**MEETINGS, NETS and SERVICES**

**Club Station:** VK4WIS

**Club Repeaters:**

Maleny: VK4RSC on 146.850 MHz & 438.075 MHz.
Peregian Beach: VK4RMB on 146.825 MHz & 438.175 MHz.
Gympie: VK4RGY on 146.625 MHz & 438.825 MHz.
Bli Bli: VK4RSN on 53.700 MHz

**General Meeting:** Monthly on the first Tuesday at 7:30 pm in the Club House, old Toll Plaza building, 85 Godfreys Road, Bli Bli. Visitors are welcome to attend.

**Weekday Meeting:** Weekly at 10:00 am on Wednesday.

**Good Morning Net:** Daily at 8.15 am at VK4RSC on 146.850 MHz. Conducted by various club members.

**Tech Net:** Weekly at 8:30 pm Sunday at VK4RSC on 146.850 MHz. Check in, raise topics and ask your technical questions.

**80 m Net:** Weekly at 7:30 pm Thursday on 3660 kHz.

**10 m Net:** Weekly at 8:15 pm Wednesday on 28.470 MHz.

**6 m Net:** Weekly at 7.30 pm Friday at VK4RSN on 53.700 MHz.

**2 m Net:** Weekly at 7:30 pm Sunday on 144.300 MHz SSB. Conducted by club station VK4WIS.

**QNEWS:** Relayed Sunday at 9:00 am at VK4RSC on 146.850 MHz. After the broadcast a callback is conducted by VK4WIS.

**Internet:** www.vk4wis.org
This website provides previous issues of Pelican Droppings in full colour in pdf format which can be downloaded. The current issue can be had by subscribing to the email edition in pdf format. Apply to SCARC.

**EchoLink:** Available on VK4RSC 146.850 MHz. The Internet station is VK4AKA-R and the node is #195107.

**NEXT ISSUE** The next issue will appear in November 2006

**SCARC Inc. Office Bearers AGM Feb 2006**

| | |
|---|---|
| President | Ray Stuart VK4YRS |
| Vice-President | Noel Des Jardins VK4NL |
| Secretary | Gordon Taylor VK4VP |
| Treasurer | Keith Noll VK4AKA |
| Committee | Harvey Wickes VK4AHW; Frank Winter VK4BLF; Mike Little VK4YFL; Richard Philp VK4YRP |

Copy deadline: 2nd Tuesday of the month preceding GM issue.
Email editor: geoffcom@powerup.com.au



# Pelican Droppings

**Newsletter of the Sunshine Coast Amateur Radio Club Inc.**

Issue No.85 August-September 2006

**SCARC President Ray VK4YRS greets Rob Walford, one of our general meeting speakers. More in Ray's Presidential Preamble on page 2 inside**

**INSIDE**



Address: The Secretary, Sunshine Coast Amateur Radio Club Inc.
85 Godfreys Road Bli Bli Qld 4560

## Presidential Preamble

Welcome to this month's PD. The club has been in operation for about forty years. During that time the club has faced many challenges. It is up to us to focus and work together in harmony and concentrate on the challenges that the club faces today to give the club a chance to be around in another forty years. One of the challenges is to bring more people into amateur radio. Other clubs have had up to thirty new Foundation Licences assessed and joined as members. Our club needs to advertise this new licence to attract new members.

If you have any suggestions on how this might be done please tell a committee member. Vin VK4FVCW, Wicen sub-committee coordinator for our caravan project, requires members to assist with painting the caravan at Dulong. Please contact Vin if you want to assist. Vin's records show that over 500 man-hours have gone into the caravan so far.

Thanks to all those who have assisted the Speaker sub-committee. FrankVK4BLF requires speakers for each monthly meeting. Can you offer the name of an interesting speaker ?. Please contact Frank if you can. Rob Walford was last month's speaker and it was very interesting to hear about the Energex Emergency Helicopter. Wayne VK4SWC will tell us about radio controlled model aircraft at the September meeting.

