

THE OLD TIMER'S BULLETIN

Official Journal, Antique Wireless Association

Published for the Old Time Wireless Operator, Historian and Collector

Vol. 2

Autumn, 1961

No. 4

A.W.A. Meeting Nets Some Good Yarns and Historic Early Gear

The Fall meeting of A.W.A., held Nov. 4 at Hotel Manger, Rochester, N.Y., was well attended, with some members driving as far as 350 miles to be there. After a fine dinner, A.W.A. President W2GB greeted the group and turned the session over to M.C. "Cy" Staud, K2DQ, ex-SAP. "Cy" introduced three members of notes: Charles Peterson, ex-7CW (formerly with Kilbourne and Clark!), John Swallow, ex-NC-3DI (formerly with RCA and Independent Wireless and now with the FCC) and George Applegate, W2IA, A.W.A. historian from New Jersey.

The first historian to report was Ralph Yeandle, W2EYI, ex-2BXS, I-8DW6. As a G.E. engineer, Ralph was associated with G. E.'s pioneer television station in 1927 and their early high power shortwave stations 2XAD and 2XAF. At the conclusion of his talk, he presented the club with the first crystal (and holder) ever used in broadcasting (originally used at the old WGI transmitter) plus the crystal used at old 2XAD!

The highlight of the evening was an address by "Col." Irvin Weir, K2POI. The "gang" sat on edge as the Colonel related in an easy manner his association or encounters with such celebrities as Alexanderson, Armstrong, Teala, Pickard, Marconi, Steinmetz and others. Not to be outdone by his companion W2EYI, Irvin presented the club with an original uncased magnetic modulator which he personally developed for G.E. (RCA) 40 years ago. This was the little blank job which the amateur placed in series with the counterpoise or ground



Flash shot of head table at A.W.A. meeting. L. to R. - W2CTA, W2GB, W2EYI, K2POI, and K2DQ

lead to modulate his transmitter.

The meeting was concluded with excerpts from the club's tape library with voices of Alexanderson, Armstrong, DeForest, Gernsback, Reiszart, Deloy, Godley, Marconi and others. A.W.A. business meetings are scheduled approximately every 6 months. If you miss the dates in the Bulletin (or we miss 'em) a postcard will get you full notice of date, time and location of the next meeting.

A.W.A. VISITORS - the usual number of Old Timers and Historians again found their way to the Club's Barn Museum this past summer. The log book shows visitors everywhere from W1 to W6 land and Canada. The most recent "guests" were W2EI and W7AN !

LOCATIONS - to minimize extra printing, the QTH or address of each member is omitted when their name or call appears in the "Bulletin". If you wish to correspond with a non-amateur member (call not in Amateur Call Book) we will furnish you the address.

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ANNUAL DUES: (which includes *OT Bulletin*)

\$3 per year payable to:

A.W.A. Treasurer
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OLD TIMER'S BULLETIN

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EARLY JUVENILE RADIO FICTION

Philip E. Hatfield, W9GFS

No radio-book collector will ever be happy until he has acquired QST from Volume 1 Number 1 to the present, Ballentine, Robinson, and a set of EI and Wm. Duck catalogs. However, many of us do not have the time, money, and pure luck required to obtain the most sought-after items. However, there is one rather pleasant bypath that is rather easy and inexpensive to explore - the collecting of juvenile radio fiction.

Around the turn of the century interest in science, invention, and just plain tinkering ran quite high among boys, and quite a few books were written which combined these interests with high adventure. As a result, we have the once popular Tom Swift series, The Motor Boys, The Motion Picture Boys, and others. (Incidentally, many of these were the product of a prodigious one-man fiction factory.) It was inevitable that attention should be turned to wireless, since it was one of the marvels of the age. Thus, we have The Motor-Boat Club and The Wireless by Hancock (1909), and Tom Swift and His Wireless Message by Appleton (1911).

