



PCARA Update



Volume 12, Issue 2 Peekskill / Cortlandt Amateur Radio Association Inc. February 2011

Event horizon

The annual **PCARA Bring and Buy Auction** held on on Sunday January 2, 2011 at Hudson Valley Hospital Center was somewhat lightly attended. Thanks to those who brought along their treasures for sale. The really good news is that the club treasury picked up a few dollars due to generous members who donated their proceeds from the auction.



Bob, N2CBH tries to catch auctioneer NM9J's attention at the PCARA annual Bring and Buy Auction in January 2011.

Things this time of year are pretty quiet. The only smoke on the horizon is the Orange County Amateur Radio Club Spring Hamfest on March 26, 2011. Additional information can be found at the Orange County ARC website (<http://www.ocarc-ny.org>). We'll consider taking a table at the hamfest if enough interest is expressed by the membership. And assuming we go ahead with a club table, if you have anything you want to bring along and try and sell, you will be most welcome.

Remember that our next meeting is at 3:00 pm on February 6, 2011 at Hudson Valley Hospital Center. I look forward to seeing each of you there.

- 73 de Greg, KB2CQE

PCARA Officers

President:

Greg Appleyard, KB2CQE, kb2cqe at arrl.net

Vice President:

Joe Calabrese, WA2MCR; wa2mcr at arrl.net

Net night

Peekskill/Cortlandt Amateur Radio Association holds a weekly net on the 146.67 MHz W2NYW repeater on Thursdays at 8:00 p.m. Join net control Karl, N2KZ for neighborly news and technical topics.

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Winter of discontent



View from Ray W2CH and Marylyn KC2NKU's White Plains apartment, after January's snow. Diamond X50A dual band antenna (right) has been remounted higher on the balcony.

Adventures in DXing

- N2KZ

Hear It Now!

An Apple iPod can do many things including accessing the Internet. The first site I tried was the home of the PCARA on-line repeater feed: RadioReference.com. There was a minor problem. Listening to Radio Reference.com feeds requires Adobe Flash Player which is not compatible with Apple products. What a shame!

Hope was not lost. A couple of days later, I was searching through the apps that were included with the iPod and found my breakthrough. Behold! A little icon that looks like a handheld scanner! One touch and I had opened a nifty app called '5-0 Radio.' It was already loaded onto the iPod ready to go. (If you don't already have it, '5-0 Radio Lite' is a free app available at the iTunes store. It's compatible with iPods, iPhones and iPads.)

A couple of touches later, it became obvious that '5-0 Radio' was indeed connected to Radio Reference's feeds. All I needed to do was go to USA, then New York, then Westchester and the PCARA feed was waiting for my use. A quick test with my HT sent my voice through the iPod (after waiting a few seconds to catch up with digital processing delays.) Wow! Now I can hear the PCARA repeater anywhere in the world!

'5-0 Radio' is the creation of Dr. James Leung who is quite an app wizard. A visit to his web site, <http://smartestapple.com/>, reveals an expanded version of '5-0 Radio' that adds many more scanner feeds along with more than 35,000 radio stations from around the world. All this for just \$1.99! Dr. Leung has also authored an app which provides a compendium of hundreds of news sources called 'News Feed' and 'Dog



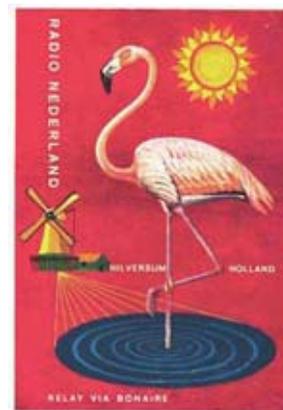
Screenshot of '5-0 Radio' application on iPod Touch.

Whistle Elite,' a training app for your mutt complete with ultrasonic attention sounds.

If you have a Droid or Blackberry, fear not! There are lots of similar apps available that will also deliver the PCARA scanner feed and thousands more to your device. Check out the comprehensive list at: http://wiki.radioreference.com/index.php/Live_Audio_Mobile_Device_Support. Now you have no excuse not to listen to PCARA's Thursday night Old Goats Net! With check-ins from all over the metropolitan area, the OGN is a great place to hear all the latest news and schmooze from our amateur radio community!

More Goodbyes

Classic foreign shortwave broadcasters from our past are slowly closing down their operations in favor of the Internet. Radio Netherlands Worldwide has decided to close its powerful Caribbean relay station on Bonaire in October 2012. The station has been subsisting on leasing their facility to other worldwide broadcasters to underwrite the enormous expense needed for this operation. Leased hours have been dwindling down and it is no longer commercially sound to continue.



