He who dies with the most (TR-1s)
(Catalins) (SW-3s) (spherical Audions)
(boatanchors) (Quarantas) wins.

OSCILLATOR

DELAWARE VALLEY HISTORIC RADIO CLUB

The Official Newsletter of the DVHRC *Vol. 5 No. 11, November 1997*

NOVEMBER

November's meeting program will center on a "different" Show n' Tell theme: early *non-radio* items. Bring in early electrical widgets, telegraph stuff, household gadgets, TV accessories, etc. (A couple of hot-ziggety items have been dug up already.)

NEWS FROM AROUND THE DVHRC

Reported by **Mike Koste**

An unusually light turnout for the October meeting, but it certainly was a pleasure to see VP Tony Molettiere back in the fold. We first must applaud Alice Tannenbaum for assuming the responsibility of Ways & Means chairperson. (All hail the High Priestess of Donuts and 50/50!) Incidentally, Jay Daveler won the night's jackpot.

President Bill Overbeck announced the availability of the new Bryant & Cones book on the early days of Zenith - he had picked up the copies the same day. It appears to be quite an eye-opener and a desirable addition to any radio collector's library. Though you may be tempted to mail-order a copy from the authors or any number of other sources, be aware the DVHRC is offering it at our customary liberal member discount. See the detailed review below.

As many of you are aware, a great number of DVHRC people are also New Jersey Antique Radio Club cardholders, including Jim and Ruth Whartenby, who recently announced that they're relocating to Arkansas next year. Jim, who serves as NJARC President, and Ruth (who can whip up one mean cake) will be sorely missed by everyone in the East Coast antique radio community.

By a show of hands, it would appear there is strong support for a second joint picnic with the Jersey club. Since it's our turn to act as hosts, Bill and Jim are going to look into securing the same site as last June's event. Lud Sibley will be researching a date so the 1998 picnic doesn't conflict with any other major meets or hamfests.

You're also reminded to make plans now for the DVHRC Super Winter Meet at the Grimes Center in Havertown on March 7th. After the overwhelming success of last year, the club has truly made a name for itself and is sure to attract a large number of out-of-town collectors. Early table reservations are strongly suggested. One of the major positives of the last Havertown meet was the auction and the exceptional service provided by auctioneer Ray Dingman. In gratitude, we're proud to present Ray with a complimentary membership in the association.

Due to the light attendance in October, auction activity was similarly quiet. Though there were quite a few top-shelf items up for grabs, most failed to meet the minimum bid. One item of note that did exchange hands was an early Red Lion drop-leaf desk designed to house an Atwater Kent radio, which sold (sans radio) for $15.

October attenders were also treated to an informative presentation on the development of HDTV (High Definition Television) by Bob Thomas. If you're a history buff, you're aware of the number of snafus and boondoggles between the US government and business interests during the early days of broadcasting. You can only conclude after hearing Bob tell the HDTV story that not much has changed in 70 years. *[This was a "dynamite" presentation by an industry pro. Bob covered the origins of HD (now digital) TV, the technopolitical actions that have directed its emergence, its promises and failings, and the major uncertainties that it carries. As part of the political weirdness of HDTV: the FCC standards for it make no mention of a scanning format, making no choice among multiple incompatible contenders - this, despite all the political flak the FCC drew for its infamous "let the marketplace decide" non-decision on standards for AM stereo. - Ed.]*

Finally, remember that the November 11th meeting will be opening the floor to nominations for the 1998 DVHRC Board of Directors. Elections will be held at the official Annual Meeting on December 9th. If we don't see you this month, have a happy Veteran's Day!

NEW OVERBECK ARRIVES

We are happy to report the arrival of William Charles Overbeck, new son of our respected president. The baby, mother, and even father are doing fine.

THE OSCILLATOR

Newsletter of the
Delaware Valley Historic Radio Club
Post Office Box 41031,
Philadelphia, PA 19127

The *Oscillator* is published monthly by members of the non-profit DVHRC. Its purpose is to provide a forum to educate, inform, entertain, and communicate with collectors and preservers of vintage radio technology.

We welcome and solicit information relating to radio history or collecting. Submissions should be carefully researched, typed and accompanied with clear photographs or diagrams. Material on-disc (3-½" or 5-¼ DOS) is particularly welcome.

Unless copyrighted by the author or indicated otherwise, material in this publication is available for attributed reproduction for nonprofit purposes. (Contact the editor to obtain copy on-disc.)

Personal views, opinions and technical advice offered in this newsletter do not necessarily reflect those of the members, officers or Board of Directors of the DVHRC, nor is the organization responsible for any buying or selling transaction incurred.

To join: DVHRC dues is $10 per year. The membership year runs January-through-December. Please mail to the club PO box above.

Meetings are held monthly except July, at North Penn Amusements, 105 Main St. (PA Rte. 113), Souderton, starting at 7:30 PM.

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may be sent to the editor at 44 E. Main St., Flemington, NJ 08822, (908) 782-4894.

COPY DEADLINE: The 20th of each month.

NEXT MEETINGS: Nov. 11, Dec. 9.

TCHOTCHKES & CHATTELS

Free exposure for your desired or excess stuff! Unless requested otherwise, we'll run each ad for two months, and will send ads to NJARC's *Jersey Broadcaster* for double coverage.

FOR SALE: Best offer. Mics - EV 660A, EV 664A (2), Altec 686A, Vega Model 10 wireless, AKG D190M, Sony ECM 22P, Shure 55 S-1 (two, working). PA amps (1950s): RCA MI-122987, Rauland-Borg 1916. RCA T2K transistor radios (late '50s). Assorted 1A2 key telephone equipment: phones, KSUs, cards, speakerphones, adapters, power supplies. American Concertone 6054R reel-to-reel. Extensive Commodore computer equipment. Garage-full of other "junque" and telephones. Michael Muderick, (610) 449-6970 or michael@muderick.com.

