

# the PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY

PO BOX 1838 WOLLONGONG NSW 2500

No. 80/7

JULY 1980

## THIS MONTH'S MEETING:

Monday 14th July, 7.30 p.m. at the Congregational Hall, corner of Coombe and Market Streets.

Special feature of the meeting is hoped to be a demonstration of the Tono Theta 7000E Communications Computer, by courtesy of Vicom.

The Store will be back again, and as usual a worthwhile prize will be raffled during the meeting.

## LAST MONTH'S MEETING:

Attendance was good, with 65 people present. The special raffle for the Kenwood Station Monitor was drawn, the lucky winner being Mike VK2VZQ. Ian McKenzie VK2ZIM spoke about amateur television (see the article elsewhere in this issue).

## AUCTION:

As in previous years, an auction will be held at the November meeting. So start looking around the shack for items to bring to the auction. Remember, no poor quality junk, please - only good quality junk.

## NEW CALLSIGNS:

Congratulations to vice-president Denis McKay, VK2DMR and committee man Dave Meyers VK2PBP on their new callsigns. It sounds as though Dave is already well on the way to DXCC. As can be seen, novice calls are now into the VK2P--- series since, obviously and logically (?) P follows N and V !

## "PROPAGATOR" NEWS:

The society has purchased its own Rex Rotary duplicator, and printers Dave VK2PBP and Mike VK2VXS are already hard at work on the Propagator. They say the twenty dollar bills will take a little longer. We are also fortunate to be able to get high quality reproductions of circuits, drawings, and printed material as seen within this issue.

We greatly appreciate the contributions already made to the Propagator, but since we are now printing more, we need more! Don't hesitate to put in anything of interest... a circuit you have built... an antenna that has collapsed... a cartoon you have seen... a report on a field day or meeting you found interesting... social news of society members... and why not a few recipes to keep the XYL's on side, and bachelor OM's fed?

Copy handed in at club meetings will almost always appear in the next issue. The copy deadline is the monthly committee meeting, held on the last Tuesday of every month.

## BAD NEWS DEPARTMENT:

Amateur fees will be changed as from the 1st July. Full and limited fees will be taken from \$12 to \$15, and novice licences will go from \$6 to \$10.

Applications for the August full and limited examinations close on the 8th July, so by the time this reminder reaches you it will probably be too late.

### Double current magnet driver - contd.

The MJE340 transistors are available from Silicon Valley, or locally from Martin de Launay (opposite Dick Smith in Keira Street), for about 80¢ each.

The 3K3 collector resistors for T3 and T4 dissipate up to 6 watts, so they get very hot. They should be spaced off the P.C. board.

Diodes D2 - D5 prevent the collectors of T3 and T4 swinging more positive or negative than the supply rails, thus protecting the transistors against inductive spikes from the magnet coil.

Diodes D6 - D9 provide full-wave rectification of the 100 volt AC supply, and filtering is done by the 33 uF 350 volt electrolytic.

The 5K wire-wound pot is used to adjust the magnet current to the required value. The original intention was to run the magnet at 20 mA, as advised in the RSGB RTTY Handbook, and the pot provided adjustment from 15 to 27 mA. However, advice in the Creed Handbook obtainable from ANARTS is to use 25 - 30 mA of magnet current, so the (rather expensive) wire wound pot can be removed from the circuit. Alternatively, the 3K3 10watt resistors can be changed to adjust the magnet current.

Optional provision is made in the circuit and on the PC board for a 4K7 10 watt resistor. This can feed current via the keyboard contacts to the input LED, enabling simple, self-contained "local loop" operation.

**CAUTION:** The 100 volt DC supply is DANGEROUS and should be treated with respect.

Finally, a point about the Creed teleprinter which is not always mentioned: when you have set it up in local loop, it always prints one character behind the keyboard entry. In other words, the first key pressed produces no result; the second key pressed causes the first letter to be printed, etc.

\* \* \* \* \*

### SOLAR POWER

An article in "The Australian Science Teachers Journal" for May 1980 includes the following information:

Assuming the reflectors to be 100% efficient, the power available at the focus of a 1.5 metre diameter parabolic mirror is about 2 kW, and at the focus of a 2.5 metre diameter dish about 6 kW. By comparison, the power rating of an electric stove hot-plate is typically 1 to 1.5 kW.

Performance tests of the two dishes produced the following results:

Application	1.5 metre reflector (time taken in minutes)	2.5 metre reflector (time taken in minutes)
To cook two large chops in a frypan	30 minutes (rare)	10 minutes (slightly burnt)
To cook 6 sausages in a frypan	15 minutes (rare)	5 minutes (well done)
To boil 3 litres of water	10 minutes	2 minutes
Temperature at the focus (measured with a thermocouple)	700°C	1100°C

Users can burn themselves severely if they place their hands, etc. at the focus of the parabola, and should be discouraged from testing "how hot" the focus is by this method. Great care must also be taken to avoid eye damage.