Radio Netherlands Worldwide short wave transmitting site on the island of Bonaire, part of the recently-dissolved Netherlands Antilles.

RNW Bonaire was the second large shortwave entity on this island. Religious broadcaster Trans World Radio also operated a powerful shortwave station here along with a half-megawatt transmitter on 800 kHz heard daily across North America beginning nightly at dusk decades ago. TWR 800 proved to be

quite a competitor for Windsor, Ontario's mighty CKLW trying to hold the frequency with only 50 kW! Trans World Radio is now off shortwave entirely and their 800 kHz transmitter is now directional east at only 50 kilowatts operating only a few hours each day.



BBC World Service has also been making dramatic cuts in service and personnel. Nearly all BBC short-wave broadcasts will cease by March 2014. English service to the Caribbean and BBC's monster medium wave transmitter broadcasting to Europe on 648 kHz will go off the air this March. I remember hearing BBC



BBC World Service transmits to Western Europe from Orfordness, England using this five tower array on 648 kHz.

648 during the day with a tiny Walkman radio in Paris! It was the only station I could pick up in English.

A group of British and Dutch broadcasters are negotiating with the BBC to use the current Orfordness

medium wave transmitter site and equipment as a base of a new privately-owned station using a working title of UK International. The new station will assume the 648 kHz frequency with a top 40 format targeted at tourists. How long will it be before radio listening morphs into an Internet-only medium?

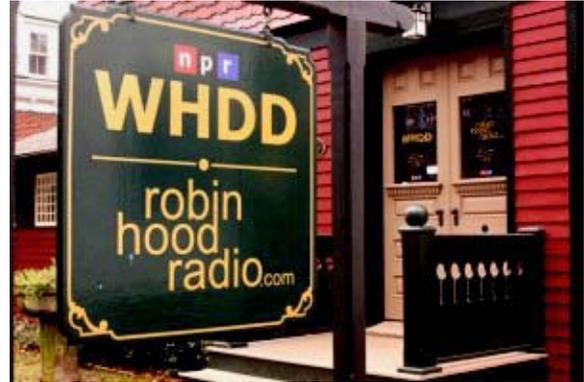
An enormous amount of quality programming waits for you at <http://www.bbc.co.uk/radio/>. You can hear numerous live feeds of BBC local and nationwide services as well as hundreds of pre-recorded programmes* on-demand using the BBC's iPlayer app. Many BBC shows are also available as podcasts. BBC World Service content is also available over many North American public radio stations and on XM and Sirius satellite radio.

* [Karl is using British spelling here. -Ed.]

Robin Hood Radio

During a recent skiing trip, I chanced upon WHDD-AM 1020 known as 'Robin Hood Radio' and touted as 'the smallest NPR radio station in the nation.' With just 2500 watts, this little station covers a lot of ground from its single tower transmitter site

along Route 22 just north of Millerton, NY. You'll hear WHDD as far north as Albany and the southern tip of Vermont down into our area (providing you can get



WHDD serving Sharon, CT.

away from New York's WINS 1010's IBOC signals!) It is a breath of fresh air. Imagine a local radio station doing local programming (and a lot of it) without traditional commercials. It is a wonder and a pleasure to hear.

WHDD can also be heard on 91.9 FM from Sharon, Connecticut and in The Berkshires on 91.7 FM in Sheffield, Massachusetts. The easiest way to tune in is via the Internet at <http://robinhoodradio.com/>. It seems the station changed format and callsign in November 2006. Previously, it was the former WKZE in Sharon, Connecticut that aired an eclectic mix of pop, jazz and classical music. Their format has not changed that much and continues to be quite interesting, to say the least! Robin Hood Radio bills itself as 'slightly off...but very good.' Of this you can be sure. It's certainly worth a visit and highly recommended.

Simple Contesting

Many amateurs begin their on-air careers on 2 meter FM. It's a great place to start, learn about the hobby and introduce yourself to great ham radio clubs. Your first piece of equipment will often be a hand-held HT or a simple FM mobile rig. If you are anxious to do more and don't have more equipment yet, or simply want to get back to basics for a new thrill, use equipment that everyone has — on bands everyone can reach. Try an FM simplex contest!

It's a lot more challenging than it may seem and it requires operational skill and a lot of persistence! This is a world devoid of repeaters and easy contacts. You may be using low power and simple antennas. Your participation may make a big difference for even the big boys using kilowatt power and large directional antenna arrays. Everyone needs contacts during a contest and you are part of the party!

