NOV 97

THE PROPAGATOR

THE NEWS LETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY INC

VOLUME 1(ISSUE 97

Welcome fellow IARS members to the new financial year. This is my first attempt at the Propagator, but I should be able to put one together a bit later on. I was asked to do one to get the ball rolling, so hopefully, someone else will edit the next one and so on to share it around a bit. It gives you a chance to try the desktop publishing package you have never really found much use for.

Congratulations to Dave VK2EZD EZD EZD on his awarding of the leather tongue. Wear it with pride Dave and look for a worthy recipient.

By the time you finally get to read this issue, the Conference of Clubs will have been held by the Goulburn Amateur Radio Club. This was attended by Rob VK2MT, Simon VK2XQX Brian VK2UBF. Courtesy of Brians limousine I'm told the trip back was most comfortable with the old cruise control set, as well as the interior climate control at a steady 20deg C.
The affiliated Conference of Clubs will be held at WIA House on November 9th, and it would be nice if we could have 2 reps present. If you get to read this before November 9th, please give your name to the secretary so that the WIA know that you will be attending.

RAFFLE

Don't forget the Yaesu FT-7B that the club is raffling only $5.00 a ticket
Drawn at the December meeting

COMING EVENTS

November
It's the world famous IARS November auction. Don't forget to bring your pre loved goodies and your soon to be pre loved cash.
All items will have an out of sight warranty, once they are out of sight they are out of warranty.

December

It has been suggested that we all have a sit down meal together with our XYL's and harmonics at the eat as much as you can restaurant in the Master Builders Club. We would need to know at the November meeting, how many of you can attend so we can book a number of tables.
Meeting night would be the same as usual.
If you plan to go to the Gosford Field Day , this would be your last chance to give Ken VK2TKE your $10.00 deposit for a seat.
First in with their deposit gets a seat. No gunnas.

FT7 HF Transceiver Raffle

The raffle will be drawn at the conclusion of the normal business meeting in December. Tickets are $5.00 each, available from the secretary at the November and December meetings. five bucks for a 100W HF radio is great value.

Amateur Classes

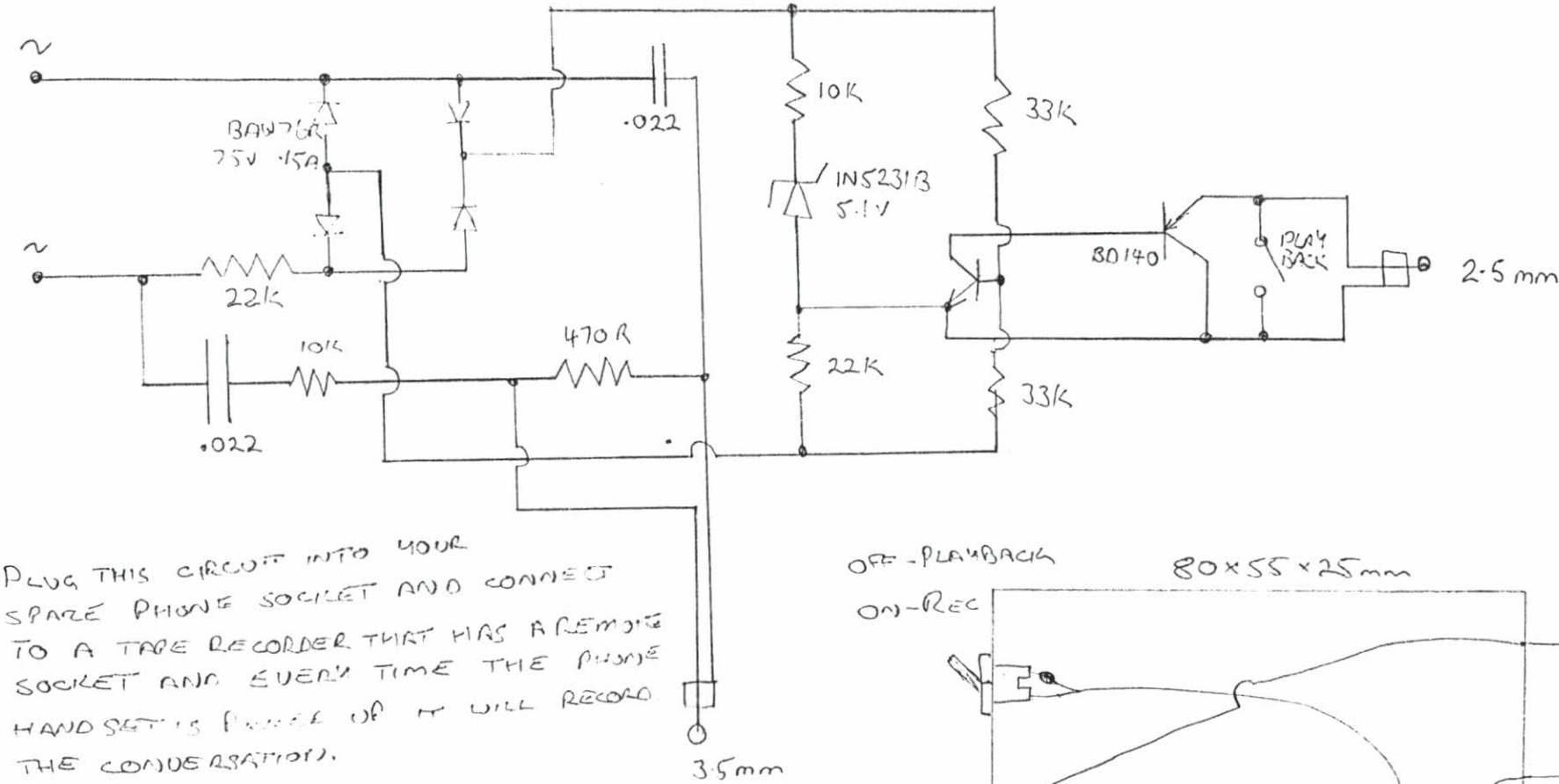
A group of interested people have got together to obtain their licenses. Dave EZD is helping to co-ordinate the classes, but would like some help on the odd occasion to help answer question and such. If you can help, please contact Dave VK2EZD. He is in the call book. There is currently 16 people in the class and they will be looking at regulations and some theory before Xmas. After Xmas they will be using the video tapes from the Gladesville Club. If you wish to obtain information on the course, please contact Dave VK2EZD.

