

# THE PROPAGATOR

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The Newsletter of the Illawarra Amateur Radio Society

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Priceless.

## EDITORIAL

How safe is amateur radio and do we have a survival plan for it?

The question may seem silly - after all, there are no perceived threats to our hobby on the immediate horizon - but do we really have any certainty of the long-term survival of the activity? Given the ever-increasing desire of governments at all levels to control as much of our daily lives as possible, we really ought to be devoting some thought about the future.

What concerns me is how our activities will fare if this nation becomes a republic. I don't have a great deal of confidence in our law-makers when it comes to civil liberties or freedom of the individual and you'd have to admit the transition from Commonwealth to Republic offers the legal and political professions (which overlap in a most incestuous manner) the single greatest chance to consolidate their grip on power ever afforded to any group of self-interested persons in the history of this country.

One of the first actions of an incoming republican government might well be measures to stifle the propagation of "dissent", in the interests of "public safety" and the "maintenance of law and order". As any politician knows, you can strip away

## In This Issue:...

**Page 3: Radio As It Used To Be...** you think setting up your shack was hard? Try doing it in the Antarctic!

**Page 5: PC Basics:** Disk drives; the how, what, where, when and why - very briefly.

**Page 10: The Editor, Again!** reports on a visit to one of our advertisers.

**Page 11: The News Report** - keeping you informed.

**Page 11: The Repeater Report:** Our network thrives and prospers - here's why.

**Page 12: 1984...look back in wonder.** Yet another nostalgia binge.

**Page 15: For Sale:** buy this stuff and help make a happy amateur feel very old.

**Page 15: Advertisers:** You know who they are, now go out and shop 'til you drop!

**The Back Page:** We briefly recapitulate back over the previously-stated information as to who is who and what frequency is what repeater.

**DISCLAIMERS:** The opinions expressed in the editorial and other parts of the publication are not necessarily those of the IARS or the committee. Contributions may be edited for layout or other compositional/editorial requirements.

## Next Issue:-...

● Phil. VK2TPH, goes into almost clinical detail about how to build J-Pole antennas

● The final in our erstwhile series of nostalgia articles - mainly because the box of old magazines has just about run out.

● Letters to the Editor...perhaps, if anyone bothers to write any.

● Contributions from readers... assuming we get some. Go on, don't be bashful. We can tart up any spelling mistakes, literal errors, factual errors - or we can just stick your article in raw, unprocessed, warts 'n' all. So, if you wanna see yourself in print, go ahead - make my day!

● We might have a report on the auction - the cheapest item, the most unusual item, the most expensive, all that sort of thing.

● Whatever we do, you'll just have to read it to be up-to-date with the doings of the IARS. And, we're proud to say...

**THIS PRODUCT  
IS  
ASBESTOS  
FREE**



freedoms piecemeal and no-one will raise an eyebrow whereas try to do it in one fell swoop and even the most bovine and stupid population will manifest unrest. It's the old "boiling the frog" principle; drop the frog in boiling water and it will jump right back out - put the frog in cold water, raise the temperature slowly and you'll boil the frog.

Given the transparent self-interest of politicians on all sides of politics and the possibility of a change to a republican system of government in the foreseeable future, I have an uneasy feeling we are living in the golden era of amateur radio in Australia and it may not last.

The assault will most likely come by stealth and in a manner quite unexpected. Perhaps a media campaign to beat up links between East Timorese freedom fighters and their supporters in Australia, with suggestions they are communicating on the amateur HF bands? Might this then be followed by a call for tighter control on all forms of non-commercial radio? From there it's a simple step to registering all hobby radio equipment, banning HF gear (due to its potentially worldwide coverage) and weeding out all non-active amateurs. With further creative statistics, any government worth its salt ought to be able to contend that a reduction in the number of amateurs in the community makes for a safer society - less TVI, no ugly aerials or towers in backyards, all that sort of thing - and amateur radio in Australia is just about at its last gasp. The final straw will be the "reorganization" of those who still wish to pursue the hobby into centrally-controlled radio clubs, similar to the system which prevailed in the former Soviet Union.

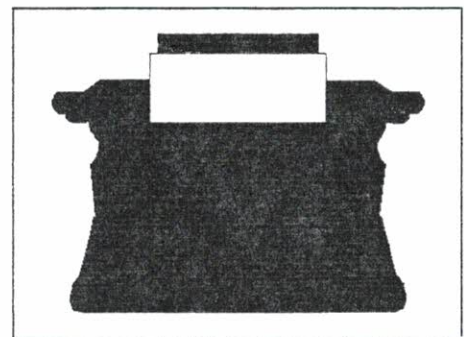
I really hope events in the future prove me wrong but I see little to encourage optimism, hence my opening questions.

The public perception of the nature and value of amateur radio is vague and ill-defined. At the moment, all we've got going for us in the positive publicity stakes is WICEN - and don't think that's by any means an ongoing situation either. All it needs is some pork-barrelling politician to blame WICEN for deficiencies in emergency services communications when in reality the problem was lack of planning by successive governments. Politicians are cynical opportunists and will sacrifice anyone to hold on to power.

