THE OFFICIAL JOURNAL OF
THE GIPPSLAND GATE RADIO AND ELECTRONICS CLUB

MARCH 87

GIPPSLAND GATE RADIO AND ELECTRONICS CLUB

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Club meetings held at the 1st Oakwood Park scout hall in Heyington Crescent, Noble Park North. Meetings commence on the Third Friday of each month at 8:00 pm.

Club Station: VK3BJA Located at the scout hall.

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ALL VISITORS WELCOME
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PRESIDENTS REPORT

The 1987 Horse Endurance Ride is almost upon us, on the 4th and 5th of April we shall yet again go North to provide communications for this exciting field weekend. It will be an event similar to the one re-printed in this edition of Gateway, so if you are interested in helping out contact one of your committee members for details.

This Friday night is TUNE UP NIGHT.
On this Friday, (20/3/87) bring your sick and mal-adjusted radios along to the meeting and we will have the test gear there to improve or condemn your ailing appliance.

On the following morning the Dick Smith Springvale Radio and Electronics dempnstration will also be in full swing, certainly worth a look if you are in the neighbourhood.

Readers may notice that the mailing of the newsletter has changed slightly, we are now using a computer to label the mag and we are not using envelopes. Last month we made a mistake and sent the newsletters in an oversized envelope with insuficient postage. Our new format will prevent this from happening again.

Please note that next month the general meeting will be on the second Friday to avoid Good Friday on the 17th.

Finaly, the 1987-88 subscriptions are soon to be due. If you wish to get in early see Albert VK3BQO and he will be glad to extract $10 from you.

Untill next month, be good and keep those mag articles rolling in.

Ian Jackson Pres, GGREC

MARCH 1987

TRIAL BY RADIO...

by Ian Jackson VK3BUF

Re-printed from ARA, volume 7, issue 2

"Checkpoint 8 to VK3BJA"
"Go ahead Checkpoint 8"
"Additional information as follows . . . at T 1159 we had R78, Y14, Y19 and W3, QSL?"
"Received ok Checkpoint 8, VK3BJA standing by"

This series of strange conversations were all to be heard on 2 metres in the picturesque mountain country of the Rubicon Ranges in central Victoria. They played a major part in the 1984 Horse Endurance Ride conducted by the Apex Club of Alexandra on the 8th April.

Almost seventy horses participated in various classes of competition — half of which were to complete the 80km section that took them along the entire length of the course past some twelve checkpoints.

The terrain through which the ride occurs is a VHF nightmare that makes the Dandenong ranges look like a golf course. Forestry tracks meander through the mountains, dense with dripping tree ferns and towering eucalypts. The course is plotted with hundreds of coloured flags installed with the use of trail bikes.

Major track junctions are monitored by the checkpoint operators. Their task is to identify the contestants as they pass, and, where necessary, provide them with back-up assistance. The most difficult part of the job is to pass all this information on to Camp Jungai, the trial starting point and headquarters. Camp Jungai, sited at the Rubicon power station, was originally a work camp, but is now reserved for use as a recreational camp.

The checkpoints are run by members of the Gippsland Gate Radio Club of Dandenong, an effort co-ordinated by Peter Weeks VK3YZP for the past three years. Prior to this, the course was monitored with the use of C.B. radio. Many difficulties arose here, as the range of communications in this sort of terrain was restricted to about 10kms on 27 MHz. Interference was also a major problem where propagation from distant locations increased the 'noise' level dramatically. This meant that checkpoints closer to main headquarters were kept very busy relaying information from every othe checkpoint. Error developed in messages relayed three or four times is considerable and in this event wrong information is worse than no information at all.

The usual routine is for the checkpoint operators to be in position well in advance of the approaching competitors, and relay all the traffic information as it occurs to a common radio control point at Acheron via whatever band or mode of transmission can make the trip. Here, all the messages are sorted out and relayed to Camp Jungai.

Last year, this was done with the use of a radioteletype link on two metres, with a couple of Siemens teleprinters and home 'brew modems. The information was passed to the teleprinter operator for re-transmission. This enables progress reports to be received in hard copy at Camp Jungai. The system worked great in theory, but when tried in practice it placed formidable pressure on the typing speed of some amateurs — hence information arrived at the Camp about thirty minutes old.

When the running of the 1984 trial was confirmed, extensive plans were made aimed at improving the previous year's effort. . .