If anyone has ideas about modulating the light beam, the thought of an optical communications link with a 6kW carrier is quite intriguing.

\* \* \* \* \*

- Brian Wade, VK2AXI

Board layout from component side.

## 27 Megahertz:

The P & T Department is presently calling for written submissions on the future of 27 Megahertz. We reproduce here the text of the P & T advertisement:

### CB RADIO WHAT CHANNELS? PUBLIC COMMENT WANTED

Radio frequency arrangements and regulations for CB radio are to be reviewed. The Postal and Telecommunications Department is conducting a public inquiry with the following terms of reference.

To report to the Minister for Post and Telecommunications as soon as possible on whether the present 18 channel 27 MHz Citizens Band Radio Service, which was established on 2 June 1977, should be retained after June 1982.

In considering this issue regard should be had to:

- (1) All matters associated with the technical operating conditions, regulations, frequencies, channel allocations and procedures governing the Citizens Band Radio Service in both the HF (27MHz) and UHF (477 MHz) bands;
- (2) The need to utilise and manage the radio frequency spectrum for the maximum overall benefit to the Australian community;
- (3) Australia's international obligations in radio frequency management; and
- (4) the need to minimise interference to other services.

The Department is seeking written submissions on these issues from interested individuals and organisations. Submissions should be sent to:

First Assistant Secretary  
Radio Frequency Management Division  
Postal and Telecommunications Department  
PO Box 5412CC  
MELBOURNE VIC. 3001

Closing Date for Submissions:  
15 August 1980

Telephone Inquiries:  
Mr. J. Kennedy (03) 609 1512

Members are urged, whatever their views, to send their submissions to the address above.

In addition, to help the Society make a submission which reflects the opinions of its members, would you please answer the questionnaire below, tear it off, and post it to the secretary or bring it to the July meeting.

#### 27 MHz QUESTIONNAIRE

	Agree strongly	Agree	Don't mind	Disagree	Disagree strongly
1. The 27 MHz band should be returned to amateurs, as promised.					
2. The 27 MHz band should be co-habited by amateurs and CB operators.					
3. The 27 MHz band should be left to CB operators, with amateurs receiving an extension to the 80 and/or 40 metre bands in compensation.					
4. Any further comments:					

## 10 METRE NEWS

The Illawarra 10 metre net (Sundays at 8.00 p.m., on 28.46 MHz) continues to flourish. Equipment used on the net varies all the way from converted 27 MHz rigs to 400 watt homebrew linears. Antennas include tribrand beams, quarter-wave groundplanes, dipoles, longwires, loaded whips, and a 4-element quad. Somehow it all seems to work, in spite of cross-polarization, aeroplane flutter, and the occasional European QRM.

From the 10 metre net comes the following 10 metre DX news:

Rick VK2DAP reports that 10 metre DX is not as good as during the summer, but around sunset European and African stations can be worked. Some of the more interesting stations Rick has worked recently on 10 metres are -

3D2DB Fiji; CR9AK Macao; HL1BV Korea; ZF2CW Port Elizabeth; 3B4BS and 5B4JE Cyprus; D29SAB, DF2EO and DF7JF West Germany; Y79YL East Germany; G4E00, G3PHT, G4JKS, G3JMH Great Britain; SP7CTY Poland; OZ4BO Denmark; FRØFLO Reunion Is.; IV3PRK Italy; YBØZA Indonesia; ZE8JB Rhodesia; VQ9JC Chagos Is.; and ZTØYFU Mongolia.

John VK2VWT has recently worked the following countries on 10 metres: Japan; USSR; W.Germany; E.Germany; Sweden; USA; New Zealand; Papua New Guinea; Canada; England; Scotland; France; Brazil; Hungary; Italy; Solomon Islands; Okinawa; Yugoslavia; Indonesia; Hong Kong; Norfolk Island; Estonia; Sweden; Venezuela; Azores; South Korea; and New Hebrides.

Morry VK2VVN has worked, on 10 metres: ON (Belgium), VE6 (Canada), 3F (West Germany), ZP (Paraguay), G3 (UK), KL7 (Alaska), YV (Venezuela), J3 (Grenada), OZ (Denmark), 3D2 Fiji, P29 (Papua New Guinea), KH2 (Guam), UA (Russia), ZL (New Zealand), 9H (Malta), and HL (Korea).

Well, that just goes to show what can be done. A tip for newcomers to the band: hop in quick and get your DX before the sunspot activity drops too much further!

\*\*\*\*\*

## EME NEWS, JULY 1980

Advice has been received that the dish is to be moved to the new site shortly after foundation work is completed.

A replacement transistor in the low noise preamplifier has provided ability to read signals some 8 db less than those detectable with the best preamp previously used by VK2AMW for EME contacts.