AUCTION INFO

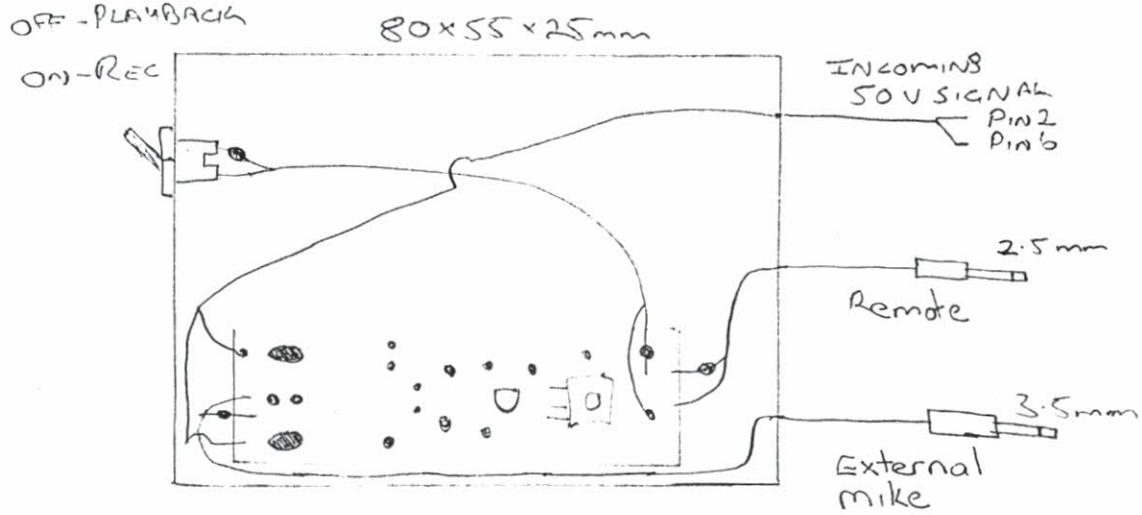
Booking in of sale items for the auction will commence at 18.30 and finish at around 19.15. When booking in or entering the premises, you will be issued with a bidding number. You must retain this for your purchases and it is also your ticket in the lucky door prize.
At the end of the auction, all monies will be paid to the secretary, your purchases checked off before you are allowed to remove any items from the auction hall. Denis VK2DMR will be the auctioneer.The club takes 10% of all sales as commision, unless the sale is a donation.
The lucky door prize is an 2M FM Tranceiver.

GOSFORD FIELD DAY

The Gosford Field Day is held at the Wyong Race Course on the last Sunday of February. Ken VK2TKE will organize a bus to take people up to the Field Day. He needs a depsit of $10.00 by the end of the meeting in December to get you seat booked on the bus. No $10.00 no seat booked. Bus Leaves Ken's QTH at 5.30am on the Sunday , from the Fairy Meadow Baby Health Clinic at 6.00am and from the bus stop below Sth Bulli Mine at 6.10 am.



PLUG THIS CIRCUIT INTO YOUR SPARE PHONE SOCKET AND CONNECT TO A TAPE RECORDER THAT HAS A REMOTE SOCKET AND EVERY TIME THE PHONE HANDSET IS PICKED UP IT WILL RECORD THE CONVERSATION.



