



# The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

September 2009

Volume 15 Issue 9



Reported by Marv Beeferman

## THE ON-LINE BROADCASTER

The New Jersey Broadcaster is now on-line. To date, 97 of your fellow NJARC members have subscribed, saving the club over \$1900 a year. Interested? Send your e-mail address to:

**mbeeferman@cs.com**

**Be sure to include your full name.**

The show-and-tell items displayed at the August meeting turned out to be such an interesting and diverse collection that your editor decided to expand a little on reporting on them this month to ensure that everyone received well-deserved credit. Perhaps they received a little more enthusiasm than normal after sitting through President Richard Lee's magnum opus on the upcoming death of AM radio that opened the meeting.

With our Old Equipment Contest scheduled for November 13th, its not too early to start thinking about what you plan to enter. Here are the basic rules, but try to keep in mind that documentation and a nice display are usually the keys to a winning entry:

1. Each member may submit no more than one entry per category and no more than a total of three entries.

2. Entries are not required to be demonstrated as working, but a statement of restoration to full operability (honor system) on the entry's description will be used as a basis for judging.

3. Categories are as follows:

- A. Crystal sets
- B. Battery radios - 1930 and earlier
- C. AC radios - up to 1940
- D. AC radios - after 1940
- E. Transistor radios



## MEETING NOTICE

### NOTE: MEETING AT INFOAGE!

The September meeting will take place on Friday, September 11th, at 7:30 PM at InfoAge. Directions to InfoAge may be found at the club's website (<http://www.njarc.org>). We'll be meeting in the Telephone Exchange Building for a "member's only" auction. President Richard Lee asks that you bring your Catalins, your shutter-dial Zeniths, your Hammarlunds, your money, but please, no "junk." We'll also have some special offerings by member Frank Johnson of box lots of tubes and parts. Frank has generously offered to donate half of his auction proceeds to the club.

- F. Novelty radios
- G. Communication and military radios
- H. Ephemera/Advertising/Literature (books, magazines, catalogs, posters, photographs, postcards, etc.)
- I. Radio Accessories (speakers, headphones, antennas, tubes, parts, test equipment, etc.)
- J. Entertainment items (TVs, phonographs, recording devices, stereos, etc.)
- K. Open category

4. Members will be asked to judge entries based on the following guidelines (obviously, you can't vote for your own entry):

- a) General appearance and condition (is the entry restored, cleaned, working and generally presentable or "as found").
- b) Documentation (ads, journal articles, books, news clips, photos, magazine articles, manuals, etc.).
- c) Effort (how much work was put into restoration, appearance, documentation and display).
- d) Rarity (is the entry relatively hard to find).

5. Awards: Three major awards will be presented at the December Holiday Party which represent the most ballots received from ALL categories. Ribbons will also be awarded to the 1st and 2nd place winners in each category.

Here's two examples from last year's contest to give you an idea of typical entries:



A few reminders for upcoming events: Our next Repair Clinic is scheduled for October 17th at InfoAge and our Parsippany swapmeet will be held on November 7th. Our Holiday Party will take place on December 12th in the beautiful and historic dining room of InfoAge's Marconi Hotel.

**THE JERSEY BROADCASTER** is the newsletter of the New Jersey Antique Radio Club (NJARC) which is dedicated to preserving the history and enhancing the knowledge of radio and related disciplines. Dues are \$20 per year and meetings are held the second Friday of each month.

The Editor or NJARC is not liable for any other use of the contents of this publication.

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## SHOW-AND-TELL AT BOWEN HALL

The club's first show-and-tell at Princeton's Bowen Hall continued a great tradition started in Freehold and carried over to the David Sarnoff Library. A new generation of interesting items came to the surface and, as usual, they prompted serious interest, serious questions and some good-natured heckling. Here's a summary of what we saw:

**Richard Lee:** What else would you expect from a CD with "TESLA" emblazoned on the cover? Restored gramophone quotations from the master of lightning? A historical record of Nikola's achievements? Unfortunately, no. As Ben Franklin said, "poor Richard... duped again."

Tesla was actually a band originally formed as City Kidd and renamed Tesla during the recording of their first album. The name derived from certain album and song titles and some song content from events relating to Nikola Tesla. The title of Richard's CD, "The Great Radio Controversy," was titled based on the debate about the identity of the inventor of radio - Tesla or Marconi. The album's inner sleeve recounts this story.

