



# WATTS

11 - 2004  
Year 74+11m

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>

ZR6FD bilingual | tweetalige logo!

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ZS6BAQ

✳️ Bulletins : 145,725MHz 08:45 Sundays / Sondag  
Relays : 1840, 3700, 7066, 10135, 14,200 MHz  
depending on season  
Swapshop: After bulletin 2m and 40m (also on-line)

## PARC Swapshop in action – photo ca 2000



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Tegnies  
Bladsy agt

### Next Meeting

Date: 11-11-2004  
Time: 19:30 for 20:00  
PARC Clubhouse,  
South Campus,  
University of Pretoria.  
SE cnr University and  
Lynnwood roads.

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## Editorial

We are close to 75 years of existence and one wonders if we should not have had a steady growth of members: like an investment with capital growth. Instead our membership has been steady around 130. You, the members, are our capital and our growth must come from your value as ambassadors for our hobby so others can become interested. I see no other mechanism that is presently applied except an opportunity for the SARL at the Science Centre in Johannesburg and some clubs being active at hobby fairs. Very little exposure on radio and TV has thus far occurred. I am sure motor sport has reasonable TV and tabloid coverage but have the essential support services by our club amateurs ever had any mention to the public? Amateurs cannot even feature in emergency services as this country is almost disaster-free.

Are we to remain a hidden factor everywhere? Are we too introvert and not worried about visibility or having a voice?

As chairman I look at the bigger picture with some reserve as even on club level I have expended considerable effort after several June 30 FY ends to try and keep our membership at least constant by literally having to corner some Alzheimer members and/or those ex members that apparently think a club membership in this hobby is worthless.

Well, those of you that still get this newsletter have obviously renewed your membership and I thank you for that. Let's be pro-active and form - or take part in - interest groups, contesting and the advocacy of amateur radio. To those with ancient VHF FM rigs: consider a dual-band all-mode rig and enjoy the hobby.

## Redaksioneel

Ons is naby ons 75e bestaansjaar en 'n mens wonder of ons eintlik 'n bestendige ledevermeerdering moes gehad het: soos in 'n belegging met kapitaalgroei. In teendeel het ons ledetal bestendig gebly rondom 130. Julle, die lede is ons kapitaal en ons groei moet uit julle waarde kom as ambassadeurs vir ons stokperdjie sodat ander ook daarin kan belangstel. Ek sien geen ander meganisme wat huidiglik toegepas word behalwe die toekomstige geleentheid vir die SARL by die Wetenskap Sentrum in Johannesburg en sekere klubs wat aktief is by stokperdjie-skoue. Baie min blootstelling op radio en TV het dusver plaasgevind. Ek is seker dat motorsport 'n redelike dekking op TV en nuusblaai kry maar word die noodsaaklike verbindingdienste wat ons klub verskaf ooit aan die publiek vermeld? Amateur kan nie eers bekendheid verwerf gedurende rampe want hierdie land is feitlik vry daarvan.

Bly ons dus maar oorsake die verborge faktor? Is ons te ingetrokke en nie bekommerd oor sigbaarheid of om 'n stem te kan uitoefen?

As voorsitter kyk ek na die groter prentjie met 'n bietjie voorbehoud want selfs op klub-vlak het ek aansienlik moeite gedoen na verskeie Junie 30 FJ eindes om ons ledetal tenminste konstant te hou deur om letterlik party Alzheimer-lede en/of voormalige lede aan te spreek wat dink dat klublidmaatskap geen waarde het nie.

Wel, die van julle wat hierdie nuusbrief ontvang het duidelik julle lidmaatskap vereffen en ek dank julle daarvoor. Laat ons pro-aktief wees – en deelneem aan – belangegroep, wedstryde en voorspraak maak vir amateur radio.

Aan die met antieke VHF FM stelle: oorweeg 'n twee-band alle-modus stel en geniet die stokperdjie.

