Indiana Historical Radio Society

BULLETIN

Vol. 6. December 1977. No 3 No. 4

MERRY CHRISTMAS

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FOR INFORMATION WRITE TO:

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Treasurer – For membership payments and address changes.

Historian – For history of the IHRS and for donations of material for the Society Scrapbook.

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Please use SASE when corresponding.

The INDIANA HISTORICAL RADIO SOCIETY has a minimum of four meetings each year. These meetings are held at various locations throughout the State of Indiana. All members are invited to participate. Guests are Welcome.

RENEW YOUR MEMBERSHIP!

INDIANAPOLIS MID WINTER MEETING
FEBRUARY 25, 1978

The third annual Mid Winter Swap Meet and Flea Market of Old Radio Gear will take place at the Riley Park shelter house in Greenfield, Indiana, on Saturday, February 25, 1978 at 10:30 am. Every one bring your 'extras' for sale or trade. Greenfield is 25 miles east of Indianapolis on U S 40. The Riley Park shelter is at the east edge of Greenfield and one half block north of U S 40 on "A" Street.

The schedule of activities will be as follows:

9:30 am to 10:30 am	Equipment set up.
10:30 am	Meeting officially opens. Please, no bartering until 10:30 am.
12 noon	Lunch - Resturants are close by.
1:00 pm	Brief business meeting.
1:30 pm	Sell 'n' Swap.
3:00 pm	IHRS Mid Winter Meet concludes.

There will be display tables available for any Western Electric radio equipment you would like to show. See you at Indianapolis!

Lifeboat Radio On the Leviathan

The ½-K.W. Quenched Gap Transmitter. It is Operated from a Bank of Edison Cells, Which Are Capable of Giving Continuous Service for Four Hours.

1923

LEVIATHAN ANSWERS TO WSN

When the Shipping Board's giant Leviathan sailed on her trial trip from Boston in the middle of June she kept in touch with the land radio stations by radio, and answered the call WSN. Radio operators Jack Irwin and E. N. Pickerill were in charge of the radio apparatus.

The Radio Corporation of America has secured the contract to erect a high power station in Sweden. The cost will total over three and a half million crowns, of which the R. C. A. will receive more than one-third. The station is expected to be ready by next year.

The Amalgamated Wireless Company of Australasia is to erect a high power station for communication with Great Britain.

The Marconi Station at Clifden, Ireland, which has been in the hands of the Irish Irregulars for some weeks, has now been freed by National troops. It will be some time, however, before the wireless service can be resumed, as the station was almost completely destroyed. The damage done is estimated at 310,000 dollars.

The number of amateur licenses issued in England is now over 13,000—representing an income to the Government of more than 30,000 dollars annually.

A novel use was made of wireless when a Canadian steamer requested the text of the Service for Burial at Sea. The requested service was wirelessed to the vessel by the *Carmania*.

Wireless Stations are to be erected at Lisbon, Madeira, Cape Verde Islands, Angola and Mozambique. The Marconi Company of England has secured the contract and a concession from the Portuguese Government to work these stations for a period of 40 years. A syndicate will be formed with Portuguese capital and a majority of Portuguese directors on the board.

The eleventh anniversary of the sinking of the *Titanic* was specially observed by the U. S. Ice Patrol in mid-Atlantic, when wreaths were dropped overboard in the vicinity of the disaster. Thanks to the excellent work of the Ice Patrol and the use of radio, such disasters have become, we hope, things of the past. Suggestions are on foot that the broadcasting of ice warnings should be made on a longer wave, as those issued by the Ice Patrol and Cape Race on 600 meters are frequently mutilated by QRM. All operators who believe that such an alteration will help in the reception of these warnings should bring the matter to the attention of their respective administrations without delay.

From January to June of this year more than 39,000 wireless messages have been handled by the White Star liners. This number does not include messages relayed for other vessels to and from shore. A considerable increase over the 1921 total of 45,000 is expected by the end of 1922.