HELP WANTED

FT901 DM 100W
ONLY PUTS OUT 10W
ON 10M

CONTACT DARRYL VK2USA

REPEATER REPORT (August- October 1996)

All systems basically working well at the moment. Unfortunately, we had 3 out of 4 Rptrs go down on the morning of Saturday, the 31st of August. That day, plus the night before, Wollongong experienced very heavy rainfall, with some of the strongest winds on record for this area. First we "lost" 8225 (& the links) about 9.00am, then about 9.30am, both 6850 & 8725 disappeared. 6975 stayed on-air but with increased traffic from users not able to use the other off-air systems. 6850 & 8725 were back on the air the next morning, with 8225 back on the Monday. Details following...

VK2RMP (Maddens Plains) 146.850 - The Rptr is working fine, with very good coverage being experienced. Perhaps more mods may yield an improvement in overall performance. We are still troubled by the occasional intermod from another system on site. Hopefully, this will be rectified shortly.

438.725 - On Wednesday the 28th of August, installed the 8725 Rptr at the site. This was despite the problem of the Rptr's exciter multiplier stage producing a signal on 146.248MHz (6850's input freq.), thus triggering 6850 whenever 8725 was TXing. Found that by de-tuning the TX frequency slightly, was able to move the offending signal from 6850s' RXer. This is only an interim measure until the new 8725 Rptr is built & installed. This should be before the end of October.

As mentioned earlier, both 6850 & 8725 Rptr's were off the air for about 24 hours, from the morning of the 31st of August. The strength of the winds that day were incredible & did quite a bit of damage to the area, as our SES Members can confirm with the number of callouts they had.The reason 6850 & 8725 went off the air, was due to the wind blowing the Rptr's heliax feedline sideways (like a sailing boat sail) between the mounting brackets, thus pulling the heliax above, downwards & the heliax below, upwards. There was hardly any give above, but unfortunately the heliax below had a "weak-point", this being an N-Connector socket. The force of the wind, eventually pulled the heliax up & out of the connector, destroying the integrity of the waterproofing tape & allowing water into the joint. This effectively shorted-out any RF signal in or out of the Rptr.

The next morning (Father's Day), the rain had stopped but the winds had only reduced a small amount. Decided anyway, to forsake the Father's Day Breakfast in Bed & go for a drive up to Maddens to investigate the failure. Brian (UBF) came up with me & as we arrived at the gates, we met an Ambulance Officer trying to get into the compound, but unable to find the correct key. We helped in out by opening both the gate & the building for him. He informed us, that they were off the air at this site & that he'd been asked to have a look. He wasn't a technician however, so we gave him some assistance in tracing the failure. We found there was no DC coming from the power supply, even though there was 240V present on the input. We "forced" their system across to the back-up batteries & this got them back on the air. I later found out that their P/S was actually working, but that the relay that changes the DC supply from the P/S to the batteries had dirty contacts on the P/S side. We can only assume that the 240V supply had gone off & on a few times & maybe caused some arcing which had left carbon deposits on the relay's contacts. So the strong winds & rain were not the direct cause of their failure, but more an indirect cause.

Upon arrival, we had also noticed that another service's antenna system had broken it's mounting brackets on the tower & was rocking back & forth in the wind, apparently held only by the antenna's heliax. Decided, despite the strength of the wind, to climb the tower & check our antenna system (which had a 10 to 1 VSWR) & also to try & lash the swinging antenna system back to the tower to prevent the whole assembly from falling the 120' feet back to earth. If I thought it was windy at ground level, nothing prepared me for what I experienced 140'above up the tower.

The wind was so strong that it was impossible to breathe if you faced directly into the wind (like sticking your head out of a speeding car). Found the problem with the heliax as outlined above. Dried out the joint, refitted the now damaged N-connector as best I could, while hanging on VERY tightly. Got Brian to check the VSWR & all was better. Climbed down to the swinging antenna system & tied a large rope around it back to the tower, then proceeded back down to ground level.

Since then, both Rptr's have been fine, although we'll have to remove, replace & reterminate the damaged heliax connector in the near future.

VK2RIL (Sublime Point)

Although there was no radio equipment at the site, Brian & myself decided to stop in at Sublime Point on the way home from Maddens on the same day. We were shocked at the amount of damage done to the trees, picnic sheds & signs at the site, it really looked like a cyclone had hit the place. We then found that our Diamond X-200 antenna up the tower was now missing it's vertical section, consisting only of the base & radials. Fortunately, we found the missing bits (we thought that it would've been somewhere between here & Fiji by now!) I believe the X-200 is suppose to be able to survive winds over 100mph, but it didn't survive what hit Sublime Point.

Decided to once again ignore the winds & retrieve the remaining portion of the antenna to try & hopefully fix in the future (which John ZLJ is presently trying).