With the advent of broadcasting, at least three publishers issued series titled The Radio Boys. Of the three series, the books published by Grosset-Dunlap, and written by Allen E. Chapman (probably a pseudonym) seem to have been written, or edited, with an eye toward accurate presentation of facts about radio. This series also carries a forward in each volume by the late Jack Binns.

Some of the others show a ludicrous lack of radio knowledge and are worth reading for that reason. One of them, Radio Boys Cronies by Whipple (1922), carries a rather grudging endorsement by Thomas Edison, who was not noted for his enthusiasm over radio.

Part of my collection is the result of a reluctance to discard boyhood books that gave me a great deal of enjoyment, but I have not found it too difficult to pick these books up, in the last few years, some still with dust jackets. The best sources seem to be stores like Goodwill, Salvation Army, etc. where almost anything is accepted and placed on sale, although many used-book stores also have them. The price of the books seldom runs over fifty cents, since very few people want them.

These books represent an authentic part of the early wireless and radio scene and certainly should be preserved.

MARCONI 10" SPARK COIL valuation in last "Bull" is way off according to WILD. Charlie sees less than 500 were made and feels the value should be at least \$100! (Incline to agree -Ed.)

CONSTRUCTION OF EARLY GEAR is the difficult task taken over by A.W.A. Historian WBJDV. Jack made a beautiful replica of a Reinartz Tuner (1921) and is now in the process of making a magnetic detector and a coherer-decoherer set!

The History of
THE NATIONAL ELECTRIC SUPPLY CO.
(now Vitro Electronics)

by

Ed Duvall, Sr., EX-3DW

Manufacturers of electrical devices and wireless equipment, for commercial and communication use and for the U. S. Government Armed Forces from 1909 up to the present time.

In preparing a history of this old Washington, D. C. firm the very age as noted above presented two problems: First the company goes back beyond the memory of any living member of the firm.

Second, few people are vain enough to keep records of their business in the belief that someday others will want to use them in history. Few people when starting a business, view their work as the founding of an institution. Consequently records are often lost or destroyed. We have, however, been able to collect enough facts and information from some of the older employees and from the few surviving records to piece together a fairly complete record of the company's development. Old ledgers now in the company's archives show that a Mr. Fred Royce who incidentally was at one time an expert telegrapher for the War Department during the Civil War, joined with a Mr. Marean and established a machine shop in old Georgetown, D.C. on Water Street in 1880. Indications are that Mr. Marean also worked in the Government with Mr. Royce but had some business background, and this company then as ROYCE and MAREAN specialized in brass and copper work, tug boat engine repair and made shafts and propellers for small craft, and manufactured "electrical de-

VICES." In 1899 this company apparently moved to larger quarters at 1408 Pennsylvania Avenue, N. W. in Washington and was active in both manufacture and sales, and also about this time organized the NATIONAL ELECTRICAL SUPPLY COMPANY. Few people were employed in constructing and installing electric doorbells (then quite a novelty) and electric gas lighters. In this period the chief source of interior lighting was gas jets. In churches and assembly halls where these gas jets had to be installed in high places to throw light over the whole room, lighting these jets was quite a chore as it required the use of ladders or long poles. The electric gas lighter which this company installed was a device for sparking these jets. Numerous buildings and churches in Washington were serviced by this device, however an old ledger shows that the largest volume of business was probably in merchandising and much of this electrical sales business was with the U. S. Government with the company acting as the local and government sales agents for companies such as Western Electric. Be-

fore and during the Spanish American War the company supplied the army with telegraph instruments.

With the event of the electrical lighting installations this company began the merchandising of electrical supplies and were distributors for all the well known manufacturers of wiring supplies and electrical appliances.

