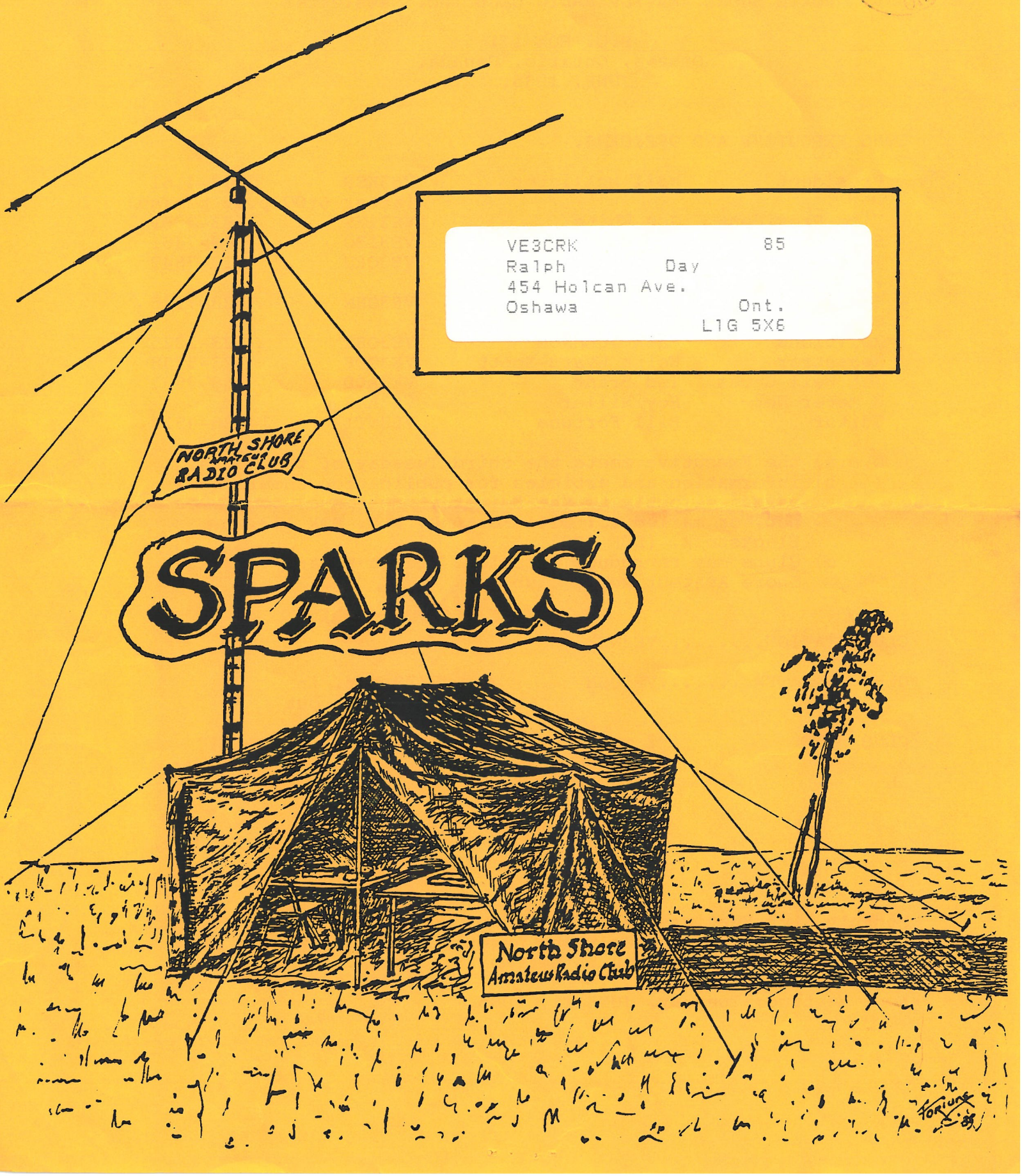
First Class Première classe

CANADA 32

NORTH SHORE AMATEUR RADIO CLUB INC.
P.O. BOX 171, OSHAWA, ONT., L1H 7L1

JUNE, 1985.