## SATELLITE REPORT

The AMSAT organisation needs funds for the next OSCAR satellite. Membership fees will help and will provide bi-monthly copies of the very interesting and practical space communication magazine "Orbit".

Some local amateurs spend hundreds of dollars on two metre transceivers which allow contacts at over hundreds of miles at the most. Why not invest in a project which will provide contacts with many more stations over thousands of miles and on different continents later in the 1980's ?

Invest in your VHF future now - see me about membership details at the next meeting.

- Lyle VK2ALU.

\*\*\*\*\*

## MID SOUTH COAST MEETING

The next meeting of the Mid South Coast Radio Club will be held at Ulladulla on Saturday 19th July, at the QTH of Frank, VK2HQ, starting from 10 a.m. Barbecue facilities, tea and coffee are provided, but bring your own food. For directions, call in on repeater channel 2.

## POWER LINE NOISE

In order to help many amateurs who are suffering POWER LINE NOISE, I am attempting to co-ordinate both local and world wide information.

If any of your members are having problems with, or have answers to, Power Line noise problems both technical and political - please contact VK3QQ and/or SAE for some useful information.

- Tony Tregale, VK3QQ  
(ex G3LMT, DL2AH, MP4BDN, 9L1AT)  
38 Wattle Drive, Watsonia 3087.  
Telephone 434-3810.

## STOLEN EQUIPMENT

\*\*\*\* Stolen from vehicle in Woonona, a Kyokuto 2 metre FM transceiver type FM-2016A, serial number A 4261 (this is the model with four memory channels and scanning).

\*\*\*\* Stolen from Technical College carpark, a 2 metre 5/8 whip. Would anyone with information contact Richard Wilson, VK2ZVX, QTHR. Phone (042) 29 8079 .

## ITEMS FROM VK2TTY NEWS BROADCASTS

VK2TTY transmits every Sunday at 0030 GMT on the frequencies of 7045 KHz, 14090 KHz and 146.6 MHz. The broadcast is repeated at 0930 GMT on the frequencies of 3545 KHz and 146.6 MHz. The speed is 45.45 bauds and the shift is 170 Hz (international amateur standards).

Amateur stations registered as at March 1980 are as follows:  
N.S.W. and A.C.T: Total 4604, consisting of 2363 full calls, 989 Z calls and 1252 Novice calls.

Australia: Total 13255, consisting of 6257 full calls, 3294 Z calls, and 3676 Novice calls.

In the last S.A.R.T.G. (Scandinavian) contest, VK2APG was first in Australia, and 34th in the world.

In the B.A.R.T.G. (British) spring contest, VK2APG was 4th in Australia and 50th in the world.... congratulations Gerry.

It has at last been established who has the most powerful RTTY station in Australia. On Friday morning (6th June) at 0746 local time 2BL in Sydney ran a segment of RTTY on the air. As 2BL runs 50 KW output, I guess that would take the prize. The instigator of the broadcast was Clive Robertson (breakfast announcer) with his Tono, aided and abetted by Graham Connolly (VK2BL), news reader. If you are confused by the callsigns, don't worry - Graham Connolly has the callsign of VK2BL and he reads the news on the ABC station of 2BL.

In the U.S., the FCC has announced that one of the amateur examinations is now available in the Spanish language. It is hoped that other examinations in other languages will be available as soon as funds permit.

RTTY Society members are reminded that the Annual Subscription of \$2 is now due. Please remit subscriptions to the Secretary, P.O. box 860, Crows Nest N.S.W. 2065. It is not intended this year to post the newsletter "Arwise" to unfinancial members.

## NOVICE SECTION

- Gio VK2VPD

Thank you Denis for putting in the article about P.C. boards, but I would like to add a few comments.

E Z Etch pens were mentioned but these and others like them are too expensive. The user will find that most laundry marker and parcel marker felt pens will work as long as they are not water-based.

Denis did not mention how to clean the board after the etching process. First of course the acid or whatever other etchant was used has to be removed from the board by washing it with water, taking care not to spill any on your hands. You will have to let the water dry away for about ten minutes before you can remove the ink from the copper tracks (turps and water don't mix too well). The ink is removed with some turps, which is much more effective than metho is. When the ink has been removed, the copper tracks should be cleaned with water and Ajax powder or Bon Ami until shining bright (this will help soldering later on). Do not touch any tracks with any part of you as the shiny copper will now oxidise very easily and go dull again. To keep the copper shiny indefinitely, spray it with "Electrolube" available from Tricky Dicky or paint on some of his resin which he sells in plastic bags, (both of these are the same material and act as a protective layer and solder flux but I prefer the spray can type).

