

■ **E. Norman Rauland as an Army officer in France during World War I.**



## **E. NORMAN RAULAND (1898-1975) AMERICAN INDUSTRIALIST**

This is the 16<sup>th</sup> installment in our series documenting Industry Pioneers.

### **BY R. DAVID READ**

Christened Einar<sup>1</sup> Norman, E. Norman Rauland was the oldest child of Jergen and Augusta Matilda Andersen. In accordance with Scandinavian naming patterns, his last name was derived from his father's first name; hence he initially became E. Norman Jergensen (Jergen's son). How his last name became "Rauland" will be covered later, but a hint might be revealed in the following: He was born in the picturesque, mountainous Telemark region of south central Norway, where the family resided in the small village of Rauland. The family migrated to the United States when Norman was still quite young. Almost 70 years later, he was to tell an interviewer about his recollections of

crossing the stormy Atlantic:

"A violent storm came up suddenly and the crew of the freighter [on which he and his family were passengers] was unable to cope. A rupture in the hull at the water line forced the ship's crew to throw cargo and personal belongings off the ship in order to stay afloat." He further related, "Even today, I can still see the cargo and wooden crates bobbing up and down on the crest of the waves. We did survive a watery grave and, after drifting for several weeks, while we were being given up as lost by those waiting in America, we landed on the Azores Islands. Whereupon, we were accepted as refugees and spent about a week there before being picked up by a German ship that brought us on to the States."<sup>2</sup>

Rauland often commented that this episode was, at least in part, what sowed the seed of his self-determination, inasmuch as it made him realize that whatever success he would have in life would be of his own making.

After their harrowing experience, the young family landed on Michigan's southern peninsula at Traverse City, where his father resumed his trade as a carpenter. The year was 1903. When work in that region grew scarce, the family moved farther West and took up residence in Chicago. In addition to Norman, his other siblings were younger sisters Ingrid and Swanhilde, and

---

*History buff R. David Read is the author of Sound & Communications' popular series, documenting our Industry Pioneers.*



two brothers and a sister (Sigrid) who were born after the family arrived in the US. All were duly enrolled in Chicago public schools. Apparently, the family prospered in Chicago inasmuch as the children all received proper educations and Norman was able to go on to attend John Marshall Law School.

## Early Interest in Wireless

According to an article in the in-house journal, *Rauland EMITTER*,<sup>3</sup> Norm Rauland, as so many early innovators discussed in this series of Industry Pioneers, became enamored with what was then the "new-fangled" science of wireless radio. According to the story, "During his early teens, Norm worked during the Summer as an office boy in the Chicago Loop and, as chance would have it, his attention was drawn to a window display in an Army surplus store at the corner of



■ *The son of an itinerant Norwegian immigrant, E. Norman Rauland became one of America's leading industrialists.*

Monroe Street and Wabash Avenue."<sup>4</sup>

One of the objects on display was a contraption made largely of beautiful, polished brass with an accompanying

tag that said simply, "Wireless." Intrigued, he entered the store to inquire about the object; he was told it was a Telefunken German wireless set that the US military had attempted to use to transmit messages during the Spanish-American War. Young Norman's meager salary precluded him from becoming the owner of this piece of apparatus, but it did whet his curiosity enough to send him to the library to seek out additional information about the subject of "wireless."

By studying the meager information available, Norman was able to cobble together a radio set using a spark coil from a Ford ignition system for his transmitter and Galena crystals for his detector. Using the call letters "AY," he went on the air as one of America's early radio amateurs. The year was 1912.

## War Years

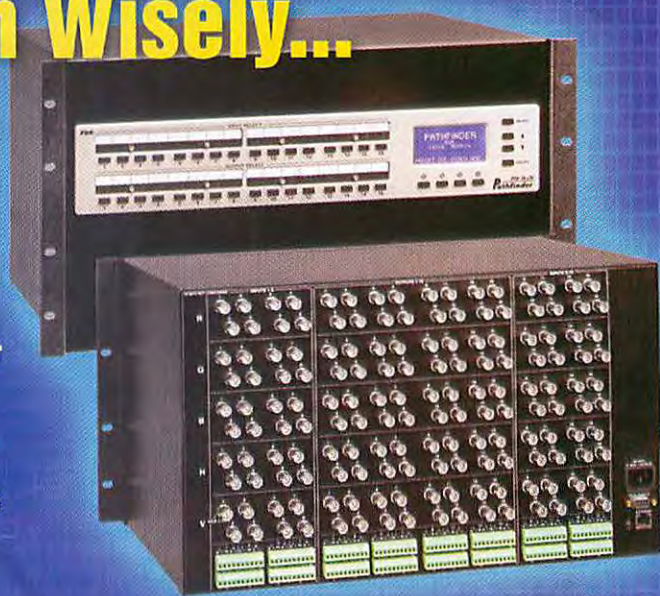
In 1917, the US entered the European war on the side of the British and

# Choose Your Path Wisely...

**FSR PathFinders are bringing new capabilities and a new level of performance to Matrix Switching!**

Check out the features....

- Over 600 MHz of Bandwidth with +/-<1dB of flatness for accurate color representation and zero loss of detail
- HD Compatible 720p 1080i, 1080p and Digital Cinema
- Split Mode Switching allows each color channel to be switched independently
- 32 Presets for ease of operation!
- Simple all ACSII Command Set
- RS-232 and IP Ports Standard



Pick your size — From 8x8 to 16x16, including 12x8 and 16x8, Optional balanced Stereo Audio available on all units.

# The PathFinder Matrix!

## FSR

1-800-332-FSR1 · [www.fsrinc.com](http://www.fsrinc.com)  
sales@fsrinc.com



the French. According to the Rauland family history,<sup>5</sup> even though he lacked only a scant six months before he would be eligible to be graduated from law school, he decided to join the Army. It was then that the Scandinavian tradition that had decreed that his last name be Jergensen became an issue. The recruiting officials, for whatever reason, questioned why his last name differed from that of his father and sister.

As was the custom, his sister was named Ingrid Anderson (she had thus adopted the American custom of taking the same last name as her father's and further Americanized it to Anderson). This obviously perplexed the US authorities to such a degree that Norman's application to serve in the Army was rejected.

A family conference was convened to discuss the issue. Inasmuch as one's last name was not paternally hereditary, many Norwegians adopted the convention of calling themselves by their first name followed by the name of the farm or town from whence they resided. Therefore, if Norman's father was named Jergen Andersen, he would go by the last name of Andersen-Rauland; that is, Jergen from Rauland.<sup>6, 7</sup> The family conference ended with the conclusion that, thereafter, they would adhere to the Anglo-Saxon tradition that was the vogue in the US, and uniformly use the family name Rauland. Thusly armed with a last name that didn't confuse the military authorities, he reapplied for service in the Army and was duly commissioned.

Even though he wasn't a graduate, by virtue of his college education, he was appointed an officer with the expectations that he would be sent to join the US AEF (Allied Expeditionary Forces) on the Western Front in the Adjutant Corps. It is not quite clear as to whether the Army made a misstep or whether Cadet Rauland instigated a change; but, rather than being assigned to the Adjutant Corps, he wound up in France attached to the US Signal Corps.

As young couples are inclined to do

during wartime, Rauland had met and been attracted to a young lady of Swedish ancestry named Florence. They were married before his departure to Europe, enjoyed a happy married life, raised two daughters and were constant companions until his death at age 77 on April 1, 1975.

It is tempting to speculate that Rauland and Irwin Armstrong [see "Armstrong: Developer of Practical

Radio Broadcasting," *Sound & Communications*, December 2002], who were fellow officers in what was a small cadre in the US Signal Corps, and who both were stationed in France at about the same time—and who both shared an interest in wireless radio—might have crossed paths. However, there is nothing in the record to substantiate that.