WANTED: Someone to repair my Standard SR-G433 transistor radio. Bill Gaston, 622 Witthill Rd., Ridgewood, NJ 07450, (201) 444-0434. (10/11-97)

FOR SALE: Highly colectible tubes. Send SASE for list of duplicates, to be mailed in January. Jerry Vanicek, PO Box 4743, Chicago, IL 60680. No phone calls, please. (11/12-97)

WANTED: Buying European radios! Grundig, Telefunken, Saba, Nordmende, Blaupunkt, French sets, Polish Goplana, etc. Must be in mint or close-to-mint condition and in working order. No junkers, please! Richard Brill, PO Box 5367, Old Bridge, NJ 08857, (732) 607-0299; fax, (908) 679-8524; email, rgbent@ aol.com. (10/11-97)

FOR SALE: The DVHRC tube program offers clean, tested, boxed tubes at very reasonable prices with availability at any club meeting. Proceeds go to the club. About 300 types are currently in stock. Of course, donations of radio-type tubes in any condition are welcome. See Charlie Class at any monthly meeting to obtain or donate tubes.

FOOD & DRINK: a good place to join fellow collectors for dinner before meetings is the Hillside Tavern, half a block uphill from the meeting site.

MEET REPORT: FREEHOLD, NJ, SEPT. 27

The Jersey gang held a winner of a swapmeet on Sept. 27 at the National Guard Armory in Freehold. In fine weather, they packed the place despite some getting-started pains like parking control in the unloading area. (There was plenty of parking for buyers.) There was general satisfaction with the site - clean, well lighted - and a desire to add outdoors sales spaces next time. Our Col. Pete Grave conducted a walk-around/table-to-table auction at the end of the event.

MEET REPORT: CENTRAL PA, DANVILLE, OCT. 4

The Central Pennsylvania Radio Collectors swapmeet on Oct. 4, at Danville, was again a modest-sized but cheerful success, although competing to some degree with the MAARC picnic in Maryland. The same site is under consideration for a Spring event.

"INDUSTRY" NEWS

AWA TO HOLD MEMBER BUSINESS MEETING

The Antique Wireless Association plans to hold its annual member business meeting this coming Sunday, Nov. 2, at the Marriott Thruway in Henrietta, NY (same site as the Conference),

ON THE HORIZON

Nov. 2	AWA Member Business meeting, Henrietta, NY
Mar. 7	DVHRC Super Winter Meet, Havertown, PA.

at Exit 46 of the Thruway. This year's meeting is more important than usual. President Fizette plans to report on progress toward completing the ARCA merger, and members present will elect a group of Board members. The candidates (courtesy of Morgan Wesson, chairman of the Nominating Committee) are:

Geoff Bourne - president of AWA-WV chapter, former ARCA board member, and major figure in the museum of Radio & Technology, West Virginia.
Mike Csontos - Museum subcurator for the tube collection and audio-visual library.
John Dilks, K2TQN - Web-wizard, New Jersey.
Mark Ellis, N9EWJ - *OTB* editor and old-radio editor for *Popular Electronics*, Illinois.
Richard Neidich - computer system developer-vendor, Washington, DC
Elmer Wagner (call unk.) - Museum aide.
John Ward, KE2ST - long-time Museum aide.

A remarkable feature of this slate is that four candidates are from well outside western New York, an unprecedented decentralization from the Rochester area. New capabilities are needed on the Board because each member is automatically a trustee of the Museum, responsible for guiding AWA into a new mode fololowing the retirement of founder Bruce Kelley. The Association faces further transition because of the impending retirement (after 30 years!) of treasurer Dex Deeley and the stresses of implementing a chapter system. As President Fizette put it, "following this, we will hold the fall AWA Board meeting. Members are invited."

WAVES, ENIGMA, AND THE COVENTRY MYTH
British Intelligence in WW II

Bob Thomas, W3NE

Throughout the Second World War, German strategic messages were encrypted prior to transmission by an ingenious machine so effective that absolute secrecy was literally guaranteed. The device, dubbed "Enigma," was an electro-mechanical machine, somewhat like a typewriter in appearance, with a keyboard for entering messages and lights for displaying output text. In the encode mode, plain-language messages were typed on the keyboard and coded ciphers appeared on the lights. The machine was so diabolical because every time a letter was entered on the keyboard, the encryption code changed. For example, when the "E" key was pressed, the printer might issue a "J", but when "E" was pressed a second time, the output would be a different letter, "W" for example. Similarly, decryption of an encoded message entered as a code cipher at the keyboard in the form "FFFH," might be decoded as "GUNS." Very clever, but what the Germans didn't know was that the British were able to assemble a close approximation of a genuine Enigma machine using code wheels stolen by Polish patriots from their Nazi occupiers. The quasi-Enigma machine was not perfect, requiring anywhere from a few hours to several days to decode a message, but it enabled British intelligence to read German wartime messages intercepted by radio or smuggled to England from agents on the continent. Furthermore, and most importantly, the Germans were oblivious for the entire duration of the war that the British were routinely reading their most confidential correspondence!

Intelligence information related to air defense, particularly from decoded Enigma messages, was routinely forwarded to Reginald V. Jones, a brilliant physicist who was Scientific Officer to the Military Intelligence Service. One such fragment of information came shortly after the start of the war from a conversation overheard between two captured German prisoners of war, in which the term X-Gerät (Translation: X-Apparatus) was mentioned. Interrogation of the prisoners along lines suggested by Jones revealed only that X-Gerät was a system of bombing apparatus employing radio pulses. Jones deduced that the "X" implied crossed beams, but he recognized that locating a target with the precision being achieved by Luftwaffe bombers would require exceedingly narrow beam widths which were beyond comprehension at that time. While Jones was ruminating over this puzzle, several new clues surfaced, all centered around the German word *Knickebein* (literal translation: Crooked Leg). First, a Luftwaffe pilot's notes found in his downed aircraft listed beam headings and included a reference to "Radio Beacon Knickebein"; messages from the French and Belgian underground mentioned construction of Knickebein installations and included sketches of large antenna structures; further interrogation of prisoners established a vague association between X-Gerät and Knickebein; and finally, deciphered Enigma messages increasingly carried references to "Knickebeins" with data for beam headings to strategic English cities from locations in France and the recently overrun Low Countries and Norway.