I don't agree with Denis's method of drilling the holes last! It is too late to find out at this stage that not enough copper track has been left to drill a hole through or that the positioning of the tracks does not fit the spacing of the I.C.'s legs. Don't fool yourselves, even if you have used a photostat copy as a template the bits may not fit. The majority of photocopy machines copy just a little smaller or a little larger and this marginal amount is enough for an IC not to fit. Find a small piece of "perf board" and use this as your template to drill the holes for the I.C.'s. Lay out the other components according to your guide diagram and drill all the other holes in their appropriate places. Now that all the holes have been drilled you are ready to draw the tracks joining the various holes. Widen the tracks around the holes to enable a solid solder joint. You are now ready to etch.

Another point is, if you are using HCl or Ferric Chloride, don't throw the solution away when you have finished because it will work for quite a number of times afterwards even if it has changed colour.

FOR SALE: I still have that AWA oscilloscope for \$65 o.n.o. and the HMV stereo record player with amplifier for \$100 o.n.o. Surely someone must be interested in the "or nearest offer" bit? Contact me Gio VK2VPD at the club because I have no phone.

### FOR SALE:

Realistic AX-190 Amateur Communications Receiver, provision for one additional band, unmarked condition. \$150 (cost \$350 new).

Realistic DX-160 0.5MHz to 30 MHz General Coverage Receiver. Good order. (Current new price \$240) - \$100.

Contact John Doherty VK2NHA (042) 289638 (home).

### FOR SALE:

Trio 9R59DS 0.5 - 30 MHz communications receiver, plus a BC221 frequency meter. \$160 for the lot.

Contact Gerry VK2APG.

# Pixilated Patents

By Rick Kemmer

"Not with a Bang . . ."

This is No. 138 in a series of odd and interesting inventions in the electrical/electronic field from the files of the US Patent Office.

Blast off, vintage 1923. It was the hey-day of prohibition, Capone, Dillinger, the era of the flapper and the jitterbug. It was in the grand year 1923 that S. P. Cottrell received U.S. Patent No. 1,461,600 for his multipurpose combination flashlight/firearm.

Cottrell's idea for cannonizing the flashlight industry came from a saintly brother who was cannonized by the Chicago underworld, but was later canonized by the Church as perpetual light shone through him. The invention of the flashlight/cannon well avenged Cottrell's brother by casting unwanted light on gangland activities and triggering an all-out investigation that blew holes in the gang's defenses.

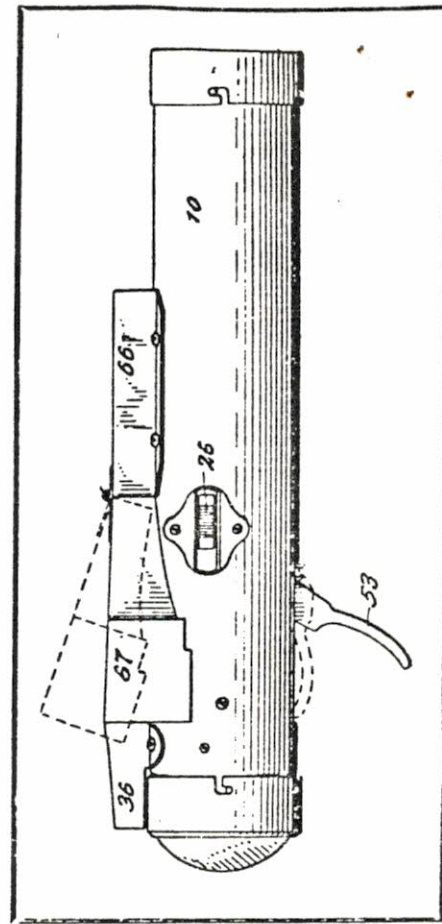
By 1925 the gunlights became a fad that wasn't matched until the hula hoop. Little old ladies roamed the streets carrying flashlights, and had the prohibition syndicates over the barrel, or at least under the gun. Cannon lights were smuggled into Alcatraz and occasioned the biggest prison break in history. It was the origin of the term "pen light." Even the insect world was terrorized by fireflies carrying submachine guns. Children played cops and robbers with flashlight-squirt guns. Their behavior, it turned out, was shock-

ing. Thousands of youngsters who shined their squirt guns on rainy days made the current obituaries where they were referred to as either "squirts" or "small fries." And by Christmas Eve, 1925, reports reached Washington to be on the lookout for enemy aircraft. Investigations showed that Santa Claus, fearful of being spotted by the wrong kind of flashlight, had installed a howitzer on the tail of Rudolph the Red Nosed Reindeer.

That was the zenith of Cottrell's invention. Almost immediately the popularity of flashlight/guns began to wane. By the outbreak of World War II, the world had largely forgotten Cottrell.

The last report of a Cottrell flashlight leaked out in 1947. It seems that a politician went to his dentist for a filling. The dentist happened to use a small gun/penlight to examine his patient's orthodontia. While the dentist searched the politician's exceptionally large mouth for a cavity, he dropped his flashlight and the politician swallowed it. Although he stumped the country over, the politician, it is claimed, never won another election. While people liked his bright ideas, glowing words, and electrifying charges, they just couldn't stand the way he shot off his mouth.