I don't for a second claim to have all the answers, but a few commonsense points suggest themselves.

Somehow, and quickly at that, we need to put into place a long-term plan for the survival of our hobby. We need strategies for positive media liaison, strategies for advancing positive public perceptions of amateur radio, strategies for educating politicians about the value of amateur radio and, above all else, strategies to increase the number of active amateurs in the community. That means young men and women joining the ranks of the amateur fraternity. I don't know what the average age of radio amateurs is in Australia, but over the last twenty years I'll bet it has increased steadily. The CB boom is now well and truly finished; we can expect no further influx of members from it. We need young amateurs, and we need lots of them, quickly! If we do not get organised, if we allow our numbers to dwindle to the point where we fall below the level required to self-perpetuate, then amateur radio in Australia is doomed to extinction. We must have numbers!

Finally, if Australia does change to a republican system of government, my opinion is a re-write of the Constitution will be high on the "things-to-do" list of the incoming administration. With that will come the opportunity for the Canberra control-freaks and under-achievers to extend their corroding influence into hitherto untouched areas of our society. I have no doubt the two words "amateur radio" will be found on their secret hit-list. We may not be top of the list, but you can bet we're on it somewhere and sooner or later the cold, unblinking eye of government will turn itself on us. When it does, I believe whatever freedoms we manage to retain as radio amateurs will be the result of what we do in the immediate future to ensure our survival.





### Radio As It Used To Be. - Roger Graham VK2AIV

I've been reading a reprint of "Home of the Blizzard", Douglas Mawson's account of the Australian Antarctic Expedition of 1911-1914. Interesting insight into radio as it used to be, when radio was "wireless". The expedition involved two parties: one on Macquarie Island, half way to Antarctica, the other at Adelie Land on the main Antarctic landmass. Both parties attempted to set up wireless installations, this in the days of spark transmitters running kilowatts of power, long wave, into antennas on gigantic masts. Not a lot of detail given about the installations, but it seems that radio was not an undertaking for the faint-hearted 75 years ago. There are two accounts actually... one written by George Ainsworth, in command on Macquarie Island, the other by Mawson himself, from Adelie Land. I've been back through the book and picked out the few sentences that actually relate to their "wireless" activities.

We pick up the Macquarie Island story in December 1911. The ship Aurora has just set down Ainsworth's party on the island.

**December 13th:** All gear for the wireless station was taken to a spot at the foot of Wireless Hill. Several tons of radio Gear...masts, engine, cables etc...to be hauled to the top of the hill along an 800-foot flying fox.

**December 26th:** Mast constructed. Pulled it up.

**New Year's Day 1912:** Carried timber from a wreck on the shore, up Wireless Hill to construct the engine hut.

**Late January:** "Daily expected communication with Australia"

**Night of Feb 2nd:** Sawyer reported he had heard the Wellington wireless operator calling Suva station.

**Feb 5th:** Aerial halyard broken (it was a 3 inch rope). Someone has to climb the 90 foot mast and pass a rope through the block. They retrieve deck spikes from the wreck and drive them into the mast to make a kind of ladder.

**Feb 13th:** First contact, with a ship the "Ulimaroa". Great excitement... no longer isolated.

**March 10th:** "Our station communicated with Suva at a distance of two thousand four hundred miles, a remarkable performance for a one-and-a-half kilowatt set".

**May 3rd:** "Hobart wireless station was by this time in working order, a fact which greatly facilitated wireless business"

"From May 12th onwards a daily weather report was sent nightly to Wellington, a distance of eleven hundred miles"

**June:** Big winds... nothing at the wireless station damaged... "work went on as usual. The wind used to make a terrific noise in the aerial wires. Did not affect transmission but interfered with receiving... making it extremely difficult to hear signals".

Communication was almost entirely at night, though experiments were going on elsewhere. July: "The operator was requested by the Pennant Hills high-power wireless station at Sydney to listen for signals tapped out during the daytime... these tests attended with some success"

**September 25th:** "We heard sounds from Adelie Land wireless station for the first time on September 25, 1912, but the signals were very faint and all that we could receive was 'Please inform Pennant Hills'. Sawyer called them repeatedly for several hours but heard no acknowledgement. Every effort from this time forward... Sawyer remaining at the instrument until daylight every morning"

**September 29th:** Again heard Adelie land. All we got was "Having a hell of a time waiting for calm weather to put up our masts".

It wasn't until the following February that Macquarie Island was able to make two-way contact with Adelie Land, for reasons that become apparent now as we pick up Douglas Mawson's account. Erecting masts had been difficult enough at Macquarie Island in the wind, but nearly impossible in the unceasing blizzards further South.

**Adelie Land, Feb 10th, 1912:** Hut constructed. Heavy foundations laid for the petrol engine and generator of the wireless installation.

**April 4:** "Erection of the wireless masts began in earnest and continued for some months... establish good anchorage... oregon masts (8 inches square) erected section by section... stayed by stout steel cables... considerable wind... frost-bite...

**Early October...** aerial about 90 feet up... began to send messages... some caught by Sawyer at Macquarie Island... October 13 hurricane completely wrecked one mast... not re-erected until January 1913 when supply ship returned.