Jones coalesced all these clues into a simple explanation of what the Germans were up to. Specifically, he determined that X-Gerät was a system of narrow radio beams emanating from Knickebein transmission sites on the Continent. These beams intersected over English target cities and conveyed information to the bomber navigators which enabled them to fly along the beam and alerted when to commence bombing. Beyond that basic framework, however, no one knew how the system really worked. For his effort, Jones was derided and personally humiliated by many top members of the British military and scientific establishment, who refused to acknowledge existence of long-range navigational radio beams as postulated by this young upstart. After all, the RAF didn't need "beams" to locate their targets; they relied on good old dead reckoning and celestial navigation! (In truth, the RAF had a controversial record of bombing accuracy at that stage of the war.). Meanwhile, thousands of British lives were being lost every day from the fearsome accuracy of the Third Reich's blistering air attacks.

The answers to the remaining questions were eventually revealed by examination of a receiver found in a Heinkel 111 that had been shot down over Scotland. The receiver's Type Plate identified it as a "Blind Landing Receiver," equipment routinely found on aircraft around the world for aid in landing in bad weather using the well known Lorenz two-beam system. Lufthansa had used a nearly identical design on its commercial airliners in 1934! Nothing seemed out of the ordinary about the receiver, until Jones received an intelligence report of a secretly monitored conversation between German prisoners who were mocking their captors for overlooking the secret to X-Gerät when it was right under their noses. This prompted Jones to

personally ask the engineer who had performed lab tests on the captured receiver if there was anything unusual about it. The reply was, "No, although it is much more sensitive than needed for blind landing." There it was - the Germans had disguised the secret beam receiver with a bogus Type Plate. Jones had successfully unlocked the mystery of Nazi beams! The maelstrom of controversy that surrounded Jones and his beam theory did not subside, however, until Winston Churchill settled the matter with finality in a crucial meeting during which Jones' persuasive argument so impressed Churchill that he prevailed over his stubborn opposition.

Final details of X-Gerät were quickly discovered. Frequency range, determined from the captured receiver's tuning range, was found to be 30 to 33.5 MHz. Monitoring by British aircraft within that range revealed exact operating frequencies, modulation characteristics, and approximate location of Knickebein stations. Precise locations of the stations and further details of antenna construction were obtained by aerial photography from reconnaissance sorties flying through enemy flak directly over the stations. Knickebein antennas radiated two narrow Lorenz beams from a dipole radiator with a reflector spaced one-quarter wavelength away on each side. Each reflector was broken at its center, with relay contacts. By sequentially energizing one relay, then the other, the narrow transmitted beam would shift very slightly to one side or the other, resulting in a radiation pattern shaped like two overlapping petals of a flower. One petal was modulated with a 2-kHz dash signal, and the other modulated with 2-kHz dots. When an airplane flew exactly between the two beams, on the central overlapping section, dots filled-in spaces between the dashes, creating a continuous tone. If the plane deviated off-center in one direction, dashes were heard, and in the opposite direction, dots were heard. The central beam, where a steady signal existed, was only 0.6 degree wide, providing a path only 400 yards wide over a typical English target city. Each Knickebein antenna assembly consisted of a large array of radiators and reflectors mounted on a turntable so it could be pointed with precision to the selected target, precision so great that compensation was required to correct for a minute error introduced by the slight flattening of the earth's surface at the poles.

A basic X-Gerät system employed one Knickebein to transmit a Director Beam along which a bomber flew, while a second Knickebein, located several hundred miles away, transmitted a Cross Beam that intersected the Director Beam over the target. In actual practice, the system was much more sophisticated than that. A second "Reserve Director" was transmitted in case the main beam failed; and as many as three Cross Beams intersected the Director to accurately define the approach to the target. Additionally, bombers did not ride the Director Beam the entire distance from their home field to the target; they initially followed a Secondary Director until they had nearly arrived at the target, then suddenly changed course to get on the main beam in a "crooked leg" path, a maneuver from which the term Knickebein was derived.

Now that the principle of the beam system was thoroughly understood and accepted, the British began to jam X-Gerät beams with noise generated by commandeered medical diathermy machines. They later transmitted false dot-and-dash tone signals from ground stations, disorienting German bomber navigators and throwing the Luftwaffe into confusion. If all that were not enough, the RAF was now able ride along a Director beam right to a Knickebein transmitter site with obvious results. Of course, the Germans quickly realized that X-Gerät was no longer viable, and so they began a new round of Teutonic ingenuity.

Evidence of a new technology was beginning to appear in the sudden rise of Enigma traffic bearing references to *Wotan*. What could it mean? Jones puzzled over this new terminology, but it was not until he consulted a former university colleague, an outstanding German scholar, that its significance became clear. According to German mythology, Wotan was leader of all the gods, and he had only one eye. That was it: one eye - *one beam*! Support for the single-beam theory came from another decoded Enigma message in which an attack ordered against a British military installation assigned only a single station to transmit a guidance beam. During the raid, German bombers were not very accurate in azimuth, but their range accuracy was quite good. British listening stations began to monitor transmissions from 40 to 50 MHz, where they discovered Lorenz right/left beams similar to those of X-Gerät but, instead of modulation by dots and dashes, the single Director Beam was modulated by a pulse. Subsequent examination of a captured airborne system and pilot's log revealed that the plane detected the pulse, then re-transmitted it back to the ground station on a different carrier frequency. The round-trip pulse delay was converted to a distance and then relayed by voice to the bomber's navigator. This system also had a refinement using a second set of frequencies that enabled the plane to return to base by a route different from its outbound flight.

