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WATTS

08 - 2006

Year 76+8m

Monthly newsletter of the Pretoria Amateur Radio Club
Maandelikse nuusbrieff van die Pretoria Amateur Radio Klub.

✉ PARC, PO Box 73696 Lynnwood Ridge 0040, RSA

web <http://www.qsl.net/zs6pta>

Bulletins : 145,725MHz 08:45 Sundays / Sondag
Relays : 1840, 3700, 7066, 10135, 14,200 MHz (Seasonal)
Swapshop : After bulletin 2m and 40m (also on-line)
Bulletin repeats : Mondays 19:45 on 145,725 MHz only

The shack of Pine ZS6OB



In this issue

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- Member news Ledenuus
- Technical + Let's go complex part 4 + Tegnies
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- **AGM annexe** **AJV byvoegsel**

in hierdie uitgawe

Next Meeting AGM 2 Aug 2006

Time: 19:00 for 20:00
PARC Clubhouse,
South Campus,
University of Pretoria.
SE cnr University and
Lynnwood roads.

PARC Management team / Bestuurspan Aug 2005- Aug 2006:

Committee members

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Treasurer, Clubhouse, Database, DF hunts	Richard Peer	ZS6UK	zs6uk@peer.co.za	012-333-0612	082-651-6556
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Minutes of the monthly club meeting of the Pretoria Amateur Radio Club held at the South Campus of the University of Pretoria on 5 July 2006

Welcome: Almero ZS6LDP declared the meeting open and welcomed all who attended.

Attendance: The meeting was attended by 18 members and 2 visitors .

Apologies were received from Hal ZS6WB, Edwin ZR6ESP, Hillary ZR6HAP, Nico ZR6VT and Elmarie ZR6AXF .

Personal Matters/Lief en leed: Bertha, lv van Hans ZS6KR , in die hospitaal met brongitus . 'JB' ZR6YV se moeder is oorlede .

Matters arising from previous minutes: None .

Minutes of previous meeting: The minutes of the previous meeting were approved. Proposed by Willie ZR6WGR and seconded by Alf ZS6ABA .

Club Activities/ Klub Bedrywighede :

Rallies/Tydrenne :

Johan ZS6JHB – Volgende tydren – 21/22 Julie 2006 - HMC Tydren – tydren gaan oor 12 sneltrajekte beslis word in die Witbank/Middelburg omgewing . – lede wat kan help met kommunikasie moet Johan ZS6JHB skakel by 08-249-23689 .

Social/Sosiaal :

Johan ZS6JHB – Next social - AGM .

DF Hunt/Jakkalsjag :

Richard ZS6UK – DF hunt standing over till September 2006 .

Financial report/Finansies :

Richard ZS6UK – reported on finances of club . Richard also proposed an increase in membership fee.

Fleamarket/Vlooiemark :

Almero ZS6LDP – Vlooiemark van 1 ste Julie 'n groot sukses - volgende Mega vlooiemark word beplan vir November 2006 .

Ham Dairy / Dagboek :

August/Augustus . 02 – PARK/PARC AGM .

Technical/Tegnies :

Pine ZS6OB – Sub audible tone on repeater (88.5Hz)

Johan ZS6JPL – Boards will be available in kit form for older type of 2m radios .

Andre ZS6BRC – Concerned about members not able to fit the kit themselves – recommend that the club start a workshop to assist members fitting the kit to their radios .

Tegniese praatjie op Maandae aande na die her-uitsending van die klub bulletin .

General/Algemeen.

Antieke radios – rakke sal in die kroeg area ge-installeer word om die radios te vertoon .

Next meeting /Volgende vergadering : AGM/AJV 2 Aug 2006 .

Presentation/Aanbieding :

Thanks to Jaques Jordaan - presentation on Multisource.

Editorial | Redaksioneel

'Nuff said the last two issues! – Genoeg gesê in die laaste twee uitgawes!

ZS 6 PTA

1930-2006

16

RADIO — ZS

October, 1948

This PARC history page has now been presented for 20 months. However, material for publication has run out and further appearance will only be possible if more comes to hand.