Recent VHF contests have taught me a lot about operational strategy and making contacts. I overheard

a couple of hams musing about how they spent hours to only make 10 or 12 contacts! Every point counts! I once participated in a VHF contest from a bluff north of Highland Falls operating on 6 meters using only a short mag-mount whip and 10 watts. Weak as I may have been, I managed to touch base with Rhode Island and Maine. My ace-in-the-hole? I picked a site with tremendous height. It's time to log some new grid squares! Success? It can be done!



N2KZ/Mobile chose a high spot for a recent VHF contest.

Can I offer you contacts with Maine or Pennsylvania? Try these FM simplex contests: The Maine sprint on February 13th from 2 to 6 pm (see: <http://www.qsl.net/ws1sm/contest.html>) and the Pennsylvania sprint on February 26th from 7 to 11 pm (see <http://harcnet.org/contest.htm>.) While you are at it, another sprint also runs on the afternoon of February 13th for nationwide participation hosted by the Milwaukee Radio Amateur's Club. Take a look at http://www.w9rh.org/fm_simplex_contest.htm. Find a good high site and a directional antenna or two and have a lot of fun! See you there!

Reminder !

For the latest amateur radio news, check the PCARA Facebook page regularly and listen to the PCARA Old Goats Net on Thursday nights at 8 pm. More and more hams are joining us every week. Our net often runs well after 9 pm, so drop by and say 'hi' A good time is guaranteed for all!



- 73 and dit dit from N2KZ.

[Every time the BBC cuts back on shortwave, there is a sudden demonstration of how useful SW can be. Note the current unrest in Egypt and difficulty communicating with UK citizens while Internet access is cut! - Ed.]

Memories of mercury

A couple of recent news headlines caught my eye and sent me reminiscing back through the decades...

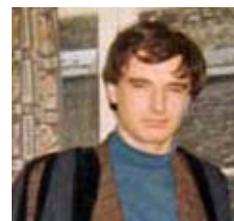
Nov 30, 2010. "Father of British computing Sir Maurice Wilkes dies"

The father of British computing, Sir Maurice Wilkes, has died at the age of 97. Sir Maurice was the designer and creator of EDSAC, a computer that ran its first program in May 1949.

Jan 13, 2011. "Pioneering EDSAC computer to be built at Bletchley Park"

The first recognisably modern computer is to be rebuilt at the UK's former code-cracking center Bletchley Park.

Let me explain... In the late 1960s, I was an impoverished undergrad student in the UK, studying Chemistry and Physics. I was also a member of the University Wireless Society, where fellow members were always on the lookout for surplus equipment that could be rebuilt into useful transmitters and receivers. Much of our surplus equipment dated back to World War II — my own amateur radio station included an ex-Royal Air Force R1155 and an ex-Royal Navy B28 receiver. We heard that the UK Atomic Energy Authority would occasionally dispose of "electronic scrap", which was more up-to-date than our old war surplus, and was available to "official" organizations.



A little history at this point. The UK Atomic Energy Research Authority had been established in 1946 at Harwell, near Oxford and this organization built the first atomic reactor in W. Europe. Founder of the AERE was Sir John Cockroft, originator of the Cockroft-Walton



voltage multiplier circuit, famous for generating high voltages and splitting atoms in Cambridge. The AERE was absorbed into the UK Atomic Energy Authority in 1954, with work continuing at Harwell into the development of nuclear reactors for civil power generation.

In order for the CU Wireless Society to make a trip to UKAEA Harwell and collect our electronic scrap, we had to obtain approval from an official of the University. Our best bet was Professor Maurice Wilkes, license holder for the Wireless Society's call sign G6UW. (In U.S. terms he was the Society's trustee.) With the necessary paperwork ready for signing, I



Professor Maurice V. Wilkes

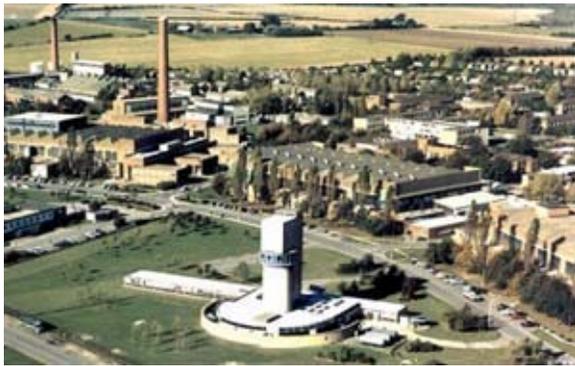
found my way to the Cambridge Mathematical Laboratory and Professor Wilkes' office. At the time — 1969 — the laboratory was just moving from its original location into a brand new building alongside its historic home, near the old Cavendish Laboratory.

Professor Wilkes was reasonably happy to sign our form and officially approve the Wireless Society's trip to Harwell. He also did a little

reminiscing about his own radio experiences, including (if I remember rightly) radio interference to and from his pioneering computer equipment from two decades earlier.

