

A social get-together will also be held at various times. An assessment fee of \$1.00 has been imposed on all members. The expenses of the Secretary-Treasurer are to be met by the money realized for this assessment.

Among some of the members present were Mr. A. H. Ginman of the Marconi Co., Mr. H. Pratt of the Mare Island Navy Yard, Mrs. G. S. De Sousa, Traffic Manager of the Marconi Wireless Tel. Co., Mr. G. Haller of the Halle-Cunningham Electric Co., and U. S. Asst. Radio Inspector Hayes.

A copy of the new Radio Law was presented by Mr. G. S. DeSousa, same being read by the Secretary-Treasurer, Mr. V. Ford Greaves.

A discussion followed the reading of the law, the important points of which will be found in another section of this magazine.

ATTENTION, READERS!

The price of this publication will be increased to 15 cents per copy, \$1.50 per year, taking effect within a short time.

Send your subscription in today at the regular rate, no subscriptions at present rate being accepted for more than a term of one year.

This action was taken on account of the ever-rising cost of paper and printing.

We will guarantee that a magazine of twice the quality and size will be at your disposal when when the new rates take effect.

Better send in your subscription before the new prices take effect, tell your friends about it in order that they may take advantage of the low subscription rates.

THE NEW PROPOSED RADIO ACT

(Continued from Page 9)

only, which are designated in the license.

2—Station on shipboard, a station on board any vessel not permanently moored. Stations on shipboard include (a) those open to general public correspondence, and (b) those open to limited public correspondence. Ship stations of class (b) transmit and receive public messages to and from certain stations only, which are designated in the license.

3—Commercial station, a land station used in the transaction of commercial business and not used for the exchange of correspondence with ships at sea. Commercial stations include (a) those open to limited public correspondence, (b) limited commercial stations, (c) Special stations for transoceanic or transcontinental communication. Commercial stations of class (a) transmit and receive public messages to and from certain stations only, which are designated in the license. Limited commercial stations (class b) are stations of private interest, and carry on a specific commercial service or services defined in the license; they do not transmit public messages to, or receive them from, other stations. Special stations of class (c) are open to limited public correspondence or not, as stated in the license.

4—Experiment station, a land station of private interest actually engaged in conducting experiments for the development of the science of radio communication or the apparatus pertaining thereto.

5—Technical and training-school station, a land or ship station of private interest used for purposes of instruction in radio communication and training operators.

6—Amateur station, a land station of private interest not covered by (3), (4), or (5) of this Section, and not operated for financial profit. Amateur stations include (a) general amateur stations, (b) restricted amateur stations, which are within five nautical miles of a Government station, (c) special amateur stations, the operation of which seems likely to result in some substantial benefit to radio communication.

7—Government station, a station controlled and operated by any department of the Government.

Sec. 3. Nothing in this Act shall be construed to apply to the transmission or exchange of radiograms or signals between points in the same State, if said transmission or exchange shall not interfere with the reception of radiograms or signals from beyond the jurisdiction of the said State, or the effect thereof shall not extend beyond said jurisdiction.

Sec. 4. No radio station other than those belonging to or operated by the United States shall be used by any person within the jurisdiction of the United States to transmit any radiogram by the apparatus and methods of radio communication, except under and in accordance with a station license issued by the Secretary of Commerce. Any person who shall operate any radio station in violation of this Section shall be punished by a fine not exceeding five hundred dollars for the first offense, and by a fine not exceeding one thousand dollars, or imprisonment for not more than one year, or both, for each offense thereafter; and any radio apparatus operated in viola-

tion of this Section shall be subject to forfeiture.

Sec. 5. The Secretary of Commerce shall fix the rates charged by all licensed stations open to public correspondence.

The heads of Government departments having jurisdiction over Government land stations and Government ship stations shall, in their discretion, so far as it may be consistent with the transaction of Government business, open such to general public business, and shall fix the rates for such service, subject to the control of such rates by Congress. Such executive heads shall arrange, each in his own department, and for stations under his own jurisdiction, for the transmission and receipt of commercial radiograms between land stations and vessels at sea, between land stations and licensed radio stations within the United States or any territory thereof, and between land stations and radio stations under foreign jurisdiction, under the provisions of the London Convention of nineteen hundred and twelve and future international conventions or treaties to which the United States may be a party. The receipts from such radiograms, less an amount not to exceed twenty-five per cent per annum for the necessary expenses of each department for the handling of such commercial business, shall be turned into the Treasury as miscellaneous receipts.

No radio station other than that belonging to or operated by the United States, or by the Government of the Philippine Islands, shall be operated on land or on a permanently moored vessel in the Canal Zone, or in the Philippine Islands, or in any territory of the United States in the West India Islands other than Porto Rico, or in the Pacific Ocean west of the one hundred and sixty-first meridian of longitude west of Greenwich and south of the fortieth parallel of north latitude.

Every Government land station and Government ship station shall have special call letters which shall be designated and published by the Department of Commerce in a list of radio stations of the United States.

Sec. 6. After three months from the passage of this Act and at any time within five years after the expiration of said three months, but not longer, the Government through the Navy Department shall have authority to acquire by purchase at a reasonable valuation any coastal radio station now in operation in the United States which the owner may desire to sell.

Sec. 7. The station license required by Section 4 hereof shall not be granted to any alien, nor to any company, corporation, or association of which any officer or more than one-third of the directors are aliens or of which more than one-third of the capital stock is owned or controlled by aliens or by a foreign government or representative thereof or by any company, corporation, or association organized under the laws of a foreign country; and a license shall become void if ownership or management of the station or apparatus shall be transferred to any alien, or to any company, corporation, or association of which any officer or more than one-third of the directors are aliens or of which more than one-third of the capital stock is owned or

controlled by aliens or by a foreign government or representative thereof or by any company, corporation, or association organized under the laws of a foreign country.

A license shall not be granted if, in the opinion of the Secretary of Commerce, the operation of the proposed station will seriously interfere with the operation of existing Government or licensed stations in the vicinity.

Sec. 8. The station license prescribed by Section 4 hereof shall be issued only in response to a written application therefor, addressed to the Secretary of Commerce, which shall set forth the following facts:

1. The name and address of the applicant, the date and place of birth, and, if naturalized, the date and place of naturalization.