PRETORIA BRANCH NOTES

The Annual General Meeting which was held on the 9th of January was very well attended. The chairman, in his report, spoke of the rapid growth of this branch. Membership was nearly doubled during 1947, the tally now being 51 ordinary and 7 junior members. Quite a few licensed hams in the Pretoria area are not members yet, but every effort will be made to contact them and induce them to join our ranks. Before commencing with the election of the new committee for 1948, it was decided that the committee should consist of 7 members instead of 6 as heretofore. It was also decided that the chairman should be elected by popular vote.

The committee members are: - Verheijen, ZS6GF (chairman); Cockbain, ZS6MY (vice-chairman); Hoogonhout, ZSL6PQ (secretary); Odendaal, ZSL6PJ (treasurer); Bennett, ZS6AK; Richards, ZS6ET; Cormack, ZS6HO.

PRETORIA

The Branch was called upon to provide a relay for the cyclists 50 mile race. The Hams who did the relay were 6GO, ET, LO, NJ, HO, EK and JU. Their efforts were successful and was greatly appreciated and a grand day was enjoyed by all. They were helped by a few ZS1's — names unknown.

On Sunday ZS6BD and 6AK were given the pleasure of meeting Iris, ZS2AA, who came over to the shack with ZS6CS, RB, DC, PH. There was also present at BD's ZS6TO MC a fine and rowdy gathering but very enjoyable.

JW. — We are sorry to hear that you are back in hospital, Dave, and trust that your two operations will be successful. The last time I saw you there you had a far-away look in your eye. Nurses, or your new final? Don't forget you are soon to be allowed your full 100 watts.

6ET. — Sorry to hear your SW has been ill, Ritchie, and hope she is well and better by now. We hear you are knocking out the DX and you have another hobby as well. That's right, give 'em socks, OM, hi!

6MC. — Has now put in a new modulation transformer and is very busy with the DX on 10 meters. The ham game is OK now, Jack, isn't it.

6KF. — An FB signal from a wide-spaced 3-element beam on 10 metres is reputed to have more up his sleeve than his funny-bone.

6GO. — Public sweetheart No. 1. Is building a super preselector, band switching exciter and has a 100 KC oscillator, with other super-duper jobs on his mind.

6LO. — A hefty signal. The theme song for your shack, OM, should be "chi-baba." The junior can always be heard and doesn't seem to get much sleep. Do you nurse it whilst in QSO?

6GF. — Has been heard on 10 with a lot more modulation than is good for one. Is this the last fling before the woods come out again.

6JU. — What is the matter with the portables, Albert. Are you trying scrambled speech. How is the new rig going?

6LR has a new two-element beam and seems to be doing well.

6OV. — Is busy building a tower said to be 40 feet up, and feels nervous about the other 20 feet. Get a barrel of something, OM, and call in the gang. Both the tower and the barrel will be finished before you can say "Bob's your Uncle."

6DC. — Has been working 20 metres and can be seen with a broad grin on his face. What is the ioke, Johnny?

6PH. — Tiny seems to be very popular with the fair sex. The YL's always like to chat him. Perhaps it is his fatherly ways, hi!

6MY. — Tom has just got back from a trip to Holland. He was there during the recent celebrations marking the golden jubilee and the accession to the throne of Queen Juliana. Was made welcome by the PAO hams. He

wasn't able to work any ZS from there, as the W's got first calls. They make a good communications job. Parts are hard to get and surplus gear is very expensive. The PAO hams are making a good post-war recovery. They send their 73 and best wishes to ZS hams.

6MW was heard for the first time in the BEE contest. A nice signal, Joy, and easy on the ears, too.

6BD was heard very busily working in the BEE contest and did very well.

6NK and 6OG. Mike says you misunderstood his note in the last ZS. It was meant to infer that you should have been searched, OM. Don't take it too badly.

The combined meeting at the Waterkloof Air Station was well attended and many old acquaintances were renewed. Apparently the occasion was a grave affair and the RF scarce. Did we hear of some getting home after the clock had struck one. Our grateful thanks to the O/C who gave us permission to hold the meeting at WAS, and the work put in by the XYL's and all who helped.

6EK. — Is still very busy on 10 and can also be heard on 40 on Sundays. His beam is the talk of the town.

6HO. — Doug, has been very quiet lately. Has been ill, but was sounding in good form during the contest.

There is a story going the rounds that our worthy secretary had a good time in the Game Reserve. Is it true that you were chased by some animal and did the 100 yards in 5 seconds then started to run in earnest. Shades of Daphne Robb!

Our Treasurer is now a proud daddy. Good business, OM.