**January:** "...a wireless telegraph station had at last been established and we could confidently expect communication with the outside world at an early date".

New wireless operator... Jeffryes... occupied regularly every night listening for signals and calling at intervals. Big spark transmitter... induction effects noted in metallic objects around the hut... cook at the stove drew sparks whenever he touched the pots.

**Feb 15th...** excitement... Jeffryes heard Macquarie Island sending coded weather message to Hobart... immediately started the engine... repeated calls... no answer.

**Feb 20th...** call at last reached Sawyer at Macquarie Island... responded "Good evening" at which point the insulation of a Leyden jar broke down and nothing more could be done.

**Feb 21st...** signals exchanged... news out and in. The first news in... Scott and four companions had perished on their journey to the South Pole.

**Mid March:** "Jeffryes and Bickerton worked every night from 8 p.m. to 1 a.m., calling at short intervals and listening attentively... It was now a common thing in the morning to find quite a budget of wireless messages had been received in the night" "It was often possible for Jeffryes to hear Wellington, Sydney, Melbourne and Hobart, and once he managed to communicate directly with the last-named". A coded weather report was sent out each night, via Macquarie Island.

**June 7th...** strong wind carried away top half of main mast.

**July 5th...** winds up to 116 miles per hour... for eight hours, average speed 107 miles per hour. "Early in July Jeffryes became very ill... much anxiety... work on the wireless had been assiduous at all times... continual and acute strain of sending and receiving messages under unprecedented conditions... eventually mental breakdown."

**August 4th...** at last a calm day. Reconstructed wireless aerial on shorter mast... finished by evening. "At eight o'clock Jeffryes, benefited by his rest, was eager to commence operating once more... soon tuned to Macquarie Island... communication unbroken from then until November 20 when interference of continuous daylight caused us to close down".

Mawson and Ainsworth wrote up their diaries 75 years ago. Months of struggle just to get the aerial up. Kilowatts of power and great rasping sparks. Striving to read faint dots and dashes while the blizzard howled in the wires. Think about it when you press the button on your little black box, and talk to the world.



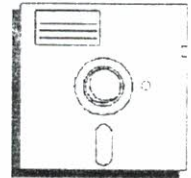
## PC BASICS

This issue we will have a look at disk drives, both hard and floppy. There are similarities between them both, but there are also some major differences.

### FLOPPY DRIVES

Use IRQ 6

- They come in a couple of physical sizes: 5.25" 360K and 1.2 meg 3.5" 720K, 1.44 meg and 2.88 meg. Each type has a pair of heads, read/write.
- The heads are made from a ferrous compound with electromagnetic coils.
- The heads move together as they are on a common frame or head rack.
- The head rack has the read/write heads centered between 2 tunnel erase heads.
- The heads stay in contact with the disk

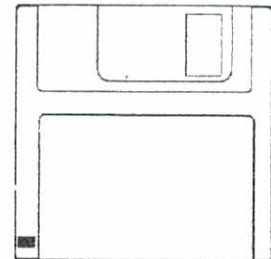


### HEAD ACTUATOR

- Uses a stepper motor to move heads in either direction.
- Heads are linked to stepper via a steel band (5.25") or a worm gear (3.5").
- Senses track 0 and then increments or decrements to the desired track.

### SPINDLE MOTOR

- Direct drive brushless DC motor
- Spins disk at about 300rpm (1.2Mb @ 360rpm).
- Speed should be self-adjusting.



### LOGIC BOARD

- Provides interface between drive and controller.
- Directly controls the head actuator, read/write heads, spindle motor and the disk sensors.

### SENSORS

- Track 0 - Write protect
- Index which allows for hardware timing reference for sectoring.

### FLOPPY DISK DRIVE ALIGNMENT

RADIAL ALIGNMENT - Checks that read/write heads are directly over the track.

AZIMUTH - Head twist

HEAD SKEW - Head positioning mechanism. Should move in and out on a line that intersects the hub of the drive.

DISKETTE ECCENTRICITY - Tests ability to centre and clamp disk properly (first test).

- If this test fails, then other tests will fail.

INDEX TO SECTOR - Time from index pulse to sector reference on the alignment disk. Specs required for the drive.

### HARD DRIVES

The most common type of hard drive you will come across these days is IDE, short for Integrated Drive Electronics. EIDE is short for Enhanced Integrated Drive Electronics.

### HEAD DISK ASSEMBLY (HDA)

- The platters (disks).
- The spindle motor.
- Heads and the head actuator.
- These components are usually mounted in a sealed unit called the HDA - HDA is treated as a single unit.
- Has an air filter to filter the internal air flow. This filter is not changeable.
- The unit is shock mounted.

#### PLATTERS

- 5.25" or 3.5", usually made from aluminium or glass coated with either ferric compound or cobalt. High performance drives are usually glass and cobalt (thin film media).

#### READ/WRITE HEADS

- Read/write heads are electromagnetic. Thin film head uses semi conductive. Read-only heads are magnetic resistive.
- One head per platter side. They all move in unison.
- Controller translates the number of physical/logical heads, cylinders etc.
- Flow dynamics:- heads rest on platter surface using spring tension when platters are stationary: heads float on air-cushion when platters are at full speed.