2. If the applicant is a corporation, the date of incorporation and under what laws incorporated, the principal place of business of the corporation, the names and addresses of the officers and directors, a statement as to each officer specifying his place of birth and the country of which he is a citizen, and, if a naturalized citizen of the United States, the date and place of naturalization, and a statement showing what proportion of the capital stock is owned or controlled by aliens, by foreign governments or representatives thereof, and by companies, corporations, or associations organized under the laws of any foreign country.

3. The ownership of the station and apparatus.

4. The exact location of the station.

5. The stations with which it is proposed to communicate.

6. The purpose or purposes for which the station is to be used.

7. The wave-length or wave-lengths which it is proposed to use at the station and the period or periods of the day during which it is proposed to operate the station.

8. The proposed rate to be charged per word.

9. Such further information as the Secretary of Commerce may, by regulation, prescribe.

Every application shall be signed by the applicant upon oath or affirmation. If the applicant is a corporation, the application shall be signed upon oath or affirmation by at least two officers thereof.

The Secretary of Commerce may upon request determine in advance of the erection of a radio station, on the basis of an application substantially conforming to the requirements of this Section, whether the apparatus to be installed in such station will be licensed upon completion of such station, and upon what condition such license will be granted.

Whoever shall knowingly make any untrue statement in the application for a license prescribed by this Section, shall be guilty of perjury and shall be punished by a fine not exceeding two thousand dollars, or by imprisonment for not more than five years or both.

Sec. 9. Station licenses shall be in such form as the Secretary of Commerce shall prescribe and shall contain a statement of the following conditions to which such licenses shall be subject:

1. The station shall at all times be subject to inspection by officials of the Department of Commerce; and the President of the United States, in his discretion, may cause the closing of such sta-

tion and the removal of all radio apparatus, or may authorize the use of the station or apparatus by any Department of the Government upon just compensation to the owners, as provided in Section 14 (b) of this Act.

2. The ownership or management of the station or apparatus therein shall not change without the consent of the Secretary of Commerce, nor be transferred to an alien or aliens, nor to any foreign government or representative thereof, nor to any company, corporation, or association organized under the laws of a foreign country, or of which any officer, or more than one-third of the directors, are aliens, or of which more than one-third of the capital stock is owned or controlled by aliens or by a foreign government or representative thereof, or by a company, corporation, or association organized under the laws of a foreign country. The ownership or control of more than one-third of the capital stock of any company, corporation, or association to which a station license has been issued shall not be transferred during the term of the license to an alien or aliens, or to a foreign government or representative thereof, or to any company, corporation, or association organized under the laws of a foreign country. No company, corporation or association to which a station license has been issued shall thereafter during the term of the license have any officer who is an alien.

3. The rates to be charged shall be as fixed by the Secretary of Commerce, and shall be specified in the license.

4. Apparatus other than that specified in the license shall not be used for radio communication.

5. Every licensed radio station open to general public correspondence shall be bound to exchange radiograms with any other such station without distinction of the radio systems adopted.

Such license shall also show specifically the ownership and location of the station in which the apparatus is to be used and such other particulars as the Secretary of Commerce may deem necessary for the identification of the apparatus and to enable its range to be estimated, shall show the purpose of the station, the rates authorized by the license, the wave-length or wave-lengths and the decrement or decrements authorized for use by the station, and the hours for which the station is licensed to work.

Sec. 10. Any station license shall be revocable by the Secretary of Commerce, in his discretion, for violation of or failure to observe any of the restrictions and conditions mentioned in the preceding section, or other provision of this Act or regulation of the Secretary of Commerce, and the books and records of the licensee shall be open at all times to inspection by officials of the Department of Commerce to enable them to determine whether such violation or failure to observe has occurred.

Sec. 11. Every radio station for which a station license is required by this Act shall be in charge of or under the supervision of a person to whom an operator's license shall have been issued hereunder. No person shall operate any such station except under and in accordance with an operator's license issued to him by the Secretary of Commerce. The Secretary of Commerce, in his discretion, may grant special temporary licenses to operators of radio apparatus when any emergency

arises requiring the prompt employment of such an operator. Whoever shall employ any unlicensed person in the operation or supervision of any licensed radio station, or whoever without an operator's license shall operate or supervise such a station, shall be punished by a fine not exceeding one hundred dollars for the first offense, and by a fine not exceeding two hundred dollars or imprisonment for not more than two years, or both, for each offense thereafter.

Sec. 12. An operator's license shall be issued only in response to a written application therefor addressed to the Secretary of Commerce, which shall set forth the name, age, and address of the applicant, date and place of birth, the country of which he is a citizen, and if a naturalized citizen of the United States the date and place of naturalization. The application shall also state the previous experience of applicant in operating radio apparatus and such further facts or information as may be required by the Secretary of Commerce. Every application shall be signed by the applicant upon oath or affirmation. An operator's license shall be issued only to a person who, in the judgment of the Secretary of Commerce, is shown to be proficient in the use and operation of radio apparatus and in the transmission and receipt of radiograms. An operator's license shall not be granted to any alien or representative of a foreign government. Whoever shall knowingly make any untrue statement in an application for an operator's license shall be guilty of perjury and shall be punished by a fine not exceeding two thousand dollars or by imprisonment for not more than five years, or both.

Sec. 13. An operator's license shall be in such form as the Secretary of Commerce shall prescribe, and may be suspended by the Secretary of Commerce for a period not exceeding one year, upon proof sufficient to satisfy him that the licensee has violated any provision of this Act or regulation of the Secretary of Commerce, or that he has failed to comply therewith by an unlicensed person in his employ or under his supervision, or the license may be revoked by the Secretary of Commerce upon proof sufficient to satisfy him that the licensee was or is ineligible for a license.

Sec. 14. (a) Radio stations licensed under the provisions of this Act shall at all times be subject to inspection by officials of the Department of Commerce. During any war in which the United States shall be a neutral nation, and in time of threatened or actual war in which the United States may be a party, and in time of public peril or disaster, the President may, by proclamation or Executive Order, issue regulations for the conduct and censorship of all radio stations and radio apparatus of every form and nature within the jurisdiction of the United States. Any person who shall knowingly violate or fail to observe any of said regulations shall be punished by a fine not exceeding ten thousand dollars or by a term of imprisonment of not more than three years or both; and in case of any such violation or failure to observe any of said regulations, the radio station, or apparatus, or both, shall be liable to forfeiture to the United States.