One of the countermeasures used against Wotan in the London area was to tune-in the bomber's re-transmission of the pulse on a ground-based receiver, then re-radiate it back to the plane on the German ground-station carrier frequency. This process introduced additional delay (from the bomber to the British receiver and back to the plane) that caused an error in the distance calculation, throwing the bomber off-range. Brute-force jamming was also employed, but a more sophisticated tactic was to transmit false range information to the bomber by overriding the German communications channel with a local ground-based transmitter. The pilot never knew for sure if he was getting genuine range instructions from his base or bogus ones from the British, with the effect that he could believe neither! Wotan was effectively neutralized by these ploys, and was finally abandoned, but it didn't matter much because by then the Soviet Union had entered the war and German offensive resources were transferred to the Eastern Front. The tide had turned in the Battle of Britain and Germany concentrated technical development on radar defenses, upon which Jones continued to direct his skills and ingenuity with the same zeal as he had against the beams.

One of the most poignant stories to emerge from World War II tells of a deciphered Enigma message revealing Luftwaffe plans for a massive air attack on the city of Coventry on the night of November 14, 1940. According to the story, this information was forwarded to Churchill, who had to decide either to evacuate Coventry, in which case the Germans would immediately realize the British had broken the Enigma code, or to do nothing and sacrifice the lives of hundreds of innocent Coventry civilians to preserve a crucial strategic secret. The story relates that his anguished decision was to preserve Britain's secret knowledge of Enigma; Coventry was brutally attacked, nearly destroyed with over 1400 casualties. It's a gripping story, but Churchill's dramatic role is a myth with no substance whatsoever. What follows is the chain of events as they actually occurred.

The German bomber command typically transmitted Enigma messages each afternoon with a coded list of target cities and Knickebein frequencies to be used for raids that night. These messages were ordinarily decoded within a few hours by British Intelligence and forwarded to R. V. Jones, who had developed a

keen sense for determining actual target-city code identities. Thus, Target 51 might be Derby, home of Rolls-Royce, major producer of aircraft engines; Target 52 the industrial center of Birmingham; and so forth. He generally was able to alert the Fighter Command as to probable targets for that night, as well as the time of the attack within ten minutes, bomber speed and line of approach, altitude, and the anticipated Knickebein beam frequencies so defense forces could be prepared and jammers preset to the beam frequencies.

A number of tragic lapses occurred on November 14 that doomed Coventry. On the afternoon of that day, cryptographers were unable to decode Enigma traffic in time to provide Jones hard data he need to make informed predictions for that night's raid. Later, when the Knickebein beams were turned on in preparation for the raid, British monitoring aircraft made frequency measurements as they flew along the beams, but not with sufficient accuracy for Jones to do any more than make an educated guess as to which were the Director and Cross beams. In any case, his best estimate was forwarded to Fighter Command who set the jammers in accordance with Jones' recommendations. That night a massive Luftwaffe armada flew right through British air defenses to wreak their havoc on Coventry. Decoded Enigma data finally became available the next day, and it supported the guess Jones had made the night before! If that were true, and jammers set accordingly, how could Coventry have sustained so much damage? An investigation disclosed that, while the carrier frequencies had been set correctly as advised by Jones, the dot/dash tone modulation frequency of the jamming signal had been set to 1.5 kHz, NOT to the 2 kHz employed by the Knickebein beams! The error had arisen by a series of misadventures too convoluted to relate here, but in any case, they facilitated the destruction of Coventry despite the accuracy of Jones' predictions.

With regard to Churchill's knowledge of an impending attack on Coventry, he certainly could have had no inkling that Coventry was a target since the related Enigma message was not decrypted until the day after the attack. Furthermore, Winston had departed from London on a trip to a country retreat on the afternoon of November 14. As he read his file of Enigma reports during the course of his trip, he came upon one indicating London was to be subjected to air attack that night, whereupon he reversed his journey and returned immediately to London, as it was his policy to never leave the City and its people when an air raid was expected. So much for the Coventry Myth.

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Part 1, Vol. 22, No. 6 (June 1989), pp. 29-39.
Part 2, Vol. 22, No. 8 (Aug. 1989), pp. 20 - 29
Part 3, Vol. 22, No. 10 (Oct. 1989), pp. 53 - 61.

Above three articles reprinted from *Practical Wireless* (PW Publishing Ltd.); Jan., Feb, and March 1988.

BOOK REVIEW

ZENITH RADIO - THE EARLY YEARS, 1919-1935

By Harold Cones and John Bryant, "with" Martin Blankinship and William Wade.

ISBN 0-7643-0367-8, softbound, 11" x 8-½" landscape format, 223 pp., Schiffer Publishing Co., Atglen, PA, $29.95 plus shipping & handling from *A. R. C.* and the other usual sellers, or $24.00 at DVHRC meetings. Reviewed by Ludwell Sibley.

The "next" Zenith book is out. This one gives us a wide variety of information on the start of Zenith, the beginnings of broadcasting, the promo activities of Eugene McDonald as Zenith's president, the flurry of Arctic exploration in the '20s as affected by Zenith's activities, etc. It provides, from the Zenith corporate archives, a series of 12 excellent photos of radio manufacture in the QRS factory in Chicago, shots of superb detail giving us a bit of "industrial archaeology" (you may cringe at seeing the punch-press operators at their machines - no hand guards, no safety switches, no eye protection). There's a fine series of 99 color photos of Chicago Radio Lab and Zenith receivers, the earliest of them from the collection of DVHRC's own Bill Wade. There is a composite picture "catalog" of CRL/Zenith products of the 1919-35 period, and an extensive tabulation of this equipment. There's even a rarity/value guide that tracks fairly well with the Bunis Collector's Guide to Antique Radios. This book is quite a comprehensive study of Zenith, and is a lot of value for the price.

It's also satisfying to see a book on radio manufacturing in Chicago. The early radio industry was based a lot more broadly than on the Boston - New York - Philadelphia axis, and Chicago was a powerhouse in its own right.

The Early Years is a bit quirky in trying to act scholarly while reaching a mass audience. The history text is set in miniscule type, which squeezes-in a lot of information but is awful to read over a long period (nobody's going to review *this* book "at arms' length"!). By contrast, the "collector" material is normal-size. The 40 pages of history text are accompanied with 15 pages of endnotes that require constant flipping back and forth. There are production problems aplenty: punctuation and spelling goofs (five misspelled names on the acknowledgements page alone), and at least three pairs of photos with the wrong captions. And the authors can't decide whether to cite frequencies in "cycles" or "Hertz." All these harm the image of the book as a carefully written product.