TIP: To calculate the size of a drive:- cyl x heads x sectors x 512. (There are 512 bytes per sector in MS-DOS.)

#### HEAD ACTUATOR

STEPPER MOTOR (for older drives including RLL and MFM)

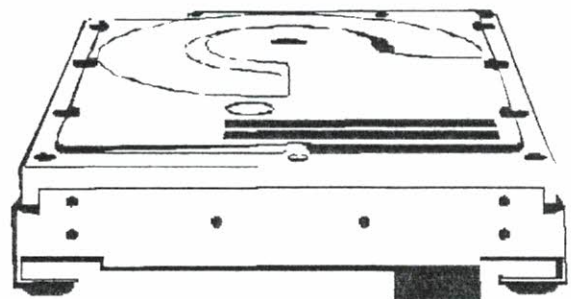
- Linked to head by a split steel band or a rack and pinion.
- Slow access time.
- Don't auto-park. (i.e. the heads crash onto the platter when the power is removed)
- Susceptible to mistracking. - Occasionally need a low-level format.

VOICE COIL (newer drives like IDE and EIDE)

- Electromagnetic coil moves on a track through the air-gap of a fixed magnet.
- The coil mechanism is connected directly to the head rack.
- Quick
- Quiet
- Efficient
- Auto-parking

#### SPINDLE MOTOR

- Brushless DC motor.
- Spins around 3000 - 7600 rpm (12 volt rail)
- Connected directly to the spindle.
- Noise free with precise speed control.



- Spindle ground strap.

## INTERFACES

### IDE and EIDE

- 40 pin dual in line connector.
- Uses ATA.ATA 2 (AT Attachment)
- Uses IRQ 14 (secondary IRQ 15)
- Controller exists on the HDD. The card in the slot or on the mainboard is buffered I/O only.(I/O is short for input/output).
- Supports 2 drives daisy chained. They must be configured master/ slave by the use of jumpers on the drives. There are Primary, Secondary, Tertiary and Quaternary configurations, each capable of the master/slave setup. \* DO NOT LOW LEVEL FORMAT UNLESS YOU KNOW WHAT YOU ARE DOING AND ALL ELSE HAS FAILED TO GET THE DRIVE WORKING.
- Interleave is set at low-level format.

### INSTALLATION

- cyl, heads, sect in CMOS setup
- FDISK partition, then format with the /s switch for a bootable drive.

### ST506/412

- 20-pin & 34-pin edge connectors.
- 20-pin is the data cable and the 34-pin is the control cable.
- Controller card is in the computer slot.
- Supports 2 drives, but each drive must have its own data cable and share a control cable if it has a twist to distinguish drive 0 and drive 1.

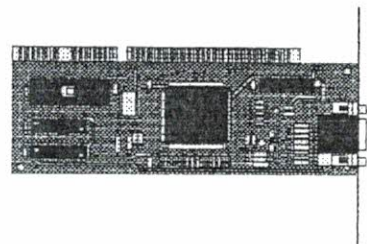
INSTALLATION as per IDE on 286 or greater. XT is low-level formatted by the controller.

### ESDI (enhanced small device interface)

- 30-pin & 20-pin cables
- Fast...for their time
- Install as per IDE

### SCSI (Small Computer System Interface) - pronounced "scuzzy"

- Card in slot sets and controls the SCSI bus (the Host Adapter).
- Bus supports up to 8 devices (7 plus the Host Adapter card)
- Uses a custom setup procedure.
- usually CMOS doesn't need to know anything about it.
- Very fast and considerably more expensive than IDE or EIDE.



## ENCODING TECHNIQUES

### MFM - Modified Frequency Modulation.

- All floppy disk drives use MFM.
- Older HDDs still use it.
- Single bit errors are easily detected.



**RLL - Run Length Limited.**

- HDD only
- Works like shorthand on a code.
- Drives were faster and larger than MFM
  - Encodes groups of data at one time.
- 1 bit error could cause up to 5 bit loss.
- Increased data density.

**DISK FORMATTING - AT****1. LOW-LEVEL FORMAT**

- Done with a utility program. It is drive-specific.
- Scans drive for surface defects and maps them first.
- Sets interleave at 1:1
- Defines disk tracks and sectors, writes sector headers and marks the defects table.
  - Writes F6(hex) to every byte of every sector. 11111100
- Re-runs surface analysis.

**2. PARTITIONING (e. g. DOS FDISK)**

- Allocates section(s) of the hard drive to an operating system or systems.
- Cylinder 0 head 0 sector 1
- master boot record (MBR).
- Boot partition is the active partition.
- sets extended partitions for additional logical drives on very big HDDs.

**3. HIGH LEVEL FORMAT (DOS)**

- Not really a format
- creates file management structures.
  - DOS (or whatever Disk Operating System you use) creates the volume boot sector, 2 x FAT (File Allocation Table) and the root directory.

TIP:- If your FAT gets corrupted, there are programs to install the second copy of the FAT (the mirrored copy) as your primary FAT and save your data.