This site is still earmarked as a ROSE packet digipeater site sponsored by the Sth Coast Packet Group, but as mentioned in the last Report, this whole installation has been beset with problems & delays. Installation dates are still very much up in the air.

VK2RAW (Mt Murray)

The planned installation of a 7575 NETROM digipeater at this site has proceeded slower than expected while trying obtain the TNC & radio for the "right price". This has now been done & with the assistance from Mike DFK with the TNC, we are just awaiting nice weather so that we can lower the mast & change the antenna. We're going to use the BIG 27' long collinear that Reg (ex-EMI) built for our old 7275 Rptr.

The other system earmarked for Mt Murray is the 10m Rptr RXer & link TXer. This system has been complete for a few months now, but we have been apprehensive to put it on the air while we have no remote control of the system. This remote system, plus WIA Broadcast RXer (with CTCSS decode) & the link TXer to send the Broadcast across to 8225 Rptr automatically, have to still to be completed.

The installation of both the Packet system & 10m Rptr RXer has to also include some energy efficient equipment & circuits as it is a solar-powered site. The Packet radio, the TNC & the 10m Rptr RXer & link TXer will presently draw to much current for what the solar panels can generate, so a bit of thought & time has gone into ways to reduce the overall current consumption. This involves modification to the existing eqpmt, plus building of "power saving" circuits, as found in many handhelds these days.

VK2RUW (Knights Hill)

The 8225 Rptr & Goulburn/Canberra link were installed on the 17th August 1996, with the able assistance of Ken TKE & Chris XBC. The installation went well & to plan (surprising all present). Since then it has worked very well with lots & lots on contacts through the linking system. Contacts from as far north as Port Stephens through to Wagga, Nimatabel & even a fellow in VK3 to the south.

The Clock announces the time on the hour, followed by a full voice identification of the 3 Rptr's in the link system. The normal 10 minute identification is also voice, but is only a short callsign only transmission.

The WIA VK2 Broadcast is relayed on Sunday mornings at 10am, with the WIA VK1 Division Broadcast in the evening at 8pm. The information presented on the two Broadcasts tends to complement each other.

As mentioned at the beginning, this Rptr went off the air on the morning of the 31st

of August. The source of this system's failure was not antenna or feedline related, as was the case at Maddens.

The failure was caused by the built-in DTMF encoder unit (which was only built into the control unit to allow convenient control of the system when on-site). The very high humidity levels caused by the torrential rains caused condensation in the room where the gear is installed, which got into the encoder's touch panel, causing enough continuity on one of the numbers to produce a continuous generation of DTMF tone, which caused a lock-up in the control system.

The annoying thing about this failure was that the encoder had caused me concern while building the control unit, because it has no on/off switch, relying on the momentary contact of one of the buttons to toggle the unit off & on. The condensation had got into the on/off button, toggling it on & then got into a numeral button producing a continuous tone. How lucky (should that be unlucky?) can you be.

On Monday the 2nd September, took a long lunch break & went to the site with a pair of side cutters, already having figured out the problem previously. Cut the wire supplying power to the encoder, everything reset & the Rptr was back on the air. Apart from the above little problem, the Rptr & link radio have performed very well since then.

The 10m TXer will be installed at this site eventually, re-transmitting what the 10m RXer receives at Mt Murray.

VK2RIS (Saddleback Mtn)

6975 Rptr continues to perform well. In the 12 months it has now been on the air, it has required no attention. This is as you can expect, rather pleasing. Stations as far south as Bega & north to Port Stephens have made contacts thru the system. Further improvements are planned, like installation of a pre-amp on the RXer to improve receive performance.

When the 10m Rptr is installed at Mt Murray, there will be a controllable link across to 6975, allowing 2m operators to talk out on 10m & of course the opposite of 10m to 2m.

Well that's about it. There is still a few projects on the bench, but the next few months should see them completed, allowing a well-earned break for the Rptr Committee.

Till next time - RoB VK2MT.

Built or designed something lately? How about an article .

AMATEURS GET THE SES ON THE AIR

When the big windy wet was on that put paid to everything with an antenna on it, the SES was pretty busy as you could imagine.

I got a call from Denis VK2DMR over the old 600 ohm, asking if the radio club could organize the setting up of an SES portable repeater at Saddleback Mountain as they needed the extra capacity.

The equipment was available from the SES and had to be transported to the site and commisioned.

I called over the clubs repeaters and within a couple of minutes had 3 willing helpers to do the job.

Brian VK2UBF (who had just spent all morning with Rob getting Maddens Plain back on the air), Chris VK2XBC and

Alan VK2(Sorry Alan my mind has gone blank).