Reports received by the British Postmaster General show that signals from the station at Leafield, near Oxford, can be copied in Melbourne and other places in Australia—a distance of 11,000 miles. Owing to the interruption of the cable service to U. S. A., occasioned by the Irish Irregulars, a considerable amount of traffic was diverted to Leafield and transmitted to Halifax. Some 8,000 words were handled nightly.

Leafield is not considered a very powerful station, and the new transmitting station to be erected at Bourne in Lincolnshire, England, is expected to have six or seven times the efficiency of Leafield. The station at Leafield is equipped with an arc transmitter while that at Bourne will use a valve transmitter.

The South African authorities have accepted the offer of the British Marconi Co. to erect a high power station at Cape Town for world wide communication.

In the recent inquiry into the loss of the P. and O. Liner *Egypt* occasioned by the collision in fog with the French ship *Seine*, it transpired that, although equipped with wireless, the *Seine* was not carrying an operator. The *Seine* carried a mate who had some knowledge of wireles, but who was not on watch at the time of the disaster and who subsequently failed to operate the set. Some six or seven vessels in the immediate vicinity carrying "watchers" (instead of operators) failed to detect the distress call sent out from the *Egypt* and repeated by *Ushant*.

AMATEURS INCREASE BY 1,334 IN FIVE MONTHS

Lest some fans believe that the reception of broadcasts is the only popular phase of the radio art, be it known that amateurs are still entering the game of "key pounding" at the rate of nearly three hundred a month. Since January 1, 1,334 amateur licenses have been granted by the Department of Commerce, and on June 5 there were 18,232 such stations in the United States.

★ ★ RADIOADS ★ ★

WANTED: Parts listing for AK mod 40.-PO211 Mt. Vernon Ind 47620--Gary Trammel

WANTED: Chassis only for Phansteel mod W6 (uses 3 199's);Base for R3 Magnavox horn; Base for Utah or Sadler spkr. -8471 Patterson St. StJohns Ind., 46373-H.W. McCauley WB9NVE

WANTED: Tunning assembly for Bremmer-Tully Counterphase rcvr--1104 E. Wooster St Bowling Green Ohio 43402-Geo B. Clemans

TRADE: Two Grebe Synchrophase MU1, good condx one missing gang chain,one equipped for loop on top of cabinet. Need Crosley 50,Ace,Harko or what have you. --Lafayette Indiana--W9ASX

FOR SALE: 1918 Duck Catalogue(No11) pro. reprint 240pages with hundreds of illustrations $7 ppd.--515 Crescent Ave Buffalo N.Y. 14214-Dick & Ann Schamberger

FOR SALE: New "Saga of Vacuum Tube" by Jerry Tyne paperback $9.95 hardback $19.95,494pgs a must for tube collectors--Vintage Radio Dept Q,Box 2045 Palos Verdes Calif. 90274

FORSALE: "The General Electric Story"Vol11"The Edison Era" Vol.2 "The Steinmetz Story" $2.50ea plus 50¢mailing--Hall of History General Electric Co, Research & Developement Center K1,3A15, PO Box8 Schenectady N.Y. 12301

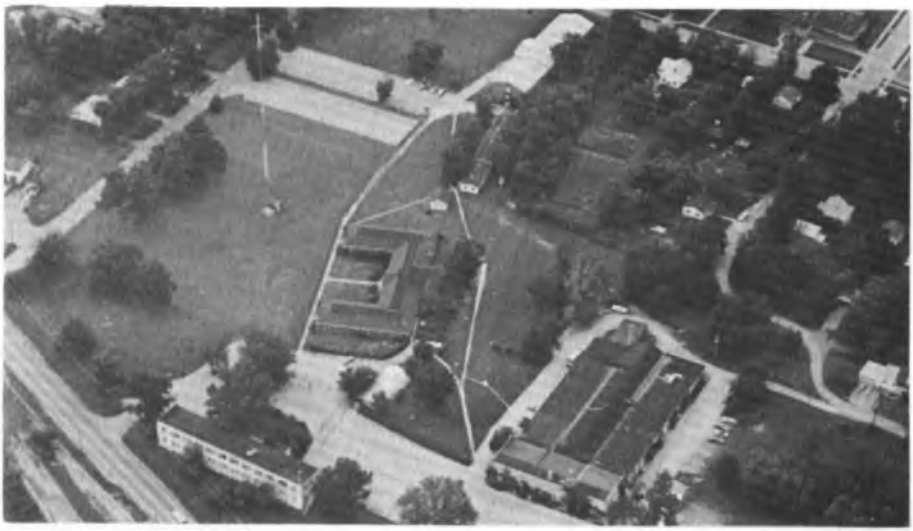
FOR SALE: Three old magneto wall telephones,oak cases,original finish, workable, $110 or all three for $300--1105 So 18th St Lafayette, Indiana 47905-G.E. Rogers