On education,VK4AHW Harvey conducts classes for all level of licences. Let him know if you are interested in attending.

Clubroom happenings: Our librarian Vicki, wife of Harry VK4TK, is looking for book or magazine donations and help to sort them. The new magazines " Practical Wireless " and " QST " are being mailed to the club and are available for members. Remember to check the South Yarra store if you need any bits for a project. The Green Room is available for use when ever the club rooms are open. Ask VK4XZ Bill if you need any help. Don't forget Sunfest on Saturday the ninth of September. Contact Richard VK4ZRP and offer your assistance for our annual get-together. We now have the clubrooms open on the first Saturday of the month, so join us on 2nd of September. Our next general meeting is on Tuesday 5th September 2006 at



## Famous Personalities : André Marie Ampère

Ampère (1775 to 1836) was born in Lyons, France, the son of a prosperous businessman. From an early age he showed a great aptitude for mathematics. He soon found that the best math books were written in Latin, so he quickly taught himself to read that language. As a young man, he published a treatise on probability calculus and this earned him a lecturer's position at the Polytechnique in Paris.

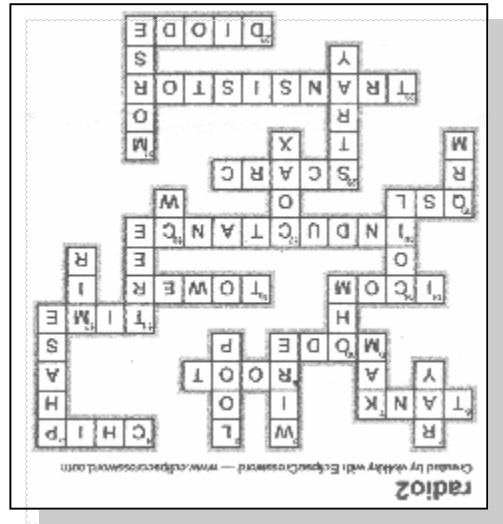
During the next 15 years, he did research on calculus, geometry, optics and mechanical engineering while also writing a book on philosophy. In 1809 he was appointed Professor of Analytical Mathematics at the Polytechnique and in 1814 he was admitted to the Academy of Sciences.

In 1820 he heard of the discovery of a magnetic field around a current-carrying conductor. This really interested him and he did a great deal of experimental and theoretical work on the subject. He discovered that a coil of wire carrying a current would act just like a bar magnet. He worked out that the force between two current-carrying conductors is proportional to the currents in the conductors and inversely proportional to the square of the distance between them – a relationship which we still use today.

At the age of 51 he suddenly became ill at work and died. The unit of current is named the Ampère (Amp for short) in his honour.