Richard also showed us something called a "Radio Master - 4 Radio Instruments in 1." He asked if anyone knew what it was and your author identified it as one of those totally useless items that were advertised to increase reception and reduce noise. Opening one end seemed to prove the point; what appeared to be a shoelace was attached between the terminal ends.

**Ray Chase:** Ray showed us a beautifully constructed, empty wood case with a brass plate inscribed with "Montclair Radio Manufacturing Corp., Montclair NJ." I tried to find the company on the internet, but my search was fruitless. I know Dumont was located in Montclair; anyone have any ideas?

Ray also displayed a Clough-Brengle CRA oscilloscope. It used a 906 CRT which is an early version of the 3AP1

CRT without the internal aquadag coating; this allowed the gun components to be visible. In 1935, the set cost \$79.50. Perhaps more interesting was the inside of the set that showed the results of an exploded electrolytic capacitor, perhaps the result, as Ray explained, of an unfused power supply.

**Dr. Michael Littman:** In 1889, William Gray got a patent for his innovative coin payment mechanism. For the first half of the 20th century, most payphones were built by the Gray Telephone and Pay Station Co. of Hartford Connecticut under contract with Western Electric and other leading companies.

In the early 1900s, the three-slot (5, 10 and 25 cents) model described by Dr. Littman, a caller would pick up the receiver to make contact with the operator. Then, as each coin was deposited, a mechanism would route it to one of three bells where the operator could verify the amount by the sound that the coin made. With the appropriate amount deposited, the caller was connected to the desired party. (Note the sign above the phone that instructs the caller to contact the central office and not deposit money until told by the operator so the coins can be verified.)

**Bob Bennett:** I've never been much of a fan of painted radios, but Bob's creation has made me a believer. Bob took a not-so-interesting radio and turned it into a beautiful, decorative item that coordinates with the décor in his kitchen. I'm sure his wife is now a believer also. Just think of how many additional drab, brown Bakelites will be allowed into your house when counterbalanced by a few of these strategically placed beauties.

**Peter Olin:** Pete's Atwater Kent Model 50 is a unique battery set. It was described by renown AK historian Ralph Williams in Volume 3 of *The A.W.A. Review*. Ralph noted that the basic signal circuitry of AK radios remained fundamentally the same from the Model 10 (1923) through the model 70 (1932)... except for the Model 50. This set provided three passive, coupled, tuning resonators to select the signal of interest before it passed to detector level in a multi-stage, broad-band amplifier unit. It was based on the concept that a better receiver could be built if it could select the desired

incoming frequency from the spectrum of other signals and noise before any amplification was permitted.

The radio did not sell well. As Ralph Williams notes: "From the small number of Model 50 receivers that have survived, the author concludes that AK saw no business value including the set in his line of alternating-current receivers."

Thanks Pete for bringing such a seldom-seen and interesting set to the meeting.

**Dr. Alex Magoun:** Blue LEDs, because of their high photon energies and relatively low eye sensitivity, have always been difficult to manufacture. The ones available today consist of a GaN (gallium nitride) and SiC (silicon carbide) construction. The first high-brightness blue LED was demonstrated by Shuji Nakamura of the Nichia Corporation, but some of the original work has remained just a footnote in history.

Thanks to Dr. Magoun, the club was able to see original papers and artifacts from the work of Herbert Maruska who originally developed the first GaN blue LEDs. In the late 1960s, RCA was still one of the premier manufacturers of color televisions, which used standard cathode ray tubes. The central research laboratory in Princeton, NJ, was interested in developing a flat television that could be hung on the wall like a painting. Red LEDs were already available and green ones had just entered the scene. All that was needed was a bright, blue LED. In May 1968, a young man in the group, Herbert Maruska, was approached and challenged to find a method for growing single crystal films of GaN which was felt would yield blue LEDs. The rest of the story can be found on the web in "A Brief History of GaN Blue Light-Emitting Diodes" by Herbert Paul Maruska.

Dr. Magoun's artifacts were indeed historic, including an actual, working test device that Dr. Magoun used to light one of Maruska's original LEDs.

**Aaron Hunter:** Advertising banners make great display pieces, even if they're not directly radio-related. Aaron exhibited one from Philco extolling its room air conditioner line.

**Richard Hurff:** In 1924, Federal Radio offered radio "panels" that could be installed in Victor phonograph consoles.

Richard's example is a Model 135 which was specifically designed for all Victor upright phonographs. The cabinet was built by Richard's brother as a reproduction of a typical radio cabinet.