VTI AT A GLANCE

Valparaiso Technical Institute, formerly known as Dodge Institute of Telegraphy, was founded in 1874, as a department of Northern Indiana Normal School---Valparaiso University. Morse Telegraphy and Railway Accounting comprised the major part of the curriculum. In the fall of 1909, Mr. G. M. Dodge enduced Paul Forman Godley to organize and teach a course in Wireless and Electro-Magnetic basics. According to Paul Godley,this was the first such commercial school course in the Western Hemisphere. Many students constructed small buzzer-battery transmitters with slide-tuner-crystal receivers and one of the first round-the-town radio nets was formed. (Valpo. Ind) Station licenses were unheard of in those days. Mr. Godley was followed by James Baskerville as head of the Wireless School. Jim was another old timer and was issued the first "Certificate of Skill" on May 25 1911 at the Brooklyn Navy Yards. The Pre-WW1 years brought changes in personnel, technology and hardware. Fortunately the Institute was able to keep up with the pace and the increasing demand for trained wireless operators and technicians. The student enrollment swelled. The school in cooperation with the U.S. Army Signal Corp. produced operators in quantity for both civil and military servvices. After the war the expanding radio field and the broadcasting era required more trained personnel. On Nov 25 1921 the Department ofCommerce, Department of Navigation issued an Experimental Radio License under the call of 9XD The system was licensed to employ spark, arc, and vacuum tubes; a flat top and cage antenna system 100 ft. long and 100ft. in height and a fundamental wave length of 310 meters. Normal sending and receiving wavelength to be 200 m. In the later '20's the Amateur Radio call was issued. (9RW) Many prominent men in the radio field were part of the schools operations, Wilbur R Cummings, Dale Clemons, Mr. Packman, Doc. Hershman and many many others. The depression in the '30's caused the temporary

closing of the school. In 1934 it was decided to reopen the Institute. The new enrollment started with only 12 students. An amateur radio club was organized with the call letters W9SAL This also the present call. Small tools and work benches were provided in an adjacent room for use in amateur construction. With the outbreak of WW2 the school geared to the increased demands for more trained personnel. During the war years the Institute trained more than 1500 and after the war many attended the school under the GI Bill for Education. The school, however, had moved from the old location to the new enlarged and present campus. This new campus was not completed until 1954. The name had been changed from the Dodge Telegraph and Radio Institute to Valparaiso Technical Institute. Three new Dormitories provide on-campus housing for the students. The field of technology was enlarged to include courses in AM Radio Broadcasting, Aviation Radio, Automation, Computers, Guided Missiles, Frequency Modulation Technics, Industrial Electronics, Television etc. The Indiana Historical Radio Society salutes the accomplishments and historical background of the Valparaiso Technical Institute

VIEW OF VTI CAMPUS



Radio Digest

1923

WHITE BILL AWAITS SENATE ACTION

The White Radio Bill, which was passed by the house, has been transmitted to the Senate, where it awaits assignment to a committee. Some indicision as to whether it should go to the Commerce Committee or the Interstate Commerce Committee has been encountered. Senator Kellogg, who favors it and will sponsor the bill in the upper chamber, is a member of the latter committee, but as Chairman Cummins is out of town, early action there is not promising. Literally, it should go to the Commerce Committee, as the original bill was passed as a commerce measure in 1912, and radio is under the Commerce Department today.