End

Page 9 radio crossword Solution

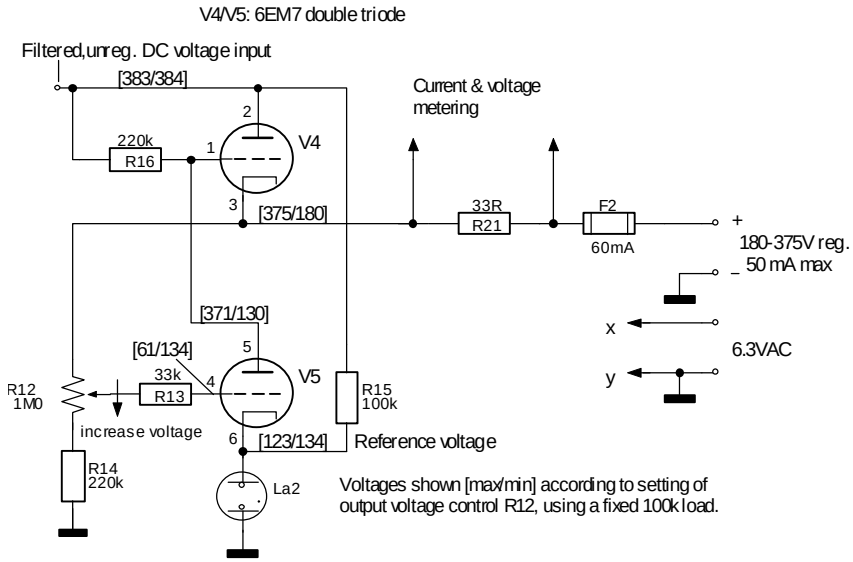


## Understanding the voltage regulated power supply

Geoff Combes VK4GWC

All such circuits have two common elements: A feedback circuit that samples the output voltage and a reference voltage (device) from which an error is detected. The error voltage is then amplified and applied to the power handling device (usually a pass transistor or electron tube) so as to reduce the output voltage change almost to zero, thus achieving automatic voltage regulation.

To illustrate I have chosen a medium voltage (180-375 VDC) variable voltage regulator that I built many years ago. It is easier to understand than most transistor circuits, although the principles are the same. Here La2( a neon glow tube) is the reference voltage device. V4 is a power triode and V5 is a low-power, high-gain triode. Should the voltage fall, owing to higher current demand, the lower voltage is fed back to the grid of V5 causing V5's anode current to decrease, raising V4's grid voltage and increasing the anode current of V4. With more current available the output voltage is restored to the value selected initially by pot R12. It's that simple. End






7:30pm at the clubrooms and our July Sunday meeting will be held on the 16th starting at 9:00am -BYO BBQ. Please use the club nets so that net controllers are kept busy. Check the SCARC web site http://www.vk4wis.org for information updates.

That's enough from me. 73 all, Ray

**SUNFEST 2006**

**Sunshine Coast Amateur Radio Club**

**Saturday 9 September 2006**

Doors open 0900h (sellers from 0700h)

**Woombye School of Arts**

Blackall Street, Woombye (UBD Map 66 F12)

Table space reservations: Contact Richard VK4YRP

07 5492 9898 email: randwphilp@bigpond.com

## William Gilbert
## The story of the beginning of electricity as a science

by Tony Thorrold VK4KKY

William Gilbert was born on 24 May 1544 in the English town of Colchester. Although today he is generally referred to as Gilbert, his correct name was Gilberd, this name being used in his and his father's epitaphs and also in the records of the town of Colchester. His father, Jerome Gilberd, was the recorder of Colchester and a wealthy man. William entered St. John's College, Cambridge, in 1558 and obtained a B.A. in 1561, an M.A. in 1564, and finally an M.D. in 1569. He was the first man to research the properties magnetism and electricity, the inventor of the term "electricity" and regarded by many as the father of Electrical Engineering.

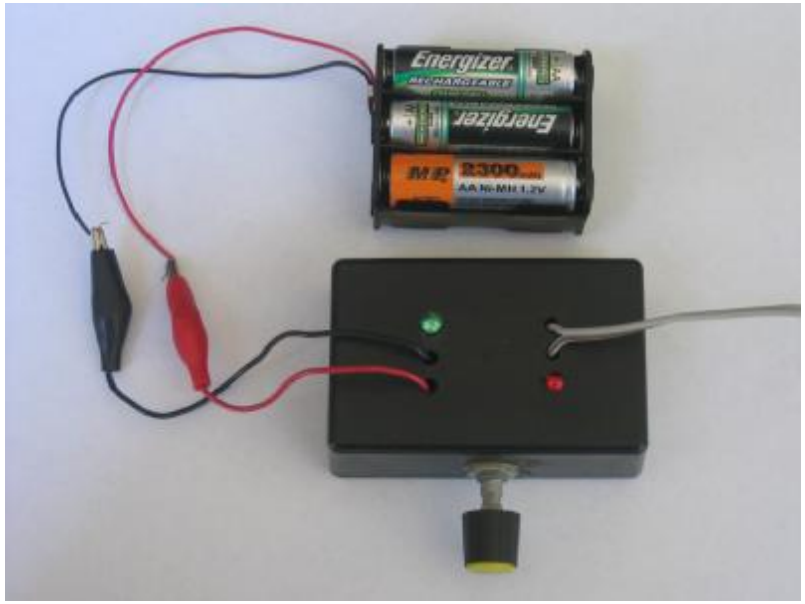
By 1575 he was a prominent physician in London and President of the Royal College of Physicians, consulted by the aristocracy and later appointed physician to Queen Elizabeth I with a salary of 100 pounds per annum. His duties as physician to the Queen allowed him plenty of spare time to study science.