We have been invited to 6NX shack for a braaivleis and ragchew. The ulterior motive, of course, is that an antenna has to be put up. Or do you love us, Eric? Before we come to the shack, tell us the final is done because after a few yards of wows we will not be able to think clearly and your effort to get help will be in vain.

Can anyone tell us where all the Pretoria gang are. The vast majority seems to have hidden themselves. What about some news and ideas. Let's hear from you and see you occasionally. Don't forget, Pretoria is the Premier Branch and your help is needed to keep it so.

"BEAM."

Birthdays

Verjaarsdae

Aug



- 01 Sue ZS6SUE, sw of Don ZS6CRT
- 02 Marelise, lv van Pierre ZS6PJH
- 03 Paul ZS6BMF
- 04 Ceciel, lv van Flip ZS4GE
- 05 Hans ZR6HVG
- 06 Estelle, lv van Simon ZS6AST
- 06 Edwin ZR6ESP, son of Molly ZR6MOL and Richard ZS6UK
- 07 Cathlen, daughter of Alta and Johnny ZR6BAJ
- 07 'JB' ZR6YV
- 07 Hubert ZS6HVM
- 08 Elza, lv van Jan ZR6BKL
- 08 Raymond ZS6ALG
- 08 Tobie ZS6ZX
- 10 Anne ZR6AUL, daughter of Frances ZR6AUT
- 10 Wally ZS5WP
- 11 Lorraine, sw of Stan ZS6SDZ
- 14 Harry ZS6HRD
- 15 Samantha, daughter of Don ZS6CRT
- 15 Molly ZR6MOL, sw of Richard ZS6UK
- 16 Marie, dogter van Poppie ZS6BCP en Hansie ZS6AIK

Aug

Anniversaries Herdenkings

- 07 Peggy and Ed ZS6UT ()
 - 09 vIasta and ivan ZS6CCW ()
 - 20 Bertha en Hans ZS6KR (40)
 - 27 Anne and Jac ZS6QA ()
-
- 16 Daniel ZR6AUS
 - 22 Neville ZR6NBA
 - 22 Hal ZS6WB
 - 23 Otto OE9OWV/ZS6OFW
 - 25 Allen, son of Alta and Johnny ZR6BAJ
 - 25 Paul (Doppies) ZS6BAQ
 - 26 Sinéad, daughter of Heather and Vince ZS6BTY
 - 28 Jean ZS6ARA
 - 29 Louise, daughter of David ZS6DSG
 - 30 Jonathan, son of Don ZS6CRT
 - 30 Don ZS6CRT
 - 31 John, son of Bernie ZS6ANU

Afleegeboel met 'JB' ZR6YV wat onlangs sy moeder verloor het.

Sick Parade | Krukkelys

Bertha, lv van Hans ZS6KR was weer in die hospitaal met infeksie en 'n kwaai bronchitis.

PARC Diary | Dagboek

- | | | |
|-------------|-----------|--|
| Aug | 02 | PARC AGM |
| | 05-06 | 10-10 International SSB Summer Contest |
| | 05 | European HF Championships |
| | 06 | SARL HF Phone Contest 1300-1630 UTC |
| | 12-13 | WAE CW DX Contest 0000-2359 UTC |
| | 19-20 | Lighthouses on the Air |
| | 27 | SARL HF CW Contest 1300-1600 UTC |
| Sept | 02-03 | All Asian DX Contest SSB 0000-2400 UTC |
| | 02-03 | RSGB SSB Field Day 0000-2400 UTC |
| | 03 | DARC 10m Digital Contest 1100-1700 UTC |
| | 06 | PARC Club meeting |

Snippets | Brokkies

- **HAMNET News** is now regular on Sundays 17:30
- The **deadline for submissions** of material for WATTS is the 20th of every month.
- **Attention all members:** Microsoft has discontinued support for windows 98.
- Our next fleamarket date was set at 11 Nov.
- **Stop Press: Antoinette ZS6D** sw of Danny ZS6AW has been awarded the Amateur Radio Community Service Award by the SA Amateur Development Trust for her support to blind radio amateurs. Presentation will be at a lunch in Midrand on 2 August.

