

Q S X P E

*Port Elizabeth Branch of the
South African Radio League*

P.O.Box 462, Port Elizabeth. 6000.

DECEMBER 1985





CHAIRMAN'S CHRISTMAS MESSAGE

X 20

Christmas time again! It doesn't seem possible that another calendar year is almost finished. Not a very good year for our members who are connected with the motor industry, with many months of anxiety and uncertainty about their future placing a great strain on the families concerned. Generally, however, a good year for the Port Elizabeth Branch with the great majority of members remaining loyal to us despite the heavy subs increase, etc. which, considering the present economic climate, is most gratifying. We have had the pleasure of welcoming back to the Branch a number of former members, as well as a large number of new members. We have completed our first year at our new meeting venue, and the turnouts at meetings is always very good.

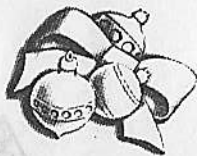
Our A.G.M. set a record with 100 people attending. The level of support shown by members and social members in all aspects of Branch activities makes the jobs of all concerned with Branch administration seem so much more worthwhile. All functions, both social and radio-orientated, held during the year, have been most successful, and my sincere thanks go to every member and social member who supported the Branch in any way at any of these events.

Such a spirit of friendly co-operation cannot do other than help the Branch grow and become a great attraction for the many who seek to become a part of this wonderful hobby.

My sincere thanks also to those members who arranged our newspaper advertising and all who made donations to the Branch during the year. May you and your family find peace and strength in the message of Christmas and may you all enjoy a peaceful and prosperous 1986.

DECEMBER 1986

THE MEANING OF CHRISTMAS



Christmas is not a holiday package wrapped with gay ribbon and holly. It is a time for meditating, for recalling that night long ago when Bethlehem cradled to its heart and gave mankind the Redeemer of the world.

Christmas should mean kind thinking, forgiveness, forgetting old cares, old grievances, fears. It should be a time for carving ideals and dreams; an hour for weaving the golden threads of past blessings into a mantle of daily thanksgiving.

Christmas is a gift transcending human understanding; an angel choir echoing the Song of Songs; imperishable glory from the very heart of heaven to the farthest part of the earth.

Christmas is a boundless love melting all grief, all heartache; hope, serene and beautiful, lighting all darkness.

CHRISTMAS IS PEACE!



THIS and THAT

We would like to take the opportunity to wish all Branch members, social members, members of Council and our Advertisers and their families a very happy and blessed Christmas, a pleasant and relaxing holiday and a prosperous happy and healthy 1986.

Committee

CHAIRMAN:	Brian ZS2AB	303498	VICE CHAIRMAN:	Lionel ZS2DD	321770
SECRETARY:	Marge ZS2OB	303498	TREASURER:	Dick ZS2RS	322111
AWARDS:	Gordon ZS2G	306776	MEMBER	Trevor ZS2AE	321746
	QSX- PE:	ZS2OB and ZS2AB.			

CONGRATS To Sam ZS2SI and Eunice on their becoming grandparents again. To Van ZS2Y on the celebration of his 50th year as a radio ham having had the same call continuously.

To: Sarel now ZS2SR, who passed his c.w. test and hopefully will be on the h.f. bands soon. To Lynn ZS2MM who now has her phone licence.

WELCOME A hearty welcome back to Fred ZS2EQ who has rejoined the ranks of the P.E. Branch. Lovely to have you back, Fred.

FIELD DAY On Saturday 16th November during the Field Day, the Branch seemed to have found the ideal spot around Port Elizabeth for DX operating. The bands were open from the moment we started at 10a.m. until we closed down at 11.30p.m. when the Sweepstakes Contest started in the USA. We worked 193 contacts on 4 bands with a total of 35500 points with 48 countries. Well done to all and many thanks to those who helped in any way.

BULLETIN From 2nd December for a trial period, depending on the response we receive, the bulletin from the Sunday before will be transmitted on 3640KHZ at 8p.m. with a relay on Ladies Slipper Repeater. This is to enable those who cannot hear the bulletin on Sundays to come and have a chat.