The visit to Harwell took place, with a group of CUWS members making the 90 mile journey by Land Rover to the center of civilian atomic research in the UK. We were shown to the electronic store room by a senior guide who remembered "Winnie" (Winston Churchill) visiting the site during its early days.

We had our pick of a wide selection of unwanted electronic items, and the Wireless Society came away with a variety of electronic scrap. All we had to do was weigh the vehicle on the way out to see how much had



UK Atomic Energy site at Harwell.

been collected. It was all relatively modern, with miniature tubes and semiconductors. Some items were used in projects at the radio club's shack "Woop Woop", including some high quality stabilized power supplies. A few items later found their way into my own station, including a couple of open frame aluminum chassis, which were used in VHF and SSB construction projects.

Early days

Let's get back to Professor Wilkes — and his pioneering work. Maurice Wilkes was born in 1913 in Dudley, in the British West Midlands. As a youngster he built crystal sets and read *Wireless World*. He went up to St John's College at the University of Cambridge to read Mathematics from 1931-1934, but was still interested in electronics. He had already passed his

code test and obtained his UK radio amateur license **G5VF**, becoming a member of the Cambridge University Wireless Society. During vacation periods, he constructed his own short-wave equipment and made contacts around the world.

Maurice Wilkes completed his Mathematics degree and stayed on at Cambridge, becoming a research student at the Cavendish Laboratory in October 1935.

His PhD studies were concerned with propagation of long radio waves through the ionosphere, leading to an interest in tidal motion of the atmosphere. Wilkes also became interested in *mechanical* calculating and computing machinery that was just becoming available and by 1937 was an early user of the University's new Mathematical Laboratory. In 1937, he became University Demonstrator at the Laboratory.



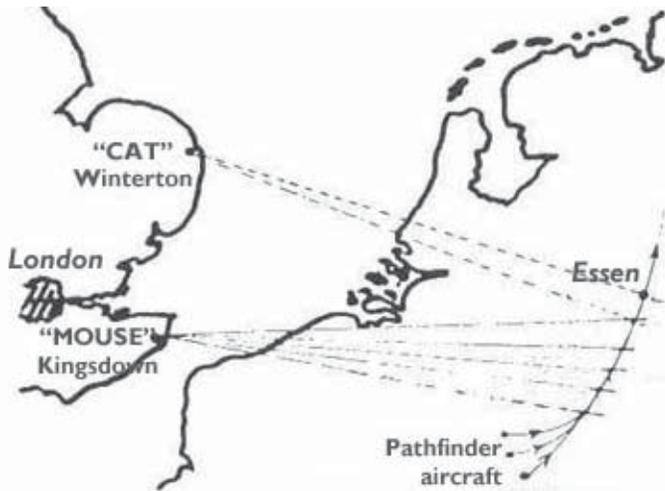
Mathematical Laboratory courtyard



Meccano Differential Analyser, 1938. Maurice Wilkes standing at right.

With the outbreak of World War II, the Mathematical Lab was taken over by the UK Government to concentrate on the war effort. Maurice Wilkes had been sent to the Air Defence Experimental Establishment at Christchurch on the South Coast. He worked

with John Cockcroft (remember him?) and Robert Watson-Watt on the development of radar, and later worked on the Oboe bomb aiming system at TRE, Malvern. Oboe employed pulsed radio transmissions on 200 MHz from two widely spaced radio stations in the UK named “cat” and “mouse”, which were picked up by a transponder in the aircraft over enemy territory, then retransmitted back to the UK to allow the aircraft’s range to be accurately determined.



Oboe blind bomb aiming system.

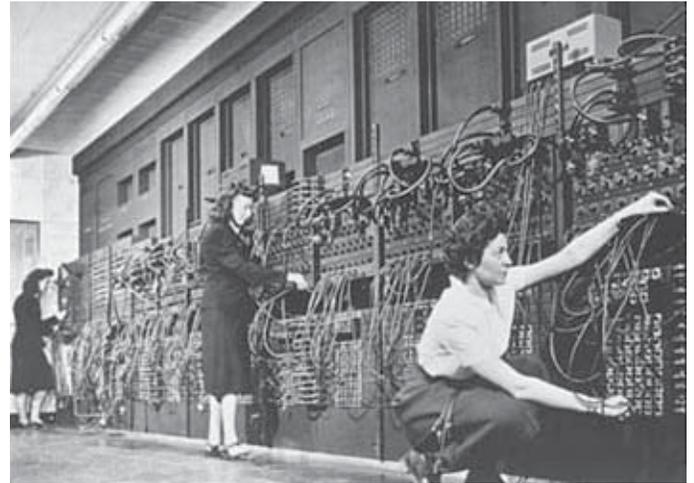
Transatlantic trip

In 1945, at the end of World War II the Mathematical Laboratory in Cambridge was returned to civilian use, with Maurice Wilkes as acting director. Wilkes was well aware of wartime developments in electronics and had developed a network of useful contacts. In 1946, he was invited to a summer school at the Moore School of Electrical Engineering at the University of Pennsylvania where Presper Eckert and John Mauchly had just completed the “ENIAC” — the Electronic Numerical Integrator and Computer.