**Mike Christiansen:** As a change of pace, Mike brought in a box of the charred remains of a lightning strike on his house. Among the many items that were transformed into carbon, the lightning left an interesting "ladder" design on his amateur radio antenna feed line.

**Bill Conte:** Bill showed us a nicely restored Transoceanic 600 using a replacement battery pack that is being offered by web-based antique restoration services. He also displayed a blue-gray 45-player offered on e-bay that received no other bids. Bill rebuilt the amplifier and noted that our "45" expert, Phil Vourtsis, said that this color was the most unusual of all colors in the line.

**John Tyminiski:** John displayed a fully restored, very ornate "Fashionette" model television. I noticed on a internet search that RCA Whirlpool also offered a 600 BTU "Fashionette" air conditioner. Whirlpool acquired RCA's air conditioner and cooking range lines including ownership of RCA's Estate brand name. "Fashionette" could apply to a full line of products including this television.

John also demonstrated his 1951, table-top Aristocrat juke box. John told us that significant work went into restoring this item because of numerous adjustments, pot metal parts and stripped gears. A drawback of this juke box was that records were not selectable.

**Marty Friedman:** "Looking Backward: 2000-1887" by Edward Bellamy was the third largest bestseller of its time, after "Uncle Tom's Cabin" and "Ben-Hur." But inside, probably as a homemade bookmark, Marty found a newspaper listing from 11/31/35 for all the radio programs for that morning. Reading these listings can give one a little insight into the celebrities and interests of the time.

Marty also showed one of those usual "throwaways" that doesn't quite meet its hype. The fact that a radio has two speakers doesn't necessarily raise it to the level of a "stereo/hi-fi, super-deluxe" model. Indeed, the radio does not broadcast in stereo. The "Starlight" brand ap-

pears to derive from a Hong Kong distributor. But all-in-all, the radio is sleek looking and does have a SW band.

**Dave Snellman:** The Simpson line of multimeters is still in production today and even older models in the "260" style are sought after for their ruggedness and reliability. At the plant that I used to work, they were the preferred instrument for measuring contact resistance over their digital equivalents. The history of these meters make them quite collectable, and Dave showed us some prime examples.



**Richard Lee - Notice the useless "shoelace" type ribbon at the right end of the Radio Master.**



Ray Chase



Dr. Michael Littman



Bob Bennett



Peter Olin

Note the passive tuning resonators of this unique AK 50.



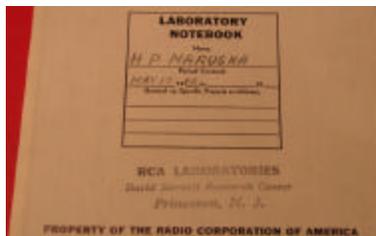
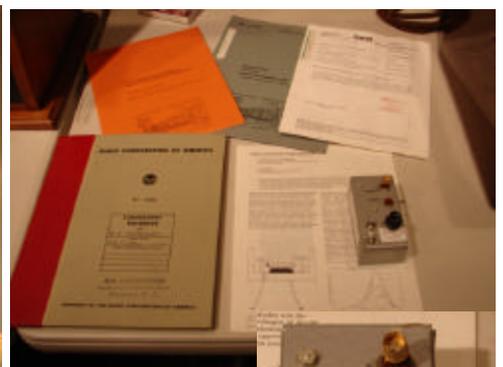
Aaron Hunter

(Photos continued on page 5.)



Dr. Alex Magoun

(Note the date of the original H.P. Maruska laboratory notebook to the right.)





Richard Hurff



Mike Christiansen



Dave Snellman



Bill Conte



John Tyminski



Marty Friedman



What do you do when you see a nice old radio sitting comfortably on a chair waiting its turn to be displayed? You auction it of course! (When you run out of people, you need some sort of filler.)



# A NEW TRICK FOR AN OLD DOG

Edited by  
Marv Beferman

Part of the search for new energy sources includes research associated with energy harvesting. Energy harvesting is the art of extracting useful power from energy sources normally deemed too weak, too dilute or too impractical to be usable. A recent article in "Electronic Design" (Vol. 57, No. 15) by Louis Vlemincq dealt with circuitry that can convert voltages in the 1 to 30 kV range into "normal" electronic voltages at power levels from milliwatts to watts. What I found interesting about the concept was that it relied on, in part, on an old device familiar to the wireless crowd.

The author notes that the conversion of such high voltages presents some interesting design challenges regarding the choice of circuit architecture and the active element, and the method to get the circuit started. It's obvious that none of the traditional solutions can be adapted here. Transistors don't go much higher than 2kV, tubes require a source of filament heating and multilevel thyristor systems are suitable only for big industrial applications.