# Minutes of the monthly club meeting of the Pretoria Amateur Radio Club held at the South Campus of the University of Pretoria on 9 Sept 2004

**Welcome:** Hans ZS6KR declared the meeting open and welcomed all who attended.

**Attendance:** The meeting was attended by 23 members, 1 visitors, Kobus ZR6D and apologies were received for ZR6JHB, ZR6PJH, ZR6SW, ZR6YV, ZR6OLM, ZS6AZG, ZS6KCS, ZS6XN  
Various members were away for the Great North Rally.

**Personal Matters/Lief en leed:** Spider ZS6SO is seriously ill at home.  
Bertha, sw van Hans ZS6KR sal hopelik by Saterdag uit intensiewe sorg wees.  
Jean ZS6ARA het onlangs weer 'n oogprobleem laat herstel  
Magda ZR6MVW se moeder is ernstig siek  
Hal ZS6WB was reported to be feeling unwell.

**Minutes of previous meeting:** The minutes of the previous meeting as published in Watts were approved.  
Proposed by Willie ZR6WGR en seconded by Almero ZR6RY.

**Matters arising from previous minutes:** None.

## Club Activities:

**1. Rallies/Tydrenne:** No Rally people were present due to current Great North NPS Rally this weekend. Approx 10 people are taking part to provide communications.  
Year-end get-together of all rally people at PMC on 25 Nov.

**2. Social:** Willie reported on the final arrangements for our Club members' get-together at the Atlas Restaurant on the UP Campus 26 Nov. Dress formal or semi-formal. A 3-course dinner, dessert and coffee etc. at R60 pp is a bargain.  
Booking with Willie essential with 50% commitment at- or before the next meeting.

**3. DF Hunting:** Not discussed but reported last month as starting this month.

**4. Financial Report:** Richard ZR6CK – Reported on the club's finances. Liquidity is currently good due to subs payments received and virtually no expenses last month.

**5. Fleamarket:** Next Fleamarket – 27<sup>th</sup> November 2004.

**6. V/UHF Projects:** Pine ZS6OB explained his vision and desires for future of PARC member participation in V/UHF activity. There is so much to experience in this part of the spectrum. The next V/UHF contest is an excellent way to learn how things really work in the field using simplex modes and high-gain antennas. Interested persons can tune in on Monday nights 8pm on our repeater and listen to- or take part in discussions with the current interest group.

<b>Ham Dairy:</b>	<b>Nov</b>	XX Annual bring and braai at ZS6P QRA 13-14 SARL HF Field Day (2 <sup>nd</sup> leg) 25 Year-end Rally function at PMC 26 Year-end PARC function 27-28 CQWW DX CW Contest 30 Closing date for SARL Council nominations	<b>Dec</b>	02 PARC meeting/Social 03 Schools close 04-05 ARRL 160m contest 10 NARC closes
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**Algemeen/General:**

1. It was noted via an Echolink contact with Otto, OE9OWV/ZS6OFW that he listens to all our bulletins and swap-shop on his Echolink connection in Austria. This link is locally established by Chris ZS6FCS.
2. Johan ZR6ANF het 'n kort verduideliking gegee oor 'n ten doel gestelde veeldoel-digitale node. So 'n node sou alle modusse en frekwensies hanteer. Om dit te bewerkstellig moet kundigheid gewerf word in gebiede soos SHF, V/UHF, rekenaarbeheer, antennas ens. Dit is 'n projek wat van die begin af verwesenlik moet word en persone wat met sulke kundigheid kan help, moet hom asb. Baie dissiplines is hierby betrokke. Kontak. Vroeë November sal 'n breinstorm-sessie hieroor gehou word.
3. Hans ZS6KR appealed for digital pictures suitable for WATTS front pages.

**Presentation:** was by Kobus ZR6D on repeater linking techniques and practical experiences with linking projects currently operational in the RSA. He explained the pros and cons of various philosophies and backbone methods. Proper discipline by users is required. All in all, the Cape Linked Repeater Network appears to be very successful and especially useful to travellers. Gauteng is not yet seriously involved in such a project.