In the early nineteen hundreds, the U. S. Government, both the Navy Department and the Signal Corps of the Army called on NESCO for many special pieces of electrical equipment and with the event of wireless, some of the very first transmitting and receiving instruments were built under contract for the Government. Between 1909 and the beginning of World War I, this company had built many of the instruments used by the Navy, the War Department and Bureau of Standards such as wave meters, long wave receivers and small portable transmitters. When the war broke out in Europe our military and Naval leaders had to face the need for substantial quantities of radio equipment. Of necessity this had to be based upon the somewhat meager experimental developments which had taken place up to that time and as this company had contributed to these developments through their experience it was evident that the quantity of military equipment needed was far in excess of what could be produced in their present factory. They opened a shop and moved the merchandising departments to 1330 New York Avenue, N. W. and the company was then able to accept prime contracts and subcontract to a number of other firms. The company was particularly noted for producing mobile radio equipment ranging from pack sets carried on mule back to complete transportation transmitting and receiving stations, including supplying probably the first electrical generator ever put on a Naval aircraft and some of the first radio equipment used on a submarine. Many of the Long Wave receivers for Naval Stations both shore and ship built by NESCO can still be found in pretty good condition in Museums and Private collections throughout the U. S. From 1915 thru 1918 most of this receiving equipment was designed for use with Crystal Detectors and some had provisions for connecting regenerating detectors using vacuum tubes and Audion Control Boxes providing some degree of amplification.

In 1917 one of the many contributions to the war effort was the manufacture of hun-

dreds of a series of small compact receivers for use on Sub-chasers under the Model number of CN-113, CN-113A and so on. These were with and without detectors, with provisions for vacuum tube operation and were so designed that they could be used in landing party pack sets, aircraft installations and even observation balloons and outposts, where a light and portable battery operated receiver was needed. NESCO was also doing special experimental model work for Major Squire of the Signal Corps and Dr. Frederick A. Kolster and many of the first Kolster Decremeters were turned out at NESCO. In fact the instrument practically was born in the testing laboratory and assembly shops of the company.

Naturally NESCO could not bear the burden alone in building equipment necessary to supply the government agencies and many of the other companies experienced in this type of material had to contract for many of the same designs and instruments in use at the time. After the war as there was little alternating current used in downtown Washington. NESCO had a major part in converting many Hotels, Theaters and public buildings from D. C. to A. C. and one of the larger jobs was converting the D. C. to A. C. in the Veteran's Building and this job involved changing over 1,000 electric motors, and one of the largest change-overs in the District. They also converted the Metropolitan and National Theaters, the Munsey Trust Company building and the Roosevelt Hotel and many others.

In the early thirties NESCO was distributor for such firms as RCA Victor, The National Company, Hamnerlund and many of the amateur radio and commercial equipment manufacturers, besides supplying commercial communication equipment to the government and the industry.

(The Nacional Electrical Supply Company's store at 1330 New York Avenue in Washington was a haven for both commercial and amateur operators and enthusiasts during the early days of radio when do it yourself projects were the order of the day and few complete radio receivers and transmitters were on the market — most of the sales force behind the counter were ham operators or ex-commercial men and a good many in the shop in the rear of the building were specialists in the field.)

In 1937 the merchandising business of NESCO was sold out to the General Electric Supply Company a subsidiary of General

Electric and the assets in the shop and factory were taken over by a few employees and several investors who founded National Electrical Machine Shops Inc. This company was chartered as a corporation in the District of Columbia in March, 1937, and moved the shop to a location at Fifth and V Streets, N. E. Washington.

During World War II the National Electrical Machine Shops, now divorced from the merchandising work of the store continued to do business with the Government and various branches of the armed forces and business expanded many fold as the entire facilities were devoted to this effort. For three years straight NEMS won the coveted Navy "E" for excellence of performance and the company grew considerably in machinery and employees, but not in space during these war years. At the end of the war it was quite apparent that NEMS needed more room to grow and in 1945 the company selected the present site in Silver Spring, Maryland. The first floor of the plant was finished for occupancy in March of 1946, and the company moved into its new home in April of that year to begin another era in its history.