Rauland served in the 82<sup>nd</sup> Division

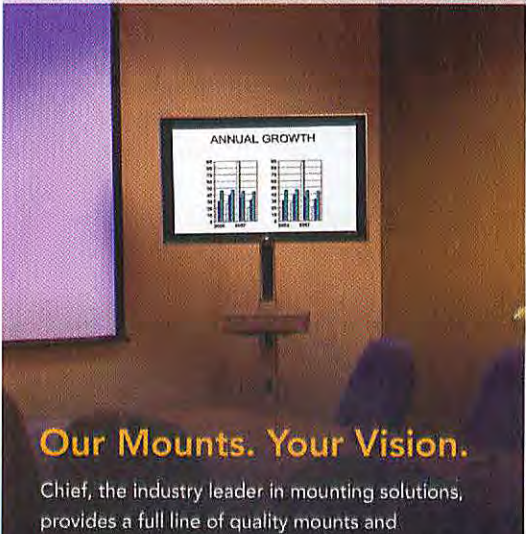


**SpeedConnect™**  
Speed up your projector installation with SpeedConnect accessories



**RPA™ Elite**  
Industry-leading RPA Elite Series of Projector Mounts

**PFC™**  
FUSION™ Mobile Carts and Stands create a media-rich environment



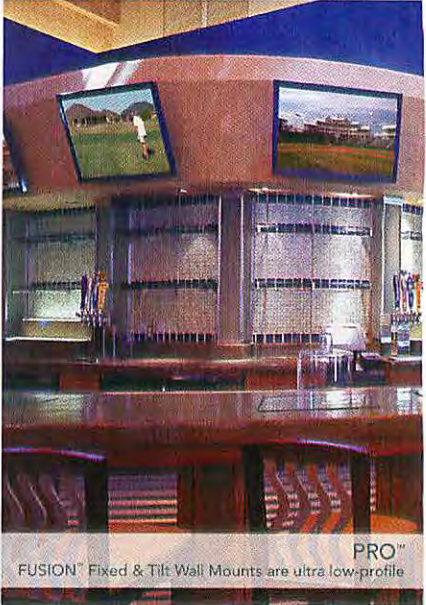
**Our Mounts. Your Vision.**

Chief, the industry leader in mounting solutions, provides a full line of quality mounts and accessories for projectors and flat panel displays. Our mounts, together with your vision generate world-class technology integration in commercial and residential applications.

NAB | 2007  
Visit Chief, Booth SL9211 for an **Interactive Technology Tour** of the latest mounting solutions and accessories!



800.582.6480 US ■ 877.345.4329 Canada ■ [www.chiefmfg.com](http://www.chiefmfg.com)  
and/or visit our website for more information on our products and services



**PRO™**  
FUSION™ Fixed & Tilt Wall Mounts are ultra low-profile



**MCS™**  
FUSION™ Ceiling Mounts showcase flat panel technology

©2007 Chief Manufacturing Inc., a division of CSAV Inc. 2000706 3/07



# CAMM

LOUD AND CLEAR

Made in  
Maine

**A HOUSE OF WORSHIP IS BUILT TO LAST.**  
So are CAMM speakers.

CAMM speaker systems are custom designed for music and voice lift applications in acoustically challenging environments such as churches and education facilities. The line includes full-range models optimized for DSP. Proudly made in Maine.



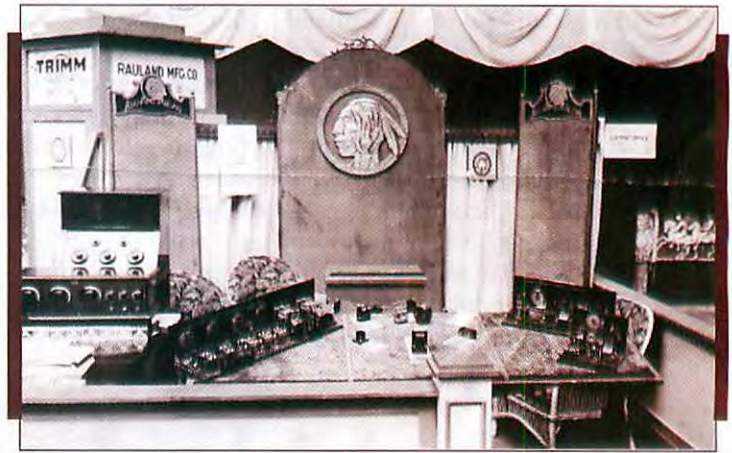
For dealer inquiries,  
call 207.725.1005.

For product info,  
visit [www.cammdist.com](http://www.cammdist.com).

*Speakers featuring CAMM technologies  
have been installed in more than  
1100 houses of worship!*

Custom Audio Manufacturing of Maine, Inc. | tel 207.725.1005 | fax 207.725.1006

Circle 148 on Reader Response Card



**The Rauland Company exhibited at an early radio show in 1924.**

of the AEF without any dire effects and attained the rank of Captain before returning to the US in 1918 for discharge.

## All-American Radio Corporation

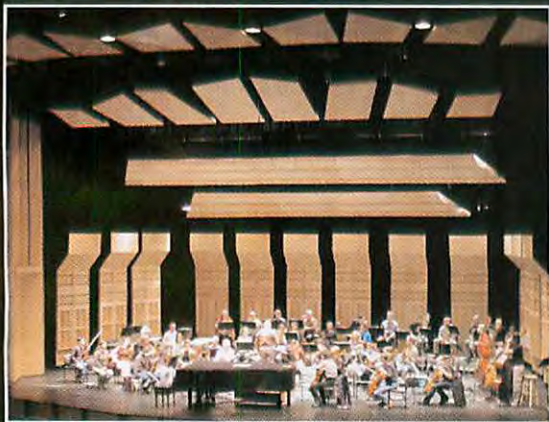
Discharged from the Army, Rauland changed career direction. He decided to give up his pursuit of a career in law and seek his fortune in industry. He cast about for a year or so, during which time he worked for Belden in the coil winding business. Still in the Chicago area, he struck out on his own. In 1920, he founded The All-American Radio Corporation,<sup>8</sup> with one of the new company's principal products branded the Rauland-Lyric line of audio transformers.

Rauland was, if nothing else, a grand visionary and a firm believer in the future of what was then a nascent radio industry. Invoices from the time showed that a fledgling little manufacturer of amateur radios called Chicago Radio Labs was an early customer for Rauland's transformers. Chicago Radio Labs, founded in 1921, was another venerable entry into the radio business of the era. The firm eventually became known as Zenith Radio Corporation.<sup>9</sup> Rauland formed an early friendship with one of CRL/Zenith's founders, Eugene (Commander) F. McDonald, Jr. That friendship would come into play on many occasions over the years to come—but we're getting ahead of our story.

By 1924, the business of radio receivers for the buying public was booming. Rauland decided that he, too, might be able to cash in on the demand for radio receivers, and tooled up to begin manufacturing such devices. Another thread that lends credible evidence of Rauland's ties to Armstrong was Rauland's securing of a licensing agreement with RCA to use Armstrong's patents for regenerative feedback in RF amplifiers. One of the stories that Rauland enjoyed telling related to how he came to be a licensee and that originally one of the inducements to sign an agreement with Sarnoff was that only three license holders would be appointed. Then, as Rauland told it, "RCA decided to expand [licenses] to seven, then to 17 and finally to 27 before they limited it to two—those two being Democrats and Republicans."<sup>10</sup>

All-American Radio Corporation radio receiver sets were sold under various model names. But in all instances, they

## Make Acoustics Part of Your Scope



**Become an authorized RPG contractor**

**Diffusion, Absorption, Optimized Canopies & Towers**



**RPG Diffusor Systems, Inc.**  
**R P G** [www.rpginc.com](http://www.rpginc.com) 301-249-0044

Circle 149 on Reader Response Card

[www.soundandcommunications.com](http://www.soundandcommunications.com)





■ This 1925 photo shows the WENR transmitter towers on the roof of the All American Radio Company's manufacturing facility.

value of the medium. Starting with a modest, home-brewed 10 Watt transmitter, he went on the air broadcasting on 1030KHz. The concept grew quickly, and by March of 1925, transmitter power was authorized to be upped to 100 Watts. Rauland lent, with some assistance from his Signal Corps commander who was by then on the [pre-FCC] Washington regulatory board, his own initials as the call letters for the station; hence, WENR was born.