ENIAC was a giant electronic calculating machine, designed to produce firing tables for the Ballistics Research Laboratory of the U.S. Army. It contained 18,000 vacuum tubes and 1,500 relays, consuming 150 kW of power. Preparing ENIAC to solve a new mathematical problem required setting up hundreds of pluggable connections and electrical switches.

Maurice Wilkes had read John von Neumann’s “First Draft of a Report on the EDVAC”, which described a follow-up machine to Eckert and Mauchly’s ENIAC. In the EDVAC Report, John Neumann described how fast, internal computer memory would store the program as well as the data in electronic form. But it would be 1952 before EDVAC became a fully operational reality, because of problems with the storage technology, personnel and litigation.

Maurice Wilkes could see that von Neumann’s “stored program” approach represented the future of



Programming the ENIAC involved hundreds of pluggable connections and electrical switches.

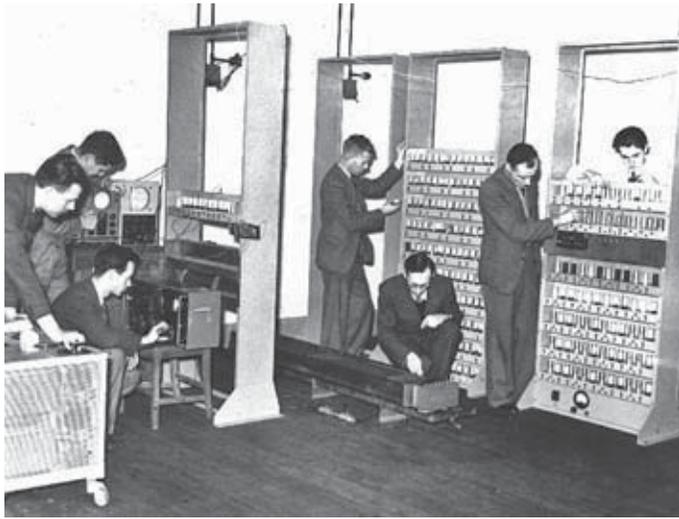
electronic computing, and on his way back from the USA to Cambridge aboard the liner *Queen Mary* he began sketching out the design for a new computer he named “EDSAC” — the Electronic Delay Storage Automatic Calculator. The name was an acknowledgement of the EDVAC concept. Wilkes decided to use mercury delay lines for the internal memory store, as originally proposed by Presper Eckert. This decision was partly based on Wilkes’ wartime knowledge of radar, where the UK Admiralty had been using mercury delay lines to store electronic pulses and improve the clarity of radar signal displays.

Mercury man

Back in Cambridge, work on the EDSAC began in October 1946, with Maurice Wilkes calling on his network of contacts for assistance with new techniques and hard-to-find components. The aim was not to prove a theoretical design, but to provide a reliable computing service for other members of the University. Many of the concepts and circuits had to be designed from scratch, with Wilkes himself making the early decisions because there was nobody else to ask. His own design for a half adder required a chassis with 12 vacuum tubes. This early work with digital electronics made him realize that “a circuit engineer coming to digital engineering for the first time had a few things to learn”. Wilkes also disliked 19 inch racks and instead used a longer metal chassis design with a heater transformer on each one.

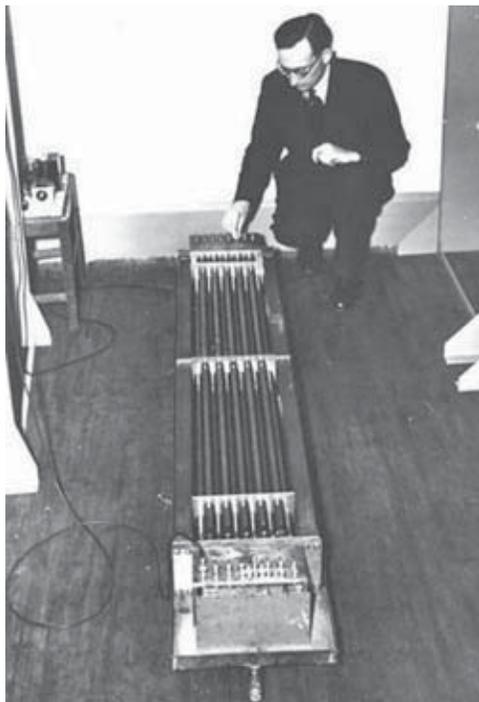
By 1947, Maurice Wilkes was leading a team of ten staff on the design, with student volunteers assisting with the construction. Progress was assisted by a £2,500 grant from the British cake and tea-house company J. Lyons Ltd. (of whom more later...)