On the seventh of April, the checkpoint crew left Melbourne looking like a convoy of mobile receipt blocks with PTT switches greased and clipboard springs well adjusted. Upon arrival at Camp Jungai, a pump-up mast was erected and a UHF link established to Acheron on 439 MHz. In the camp canteen, a TRS80 model 4 microcomputer and line printer were installed and tested. Another group drove to an isolated spot on the Skyline Road, 15kms north, where a breathtaking view could be seen of Lake Eildon to the north and the Cathedral ranges to the south. Here, the group set up a 2 metre portable field repeater, tested it and returned to Camp Jungai where accommodation made available by the Apex Club was established in cabins nearby.

The field repeater is an interesting piece of equipment. It is seldom used for anything other than this annual event. It is a battery powered ten watt output device that uses touchtones to control several modes of operation and features a single 5/8 ground plane for its antenna system. This is coupled via a home brew diplexer unit constructed from a copper clad double sided printed circuit board. Its main function was to ensure communications from the horse trial area in the south, to the control point at Acheron.

After all the preparations for the following day had been made, Radio Club members dissipated some of their enthusiasm at a Chinese restaurant in Alexandra for the evening. An extra excuse for celebration was exploited when it was revealed that Tony VK3ZOT had his birthday on that day. As a tribute, a team effort had soon constructed a small pyramid of empty drinking containers on the restaurant table. At the same time, George VK3YZG conducted experiments with centrifugal force and wine glasses on the rotating serving platter. Later, after playing radio and consuming beverages for a couple of hours, the last of the group retired to bed at 2am the following morning.

At 4.30am the operators arose, devoured a hearty breakfast, prepared with thanks by the Apex Club crew, and departed for their allocated checkpoint sites. Most tracks were reasonably easy to find in spite of the engulfing darkness. When there was any doubt about the direction of travel, further details were passed on over 2 metres.

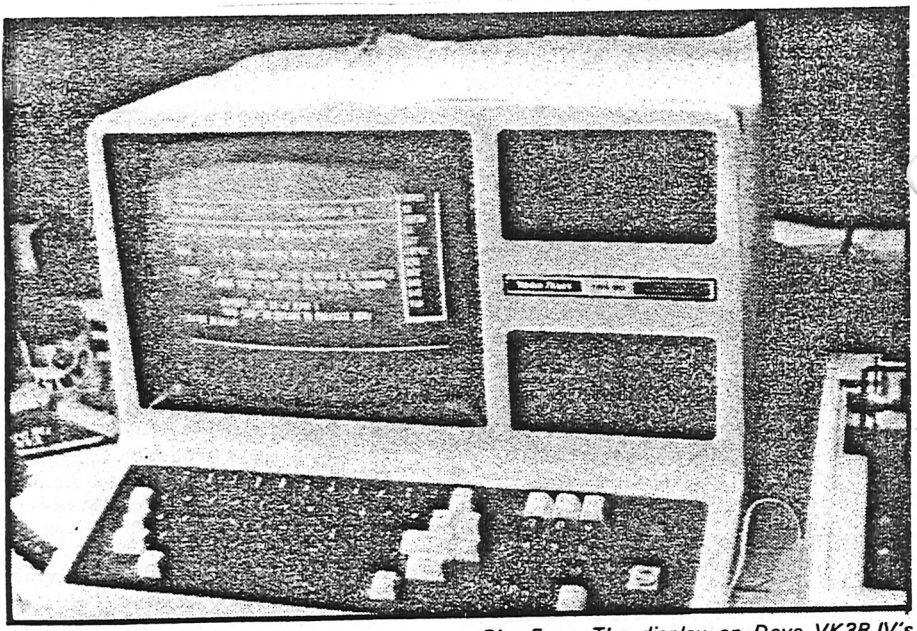
The road conditions were fair, in view of the recent weather. There was nothing a robust Hillman could not cope with, except perhaps for checkpoints 2 and 6. Here tracks were extremely steep — the path littered with large sump-busting type rocks. A Land Rover and Suzuki four wheel drive vehicle were used to access these locations.

The morning was an excellent one, the air cool and fresh. Both horses and riders assembled at the starting point stamping their feet and blowing vapour rings through their nostrils. At 6.30am, when the tip of the mountains surrounding the valley turned gold with the encroaching dawn, the first group of riders departed up the stoney track. Kerry VK3NZI and his wife Lynn were posted at checkpoint one, a most difficult spot as the riders still travelled as a group. They endured extremely well as twenty five contestants simultaneously called out their colour and number identification. This information was noted on checklists provided, and at an opportune moment was transmitted to our radio control point at Acheron. In this case, 24.8 MHz was used as a link.