With this increase of power, the sta-


tion now could be heard throughout the Chicago area and into the surrounding states. At a time when radio advertising was practically non-existent, Norm Rauland often-times went on the air as his own announcer touting his All-American radios and his Rauland-Lyric transformers. He also liked to reminisce that his main advertiser at that point was a funeral parlor.

The benefits of radio "commercials" were beginning to be realized and, by the end of 1925, WENR put a Rauland-designed, Western Electric-built 1kW


used Rauland-Lyric transformers. In advertisements for the radios, the transformers were touted as "the secret of tone perfection." The top-of-the-line receiver was the Rauland Sovereign, which featured a hand-finished, ornate, furniture-style Spanish Renaissance cabinet and a seven-tube chassis. Price for the set in 1925 was \$435 (in equivalent 2006 dollars, this would be about \$4400). The cabinet had provisions for batteries and other power supply components; an All-American Constant-B battery eliminator sold separately for the sum of \$37.50.<sup>11</sup>

## WENR: 'The Voice of Service'

Rauland was intrigued by the potential power of radio as a communication tool. In 1924, he took steps that would prove the usefulness of the emerging technology as a commercial success that would enhance the marketing



details



### Experience absolutely every last drop of detail.

The PLV-HD100 utilizes three true High Definition resolution (1920x1080) LCD panels to reproduce HD sources as they were meant to be viewed. A micro lens is integrated into each individual pixel on the three LCD panels increasing light efficiency, resulting in significantly brighter images. The combined efforts of SANYO's 6500 degree K color temperature optical system and it's newly developed 12-bit Progressive Scan integrated circuit, helps to ensure superior color purity at all times.


**SANYO**  
PLV-HD100 **Full HD 1080p**

5,500 ANSI Lumens  
Full HD 1080p (1920 x 1080)  
Networking Compatibility  
10+ Optional Lenses

**Now Available!**  
Make your projector network compatible with a **FREE PJ-NEILAN Adapter** a \$490 value. Only on select models.


**Boardroom**

PLC-XPS7L  
5,500 Lumens  
XGA (1024 x 768)  
5+ Optional Lenses




**Portable**

PLC-XT20  
3,800 Lumens  
XGA (1024 x 768)  
4+ Optional Lenses



**Home Theater**

PLV-Z5  
1,100 Lumens  
10,000:1 Contrast




**iAVI** International Audio Visual, Inc. [www.iavi.com](http://www.iavi.com) [sales@iavi.com](mailto:sales@iavi.com)

**(866) 813-5945**

To locate a dealer contact us online or call us at

**FREE** iPod nano  
with the purchase of any  
Sanyo HD1080p projector.  
while supplies last



Circle 150 on Reader Response Card



## Everett Mitchell (1898-1990)

Everett Mitchell was a 25-year-old amateur baritone soloist who had appeared on several Chicago-area radio stations, including WENR. Rauland's decision to hire Mitchell was based largely on several ideas that Mitchell had outlined to the young station owner (Rauland himself was only 27 years old at the time) over the preceding months, ideas that were designed to improve the station's performance.

Immediately upon his appointment, Mitchell instituted a weekly schedule (an idea without precedent in the then "free-wheeling" style of broadcasting); a reorganization of the station's Staff Orchestra with the introduction of smaller "jazz," gospel and classical content; and the formatting of regularly scheduled programs such as the *Farmer's Exchange* and an informational program called *Know and Boost Your United States*. One of Mitchell's more dubious innovations was the use of canaries to add singing accompaniment to musical programs; the idea quickly was adopted by other area broadcasters.

One of the problems the station faced was its location, about 10 miles removed from downtown. This meant that the amateur talent of the day (paid performers were few and far between) had to travel to the "burbs" to give freely

of their talents. Mitchell arranged for WENR to move into the Kimball Building in the heart of the Loop. Rent was free, providing the station would announce where it was located and throw in an occasional promo for Kimball Organs. The arrangement was short-lived, owing to a leasing dispute. Within months, WENR found itself relocated into studios previously occupied by the defunct WSWS, located in the Strauss Building on South State Street.

Mitchell enthusiastically described the new studios as being a first-class facility with a main studio large enough for a symphony orchestra, ample audience seating and a large Wurlitzer organ. One of the more notable "acts" that had its beginnings in this new studio was the husband and wife team of Jim and Marion Jordan, better known to countless audiences as "Fibber McGee & Molly."

When Rauland sold WENR to Samuel Insull's Great Lakes Broadcasting Corporation in 1928, one of the stipulations was that Everett Mitchell had to be part of the deal. And, a few years later when Insull, in turn, sold out to clear the way for NBC's Chicago "Blue" channel, Mitchell's services were re-

tained. For years, he was the announcer for the network's National Farm and Home Hour.

Mitchell retained his stature as a well-known radio talent in the Chicago area until he retired from broadcasting in 1967.<sup>30</sup>



Everett Mitchell.

Dear Listener:

I want to thank you heartily for the comments you have been good enough to send us on our broadcasts. When we count up the many friends we have made—some of them in far-off countries—we feel encouraged to still greater efforts. I hope you will cease to feel that you can always find a good time on our wave length. In order to give it to you, we need all the help you can provide in the way of suggestions as to what you would like to hear.

Sincerely yours,  
FRANK WESTPHAL,  
Director.

### Facts of Interest

The voice of WENR was first heard on the air in April, 1924. The power was at that time only 5 watts, but was shortly increased to 100 watts.

The present Low-voltage plant of WENR, one of the most modern types of Western Electric transmitter, was placed in service August 25, 1925.

WENR has been heard in the farthest corners of the United States and Canada, in Cuba, Mexico, Central America, Alaska, Hawaii and New Zealand.

It is the aim of WENR to provide at each hour a program having a certain definite character, so that whatever may be your musical taste, you can rely on finding with it at some time during the week the kind of music you enjoy.

Whatever the character of the program, we endeavor to keep our modulation so perfect that our listeners may enjoy uninterrupted reproduction at all times.

Visitors are welcome during broadcasting hours, at the Kimball Hall Studio.

Listeners who desire written verification of their reception of WENR may receive it on giving us, by mail or by wire, the names of artists or musical selections heard at some specified time. "Elli" stamps are sent out with our verification whenever the fee of ten cents is enclosed.

### WENR Broadcasting Schedule

Central Standard Time  
Daylight Saving Time during summer months.

Wave Length 346 metres Frequency 1120 kilocycles Power 1,000 watts

Day	12	1	2	3	4	5	6	7	8	9	10	11	12
SUN													
MON													
TUE													
WED													
THU													
FRI													
SAT													



Here are the famous All-American Pianists, under the direction of Frank Westphal, well known orchestra leader and composer. Unprecedented success has greeted the WENR idea of a dance orchestra in our own studio, suited to its personnel and instrumentation for the one purpose of supplying the best of dance music to the microphone.

**The Rauland-Lyric Trio**  
This organization of synchrony men represents the finest efforts of WENR to give pleasure to the lover of string ensemble music, as well as to those who prefer entertainment of the lighter type.

**What We Broadcast**  
The general character of programs is here described. Exact times are given in the schedule opposite.  
11 to 12 Noon: News  
1 to 3 P. M.: Varied entertainment and talks of general interest to audience pertaining to the hour.  
5 to 7 P. M.: Dinner music, featuring the Rauland-Lyric Trio.  
8 to 10 P. M.: Popular music interspersed with dance selections by the All-American Pianists.  
12 to 2 A. M.: Mighty Frolic, featuring the All-American Pianists.  
Sundays: Sacred and semi-classical programs.  
2 to 4 and 8 to 12: Popular music programs.

Band leader Frank Westphal headed the Staff Orchestra at WENR during Mitchell's time as studio manager.



# GENERATING EXCITEMENT

MR-PRO and MR2 Audio Signal Generators

Two new Minirators from NTI set the standard for portable audio generators.

Both feature a new ergonomic instrument package & intuitive operation, balanced and unbalanced audio outputs, and a full set of audio signals including sweeps and noise.