**Next meeting:** The next meeting is scheduled for 11<sup>th</sup> November 2004.

**Closing:** The meeting closed at 21h30. Thanks to Molly ZR6MOL for serving tea, coffee and biscuits.

## Birthdays Verjaarsdae

November



03 Blaine, son of Vince ZS6BTY  
06 Brian ZR6BJS  
06 Solly ZS6SV  
07 Adele, lv van Hans ZR6HVG  
07 Gerhard, seun van Pieter ZR6KSA  
07 Andrew, son of Andre ZS6BRC  
10 Agnes ZS6BAV, sw of Ivan ZS6AUT  
10 Luther ZS6E  
11 Peggy, sw of Ed ZS6UT  
16 Hendrik ZR6PRC  
16 Jean, daughter of Andre ZS6BRC  
19 Vlasta ZS6-2501, sw of Ivan ZS6CCW

## Anniversaries Herdenkings

November

04 Estelle and Simon ZS6AST  
11 Aletta en Alf ZR6ABA

19 Joe ZS6TB  
22 Heila, sw of Melvin ZS5MF  
22 Caitlin, daughter of Vince ZS6BTY  
26 Bridge ZS6BJM  
27 Janice, daughter of Vince ZS6BTY  
27 Albert ZS6JU

## Nuwe Lede | New Members ?

### Afleegevoel

Ons innige meegevoel aan Magda ZS6MWW en familie wat haar moeder verloor het.  
Ons innige meegevoel aan Hubert ZS6HVM en familie wat onlangs sy LV verloor het.  
Ons innige meegevoel aan die familie van oorlede Spider Hattingh ZS6SO.

### Sick Parade

Bertha, LV van Hans ZS6KR is nog ernstig siek.



### Krukkelys

## PARC Diary | Dagboek

**Nov** XX Annual bring and braai at ZS6P QRA  
13-14 SARL HF Field Day (2<sup>nd</sup> leg)  
25 Year-end Rally function at PMC  
26 Year-end PARC function  
27-28 CQWW DX CW Contest  
30 Closing date for SARL Council nominations  
**Dec** 02 PARC meeting / social  
03 Schools close  
04-05 ARRL 160m Contest  
10 NARC closes

### Attention

**Die Klub beplan 'n  
eind-jaar funksie  
op die aand van 26  
26 November.**

### Aandag

**The Club is planning  
a year-end function  
on the evening of 26  
November.**

**Atlas Restaurant UP Campus**  
Cold and warm buffets and dessert. **R60 per person**

**Book now with Willie ZR6WGR. Contact details in  
Committee list this issue p2. Half deposit required.**

## Snippets | Brokkies

- **NEW!** Every Monday night 8 pm on 145,725MHz there will be a get-together for V/UHF aficionados to discuss interests, problems, projects and contesting.
- Have you got a Desert Island yarn? Let's hear it at our December 2<sup>nd</sup> meeting!
- Johan ZR6ANF is looking for expertise in microwave, UHF, VHF, software etc. for a future project to establish an all-purpose all-mode digital node in Pretoria. Please contact him to find out more. If you have experience and perhaps saltmine facilities that would be extremely useful. Don't be shy – offer your help so that a start can be made at the first brain-storm session in November.
- Viv ZS6BZS (the big ZS) just had his 70<sup>th</sup> birthday. Many more Viv!
- U redakteur soek amateur-verwante artikels in Afrikaans verkieslik met sketse of fotos.
- Wat kan 'n mens met gebruikte CD's doen – kom laat ons hoor!
- For best readability of WATTS on a 14" screen, set Acrobat to 150% (RH top) for clearest character rendition.

## From Tom's Business News (spotted by ZS6BAQ)

**Summary:** Hackers converged on the Alexis Park Hotel in Las Vegas for the 12th annual Defcon hacker convention. This may be the single venue in the world where hackers and hard-core federal marshal types convene to exchange ideas, listen to talks and discuss how exposed we really are.

**Bluetooth Vulnerabilities** Hackers have found many flaws with Bluetooth devices. As these devices gain in popularity, the public needs to be made aware of vulnerability issues with the various Bluetooth devices such as phones, PDAs and wireless headsets.

Three of the most interesting attacks were Bluesnarfing, Bluetracking and Bluebugging.