VE3CRK 85
Ralph Day
454 Holcan Ave.
Oshawa Ont.
L1G 5X6



NORTH SHORE AMATEUR RADIO CLUB inc. Newsletter

P.O. BOX 171
Oshawa, Ontario, Canada.
JUNE, 1985.

1985 EXECUTIVE AND OFFICERS.

President	Neil McAlister	VE3KSP	668-4161 (after 6:00 p.m. please)
Vice President	Joe White	VE3IHS	623-4069
Secretary	Charlie Bissett	VE3IBO	668-7481
Treasurer	Colin Bell	VE3CEU	723-7842
Program Co-ordinator	Roy Norton	VE3OHN	623-7125
Community Relations	Mark Johnson	VE3OBJ	623-1325
Registrar	Keith Wyard-Scott	VE3GDF	723-5758
Get Well Cards	Ted Brant	VE3ADD	668-3561
2 Meter Net	Roy Miller	VE3AAF	
Editor	Bill Fortune	VE3NTI	1-986-4513

N.B.a) the Executive meets the third Tuesday of the month.
b) information and articles for publication should be passed directly to the Editor at meetings, sent over the net, or mailed to: Bill Fortune, P.O. BOX 113, Blackstock, (L0B 1B0)
c) Clubs may reproduce articles. Credit please to North Shore Amateur Radio Club .

CLUB STATION.....VE3NSR

CLUB REPEATER.....VE3OSH 147.72 MHz. in
147.12 MHz. out

CLUB NETS 2 meters Net each Thursday via VE3OSH
at 1930 hrs. - local time.
Net Control: Roy VE3AAF .

10 Meters Net SSB each Sunday
at 1000 hrs. - local time - on 28.200 MHz.
Net Control: ?????

Monthly Club Meetings are held at 2000 hrs. on the second Tuesday of every month (except July and August) in the cafeteria of O'Neil Collegiate, Simcoe Street North, Oshawa.

Next Meeting: Tuesday, JUNE 11, 1985.

Neil Harding McAlister VE3KSP
22 Renfield Crescent
Whitby, Ontario
Canada L1P 1B4

Is Ham Radio Baking Us?

What damage occurs when human bodies are subjected to electromagnetic fields is not fully understood. Here, an expert in biostatistics examines the problem from an amateur's perspective — and offers some practical preventative suggestions.

Even if it never happens to you and me — well, hardly ever — we all joke about browbeaten hams whose neglected spouses storm into the shack periodically, demanding that they switch off "that %$#@* radio" on threat of dire consequences.

Wouldn't it be ironic if those impatient wives and husbands have actually been doing these persecuted hams a favor by dragging them away from their beloved rigs? New research into the biological effects of electromagnetic (EM) radiation is beginning to suggest that people who expose themselves to higher-than-normal levels of radio frequencies (rf) and microwaves may no longer be able to take it for granted that these exposures are perfectly harmless.

How significant is the concern? Nobody knows for sure. If there is any danger at all from the emissions of ham-radio equipment, it is neither immediate nor overwhelming: Hams aren't dropping dead by the dozen after a grueling weekend contest. However, our understanding of what rf fields do to people over long periods of exposure (like years or decades) is limited by a shortage of basic scientific knowledge about the effects of EM radiation on human cells, by the virtual absence of population-based (or "epidemiologic") data about large groups of people (like hams) who have been exposed to higher-than-usual levels of rf and microwaves for a long time, and by the vastness of a subject as wide as the electromagnetic spectrum itself.

The electromagnetic frequency spectrum ranges from extremely low frequencies (ELF) or very low frequencies (VLF) of 5 to 300 Hz, with wavelengths in the order of 10^8 meters, up through increasingly higher frequencies and shorter wavelengths. It progresses through radio frequencies from a few kHz to a few MHz, microwaves up to the 100-GHz range, infrared light, visible light, ultraviolet, X-rays, and, finally, gamma rays with frequencies of up to 10^{22} Hz and very short wavelengths in the order of 10^{-14} meters.

Ultraviolet light, X-rays, and gamma rays have quanta of sufficient energy to ionize molecules and break apart their bonds. Such ionizing radiation is known to disrupt many biological functions. Visible light (e.g., a laser beam) does damage by direct heating. Longer wavelengths (microwaves, rf, and ELF) neither have enough energy to cause ionization nor, generally speaking, are they capable of producing damage by heat. Yet it is known that weak electromagnetic fields in these lower frequencies also produce biological effects on living cells. Although these nonthermal effects are incompletely understood, they are applied in orthopedic medicine, where weak, pulsed EM fields are used in the treatment of fractures.