Immediately after the War, Mr. Allan Clarke, JAEV, who had been in the broadcasting field in Danville, Virginia formed, with some associates, the Clarke Instrument Company to develop and market instruments for science and industry. The first items developed by this company were a series of Field Intensity Meters for AM-FM and telemetering bands and he gave the job to NEMS to build them, and as Clarke had known the principals of the National Electrical Machine Shops for some time he made arrangements to occupy some 5550 feet of floor space in the new quarters. The Field Intensity Meters were followed by the development of Phase Monitors, Telemetering Receivers and TV rebroadcasting receivers and accessories.

The company continued to grow with a reasonable degree of success, but when the Korean War started it became increasingly evident to Mr. Clarke and the management of NEMS that the two companies complimented each other and that a merger would be beneficial to both parties. This Merger was effected on January 1, 1951, NEMS, or what had been known as The National Electrical Machine Shops Inc., became NEMS-CLARKE Company, Inc., with the quarters

occupied by the Clarke Instrument Company, becoming the developing and engineering laboratories of NEMS-CLARKE. Mr. Clarke became Vice President in charge of engineering.

The Korean conflict put such a stress on the production facilities that more space was necessary to continue with the still increasing demands for the specialized electronic equipment that a second floor was added to the Silver Spring building and another building in the rear acquired in 1952. This operation was performed and completed without interruption to production and while working two shifts and employment reached an all-time high of over five hundred.

In 1954 after contributing greatly to the success of the firm during its founding years, Mr. E. M. Nevils, Jr. the first president died, and was immediately succeeded by Mr. A. S. Clarke, and in late 1954 the stockholders approved a change in the corporate name to NEMS-CLARKE Company, Inc. The original name, National Electrical Machine Shops, Inc., no longer adequately covered the broadened scope of the operations.

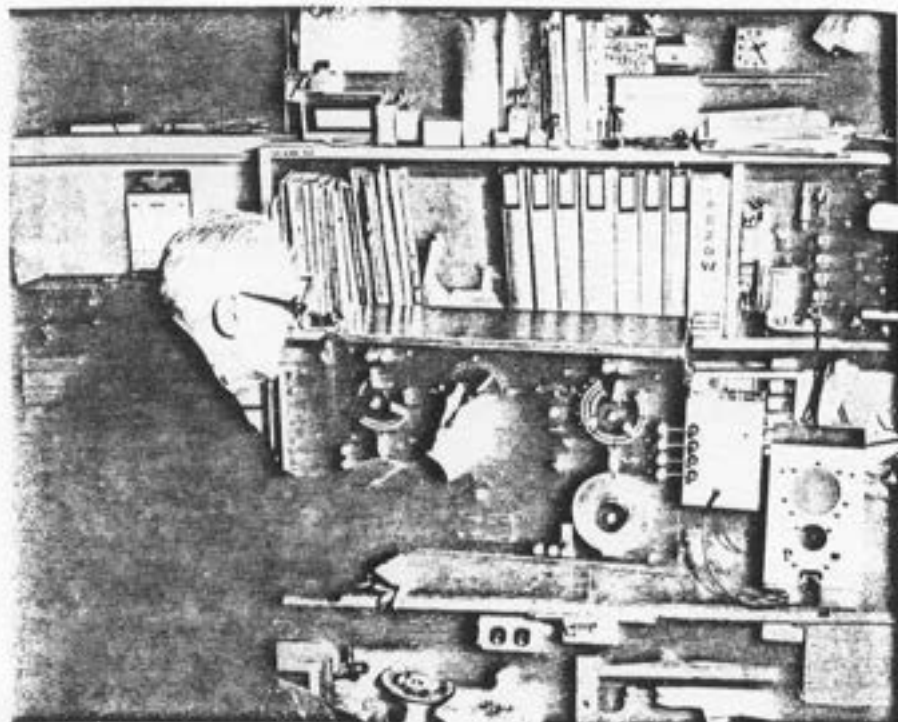
Besides the Government Contracts, sub-contracts with various firms such as RCA, Bendix and others, many new proprietary products were added, including a series of special-purpose receivers for telemetering, TV Color Rebroadcasting receivers and professional electronic flash equipment, and other special light sources for medical research and photomicrography.