### MR-PRO Adds:

- ▶ Load impedance & phantom voltage measurements
- ▶ User wave files
- ▶ Even higher performance
- ▶ Cable test & other features



NTI Americas Inc  
P.O. Box 231027,  
Tigard, Oregon, USA  
Phone: 503-684-7050  
www.nti-audio.com



transmitter on the air, broadcasting from the All-American Radio Corporation's manufacturing site in North Chicago. The station now could be heard with clarity from points as far away as Colorado and Pennsylvania.<sup>12</sup>

ENR acknowledged that one of his better ideas, when it came to broadcasting, was realized in 1925, when he hired Everett Mitchell as station manager and chief announcer for WENR [see accompanying sidebar].

In the Spring of 1926, WENR commenced broadcasting "remotes" using a Rauland Company-engineered, less than 10lb., portable transmitter to transmit orchestral performances from the LaSalle Street Masonic Temple. And innovation in its news department was a WENR hallmark: The station's late-breaking news coverage surrounding aviator Charles Lindbergh's trans-Atlantic flight in May 1927 scooped all of the local newspapers.

Rauland was delighted with the im-

provements that Mitchell had brought to WENR—and so were the station's listeners. One member of the audience was so moved that he penned a poem that was published in the *Chicago Evening Post*. The last line read, "Your voice the service brings," a line that inspired the station to adopt as its motto, "The Voice of Service."


In October 1927, Rauland was approached by Samuel Insull's Great Lakes Broadcasting Company, asking if WENR was for sale, and if so, for what price. ENR responded in characteristic fashion by saying, "Everything I have is for sale, if the price is right." In short order, a luncheon meeting was arranged and a verbal agreement for the sale of WENR was consummated: selling price, \$1.5 million.<sup>13</sup>

On April 17, 1928, E. Norman Rauland exited the broadcasting market. According to some sources, he then took a one-year hiatus before he acquired a partner and established The Rauland Manufacturing Company.

## Radio to the Arctic

In 1925, an epic adventure unfolded as the MacMillan-McDonald Expedition<sup>14</sup> set forth to probe the unknown furthest reaches of the Arctic regions. Not since the Peary excursion in 1908-09 had the United States mounted any serious efforts for additional exploration of the lands above 75° latitude. For the first time ever, the 1925 voyage used both radio and aviation in the quest to gain knowledge of the frigid northland. Indeed, radio played a significant role in making the expedition a success, and in several instances proved to be a life or death tether for the participants.<sup>15</sup>

The US Navy provided some logistical support for the expedition; however, the principal financial sponsor was the Zenith Radio Corporation. With due cause, Zenith is, rightfully, given principal credit for the undertaking. Zenith's McDonald led the charge on the Naval bureaucracy with regard to utilizing "short-wave" versus "long-



### Preserve the quiet™ by beaming sound

**Invented by MIT researchers, this revolution in acoustics allows sound to be transmitted in a tight beam – just like light!**

**Play multiple soundtracks** in a single space, without interference.

**No headphones.** Hands-free, nothing for listeners to carry.

**Thin, Flat design.** 1/2" thick speaker with choice of color and size.

**Thousands of systems already installed worldwide by the world's top museums, corporations, and exhibitors.**

"Audio Spotlights may be the most radical technological development in acoustics since the coil loudspeaker was invented in 1925... The audio spotlight will force people to rethink their relationship with sound, as the arrivals of the phonograph, the telephone and the Walkman have done before."

- New York Times



## All of the sound – with none of the noise.™

**Free design assistance for any project**  
[www.holosonics.com](http://www.holosonics.com)  
617-923-4000

**audio spotlight®**  
directional sound system

Holosonics | 400 Pleasant Street | Watertown, MA 02472

Circle 152 on Reader Response Card







predictably foresaw that the gyrations in the financial markets of the 1920s were headed for an abrupt fall.

In 1928, much to amusement of his friends and associates, and against the advice of his financial counsel, he sold his market shares, assumed a polemical position and converted all his investments into cash. Consequently, when the market crashed just as he had predicted, he was one of the few businessmen in the United States who, owing to the liquidity of his assets, had a sizeable sum of cash at his disposal.<sup>16</sup>

In the late 1930s (the records are fuzzy as to the exact timing of the event), Rauland had a falling out with his partner and found himself in dire need of ready cash. He went to see investment banker Paul H. Davis, an old friend and a fellow radio enthusiast. Davis also happened to be instrumental in the transaction that had formed the Borg-Warner Corporation.

Rauland laid his case before Davis: "I'm in a pocket," he admitted. "My partner just gave me a buy-or-sell proposition. I don't want to sell and all my capital is tied up so I'll need help to buy...And, ready cash seems to be pretty hard to come by." Davis' response was, "There's one man who is certain to have the cash. He might be willing to finance you...And that's George Borg." An appointment was arranged quickly and, within the hour, Rauland was seated across the desk from George Borg.

Borg knew practically nothing about the radio or electronics business. In fact, Davis had forewarned Rauland that, "He probably doesn't know a dial from a decibel." True to form, Borg cut straight to the crux of the matter: "What's the condition of your company? And, what are your prospects?" Rauland presented his financial documents and, even though they were somewhat meager, they did show that The Rauland Company was solvent. As for prospects, Rauland was able to produce documentation attesting to the fact that the company had orders in-hand from the US government for \$400,000 worth of communications equipment—not a shabby amount in

the peacetime US, circa 1939. ENR laid out his proposition: "You [Borg] buy out my partner's half interest for \$30,000, lend the company \$10,000 and I'll put up an additional \$10,000. With that, we'll have enough capital to go ahead."<sup>17</sup>

### 'I'll Go With You'

After a perfunctory tour of the Rauland plant the following day, Borg announced his decision, "I'll go with you—drop by the office in the morning to attend to the details." When

Rauland stopped by the next day, he was bewildered to find two checks made out to *him personally*, one in the amount of \$30,000 and the other for \$10,000. He stammered out an offer to sign a receipt. Borg waved his arm and responded, "If a man's word isn't any good, then his receipt won't be, either." With that, Rauland headed for his attorney's office to complete the transaction. Attorney A.L. Shapiro was incredulous: "Do you mean to tell me he made out these checks to you personally and didn't even want a receipt?"

**Interested in  
the Club Market?**

**CLUB  
systems  
INTERNATIONAL**

**CALIFORNIA STALKING HOT NEW PRODUCTS DESIGN IDEAS**

**VEGAS ON ICE**  
NEW MULTI-ROOMED  
DANCE HAVEN TAKES  
ON THE CASINO CLUBS

**DIGITAL VELOCITY**  
AMERICAN AUDIO'S DUAL  
DECK IS THE NEWEST  
PLAYER AT THE TABLES

**DANCING ON  
ROPESTRING**  
MATRIX AT 620  
CHEAP

**CALIFORNIA  
STALKING  
HOT NEW  
PRODUCTS  
DESIGN IDEAS**

**GET A  
FREE  
SUBSCRIPTION**

to Club Systems International  
go online:  
[www.clubsystemsinternational.com](http://www.clubsystemsinternational.com)  
or call 1-800-YES-7678





■ Rauland and an unidentified Zenith executive examine one of the "new" rectangular television sets.

Who is this guy? Santa Claus?" Rauland chuckled and replied, "That's right and he is."<sup>18, 19</sup>

There isn't a shred of evidence that the relationship between the two men was anything other than amicable. When Rauland delivered Borg's stock certificates, Borg told him, "It's your show. Run it." With the European conflict raging and the prospects of America being dragged into the cauldron, military orders for ordnance escalated. On one occasion, Rauland called Borg to inform him, "We've just landed \$2 million in government orders. We're going to have to get a big, new plant." Borg responded in a matter-of-fact manner, "Well, go out and buy one." It wasn't until after the Battle of Midway that Borg ever got around to visiting the new Rauland plant. What he found was a modern, attractive manufacturing facility bustling with activity. He exclaimed, "Do you mean to tell me I own half of this?" To which Rauland replied, "You're damn right you do."