There's a more basic problem here: Bryant and Cones' feud with historian Alan Douglas, induced by the latter's "Gods and Mythology at Zenith" review of their Trans-Oceanic book (*Oscillator*, Feb. 1996). It's visible, starting with the acknowledgements page, where thanks are given to a variety of "radio historians" for their aid. But how is Douglas thanked? As the author of 200 or so historical articles over the last 22 years, appearing "everywhere" in collector/history literature? As writer of the pivotal three-volume Radio Manufacturers of the '20s series? As a Fellow of the Radio Club of America for his achievements? No, Douglas is a mere "collector of radio ephemera"! It hardly stops there: there's a go-for-the-gonads approach to the Zenith chapter of Douglas' book, with endnotes sneering at alleged errors and "seriously flawed" material. Douglas' publication of the reminiscences of Fred Cassens, early Zenith employee, is heavily deprecated; after all, Cassens made bold to point out certain undesirable traits in McDonald's character. (An *unbiased* history would list Cassens' claims and reinforce or refute them; here Cassens is simply dismissed as unreliable. This is all sad, considering that Bryant and Cones' book is otherwise a good product.

The authors tend to accept Zenith's claimed "firsts" uncritically, as with "WJAZ mobile - the world's first self-contained portable

broadcast station" from 1924. This is a neat story illustrated with great photos. Unfortunately, here in DVHRC territory good ol' 3OI scooped Zenith by more than two years (Oct. 1921). 3OI was an amateur station in a cabin on a truck chassis, with radiophone transmitter and receiver, on-board gas-powered generator, mobile antenna attached to the body, and even a phonograph for playing records. Owned by Horace Beale of Parkesburg, it operated in the days when amateur stations could still transmit music and other programs, and was well documented both then and in modern times*.

As another "flaky first," it is claimed (Ch. 1, Note 83) that Zenith's chief engineer "made possible the development of the first all-band portable radio." If this means "Trans-Oceanic," then one must recall another Chicago product, the Hallicrafters S-29 of August 1940. The S-29 was announced a year-plus ahead of the Trans-Oceanic, but even it wasn't necessarily the first all-band portable!

It'll be interesting to see how the rest of the collector/history press reviews this book. Of the Big Three publications (*A. R. C.*, *OTB*, *Radio Age*), none printed Douglas' commentary on the initial Bryant-Cones approach to Zenith history - one pocket-vetoed it because it represented (horrors!) *controversy*. This, despite the boundless contributions that Douglas has made to all three. After the *Oscillator* carried his review, the British Vintage Wireless Association *Bulletin* independently printed it - apparently the British are more interested in the exchange of ideas than in politics.

In the mean time, go ahead and buy the book; it's valuable stuff on a lot of levels. But be sure to read "the fine print"!

OBSERVATIONS BY ALAN DOUGLAS

I like the book. I would like it better if the authors would stop taking pot-shots at anyone who dares to accept their challenge in the Transoceanic volume: "We want readers to be able to determine the exact source of our information, so they may judge for themselves the validity of our conclusions" (p. 5).

On dates given Zenith models: I see a Procrustean attempt to force all Zenith radios into a model-year bed. A month and year of first advertising might better accommodate the many models that appeared during a year, as new circuits, licensing, competition, strikes - whatever - forced Zenith's hand. There are likewise no dates on the otherwise excellent advertisements reproduced in the book.

On the role of QRS: I wish a little more credit were given to Tom Pletcher and the QRS Music Roll Company for their pivotal role in Zenith's survival in 1922-23. Without the QRS connections to the best music dealers across the country - QRS sales were twice the combined output of *all* radio companies in 1920 - Zenith would have offered good products with no one to sell them. It was no accident that the radio manufacturing companies that seemed to grow into giants overnight, like Atwater Kent and Philco, had elaborate dealer organizations in place long before their entry into radio.

Now for the pot-shots.

Was being licensed by RCA equivalent to being "knighted by the Queen" (Ch. 1, Note 88): RCA licensing in 1927 was far more important to RCA than Sarnoff would ever admit. RCA had been formed as a communications monopoly, but there was absolutely no excuse for using this position to control radio manufacturing or broadcasting. RCA simply happened to be in the right place at the right time, and Sarnoff's hope was to cement this position before too many people noticed. He did pretty well. He made it seem almost natural that RCA should own all radio patents and impose stability on a chaotic industry, and that 7-½ percent was a fair royalty to RCA for the service. He got his way in the vacuum-tube industry, where a few patents were fundamental, but finding a basic radio-circuitry patent was not so easy. By good fortune, Alexanderson of GE had such a patent, on cascaded tuned RF circuits, and by equally good fortune, one federal judge on one test case had interpreted this patent far more broadly than it deserved to be. RCA's ploy was to publicize this decision as much as possible, to avoid appealing it at all costs, and to stampede the radio industry into signing up, before they realized how weak RCA's position actually was.

The few that did know, like Splitdorf and Atwater Kent, extorted very favorable terms from RCA, which collected less than half the total royalties from the industry than the 7-½% arithmetic would indicate. Even many ordinary companies got forgiveness of past royalties: see Floyd Paul's story on Gilfillan in the August 1994 *SCARS Gazette* (reprinted in AWA Review Vol. 10), based on documents recently seen in the ITT Gilfillan files.

So what did McDonald get by being first on RCA's doorstep, hat in hand? Probably - since Zenith had no money to pay it - forgiveness of $500,000 in past royalties, in return for hewing to the RCA party line. Could he have carried on business without the license? Certainly for a year, maybe more: no one likes to be first to sign up for a shearing; in Zenith's absence, who knows if anyone else would have. Sparton did very well without a license (but was more self-sufficient, with a tube-making subsidiary). I don't know. But Zenith was in poor financial shape at that moment in early 1927, so Sarnoff and McDonald each held much weaker hands than they thought the other had, and each was most anxious to make a deal.