When the hill is signed, early action is still hoped for, although some Senators admit that if it is likely to incur much debate and obstacles are thrown in its way, it will be impossible to pass it this session. It passed the house after two days' discussion and suffered little thereby, but such speedy progress in the Senate is hardly hoped for, with other important legislation pending.

Secretary Hoover, after a conference with Senator Kellogg, was sanguine as to the bill's passage in the Senate this session, unless some obstructionists interfere.

Questioned as to why radio came to be under the Commerce Department instead of the Post Office, as it is in many European governments, Secretary Hoover said it was probably because it required regulatory supervision, which duties did not devolve upon the Post Master General. At first, no department seemed to want radio, Mr. Hoover explained, adding that as he believed some governmental department should foster its development, he volunteered, although he realized it would mean considerable additional work.

Based upon the present number of stations and operators and at rates now set forth in the bill, the Department expects to collect annually a sum approximating $186,000 in fees for licenses. This would offset a large part of the expenses of administering, inspecting and licensing the stations and individuals. This money would not be received in cash by the radio section of the Department but would be collected through the sale of Government revenue stamps and would constitute additional income to the Government. Thus, it is explained radio interests and individuals would actually be paying for supervision and service, which would require almost double the work.

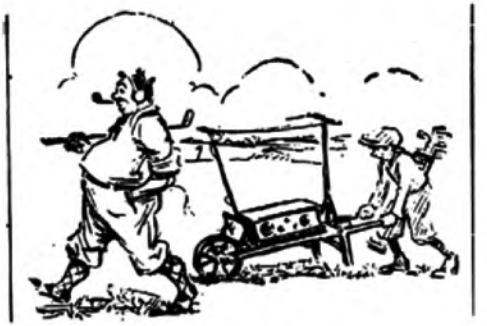
THE BROADCASTING SITUATION

By CARL BUTMAN

For the first time since broadcasting began in September, 1921, fewer new stations were licensed during the month of January than dropped out, indicating that the field for broadcasting is practically filled. This is not to be wondered at, officials point out, because the "saturation point" has been reached. Many fans say, "well, there are enough anyway; we don't want any more; let the better ones survive."

Today, there are 570 broadcasting stations, 28 of which are in the B Class on 400 meters, the balance being on the more popular 360-meter wave. On January 1 there were 576, showing a loss of six during the month. While there were 28 new stations licensed in January, 34 old ones failed to renew their licenses.

On the first of February last year, there were but 36 stations licensed in the new pastime of broadcasting; today, there are almost 16 times that number. Many people believe that this is far too many, particularly since they are not well distributed on the 360-meter wave. The radio bill, however, provides for the distribution of a large number of new waves, which will aid in decreasing the interference. Competition is creeping into the game. The best equipped stations giving the best service to the fans will probably become the permanent ones in the long run, it is believed.



The bill does not carry any salaries for the members of the Advisory Committee, who are not Governmental employees, but provides for the payment of their expenses when in session in Washington. One of Secretary Hoover's first acts following the passage of radio legislation would be to secure the appointment of this committee and call a session for the immediate revision of the wave assignment schedule, it is understood.

'TWAS ALWAYS THUS

Radio, like the baby, does the cutest things after the company has gone.

IT'S THE BUNK

When people say they receive radio messages through iron beds—it's the "bunk."

MEET WALT SANDERS AND HIS SON OF TERRE HAUTE

Walt is Prof. of Education at Indiana State University. He moved to Terre Haute from Urbana, Ill. in 1971 where he was Associate Prof. at the University of Illinois. His intrest in radio began 18 years ago when his wife asked him to help her Cub Scout pack make crystal radios as shown in their manual. This request resulted in visits to local repair shops searching for parts, and turned up a number of things such as chassis and complete radios (vintage of 1940-50) to play with. The crystal set project was a fiasco, but Walt did learn a little about radio, with the help of an old copy of Marcus.
Six years later at a flea market he bought a Freshman Masterpiece - 3 dials - for $8.00, and he was "hooked".
It was another three years before he located other vintage sets, but with the help of Eric, his son, more sets emerged. On two occasions they displayed their collection at the U of I Engineering Open House, and once at Rose-Hulman Tech. This fall they carried 35 sets with horns, etc. to the local shopping center for a two day display. Its a lot of work, but well worth the interest people show in old radios.
Eric is 21 and the oldest of six children. He is a senior in elementary education at ISU, an ardent swimmer and skindiver. He is on a swimming scholarship at the university. When the family packs up their equipment for a show everybody helps.
Walt is the new vice-president of IHRS.