Fleamarket snaps - courtesy Eddie ZS6BNE



Sam's Radio Accessories table



Johan ZS6JPL



Clive ZS6AVP



Pieter ZS6PVW, Japie ZR6JN, Eddie ZS6BNE



Danny ZS6AW



Magda sorg vir ons (Hams se) burgers



Michelle ZS6TO



Kevtronics table



Hans ZS6AKV

Long Term HF Propagation Prediction for Aug 2006

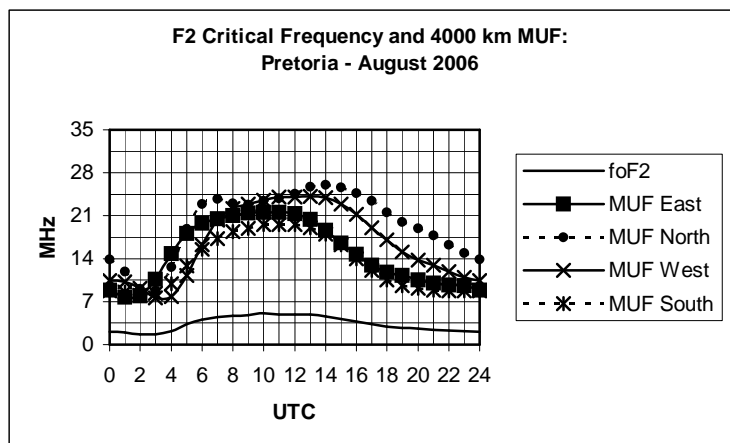
Vince ZS6BTY

DX Operating

The graph shows the 4000 km maximum useable frequency (MUF) to the East, North, West and South from Pretoria for the first hop using the F2 layer.

Local Operating

The F2 critical frequency (foF2) is the maximum frequency that will reflect when you transmit straight up. E-layer reflection is not shown.



Concerns over lead-free solder

From VECTOR magazine

The European Union RoHS directive that restricts the use of eight hazardous materials, including leaded solder, in the manufacture of various types of electronic and electrical equipment, is causing considerable concern.

by Lutz Otto, RS Components

Initially intended to replace the use of traditional leaded solder with the new, lead free variant, it has had unexpected and alarming health implications, according to RS Components, a major SA supplier of electronic, electrical and industrial components.

Recent research suggests that the fumes and vapours emanating from lead-free solders may be even more dangerous to workers and the environment than those emitted by traditional lead containing solders. While lead was obviously toxic, silver - a standard constituent of lead-free alloys - was found to be several orders of magnitude more eco-toxic than lead. It seems that the best intentions have had unintended consequences. Most research projects concerning the use of lead assumed that eliminating it would have a positive effect on the health of workers, while ignoring the possible adverse health effects of lead substitutes - particularly at the level of the bench top where workers are 'face to face' with potentially toxic, but invisible, fumes, vapours and gases.

And it is these fumes that seem to pose the most immediate risk. Many of these lead-free solders use rosin as a fluxing agent. Tin-lead solders melt at around 180°C, whereas lead-free solders melt at temperatures 30 - 40°C higher. The fear is that the higher temperatures required for lead-free soldering will significantly increase the amount of fume produced. As solder fume is one of the top causes of occupational asthma, Britain's Health and Safety Executive is concerned about workers breathing in fumes from solders containing rosin-based fluxes, also known as 'colophony fume'. Anyone soldering with rosin-based fluxes is at risk of developing asthma.

The RoHS lead-free directive only affects South African suppliers of electronic and electrical equipment to the EU, and comes into effect in July 2006. In addition, there are measures that can be taken to counter the impact of these fume vapours. These measures fall into the areas of substitution with non rosin-based flux, fume absorbers, flexible arm extraction and tip extraction.

Substitution is the most effective means of preventing exposure to rosin-based solder flux fume. While new products continue to come on to the market, for technical reasons (e.g. product quality, tolerances, performance levels, output and re-work costs) they may not yet be suitable alternatives.

Fume absorber units are rarely appropriate because they do not filter out the active fume components that cause the development of occupational asthma. Tests have shown that the units' coarse carbon filters that are usually fitted remove only a small proportion of the harmful constituents in the fume. Recirculation blows fume at other workers. Flexible arm extraction is a better option. These units extract fume via an extraction tube situated above the work piece and pass it through a large, central filter system elsewhere on the premises. For efficient control, the extraction collection point needs to be close to the work, and between the work and the operator's breathing zone.