These hardy 3 plus a helper from the SES weaved their windy way down to Saddleback Mt to install the equipment. Much fun was had by all concerned as the boys had never seen the equipment before and the weather conditions were no conducive to mucking around with 40ft poles in the vertical plane. The dround was soo soft that the guy rope pegs did not want to stay in the ground, so life was not easy. I spoke to Denis later on that day and he said that the boys did a great job . TNX guys.

Way Back When...1981

(Somehow this article was not included in the Propagator in sequence, so we present it in this issue with apologies...)

Remember 1981? Once again the pile of old electronics magazines proves to be a fruitful source of memories. Can you remember some of the following technological leaps, stutters and stumbles?

There was a report in one magazine about a voice-activated typewriter with the optimistic prediction they would be in common use by 1983. We're still waiting! Indeed, voice-recognition and activation of a number of electronic appliances is still very much in the developmental stage. There's a huge potential market for such devices once their reliability and adaptability is proven so major manufacturers are still pouring money into the problem.

Other predictions were a little closer to reality. One such was the Cardphone. British Telecom announced in early 1981 it was testing a new type of public telephone which did not require cash. Rather than magnetic encoding as used in today's phonecards, the system used a series of holographic stripes laid down into the card during manufacture. One set was visible and represented the financial credit available - every time the card was used a tiny heating element inside the phone melted some of the stripes to deduct credit from the card. The other set of stripes was used to carry a code known only to the manufacturer, presumably as a security measure. Close, but no cigar! The magnetically-encoded phonecard of today was to emerge years later and the big surprise about the modern phonecard is how collectable they appear to have become. Then again, the same comment was probably made by the Victorians shortly after those little gummed pieces of paper had been invented to speed the carriage of mail throughout the British Empire stamps. Who would be so stupid as to collect them?

Cautious predictions too about the future of electric vehicles. The options for battery technology and hybrid-engined vehicles were examined and several photographs of prototypes (invariably modified from existing vehicles) appeared. A UK-Danish team actually predicted electric vehicles would take 5% of all European sales by 2000 and 15% by 2025. With less than 4 years left this prediction appears to have been slightly optimistic. Problems of weight, battery capacity and recharging, sustainable speed and usable range still remain. The mass-production electric commuter vehicle of the future remains just a vision in the minds of development engineers and a nightmare for those with a heavy vested interest in fossil fuel and internal combustion technology. Looks like we'll just have to wait a lot longer for that one. Why does this not surprise me?

Philips and Sony had announced their pioneering Compact Disc audio system. A photograph of the equipment was published in the January 1981 issue of "Electronics Australia". Did any of us suspect we were witnessing the beginning of the end of vinyl discs with which we were so familiar?

Now it's very difficult to buy newly-pressed vinyl although I understand for specialist markets the production costs of limited runs still beats CDs. All right if you like Cajun Music with Cantonese lyrics (a hypothetical low-demand scenario) but even now audiophiles with long memories still yearn for the richness and warmth of the famed 1970s Decca orchestral pressings. These are still reckoned by experts to have a superior sound to the clinically antiseptic clarity of CD.

How many of us had even heard music off CD in 1981? How many have heard music recently from a vinyl disc? The answers would probably be the same in both cases.

Speaking of vinyl discs, have you seen an advertisement for a conventional turntable lately? I'll bet not. Well, they were still being advertised in 1981. Mitsubishi even had a vertical linear tracking model. Since conventional turntables take up quite a bit of "real estate", the

vertical linear tracker at least saved on valuable bench space. Reviews of new turntables were de rigueur whereas a review of a turntable today would count as a nostalgia" article. One such review was of a very sophisticated Sony unit which used servo-control of the tonearm itself via two motors. Most turntables merely allowed the tonearm to move under the influence of the stylus riding the groove, but the Sony system was supposed to reduce record wear and result in cleaner sound. They called it the "Biotracer" and beside the obvious functions of raising and lowering the arm, the system also positioned the arm right over the lead-in section of the record with continuous adjustment of stylus tracking force. It retailed for about $650. By comparison with this complex unit, a British Rega Planar 3 turntable was about the same price but had 90% fewer parts. The Rega Planar and Linn Sondek are still considered by vinyl buffs to be exceptionally fine turntables and being so simple they simply refuse to break down. Could the same be said of the Sony Biotracer? Shortwave listeners mourned the demise of the classic Yaesu FRG-7 receiver but were placated to a great extent by its replacement, the FRG-7700. With a digital display and FM as a bonus, it proved a worthy successor. Price? A mere $525 from Dick Smith Electronics. Look at the price of the latest generation of general coverage communications receivers and weep! Speaking of shortwave receivers, the Sony corporation were not idle, releasing their soon-to-be-classic ICF2001. Radically different in appearance from the Yaesu offering, it too became prized by its devotees. There must be a few hundred thousand of both still out there, pulling in signals as well today as they did when they were new.