And so, as T. S. Eliot might have put it, the combination flashlight/firearm eclipsed "not with a bang but a stumper."



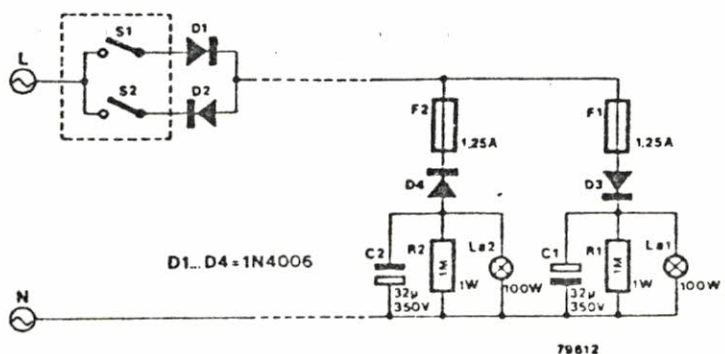
"It's hard to believe you worked coast to coast with that!"

## 2 switches- 2 lamps - 1 wire

When housewiring, the addition of an extra switch and light to an existing circuit using the same power supply point would not normally cause any problems. However the situation can arise where it is not possible to 'run' an extra cable between the additional switch and light thereby making it impractical to fit them.

The circuit described here is a simple but effective method of solving this problem by replacing the missing wire with a little ingenuity.

It will be seen from figure 1 that diodes D1 and D2 ensure that switch S1 controls lamp La1, whilst S2 controls lamp La2. The half-wave rectified mains voltage is partially smoothed by capacitors C1 and C2, so that an RMS voltage of approximately 240 V appears across the



lamps, which therefore burn at normal intensity. The value of these capacitors is determined by the power rating of the lamps used. The appropriate value can be calculated by using the following equation:

$$C_x = 32 \cdot \frac{P_x}{100}$$

where  $C_x$  is the new value of the capacitor (in  $\mu F$ ) and  $P_x$  the power rating (in W) of the corresponding lamp.

W. Richter

(Germany)

## AND NOW FOR A BIT OF RELATIVITY...

A fencing instructor named Fisk  
In duels was terribly brisk.  
So fast was his action,  
That Lorentz contraction  
Foreshortened his foil to a disk.

## THE POTENTIAL OF THE CENTIMETRE AMATEUR BANDS.

The microwave bands are commonly misbelieved to be limited to "line-of-sight". However, the bands over 1 GHz are useful not only for space communications, but also for terrestrial use and well beyond the horizon.

In the 10 GHz band, low power unstable free-running oscillators and "noisy receivers" with 1 MHz passbands have permitted communication up to 500 km on sea and over 350 km on land. These figures do not consider communication between portable stations located high on mountains, but sea-level locations whose horizon is only 20-50 km.

There is reasonable hope that these bands, several MHz wide, may become available for regular medium distance communication when amateur techniques shall be improved to a level similar to standards on VHF.

Improvement to receiver sensitivity depends mainly on the transmitter stability; but the "frequency jitter" originated by crystal oscillator multiplication is so far one of the most important obstacles.

According to statements by G3RPE, with little improvement of the current techniques, reduction of the receiver passband and the use of an efficient antenna such as a paraboloid 180 cm in diameter, regular communication up to 400 - 600 km by means of tropo-scatter may become a reality.

The basic conditions for scatter communication at amateur level in the centimetre band are: 2 kHz of passband in the receiver, and 180 cm paraboloid reflectors at both ends. Then the standard conditions become:

- 1.3 GHz band, 40W output = 16 kW erp — distance 600 km.
- 2.3 GHz band, 30W output = 30 kW erp — distance 500 km.
- 5.7 GHz band, 2W output = 10 kW erp — distance 400 km.
- 10 GHz band, 1W output = 16 kW erp — distance 400 km.

We cannot risk to lose such a powerful medium for communication which may accommodate thousands of new amateurs, only because many of us do not rely enthusiastically enough on it.

- from "Break-In", April 1979.

## THE W6SAI THEORY OF ANTENNA GAIN

"The DX-ability and overall effectiveness of any beam antenna is directly proportional to the time and money spent on the antenna, the difficulty of erecting it, and the overall size and weight of the array."

- Bill Orr, in "All about Cubical Quads"



Drawn By Lisa, daughter of John, VK2VWT.

## EARTHING PROBLEM

Perhaps it could only have happened in America but WOR, one of New York's broadcast stations, suffered the loss of 20,000 feet of above-ground copper wire earth radials from the aerial system. It seems incredible that such a quantity could be lifted without attracting attention.

The whole lot was replaced by best quality galvanised steel barbed wire, much more difficult to handle by would-be pilferers and, apparently, without noticeably adverse effect on radiation efficiency.