The active element that the author selected for his design is a very old classic: a spark gap. How can this icon of 19th century technology be put to good use in a modern circuit? Let's examine the facts about spark gaps:

1. Their voltage can be readily modified by changing the spacing of the electrodes.
2. They require no standby power, are self-triggering (when the breakdown voltage is exceeded), and self-extinguishing (when the current falls below the holding current).
3. They have good efficiency - the off-state current is negligible, and the on-state voltage could be anywhere between 100 and 500 volts. This may look large, but with a supply voltage 20 or 40 times larger, this is negligible.
4. They are robust (no electrostatic-discharge precautions required.)
5. They are inexpensive.

The properties of the spark gap make it an ideal candidate for the relaxation oscillator shown in Figure 1. With a 1 kohm load, a prototype of this circuit delivered 306 mW from an input power of 480 mW. The high voltage source is symbolized by a current generator. This approximates most practical high voltage generators, which have a large internal resistance. Let's see how the circuit works.

The role of R1 is to isolate the oscillator from the external world. It minimizes the transmission of interference (the pulsing part of the converter is a powerful interference generator) and avoids the generation of high peak currents in the cabling that may arise if the power source is capacitive. The input current charges C1 until the spark-gap reaches its breakdown voltage and discharges it into the primary of the high voltage transformer. The resulting pulse is transferred

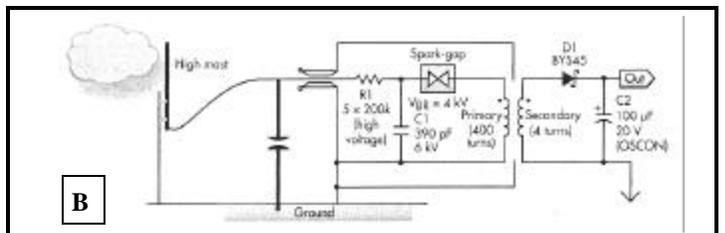
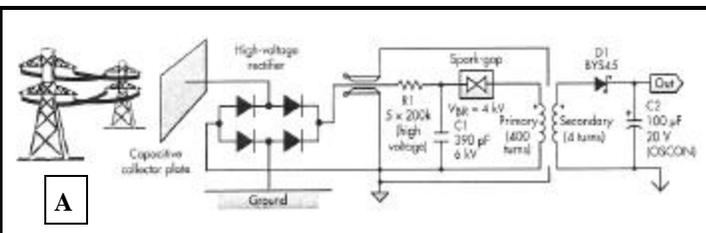
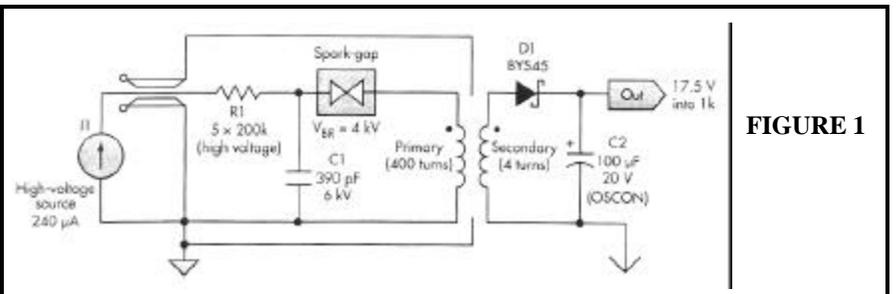
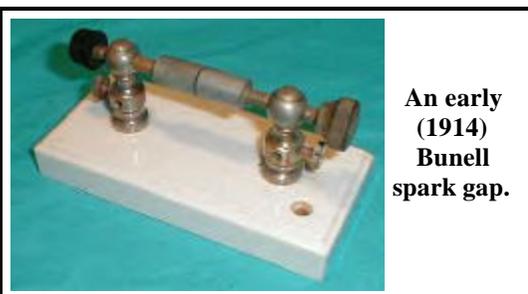
to the secondary, and then to storage capacitor C2 via a Schottky diode.

An additional element, the leakage inductance of the transformer, has a very important role. This inductance spreads the current pulse in time, and reduces its peak value to levels acceptable to the diode and the capacitor. Even with this inductance, the peak currents are rather hefty for such a low power circuit, typically between 10 and 100 amps. This is why such a large diode is used, together with an organic semiconductor (OSCON) capacitor. The slightest ohmic losses have a dramatic impact on efficiency.