SEPTEMBER MEETING OF IHRS

Our society held its fall meeting in Terre Haute on Saturday, Sept. 10th at the Rose-Hulman Institute of Technology. Our Secretary, Walt Sanders, was host to the meet. Although the attendance was small, enthusiasm was not lacking and, by request, a number of A K breadboards were brought in for display. Numerous other old equipment was brought for swap.

At the business meeting it was decided to postpone the election of officers until the next meeting since the president and vice-president were absent, and since no nominating committee had been appointed in advance. Walt Sanders conducted the meeting and appointed an ad hoc committee to select a slate of officers for 1978. This was done over the lunch hour.

Much discussion was given to the future of the bulletin, since Gary Vierk would have to retire as "make-up" editor due to business reasons. It was felt that a new format might have to be considered. This will have to be resolved after the publication of this issue.

Following the meet many of those in attendance visited Walt Sanders at his home to see his collection of old radios and equipment.

H. GERNSBACK, Editor and Publisher
SYLVAN HARRIS, Managing Editor
EDITORIAL AND GENERAL OFFICES, 53 PARK PLACE, NEW YORK

Vol. 7 MAY, 1926 No. 11

Radio Television

By HUGO GERNSBACK, F. R. S.

...the same wave to which you are tuned, for ... reason.

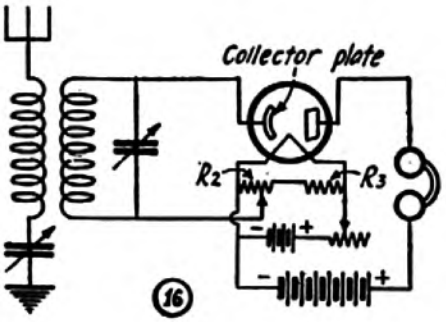
The range of acoustical frequencies is really very narrow, and does not take in a wide band; the human ear responds to no vibrations above a frequency of 23,000 per second. That is the reason why the so-called radio "carrier" is inaudible. To the non-technical reader it may be explained that the "carrier" is the fundamental wave emitted by a broadcast station, which is on the air at all times when the station is transmitting. When no one is speaking or singing at the broadcast studio, you hear nothing but a faint rushing sound in your receiving instrument. The vibrations of this carrier run into millions per second, and that is why we cannot hear them directly.

If however Television is perfected (as it almost surely will be during the next two years, or perhaps sooner) it will be possible to impress the Television impulses upon this same "carrier" which brings the sound impulses to your set. The Television impulses, being of a frequency too high to be audible, will not interfere with your loud speaker; and the Television picture for the same reason, will not be mixed up with the speech, any more than a violin or a piano, both of which you can readily distinguish with your ear. This is an inadequate comparison, because the separation between the acoustical band or audio frequencies and the radio frequency band is enormously wider than that between any two audible notes of music; and it will therefore be practically impossible for the "sight" waves and sound waves to interfere with each other.

I have pointed this out to bring home the point that, when Television is finally brought about, it is quite probable that today's radio sets will be adapted to this new purpose; and that it will be possible to connect a Television attachment right to your present set and ... going on all over the country while ...

More than six years ago, Hugo Gernsback, then editor of RADIO NEWS, *predicted simultaneous transmission of sight and sight signals on the same wavelength. The idea was generally ridiculed at the time, but for that matter a lot of competent radio engineers thought that radio television itself was impractical. Now the second largest broadcasting organization in the world, which has always displayed considerable progressiveness, announces regular sight-and-sound broadcasting on exactly the basis described in Mr. Gernback's original editorial, part of which is reproduced above. Note the date—May, 1926!*

A PREDICTION COME TRUE!