- "Practical Electronics", June '77

## 7490 COUNTER

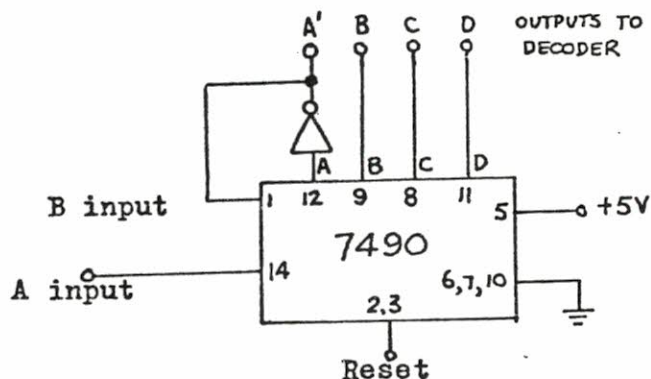
It is often a requirement to reset a 7490 counter to one instead of zero. The 7490 is in fact two separate counters in one package, with an external connection required between the A output of the divide-by-two stage and the B input of the divide-by-five stage.

These counters change state on a negative-going edge, so that if an inverter is put in the external loop between the stages, and the output of the inverter (A' in the diagram) is now read as the output of the divide-by-two stage; on reset the output count will read one.

After the first input pulse, the A' output will go to a low logic level, and as this is a negative-going edge the B output will go high, giving an output count of two.

It can be seen from the truth table that the normal counting sequence will be followed, but running from one through to zero instead of zero through to nine.

BASIC COUNT	A	A'	B	C	D	MODIFIED COUNT
0	0	1	0	0	0	1
1	1	0	1	0	0	2
2	0	1	1	0	0	3
3	1	0	0	1	0	4
4	0	1	0	1	0	5
5	1	0	1	1	0	6
6	0	1	1	1	0	7
7	1	0	0	0	1	8
8	0	1	0	0	1	9
9	1	0	0	0	0	0

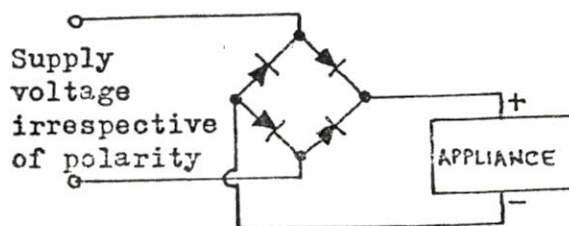


The reset line is normally low, but goes briefly high to reset.

- "Practical Electronics, November 1977.

## POLARITY PROTECTOR

A bridge rectifier built into any battery operated appliance, including car radios and cassette players, makes the polarity of the applied power unimportant. The appliance is thus automatically protected against accidentally transposed supply leads.



## CALCULATORS IN SCHOOLS

Dr. George Blakley, head of the maths department at a school in Texas (U.S.A.) is reported to have made the following comment when asked if calculators should be used in schools -

"Like sex and automobiles, they're here to stay, but if you get involved with them too early, you might get hurt."

Candidates for the P&T amateur licence examinations are reminded that they are permitted to take portable, non-programmable calculators into the examinations with them - however, battery failure does not entitle a candidate to special consideration.

MACELEC PTY. LIMITED  
99 Kenny Street (P.O. Box 1755)  
WOLLONGONG. 2500 PH. 29 1455

TS120S	80-10 Metre Transceiver 100 Watt.....	\$725.00
TS120V	As Above 10 Watt.....	\$550.00
PS20	Power Supply for 120V.....	\$85.00
PS30	Power Supply for 120S 20 amp.....	\$205.00
R1000	General Coverage Digital Receiver.....	\$498.00
SP100	Speaker for R1000.....	\$44.00
AT200	Antenna Tuner-SWR-PWR Meter.....	\$160.00
SP520	Extension Speaker.....	\$33.00
MA5	80-10 Metre Mobile Helical System.....	\$99.00
HS5	Deluxe Headphones.....	\$33.00
MC35S	50K Noise Cancelling Microphone.....	\$26.00
MC501C	Economy Base Microphone 50K.....	\$29.00
HC10	Digital-Programmable World Ham Clock.....	\$95.00
TR2400	Digital L.C.D. 2 Metre Transceiver H. Held..	\$342.00
TR9000	The Latest all Mode 2 metre Transceiver with Memories-Scanning-SSB-FM-CW.....	\$540.00
DIGITAL	Capacitance Meter Measure 1PF to 1 Farad within $\pm$ 1PF.....	\$136.85
LEADER	LDM-815 Transistorised DIP Meter.....	\$89.00
BECKMAN	Digital Multi-Meter LCD Display.....	\$159.85
B & K	50 MHZ Digital Logic Probe.....	\$63.25
MC501	Economy Base Microphone.....	\$29.00
B & K	40 MHZ Frequency Counter.....	\$126.50
TONO-THETA	7000E Communications Computer.....	\$899.00
COAX	Switches-Impedance Matching Transformers-Dummy Loads-	
LEADER	Model LMP880 R.F. Power Meter-Dummy Load 1.8 - 500 MHZ 120 Watt.....	\$139.00
LEADER	T.R. Dip Meter 1.5 - 250 MHZ.....	\$89.00
DAIWA	Automatic Antenna Tuner.....	\$269.00
DAIWA	DR7500R Rotator with World Map Centered on Australia.	