The mercury delay lines were at the heart of EDSAC. Maurice Wilkes obtained the design of a “mercury tank” from Tommy Gold, when he had



EDSAC I under construction in 1947. Maurice Wilkes is shown kneeling by one of the delay lines.

worked at the Admiralty. (The phrase ‘mercury tank’ was used instead of ‘tube’ to avoid confusion with vacuum tubes.) As a test, Wilkes built a single tank to Gold’s specifications, then had two batteries of 16 tanks built by the Engineering Department. The mercury was held in a steel tube about 5 feet long, with quartz crystal transducers at each end, operating at 13.5 MHz. The sending quartz crystal fired a narrow beam of ultrasonic waves down to the far end of the column of liquid mercury, where it was received by the corresponding crystal.



Dr. Wilkes adjusts mercury delay lines for the EDSAC. [B/W pictures copyright Computer Laboratory, University of Cambridge. Reproduced by permission.]

How can a mercury delay line be used as a computer store? In the radar application, pulses returned from a target were routed through the delay line, where they would emerge a short time later. These pulses could then be synchronized with reception of the next set

of echoes from the target, reducing ‘noise’ interference from other reflections. In the computer application, pulses modulated onto an ultrasonic carrier wave emerged from the end of the mercury column, where they were amplified, reshaped and fed back into the sending end of the tube. In this way, a number of pulses could be continuously cycled around and around the tube until needed. Total capacity of each tube was 16 words of 35 bits.

The accumulator and multiplier registers in the EDSAC’s arithmetic unit also used mercury tanks. These short tanks for the registers only held one number and were around one inch long.

Wilkes used pentode vacuum tubes for the logic switching. He tried using both the control grid and suppressor grid, but the larger voltage swing needed on the suppressor grid made for an unbalanced circuit. Wilkes’ solution was to use a combination of diode switches driven by a cathode follower, with output fed into an amplifier. The whole machine was AC-coupled, with DC restoring diodes.

There were approximately 3000 vacuum tubes in the EDSAC. The main tube type was the EF54 pentode — a gift from the Ministry of Supply of unused surplus stock.

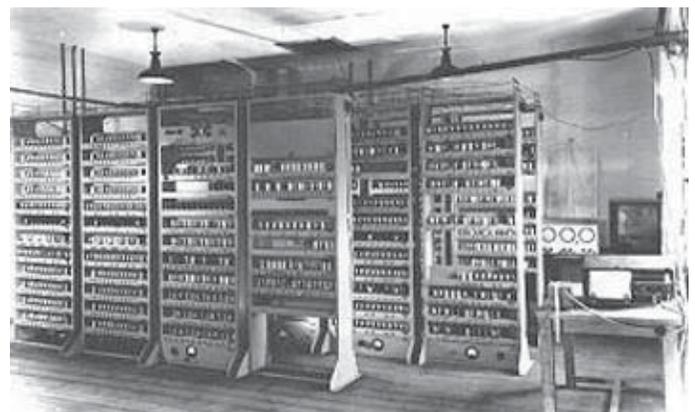
The EDSAC ran its very first program on May 6, 1949, calculating the squares of the numbers from 0-99. It became the first fully operational regular electronic digital stored program computer. (It was beaten to the claim of first ever stored program computer by a small experimental machine at the University of Manchester, England, built as proof of concept for an electrostatic storage system based on the cathode ray tube.)

(Sub) Routine operations

The aim of Maurice Wilkes’ project was to provide



Mullard EF54 as used in EDSAC



Completed EDSAC ran its first program on May 6 1949.

a practical computing service for other University departments, and EDSAC was made available to anyone in the University who could make good use of it. The first customers were research students who wanted to avoid a lot of manual calculation. Soon their supervisors and other University members became aware of the potential.

Programs were entered in assembly language on 5-hole punched paper tape. Wilkes' group kept a library of subroutines on tape for frequently-used procedures. These subroutines could be included with the main program by mechanically combining the program and subroutine tapes and punching a third tape.