**DOS VOLUME BOOT SECTOR**

- 1st sector on logical DOS disk (Volume).
- Contains a small boot program loaded by ROM BIOS & media or by disk parameter map.

**ROOT DIRECTORY ("little black book")**

- immediately after second FAT.
- Simple database containing information about files and directories stored on the disk.
- Has file name, attributes, creation time and date, size and starting cluster entry.

**FILE ALLOCATION TABLE (FAT)**

- Is a table of numeral entries describing where each allocation unit is located on the disk (a



“road-map” of where each bit of every file is).

## SERIAL PORTS

- Serial ports or comm ports or even the modem and the mouse port are all an RS-232C port.
- Usually a DB 25 M or a DE 9 M. They are actually Asynchronous communication adaptors. (Comm port ok)
- The most common Comm ports are Comm1 IRQ4 3F8 Comm2 IRQ3 2F8 Comm3 IRQ4 3E0 Comm4 IRQ3 2E0
- The chip behind all this is the UART (8250 in early PCs, now the 16550).
- UART stands for Universal Asynchronous Receiver Transmitter. USART stands for Universal Sync/Async Receiver Transmitter.
- 1488 & 1489 line drivers are required as well.
- RS232 standard says -3/15v -3/15v.

## PARALLEL PORT

- Usually called the printer port because that's the only thing that seems to get plugged into it.
- LPT 1 IRQ7 378h
- LPT 2 IRQ5 278h
- LPT 3 3BCh
- Usually a DB 25 Female connector
- Simpler settings than RS-232
- Faster data transfer.
- More control over a printer than RS-232

Pin Outs	1	2	to 9	10	11	12	13	14	15	16	17	18-25
	strobe	data0-7	ack	busy	pap/out	sel	a/feed	err	init	pr	sel/in	Gnd

## VIDEO CARDS ETC

### MONO

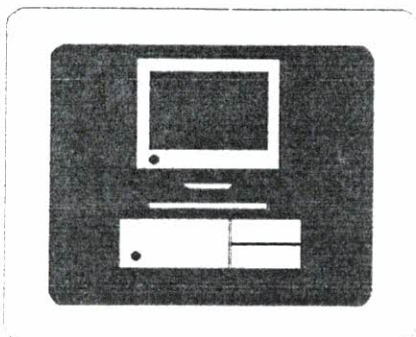
- Resolution of 720 x 350 max
  - TTL signal up to VGA
  - 9 pin D-connector up to EGA
  - Hercules is mono that can emulate graphics
  - almost extinct now although high resolution monochrome still excellent for CAD use.
- \*Graphics cards are called APA cards from CGA and up. ALL POINTS ADDRESS.

### CGA - Colour Graphics Adaptor - 16 colours in text mode

- 2 colours in APA mode -320 x 200 16 colours in APA mode
- 8-bit - also nearly extinct now

### EGA - Enhanced Graphics Adaptor - 720 x 350 max, text mode with 4 colours

- 640 x 350 APA mode 16 colours
- 8-bit



- not yet extinct but definitely endangered.

#### VGA - Video Graphics Array

- 15 pin D connector. 3 rows of 5 pins.
- 640 x 480 (standard) 16 colours
- 320 200 256 colours
- 720 x 400 in text mode max
- 16-bit - getting a bit long in the tooth now.

#### SVGA - Super Video Graphics Array

- Same 15 pin connector as VGA
- Cover all VGA resolutions.
- Local bus, Vesa Local Bus (VLB) or PCI
- comes in 16, 32 or 64-bit flavours.

That about covers what I set out to do. Obviously we can talk about printers and keyboards, but that's not really the basics.

I nearly forgot to tell you the answer to the question that has never been answered...what does PCMCIA stand for?

People Can't Memorize Computer Industry Acronyms, OR

Properly Controlled Modems Communicate In ASCII, OR

Politicians Control Morons, Citizens Innocently Accept, OR

Previously Circulated Memoranda Correct Ignorant Apprehensions, OR

Please Call Me Collect If Available, OR

Perfectly Classical Music Charms Irrate Animals, OR

Percussive Car Maintenance Costs Increasing Amounts, OR

(write your own definition here...)

Cheers - de Simon VK2XQX

#### THE EDITOR, AGAIN!

As part of my editorial duties I decided to pay a visit to Nietner Brothers who are one of our advertisers. What did I find?

First, you should realise Nietners are an electrical dismantling and reclamation organisation. As a result you'll find mostly components but there are complete items of equipment with surprisingly diverse functions.

In less than half an hour I'd found items ranging from working road-side hazard lights (just add a battery) to electrical switchgear, brand-new ball-bearings still in their original packing, a comprehensive range of nuts and bolts of varying size (most in cardboard boxes with dimensions marked), blind aluminium rivets (perfect for that homebuilt airplane), pressure gauges, voltmeters, a large number of genuine IBM PS/2 monitors, an equally large number of genuine IBM keyboards (you don't know how good a keyboard can really feel until you've used an IBM), electrical motors, packets of ceramic



capacitors, larger electrolytic caps, gears, cables, brand-new reels of coil-winding wire in various gauges, hydraulic rams, an array of computer miscellanea such as monitor arms, printers and more.