Tip extraction units are probably the most efficient of the mechanical methods. These have the advantage of continuous removal of fume, whether the iron is in use or at rest. Also the low volume and flow rate of air avoids significant heat loss. It does, however, require regular

and frequent maintenance and cleaning as sticky residues build up and block the small bore tube. The iron must also be held in the right position for the extraction to work e.g. elbow rests may be required.

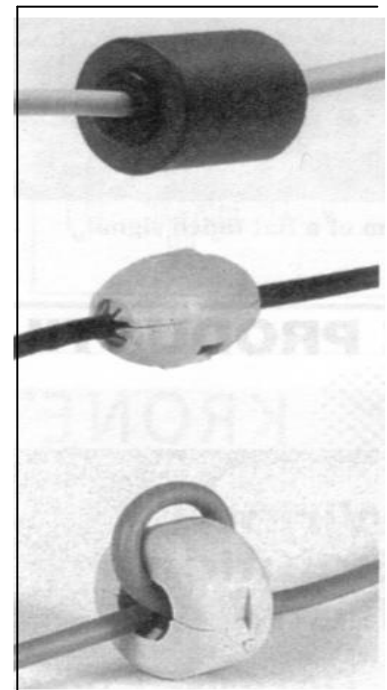
The company's website displays full compliance information on all affected products.

Contact Lutz Otto, RS Components, Tel (011) 691-9300, lutz.otto@rs-components.com

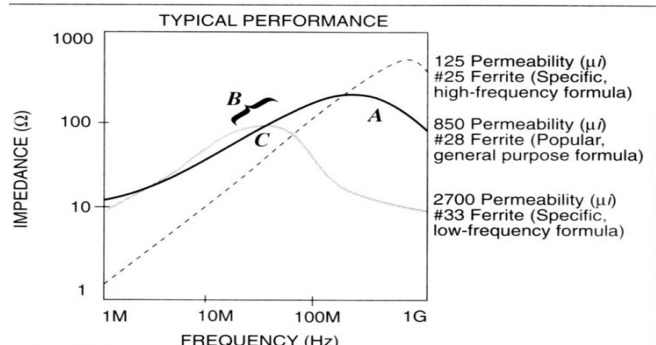
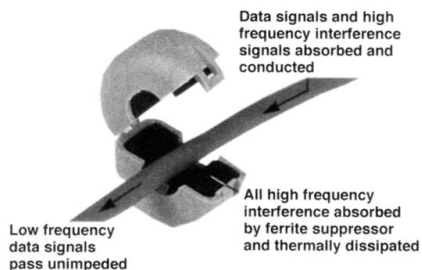
Vector welcomes comments/opinions on this matter from readers.

Note:

Highlight: The RoHS lead-free directive only affects South African suppliers of electronic and electrical equipment to the EU, and comes into effect in July 2006.



Ferrite helps with interference control



This time we will dwell some more on the phenomenon of resonance and concentrate on how we can exploit this to effect useful functions. To recap, we have proved that a series resonant circuit is a virtual short circuit and a parallel resonant circuit a virtual open circuit at one particular frequency with a bandwidth behaviour dependent on the Q factor.

7. CIRCUIT EXAMPLES

Series LC circuits are often used as traps for unwanted frequencies or to let through a particular frequency:



Fig. 11 Killer or trap

Parallel LC circuits can be used to block (insulate) an unwanted frequency, transform impedances and be part of a coupled circuit:



Fig. 12 Single freq pass



Fig. 13 Coupled (stolen) energy to load

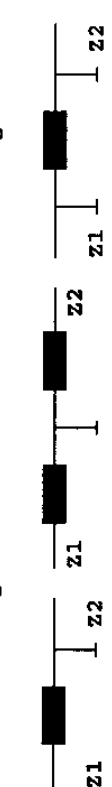


Fig. 14 Freq. or bandstop (typical antenna 'trap')