NEW QTH It was good to hear Peter ZS2GW now portable in Div. 5 having settled down in his new QTH and we hope to hear you frequently on bulletin nets, Peter. Good luck to you and your family.

TV STAR What a nice surprise to see Tom ZS2TC appearing on the TV 1 programme "Those Crowded Years". I bet it brought back many memories, Tom.

* STOP PRESS *** STOP PRESS *

DUE TO COMPUTERISATION OF LICENCE RECORDS IN THE POSTMASTER GENERAL'S OFFICE, NO LICENCE ACCOUNTS WILL BE SENT UNTIL THE FIRST TWO WEEKS OF JANUARY 1986.

This item of information comes from Bill ZS2BY who has just returned from Pretoria. Thanks Bill, this will keep members from thinking that maybe their licences are not being renewed this year.

bulletin roster

22nd December	Brian ZS2AB
29th December	Lionel ZS2DD
5th January	Marge ZS2OB
12th January	Dick ZS2RS
19th January	Trevor ZS2AE
26th January	Gordon ZS2GK





HALLEY'S COMET

TABLE FOR PLANNING YOUR OBSERVING OF HALLEY'S COMET FROM PORT ELIZABETH, BY J.R. ST. CLAIR.
 FIGURES PLOTTED USING MIRRORSOF/STAR SEEKER PROGRAM ON COMMODORE 64 HOME COMPUTER.

DATE	DIST. TO SUN	DIST. TO EARTH	DEGREES FROM NORTH	DEGREES FROM HORIZON	RIGHT ASCENSION	DECLINATION	BRIGHTNESS	RISES	SFTS
NOV 15TH	1.71	.73	78.7	-23.7	3h53m	21,54'	8	22.58	08.59
30TH	1.49	.63	52.8	23.0	1h10m	14.40'	7	18.53	05.42
DEC 15TH	1.26	.84	8.6	52.2	23h14m	3,28'	6	15.29	03.29
30TH	1.03	1.14	321.2	51.5	22h20m	-1,-1'	5	13.21	01.35
JAN 15TH	.79	1.41	292.3	37.8	21h46m	-5,-23'	4	11.36	00.08
30TH	.62	1.56	275.2	22.3	21h20m	-8,-13'	3	10.03	22.50
FEB 15TH	.60	1.49	259.0	5.4	20h51m	-12,-6'	3	08.20	21.29
28TH	.72	1.27	245.3	-6.8	20h28m	-16,-9'	3	06.54	20.27
MAR 15TH	.93	.92	225.1	-17.4	19h57m	-22,-1'	4	05.30	19.19
30TH	1.16	.55	190.3	-17.9	18h36m	-37,-10'	5	01.43	17.55
APR 3RD	1.22	.48	176.2	-13.2	17h43m	-42,-42'	5	00.03	17.17
7TH	1.28	.43	160.2	-4.7	16h20m	-46,-59'	5	21.53	16.10
10TH	1.33	.42	147.5	3.7	15h02m	-47,-14'	5	20.22	14.42
12TH	1.36	.42	139.1	9.8	14h11m	-45,-30'	5	19.37	13.29
15TH	1.41	.45	127.1	18.7	13h06m	-40,-47'	5	18.52	11.42
18TH	1.45	.50	116.1	26.5	12h20m	-35,-10'	6	18.22	10.15
21ST	1.5	.56	106.2	33.0	11h47m	-29,-52'	6	18.00	09.09
24TH	1.54	.63	97.3	38.1	11h24m	-25,-21'	7	17.42	08.18
27TH	1.59	.71	89.3	42.3	11h08m	-21,-39'	7	17.27	07.27
30TH	1.63	.80	82.0	45.7	10h57m	-18,-40'	8	17.13	07.05

Above is a table worked out by John St. Clair, ZS2JR for a leaflet to be issued by the local Astronomical Society.

It is calculated for 9.00p.m. S.A.S.T. The Comet comes up from below the horizon at roughly 15 degrees per hour so one should only start looking for it about 11p.m. on the 15th November and, with a brightness of only 8, there will be little hope of seeing it without a telescope until late December. Best viewing will be mid April.

A full article by John can be purchased from the Astronomical Society for a small sum (+ 50c).