"Initial orders" were hard-wired onto a set of unselector switches, then loaded into low memory at startup. The program on paper tape was read into



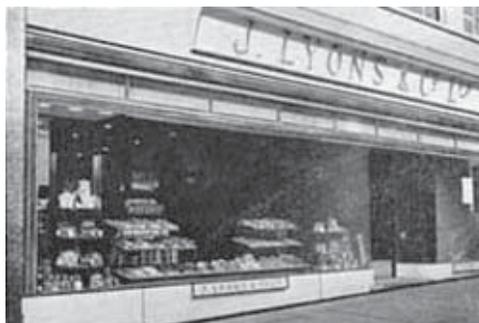
Professor Sir Martin Ryle, G3CY

memory and allowed to run. The results of all the calculations within EDSAC were then produced on a teleprinter.

Increasing use of the EDSAC was being made by Cambridge researchers — including the Nobel prize winner John Kendrew, who calculated the chemical structure of the protein myoglobin from X-Ray crystallography. Another Nobel prize winner was Martin Ryle, **G3CY**, who used EDSAC in its earliest form to pioneer the technique of

"aperture synthesis", using multiple radio telescopes — whose position could be changed — to simulate a much larger telescope and generate radio maps of the sky.

The success of EDSAC did not go unnoticed by catering company J. Lyons, who had been sufficiently impressed to contribute to the early funding. Lyons decided to construct its



One of Lyons' Teashops. J. Lyons & Co. constructed their own version of the EDSAC to calculate production requirements from the daily orders called in by these teashops.

own version of the computer for office calculations. The basic design was similar to EDSAC, with input and output based on card readers and punches. The new machine, named "LEO" (for Lyons Electronic Office) was running test programs in 1951 and was providing a full business data processing service for the famous teashops by 1953.

After EDSAC I

EDSAC continued operating until 1958 and Maurice Wilkes continued his work at the Cambridge Mathematical Laboratory. He and his team built EDSAC II, which became operational early in 1958, incorporating magnetic core storage as well as paper tape, magnetic tape, and the world's first micro-programmed control unit. (With microprogramming, the registers within the Central Processing Unit are controlled by a small, specialized computer program held in high-speed memory.) EDSAC II relied on miniature vacuum tubes and continued running until 1965. I may still have some of the 6060 special quality double-triode vacuum tubes (equivalent to a 12AT7) that were removed after so many hours' use and left for the Wireless Society at Woop-Woop.

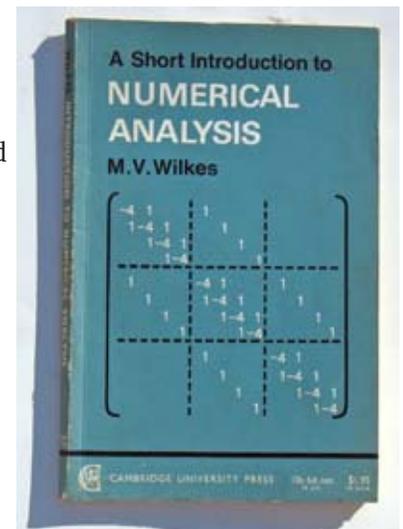


6060 special quality dual triode tube.

Developments continued at the Mathematical Laboratory, with EDSAC II being succeeded in 1964 by Titan, a joint development with Ferranti. Titan was designed for multi-processing, with the design subsequently modified after a visit by Maurice Wilkes to MIT in 1963 for multi-user **time-sharing**. It was based on germanium transistors, with a tunnel diode cache.

After the move to the new building in 1969 (where I popped briefly into the story), the Mathematical Laboratory was renamed the Computer Laboratory in 1970, responsible to the Computer Syndicate.

In 1974 Maurice Wilkes saw early work on digital telephony at Hasler AG in Switzerland, using a ring topology to allocate time on the network and concluded that local computer communication would be more effective if based on similar wider bandwidth technology. His



One of my textbooks was written by Maurice Wilkes

design to connect terminals and computer equipment was known as the “Cambridge Ring” and developed during the late 1970s - early 1980s. This was an early Local Area Network (LAN) based on a ring of twisted pair cables to connect clients and servers — initially at 10 Mbps.

In 1980, Maurice Wilkes retired from the Computer Laboratory and became a consultant to Digital Equipment in Massachusetts. Later he returned to Cambridge and was a consultant for Olivetti and AT&T. He was knighted in the New Year Honours list of 2000.

Mercurial memorial

Following the death of Sir Maurice Wilkes in November 2010, the Computer Conservation Society announced that it would commission a replica of the EDSAC to be built at Bletchley Park, home to the UK’s secret code-breaking activities in World War II. Visitors to the modern-day National Museum of Computing at Bletchley Park will be able to watch as the replica machine is constructed in a 215 square-foot space. The museum also houses a rebuilt Colossus, the world’s first programmable electronic computer.