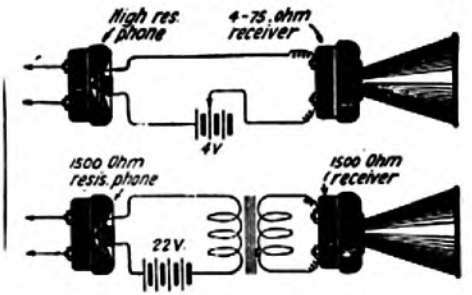


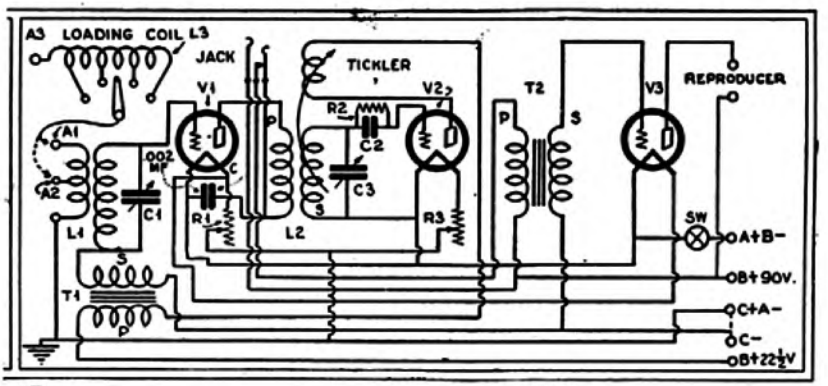
Receiver using the new Sodion tube.

In diagram No. 16 we have a circuit that will prove far more sensitive than any of the others thus far described. In this receiver the new Sodion tube is employed as the detector. A special form of loose coupler must be used with this tube, as very loose coupling is required for best operation. This tube does not have a grid, as is the case in a three-element tube, but instead it has a curved metal plate known as the collector. The circuit for this tube is similar to a standard vacuum tube circuit, but it requires a potentiometer of about 50 ohms (R2) in series with a fixed resistance of 150 ohms (R3) connected across the filament battery and rheostat as shown. The primary of the coupler may be tapped as usual, or it may consist of a fixed inductance with a variable condenser of .001 mfd. capacity in series. The secondary of the coupler is tuned by a variable condenser of .0005 mfd. capacity. This circuit is very sensitive, especially on weak signals, which makes it excellent for long distance reception. A receiver using this tube cannot oscillate, is non-regenerative, and will not interfere with other receiving sets.

How to Hook-Up a Transmitter Button to Make an Efficient Loud Talker

A Transmitter button with a few dry cells and a telephone receiver will make a remarkably simple and efficient loud talker. A Microphonic amplifier of this type is just the thing for use with a radio set. The weak music and signals may be amplified many times their original value. It is possible to entertain a large audience with a simple radio equipment if a transmitter button is used in the circuit





(Fig. Q58F) The famous Crosley "Trirdyn" (Model 3R3) which incorporates a reflexed stage of R.F. and first A.F. Unlike earlier models, this receiver used a condenser with meshing rotor plates.

CLAPP-EASTHAM COMPANY

MODEL H. R.

Radak Receiving Set

The popular Christmas gift of the year. Handsome mahogany cabinet with dull black panel. $40. (Licensed under Armstrong U. S. Patent 1113419.)

"It's to be a Radio Christmas this year"

1923

MODEL H. Z.

Radak Two-Stage Amplifier

Popular companion gift with Model H. R. Radak Set, permitting the use of a loud speaker. Same size and finish. Price $40.