John's comment: "I hope it's right because I won't be around to correct it for next time!"

Many thanks John. (Ed.)



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HALLEY'S COMET... AGAIN



To: Factory Manager
From: Divisional General Manager

On Friday evening at approximately 5:00p.m. Halley's Comet will be visible in this area, an event which occurs only once every 75 years. Please have the employees assemble in the area outside the factory, in safety helmets, and I will explain this rare phenomenon to them. In case of rain, we will not be able to see anything, so assemble in the canteen and I will show them a film of it.

To: Assistant Manager
From: Factory Manager

By order of the Divisional General Manager, on Friday at 5:00p.m. Halley's Comet will appear above the area outside the factory. If it rains please assemble the employees in safety helmets and proceed to the canteen where this rare phenomenon will take place, something which occurs every 75 years.

To: Personnel Officer
From: Assistant Manager

By order of the Divisional Manager in safety helmet at 5:00p.m. on Friday the phenomonal Halley's Comet will appear in the canteen. In case of rain in the area outside the factory, the Divisional Manager will give another order, something which occurs once in 75 years.

To; Foreman
From: Personnel Officer

On Friday at 5:00 p.m. the Divisional General Manager will appear in the canteen with Halley's Comet, something which happens every 75 years. If it rains, the Divisional General Manager will order the comet into the area outside the factory.

To: Employees
From: Foreman

When it rains on Friday at 5:00 p.m. the phenomonal 75 year old Bill Haley accompanied by the Divisional General Manager, will drive his comet through the factory to the canteen.

THERE HAD TO BE A REASON....

At last, a virtue for watching television! It prevents outbreaks of mosquito-borne encephalitis. That is what a group of researchers have concluded after ploughing through health records and surveying the viewing habits of people in California's central valley.

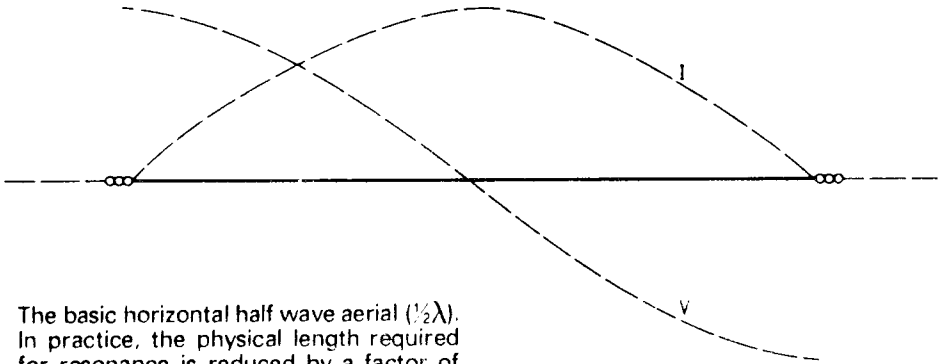
It's very simple. On warm summer evenings, when the mozzies are out, people sit in air-conditioned rooms and watch television. Fewer people are being bitten, so the incidence of encephalitis is down.

The researchers acknowledge that efforts to control mosquitoes have also helped, but they seem rather stuck on the television idea. It turns out that the counties in the central valley with the greatest increase in the number of television-owners over the past 30 years showed the greatest decline in the incidence of the disease.

The disease is also down among horses. But even in California, very few stables have TV sets! Here, immunisation is probably responsible!

New Scientist February 1985.
(Thanks to Colin ZS2AO)

Antenna Basics

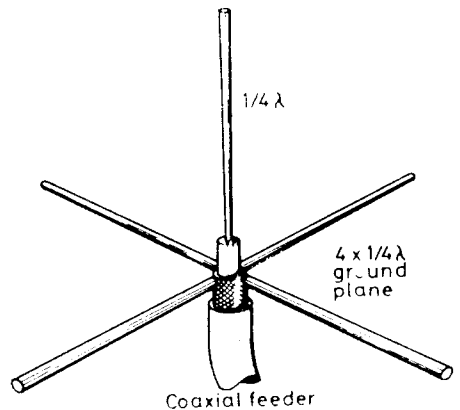
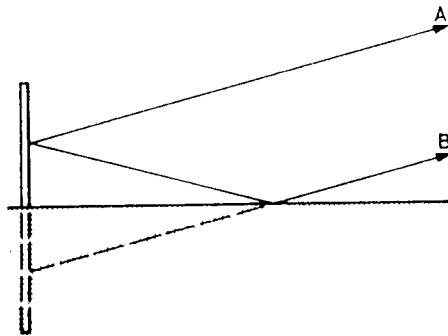