Again in 1957 another important change was made in the NEMS-CLARKE organization as it became an operating division of Vitro Corporation of America. Since 1955 this company has undergone a transition from predominantly contract manufacturing to engineering development and the manufacture of these developments. In 1960, the Company was officially designated Vitro Electronics Division of Vitro Corporation of America.

Chronology

- Royce and Marean, Organized 1890
- National Electrical Supply Company, Inc., Organized 1899
- National Electrical Machine Shops, Inc., Organized 1937
- NEMS-CLARKE COMPANY, Inc., organized 1954
- VITRO ELECTRONICS, Organized 1960

Meet the Author



Ed Duvall, ex-3DW, A.W.A. Historian, is currently inactive on the air but is nonetheless one of the most active amateur historians in the business. One-time A.R.R.L. official and leader in amateur activities, he now devotes his time to correlating amateur and commercial historical data, this article on NESCO being his latest.

Ed worked for NESCO (now VITRO Electronics) for many years. During WWI, he was associated with the Naval Research Lab, where he saw the development of wireless reach an all-time high.

This article is presented to our amateur historians to give them a factual background on NESCO and its equipment. Two choice items the collector will immediately recognize, one the CN-113 (one is in the A.W.A. Museum) and the CN-239 (see photograph above). Another piece of NESCO gear was a Wavementer made during WW I. W2ICE found one for \$3 in the basement of a store on radio "row" (Cortlandt St.1) a few years ago.

Our thanks to VITRO Electronics for permission to reprint Ed's "history" as it appeared in the Vitro Communicator.

A.W.A. MEMBERS AT NEW YORK STATE A.R.R.L. CONVENTION

As an A.R.R.L. Affiliate, our club was well represented both in programming and in representation. Well over 25 members were present from 6 different states and Canada including Ed Duvall, I-JCW from Maryland, W9QKE - Illinois, and W8SS from Michigan. A.W.A. highlights included a huge exhibit of the club members' gear which was attended by our President, W2GS, and by W2LF, with programming by W2UTH, W2QY, W2ICE and WJWRE.

The hit of the program was the new A.W.A. show titled "120 YEARS OF BRASS-FOUNDING"—a color film presentation with stereophonic sound. The viewer followed the history of telegraphy from the earliest Morse days to the present. Stereophonic tape enabled one to hear old time spark signals as demonstrated by Geo. Grammar, W1DF, of the A.R.R.L., high speed Morse on the Washington/New York circuit, Irving Versaliya, W1ZE, sending a greeting to the old Morse Net, and lastly, the voices of Earl Williams, W2ED, telling about the old spark brass-pounders and then Ed Raser, W2ZI, narrating the history of the telegraph key.

Credit for this outstanding show goes, of course, to Lou Moreau, WJWRE, and her



Front: 1. to r. - W2ICE-A.W.A. Secy.; W2QY-A.W.A. Vice-Pres. Back: 1. to r. - W3YA-A.R.R.L. Director; unknown novice; WJWRE-A.W.A. Key Historian; and W8SS - Mich. member. (Photo by A.W.A. Photographer W2HPO)

many helpers mentioned above plus old standbys such as W2EXM, W8CW, W8FX, Elmo Pickerill and others. The show will not be available for regular club use until the latter part of 1962.

MAGNETIC AND ELECTROLYTIC DETECTORS

by George Applegate, W2IA

The Coherer, in several variations of design, was essentially the standard detector during the initial seven or eight years of practical wireless. In 1895, however, Professor Rutherford of England had invented a "Magnetic Detector," which, in its final form helped bring the reign of the coherer to an end.