David Hartley, chairman of CCS said that few parts of the original EDSAC remain, although Cambridge University does have one of Dr Wilkes’ original EDSAC chassis. One aspect of EDSAC that will *not* be recreated is the collection of mercury delay lines, for health and safety reasons. Alternative delay lines without the toxic mercury metal will be substituted.



Maurice Wilkes with a pioneering computer chassis.

Final thoughts

It’s not often that you get the chance to meet a pioneer, and I mostly learned about Maurice Wilkes’ achievements *after* leaving University. (At the time, it

was only the electrical engineers and the radio astronomers in CUWS who got to play with real computers! In Natural Sciences, all we had for number crunching was a slide rule and an ANITA desk calculator.)

For me, a fascinating part of this story is how someone trained in mathematics, with an amateur radio background, developed an interest in radio wave propagation and the need to automate calculations.

Then, by being in the right place at the right time, Maurice Wilkes was able to bring together recently-developed technology and the right people to construct the very first practical stored-program computer. This do-it-yourself approach succeeded in the Mathematical Laboratory for another sixteen years, resulting in a raft of pioneering techniques. It was only in the mid-1960s that commercially produced mainframe computers became a better choice than home-brew!

- G3VNO, NM9J

Sources included: “*Early British Computers*” by Simon Lavington and the Computer Laboratory, University of Cambridge, <http://www.cl.cam.ac.uk>.

WECA General Class

Do you have an Amateur Radio Novice or Technician license? Would you like to upgrade to General Class and enjoy the expanded privileges of world-wide HF band operation? If so, here is your opportunity. Westchester Emergency Communication Association (WECA) is proud to sponsor a General Class License course.

The WECA course covers all topics needed to pass this test. An exam will be given at the conclusion of the course. The course will be held each Tuesday evening beginning on **Tuesday, March 1, 2011** and will run for ten consecutive weeks. Classes will begin at 7pm and conclude at 9pm each Tuesday night. The course will be held at The American Red Cross, 106 North Broadway (Route 22), White Plains, NY 10603. There is no charge for attending the course.

You must purchase the ARRL text book entitled “General Class License Manual” Revised 6th Edition. This book is available from the ARRL, Amazon and other sources.

The license examination test will be given on the tenth night, **Tuesday, May 3rd** beginning at 7pm. There is a \$15 fee to take the FCC exam that will be collected at the start of the exam.

If you or someone you know would like to earn your FCC Amateur Radio General license, contact Tom Raffaelli, WB2NHC to reserve a spot in the class. The cut-off date for signing up for this course is February 25th, 2011. Please contact Tom by email: wb2nhc@weca.org.

Peekskill / Cortlandt Amateur Radio Association

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Newsletter contributions are always very welcome!

Archive: <http://home.computer.net/~pcara/newslett.htm>

PCARA Information

PCARA is a **Non-Profit Community Service**

Organization. PCARA meetings take place the first Sunday of each month* at 3:00 p.m. in Dining Room B of the Hudson Valley Hospital Center, Route 202, Cortlandt Manor, NY 10567. Drive round behind the main hospital building and enter from the rear (look for the oxygen tanks). Talk-in is available on the 146.67 repeater. *Apart from holidays.

PCARA Repeaters

W2NYW: 146.67 MHz -0.6, PL 156.7Hz

KB2CQE: 449.925MHz -5.0, PL 179.9Hz

(IRLP node: **4214**)

N2CBH: 448.725MHz -5.0, PL 107.2Hz

PCARA Calendar

Sun Feb 6, 2011: PCARA monthly meeting, Hudson Valley Hospital Center, 3:00 p.m.

Hamfests

Sun Feb 27: LIMARC Long Island Hamfair and Electronics Show, Levittown Hall, 201 Levittown Parkway, Hicksville, NY. 9:00 a.m.

Sat Mar 26, 2011: Orange County ARC Spring Hamfest, Town of Wallkill Community Center. 2 Wes Warren Drive, Middletown, NY. 8:00 a.m.

VE Test Sessions

Feb 6: Yonkers ARC, Yonkers PD, Grassy Sprain Rd, Yonkers, NY. 8:30 a.m. Contact Daniel Calabrese, 914 667-0587.

Feb 10: WECA, Westchester Co Fire Trg Center, 4 Dana Rd., Valhalla, NY. 7:00 p.m. Contact Stanley Rothman, 914 831-3258.

Feb 21: Columbia Univ VE Team, 2960 Broadway, 115 Havemeyer Hall, New York NY. 6:30 p.m. Contact Alan Crosswell, (212) 854-3754.



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