The Eskimos (Ch. 5, Note 66): Now let's dispose of this Eskimos-singing-to-Admiral-Coontz-off-Tasmania baloney. I say again: this reception never happened. There is not a shred of credible evidence that it did. There was no fraud among Navy men: Admiral Coontz never claimed to have heard them, nor did Fred Schnell (the "Lord, what a note!" quote below from *QST* refers of course to CW, not *do-re-mi*), nor are there any contemporary reports. The only person who claimed this broadcast happened was Commander McDonald, with MacMillan following his lead. But MacMillan was in no better position to know who was receiving his broadcasts than McDonald: they would not know most of what went on until they returned to civilization several months later. Do you suppose McDonald ever got the real picture? I can just imagine the Zenith flunkies telling him "We screwed up and didn't get to rebroadcasting your concerts at all." *There's* a one-way ticket out the door. "Oh, yeah, Commander, they came in just great, sounded like college yells, we've got reception reports from New Zealand and all over."

It would appear, based on a paraphrased but unseen letter, that McDonald had something to do with putting Schnell on the U. S. S. Seattle. Here is a bit of contrary hard evidence, from the typescript reminiscences of A. Hoyt Taylor (head of the Naval Research Laboratory), as annotated by his colleague Leo Young, p. 197: "I persuaded the Navy Department to call Fred Snell (sic) back to active duty and assign him to the staff of the United States Fleet Radio Officer, who was then Commander Hooper. Hooper, at that time, was not at all sold on high frequency. When he came back from that cruise, he was enthusiastically in favor of it." Taylor goes on to describe Schnell's preliminary work at the Laboratory, on the equipment that would be used during the cruise. I would say that McDonald was mis-

* See The Year Book of the Chester County Radio Association, 1922, p. 20; *QST*, May 1922, pp. 9-12; and *OTB*, Aug. 1988, pp. 16-18.

taken about his degree of involvement in this matter. (Thanks to Ed Lyon of MAARC for this material.)

From *QST*, Nov. 1925, p. 50: "On August 17 (sic) 6AWT connected WAP and NRRL with each other for their first two-way communication. NRRL reports hearing WAP's phone and one of the airplane sets using UV-201-As." From *QST*, Jan. 1926, p. 14: "Holland OSV was heard August 16 at 4:45 P. M. and shortly after that I heard some funny noise which turned out to be WAP - Lord, what a note! August 19 I clicked with WAP, after 6AWP fixed us up, and WAP was worked several times after that without much trouble."

The second reference is from a seven-page report by Schnell on his cruise, almost a minute-by-minute account including mention of every station he heard or worked. The two-way QSOs were on CW; he had no phone rig. If Schnell heard one of the airplane sets - No. 2 is shown on p. 69 of the Zenith book - he no doubt described it aptly: it's a self-excited 201A, Heising-modulated by another 201A for phone. I have No. 1 here, which is set up for 40 meters just as it came back from the expedition; I bought it from the Zenith employee who was given it in 1925 *. I'm sure it would whoop up and down the band if I ever tried to get more than a few milliwatts from it.

If Schnell had heard McDonald's singing Eskimos, it is simply incredible that he would not have said so; it would have been the highlight of the cruise. He does describe working 2NM, Gerald Marcuse in Surrey, England, who had an experimental phone outfit. This is not to say there were no broadcasts from the Peary, or that they were not received elsewhere, but they were certainly not received on the USS Seattle by Admiral Coontz, off Tasmania, in the Tasman Sea, or anywhere else.

Zenith and "Firsts" (Ch. 1, Note 84): The authors have once again made heroic efforts to redefine "AC set" so that some Zenith model will come out first. The X didn't make it, as that was never sold as an AC model despite advertising claims. The 27 is simply a left-over VII chassis with '99s installed in adapters, and preceded by the Dynergy and the Radiola 30 in any event. Now it's the 11E, because it used AC tubes, from September 1927. But the Radiola 17 came out at exactly the same time, and there were other sets a year earlier using non-RCA tubes that just as surely worked on AC: Garod, Marti, Sparton, and more. *Give it up, guys.*

The few remaining - we're making progress - "firsts" do not fare any better. If the "portable" radio (Ch. 1, Note 62) can now include a 100-foot antenna and ground stake, then read Mike Schiffer's book for any number of qualifying sets that predated the never-produced Zenith PR-1. If the great advance of the DeLuxe models was that they could work without external antenna or loop, the Grebe CR-12 came with 20 feet of wire to hide behind a picture molding, two years earlier. Dual horns, high and low? Grebe had those too, at the same time as the X, in the Synchrophase console. *Give it up, guys.*

Cassens' information: I should say a word in defense of Fred Cassens, who is no longer here to speak for himself. He worked for the Commander for twenty years and in a responsible position, not as an office boy or favorite nephew. He certainly had a viewpoint, as did everyone who worked for McDonald, but nearly everything he told me turned out to be independently verifiable. The only thing I had major doubts about, was his story on failing 1928 power-pack capacitors bought from Majestic, as nothing ever appeared in the trade press. But the authors have found documents showing not only that this *did* happen, but even that McDonald felt Majestic was out to get him (Ch. 1, Note 98). Re-read my paragraph on this (Vol. 3, p. 265) and see if it doesn't agree precisely with the authors' new information.

Viewpoint or not, if Fred said those 1922 factory photos (page 15) were not the Zenith he remembered, he was there in 1923, not I and not the authors and not anyone else working at Zenith now. The authors prefer "posed" to my "faked"; of course they were posed, as the exposures took about two minutes, but if they show another company's building, fixtures, and (some) employees, than if it quacks like a fake, it's a fake. Now in all probability Zenith was using that space at the time - most of the photos were taken in the same room - but it had to be the QRS shop. One of those punch presses could have produced more stampings in a day than Zenith could use all season, and it doesn't make sense to buy and install such a machine, only to use it for a few days. More likely, these were originally used to stamp out piano-roll spool ends (I have some from 1922) and were idle after QRS switched to molded-composition spools.