Gilbert spent 17 years experimenting with magnetism and electricity. In 1600 he published his findings about lodestones and magnets in Latin in a book entitled 'De Magnete'('The Magnet'). He ‘proved’ that electricity and magnetism were not the same thing. For evidence, he incorrectly pointed out that electrical attraction disappeared with heat, while magnetic attraction did not. In his book, he wrote about static electricity, generated by rubbing amber on silk. Amber is called elektron in Greek, so Gilbert decided to give the name ‘electric’ to the effect. 270 more years would pass until James Clerk Maxwell showed the close relationship between electricity and magnetism.

Famous astronomers of the time, Johannes Kepler and Galileo were greatly impressed by his work, which was soon accepted as the








part of the circuit is to give an indication that current is actually flowing and it works for any current from a few mA up to a few amps, the maximum depending on the transistor used. It is a circuit that I found in Practical Electronics magazine of January 2005.

T1 is any NPN power transistor; I used a TIP31. Current through LED2 and R3 cause LED2 to light, indicating that power is being supplied to the load – in this case that the batteries are definitely on charge. R3 is chosen to give whatever brightness of LED2 you like, eg 15 mA. Any current in excess of 15 mA being drawn by the load will be shunted around the LED through T1. The voltage drop across this part of the circuit is about 3 volts, so R3 = 3/0.015 = 200 ohms.

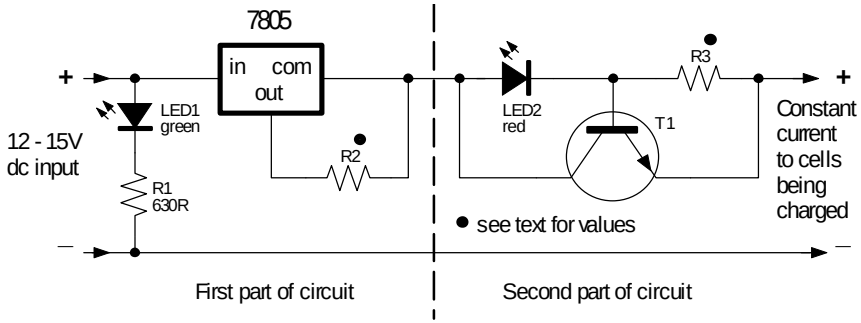
The only problem I have found using the two circuits together is that the total voltage drop is about 5 volts. If charging four or more cells in series, make sure the supply voltage is high enough.

For long battery life, do not charge at more than C/10 where C = cell capacity in mAh, eg a 2300 mAh cell should not be charged at more than 230 mA. Charging time in hours = C/charging current + 50% eg a 600 mAh cell being charged at 50 mA should remain on charge for 600/50 + 50% = 12 + 6 =18 hours. So-called fast chargers use much higher charging rates, but this is at the expense of battery life, unless the batteries are specifically made for fast charging. End

## NiCd / NiMH Battery Charger (Two Useful Circuits!)

by Tony Thorrold VK4KKY

I would like to share the circuit of a simple and inexpensive constant current charger which I built to charge the NiCd and more recently, the NiMH cells used in my 2 metre transceiver. It will charge from one up to six cells at the same time. The circuit diagram consists of two parts that could be used independently in other projects., and is shown below. The finished charger is shown opposite.