There were a few hard-disks that had come out of the PS/2s which were being dismantled but they'd probably be a little on the small side for today's machines. Another eye-opener was a set of platters from an old (and I do mean old) HDD. There must have been sixteen aluminium platters, about eight inches across, with a copper-coloured recording surface. They'd make highly unusual frisbees. There's much, much more! Ask and it shall be given - seek and ye shall find.

Nietners is sort of, but not quite, like Cavions, if you see what I mean. The two companies complement each other. In any event, I'm sure you'll find browsing through Nietners every bit as rewarding as a stroll through Cavions, with the advantage that it's all under one roof and won't take quite as long. For those living south of Port Kembla, Nietners are a lot closer than Cavions and for all of us with an eye to a bargain they're definitely worth a visit! For their opening hours and address, see our advertisers section.

73s de Ned VK2AGV

## NEWS REPORT

Once again we bring you information, events, appeals for help and all those sorts of things that help to make you the truly informed amateur of today!

**The Auction:** Our annual auction took place at the meeting on Tuesday November 11th

(Armistice Day for those old enough to recall). This year's "master of ceremonies" was Denis (VK2DMR) and he brought to the task all the skill and expert delivery we have come to expect. If you missed it then you missed an entertaining evening and the chance to pick up a bargain or two. Mark your calendars for next year because it will be on again in November 1998!

**Silent Key:** Sadly the Propagator records the loss of Alan Burt, VK2XF, who passed away in the last week of October. Alan was very active in the St George Amateur Radio Club and was heard regularly on the 6850 repeater. He will be missed.

### REPEATER REPORT (November 1997)

Not much to report. 6850, 6975, 8225, 8725 voice systems and 4700 & 7575 digis are all functioning fine. There hasn't been a breakdown for quite a while - touch wood (or Phil's head).

Most of the work has been on the new Rptr the IARS is sponsoring for the Batemans Bay area. The planned location is just north of Batemans Bay, overlooking the Princes Hwy, a region not currently covered. The site height is about 370m ASL & our antenna is about 35m up a communications tower.

The Rptr itself is a Philips FM-814 50w Rptr/Base unit & will RX on 146.075MHz and TX on 146.675MHz. It will have a voice ident with a DTMF control unit for full remote control of all necessary on-site functions. LDF 4-50 or 5-50 heliax will be used as feedline, with the antenna being a simple but reliable folded dipole.

Installation is hoped for either late November to early December, in time for the holiday season. It is planned to link this Rptr back up to one of our existing Rptr systems, perhaps 8225 (& on to Goulburn & Canberra).

The establishment & maintenance of this 2m Rptr is a joint effort of both the IARS & South Coast WICEN & will fill in a big "Rptr hole" between the Ulladulla & Bega Rptrs.



### 1984...Look Back In Wonder.

The fog in the crystal ball clears and, faintly at first, then ever clearer, the Orwellian year 1984 appears and draws nearer as we separate the yellowing pages...

A real battle was looming in the war between conventional turntables and the recently-introduced compact-disc players. The point was made that a very good vinyl pressing played on a top quality turntable with a broadcast cartridge was pretty evenly matched with the same piece reproduced from a compact disc. Certainly you can hear differences - and measure them - but audio is a very subjective medium and there are those who prefer the warmth of vinyl to the almost antiseptic cleanliness of CD. If sheer technical specifications are the criterion, the CD wins hands down. But vinyl was a well-proven technology and initially there were some very poor compact discs. An interesting point was raised in a recent issue of "Broadcast Engineering News". Apparently vinyl archives much better than CD - the statement was made that already 10-year-old CDs were starting to develop errors which the error-correction algorithms were not handling. A vinyl pressing, properly cleaned and stored, has the potential to last hundreds of years provided the vinyl itself was of the correct quality when manufactured. (When the French factory that produced one of the essential plasticisers was unable to meet demand, old vinyl was re-melted and added to new product. The result was some truly awful pressings in record stores in the seventies).

You know those little LCD colour TV sets everyone seems to make these days? They made their debut in 1984. Sinclair Research and Sony released their first production models...Sony slightly ahead of Sinclair but the latter cost one third the price of the Sony unit - about \$140. Actually, the Sinclair product was not an LCD screen at all, but a flat-screen using a conventional electron-gun. The gun was mounted to one side and the beam bent through 90 degrees to strike the screen. The remainder of the receiver used a single integrated circuit designed jointly by Sinclair Research and Ferranti. The whole unit was the size of a transistor radio and powered by special low-profile batteries which gave up to 15 hours viewing.

Hitachi announced a colour viewfinder tube for domestic video cameras. It used a single beam sweeping across the tube, modulated so it caused only the required phosphors to fluoresce. Internal light sensors and feedback circuitry was used to ensure accurate registration. The tube had a beam deflection angle of 36 degrees and a resolution of 160 lines. It was planned to install it in the top-of-the-line cameras. Now let's have a reality check here. The black and white viewfinders used for studio cameras usually have resolutions of 700-750 lines. The little 1-1/2" viewfinder tubes in ENG cameras have resolutions of about 600-650 lines. Current domestic camcorders have viewfinders with at least 250 lines resolution - about the same as they had in 1984. With a resolution of 160 lines I would have installed the colour viewfinder tube in the cheapest camcorders going - they would have been horrible!