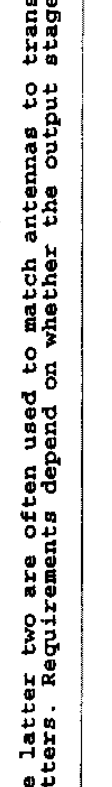


Fig. 15 Tapped inductor matching network



Fig. 16 Tapped capacitor matching network

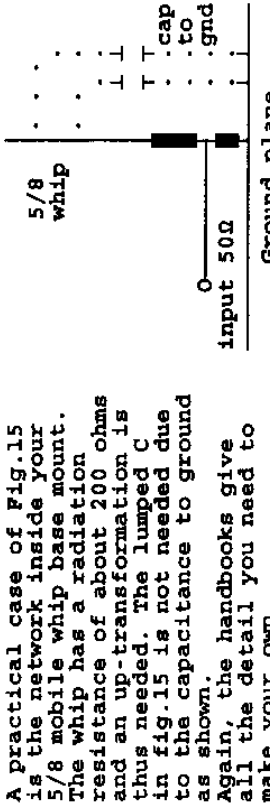
Fig. 17 L network Fig. 18 T network Fig. 19 Pi network

The latter two are often used to match antennas to transmitters. Requirements depend on whether the output stage

is valve or transistor and whether the antenna is high or low impedance. These networks are very extensively discussed in all amateur radio handbooks and computer calculated component value tables are published for any impedance to any impedance.

Commercial matchers with all components front-panel variable are widely available and a variation of fig. 18 known as the 'transmatch' is very popular.

Building your own is also easy and details are easily found in many handbooks. Also consult Radio ZS Oct 1989 and Nov 1989 for a neat overview of various types from practical experiences of the author.



8. MAXIMUM POWER TRANSFER

The object of reactive matching networks is to provide lossless impedance transformation. Good construction and quality components will make them almost so. At a single frequency or narrow band of frequencies the required conditions for maximum power transfer are:

$$\begin{aligned} R \text{ load} &= R \text{ source} \\ \text{load } R+jX &= R-jX \text{ source} \quad] \text{ conjugate match} \\ \text{load } R-jX &= R+jX \text{ source} \quad] \\ \text{max available power} &= (V_{in})^2 / 4R_{source} \quad [18] \\ &= (I_{in}) \cdot R_{source} / 4 \quad [19] \end{aligned}$$

Another way of matching often used in line transmission for a broadband match is according to

$$\begin{aligned} Z \text{ load} &= Z \text{ source} \\ \text{load } R+jX &= R+jX \text{ source} \\ \text{load } R-jX &= R-jX \text{ source} \end{aligned}$$

This is not as efficient as conjugate matching but is used in line transmission for a true reflectionless match.

Next month we will examine transmission lines and derive suitable circuit models for characterization and analysis. Slowly but surely we are approaching the Smith chart.

RADIO Inspector B. H. Linden wishes to announce to all and sundry that the "hams" in his district, 11th Radio District, comprising the lower half of California and Arizona, are a bit of all right. Not a single unlicensed op operated not a single unlicensed station for some time past and this is a darn good record. He advises the gang that the *FCC* is going to be especially tough during these trying times. So if any one should feel irresponsible or giddy enough to operate illegally, or to permit any one else to operate illegally, the culprit is going to find himself facing a sentence of a \$10,000 fine and two years in jail. Also, the felony mark would be carried through life. So beware, beware. . . .

The Imperial Past (gleaned from a UK Newsgroup)

Primary school mental arithmetic: "How much change would I get from a five pound note if I bought two gross of pencils at a penny-three-farthings each?"

Answer: 288 times a penny-three-farthings = 504d.

Five pounds = 5 x 240d = 1200d.

1200d - 504d = 696d = 58s =

£2-18s-0d change.

In fact, the accepted way of calculating change was by addition, not subtraction. The shopkeeper would start by stating the amount you owed, then progressively take money out of the till until the total reached the amount you had tendered.

Did you know the Florin was an early attempt at decimalisation? Yes, it failed ... "In 1847 a motion was introduced in Parliament calling for the introduction of a decimal currency and the striking of coins of one-tenth and one-hundredth of a Pound. The motion was subsequently withdrawn on the understanding that a one-tenth Pound coin would be produced to test the waters of public opinion. There was considerable discussion of what the coin should be called, with Centum, Decade, and Dime being among the suggestions, before Florin was eventually settled upon, partly because of its connection with old English coinage, and partly because other European countries also had coins of approximately the same size and weight called Florins." Thus:

4 Florins makes £2-10s-0d, and a ten-bob note makes £3, and two pound notes makes £5. Thank you.

There are two major products that came out of Berkeley University: LSD and UNIX. We don't believe that this to be a coincidence. – Jeremy S. Anderson

1949. Roving sound recording van. (Netherlands broadcasting service)