(b) The President, further, in his discretion, may cause the temporary closing of any radio station within the jurisdic-

tion of the United States and the temporary removal therefrom of any radio apparatus for a period or periods of not more than five months each, or may authorize the temporary use of the station or the apparatus thereof by any department of the Government for a like period or periods upon just compensation to the owners.

Sec. 15. (a) Whoever shall maliciously or wilfully interfere with or cause any interference with radio communication carried on or sought to be carried on by any radio station or apparatus shall be punished by a fine not exceeding five hundred dollars for the first offense, and by a fine not exceeding one thousand dollars, for each offense thereafter.

(b) Whoever shall wilfully divulge or publish the contents, substance, purport, effect or meaning of any radiogram, or any part thereof, to any persons other than the sender or addressee thereof, or his agent or attorney, except to a telegraph or radio station employed to forward such radiogram to its destination, or in response to a subpoena issued by a court of competent jurisdiction, or on demand of other competent authority, shall be punished by a fine not exceeding five hundred dollars for the first offense, and by a fine not exceeding one thousand dollars, or imprisonment for not more than one year, or both, for each offense thereafter; provided, that this section shall not apply to the divulging or publication of the contents of any radiogram by the sender or addressee thereof.

Sec. 16. All stations shall give priority over all other radiograms to radiograms relating to ships in distress, shall discontinue all sending on hearing a distress signal, and, except when answering or aiding a ship in distress, shall refrain from sending until all radiograms relating to the ship or ships in distress shall have been completed.

Every coastal station and every station whose operation can interfere with the exchange of messages between ship and ship, or ship and coast is required, during the hours it is in operation, to listen in at intervals of not less than 15 minutes, and for a period of not less than 3 minutes, with the receiver tuned to receive messages on a wave length of 600 meters, or such other normal wave length as may be required by future international conventions.

Sec. 17. When sending distress signals, the transmitter of a station on shipboard may be tuned to create a maximum of interference with a maximum of radiation. In all other circumstances, all stations shall use the minimum amount of energy necessary to complete any communication.

Every radio station shall use such transmitting apparatus that the energy is radiated in as pure and sharp a wave as practicable, and have a logarithmic decrement not greater than the limits which may be specified by the Department of Commerce, but the owner or operator of a station mentioned in Section 18 following shall not be liable to the penalties provided in Section 28 for a violation of the requirements of this paragraph unless such owner or operator shall have been notified in writing that the transmitter owned or used by him has been found, upon tests conducted by the Government, to be so adjusted as to violate said requirements, and opportunity given such owner or operator to adjust such trans-

mitter so as to conform to said requirements.

Receiving apparatus shall be of such construction and so adjusted and used as to give the greatest practicable protection against interference.

Sec. 18. General amateur stations shall not use a transmitting wave-length exceeding 200 meters or a transformer input exceeding one kilowatt.

Restricted amateur stations shall not use a transmitting wave-length exceeding 200 meters or a transformer input exceeding one-half kilowatt.

Special amateur stations are permitted to use any wave-length less than 600 meters and an amount of power not exceeding the limit which shall be specified in the license, provided the Secretary of Commerce is satisfied that such operation would not interfere with Government, commercial, coastal, or ship stations.

Sec. 19. The Secretary of Commerce may, in his discretion, grant licenses to experiment stations to permit the carrying on of tests with any amount of power or any wave-lengths, at such hours and under such conditions as will insure the least interference with the work of other stations.

Sec. 20. Commercial stations and technical and training-school stations shall not use a transmitting wave-length of 1800 meters nor any wave-length exceeding 600 meters unless it exceeds 1600 meters, except in special cases to be determined by the Secretary of Commerce. Such a station shall operate in such a manner as not to cause interference with Government stations or other commercial stations. Such a station shall not use any wave-length between 200 and 600 meters if operation at such a wave-length would in the opinion of the Secretary of Commerce cause interference with coastal or ship stations.

After the passage of this Act no license shall be granted to a commercial station permitting the use of a wave-length between 200 and 4000 meters, except when so far removed from Government or coastal stations that in the opinion of the Secretary of Commerce no interference can occur with Government or coastal communications.

In considering complaints of interference and in deciding whether the license of a station causing serious interference shall be revoked by the Secretary of Commerce, preference shall be given to stations communicating with ships or between points where other means of communication are not available.

Sec. 21. Every coastal station and ship station shall at all times be ready to send and receive messages and signals on such wave-lengths and of such wave character as are required by the existing or future international conventions, one of these wave-lengths to be considered as the normal sending and receiving wave-length of the station. Such stations may also use 1800 meters and such additional wave-lengths less than 600 meters as may be granted by the Secretary of Commerce. Every such station shall have its receiving apparatus so marked that the operator can quickly and conveniently adjust it to a receiving wave-length of 600 meters or other distress wave-length that may be designated by future international conventions.

Sec. 22. No licensed ship radio station when within fifteen nautical miles of a Government land station or a coastal sta-

tion shall use a transformer input exceeding one kilowatt, nor when within five nautical miles of a Government land station or a coastal station, a transformer input exceeding one-half kilowatt, except for sending distress signals or signals or radiograms relating thereto.

The Secretary of Commerce may regulate or prohibit the use of the transmitters of stations on ship board in harbors within the jurisdiction of the United States, as he may deem necessary.

Sec. 23. No licensed land station in operation on the date of the passage of this Act within fifteen nautical miles from the Government receiving stations at the following points: Boston, Mass., Newport, R. I., Washington, D. C., Charleston, S. C., Key West, Fla., San Juan, P. R., Point Isabel, San Antonio, Laredo, and El Paso, Texas, Fort Huachuca, Arizona, San Diego, and San Francisco, Calif., North Head, Tatoosh Island, and Bremerton, Washington, or from any Government station in Alaska, shall be licensed to change its equipment in any manner that will increase its interference with other stations, and no land station located within fifteen nautical miles of the Government receiving stations herein named, and not in operation on the date of the passage of this Act, shall be licensed for the transmission of public or commercial business by radio communication.