The basic horizontal half wave aerial ($\frac{1}{2}\lambda$). In practice, the physical length required for resonance is reduced by a factor of 0.95 ($0.95 \times \frac{1}{2}\lambda$) due to the effect of insulators and nearby objects. A simple formula for the practical half wave aerial is $143/F$ (MHz) metres. At resonance the induced voltage V will be maximum at the ends of the aerial (high impedance) while the current I will be maximum at the centre.

The basic Marconi aerial is a quarter-wave vertical with the lower end close to the ground, and it is used mainly on the lower frequencies. If this aerial is erected over a perfectly conducting ground then an image of the aerial is formed, which simulates a half-wave aerial. In practice the 'perfect' earth is formed from a number of long wires (radials) laid on or just under the surface of the earth.

It is not necessary for the aerial wire to be physically the correct length for a particular frequency or wavelength. It can be made shorter or longer electrically to achieve the same state of resonance by using an aerial tuning unit (a.t.u.).

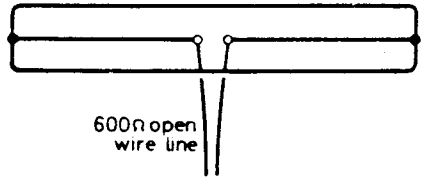
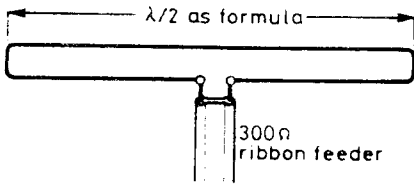
At higher frequencies, such an aerial is commonly mounted well above earth, and relies upon $\lambda/4$ radials entirely for its reflecting "earth plane". Such an aerial is known as a ground-plane.



Folded Dipole

The folded dipole (a) will transform the input impedance by a factor of 2^2 or $4 \times 70 = 280$ ohms so that it can be fed with a flat ribbon feeder of 300 ohms impedance, provided the wires forming the folded

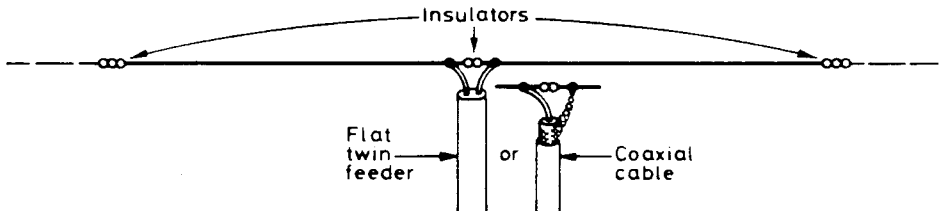
dipole are the same diameter. If a three-fold dipole is used, the input impedance will be $70 \times 3^2 = 630$ ohms which will provide a good match to an open line feeder.



Half Wave Dipole

As the impedance at the centre of a half-wave aerial is approximately 70 ohms, flat twin or coaxial feeders will provide a good impedance match to the aerial ensuring maximum signal transference. The aerial,

length calculated from the formula given, is cut at the centre and an insulator inserted, the wires of the feeder being connected either side of the insulator.





HOME CONSTRUCTOR'S SUPPLY

by Viv Moore ZS/VM

Got an itch to get involved in construction projects? Building a power supply could be a good place to start. If you learn as you go, so much the better.

BASIC SUPPLY

The basic power supply circuits are used to operate from AC mains and convert this into a DC voltage at the level required to power up the equipment in use.

The basic circuit consists of a little more than a transformer-rectifier-filter combination.

The transformer converts the AC mains voltage into a usable AC voltage. It also electrically isolates the mains from the DC supply output. The rectifier converts the AC voltage into a DC voltage. The capacitor smooths the DC voltage.