The Betamax versus VHS battle raged on. Sony introduced a multi-standard model, the SL-T7. Fine if you travelled between countries which used different television systems and wanted to take your VCR with you. Question: What did you carry it in? Did it pay full fare as well? VHS kept on plugging away, kept the pricing reasonable and looked at the long-term prospect of overwhelming Betamax by sheer weight of numbers. The two half-inch formats went head-to-head but other formats sprouted in the fertile soil of electronic advancement, only to wither and die. Aside from the linear system mentioned in the last article, Technicolor nonacid a joint venture with a Japanese company to make a 3Kg portable VCR using quarter-inch tape (smaller even than today's Video 8 and Hi8). It was just one of several systems which became "roadkill" on the highway of consumer electronics development.

"Electronics Australia" published a photograph of the system in its April 1981 issue. It used a mini-helical scan system and a cassette not much bigger than the familiar audio cassette for our car stereos. Play time was 60 minutes and a single cassette cost just $12.50. Ranged up alongside a U-Matic, VHS and Betamax cassette the Technicolor unit was very small. EA confidently predicted it might be the "dark horse" in the domestic VCR market. Cost of a basic system was $1349. A colour camera to go with it was an extra $1299. Well, dark horse it might have been but as history shows, it didn't even get out of the starting gate, let alone appear in the finish.

The developmental highway became littered with good ideas, but computers seemed immune to these unfortunate mishaps. Not a lot had changed from 1980 in many ways. The Super-80, TRS-80, Commodore's PET, Clive Sinclair's ZX80 and those chunky-looking Cromemco machines soldiered on. So did Apple. Sinclair had also introduced the ZX81, an updated machine which shared the same membrane keyboard as its predecessor. Price was much the same as the ZX80 a year earlier although in view of the new machine the ZX80 had now dropped to less than $200. Internally the ZX81 was a far different machine - in-

stead of 21 chips, it had just 4. The processor was faster, more mathematical functions were provided and it came standard with an 8K BASIC ROM. In addition there was an add-on 16K RAM pack which fitted either the ZX81 or the old ZX80.

An American competitor to the ZX80 had emerged, as a kit. The Micro-Ace Z-80 was sold by Dick Smith Electronics and assembled into a machine which was similar to the ZX80 in look and function. Another nice try but Sinclair had that section of the market pretty much sewn up. Popular too were the single-board computers - a working board and not much more. You organized your own case, disk-drive, monitor and just about everything else. Price? About $700. A typical example of these computers was the Ferguson Big-Board. Quite a few of these found their way into the hands of computer enthusiasts where, it appears, they served very well indeed.

Associated with computers were the developments in early VLSI chips. The hottest announcement was from Japanese manufacturers:- the 256K RAM chip. It seemed impossible to think such an amount of RAM could be built into a single silicon wafer. Now it's megabytes per wafer and the limits are being pushed further and further. In 1981 a Pentium chip was unthinkable. What will our base or entry level microprocessor be in 2001? Will it be RISC or CISC? Will it perhaps have several different instruction sets in microcode enabling it to run programs from several different families of older processors? Will it perhaps have user- customizable microcode to allow development of task-specific processors dedicated to a particular proprietary application - the end-user actually designing their own microprocessor in-house, keeping their trade secrets safely within their own organization? Just what are the limits? Your guess is as good as mine:

Scanning receivers had been around for a few years, but 1981 saw the introduction of what was to become one of best-selling scanners of the 1980s - the JIL SX-200. It retailed for just under $500 and offered very good specifications although the number of memories was rather limited and it could only receive a single mode at a time (AM or FM).

Nonetheless, it was an excellent machine. The only problem was the gas discharge display. The power supply inverter for this would eventually expire because of heat buildup. A company in Victoria became very adept at fixing them and improved the display power supply in the process. Many SX-200s remain in service to this day. Those that still work are those whose owners drilled holes in the top and bottom cases to vent the heat from the inverter! A true classic, the JIL SX-200.

The Government also moved in 1981 to update the now very-outdated Wireless Telegraphy Act. The aim was to have the new Act in force by the end of the year, after circulating draft principles to interested organizations representing manufacturers and users for comment. The changes were well overdue since the Act dated from 1905 and technological advances required a radical revision. What is surprising is it took so long to set about the task. The old Act contained some wording which was capable of several interpretations according to the needs of the day but the time had arrived to clarify things. That classic phrase "erect, operate or maintain", (so delightfully full of ambiguities for legal eagles,) would finally be dealt the death blow. Doubtless other equally contentious legalese found its way into the new Act, time bombs just waiting for the right circumstances to explode in someone's face. Another announcement from the Department of Communications concerned "C" group callsigns. In the past these callsigns (VK*CAA to VK*CZZ) had been reserved for full call amateurs who had a reason to travel regularly and for whom continually changing callsigns as they moved from state to state

would have been inconvenient. The Department had recently liberalized operating conditions for mobile and portable stations and contended as a result of this there was no further requirement for "C" calls to be reserved for peripatetic amateurs. Accordingly, the Department had decided to release the "C" group of callsigns for general full call use.