Sec. 24. At all important seaports and at all other places where coastal stations operate in such close proximity to Government stations that interference with the work of the Government stations cannot be otherwise avoided by the enforcement of this Act, such coastal stations as interfere with the receipt of radiograms by the Government stations concerned shall not use their transmitters during the first fifteen minutes of each hour, local standard time. The Secretary of Commerce may, on the recommendation of the Department concerned, designate the station or stations which may be required to observe this division of time. The Government stations for which the above-mentioned division of time may be established shall transmit radiograms only during the first fifteen minutes of each hour, local standard time, except in case of radiograms relating to vessels in distress.

Sec. 25. Whoever, including any person in the service of the Government, shall knowingly transmit or publish, or knowingly cause to be transmitted or published, any false or fraudulent distress radiogram, or who, when engaged in radio communication, shall transmit or publish, or cause to be transmitted or published, any other radiogram for the purpose of defrauding or deceiving the Government, shall be punished by a fine not exceeding two thousand dollars or imprisonment for not more than five years, or both.

Sec. 26. No person shall use or operate any radio apparatus on a foreign ship when within the jurisdiction of the United States otherwise than in accordance with the provisions of Sections 14 (a), 15, 16, 17, and 22 of this Act, and all the provisions of said sections and penalties thereto attaching are hereby made applicable to such apparatus: Provided, however, that in no other respect shall anything contained in this Act apply to apparatus on foreign ships, nor shall the restrictions of this Section or of any other

(Continued on Page 34)

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(Continued from Page 32)

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Sections of this Act apply to public vessels of foreign governments otherwise than by a general proclamation of the President.

Sec. 27. The office of Director Naval Communications, established under the jurisdiction of the Navy Department, shall be charged with the accounting and payment of charges in connection with the settlement of international radio accounts as provided by the London Radiotelegraphic Convention of 1912, or as may be provided by future international conventions. The expenses involved in the settling of international radio accounts, not exceeding five thousand dollars per annum, shall be borne by the United States.

Sec. 28. In all cases of violation of any provision of this Act for which no penalty is otherwise prescribed, or of any regulation of the Secretary of Commerce, the Secretary of Commerce may impose a fine of one hundred dollars upon the owner of the apparatus by means of which such violation was effected, or a fine of twenty-five dollars upon the offending operator, or both, but such fines may be reduced or remitted by the Secretary of Commerce in his discretion; and in addition the Secretary of Commerce may, in his discretion, revoke the station license of such owner and revoke or suspend the license of such operator as provided in Sections 10 and 13 of this Act.

Sec. 29. The Secretary of Commerce shall have power to enforce the provisions of this Act by appropriate regulations through collectors of customs and such other officers as he may designate; and said Secretary shall also enforce the provisions of such international radio conventions as have been or may hereafter be ratified or adhered to by the United States, except that provisions thereof relating to Government radio installations shall be enforced by the Departments respectively controlling such installations.

The Secretary of Commerce may, upon application therefor, remit or mitigate any fine, penalty, or forfeiture provided for in this Act with the exception of penalties including imprisonment: Provided, that the penalties not involving imprisonment incurred in the Philippine Islands, may be remitted or mitigated by the Governor General and President of the Philippine Commission, and such penalties incurred in the Panama Canal Zone may be remitted or mitigated by the Governor of the Panama Canal on application therefor being made, in such manner and under such regulations as they may deem proper.

Sec. 30. Except as otherwise specifically provided in this Act, the provisions of this Act shall extend to all places subject to the jurisdiction of the United States. The several Courts of First Instance in the Philippine Islands and the District Court of the Canal Zone shall have jurisdiction of offenses under this Act committed within their respective districts, and of conspiracies to commit such offenses as defined by section thirty-seven of the Act to codify, revise, and amend the penal laws of the United States, approved March 4, 1909, and the provisions of said section, for the purposes of this Act, are hereby extended to the Philippine Islands and to the Canal Zone.

Sec. 31. The Act approved August 13,

When writing to Advertisers please mention this Magazine

1912, entitled "An Act to Regulate Radio Communication," is hereby repealed.

Such repeal, however, shall not affect any act done or any right accruing or accrued, or any suit or proceeding had or commenced in any civil cause prior to said repeal, but all liabilities under said laws shall continue and may be enforced in the same manner as if said repeal or modifications had not been made; and all offenses committed, and all penalties, forfeitures or liabilities incurred prior to the taking effect hereof, under any law embraced in, changed, modified, or repealed by this Act, may be prosecuted and punished in the same manner and with the same effect as if this Act had not been passed.

AMATEUR STATIONS ROBBED

During the past three months, more than half a dozen San Francisco amateur stations were looted by daring robbers and up to the present time no clew has been found. Detectives have been working on the case for several months but have obtained no definite information as yet.

The station of Mr. A. W. Martin was thrice robbed. Mr. T. T. Barnett's station was looted twice. The entire equipment, including the screws on the wall, were taken by these daring mischief-makers.

Mr. T. J. Ryan reports that his basement was robbed at least three times in two weeks, many magazines, insulators and other small wireless articles being stolen. Mr. Howard Cookson's aerial on the Y. M. C. A. building was stripped of the wire, insulators and other material, everything being taken but the aerial poles.

While Mr. C. P. Altland was spending his vacation in Los Angeles, his aerial was also stripped of the wire and insulators.

Looks as if some enterprising enthusiast is endeavoring to establish a wireless corporation for the sale of second hand material.

Detectives assert that they are under the impression that no amateur is guilty of the offense and place the blame on second hand junk dealers, who are taking advantages of the high price of metals, especially copper.

On Thursday night, November 23d,

the antenna used at the big football game at the University of California was stripped of all its wire.

Any information regarding these daring robbers will be appreciated. All correspondence should be addressed to the S. F. Radio Club.

DO YOU KNOW THAT

the **BEST** photographs and articles of radio stations operated by the Federal Telegraph Co., the Haller-Cunningham System, the Kilbourne and Clark System and the mysterious Japanese System have never been published in any magazine? We will convince you of this fact by publishing some hair-raising stories on the most interesting systems of radio communication in use today. Each issue will contain an interesting article on one of these systems, fully illustrated with photographs that have never before been published.

If the contents of this issue meet your approval, think of what we have in store for our future issues. Show this magazine to every radio enthusiast you meet, send us his name and address and we will send him a sample copy of this publication.