Models R23 and A23 Radak

Latest De Forest Radio Apparatus

1916

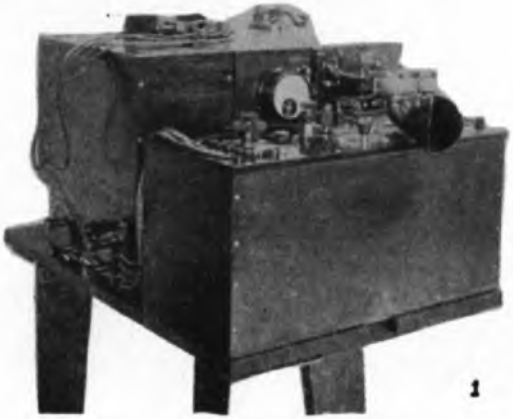


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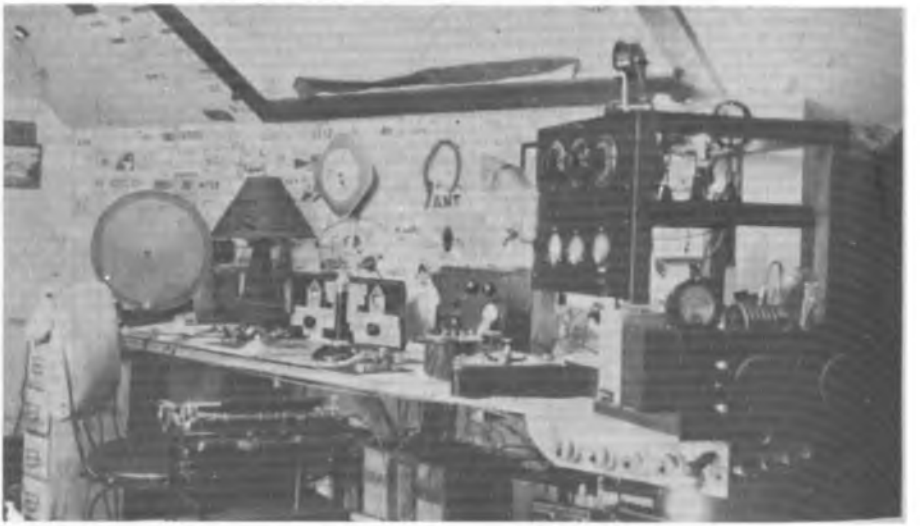
Fig. 1 Illustrates Appearance of new De Forest Wireless Telephone and Telegraph Set for Portable Work.

Fig. 2. Depicts Ultra-Sensitive Polarized Relay for Use with Audion or Other Radio Detectors, to Permit of Recording the Signals on Paper Tape.

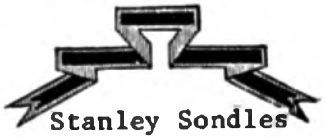
Fig. 3. A Newly Developed Audion Receiving Cabinet Intended for Experimenters and Others. Allows Use of 110 Volt Commercial Current.

Fig. 4. U. S. Navy Type Audion Receptor for Undamped or Damped Waves. Uses 110 Volt D.C. Through Special Potentiometer.

W7ANT Great Falls Mont. Jack was active on 80mtr Fone in late'20s and early '30's. This is his stn. in the early '30s



Retired Magnavox executive dies



Stanley Sondles

Magnavox Company veteran, Stanley Sondles, 81, died at his home in Fort Wayne Indiana recently. He joined the Company at its Oakland California headquarters in 1922 as a time keeper. During 1927, Sondles was assigned the responsibility for establishing a Chicago office for the Company, and in 1930 he moved to Fort Wayne when Magnavox consolidated its office and manufacturing operations in the old Stenite radio plant on the City's east side. Stanley Sondles was named Sales Manager for the Company's Speaker Division in 1932; for its capacitors in1935 and for all its components in 1946. He lectured extensively on the early days of radio and authored various papers tracing Magnavox's growth. Founder of the Company's Quarter Century Club, he served as its president and, eventually, Director for many years. He retired in 1965 to devote much of his time to travel and caring for his extensive collection of flowers. As an Advanced Amateur Photographer, he acquired a vast collection of slides that recorded significant moments during his active life that primarily centered around the company whom he was associated for over four decades.