**Circuit description**

The power source is 15 volts dc from a plug pack, or 12 volts dc from the car battery when I am travelling. LED1 and R1 are just to give an indication that input power is on.

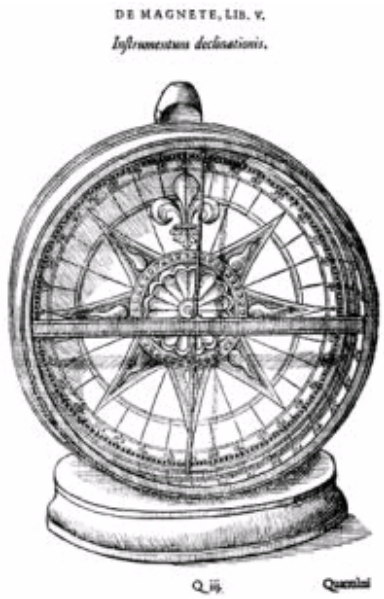
The 7805 is a +5V three-terminal regulator connected in an alternate mode to function as a constant current source, which is what is required for charging the batteries. R2 sets the value of the charging current.

R2 = 5/charging current, (5 because it is a 5 volt regulator). For instance, for 200 mA (or 0.2 amps), R2 = 5/0.2 = 25 ohms, 1 watt.

You can use just this part of the circuit as a charger; I did for years. If you want to be able to select different currents for different types of battery, use a rotary switch to select different resistors for R2.

However, sometimes one of the batteries did not make good contact in the holder, or there was some other connection problem. The next morning I would find that despite the green LED being lit, the batteries were still uncharged, much to my annoyance. The second






standard on magnetism and electrical phenomena throughout Europe. Gilbert's magnetism was the invisible force that many scientists incorrectly believed to govern the motions of the planets.

At that time the magnetic compass was one of the few instruments that could save sailors from being hopelessly and fatally lost. But little was known about lodestone or magnetised iron. Gilbert tested many folk tales, e.g. ‘Does garlic destroy the magnetic effect of the compass needle?’ He concluded that the earth was itself magnetic and this was the reason compasses pointed north. Previously, it was believed that the compass needle was attracted by the pole star, Polaris. From his studies and experiments he added much knowledge to the subject and his experimental observations provided a starting point for scientists of the next century. He also made many important contributions to the science of electricity, ranging from the invention of the electroscope to the study of conductors and insulators.

William Gilbert died in London of the plague on 30 November 1603. Buried in Colchester, the inscription on his tomb reads: "He composed a book, concerning the magnet, celebrated among foreigners and among those engaged in nautical affairs."

The CGS unit of magnetomotive force was named the gilbert in his honour. 1 Gi = 0.795 775 ampere-turns. End

## THE FAIL-TO-FLOAT BOAT
**A rhyme by Harvey Wickes VK4AHW**

There was a Bay Cruiser in South Moreton Bay,
On a rusty swing mooring down Woolgoolba way.
An “oldie but goodie” was how she was classed,
Comfy and roomy, but not very fast.

Well Wickesie and Cookie bought her for a song,
She needed some paint and some work, you’re not wrong.
But they were both keen to go out for a fish,
And “Nula” was able to meet every wish.

They brought her and slipped her and oh how they worked!
They scraped and they painted and neither one shirked.
Their share of the work that was desperately needed,
Or their share of the costs as the project proceeded.

She needed a drive shaft and brand new propeller,
“But she’s an investment, and one day we’ll sell her”.
The gearbox had karked it; the rudder was bent,
And before very long, lots of cash had been spent.

When work hours exceeded the time they spent fishing,
They mumbled and grumbled and found themselves wishing.
That Nula would sink to the depths of the sea,
But insurance salvation was never to be.



only about 30 milliwatts of power. They also have moderately fast switching times, in the order of 10 nanoseconds, and emit light of a pure colour, the colour depending on the semiconductor material and the doping used. For instance, gallium phosphide doped with oxygen produces red light, but if doped with nitrogen it produces green light. Infrared light is produced by gallium arsenide.