The Effects of Rf and Microwaves

The relatively small amount that we know about the biological effects of EM fields is based on work with test-tube cell preparations and on animal experiments. Very little work has been done to examine comprehensively the health of large numbers of humans who have been exposed to higher-than-average EM emissions.

Writing in a recent issue of the *I.E.E.E. Spectrum*, a magazine received by all members of the Institute of Electrical and Electronics Engineers, Eric Lerner explained that experiments done so far must be interpreted with caution for several reasons. For one thing, in the US most experiments are performed at 27.12, 915, and 2450 MHz — not because there is anything special about these frequencies biologically speaking, but because they are the ones assigned to medical, scientific, and industrial uses. Effects observed at these frequencies are not necessarily produced at different frequencies. He also noted that many experiments are

performed in test tubes, not in living creatures: Test-tube results are not necessarily seen in live animals.

Lerner reports that the most significant experimental finding to date suggests that microwaves can sometimes induce genetic damage in live animals. In one experiment, there was significant harm to sperm cells of male mice exposed to microwaves of 0.915, 2.45, and 9.4 GHz, and a consequent decrease in their fertility. More miscarriages than normal were recorded among their mates, and a notable increase in genetic disorders occurred among the baby mice that did survive. At 27 MHz no such changes were observed.

Microwave-induced genetic damage was also documented in experiments using insect larvae. Whether these observations have any implications whatever for human beings is anyone's guess.

Current Safety Standards

Fundamental lack of knowledge about the biological effects of EM radiation on humans is reflected both in an absence of uniform, enforceable regulations within the United States and by the diversity of standards internationally. The American National Standards Institute (ANSI) has recommended standards for EM emissions from electronic equipment at various wavelengths. However, whether manufacturers adhere to these standards is purely voluntary, and no agency monitors or keeps records of compliance with the ANSI specifications.

The ANSI standards are not the most stringent ones in the world. As seen in Fig. 1, at all frequencies the ANSI-recommended limits for exposure are much less strict than limits set in China and the Soviet Union, for example.

Within the United States, some regional governments are starting to move independently to establish their own safety guidelines. At the time of writing this article, the state of Massachusetts and the city of Portland, Oregon, have proposed standards for the general population that are five times stricter than the ones suggested by ANSI.

The Environmental Protection Agency is now working on a proposed standard for nonionizing EM radiation, but it will be several years, at the earliest, before this becomes federal law applicable to all national government agencies.

While the public and consumers of electronic devices may soon be covered in some American jurisdictions, occupational exposures are generally not included in anyone's recommendations. As shown in Fig. 1, workers who use rf equipment to heat and thereby seal plastic packaging are exposed to levels of rf far exceeding the ANSI recommendations. Many broadcasters work in environments heavily polluted with rf that exceeds the "safe" limits as well.

Of interest to radio amateurs who enjoy mobile operation, frequent operators of mobile transmitters have some of the highest non-occupational exposure to rf fields, coming very near to the recommended "safe" limits.

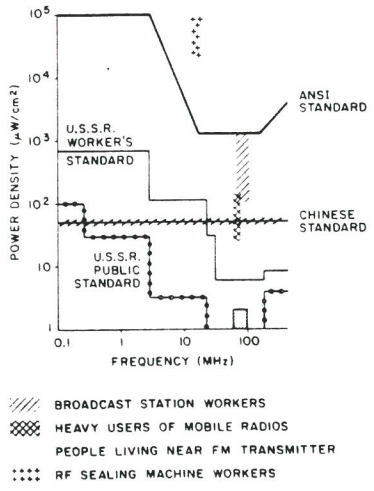


Fig. 1. Limits for exposure to EM fields., Adapted from Lerner, E. J., "The Drive to Regulate Electromagnetic Fields," I.E.E.E. Spectrum, *March, 1984, pp. 63–70.*

Practical Suggestions

Should we all rush to put our rigs up for sale on the next swap net and find a safer hobby? Of course not. Life is full of calculated risks. We accept the chance of an accident whenever we cross the street or get behind the wheel of a car. It is highly probable that the EM radiation from ham-radio gear is an insignificant health hazard compared to cigarette smoking—a habit that many amateurs embrace despite its proved and well-publicized dangers. There are many pastimes a lot more dangerous than ham radio: skydiving and scuba diving, for instance.