Amateurs were treated to the all new all-mode Yaesu FT757GX, sold via one of our leading electronics chains at a snip under a thousand dollars. For the novices there was the Yaesu FT-77S, just under six hundred dollars. The UHF "Explorer" kit was in the marketplace for two hundred dollars - the PL02A at the heart of it was the subject of an article in the last Propagator, remember? Another piece of gear offered was the Yaesu FT-690 6m rig with 5W output power, a shade under two hundred dollars. The hope was that the whole 6m amateur band would be opened up with the demise of TV Channel 0. Another eighty dollars or so got you a small linear which doubled the output power. The 6m band is rather an oddity - just ask anyone who regularly works it. A good antenna and plenty of power is a pre-requisite so the linear was handy although it's only fair to say 10W is severely "under-gunned" for 6m operations. Kenwood likewise offered a VHF all-mode transceiver in the TS-711A and a UHF all-mode unit in the TS-811A, plus their usual HF gear.

IBM unveiled what was to prove one of their worst products ever when they announced the PC



Junior. It was called the "Peanut" before its release, but it proved to be more lemon than peanut. It featured (pioneered?) a 62-key keyboard using an infra-red link rather than a cable, although a cable was available if required - as an option. Using the Intel 8088 processor and running MS-DOS 2.1 the basic version had 64K of RAM, two cartridge slots and ports for a printer, disk drive, joysticks and a modem. The enhanced version had a built-in 360K drive and sold for about \$US1250. Precisely the wrong idea at the wrong time, it died a death which was regretted by no-one.

They did slightly better with their Portable Personal Computer which weighed 13.6Kg (making it luggable rather than portable), had 256K of RAM (expandable to 512K) a choice of single or double 360K drives, a built-in 229mm monochrome monitor and a universal power supply. This sparked a race by several manufacturers to develop luggables. Compare today's laptops and notebook machines. Texas Instruments also announced their portable, with similar specs. There was even a 10Meg hard disk which could also be installed inside their machine. I doubt you'd fit a Windows application of today on 10Meg - the help file alone would fill the entire disk! We call this progress.

Whilst we're on the subject of computers, Apple dropped the price of the ill-fated Lisa but there was a catch - there was no software. The price was a cool \$US8600. If you added the previously-bundled software it climbed right back to just under \$US10,000. As we all know, it wasn't enough to save the Lisa which was probably one of the best examples of the right product at precisely the wrong time. All was not lost for Apple however - they announced the Macintosh, which had been developed using the Lisa technology but pitching the price in the right range and designing the machine to be manufactured "in the millions". This time they got it right.

In December of 1983 one Justice Beaumont of the Federal Court had ruled that computer software was not subject to copyright in Australia - a classic case of technology far outstripping the law. The amended act only covered films, sound recordings and videotapes, as well as written works. Predictably there was something of a frisson amongst the computer industry in early 1984 as the import of this decision became apparent. You could say the virtual cat was well and truly amongst the virtual pigeons, so to speak. They sorted it out, but for a number of software company executives it must have been a nerve-wracking time...pass the Valium, please!

Channel 9 came up with a neat solution for getting live sound from the cricket pitch during outside broadcasts. Instead of using a shotgun microphone at the edge of the oval which had the usual delay occasioned by the distance involved, their engineers simply buried a wireless microphone within the base of a cricket stump. This allowed the sound of the bowler's feet during delivery, the ball being caught in the keeper's gloves, the scuffling of a batsman struggling to regain his crease and other such "atmos" sounds to be captured, greatly adding to the ambience of the broadcast... and the sound was in sync with the action.

Actually, the mic in a stump was not the first attempt. Initially, they tried burying the transmitter in the soil a couple of inches behind the stumps with the mic about an inch and a half above ground level and a small above-ground antenna as well. This worked but had two problems; it was visible and it was vulnerable, especially in the close-in play that usually accompanied a stumping. The eventual solution was to hollow out a section of the base of a cricket stump, sleeve it with an aluminium tube and place a custom-designed transmitter and mic in the cavity with the antenna mounted above it, a small hole allowing good audio pickup. Powered by a 1.5v alkaline battery, this system proved rugged and reliable. In tests the engineers battered the stump at short range with cricket balls at high speed (145Km/h) until the system failed - and the alkaline cell failed before the transmitter. The system radiated around 90Mhz, with several different frequencies being used, depending on local requirements. A standard FM receiver (88-108Mhz) recovered the transmitted sound for the audio desk operator to mix into the broadcast as required. The use of multiple frequencies at one time also allowed other networks to receive the sound and do their own sound mix



independently of Channel 9. This technology paved the way for "Stump-Cam"...but that's another story.