**Laser diodes**

Low power laser diodes (between 1 and10 mW) are easily obtainable and generate a thin focussed beam of light commonly used in CD players, pointers, levels and optical scanners, to name but a few applications. Laser diodes of higher power are used in industry for cutting, welding, etc.

**Opto-isolators** (also known as opto-couplers)

These consist of an LED and a phototransistor mounted near each other within a light-tight enclosure. They are extremely good at electrically isolating two circuits - a very high isolation resistance (millions of megohms) can be achieved. They can be used to protect circuits from voltage spikes or dangerous voltages as an LED itself is capable of surviving a very high voltage spike which would destroy a transistor or IC.

Opto-isolators are not good for use with low signal levels as they generate some noise. They can only handle a limited amount of power and have a limited frequency response.

Examples: 4N25, SFH601-3

**Digital displays**

There are many types of light-emitting digital display. The oldest is the ‘Nixie tube’, a small glass vacuum tube containing ten anodes, one behind the other, each fashioned from thin wire bent in the shape of the digits zero to nine which would glow when energised.

Digital fluorescent displays containing eight or eleven separate 7-segment numbers in one glass envelope glow blue or orange to display long numbers on equipment. Most modern equipment uses several 7 segment LED displays mounted adjacent to each other. These are useful for providing high visibility numerical readouts, e.g. in clocks, digital voltmeters, etc. and ICs containing ten or more small rectangular LEDs make useful bar-graph displays.

Liquid crystal displays, either 7-segment or dot matrix, are not light emitting themselves, but often have a backlit screen behind the digits to make them legible in the dark. End

## Shedding light on Semiconductors

A PD Tech Review by Tony Thorrold

Electronic components and light are used together to perform many tasks. Your transceiver, sound system, computer and other common pieces of equipment in your home probably have several such devices quietly working away without you ever thinking of them.

**Light-dependant resistors** (also known as photoconductors or photo resistors)

These resistors decrease in value when light falls on them. Resistors made from cadmium sulphide are used for operation by visible light and vary in value from several megohms in the dark to just a few ohms in bright light. Lead sulphide devices are used with infrared light and selenium with ultraviolet. When light falls onto the semi-conductor material, it provides extra energy to the molecules, increasing the number of electron-hole pairs. This causes the resistance of the material to decrease.

Example: ORP12

**Photodiodes**

A photodiode is one, which is sensitive to light, and the junction is enclosed in a transparent case. When the diode is reverse biased and illuminated, a small reverse current flows. The current is low, but the response time is very short.

Example: BP104

**Phototransistors**

These are used as amplifiers whose gain varies with the brightness of light shining on them. The light acts as if it were a base current in the transistor.

The sensitivity of a phototransistor is much higher than that of a photodiode, but the response time is longer.

**Photovoltaic cells** (also known as solar panels)

These use very thin slices of silicon crystal to generate electrical power directly from light – see the article in PD issue 79.

**Light emitting diodes** (LEDs)

An LED is very similar to a normal diode and in fact can be used in place of a regular diode as a rectifier. However in a normal diode, the internal losses are given off as heat, while an LED gives off part of its losses as light, a phenomenon known as electroluminescence. They are very efficient, giving off a bright light for a consumption of





By then they were broke and just couldn't afford,
The cash or the jail time for committing such fraud.
And just when they anguished in sheer desperation,
Old Harvey was struck with some grand inspiration.

"We really should share all the pleasures of boating,
A few extra partners would keep the show floating.
Let's sell off two shares in this lovely old Cruiser,
And then we'll take turns, week about we can use her".

The boat syndication worked wonderfully well,
Both Wickesie and Cookie just thought it was swell.
New money injected got Geoff off his knees,
And Harv took his daughter on a trip overseas.