Existing "C" calls would retain their callsigns so as not to be disadvantaged.

Finally, a communications expert predicted we ought to forget about cable TV because a subscription service would be far cheaper to implement with signal distribution via antennas rather than cable. The expert, Dennis Merchant, may well have been prophetic with recent local council action to prevent Optus Vision putting up cables above ground for its pay TV service. The article was headed "Forget Cable TV...". Oh, how I wish we could, especially after the debacle that resulted from the tendering process to assign licenses to operators. Never mind.

My prediction about pay-TV is there will be one network left after about the next three years. Seventeen million people (not all of whom watch television anyway) isn't enough to support three pay-TV networks.

Those of you who have signed up should enjoy it while it lasts.

Ned

VK2AGV

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Some goodies available at the Auction

There will be 2 only Fm 92's available at the November auction. These units are ex commercial and have been reprogrammed for the amateur 2m band. All the local and Sydney repeater offsets have been included in the programming, as well as the most commonly used paket frequencies. There are also many simplex frequencies as well as VK2RIL. More about that later.They are complete with speaker and microphone, however, the need fuses to be placed in the power cable as the cables were just cut off. 2 10 amp fuses are recommended, one in each cable.

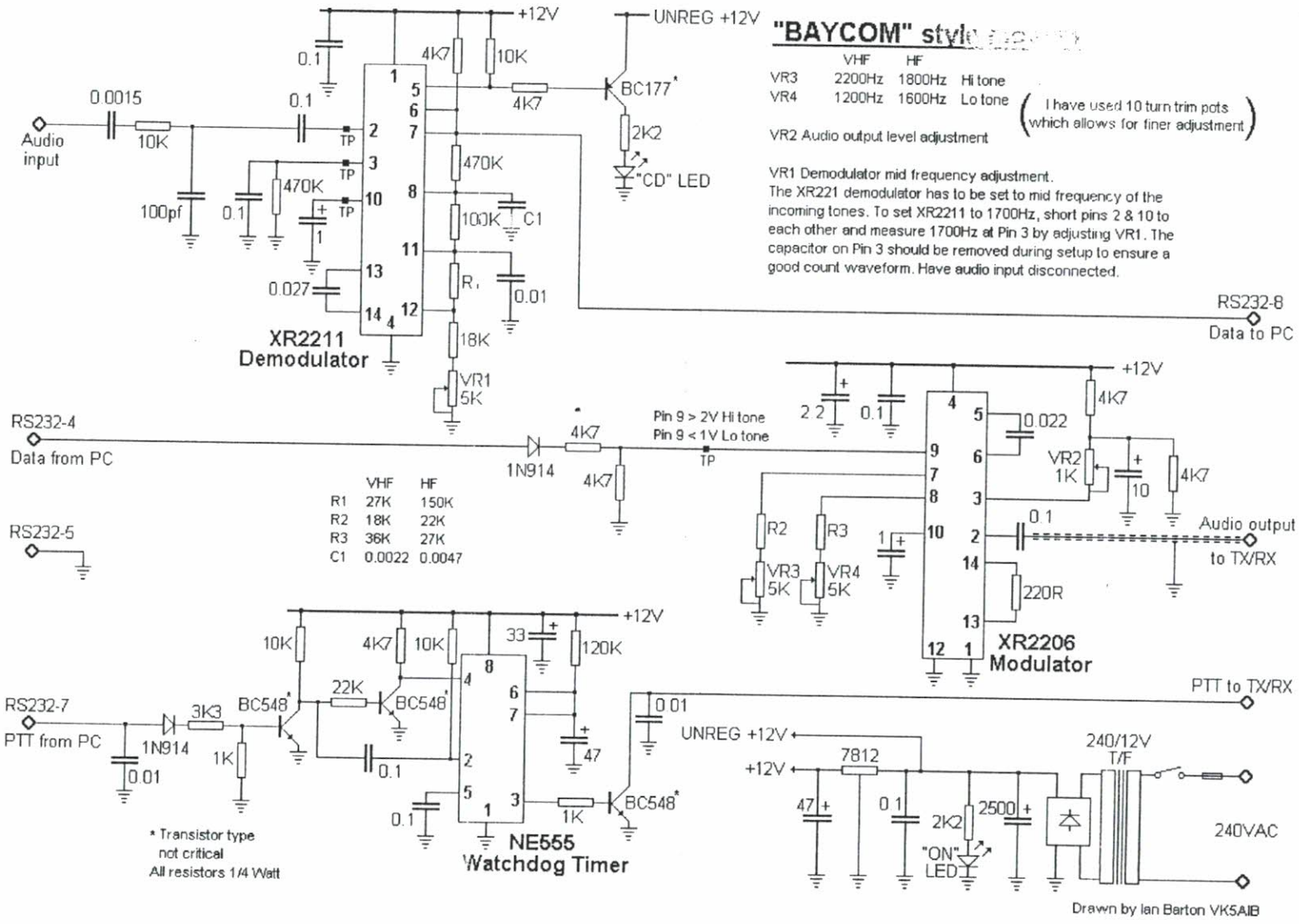
There will be three 286 computers available. Ideal for paket. One has a 70 meg hard drive with 1.2 meg floppy the other 2 have only the 1.2 meg floppy. They require keyboard and mono monitor.