Between Pearl Harbor and VJ-Day, the total war output from The Rauland Company totaled an estimated \$78 million.

### The CRT Episode

Rauland had watched with interest as Baird Television in England perfected the cathode ray tube that was to be so instrumental in the development of commercial television. On at least one occasion, he had visited England and personally met with a young Hungarian physicist named Dr. Constantin S. Szegho [see accompanying sidebar]. Szegho was leading Baird's efforts in

**too late.**  
**IT'S TOAST.**

**What's protecting YOUR INSTALL?**

For over ten years, top AV Integrators and Consultants have relied on the power of **SurgeX** to protect their installations. That's because **SurgeX** power conditioners offer the world's most reliable surge protection available, bar none. To date, no equipment protected by **SurgeX** has ever failed due to an AC surge-related event. And **SurgeX** offers the only ten year warranty in the Industry.

So insist on **SurgeX** for all your installations!  
To learn more visit [www.surgex.com](http://www.surgex.com)

**SURGEX**<sup>®</sup>  
The World Leader in Power Conditioning Technologies



CRT developments.

Again, Rauland's connections served him in good stead, this time involving a New York attorney by the name of Paul Kolisch, who just happened to be the patent attorney for Baird TV's American Division and also represented Rauland's interests. Baird TV had opened a New York office to further develop and promote large-screen, video-projection systems for use in cinemas. Wartime restrictions by the British government had curtailed these developments and, even though Baird TV had demonstrated a 20-foot-diameter video-screen image, American cinema operators faced staunch opposition from their unions and were slow to adapt to the new technology.<sup>20</sup>

Realizing that Baird TV was stymied in furthering its developments of video-projection systems—at least for the duration of the war—and that the company was cash-starved, Kolisch recommended to Rauland that he seek

an acquisition. Rauland seized the opportunity that would not only expand his company's position in CRT manufacturing and video projection, but also bring him the services of Dr. Szegho. It was Rauland's observation that Szegho was a man with whom he could work well and who would make a substantial contribution to his plans. In May of 1942, he completed his purchase of Baird Television of America (aka Cinema Television Ltd.), and Dr. Szegho took up employment as director of tube engineering for The Rauland Company.

Adolph Schmidt joined The Rauland Company in 1941 as a technician in the Knox Avenue plant, where he was put to work testing tank radio transmitters. As Schmidt relates, "I was there to witness as they sectioned off a new space in the plant and started moving in some CRT and TV receiver apparatus. I was intrigued with these developments and quickly requested a transfer to the new department.

Soon there were four of us: Dr. Szegho, a glass blower, a chemist and myself. We were responsible for setting up a production facility for development and manufacturing of CRTs."<sup>21</sup>

## Military Supplier

At the time, it looked like television might bow in via large-screens in cinemas prior to its acceptance as a home medium. Norm Rauland even went so far as to set up a demonstration theater to showcase 20-foot-diameter projected images. But, with the advent of US involvement in World War II, it appeared that The Rauland Company would be a military supplier—at least for the duration.<sup>22</sup>

During World War II, there really were two top US secret projects: One was, of course, the nuclear bomb, and the other was radar. Development of CRTs for television was one thing, developing a CRT with sufficient "after-glow" for use in radar was a totally

*(Continued on 107)*

**STARDRAW**  
ultimate control CONTROL



- Control any Device
- Use any Protocol
- Create your own User Interfaces
- Host UIs on any Windows XP Device
- No programming skills required

▶▶ Free download at [www.stardraw.com](http://www.stardraw.com)

WINNER OF THE  
**PLASA**  
2004 AWARDS FOR INNOVATION





## AV CAFÉ

(Continued from 32)

on the consumer electronics side: Nowadays, it is almost difficult to create a system that is *not* high quality. This is partly because these systems have such a huge marketplace that some extremely sophisticated technologies have been developed to ensure absolute success.

The trio of concepts of 1) surround-sound systems with automatic room calibration; 2) HDMI and HDTV native quality with equipment auto-sensing, and 3) manufacturer-specific, integrated control systems makes this technology available to millions of people at a relatively low cost. This means that our clients are experiencing high quality in their homes

and, subsequently, expect this quality in their conference rooms where they have spent multiples more money on seemingly similar equipment!

How many times have you and I walked into a restaurant, a bar, a classroom, a conference room or any room with an audiovisual system and noticed right away how awful the installation looked? All the time, right? We ask, "Who are these people who installed that? It looks horrible!" You've seen it: cables hanging down, holes in the wall, crooked screens, green images, and hum, distortion and noise.

This is not the result we wish our clients to pay for, and not the result any of

us would put our name to and be proud of. What about the opposite? Students in the Café mention audiovisual that amazes them: IMAX theaters, elegant touchpanel designs, professional labeling, theme park attractions, beautifully produced compact discs, arena scoreboard displays. Why can't every installation have that sense of quality that we appreciate?

The more it seems like things are getting easier in our industry, the more difficult they become. How about getting a second set of eyes on your project: Open yourself up to constructive criticism. Be a quality audiovisual professional. Know that good enough is *never* good enough. ■

## HIGH ENERGY WORSHIP

(Continued from 61)

back elimination products, including a Sabine FBX1020-P-U feedback eliminator. "We've had to opt for some lower volume levels to keep reflection issues down," Rutledge noted.

He selected an Allen & Heath ML3000 48-channel mixing console for its ease of operation, and for the features offered for the price.

Rounding out the audio systems is a Shure PSM400 in-ear monitoring system and Audio-Technica Series 4000 wireless mics. The mics include six AT-4000 handhelds with Artist Elite 5400 heads and two AT Series 4000 wireless body pack systems, with flesh-colored over-ear microphones. Wireless mics were essential, according to Bodley, because, in such high-energy services, ministers don't stay in one spot on the stage. "You don't even see the mic on them as

they're talking, but the clarity is so much better than what we had previously," Bodley added.

### Time Constraints

Not only do the new systems fulfill the growing church's AV needs, Worship Resources installed them under a tight time frame of four weeks, while church services were still going on and other contractors were finishing construction. "We were working while they were having rehearsals," Rutledge recalled.

In a hurry to get out of its temporary facility, the church moved into the new building while construction was still taking place. Every Monday, work began, with contractors putting up sheetrock, sanding, running electrical and then cleaning up on Saturday in time for Sunday services.

"We did temporary wiring of snakes and signal cable to get them up and running," Rutledge said. "Then, on Monday, we'd tear it all out so the other contractors could do what they needed to do."

During this time, the church used portable AV systems because the installation products had not yet arrived. "They knew this going in," Rutledge said. "They moved into the facility before we had some of the gear in our hands."

Even so, Bodley and the rest of the church technical staff were pleased with both the end result and the overall experience. "Tom comes from a church background, and he understands the church mentality," Bodley said. "I can't express how important that is. He works diligently to accomplish everything you ask him to do. It is just a tremendous pleasure to work with him." ■

## PIONEER: RAULAND

(Continued from 83)

different story. Rauland was determined to get a contract for providing radar display tubes. However, despite his many good connections in Washington, he was unable to secure the specifications for the P7 tube to manufacture the device.

In essence, he was told that he would have to reproduce the tube using his own initiative. He set Dr. Szegho to the task. While Rauland literally paced the floor, Szegho explored the physics of fluorescent materials until, with a burst of sudden inspiration, he hit on the idea of a "cascade" screen and a successful

prototype appeared. Rauland and Szegho set out for Washington and astounded the military by presenting a near exact duplicate of their "top-secret" P7 tube. Surprisingly, they didn't both wind up in jail as subversives. Needless to say, The Rauland Company produced thousands of radar display tubes during the war. That wartime production set the stage for a transition to television picture tubes upon the cessation of hostilities.