Claimed flaws: According to the authors, my chapter on Zenith is "seriously flawed" (Ch. 1, Note 69). But so far as I am aware - and this applies after reading the new book - there are no factual errors in my chapter. A little perspective is in order here: Zenith in the 1920s was a nobody, an insignificant company. It might have ranked tenth in the industry - the numbers varied wildly from year to year, and not all company sales figures are available - but Zenith was dwarfed by Atwater Kent and RCA in the mid-'20s, and by Majestic and Philco later. My books are on radio manufacturing, but Zenith's best stories are not the pretty cabinets they made, but McDonald's derring-do: Arctic explorations, feuds with the Department of Commerce and other radio companies, his flair for sales (and self-) promotion. What other radio executive could be in command of a ship on an Arctic expedition? All I ask is to get the story straight: no company hype, no delusions that the Commander was God's gift to mankind.

Miscellaneous comments:

- P. 11: Neither Hassel's nor Mathews' recollections of the Paragon name usage are accurate, and I'll stand by what I wrote.
- Photo, p. 14: The "unknown" amp is a W. E. 7A, with probably a 518W horn behind the grille cloth.
- Photo, p. 46: Someone told me that was F. E. Handy, not Warner.

* Described further in A. S. Douglas, "Ham Radio in the Arctic - 1925," *73 Magazine*, July 1975, pp. 103-105.

"INDUSTRY" NEWS

MARCONI COLLECTION CATALOG OFFERED

Remember the infamous Marconi Museum auction that never was? Well, Christie's is going ahead with production of the sale catalog that would have been issued at the time. Comprising 220 pages with photos in B & W and color, it lists the once-planned auction lots - such things as the headphone from the 1901 Signal Hill receiving site used for Marconi's pioneering transatlantic transmission. It's orderable, for $55 to the U. S., from Christie's South Kensington, ATTN: Julia Chinnery, Marconi Collection, 85 Old Brompton Rd., London, SW7 3LD, U. K. (Info from Jerry Vanicek.)

OBITUARY

ROBERT M. MORRIS, BROADCAST ENGINEER

Ludwell Sibley

The *Oscillator* rarely runs obituaries, but Bob Morris was such a remarkable figure in early radio - and in radio-history organizations - that it is appropriate to mark his passage in October at the age of 95.

Morris was born Jan. 18, 1902 in Washington, DC, and attended Case Western Reserve University in Cleveland, where he was reportedly a roommate of John Victoreen of Victoreen Superhet fame. He left school after two years, went to the Western Electric Company in 1923, and became a studio engineer at AT&T's WEAF at its establishment in 1924. He shifted to NBC upon its founding in 1926.

During the '30s he held the title of Development Engineer, reporting to O. B. Hanson, NBC's chief engineer. In this role his group designed and built specialized radio gear: he was often photographed with NBC's latest wireless microphone, and his shop produced the gear used in the Army's 1935 manned stratosphere balloon flight for broadcasting on the NBC net. He took part in NBC's television trials in the '30s, and had a 1937-vintage TV set - later donated to AWA - in his home. He was active in RCA's early FM trials and in the development of transcription recording. The volume-unit (VU) meter, still a common sight in audio gear, came in 1939 from a joint Bell Labs - CBS - NBC development effort for which Morris was the NBC representative. He was named business manager of the NBC Radio-Recording Division in 1941.

In 1942 Morris took a leave of absence from NBC, being named Chief Radio Engineer of the Signal Corps. He served in the Signal Security Agency, and was decorated at war's end with the Exceptional Service Medal. Returning to NBC's Radio-Recording Division, he eventually (so one story goes) displeased David Sarnoff and was personally fired by the latter in 1948. Morris compensated by moving to ABC, where he finished his paid career in 1967 as Radio Facilities Engineer. But he was active in retirement, as editor of the *IEEE Proceedings on Broadcast Technology* up to 1975, and as founding editor of the AWA Review.

Morris was a radio amateur licensed for 75 (!) years, as 2CQZ in 1922, 2LV in 1926, and then W2LV. He got on the air as the vacuum-tube era opened up; in later years he expressed pleasure in having started "after spark was dead, buried with a stake in its heart." He was an active DXer (on the DXCC Honor Roll with 300-plus countries) and an early member of the North Jersey DX Association. Something of a "killer" operator, he won the AWA old-time operating contest six years out of 12 (1971-83) from his station in Sparta, NJ.

Morris was nearly unique in having served on *two* National Television Systems Committees: both the prewar one and the postwar color-TV group.

Bob was not easy to get along with if he didn't know you - he once advised a friend of mine proposing an article for the AWA Review that the latter was "not qualified" to write the story. (Fortunately, Morris was wrong that time - the eventual article was quite good.) To friends, Bob was warm and helpful. He had lots of industry contacts: when the question came up of whether the Army's 1946 moon radar was an FM system, he simply called up his friend John DeWitt, formerly *Lt. Col.* DeWitt and leader of the radar project, and got confirmation that the radar was in fact not an FM device.

Morris held the grade of Fellow in the Radio Club of America and its Jack Poppele Award for broadcast achievement. He was also a Life Fellow of the IEEE, in part for service on seven technical committees. He received the AWA Houck Award for Documentation in 1989. The National Association of Broadcasters gave him its 1967 Engineering Achievement Award; the Audio Engineering Society, its Emile Berliner Award in the same year.

Thanks to Bob Thomas, W3NE, for some extra reminiscences of Morris.

READERS' COMMENTS

THE MERCURY TABOO

I think the mercury taboo is a lot of fear-mongering. Room-temperature mercury is not dangerous unless it gets into food or is somehow ingested. The only time mercury is dangerous is when it is vaporized, and that takes heating it pretty hot.

This fear-mongering is the same as the asbestos scare, when uninformed people would walk across the street from a building or school that had known asbestos in it - which had been specified by state building codes - in fear that the asbestos would jump out at them.

The same goes for PCB scares. People have had furnaces and pipes for years that were asbestos-coated, and all that is needed is to paint it with a flat paint to hold it from flaking off.

Mercury, asbestos, aerosols, airplane glue, carbon tet, and other toxic substances, if handled with care and sense, are reasonably harmless. What about mercury switches in thermostats and some electrical wall switches? I'm tired of hearing people run around screaming "Danger! Danger! when the slightest suggestion of "toxic" is mentioned.