Do not fail to send in your subscription today; if you cannot afford to send us \$1.00 for a year's subscription, will send you five consecutive issues for 50 cents.

No radio magazine published in the United States can give you the news that we can. We have representatives in every wireless corporation on the Pacific Coast and will keep our publication filled with the most fascinating articles imaginable.

AMATEUR ARTICLES

These will be published under the heading of "Handy Hints", all amateurs being requested to furnish ORIGINAL articles that will prove to be of general interest to all readers.

See announcement in next issue regarding prizes for best articles.

GOOD GROUND CONNECTIONS

By D. B. McGown

It has come to the attention of the writer in a very noticeable manner lately how few amateurs have a really good ground connection. It seems to be a very common idea that a water pipe, no matter where, or how located, is all very well and sufficient for a ground. One case which is well worth citing is as follows. A certain amateur, who imagined he knew well what was necessary for the proper installation for his station erected a fine antenna, composed entirely of stranded phosphor bronze wire, well insulated with rubber rod insulators, and with a fine Electro-seal lead in tube. He then proceeded to connect his transmitter to this antenna, and tried to adjust it to resonance. He found that the natural period of the antenna was about 197 meters, just as

or ungalvanized pipe. The ground was at once disconnected, and a big copper plate was buried in the ground directly under the station, some coke being buried with it, to attract moisture. The radiation now rose to about two amperes, on the same power as was used before.

Some results recorded from several experiments at the author's own station are as follows. The ground first used was a number six stranded copper wire, which led directly to the water pipe. This pipe ran about ten feet farther on, where it entered the ground. We will call this ground number one. Some half inch copper ribbon was then soldered to the ground wire where it was fastened to the pipe, and then twisted around the pipe, and run for about ten feet past

Ground Number	Radiation	Wave	Power
One1.1 Amps	210 M.	500 Watts
Two	1.8 Amps	210 M.	500 Watts
Three	2.3 Amps	210 M.	500 Watts
Four	3.1 Amps	210 M.	500 Watts

he had designed it to be, however, do what he would he could in no way put more than about half an ampere in the antenna on I K. W. Finally, after a series of very disheartening tests, the writer was asked to look the equipment over. Finally, after everything else was carefully looked over the ground was looked after. The ground wire, a number four stranded copper, was traced from the transmitter, thru the wall and down to the cellar. Here it was fastened to the galvanized water pipe, and everything seemed all right. However, the water pipe was traced, and it was found that the galvanized pipe ran only a few feet, thru the wall, when it was screwed to a common "black",

the point where the pipe entered the ground. We will call this ground number two. About fifty pounds of junk copper wire of various sizes, mostly No. 8 or 10, was then buried, at a depth of about five feet, directly under the station. This wire was spread over an area of about thirty square feet. A one inch brass ribbon was led off of this. We will call this ground number three. About fifty pounds more of junk wire were then buried, but this time it was not buried so deep, but rather buried so that it covered as large an area as possible. This was connected to a half inch brass ribbon, which ran for about twenty feet, about two feet below the surface, before it was led to the sta-

tion. We will call this ground number four. The radiated amperage for these various grounds is shown in the table.

These readings were obtained when the grounds were connected as follows: First Number one, then Number two was connected right on with Number one, then Number three was connected into the circuit, and finally Number Four. Thus in the latter case it will be seen that all of the grounds were in use in test four.

As it is well known that the radiation varies directly as the SQUARE of the antenna current, the energy transmitted in the last case is very much greater than that transmitted in the first case.

For a really efficient ground, then, it seems that the points to be taken into account are: First, a good heavy lead from the station; second, no high resistances introduced into the circuit; third, a number of separate grounds, and lastly a good surface exposed by the active wire.

TACOMA AMATEURS ORGANIZE WIRELESS CLUB

On Oct. 20, 1916, the Radio Club of Tacoma, Washington, was organized at Mr. D. Mason's station on 13th St. The following officers were elected:

President, H. G. Reichert.
Vice-President, D. Mason.
Secretary, Edwin Moe.
Treasurer, Alvin Stenso.

A committee for drafting the Constitution was chosen, consisting of three club members.

Up to the present time the Tacoma Wireless Amateurs have had no Radio Club regardless of the large number of radio enthusiasts in that city.

The purpose of the club is to promote the interests of Radio Communication among its members and other radio operators on Puget Sound.

A meeting of the club is held every Thursday evening at 817 N. 13th St., order being called at 8 o'clock.

All correspondence should be addressed to the Secretary, Mr. Edwin Moe, 4118 N. 16th St., Tacoma, Wash.

OLD MAN STATIC GOES TO JAIL

The Jurors gave the verdict,
One dark October day,
They convicted Old Man Static
To his cell across the Bay.

'Twas no surprise to radio "hams",
Commercial men as well—
Old Static keeps the ether jammed,
Does things we would not tell.

His buzzing, rumbling, heavy click
Caused more than one harsh
word,
From men who to their tuners
stick,
And nothing else they heard.

They cuss Old Static up and down,
From Nome to Panama,
His name has gained world wide
renown,
His spirits spread afar.

In Summer when the nights are
warm,
He starts out on his task,
He raves about from eve till morn
And travels mighty fast.

He spits his fire to and fro
For six long Summer months,
Conditions then do better grow
And he stops his funny stunts.

In Winter time he disappears,
You wonder where he goes,
In JAIL, that's where he sits in
tears,
We've told you something no
one knows.

OUR FIRST SUBSCRIBER

The first person signing our yearly contract subscription blank was Mr. E. F. Smith of San Francisco.

The first Eastern enthusiast to send for a copy was Mr. H. M. Lodge of Grubbs, Del.

PACIFIC COAST ARMY AVIATOR MAKES WORLD RECORD

The War Department in Washington announced that on Dec. 6th, Captain C. C. Culver of the army signal corps broke the world's record for long distance transmission of wireless signals from an aeroplane.

Captain Culver successfully transmitted and received messages at a distance of 119 miles while in flight. It is stated that the previous record of 48 miles was established by a French army flyer.

The record was made in a cross-country flight from Los Angeles in a stock army aeroplane equipped with a 180 watt transmitter.

Successful trials of signalling between two aeroplanes was made the same day by Captain Culver, the message being received by Lieutenant William A. Robertson of the San Diego aviation school.