Rutherford's design was based on the research of Lord Rayleigh and others in the field of oscillatory currents. It had been found that the passage of a high frequency discharge through a coil wound around a small iron core resulted in demagnetization of the core. Rutherford's device consisted of a small solenoid of insulated copper wire to the terminals of which two antenna rods were connected. A very small core of fine iron wires was inserted inside the solenoid. A free-swing-

ing magnetic needle, similar to a compass needle, equipped with a small mirror at one end, was located at one end of the iron core. This device was known as a "Magnetometer". When a wavetrain traversed the antenna winding, the residual magnetism of the core was altered and the needle was deflected; the attached mirror serving as a means of enabling an observer to discern very slight movements. This detector was sensitive enough to respond to sparks of a Hertz oscillator at a distance of a half mile. In this original model, it was necessary to remove the core from the solenoid and remagnetize it prior to each test. Professor Rutherford was credited by Professor Wilson as having produced an improved model employing a moving band of wire in 1900 or 1901.

(Continued on Next page)

Professor Wilson, in 1897, improved upon Rutherford's original model by providing the magnetic needle with contacts which served to energize an additional winding employed to remagnetize the core after the reception of each wave-train. Later, during 1902, Wilson again revised the design so that the core was recharged repeatedly to an "alternately reversed magnetism by a periodic electric current." He also eliminated the needle and mirror and added a new winding to which he connected a Bell telephone receiver.

Following the work of Rutherford and Wilson, Marconi, in 1902 produced two models of a magnetic detector, each of which employed two coils wound around an iron core. One coil was acted upon by the incoming signal and the other was connected to a telephone receiver. The first model employed a clockwork arrangement to slowly rotate a horseshoe magnet for the purpose of restoring magnetism to the core. Another design employed a magnet (or magnets) clamped in a fixed position with the core so arranged that it travelled in the field of the magnets. An endless loop of iron wire, running on two clockwork-powered spools, served as the core. The wire travelled slowly through a small glass tube on which the two windings (antenna and telephone receiver) were located. This latter arrangement is the familiar "Marconi Magnetic Detector." While it was not very sensitive, it was quite reliable and saw much service in the Marconi Company where it continued to be used as a "stand-by" detector long after more sensitive detectors became available.

In 1898, A. Neugschwender and E. Aschkinass of Germany and later Lee de Forest, of the United States, developed detectors employing very narrow slits which were cut across strips of sheet-metal or tinfoil. Various forms of "electrolyte" were applied to the gaps in the conductors so as to form a bridge between the two pieces of metal which would act as a detector. A great many substances were tried out, "including Woodbury's Facial Cream," as de Forest says in his Autobiography, published in 1950. His name for some of his mixtures

was "Goo." He called his detector a "Responder." These detectors were "self-restoring" and apparently fairly sensitive but not very reliable and had the disadvantage that frequent replacement of the "Goo" was required.

In 1903, Reginald Fessenden of the United States, Commander Ferrie of France and W. Schloemilch of Germany independently developed electrolytic detectors of a new type. Typical of these was Fessenden's, which he called a "Liquid Barretter." It consisted of a small cup filled with a weak solution of nitric acid in which the end of a piece of very fine platinum wire (Wollaston wire) was immersed. The incoming signals were applied across the terminals of the detector. A battery, in series with a resistance and a telephone receiver, was bridged across the detector, the battery potential causing electrolysis of the acid. This was accompanied by the formation of small gas bubbles around the tip of the platinum wire, these bubbles rapidly dissipated and were continually replaced with fresh ones. Much debate was generated in scientific circles as to the principle of operation of this device. Thermo-electric effects were championed by some, others claimed it was a rectifier, still others stated that the detector functioned in a manner similar to a mechanical interrupter, the gas bubbles acting as insulators. The Electrolytic Detector was quite successful and was in very wide use for several years. The advent of the crystal detectors, however, pushed the Electrolytic back into history.

NEW MEMBERS - We extend a hearty welcome to all the new members who recently joined our historical club. A glance thru the applications indicate we have some real old timers in the group. You're invited to participate in our activities and help to have you with us at various A.P.F.I. Conventions and banquets.

73, W20B (President)

WESTERN TRIP - by W9ENH netted a few old books (not too easy to find) and a visit to some of the West Coast historians. Frank regrets that he missed Edward Fry - - no reply to his telephone call. Don W2OE was out at the time.