FIG. 1

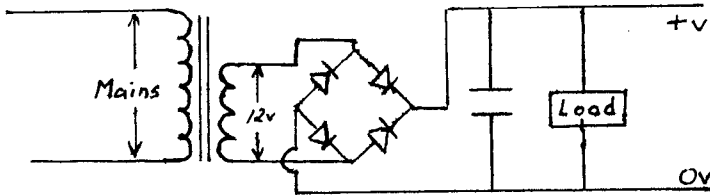


FIG. 2

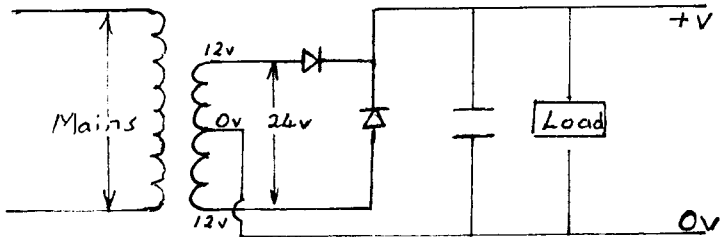
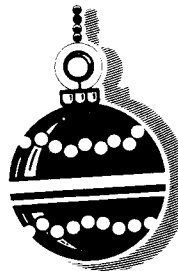


Figure 1 shows a single ended transformer and bridge rectifier. Figure 2 uses a centre-tapped transformer and provides almost the same performance.

PARTS SELECTION

The most important transformer parameters are:

- 1) The secondary voltage
- 2) The power rating
- 3) The regulation factor.



The secondary voltage is always given as the R.M.S. value at the full rated current output. The power rating is given in watts or VA. The regulation factor is the difference in voltage between the unladen voltage and the voltage output at the full rated output.

A 12 volt 12VA transformer supplies a secondary voltage of 12 volts RMS at a load of 1 amp. When the load is removed the voltage will increase by the regulation factor of say 10%, which is a common factor, and rise to 13,2 volts RMS.

It is important to note that the DC output voltage from the supply is not the same as the AC RMS voltage of the transformer secondary. It increases by approximately 1,4 times when using the circuit in fig. 1 and 0,7 times when using circuit in fig. 2.

When rectifier losses are considered, the voltage output of fig. 1 will be reduced by 1,2 volts and fig. 2 by 0,6 volts. The bridge rectifier or diodes used should be able to handle the full current that the transformer will supply.

The smoothing capacitor converts the rectified signal into a smooth output voltage and the important parameters are the working voltage and the capacitance. The working voltage should be at very least the off-load output voltage of the supply.

What governs the capacitance is the power drawn from the circuit, the transformer regulation factor and the voltage ripple on the DC supply. Rule of thumb will be 500 mfd for small supplies up to about 1 amp, 1000 mfd up to about 5 amps.

VOLTAGE REGULATION

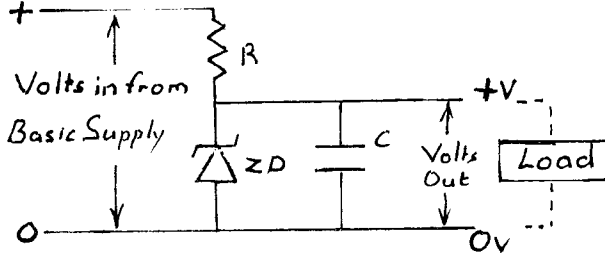
Voltage regulators can vary from simple circuits using zener diodes at fixed outputs to variable voltage and regulated high current circuits using discreet components. Or developed around three-or multi-terminal regulator IC's.

In its simplest form one can use a zener diode, the important parameters being the voltage and wattage. Zener diode regulators can be used to supply current of up to 30 milliamps.

A zener diode is a device that can be likened to a pressure relief valve. When the voltage (pressure) across the zener exceeds the zener voltage the zener breaks into conduction and holds the voltage across the device at its prescribed value.

Let us assume that the load requires 20 milliamps at 12 volts and the basic supply delivers 18 volts DC.