To maximize power and efficiency, the output must be adapted, i.e., the loaded voltage must be half of the open-circuit voltage. In fact, it should be a little less, to account for losses, imperfect coupling, etc. In this circuit, the transformer ratio is 1:100 and the spark gap voltage is adjusted to 4 kV, yielding a theoretical 20-volt output. The actual optimum is reached at 17.5 volts.

The spark gap used in this circuit cannot conform to the stereotype of two pointed tips. Ideally, the electrodes need to be rather massive, smooth, and slightly convex. For continuous operation, its material should be hard and heat-resistant enough to resist erosion, such as tungsten.

The author notes that possible power sources include primarily piezoelectric or pyroelectric elements, but there are other possibilities. Figure "A" represents a "power thief" where an antenna collects the stray electrostatic field from a high voltage power line and feeds a high voltage rectifier. In theory, it should also be possible to exploit the atmospheric gradient (Figure "B").



## MY DAYS AT SARNOFF

By  
John Tyminski

When I heard that the David Sarnoff Library was closing, I decided to see if I could scan some of the RCA schematics. I offered my services as a volunteer, thinking I would just scan what I might need in the future. When I discussed this with library director Dr. Alex Magoun, he suggested that if I found something in a book or folder I wanted, he would prefer that I would scan the entire reference. I won't lie to you...I immediately had second thoughts. I was planning to be at the library for a day at most and was not happy. But I started scanning anyhow.

As I started to look at the material, it became obvious of what I needed to scan... just about everything!

I started scanning the RCA Victor Service Data. The data books are condensed or revised RCA service notes; the series started in 1946. The first two books are reprinted: Book 1 covers 1923 to 1937, and book 2 covers 1938 to 1942. The entire set covers 1923-1952. 1952 was the last year they printed the service data in book form; from then on, it was only available in a loose-leaf format.

The other set of books I took on was the RCA Victor Service Notes. These contain the original notes for each item in RCA's Radiola series, with pages of detailed instructions on how to service them. RCA printed the first book in 1929, which covers 1923 to 1928. Then, a Service Notes book was printed each following year. In 1940 it looks like RCA Victor ended the series.

For the past couple of months, I practically lived at the library, scanning and sorting books and folders. The more I sorted through, the more I found I needed to scan.

I started this project with the hope of getting some service notes that I might need. In the end, I believe I helped preserve some historic information that is critical to our hobby. I'm so thankful I had the chance to do this.

The David Sarnoff Library was an interesting place to work. The atmosphere was great; "Dr. Alex" was great. He made what would have been a dull, discouraging task, a lot of fun. I will miss the days I spent there.

## SONY'S HITS AND MISSES

On June 25th, CNN Money.com ran an article on Sony's highlights and low points over the last 50 years. Realizing that a lot of collectors in the club are also ardent technology buffs, if not outright consumers, I asked *Broadcaster* readers if they could identify certain Sony products as either "hits" or "misses." I also asked if any members still had any in working condition and a good story to go with them. Although the response was limited (actually zero, but why be negative?), I felt I still owe you the answers as promised.



**HIT: Trinitron** Groundbreaking color television technology ultimately propelled Sony to the forefront of the consumer electronics industry in the 1960s. Since color television was still a new and largely imperfect phenomenon at the time, and recognizing room for leadership, Sony moved in.

After a few failed experiments, Sony engineers developed a television set that efficiently generated an image of unparalleled brightness and precision, differentiating it from the existing field of dark, blurry, and costly models. Released in 1968, Sony's "Trinitron" earned the company a reputation for quality and allowed it to reign supreme in color televisions and computer monitors through the 1990s.



**HIT: TR-55** Though U.S.-based Regency Electronics produced the original transistor radio, Sony was the first to recognize the gadget's consumer appeal and to successfully market a model built entirely from its own components.

Sony later refined its original TR-55, which debuted in 1955, into the pocket-sized TR-63 and TR-610 models of 1968. These quickly turned into global sensations and helped Sony gain a crucial foothold in the European and American markets. Some attributed Sony's sale of 500,000 TR-63 units to clever marketing: Sony salesmen tried to convince customers that the TR-63 was truly pocket-sized by wearing shirts with larger-than-average pockets.



**MISS: Betamax** The battle between Betamax and VHS to become the predominant video-recording format proved a heated rivalry, and culminated in one of Sony's greatest embarrassments. While most considered Sony's 1975 Betamax technology superior to VHS, Sony lost to its competitor because of strategic miscalculations.