Here Peter VK3YZP operating under the Club callsign, and with the assistance of his wife Taryn, progressively accepted details from all twelve checkpoints and relayed this via 70 cm to Camp Jungai where Dave VK3BJV ran the computer.

Prior to the trial, Dave had spent dozens of hours writing an enormous programme to collate all this information using a specially devised colour-number abbreviation system. Riders wore vests coloured in red, yellow, blue or white, each with a large two-digit number pinned in the centre. This required a tricky bit of programming, as the numbers were fairly scattered, and the same number could appear on two different colour groups. Information was entered by presenting a checkpoint number, a time, and the identity of horses passing at that time using the colour-number abbreviation. For example: Blue twenty one was entered as 'B21'. At fifteen minute intervals, the computer produced a printout that was pinned up for trial officials and relatives of contestants.

Before the day was over, more than nine hundred messages were handled in this fashion. Dave's biggest problem turned out



Pic. 5 — The display on Dave VK3BJV's computer which handled all the data.

to be typing with a microphone in his hand, and he suggests that in future a headset, boom mic and footswitch be used.

Proceedings went smoothly and at midday horses were submitted for vet inspection. The heart rate was monitored thirty minutes after arrival and if the horse had not then recovered to within a maximum pulse rate, it was not permitted to complete the course. If the inspection was successful there was another thirty minute break and the team resumed the journey for the 'second leg'. There were few problems here as the emphasis of the trial is placed on the pleasure of the ride rather than the stark competition.

The checkpoints performed their task well. Most locations could communicate to the co-ordination point at Acheron quite well on simplex, so even though the field repeater covered the entire terrain, it carried only light traffic. There were few slip ups, and enough activity to keep the whole crew occupied throughout the day, though some were stationed at what seemed to be local mosquito colonies.

As all the horses and riders passed each checkpoint, the operators shut down and returned to Camp Jungai for much needed refreshments. The trial drew to an end at about 4pm and everyone congregated in the canteen to view the final results. Because each printed out superceeded the previous one, the final copy included details of every entry made throughout the entire event. It made very impressive reading.

Most of the amateurs did not remain for the presentations. Antennas were pulled down, equipment was packed away and prepared for the return trip to Melbourne, leaving behind what had turned out to be the most successful horse endurance ride yet.

This of course did not prevent speculation about what could be done to make the 1985 trial even better. The general consensus was that a computer is certainly the way to go in future. Andy VK3KCS commented that one avenue of improvement would be to paste 'bar codes' on the sides of the horses and equip the checkpoint operators with light pens to scan them like a library book.

Much credit is earned by the organisers who have established Australia's most unique horse trial in an outstanding mountain environment which mixes the tension of a Grand Prix with the atmosphere of a family outing.

As for the checkpoint crew, by the time they had returned to Melbourne, their main features were red eyes and sore throats, as after using radio for almost two days solid, who wouldn't be a little hoarse?

DATA PROCESSING

Enter the superchip

The recent introduction of Intel's 80386 computer chip is being heralded as the start of a technological revolution in personal computers by making such applications as voice recognition and computer-aided design and engineering possible. It can run several programmes simultaneously and be used by more than one person at the same time.

The 80386 chip is a 32-bit microprocessor, capable of processing data up to eight times as fast as the early micros.

Speed is critical. While the original IBM personal computers operated at 4-6 MHz, the 80386-based machines boast a speed of 12.5MHz, with improved models promising an even better performance.

But 80386's biggest impact will be on the memory capacity of new micros. Until recently, the limit was a million bytes, which is one megabyte or about 500 typewritten pages. The 80386 boasts a memory of 4,096 megabytes.

The main component needed to fully exploit the 80386, and the one upon which almost all other developments will be based, is the operating system. This is the shell around the microprocessor, enabling it to issue the proper hardware and software instructions.

Currently the most popular operating system is the M5-DOS, which was designed for IBM. The DOS is the standard model for personal computers but it is incapable of supporting the 80386 chip. Until the improved DOS model is launched next year, software companies will be reluctant to design expensive programmes. Hardware companies producing adaptors and memory devices face a similar dilemma.

Although IBM owns a significant share of Intel, it has set no date for the launch of an 80386-based computer. Traditionally, IBM has been the pace-setter in the market but Compaq, a maker of IBM-compatible machines, launched an 80386-based machine in September.