Rauland also subsequently made another key decision that ultimately would work in his favor. Rather than launching

a television receiver manufacturing business, he elected to maintain a position as an OEM supplier to all of the others that were crowding the marketplace with post-war TV sets. In addition to CRTs, the company also produced tuning condensers and other electronic assemblies. In this regard, one recognizes the influence of George Borg, in the sense that Borg had followed a similar path in the automotive market. ■

[Note: References will be covered in part 2 next month]





■ **E. Norman Rauland as an Army officer in France during World War I.**

# E. NORMAN RAULAND (1898-1975) AMERICAN INDUSTRIALIST CONCLUSION

This is the 16<sup>th</sup> installment in our series documenting Industry Pioneers.

## BY R. DAVID READ

*Editor's Note: This is the conclusion of our two-part look at the life of American industrialist E. Norman Rauland. Part 1 appeared in April.*

### Venturing Into Audio

The current-day management of the Rauland-Borg Corporation was kind enough to open its historical records for purposes of our research. While leafing through that documentation, an interesting piece of history unfolded. A catalog dated 1941, emblazoned with the logo "Webster-Rauland," came to light. At first thought, this seemingly pointed to some peculiar alliance between two companies that competed in the institutional (school) intercommunications market and the commercial sound business. Only after further investigation was it determined that the Webster referred to was not Webster Electric Company of Racine WI<sup>23</sup> as first suspected, but the Webster Electric Company of Chicago.<sup>24</sup>

The referenced Catalog No. 141 was a 16-page, duotone piece that dis-

played an extensive line of audio amplifiers (including a six-input [four-mic, two-phono] 60 Watt unit with booster amps to up power to 240 Watts), disk-recording/playback equipment, microphones, loudspeakers and like items. A disclaimer on the front page also was interesting, in that it stated "Manufactured under license with Electrical Research Products, Inc. [ERPI], subsidiary of Western Electric Co., Inc., and American Telephone and Telegraph." ERPI was, of course, the predecessor of The All Technical Service Company (ALTEC). And, Altec used that designation until it acquired Lansing Manufacturing Company in 1939, at which time it became Altec Lansing Company. This gives rise to the supposition that the Webster-Rauland alliance occurred sometime prior to 1939.

What prompted Norm Rauland to get into the intercommunication/commercial sound business remains a mystery. What *is* clear is that The Rauland Company initially formed an alliance with Webster Electric of Chi-

cago and that, by 1942, had acquired the intercom/commercial sound portion of Webster Electric.<sup>24</sup> Robert Banks, who worked for Rauland at the time, confirms that he was an active participant when the new division was established and production of Webster products was initiated at the (then new) Belmont Avenue plant.<sup>25</sup>

Today, the Rauland-Borg Corporation is an active participant in the institutional communications, commercial sound and, by virtue of its financial interest in Biamp Systems (a wholly owned Rauland-Borg subsidiary), sound reinforcement markets. Management acknowledges that its heritage and accomplishments rest on the foundation set in place by Norm Rauland back in 1942.

### End Of An Era

In 1948, Norm Rauland was diagnosed with cancer. His doctors were skeptical that he would survive surgery so he was advised to "put his affairs in order." Clearly, he would have to divest himself of his business deal-

---

*History buff R. David Read is the author of Sound & Communications' popular series, documenting our Industry Pioneers.*









A Lyric "Sextet" receiver.

**ALL-AMERICAN**  
TRADE MARK

**Laboratory Grade Amplifiers**  
*Rauland-Lyric*  
AUDIO TRANSFORMER

THIS laboratory grade transformer is designed for those desiring the utmost in sound reproduction of wood, brass and instruments when we specified such unexcelled "real music" as the special design of Rauland-Lyric. Meticulous good construction, in addition to the fact that the sound stage is the result of the "Lyric" amplification circuit. From zero to full volume sound is approximately 40db (over 100db) in a quiet room or with ear amplification, thus making suitable reproduction of high tones and overtones, which are often lost altogether when cheaply built transformers are used.

When a 2 stage audio amplifier is desired, a Rauland-Lyric one stage transformer may be used for the first stage in the second stage, thus the Rauland-Lyric and 2 stage transformer will give greater satisfaction. (See Page 14)

TYPE R-100. Maximum plate, grid voltage. LOVER. Maximum output 2.5w. Standard Package \$12.00

*Rauland-Trio*  
IMPEDANCE UNIT

THIS Rauland-Trio is similar in appearance to the Rauland-Lyric except that it is slightly smaller in size. It is an impedance coupling device containing in one housing the three necessary inter-computer, impedance and capacity, to correctly impedance match.

Due to the compact design it is very easy to install in any receiver. Type R-100 is especially adapted for use in

For detailed sheets and information, these spec. sheet, see page 14. Write: Ray Buck (Newark, N.J.)

**ALL-AMERICAN RADIO CORPORATION**  
4311 Belmont Avenue Chicago

[ 17 ]

PRINTED IN U. S. A.

An early spec sheet touts the merits of Rauland-Lyric audio transformers.

of transistorized equipment. On one occasion, this cutting-edge design philosophy came back to haunt the Engineering Department: A solid-state consumer-grade stereo tuner/amplifier was developed for the Allied account. It was an unmitigated disaster inasmuch as the output stage lacked adequate short-circuit protection and the device failed in alarming proportions. To compound the problem, most of the units had been sold on a "90-day Free Trial" basis and, after the novelty wore off, buyers simply returned them for credit. A fix was applied, but relations with Allied were something less than cordial for a few months.

By the early to mid '60s, ENR decided that military contracting was becoming too cut-throat to be profitable; the company might have been a hobby as some suggest, but Norm Rauland was not one to tolerate activity that didn't turn a profit. Hence, he withdrew from the government sector. The Allied account looked like it might be in jeopardy and the influx of import products from the Far East made the future for producing consumer audio equipment stateside look grim.

## Adapting To The Market

As the story goes, Rauland was out for a drive one Sunday afternoon and paid particular attention to the number of new schools springing up in the Northwest suburbs of Chicago. The following Monday morning, he called everyone into his office and asked how many of those new schools were using Rauland-Borg equipment? The answer was none. The old Rauland Company had been a leading supplier of intercom equipment before World War II, but had fallen way behind its competitors by not keeping up with the changes that were shaping that marketplace. Distribution patterns were changing: While Rauland was selling primarily packaged goods through jobbers, the competition was shifting to selling modular systems to sound contractors.<sup>27</sup>

The attitude around the Rauland-Borg Corporation became, "Let's See

ley. It was there on Borg's ranch that Rauland went to recuperate.

After a year of basking in the Arizona sun, Rauland returned to Chicago. Never a man to sit idle, he started casting around for something to keep busy. When he sold his interest in Zenith, he had, at McDonald's insistence, retained the title of president of The Rauland Corporation and was an active member of the Zenith Board of Directors. Still, he felt he needed something more to keep him active. One of the caveats of the Zenith sale was that Rauland retained the option to buy back the small audio section if, and when, he desired.

## Bought Back

Whether it was for occupational therapy as some claim, or merely a rich man's hobby as others suggest, ENR exercised his option and bought back the audio portion from Zenith. However, he was precluded from using the name Rauland for his new enterprise. Again, the name Borg surfaced and, for a stipend, George lent his name to the new endeavor: The Rauland-Borg Corp. was founded. From all accounts, Zenith was fully supportive and provided him with the tooling and manpower necessary for the startup of the new operation.

Rauland-Borg in the earlier years

(1950-1970) existed primarily on government contracts, private-label manufacturing and a dab of commercial business. One of the interesting tales to emerge from the government contracting side of the operation came out during the Vietnam era, when Rauland took a contract for building intercom amplifiers for use on military helicopters. The device in question was developed by RCA; however, when Rauland attempted to put it into production, it was discovered that it didn't even come close to meeting the design criteria. A typical "catfight" broke out, resulting in some 26 change orders being issued in the span of 30 days. In the end, Rauland persevered, with the end result being a cost+re-design contract negotiated on a very profitable basis.<sup>28</sup>

Allied Radio was another Chicago-based firm that had been around since 1931. Primarily, it was a "catalog" distributor of components, kits and finished goods sold under the "Knight" name. Rauland enjoyed many years of profitable business designing and manufacturing the Knight product line's finished goods. This business dried up when Allied was sold to Tandy in the late '60s and the buyer folded the Allied products into its RadioShack operation.