Sony was reluctant to license Betamax technology to other electronics equipment manufacturers and failed to realize that consumers and film producers would value VHS's longer recording capacity. More companies produced VHS players than Betamax players, and consumers flocked to the less expensive VHS systems. In 1968, Sony acknowledged defeat when it began manufacturing VHS VCRs.



## CONNECTIONS

Free exposure for buyers and sellers! Unless requested otherwise, each ad will run for two months in both the *Jersey Broadcaster* and the *Delaware Valley Oscillator*. All buying and selling transactions are the responsibility of the parties involved.

Are you aware that NJARC now has a resistor program which includes many commonly needed replacements? Contact Walt Heskes at any club meeting for details.

## FOR SALE

Check out NJARC's capacitor program for those most commonly needed replacements. Contact John Ruccolo at any club meeting or call him at home (609)-426-4568 to find out what's available. All proceeds go to the club.

**WWII AN/PRT-1 jammer. Basically a spark transmitter with a timer made in the last months of WWII, complete with a copy of the manual. Asking \$150 + shipping, or pickup. Contact Gary Berg, 24 Pat Road, Newburgh, NY 12550. bergg@hvc.rr.com**

## WANTED

**Rare or unusual wire recorders such as Soviet Type MH-61, WWII Signal Corps RD-15/ANQ-1, GE model 20N. Also wanted is an un-modified BC-652A with dynamotor. Contact Gary Berg, 24 Pat Road, Newburgh, NY 12550 bergg@hvc.rr.com**

**9002 and 9003 tubes for a BC-639 receiver. Rob Flory (robandpj@earthlink.net).**

**Good 17PKP4 crt. John Tyminski tubeularelectronics@gmail.com**

**WANTED:** Radio repairmen and restorers. Run out of your own radios to work on? The club and Infoage have received a quantity of radio donations, some of which would look good in our museum. Others will be set aside for traveling displays, trading or resale as fundraisers. Many of these radios only need a good cleaning and polishing and a minor electrical checkout. Take one or two home with you and practice your skills...even if you just want to clean them up. Contact Ray Chase at our next meeting, at 908-757-9741 or at enrpnr@erols.com.

**MISS: Mavica** In 1981, Sony announced that it had developed the first electronic camera, a predecessor of today's digital camera. However, it didn't reach U.S. shelves until 1989 and found few takers. Its lackluster photo quality didn't justify the initial \$650 price tag. While the Mavica's photos could be viewed on a television screen, along with user-recorded sound bites, this novel feature required the purchase of a \$230 adapter.

The Mavica was still on the market in 1999 when I purchased a much improved model that recorded pictures on a 3.5" floppy disc. It reduced the production time and cost of the *Broadcaster* significantly since I no longer needed to purchase film and have photographs developed and scanned. I also liked the idea of transferring photos to people with limited computer savvy via a floppy disc; it saved many explanations.

The camera still works great and the photo quality is good enough for the internet. As far as I was concerned, my purchase was a hit.



**HIT: Walkman** Long before "iPod" became synonymous with music-on-the-go, Sony's Walkman revolutionized the way people listen to music. With the first U.S. shipment in June 1980, this \$200 music player flew off the shelves. In 1984, Sony introduced the Discman, the first portable compact disc player, helping to make CDs the format of choice.

Sony's position at the top of handheld music kept it from exploring digital music ahead of its competitors, letting Apple overtake Sony as the portable music standard bearer with the release of the iPod.



**MISS: AIBO** Sony introduced its first robotic dog in 1999, hoping that the small pup would enchant consumers excited to interact with artificial intelligence. For \$2500, owners could teach or program their electronic dogs to perform a variety of tricks, like fetching a ball or competing in robotic soccer at the annual international RoboCup. But interest fizzled as more affordable robots entered the market, and production facilities were closed in 2006.

**Additional hits and misses:** Sony scored a resounding victory over HD DVDs with its **Blu-ray** format, especially when Target, Blockbuster, Warner Brothers, Netflix and Wal-Mart decided to sell the format. The discs stored more data and came equipped with more anti-piracy protections than Toshiba's HD DVD. The current incarnation of the **Sony Reader** remains a miss, since it lacks the wireless capabilities of the Kindle, making it impossible for users to download books and newspapers on the go. However, a wireless version is in the works. Sony's **PlayStation 2** was an unqualified hit, but the PS3 is being sold at a loss based on exorbitant manufacturing costs. Gamers found the new system difficult to use and complained about its games and high price.