The Minister for Communications, Michael Duffy, announced the European dual sub-carrier system would be the standard for Australian TV stereo sound. This would permit broadcasting stereo sound or, as an alternative, two channels of mono sound in which one could be a different language to the other. Apart from anything else this allowed Australian manufacturers to begin production of stereo receivers (yes, apparently we still had some TV manufacturers in 1984).

On the subject of TV, the ABC decided to discontinue their well-rated "Towards 2000" series which had introduced many new technologies to millions of Australians. Although there were occasional technical gaffes in presentation, the program had managed to keep Australians informed about new technologies that were being developed. As it happens, the ABC's loss was someone else's gain - the program developed a life of its own, was re-born as "Beyond 2000" on a commercial network and has spawned a complete industry in its own right:- Beyond International. Perhaps being "liberated" from the ABC was the best thing that could have happened.

The ABC also began planning a new tower to replace their existing Gore Hill transmission tower which dated from 1962 and was designed to handle a single TV transmitter and an experimental FM broadcasting service. Well folks, that old tower is still there and was refurbished, a lengthy task which only finished last year. Wonder what happened to the plans for the new one and just how much tower do we each own for our eight cents a day?

On the automotive electronics front, BL Technology of Warwick, England, were developing electronic dashboard displays for motor vehicles. They were experimenting with CRTs because they considered these were the only devices capable of providing a large display with the required flexibility. Also under consideration were pushbuttons to display additional information when warning annunciators came up. Obviously they were somewhat influenced by the development of aircraft glass-cockpit display and, not surprisingly, we're still waiting to see them. With the present half-analogue, half digital gas-discharge/LCD/dial & pointer displays in the current crop of fossil-fuel-fired people-purveyors, the manufacturers have clearly adopted the "no expense is spared to keep the cost down" philosophy. Today, the presentation of data to drivers of motor vehicles is still fairly crude. Part of the problem is auto-fashion - what people expect the dashboard of a vehicle to look like - and partly a lack of enthusiasm amongst the vehicle manufacturers to depart from the tried-and-true (tired-and-true?) instrument presentation which has a known cost and is already tooled-up for volume production.

So much for 1984. The Hubble space telescope was recently focussed on that deep-space faint object called AD1985...if I can get a government grant for some detailed research I'll report on it in the next issue. The only way to stop me is to send in so many contributions there isn't room for it. Gentlemen.....start your word-processors!

#### A Few Reflections On Life, The Universe, Oil, High Pressure & Rats...

When I boot one of the OSs on my computer, I get a thought-provoking piece displayed just prior to the login prompt. Sometimes they are very short and humorous. Occasionally they are in-jokes about the computer industry, especially things like PDP-8 mini-systems. Sometimes they are just plain off-the-wall crazy. How crazy? Try this as an example...

"The trouble is we have run out of old dinosaurs to compress into oil and that's why oil reserves are running out. Scientists have tried compressing mountains of other animals under huge pressures and temperatures; cows, horses, sheep, pigs, goats, monkeys, even rats, have all been mixed with pulverised car tyres, heaped up in huge piles and compressed. Not one single drop of oil has resulted. A statistically significant number of the rats, however, developed cancer."





**FOR SALE**

1. IBM-compatible 80286 Laptop Computers - ideal for running a packet station. These machines are about the size of a phone book and are selling @ \$50.00 each. Each machine has a Nicad battery with charger and a jack for external 12v input. There's an external EGA monitor socket with 1 comm and 1 serial port. A single .144Mb floppy drive is included, with a 20Meg hard-drive. DOS v5 is installed and the machines have 3 Mb of RAM with a monochrome LCD screen. They're not fast, but OK for packet and they are cheap!

Interested? Contact Dave Thompson VK2BDT 02 4821 5036

2. A two-element 20m monoband yagi antenna, all aluminium construction. Price is \$50.00. Contact Rob McKnight VK2MT by packet or on the usual numbers (see the rear page).

3. Icom IC-2AT H/held. (thumbwheel tuning & keypad for tones)

IC-BP5 Battery pack (converted to run from a 12v supply, can be converted back)

IC-?? Battery pack (with internal carrier for 6 X AA batteries)

Speaker microphone and a Belt clip - all above items in good condition.

Philips FM828 with crystals for 144.900 and cabled to fit Paccom Tiny-Two - fair condition.

Diamond antenna W-8010 (5-band trap dipole 80/40/20/15/10 metres) includes 50 Ohm balun; max power rating 1.2Kw PEP, Length 19.2m (63ft), weight 2.5Kg, this unit is in excellent condition.

Service Manuals:- Alinco DR-610T/E, Philips FM29 & Tandy Pro-30 scanner

Netcomm Smart Modem E7F (14400bps, includes cables & power supply) - excellent condition

Acer 486 SX-20 Computer - 120Mb HDD - 8Mb RAM & a mouse. 14" SVGA monitor. The machine has Win 3.11, MS-Office, Xtgold, C 3++ Compiler & Source codes for a number of JNOS versions. Also has paKet6 & JNOS programmes.

for prices & further details contact Bruce Gollan VK2JAI on 02 9799 1676



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VK2RUW	438.225	Voice	Knights Hill	VK2RGN, VK1RGI
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