There are, however, a couple of logical and perfectly acceptable precautions that a radio amateur can take in response to the present state of uncertainty about the biological effects of EM radiation.

We already know many good reasons to avoid unnecessary, habitual QRO operation. For one thing, it is illegal here in VE-land, where regulations require radio amateurs to use the minimum necessary power during a QSO. Running QRO while chewing the rag with someone in the neighboring state clutters up the HF bands with pointless QRM and is therefore discourteous to other amateurs even half a world away.

High power also tends to aggravate TVI problems. Leaving a mobile 2-meter rig stuck on the HI power position when LO would do the job is rude because it is sometimes bothersome to other drivers' cheap car radios; running hot all the time gives the mobile transceiver itself a beating. It is just possible that wasteful QRO is also detrimental to the long-term health of the thoughtless operator, by exposing him or her to unnecessarily high doses of rf.

YL operators will be interested to know that there is no proven association between miscarriages or birth defects and low-level EM radiation, and that many scientists feel there is unlikely to be a connection. On the other hand, neither has absolute safety been proven. Logic suggests that women who are worried enough about extraneous EM radiation to avoid using visual display terminals at work during their pregnancies would probably want to avoid operating or going near ham stations too—at least during the first three months, when the fetus is most susceptible to hazardous, outside influences. Even if future research proves this precaution unnecessary, it would remove a source of anxiety now, when no answers are known with certainty.

The more time a ham spends in the shack, the more rf he or she is exposed to. Since long-term exposure over many years may be the greatest concern, it is probably fortunate that most younger operators have to work or go to school: Young people, who have the greatest number of years of exposure ahead of them, also have less spare time to in-

dulge in their hobby than do their ham friends who are enjoying amateur radio in their retirement. Older hams likely have less to worry about and may derive comfort from the case of the 90-year-old man who has enjoyed booze and cigarettes ever since he was a youth of 16. If he has survived his bad habits this long, there's little reason why he should suddenly quit now!

The Jury is Still Out

The bottom line is that we have no final answers, yet. The long-term effects of above-average, though still relatively low, levels of rf radiation and microwaves on humans are largely unknown, though they are the subject of increasing scientific investigation. To date, no one has proven definitively that a health hazard from low-intensity EM fields actually exists.

On the other hand, there is now some reason to suspect, particularly in view of animal experiments, that there could be at least a theoretical basis for concern. Most important in view of these theoretical worries: No one has yet proven that the above-average exposures incurred by ham-radio operators are harmless—no comprehensive survey of any kind has ever been carried out to compare the health of radio amateurs to the health of nonhams.

In the light of the practical experience of many thousands of radio amateurs over the years, it seems improbable that the dangers of running a ham station are really very great at all. However, in the absence of comprehensive scientific data, assumptions based on common sense, our personal experience, and what seems intuitively obvious can be misleading. In the 1950s, military "experts" told us that above-ground nuclear testing was safe, just because soldiers who witnessed these events weren't dropping dead immediately after a blast. Tragically, we now realize that it has taken two or three decades for some victims of nuclear fallout to manifest the deadly cancers that the original radiation started, years ago.

It would be alarmist and irresponsible to suggest that the emissions from ham-radio transmitters are anywhere near as noxious as nuclear explosions! But even though the scientific jury is still debating its verdict on this issue, we would be well-advised to consider that evaluating a potential health hazard is not like conducting a trial in a courtroom: Where health is concerned, it is bad policy to presume a potentially harmful agent innocent until proven guilty, because we don't get to appeal the sentence of sickness that nature may impose on us if we guess wrong.

Given so much uncertainty about the biological effects of long-term exposure to the frequencies we use in amateur radio, it makes good sense for all us hams to take a few simple precautions that scarcely jeopardize our enjoyment of our hobby. Who knows? It might even clear up some of the QRM on 20 meters! ■

Further Reading

Lerner, E. J., "The Drive to Regulate Electromagnetic Fields," *I.E.E.E. Spectrum*, March, 1984, pp. 63-70.