When the full potential of the 80386 is realised, tasks previously confined to large computers will be possible on one desktop personal computer. ■

Paul Meyers in San Francisco

☐ Running on rice

■ A generator fired mostly by rice husk could soon supply electricity to rural areas in Indonesia. Developed by the Bandung Institute of Technology, it comprises a 20,000W engine which uses one part diesel to 10 parts rice husk. The generator is currently supplying power to local handicraft industries and some 300 households in the town of Majalengka, West Java. If successful it will be mass-produced.

☐ Mapping the desert

■ A computer-based model for producing maps detailing the process of desertification has been successfully tested. According to the International Bureau for Informatics, the system works faster than traditional methods and produces maps with a reasonable degree of accuracy.

It was developed by several Swedish government agencies in cooperation with the University of Khartoum, Sudan. ■

☐ Video rays

■ A company in Hong Kong has developed a new radiographic system which captures images using an X-ray sensitive video camera. The samples can be viewed instantly. Slight differences in shade, not usually obvious on X-ray films, are displayed as bright contrasting colours.

The new technology provides hard copies from monitors, image signals and conventional X-ray films and is particularly useful for controlling production processes and analysing defective products.

☐ Wind power

■ Energy for pumps, TVs and fridges can now be obtained from a new portable windmill. The Windstream, produced by Thermax Corporation of the US, can provide DC or AC current when wind velocity is 3.5m a second or more. The unit weighs only 9kg and can also be used as a power source for communication systems.

Computer scavenger

MILLIONS of tonnes of scrap metal are produced every year. Iron merchants extract most of the iron and steel, using powerful magnets, but non-ferrous metals, such as aluminium, brass and copper can only be retrieved by hand. Less than half is normally recovered.

Now Warren Springs Laboratory in the UK has developed a computer-based process that can sort up to 14 different metals a second. An X-ray scanner identifies them by the frequencies they emit, and the process uses a mechanical arm and air pressure to push them into bins.

☐ Solar still

■ Parched Third World regions can now distil drinking water from brackish supplies using a solar radiation process developed at the centre for energy studies of the Indian Institute of Technology in New Delhi.

Layers of black jute cloth enclosed by two aluminium frames and glass absorb radiation and suck up saline water. The water passes through the cloth and a trough collects the distillate. The solar distiller is light and portable and can be built for about half the price of similar units now on the market, the institute says.

☐ Strokes of genius

■ China's efforts to adapt the complex and lengthy Chinese alphabet to computers have taken a step forward. An engineer at the Henan computer centre has designed a system which uses a maximum of five keystrokes for even the m complex Chinese characters. The syst recognises any character from its first four and final strokes.

Thailand's ambitious bid to develop the world's largest solar-powered telecommunications system is facing teething problems – nearly a third of the 57 planned microwave repeater stations have proved accident prone.

Lightning has destroyed four stations and fungi have infected others. And on days when there are few hours of sunlight, energy reserves at the stations have slumped. Any increase in capacity will require more investment or, ironically, using diesel generators.

But the Telephone Organisation of Thailand (TOT) is pressing ahead with its US$2.6-million World Bank-funded solar conversion project. In addition to the repeater stations, it is also building 30 smaller end stations.

A spokesman for the company said: "Over six or seven years, solar power is cheaper than a generator – there are no fuel costs and little maintenance – but still more expensive than electricity. But it costs about US$15,000 a kilometre to set up a power line – the cost of a solar station."

Solar power first caught the eye of TOT in 1977. Four years later, private industry introduced the first solar-powered TV set and lighting in a northern village. Some 50 houses took part in the experiment, which was expanded two years later to nine other villages.

Now it has caught on in a big way in Thailand. The Asian Institute of Technology, among others, has run several pilot schemes. The military have used it for field transmission systems, and research is also being promoted by the government.

It has set up 10 solar stations costing US$53,000 in remote villages for people to recharge car batteries and domestic appliances. The service is free. The ministry plans a big solar power promotion to mark King Bhumibol Adulyadej's 60th birthday this year. It is proposing spending US$380,000 on 400 solar panels to power water pumps, gem-cutting machinery and ultra-violet water purifiers.

There are now four Thai companies assembling solar panels in association with foreign companies. One joint venture in Bangkok is between Thai Solar Corporation and British Petroleum, which expect a turnover of US$343,000 this year, almost exclusively from government orders.

Chief executive Varunee Vidhayasirinun expects the solar power boom to continue. "Costs have been reduced by half over the past five years and they may be reduced by another 50 per cent in the next five years," he says. ■

Marcel Barang in Bangkok