SAYVILLE DIRECTOR VISITS SAN FRANCISCO

Dr. Karl G. Frank, Secretary-Treasurer of the Atlantic Communication Company, recently visited San Francisco. The reason for making the trip still remains a mystery.

He informed the "Pacific Radio News" that the Sayville station was rendering excellent service and that communication with the German station was being carried out on a 24-hour day schedule.

He further stated that reports often read in the newspapers regarding unsatisfactory working of the station due to static conditions, were without foundation. The great number of commercial messages destined to the German Empire had caused the directors of the station to discontinue accepting commercial traffic for several days, static in no way hindering the means of communication with the European station.

The audion amplifier is being used at Sayville for receiving the German signals, a 100 K.W. undamped wave transmitter being employed for transmitting the traffic.

Owing to the fact that the British Government has barred the International News Service from the British Isles, the Sayville station has been overflooded with war reports for publication in the Hearst papers thruout the country.

A special rate of 8 cents per word for press service was awarded the Hearst News Service.

Dr. Frank is also a representative of the Siemens and Halske Corporation of Berlin, the manufacturers of the Telefunken apparatus.

He stated that despite the enormous amount of material taken over by the German Government for war supplies, the corporation is still manufacturing an abundant supply of radio apparatus, the development of which has been very rapid since the declaration of the war.

A 5,000 K.V.A. machine is under construction and will be shipped to the United States at the termination of the war.

He expressed no surprise when told that the Nauen station was being heard by San Francisco amateurs.

IMPORTANT ANNOUNCEMENT

An article pertaining to the operation of Commercial and Government land stations on the Pacific Coast will be published monthly in this magazine.

Each article will be illustrated with many photographs and the most interesting articles imaginable.

In this way you will know just how the station looks that you hear every day and the conditions under which their business is conducted.

'T WAS MUSIC TO HIM

(A Tragedy in One Act)

Scene—Ocean Liner's passengers asleep in deck chairs near Wireless Room.

Time—1:50 a. m.

Place—On the briny deep, 1,000 miles from Noplace.

Wireless Operator starts motor-generator and calls KPH for 10 minutes before "signing off."

German Musician (awakens from terrific noise of the spark): "Ach, Himmel, vot wonderful moosik."

English Traveler (awakens from combined noise of German musician and spark): "What a bally fool you

are, shut up and go to sleep, you talk like a bundle of loose axe 'andles, that deucedly noisy spark makes more racket than an elevated tram-car falling hoff the track."

(Beware, dear reader, expressions of this character were the very reasons for the declaration of the European war.)

WANTED IMMEDIATELY

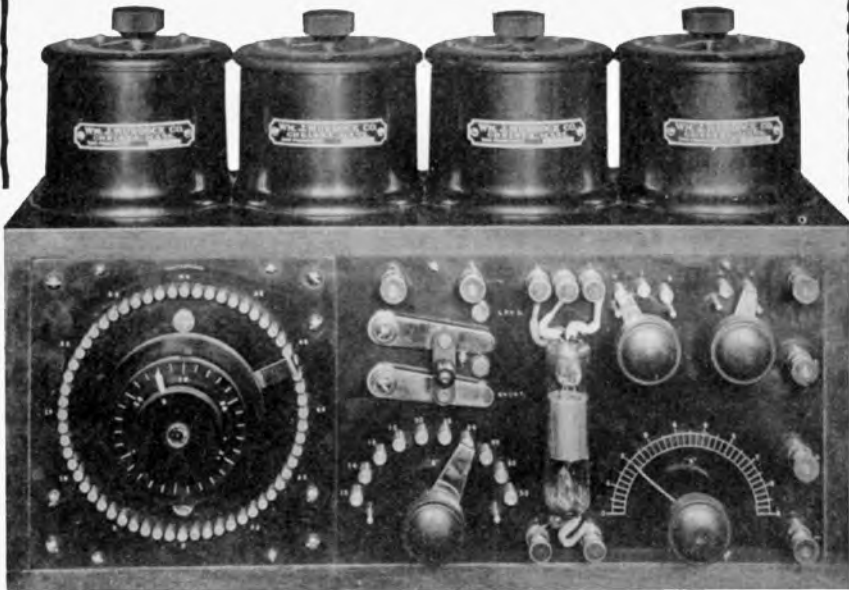
Wireless fiction stories for publication in this magazine. These stories, if accepted, will be paid for at regular rates. If this proposition sounds interesting to you, send at once for our rate sheet and general information.

DO YOU KNOW

- THAT** the "quenching" of a quenched spark gap is not due to the air-tight closely spaced sparking surfaces, BUT to the adjustment of the coupling on the Oscillation Transformer?
- THAT** only one variable condenser is needed in most audion circuits to make a bulb oscillate, and that this condenser should be placed in series with the grid?
- THAT** the decision in the Marconi-Kilbourne & Clark suit in Seattle has not yet been handed down?
- THAT** a Berkeley amateur communicated with another amateur in Phoenix, Arizona, a distance of 600 miles, with a 1 KW. transformer and a rotary gap?
- THAT** when 2 separate aerial leads are brought into a station they should never be run parallel to each other?
- THAT** there are nearly 50 ships using the "IMPULSE Excitation" type of transmitter on the Pacific Coast?
- THAT** the only oil to be used for transformer cooling should be vegetable oil?
- THAT** the ratio of the primary voltage to secondary is called the Ratio Of Transformation?
- THAT** the lines of force that leak across the transformer core without threading the primary and secondary coils is called Magnetic Leakage?
- THAT** whenever an amateur tells you his range is 5,000 miles, it will be necessary to take square root of this number and divide the answer by four in order to get his correct range?