Lerner, E. J., "Biological Effects of Electromagnetic Fields," *I.E.E.E. Spectrum*, May, 1984, pp. 57-69.

Editor's Note: VE3KSP is a medical doctor, Assistant Professor of Preventive Medicine and Biostatistics at the University of Toronto, and a partner in Clinicom Computing Services International, Inc., of Winnipeg, Manitoba, and Toronto, Ontario, Canada.

We regret to inform you that GLEN GIBSON, VE3MEU, reported on the sick list in the last issue is now a silent key. GLEN suffered a heart attack some time after surgery and did not recover. Condolences on behalf of the club members have been extended to his widow, Audrey, and members of his family.

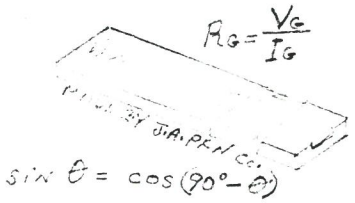
NEW ADDRESS

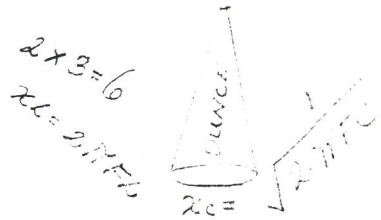
Please note TOM MOLICA, VE3KZJ, formerly of Orono now resides at 233 Mary St. West, Lindsay. K9V5K6.

SSB (Sell, Swap, Buy)

Two element G.E.M. Quad	$100.00
CDE Antenna Rotor Model TR44 Thrust bearing Tower - TV - 36 ft. Rotor Cable - manual	$200.00

See: BILL FORTUNE, VE3NTI - 986-4513.





"THE OLD SLIDE RULE"
or
"THE WHIZ KID RETURNS"
by
ED TAYLOR, VE3FRM

I had been rummaging through ancient cardboard boxes in a dusty corner of my barn attic in search of documents long misplaced. Deep in the corner of a dog-eared, overstuffed Carnation Milk box, I discovered a relic from my youthful past - my old wooden slide rule! Gosh, it seemed like a hundred years since I worked that thing. Dozens of pleasant memories flooded my thoughts as I walked into the ham shack and sat by the light to view the myriad of inscriptions intended for computations.

My first "slider" as we called them in school, was a rather crude version with "Made in Occupied Japan" stamped on its back. Dad, seeing what a "Whiz Kid" I had become with the thing, drove into Toronto and bought me the best he could find. It must have cost him a day's pay! Boy was I thrilled! It was made from the finest of Mahogany and coated in white plasticised paint. Calculations could be taken to the Nth degree and its versatility was almost unlimited. My school chums and I would compete at who could "slide" the fastest. My skills proved best in eight out of ten, for a while anyway.

I tried a few runs at simple square roots, -- nothing! Fingers too stiff, eyes too weak and brain too sluggish, the years had taken their toll. "Where's the Whiz Kid now?" I asked aloud. Laying it down beside my Liquid Crystal Solar Powered Calculator, I mentally compared the two technologies. "Disgusting," I thought. "This new stuff takes all the fun out of life." Glancing around my shack, I began to peruse all the gear. Only three pieces are transistorized and none of them worth a darn: a calculator which functions only if pressed slightly below the display; (The J A Pan Co. is not competent in the metalurgy field as yet and manufacture very poor spring contacts) an FET VOM which requires 30 minutes for recalibration each time it is used; a transistorized frequency counter which requires 5 watts of RF before it can count. "Hi-Tech, Solid State, Phooie!!" I gave them the old raspberry. The rest of my gear functions great with old faithful, reliable vacuum tubes. Transistors and ICs, yech!! How I hate 'em! I can't get them to work except in a few simple code practice oscillators. As a grand finale to my last exasperating failure in transistorization, I roasted one of the wretched little things on the end of my 80 watt iron. I remember snickering like a mad man but OH! it made me feel good! Some Whiz Kid!