Four equal partners in theory sounds great,
More hands make less work and work we all hate.
But theory and practice aren't always the same,
When partners aren't partners, well then it's a shame.

Soon it was noticed at each working day,
That two of the owners were staying away.
Poor Jim was too sick, had a valid excuse,
And our one 'silent partner' was really a goose.

Now here's where our tale now reverts to the boat,
Which never did sink, but once failed to float.
Poor Harv was unable to pay for the slip,
And wouldn't those barnacles give you the pip?

With the prop and the rudder so badly encrusted,
And every zinc anode corroded and rusted.
The bottom all fouled up and covered in weed,
'Twas long overdue for some work to proceed.

So up to the jetty and close alongside,
Tied up with strong ropes at the top of the tide.
Old Nula careened on the mud looked quite funny,
But as least the procedure would save lots of money.

With weighty old rocks stacked along the port side,
She leaned on the jetty right where she was tied.
Six tons thus did settle on mud green and rank,
On top of a boulder, which of course, sprung a plank.

Now this situation remained undetected,
For ‘twas not in a place that was seen and inspected.
New anodes were fitted and the paint was well dried,
Then the waters returned with the incoming tide.

The rest you may guess, but you never will know,
Of the stink, of the oil, from the bilges below,
As the water poured in to the bowels of the boat,
Which never once sank, but once failed to float.

End

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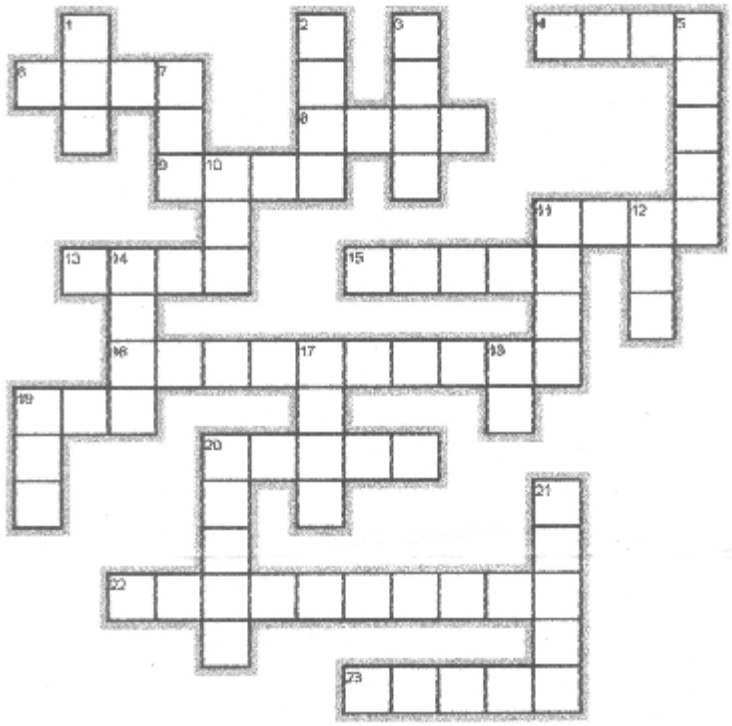
## radio

Created by vk4kky with EclipseCrossword — www.eclipsecrossword.com



**ACROSS**

**4** Integrated circuit
**6** Kind of coil
**8** Square or cube?
**9** Fm, am or ssb
**11** Never enough
**13** Brand of radio
**15** Holds up your yagi
**16** Property of a coil
**19** Acknowledge receipt
**20** Club name
**22** Amplifying device
**23** One way

Solution page 15

**DOWN**

**1** The president
**2** Connects components
**3** An 80 m antenna
**5** Single or three
**7** Type of modem
**10** unit of resistance
**11** Support for portable antenna
**12** Russian space station
**14** Has turns
**17** Conducts the signal
**18** Needs a key
**19** Interference
**20** Type of capacitance
**21** A code