Rauland also was an early adopter



What We're Good At; And Do More of It." Rauland was not going to be satisfied just catching up to the competition; he was driven to seek innovations that would leapfrog available product offerings and leave the competition to play "catch-up." School communication consoles had not changed much in basic operation for 30 years. Admittedly, the internal components had been upgraded, but it was still the manual: select a switch, adjust knobs and push a button function that had appeared in the 1930s.

ENR strongly believed that any new product had to be markedly better than its predecessor or it wasn't worth the time and effort. He simply didn't believe in cosmetic changes just to have a new model to sell. As Carl Dorwaldt tells it, the marketing team at Rauland-Borg was convinced that digital switching technology was the wave of the future, and with ENR's acquiescence, work commenced on designing systems that would move school communications out of the dark ages. The result was the introduction of the first Rauland TeleCenter in 1970.<sup>29</sup>

## Healthcare, Too

A similar attitude and drive was applied to the healthcare (nurse-call) systems business. Nurse-call systems had lagged way behind modern technology. Transistors had replaced vacuum tubes, but that was about it. Before his death, Rauland set the stage for the company's entry into the healthcare market. Ultimately, in 1979, this resulted in the acquisition of hospital communication systems manufacturer Picker-Briggs, Cleveland OH, which also garnered some valuable engineering and market savvy personnel. The Rauland "Responder" resulted.

The commercial sound and pro-sound reinforcement market also caught his eye. Electronic products, *i.e.*, new power amplifiers, mixers, equalizers and OEM arrangements with loudspeaker manufacturers, came into being. Without a doubt, Norm still is grumbling in his grave that he didn't live long enough to per-



Dr. Constantin S. Szegho

sonally participate in the coming DSP and computer age.

At a time of life when most men would be content to reap the rewards of their fruitful endeavors, Norm Rauland still was to be found at the helm of his commercial enterprise and participating on a daily basis. Eventually, he started to realize he was not immortal and mellowed considerably, but not to a point where people would consciously cross him up or slacken in their effort.

After a full and active life, E.

## Order a Complete Integrated Rack System Faster Than You Can Read This Ad

Specify a fully configured rack, outfitted with factory-installed accessories needed for most AV systems, and you may be left with a whole lot more time on your hands.



Includes these accessories and more!



Power Distribution



Cabling Accessories



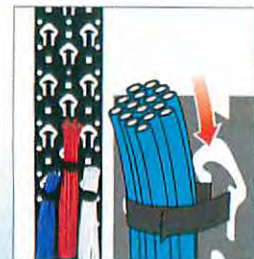
Thermal Management



Installation Hardware

Factory-configured AV racks are optimized to save ordering and installation time.

Order a single part number to receive a configured enclosure that includes the essentials for ensuring a reliable system.



Don't miss our collection of time-saving cable management accessories at **InfoComm Booth #6609**

Learn more about all of our application-configured enclosures at [middleatlantic.com](http://middleatlantic.com)

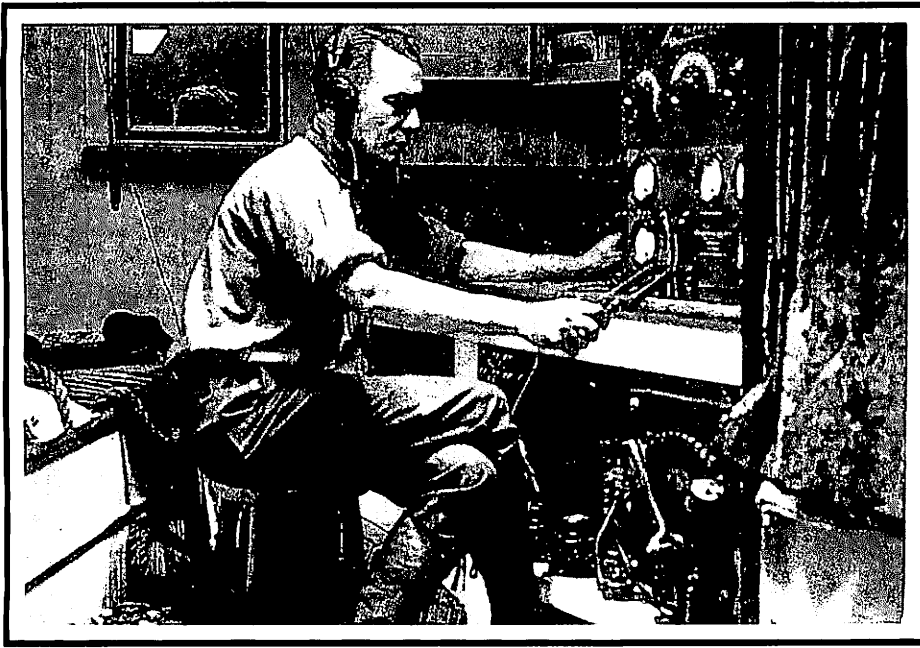


Request the 2007 Master Catalog



**Middle Atlantic Products, Inc.**  
800-266-7225 | [middleatlantic.com](http://middleatlantic.com)





■ **Commander McDonald at the controls of a shortwave transmitter on board the Bowdoin during the Arctic Expedition. (Courtesy: Zenith.)**

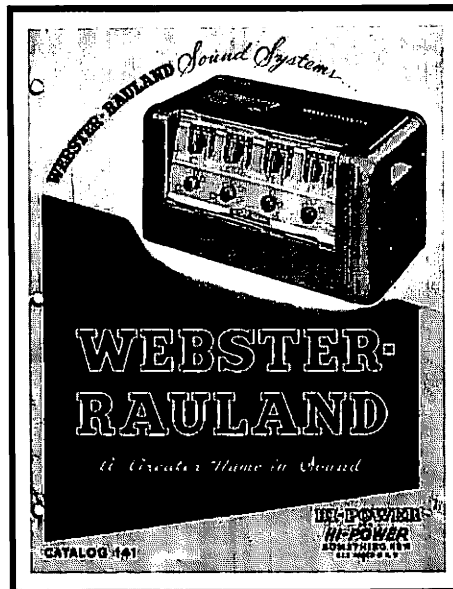
Norman Rauland passed away on April 1, 1975. Although a titan with an imperial presence, he would catch the unwary by complete surprise with his practical jokes. It was fitting that he died on April Fool's Day. ■

### Acknowledgements

Grateful appreciation is extended to Norm Kidder, CEO of Rauland-Borg Corporation, and the many members of his staff who provided information for this article. Likewise, Adolph Schmidt was a valuable source of information, particularly regarding the Rauland Tube Division; Schmidt was also kind enough to put me in contact with Elizabeth Szegho (Dr. Szegho's widow), who opened her late husband's collection for examination. And thanks to Carl Dorwaldt, whose long relationship with Rauland was the source of many of the episodes that ENR had related to him over the years, and who kept the record straight by reviewing my drafts for accuracy.

### References

1. For reasons known only to him, Rauland was loath to use his first name, and from an early age adopted the use of his middle name. For purposes of this presentation, his wishes with regard to how he preferred to be called will be respected, *i.e.*, E. Norman Rauland. To many of his close friends and associates, he was known simply as 'Norm.'
2. *The Rauland EMITTER*, May 15, 1969. *The Rauland EMITTER* was an in-house publication of the Rauland Division of the Zenith Corporation.



■ **A 1941 catalog advertises the Webster-Rauland line of sound and communications equipment.**

3. *Ibid.*
4. Don't look for the shop today. It has been gone for many decades.
5. As related by: Norm Kidder, CEO of Rauland-Borg Corporation and grandson of the company's founder. Rauland was a rather stoic and unpretentious individual, and was not given to archiving records of his personal exploits.
6. For an interesting and informative look at Scandinavian naming practices, refer to: Johan I. Borgos, *Norwegian Naming Patterns*: [www.nndata.no/home/jborgos/names.htm](http://www.nndata.no/home/jborgos/names.htm).

7. If this sounds confusing, it is—and it drives genealogists who attempt to trace Scandinavian family trees absolutely stark-raving mad.