Alton A. DuBois

THE ROCHESTER 1997 AWA MEET AND AUCTION - AS IT HAPPENED!

John Dilks, K2TQN, "Webmaster"

The NJARC Web page broke new ground this year in an unusual way, that of being the first to place an antique-radio meet on the World Wide Web, on-line, every day of the meet. It was the AWA meet in Rochester, NY. We posted daily reports and photos, providing a window for members of AWA, or any other club, who were unable to attend.

For those of you unfamiliar with computers and the "web," imagine an evening newspaper with color photos delivered to your home every day. Inside you find information about the day's activities. There are pictures and short stories about the flea market and equipment contest, and an auction preview.

Those of you who have a computer or a friend with one can still view this information at the following location: **http://www.eht.com/oldradio**. Make the "AWA" selection from the menu. There are also some new stories posted after the meet, including the complete auction report by club member Ludwell "Scoop" Sibley. This web location is the New Jersey Antique Radio Club's Home Page.

While visiting the NJ club's website, you will want to check out the "History of Radio" chapter, written by John V. L. Hogan in 1922. This is a well written, first-person report from a real radio pioneer. It has information and photos of Reginald Fessenden's Brant Rock experimental station. Hogan worked for de Forest and Fessenden in early years.

Putting the AWA meet on-line was a "fun" project that I want to continue. Watch for it next year. It's set for the Wednesday through Saturday, Sept. 2-5, 1998. Or, better yet, make plans to attend.

MORE WEBNEWS

David W. Kraeuter

I think DVHRCers with access to the Internet will be interested in a new radiohistory Web site produced by John Belrose. It's available at: http://newton.otago.ac.nz:808/ursi/belrose/spark.html and contains lots of info on early wireless, etc., including audio samples of (simulated?) spark transmissions. [*Belrose is a "power" in this area - he wrote an extensive recent biography of wireless inventor Fessenden in the* Proceedings of the Radio Club of America - *Ed.*] This information comes from the latest newsletter of the IEEE Center for the History of Electrical Engineering. The newsletter is, apparently, free fer nuthin'. Snailmail address is: c/o Rutgers University, 39 Union Street, New Brunswick, NJ 08903.

Your 'Net-capable readers will also be happy to hear that Antique Electronic Supply's catalog is now on the Web. The address is: www.tubesandmore.com. A nice bonus is on-line ordering capability. 'Net-challenged readers may order a paper copy of the 1998 62-page catalog via regular mail: Antique Electronic Supply, 6221 South Maple Ave., Tempe, AZ 85283.

GRUNOW AND BUFFALO WINGS

The Feb. 1941 issue of *Fortune* carried an article about the merger of the Capehart phonograph company into the Farnsworth Televison & Radio Corporation. It included an interesting sidebar about William Grunow, originally of Grigsby-Grunow (Majestic receivers), then of General Household Utilities (Grunow radios). Here's what it said:

> *William Carl Grunow is currently in the spare-chicken-part business. In 1939, having been buffeted by the world and reduced in bank roll, he retired to his palatial estate at Lake Geneva, Wisconsin, to think it over. As usual, he got an idea: why not turn the estate into a monster chicken farm? And instead of simply selling chickens, why not get an extra price by selling exactly what the customer wanted: 150 breasts for a banquet, 500 livers for hors d'oeuvres, 300 legs for picnics? Spurred on by this inspiring notion, Bill went to work at once. The population of his farm has now reached 200,000 chickens, whose feet are never allowed to touch the ground. The chicken-part business is now highly successful. It was a sales idea, and Bill Grunow is as super-dooper a salesman as ever Homer Capehart was.*

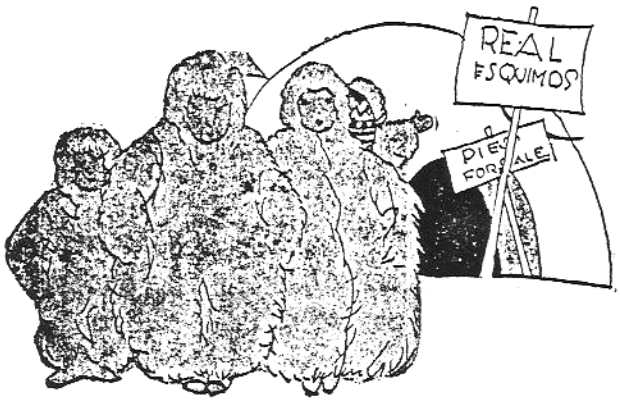
So the next time you're enjoying a plate of Buffalo wings or a chicken-breast sandwich, turn on your Grunow Teledial and think of ol' Bill! (Scoop)

FIXING FLEA-MARKET TABLES

Those of us who partake in that exercise in primitive capitalism, the flea market, often use folding tables of the kind with Masonite tops and aluminum frames. The Masonite is held in place in a channel in the frame material, crimped here and there to lock it in. Trouble is, we routinely overload these rather fragile tables; the Masonite chafes in the crimped places, and the top eventually slips loose from the frame.

Injured tables can be restored, and good tables reinforced, easily. Get the Masonite back into the channel (cutting away some of its thickness with a single-edged razor blade helps) and wrap the table top with a piece of cord to hold the frame tight against the Masonite. Then the table over and fill the Masonite-to-frame joint all around with caulking compound from a gun. I used Red Devil "siliconeized" caulk - it comes out white, turns milky like RTV silicone compound, then cures gummy like contact cement, and finally turns colorless and resilient. Release the cord, and the top will be found to taut and strong.

I fixed up six tables, both good and injured, before Rochester this year. All served well and are still in fine shape. Of course, the next level of abuse is the overload that buckles the frame - and caulk won't help that! (Scoop)



Ugluk, mukluk.
We've got 23 words for "snow."
You're gonna get all kindsa DX
On your Zenith Rad-i-o.
Shooby-doo-bop-doo-wah.

"Commander Mac and the Eskimos,"
early South Street doo-wop group.

AUDIOFEST 97

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