IHRS VALPARAISO IND. MEETING

A special meeting of the Indiana Historical Radio Society was held at Valparaiso Technical Institute at Valparaiso Indiana on November 5 1977. The purpose of the meeting was a delayed election of officers for the year of 1978. A swap and trade session was held in the morning at the school parking lot. The excellent facilities of this historical school provided the setting for an interesting meeting. The new museum at VTI, although not complete, has an excellent collection of rare & historical communication articles. The noon luncheon was provided by our gracious hosts, the Almuni Assn. of VTI. The afternoon business meeting was conducted by V.President Ross Smith

FOLLOWING OFFICERS WERE ELECTED FOR 1978.

President: Ross Smith
1133 Strong Ave Elkhart Ind 46419

V. President: Walt Sanders
15 Todd Pl. Terre Haute, 47803

Sec. Frank J Heathcote
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Treas. Harry Martin
PO Box 415 New Palestine 46163

Editor Fred C Prohl
7257 Murphy Indianapolis 46256

Historian Ed Taylor
245 N Oakland Ave Indianapolis 46201

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MAY 5 & 6, 1978 IHRS-AWA MEETING AT THE CORD-AUBURN-DUESENBERG MUSEUM

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PAUL FORMAN GODLEY THE TARN, HOUSTON ROAD, GREAT NOTCH, N. J. 07424 (201) 746-3001

Dear Larry:

Yours of the 9th just as I'm about to take off for London.

The fall of 1909 -- I then Installation Engineer for United Wireless Tgh. Co., The Great Lakes, the late G. M. Dodge induced my coming to Valpo., there to organize, prepare curiculum and teach Wireless and the electro-magnetic basics; and I carried through with this, notwithstanding I had planned, that year, to get some advanced work at The Univ. of Illinois -- to which I went the following school year.

To the best of my belief, this was the first such commercial-school course in Wireless; in the Western Hemisphere, at least. I had 20 students, as I recall -- including one young woman. The class was required, in due course, to fabricate their own double-slide, crystal-detector receivers and a battery-powered, buzzer (door bell) transmitter; and, as result, here the prioneer ham(?) wireless network -- a net which was busy, indeed, during evening hours, the students rooming, variously, throughout the town.

As you may not know, both pre- and post-War I, pioneer work of mine in the field -- including the T.A.T. tests sponsored by the A.R.R.L., December, 1921 -- engendered turn, world-wide, to the theretofore held useless short wave portion of the spectrum.

After about 10 years as a pioneer radio manufacturer, I established the pioneer Radio Engineering firm of consultants (1926) carrying my name. This firm is, now, in the hands of my son, Paul F. Godley, Jr. -- I having retired in 1963. This firm, too, carried on pioneer work in the Defense, Broadcasting, TV, FM, Voice of Ame., and Turnpike, Foreign Corporation and Police Communications fields, etc., etc. -- and is still active, indeed.

I am now 82, in excellent shape, comprehensively, my time given to writing and extensive travel. My two sons, two daughters are, all, self-winding, self-propelling; and their 13 children (jointly) are a heartenningly wonderful lot of progeny, indeed.

And there you have the story; in a nutshell.

Good to hear from you. Your 73s reciprocated. . . Hastily,

Paul F. Godley

Mr. Larry Briggs,
5108 Boulder Drive,
Oxon Hill, Maryland - 20021.

Merry Christmas! Happy New Year!

Announcing-

THE NEW

MICHIGAN

Four Tube Set

$150.00

Bon Voyage

Take a trip with a Michigan 4 tube set any place in the U. S. A. A turn of the finger and you jump from Cleveland to Memphis—another turn and you visit New York. A wonderful trip—so simple, so easy, and all with four tubes.

Less Controls **Less Battery Consumption**
Less Tube Expense—Than Ever Before

offered in a set that gives such unusual distance, volume and selectivity, and best of all the Michigan 4 tube set is non-radiating—you can enjoy yourself without spoiling your neighbor's pleasure.

The performance of the Michigan 4 tube set is in keeping with its wonderful appearance. Truly, an unusual set from every angle. Works equally as well with Dry Cell Tubes or standard 6 Volt Wet Battery Tubes.

See your dealer at once—and ask him to give you a demonstration.

MICHIGAN RADIO CORPORATION

33 Ottowa Street **Grand Rapids, Mich.**