8. Rauland's 82<sup>nd</sup> Division in France was nicknamed "The All-American" Division and he borrowed the nickname for his new company.

9. Cones, Harold N and Bryant, John H. *Zenith Radio—The Early Years 1919-1935*, Schiffer Publishing Ltd., Atglen PA, 1997.

10. Dorwaldt, Carl, personal correspondence with the author.

11. McCluer, Paul (collector), The WENR-KYW Scrapbook Collection, Library of American Broadcasting, University of Maryland libraries, College Park MD 1971: [www.lib.umd.edu/LAB/wenr2.html](http://www.lib.umd.edu/LAB/wenr2.html).

12. Gager, E.H., "Some Facts About WENR—Largest Broadcasting Station in The West," *National Radio News*, Washington DC, September 1928, pp. 14-15.

13. Insull's financial empire collapsed with the market crash in 1929. WENR was purchased by NBC as its Chicago Blue Network outlet; sold to newly formed ABC in 1943, and when ABC merged WLS with WENR in 1954, the call letters WENR faded into oblivion.

14. The expedition is sometime (erroneously) referred to as "The Byrd Expedition." Richard E. Byrd, USN, was one of several participants; however, Byrd seemed to have had the best press agent.

15. Bryant, John H. and Cones, Harold N. *dangerous crossing*, Naval Institute Press, Annapolis MD, 2000.

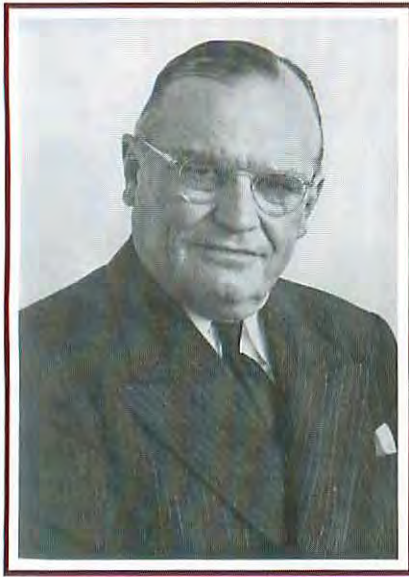
16. Casey, Robert J. *Mr. Clutch—A Biography of George Harvey Borg*, Bobbs-Merrill Publishing, New York NY, 1949.

17..18. Casey, *Ibid*

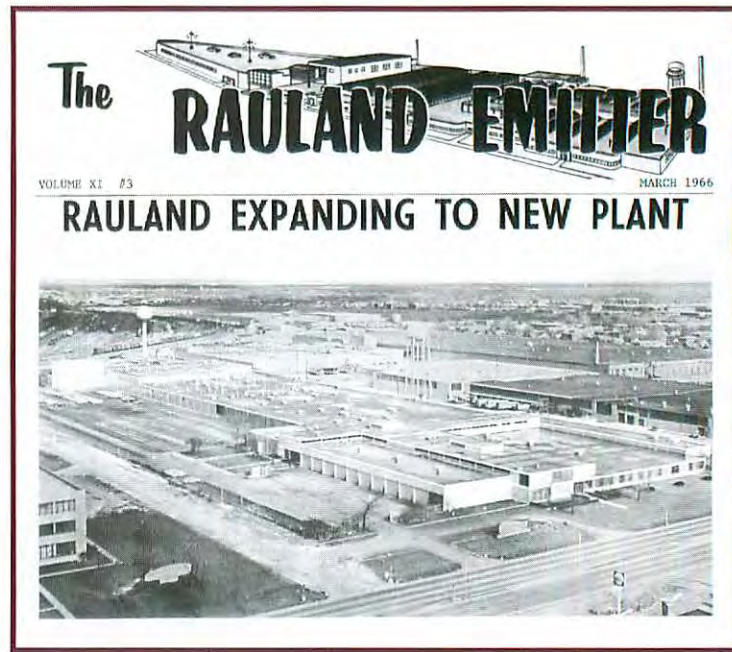
19. Casey does not provide a reference for the amusing quotes in the earlier story of Rauland's encounter with Borg; hence, they must be considered somewhat suspect. A more "official" (or sanitized) telling was related by ENR to the effect that, owing to the reluctance of the bankers of the time to lend money without personal indemnification by the company's officers, and the refusal of Norman Wunderlick (Rauland's chief engineer) to endorse such personal guarantees, Wunderlick sold his shares of The Rauland Corporation in December 1939 to George W. Borg.

20. Much of the information relating to the Gaumont British/Baird TV/Cinema Television Ltd. negotiations and subsequent purchase by The Rauland Company are provided by Dr. Douglas Brown—director, Strathclyde Science & Technology Forum, University of Strathclyde, Glasgow, Scotland. Dr. Brown is preparing a book, *Images Across Space*, based largely on his thesis, entitled "The Electronic Imaging of Baird Television," 2000. Appreciation is extended to Dr. Brown for





■ **George Harvey Borg, circa 1949.**



■ **One of several Rauland tube plants in the Chicago area.**

permission to use excerpts from his forthcoming book.

21. Author's personal interviews with Mr. Schmidt.
22. The *Rauland EMITTER*, December 1969.
23. Webster Electric Company of Racine WI continued to be an independent manufacturer of intercom and commercial sound equipment (and a Rauland competitor) through the mid-1970s when it was bought by Raytheon.
24. Webster Electric Company of Chicago subsequently was renamed Webcor and for many years thereafter produced wire-recorders and, later, magnetic tape recorders. Further evidence that Rauland and Webcor had a long relationship is a receipt dated 11/25/21 from the Webster Novelty Company issued to "All American Elec. Mfgs." The invoice is for 4863 "stampings elec. steel parts" in the amount of \$18.06. These parts were likely lami-

nates for making transformer cores. The invoice is stamped, "The Webster Co. PAID" and ENR noted on the invoice the name "Webcor." Contained in the Rauland-Borg archives is a financial statement dated 12/31/40, probably acquired by ENR during his evaluation prior to acquisition of the firm. Interestingly, it reads, in part: "The Webster Co. was established in 1914 and added the Sound Division to its main activity of Tools, Dies and Stampings in 1928....Webster was one of the earliest pioneers in the field of designing and manufacturing equipment for the public address and later sound equipment for movie films, portable slide film projectors, industrial paging, inter-communication units, phonograph accessories, micro-phones. [Experience] has placed Webster-

- Chicago at the top of the field..."
25. Telephone interview with Mr. Banks by the author.
  26. Dorwaldt, *Ibid.* Dorwaldt was for several years VP of marketing for the Rauland-Borg Corporation. At this writing, he currently holds a marketing position with Renkus-Heinz.
  27. "Tube-jockey" was a derisive term that the industry bestowed on service technicians whose sole mode of testing receivers was the "swapping" of tubes.
  28. Dorwaldt, *Ibid.*
  29. Dorwaldt, *Ibid.*
  30. Wheaton College: [www.wheaton.edu/learnres/ARCSC/collects/sc14/bio.htm](http://www.wheaton.edu/learnres/ARCSC/collects/sc14/bio.htm).
  31. Edgewater Historical Society, *Obituary*, Vol. VII No. 1—Winter 1996: [www.edgewaterhistory.org/articles/v08-1-1.html](http://www.edgewaterhistory.org/articles/v08-1-1.html).



## GENERATING EXCITEMENT

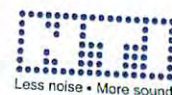
MR-PRO and MR2 Audio Signal Generators

Two new Minirators from NTI set the standard for portable audio generators.

Both feature a new ergonomic instrument package & intuitive operation, balanced and unbalanced audio outputs, and a full set of audio signals including sweeps and noise.

### MR-PRO Adds:

- ▶ Load impedance & phantom voltage measurements
- ▶ User wave files
- ▶ Even higher performance
- ▶ Cable test & other features



**NTI Americas Inc**  
P.O. Box 231027,  
Tigard, Oregon, USA  
Phone: 503-684-7050  
[www.nti-audio.com](http://www.nti-audio.com)