Custom Made Apparatus

Embodying the Latest Improvements
In Radio Detectors, Receiving,
and Transmitting Sets



Type A-U, 200-4000. Price, \$90.00

Tuner Type P, 2,000-12,000	\$60.00
"De Luxe" Tuner Type, 200-15,000	\$160.00
Special Selected Vacuum Tubes as supplied with above apparatus, prepaid	\$7.50

Information and Prices on Tuners, Valve Detectors, Amplifiers
and Transmitters on request

H. R. SPRADO

Radio Engineer

798 POST ST. - - - - - SAN FRANCISCO, CAL.

When writing to Advertisers please mention this Magazine

CLASSIFIED ADVERTISEMENTS

In the February, 1917, issue the "PACIFIC RADIO NEWS" will inaugurate their classified advertisement section. This section will classify ads under various heads such as Agents, Books and Periodicals, Business Opportunities, Cameras, Photography and Supplies, Coins and Stamps, Electrical, Formulas, For Sale, Inventors and Inventions, Machinery, Models and Tools, Miscellaneous, Motorcycles, Motion Picture Plays, Motors, Engines, Generators etc., Music, Songs, Musical Instruction, Patents, Patent Attorneys, Pennants, Pictures and Postcards, Printing, Multigraphing and Engraving, Telegraphy, Typewriters and Supplies, WIRELESS, Help Wanted, and as many more heads as are demanded.

The rates are 2 cents per word net. Remittance, in the form of currency, money order or stamps, must accompany the copy. Advertisements for the February, 1917, issue must reach us before January 1st in order to insure classification. In counting words count name and address.

The "PACIFIC RADIO NEWS", being the only publication dealing with the art of Radio Telegraphy and Radio Engineering on the Pacific Coast and not being connected with any corporations which prejudice the editorial policy of the publication, enjoys a circulation far exceeding that of any other publication of like nature and with prospects of gaining an even larger circulation. It will pay you to try this advertising section.

PACIFIC RADIO PUBLISHING CO.

50 MAIN ST., SAN FRANCISCO, CAL.

WIRELESS

	<h3 style="margin: 0;">Fellow Amateurs</h3> <p style="margin: 0;">QST is the amateur magazine; the contents are written for us amateurs, by amateurs who know the "Real Dope". QST with its sixty-four pages of radio articles is the only thoroughly amateur wireless magazine. Order today and see.</p> <p style="margin: 0;">\$1.00 per year; 10 cents per copy</p> <p style="margin: 0;">The QST Publishing Company, Inc.</p> <p style="margin: 0;">25 Oakland Terrace, Hartford, Conn.</p>	
<p style="margin: 0;">This fellow doesn't read QST</p>		<p style="margin: 0;">This fellow reads "QST"</p>

When writing to Advertisers please mention this Magazine

ELECTRIC CONDENSERS FOR PRODUCING HIGH
FREQUENCY ALTERNATING CURRENTS

—and—

The Glorious Days at Old "PH"

will be the special features of the

FEBRUARY ISSUE

Extracts from the Log Book, Side-Splitting Cartoons, Poetry, and
a few interesting stories written by the "Old Timers"

SUBSCRIBE TODAY

The well known Radio Engineers are writing for this magazine
WRITTEN SO THAT EVERYBODY CAN
UNDERSTAND IT

Not a Technical Tangle, not a "Simple Simon" Story Book, but a
magazine that will set the entire radio world thinking

Send your dollar TODAY, you will be sure to forget it tomorrow.

Please do not send stamps.

Tear along this line.

"Pacific Radio News"

P. R. FENNER, Manager
50 MAIN STREET, SAN FRANCISCO, CAL.

..... 19.....

I hereby subscribe to the "PACIFIC RADIO NEWS" for

..... years to start with the..... issue.

Subscription rate: Signed.....
\$1.00 per year, No..... Street.....
payable in advance. City or Town.....

Make all checks payable to the
Pacific Radio Publishing Co. State.....

A HEART TO HEART TALK WITH OUR ADVERTISERS

To begin at the beginning, the editorial and managing staff of the "Pacific Radio News" wishes to thank the advertisers who have favored us with advertisements for the first issue of this magazine. Without the slightest doubt, few of our advertisers really knew what the initial issue of this magazine would amount to, and we feel assured that all of our claims have been justified.

As previously stated, this magazine will be published monthly if the required number of advertisements are received, the circulation of the magazine will increase, and the manufacturer will certainly receive his share of the benefit. Without advertisements it would be impossible to publish a magazine of such proportions as the "Pacific Radio News," and were it not for the fact that our advertisers were far-seeing men, they would not have favored us with their advertisements. They were all well aware of the fact that the publication would be a huge success and have done everything possible to make it so. This magazine will have one of the largest subscription lists of any of its kind in existence, we can safely guarantee twice the circulation within the course of three months. Radio and electrical men from all parts of the country will subscribe to it and full returns for all advertisements will be sure to follow. We request all manufacturers to write for our advertising proposition at once in order that a better magazine may be published. It is almost next to impossible to reach all manufacturers in the country even though a large majority have been notified of the publication of the "Pacific Radio News."

Any advertisement that will be of general interest to radio, electrical and telegraph operators, will be published in the magazine.

Get in touch with our Advertising Manager, 50 Main St., San Francisco, Cal., and ask for our excellent proposition regarding advertisements.

Start the New Year right, subscribe to the Pacific Radio News, get the FACTS—read the fascinating stories and a thousand and one other things that will make this publication the greatest authority on Radio Communication in the United States.

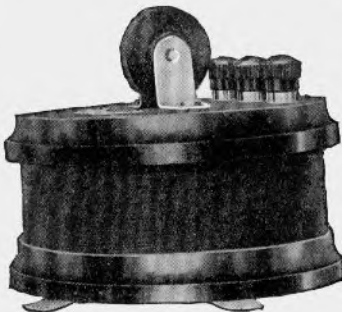
Make this your first and greatest New Year's resolution, you are doing yourself a great injustice by neglecting to subscribe at ONCE.

A Proposition Worth Considering

We have introduced the best radio publication to our readers, and the next great step to take towards increasing the circulation of this magazine will be to appoint a number of live advertising and subscription agents. If you are interested in this magazine, if you wish to make a little side money during your spare time, if you wish to make this magazine the greatest authority on radio communication, write immediately to our general office asking for information as regards our advertising and subscription scheme, and we will at once supply you with the necessary material and information. We have an excellent proposition to offer certain of our live readers; we wish to establish an agency in every city and county of the United States in order that our subscription list will assume huge proportions thus raising the quality of our publication. This magazine was published at the critical moment, nothing of any value to this publication was set aside, large sums of money were expended in order to give our readers the greatest radio magazine published. The size and quality of the magazine will grow as soon as the required number of subscriptions and advertisements are received; only first class articles will be published and necessarily only the best men will be appointed to manage the subscription and advertising agencies thruout the country.