FIG. 3



Referring to fig. 3 we want to draw of 20 milliamps across the zener diode ZD, so we must ensure that at least this amount flows through the zener. To make sure that there is no voltage drop-off we will add an additional 20% to the flow.

We first of all select the zener, in this case a 12V zener, and the zener should be able to handle at least the off load power, in this example $20\text{ ma} + 20\% = 24\text{ ma}$.

Dissipated power for zener = $12\text{V} \times 24\text{ ma} = 0,29\text{ watts}$. You can't get a 0,29 watt zener diode so we select one rated at 0,5 watt.

Now to find the value of the resistor R. The supply to the regulator is 18V and the zener is 12V, therefore we have 6 volts across R, therefore $R = 6\text{V} \div 24\text{ ma} = 250\text{ ohms}$, but you can't easily get a resistor of this value, so you use a preferred value of 220 ohms. This means that a little more current is going to flow through the zener but the fact that we increased the rating from 0,29 watts to 0,5 watt should take care of that. At this sort of current 5 mfd for C should be adequate.

Now this circuit does not supply much and would be suitable only for single transistor audio pre-amps and the like. Lets suppose that we want a supply for a transistor radio or small tape recorder requiring 300 ma at 12 volts. We introduce a transistor and the zener serves as a reference voltage to a non-inverting high gain amplifier as shown in fig. 4.

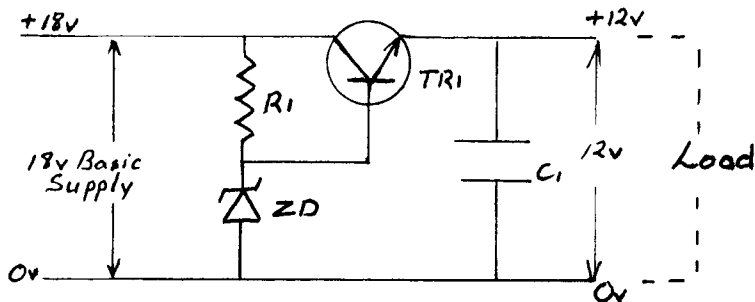
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=====

FIG. 4



The transistor parameters are maximum collector current, dissipated power and current gain. In this case the collector current is the 300 ma that the portable radio is going to draw.

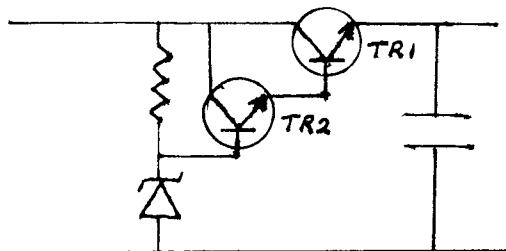
The dissipated power is 6V dropped across the transistor times the current, $6V \times 0,3 \text{ amps} = 1,8 \text{ watts}$, if we used the values mentioned in the previous example we have 20 ma available and we now want 300 ma. Therefore the current gain should at least be $\frac{300}{20} = 15$. The higher the gain the better the regulation.

It must be taken into account that there will be losses in the transistor of about 0,6V and a 12V zener will give an output of 11,4V. A suitable transistor would be a 2N3054 which has these maximum ratings.

Collector current	-	7 amps
Dissipated power	-	45 watts
Current gain	-	20

It may be that the gain of the transistor is insufficient for the purpose, (most power transistors have low gain) in which case a second transistor may be introduced.

FIG. 5

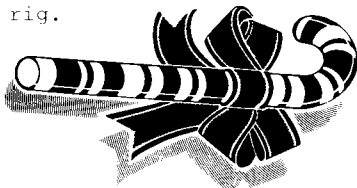


TR1 = 2N3054
TR2 = 2N3053

Mount TR1 on a heat sink

The gain of this super alpha pair is the product of the gains of the two transistors. A suitable transistor would be a 2N3053 and this circuit could supply up to the maximum rating of the 2N3054.

In the second half of this article, we will talk about a variable voltage supply capable of powering an HF rig.





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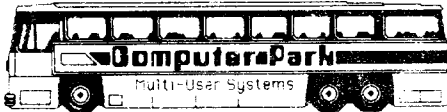
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