\*NEWLY APPOINTED DEALERS FOR OHIO SCIENTIFIC CHALLENGER  
SERIES MICRO COMPUTERS. SYSTEMS FROM \$385.00 to \$15000

We also stock a Wide Range of  
Professional Test Equipment, And  
Amateur Products Not Listed Here.



At the Radio Society meeting on 5th July, Ian McKenzie, VK2ZIN gave a very informative lecture on amateur television. We extend our thanks to Ian, and note below some of the points gleaned from the lecture.

### Fast-scan amateur television (ATV).

This is run to ordinary commercial standards, including 625 lines, 25 frames a second, and line interlace. Amateur operation is usually in the 70 cm and 50 cm bands.

### Picture generation.

The cheapest method is to tune a TV set to a commercial station and disable the video amplifier so that only the line raster is obtained. A slide projector containing a 2" x 2" slide of the picture to be transmitted is placed in front of the TV set, with the raster focussed onto the slide. The projector lamp is replaced with a photomultiplier tube, and the voltage obtained from the tube is the video output.

Beware of simple "door minder" cameras which for cheapness and simplicity operate at line rates determined by free-running oscillators in their associated monitors. They are not suitable for amateur TV.

Ex-TV station cameras may need external synch generators, etc.

Such places as advertising agencies can be sources of second-hand cameras and equipment.

### Signal transmission.

The simplest way to get onto the 70 cm band is usually to run a 2 metre exciter into a varactor tripler, and apply grid modulation to the final valve in the power amplifier.

An alternative approach is to use a low level "black-box" signal generator and modulator, coming out at 70 cm or 50 cm., followed by a linear amplifier.

### Signal reception.

50 cm transmissions can be received by an unmodified TV set with a UHF tuner; 70 cm signals are typically converted down to a VHF TV channel.

### ATV repeaters.

The repeater in Adelaide receives on 70 cm and transmits on 50 cm, which matches with both the simplest transmitting and receiving equipment for operators. Frequencies are sufficiently separated to avoid desensing problems, so an amateur transmitting on 70 cm can watch his own picture returning from the repeater on 50 cm. A liaison link on 6 metres allows amateur without TV transmitting capability to work ATV stations. The repeater also converts fast scan pictures into slow scan format for radiation on 2 metres, and accepts slow scan pictures on 2 metres for conversion into and transmission of fast scan. Thus pictures can be exchanged between amateurs with either fast scan or slow scan equipment.

### Slow Scan Television.

A fast-scan signal has a bandwidth of about 5 MHz, and can be transmitted by amateurs only on the 70 cm or higher bands. The slow-scan format has been designed so that the bandwidth is only 3 KHz. Thus it can be transmitted over any voice link, which includes long distance HF links. The reduced bandwidth has been achieved by reducing picture resolution from 625 lines to 120 lines, and increasing the transmission time of one complete picture from 1/25 second to about 8 seconds.

To reduce fading problems on HF links, the video information is converted into a frequency modulated audio tone which can be fed into the microphone socket of a transceiver.

The audio frequency varies from 1500 Hz for black to 2300 Hz for white, with 1200 Hz being used for synchronising pulses.

\* \* \*

## 10 METRE NEWS

The Illawarra 10 metre net (Sundays at 8.00 p.m., on 28.46 MHz) continues to flourish. Equipment used on the net varies all the way from converted 27 MHz rigs to 400 watt homebrew linears. Antennas include triband beams, quarter-wave groundplanes, dipoles, longwires, loaded whips, and a 4-element quad. Somehow it all seems to work, in spite of cross-polarization, aeroplane flutter, and the occasional European QRM.

From the 10 metre net comes the following 10 metre DX news:

Rick VK2DAP reports that 10 metre DX is not as good as during the summer, but around sunset European and African stations can be worked. Some of the more interesting stations Rick has worked recently on 10 metres are -

3D2DB Fiji; CR9AK Macao; HL1BV Korea; ZF2CW Port Elizabeth; 3B4BS and 5B4JE Cyprus; D29SAB, DF2EO and DF7JF West Germany; Y79YL East Germany; G4EOO, G3PHT, G4JKS, G3JMH Great Britain; SP7CTY Poland; OZ4BO Denmark; FR0FLO Reunion Is.; IV3PRK Italy; YB0ZA Indonesia; ZE8JB Rhodesia; VQ9JC Chagos Is.; and ZT0YFU Mongolia.