Eastern agents are as desirable as Western agents. The magazine, although a Pacific Coast publication, will be read with more interest by Eastern subscribers than by local subscribers, simply due to the fact that very little Western news is published in Eastern magazines. Subscription blanks, advertising contracts, circular letters and other material will be supplied to the first enthusiast of every locality who sends us his name and address, and who is in a position to insure satisfactory returns for this magazine.

For full details and information write:
 P. R. FENNER, Business Manager "Pacific Radio News",
 50 Main Street, San Francisco, Cal.



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We are Central West Representatives for

E. T. Turney Apparatus

We can give you prompt service and guarantee satisfaction. Let us have your next order.

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Specially Selected Crystals
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TESTED CRYSTALS TWENTY CENTS PER OUNCE

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1247 Forty-seventh Ave.

San Francisco, Cal.

BIGGER and BETTER THAN EVER

X-Mas Number Out November 20th

THE big electrical Magazine for those who dabble in electricity and Wireless. The "How-to-Make-It" magazine, chuck full of experiments and the latest electrical progress. Foremost authority on WIRELESS in the United States. Official organ of the Radio League of America. Over 200 wonderful illustrations with over 100 articles in each number. You are not keeping abreast with the times unless you read the **Electrical Experimenter**. One copy will convince you. Every issue also contains the snappiest and most up-to-date scientific stories that will delight you.

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\$1.50 per year

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233 FULTON STREET, NEW YORK

Wireless Taught By Mail



You May Learn Theory, Code and Laws of Radio Communication in Our School or at Your Home fitting you for positions paying good salaries with wonderful chance to travel the world over. It's the most interesting profession known and the demand for skilled operators is increasing. Send stamp for catalog giving facts. Resident classes open Oct. 2nd.

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WASHINGTON Offers Special Advantages
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When writing to Advertisers please mention this Magazine

Important Announcement of Advance Rates on January 1st, 1917 To Wireless Age Subscribers

This is Your Last Chance to Subscribe at the Old Rates

The paper on which THE WIRELESS AGE is printed has advanced during the past year over 100% in cost to us. We are unable to hold our present subscription price any longer. For a short time we will accept subscriptions at old rates. From now up to January 1st, 1917, ONLY, we will accept a special pre-publication offer made below for our new books, which we will soon bring out:—

Dr. Goldsmith of the Institute of Radio Engineers, and Director of the Radio Laboratory of the College of the City of New York, has for the past year been conducting exhaustive research work in Radio Telephony. He has made discoveries of great importance. The results of this research work will be presented exclusively in THE WIRELESS AGE in a series of articles beginning in January, 1917, issue. The complete series, profusely illustrated, will be published in book form early in 1917. Price in cloth, \$1.25 per copy. Ready early in 1917.

Mr. E. E. Bucher, Instructing Engineer in charge of the Marconi School of Instruction, has just completed an indispensable book for all wireless operators and amateurs who desire to know what's what in the latest and most advanced commercial wireless practice. The book, called "Practical Wireless Telegraphy," is very completely illustrated, and covers descriptions, instructions, and handling of all the newest types of commercial apparatus, much of which is just going into use, and some of which will not be actually ready for use until 1917. This book is a complete operator's instruction book in which every detail the commercial operator needs to know is fully and thoroughly covered. Price, \$1.25 per copy, in cloth. Ready about January 1st.

Major J. Andrew White, Chief Signal Officer of the Junior American Guard, and Editor of THE WIRELESS AGE, has been at work many months to fill a long felt want of a Military Signal Corps instruction book, prepared especially to enable the National Amateur Wireless Association to carry out one of the principal purposes of its organization—the Third Line of National Defense. This book is perhaps the most important one we will publish. There is no Signal Corps book in existence today that covers in anything like an adequate way the information given in this book. Price, 50c. per copy. Ready in January.

SPECIAL IN ADVANCE OF PUBLICATION SUBSCRIPTION OFFERS GOOD ONLY TO JANUARY 1st, 1917

	With WIRELESS AGE One Year	After Jan. 1st
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Major White's "Military Signal Corps Manual" .50	.50	\$2.25
OTHER SUBSCRIPTION OFFERS		
1916 Year Book of Wireless Telegraphy & Telephony.....	\$1.50	\$2.75
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How to Pass U. S. Government Wireless License Exams.50	\$2.10
How to Conduct a Radio Club.....	.50	\$2.10

These offers are open to both new and old subscribers.

The Wireless Age

42 Broad, New York



The Publishers of the
Pacific Radio News
extend their best wishes for a

Merry Christmas
and a
Happy New Year

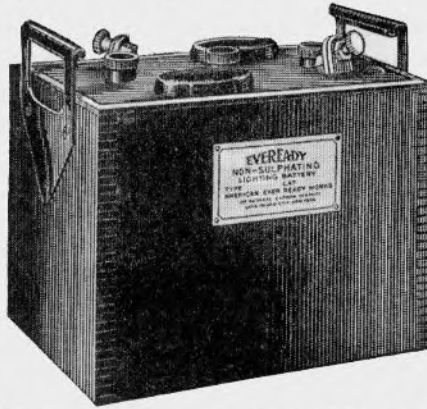
to the readers of this Magazine



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EVEREADY

Non-Sulphating Storage Battery



BEST FOR RADIO SERVICE

Its non-sulphating feature makes it especially desirable, as it does away with regular periodic recharging and overcharging to prevent this deadly element causing ruination to the battery. It insures maintaining the full porosity of the plates; prevents loss of capacity and efficiency, and insures longer life.

Definite Guarantee
For Starting Service,
18 Months. For
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ing Service, 3 years.

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LOS ANGELES



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for men who are determined to succeed

One of the finest Radio Schools in America is now being installed at Heald's Engineering School---the equipment will be the last word in Radio--nothing better in the world--ask for full information--

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“Albany”

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These meters were designed especially for the Wireless Trade. The A. C. Volt and Ampere Meters are of the repulsion type and are accurately calibrated.

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Hotwire Ammeter, 0 to 3 Amperes.....	3.50
Hotwire Ammeter, 0 to 5 Amperes.....	3.75
VOLTMETER, 0 to 125 Volts, A. C.....	8.50
Ammeter, 0 to 10 Amperes, A. C.....	8.00

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