This mood of failure was broken by my daughter, Laura, entering the room. "My dryer is broken, Daddy!" she said, gently placing it on the bench. Her head was swathed in towels and the dryer was top priority now. I quickly gave it a continuity test and found one side of the cord to be open. Using my homebrew VOM and a sewing needle, I began probing from the switch down. Voila! Just as I suspected! The break was right where the cord is pinched by the CSA approved cord clamp. Within minutes the dryer was together and functioning. "Oh, Daddy! You're always so smart!" she said loudly into my ear, giving me a big hug, then running off to the house.

With her kind words of praise echoing in my head, I rose up on my haunches, straightened and paced the room imitating the step of a proud Prussian after receiving the Iron Cross. When the euphoria of success cleared my head, I sat down and began to study my slide rule under the lens. I muttered something about hoping to never run out of tubes, then tried a few calculations. Ohla! Caramba! Suddenly square roots, Cosines, Tangents. Deci-bells, all began to spew off the hairline of my rule. Thank God! The Whiz Kid is back!!!

30s M'Friendly

In 1917, during a lull in the fighting, an American flyer was doing aerobatics over a British aerodrome. A large number of Canadian and British airmen had gathered to watch with heads back and mouths agape. During his last maneuver, the young aviator flew low over the crowd and emptied a bag of horse dung onto the unsuspecting throng. He then flew with haste back to his own air field.

The next morning, a British Spad was spotted coming in low over the American field. Everyone ran for cover in fear of a reprisal. Instead, the British plane returnd to its base after dropping a tethered bag of horse dung and a note. The note read:

Gentlemen:

We regret to inform you that during a display of aerobatics your Commanding Officer fell from his craft and disintegrated. These remains are all that could be found.

de VE3FRM

An engaged couple went to the rectory for premarital instruction. At one point the priest spoke to the prospective bridegroom, a TV repairman, privately.

"How did things go?" asked the bride some time later.

"The questions went along fine," he replied, "until the priest asked me what fidelity meant. All I could think of was two tweeters and a woofer."

COMING EVENTS

JUNE 20

OLD TIMERS' GET TOGETHER - third Thursday in June, as usual. Eyeball - Couchiching Park, Orillia (near Champlain's Monument) - June 20th, 2:30 p.m. Reservations were to have been confirmed by May 1st. XYLs welcome. They'd probably be happy to see you if you just dropped in. For information contact VE3BC - Apt. 4081, 970 Eglinton Ave. East, Toronto.

JUNE 22,23

FIELD DAY - N.S.A.R.C. located at Heber Downs Conservation Area. Some notes for information - owing to soft ground conditions vehicles should remain on gravel surfaces. We may be required to share facilities with other groups. Equipment/materials used should be returned after use to original location. Water is available at washroom/fountains. The area has been provided by the Central Lake Ontario Conservation Authority. We are asked to leave area as clean as when we arrived.

ROBBIE INTERNATIONAL SOCCER TOURNAMENT

Two meter operators are required for this tournament to be held in the Ajax/Pickering area during the week-end June 29,30. We need quite a few operators so please contact MAL HAMON, VE3KXH, 987-5488 - ASAP.

JULY 9

SERMON ON THE MOUNT - N.S.A.R.C., Purple Hill.

JULY 14

BATAVIA HAMFEST, NEW YORK - Niagara Falls Convention Centre. For information contact GRACE VE3MCO.

JULY 27, 28

CANADA'S WONDERLAND is pleased to invite all HAMS and their family and friends. Spcial price for the day. Once Pricie Passport is only $9.95 prepaid, per person (save $6.00) Must complete order form and submit by July 2nd. For more information call 416-832-7000 ext. 392.

AUGUST

N.S.A.R.C. CORN ROAST - date to be announced later.

SEPTEMBER 14

HAMBURG HAMFEST COMPUTERFEST 85 - HAMARAMA. For information contact Wentworth Amateur Radio Association, 68 Kirby, Dundas, Ontario, L9H6H8. Tickets - $3.50 Canadian by August 24th pr $5.00 U.S. at gate. Information submitted by WAYNE VE3IMI.

SEPTEMBER 27 - 29

JOINT ANNUAL CONVENTION CRRL/RSO - LONDON Excellent program - great speakers - the EVENT OF THE YEAR Registration forms are available at clubs and fleamarkets. Hotline 519-471-7691 between 1800 and 2300 hours local time, Monday to Friday and 1200 to 1800 hours on weekends. For special rates complete registration form and submit to appropriate hotel. This will also be Cavalcade Week-end and hotels will fill early.