John VK2VWT has recently worked the following countries on 10 metres: Japan; USSR; W.Germany; E.Germany; Sweden; USA; New Zealand; Papua New Guinea; Canada; England; Scotland; France; Brazil; Hungary; Italy; Solomon Islands; Okinawa; Yugoslavia; Indonesia; Hong Kong; Norfolk Island; Estonia; Sweden; Venezuela; Azores; South Korea; and New Hebrides.

Morry VK2VVN has worked, on 10 metres: ON (Belgium), VE6 (Canada), 3F (West Germany), ZP (Paraguay), G3 (UK), KL7 (Alaska), YV (Venezuela), J3 (Grenada), OZ (Denmark), 3D2 Fiji, P29 (Papua New Guinea), KH2 (Guam), UA (Russia), ZL (New Zealand), 9H (Malta), and HL (Korea).

Well, that just goes to show what can be done. A tip for newcomers to the band: hop in quick and get your DX before the sunspot activity drops too much further!

\*\*\*\*\*

## EME NEWS, JULY 1980

Advice has been received that the dish is to be moved to the new site shortly after foundation work is completed.

A replacement transistor in the low noise preamplifier has provided ability to read signals some 8 db less than those detectable with the best preamp previously used by VK2AMW for EME contacts.

## SATELLITE REPORT

The AMSAT organisation needs funds for the next OSCAR satellite. Membership fees will help and will provide bi-monthly copies of the very interesting and practical space communication magazine "Orbit".

Some local amateurs spend hundreds of dollars on two metre transceivers which allow contacts at over hundreds of miles at the most. Why not invest in a project which will provide contacts with many more stations over thousands of miles and on different continents later in the 1980's?

Invest in your VHF future now - see me about membership details at the next meeting.

- Lyle VK2ALU.

\*\*\*\*\*

## THE ILLAWARRA AMATEUR RADIO SOCIETY - SERVICES

Monthly meeting: Second Monday of each month (except January) at 7.30 p.m., Congregational Hall, corner of Coombe and Market Streets Wollongong (between Kembla and Corrimal Streets).

Monthly broadcast: 7.15 p.m. on the Sunday night before the monthly meeting, on VHF repeater 5; UHF repeater 1; 28.46 MHz.

Slow Morse Broadcast: From VK2AMW, on Monday nights (except meeting nights), 7 - 8 p.m., on 1.805 MHz.

Monthly newsletter: The Propagator is usually posted to reach members during the week before the monthly meeting.

Amateur Radio Classes: Designed for those intending to sit for the Novice, Limited, or Full licence examinations - held on Friday nights, 6 - 9 p.m. Contact Keith Curle VK2OB or Denis McKay, VK2DMR.

Club nets: 6 metres: 8.30 a.m. Sundays - 52.525 MHz FM.

10 metres: 8.00 p.m. Sundays - 28.46 MHz USB.

VHF Repeater: VK2RAW, Channel 5 (146.25 MHz in, 146.85 MHz out).

UHF repeater: VK2RUW, Channel 1 (433.225 MHz in, 438.225 MHz out).

Club Station: VK2AMW.

### THE PROPAGATOR

Newsletter of the Illawarra  
Amateur Radio Society.

Registered for posting as a publication  
CATEGORY B

I.A.R.S.  
POSTAGE PAID  
WOLLONGONG  
N.S.W.  
AUSTRALIA  
2500

MR.R. MCKNIGHT  
14 IAN BRUCE CRES  
BALGOWNIE

88

2519

I.A.R.S.,  
P.O. Box 1838,  
WOLLONGONG. N.S.W. 2500.

PRESIDENT: Keith Curle, VK2OB, 24 Beach Drive, Woonona 2517.

VICE-PRESIDENT: Denis McKay, VK2DMR, 17 Doncaster St, Corrimal 2518.

SECRETARY: John Doherty, VK2NHA, 7 Risley Road, Figtree, 2525.

TREASURER: Geoff Cuthbert, VK2ZHU.

COMMITTEE: Gio Donk VK2VPD; Ron Dorin VK2VOE; Les Kirchmayer  
VK2AIK; Dave Meyers VK2PBP; Ian Squires VK2DKS;  
Brian Wade VK2AXI; Keiran Kennedy VK2DAN.

PROPAGATOR EDITOR: Brian Wade VK2AXI, 72 Murray Road Corrimal 2518.

ANNUAL SUBSCRIPTIONS: Send \$5 to the Treasurer, I.A.R.S., P.O. Box 1838, Wollongong, N.S.W. 2500., or see Geoff Cuthbert at meetings.

INQUIRIES: The Secretary, I.A.R.S., P.O. Box 1838, Wollongong, N.S.W. 2500.