Don't forget the other bargains that you will be able to pick up at crazy prices.

You can buy raffle tickets for the FT7 100W HF transceiver at the auction from the secretary. This raffle prize will be drawn at the conclusion of the December meeting.

MERRY CHRISTMAS

Fisrt meeting in the new year will be in February. This will be your last chance to pay your deposit for the Field Day Bus


"BAYCOM" style
VHF HF
VR3 2200Hz 1800Hz Hi tone
VR4 1200Hz 1600Hz Lo tone
(I have used 10 turn trim pots which allows for finer adjustment)
VR2 Audio output level adjustment
VR1 Demodulator mid frequency adjustment.
The XR221 demodulator has to be set to mid frequency of the incoming tones. To set XR2211 to 1700Hz, short pins 2 & 10 to each other and measure 1700Hz at Pin 3 by adjusting VR1. The capacitor on Pin 3 should be removed during setup to ensure a good count waveform. Have audio input disconnected.
+12V
UNREG +12V
Audio input
0.0015
10K
0.1
100pf
470K
0.027
4K7
10K
BC177*
2K2
"CD" LED
100K
C1
0.01
18K
VR1 5K
XR2211 Demodulator
RS232-8
Data to PC
RS232-4
Data from PC
1N914
Pin 9 > 2V Hi tone
Pin 9 < 1V Lo tone
TP
RS232-5
VHF HF
R1 27K 150K
R2 18K 22K
R3 36K 27K
C1 0.0022 0.0047
2.2
0.022
VR2 1K
10
220R
VR3 5K
VR4 5K
Audio output to TX/RX
XR2206 Modulator
RS232-7
PTT from PC
3K3
1N914
1K
BC548*
22K
33
120K
47
PTT to TX/RX
UNREG +12V
7812
240/12V T/F
240VAC
2500
"ON" LED
NE555 Watchdog Timer
* Transistor type not critical
All resistors 1/4 Watt
Drawn by Ian Barton VK5AIB

THE ILLAWARRA AMATEUR RADIO SOCIETY SOCIETY INC

PO BOX 1838

WOLLONGONG NSW 2500

REPEATERS

Call	*Fx*	*Mode*	*Location*	*Linked to*
VK2RMP	146.850	VOICE	MADDENS PLAINS	VK2RMU
VK2RIL	438.725	VOICE	SUBLIME POINT	
VK2RIS	146.975	VOICE	SADDLEBACK MT.	FUTURE
VK2RUW	438.225	VOICE	KNIGHTS HILL	VK2RGN VK1RGI
VK2RUW	29.620	VOICE	KNIGHTS HILL	OFF AIR
VK2RAW	147.575	PAKET	MT. MURRAY	
VK2AMW-1	144.625	PAKET	WOLLONGONG UNI	
VK2XGJ	144.700	PAKET	DAPTO	
VK2XGJ	439.075	PAKET	DAPTO	

MEMBERSHIP $20.00 PA $15.00 CONCESSION EXPIRING IMMEDIATELY AFTER THE AGM IN AUGUST

COMMITTEE

PRESIDENT	VK2XQX	SIMON FERRIE		
VICE PRESIDENT	VK2UBF	BRIAN FARRAR		
SECRETARY	VK2MT	ROB McKNIGHT		
TREASURER		ROB SKELCHER		
COMMITTEE	VK2ZLJ	JOHN LODDING	VK2ZWG	JIM BEAVER
	VK2AGV	NED McINTOSH		
REPEATER COMM	VK2MT	ROB McKNIGHT	VK2TKE	KEN GOODHEW
	VK2ZLJ	JOHN LODDING	VK2BIT	PETER WOODS
	VK2CAG	GRAEME DOWSE	VK2XBC	CHRIS STEVENS
PUBLICITY	VK2UBF	BRIAN FARRAR		
BROADCAST	VK2UBF	BRIAN FARRAR 146.850		
	VK2MT	ROB McKNIGHT 438.225		
EDITOR				
PRINTER	VK2XQX	SIMON FERRIE		
CANTEEN	VK2KVH	VIC HEE		
LIFE MEMBERS	VK2OB	KEITH CURLE	VK2CAG	GRAEME DOWSE
	VK2ALU	LYLE PATISON		