FROM THE EXECUTIVE

Field Day preparations for 1985 are coming along well under the guidance of JOE WHITE, VE3IHS, and it looks like we should have an excellent crew this year, as in other years. As you all know, it will be at Heber Down Conservation Area again this year and the executive requests the cooperation of all the people in attendance.

Yours truly, CHARLIE, VE3IBO has recently purchased a Radio Shack Co Co extended Basic Computer and I am having lots of fun trying to learn how to run it, Hi,Hi...

It seems that the Nonquon communications are pretty well organized again for this year on June 1st. I am sure it will be a success as it has been in other years.

Best 73s for now "IBO"

GENERAL INFORMATION

Quinte operates a repeater VE3QAR - 146-430, 147-030 with an auto patch open to all members. Peterborough also operates repeater VE3PBO - 146.340, 146-940

Our Foreign Correspondent,DICK, KA2KNZ wrote that he will be in England at the end of May but by mid July he hopes to be on OSH. He wishes to be remembered to everyone, especially WALT, VE3DYE.

TNX to the many members who came out to support last month's program. Special thank you to RON WRAGG, VE3AIY for his presentation and ANDY VERHOEVEN for his demonstration. GARRY H. CUBITT, VE3LNF, Social Director, gave a very lucid in depth outline of the responsibilities of this department. For those who are unsure of the comprehensive nature of this unit, his talk was very informative.

HOME COMPUTER MAGAZINE

This magazine had an article on the use of computers with ham radio in a recent issue. I wrote asking for permission to reprint but received a letter saying that it was not possible for them to grant reprint rights at this time. If you are interested, I could pass the article on to you. (Ed.)

LATEST ON THE AUTO PATCH

PHIL PITMAN, VE3DQK, at our last meeting, in a "statement of intent", advised the members that RPT is investigating a possible link to the Oshawa area. This is very, very tentative as yet. Negotiations with a few of our members have apparently been going on for some time. The proposal by NEIL, VE3KSP and BOB, VE3LLE has been shelved for the present.

REWARDS

ROY, VE3AAF and BILL, VE3NTI were presented with awards for their contributions to the club: ROY for the Thursday Night Net and BILL for the Newsletter.

C.N.E. from EVAN, VE3IND

Ex service operators are required for WARRIORS' DAY PARADE. (XYLs particularly welcome) Our representative is JOE, VE3IHS - please pass information to him.

C.N.E. booth will be simplified this year. There will be four operating positions.

1) Simple receiver - separate transmitter - perhaps Heath or home brew.
2) White Cane station.
3) Middle of the road "ham" outfit.
4) "State of the Art" station.

There will be four or five positions at the front of the booth where spectators will be able to monitor any station. Operators will explain what is happening at each station.

There will be no really sophisticated equipment. N.S.A.R.C. will be on duty AUGUST 30. See you there!

VOLUNTEERS NEEDED

PARKS CANADA - AMATEUR RADIO NETWORK

Since 1985 is the 100th anniversary of the establishment of our first park, Parks Canada is joining with all Canadians in celebrating 100 years of heritage conservation.

As part of our Canada Day celebration at Harbourfront, we would like to link up the visitors to Harbourfront with each National Park in the country by radio on Canada Day.

In order to do this, HAMS ARE NEEDED. Would YOU like to help? If so, please contact a member of the executive.

By the time you receive this, our first outside summer service, CANOE THE NONQUON will have passed. I expect our response to this, under the able direction of GLEN, VE3LIZ, will have been very good as it has been in past years. But what of the other events to come, FIELD DAY, OSHAWA HIGHLAND GAMES, C.N.E. etc. Last year our response to the GAMES was quite dismal. How about volunteering your services for at last one of the summer events? We have earned a good name in the past; let's keep it that way.

NEXT MEETING - TUESDAY, JUNE 11, 1985.

At the next meeting, JOE, VE3IHS and RUSS, VE3ATT will provide video tapes of Field Day events, including our own from last year.

If you keep an open mind - people will throw a lot of garbage into it.