**Bluesnarfing** is attacking the Bluetooth device, usually a phone, to rip out information. Hackers can obtain phonebooks, calendars and stored SMS messages.

**Bluetracking** is tracking a person's movement by tracking their Bluetooth device. All Bluetooth devices have a unique address, similar to a MAC address on computer network cards. By using special sensors or antennas you can see where a particular Bluetooth device pops up and record a person's movement.

**Bluebugging** involves sending executable commands to the Bluetooth device. With the proper software, you could secretly turn on a phone and make it call you. Why is this important? You have just turned the phone into a listening device that can record without your target knowing it.

**BlueSniper** When the Flexilis team walked in with their BlueSniper Bluetooth sniper, everyone wanted to know what this evil looking contraption could do. It looks like a mutant cross between a sniper rifle and Ghostbusters particle canon, complete with nuclear backpack. Thankfully, it is a very simple device that can do one thing well: find and attack Bluetooth devices from far away. The BlueSniper is a rifle stock with a scope and yagi antenna attached. A cable attaches the antenna to the Bluetooth card, which can be in a PDA or laptop computer. The laptop can be carried in a backpack with the cables connecting into the backpack, giving it the Ghostbusters look.

The Flexilis teams demonstrated the gun with some home-brewed Bluetooth scanning software. They pointed the gun down the hallways and out windows. Almost instantly, vulnerable phones with their unique Bluetooth device numbers appeared on the laptop screen. The device is powerful enough to detect devices through building walls.

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## FCC Acknowledges Interference Potential of BPL as it Okays Rules to Deploy It

NEWINGTON, CT, Oct 14, 2004--As expected, the FCC has approved revised Part 15 (unlicensed services) rules to specifically regulate the deployment of broadband over power line (BPL) technology. The Commission adopted a Report and Order in ET Docket 04-37 when it met in open session today. At the same time, three members of the Commission, including Chairman Michael K. Powell, specifically mentioned the concerns of Amateur Radio operators at the open meeting and expressed either assurances or hope that the new BPL rules will adequately address interference to licensed services. Republican FCC Commissioner Kevin J. Martin addressed Amateur Radio's and broadcasters' interference concerns in his written statement. ARRL President Jim Haynie, W5JBP, said he was encouraged to see the Commission's shift from the early days of the BPL proceeding, when it followed the lead of the BPL industry in largely ignoring interference to amateurs as a real issue in the proceeding.

"What the League has done in the last year and a half on this issue showed in the Commission's public meeting today," Haynie said. He cited the FCC's approval of three major points that the League had been pushing for: Certification of BPL equipment instead of verification, a requirement for a public BPL database--something the BPL industry did not want--and mechanisms to deal swiftly with interference complaints.

### Essentials of the FCC's Report and Order in ET Docket 04-37

The Federal Communications Commission has adopted a Report and Order (R&O) in ET Docket 04-37 regarding rules for Access Broadband over Power Line (BPL) systems and ET Docket 03-104 concerning Carrier Current Systems, including BPL. The detailed text of the R&O will not be available for several weeks.

The R&O will look very much like the Notice of Proposed Rule Making in ET Docket 04-37. For example, there will be no change to existing Part 15 radiated emission levels, nor any change in the absolute obligation for BPL device operators to resolve interference problems.

BPL operators would be required to "notch" certain bands, such as those used for life and safety communications, such as aeronautical mobile or US Coast Guard communications.

*There was no mention of any particular preventive measures, such as notching, for the Amateur Radio bands.*

BPL systems will be subject to certification, not verification. Remarks made by the Office of Engineering and Technology staff after the FCC meeting, suggested that certification--which requires outside verification of rules compliance--would apply to individual BPL system components, not to entire BPL systems in place.

The R&O will require that the BPL industry maintain a public database giving at least the locations of BPL installations by ZIP code and a telephone number to contact the BPL operator.

## Simple circuit measures battery drain

Measuring battery life for a portable system is a time-consuming task, and the methods that accelerate battery discharge don't provide reliable results. In the usual approach you simply measure elapsed time while operating the product to the point of battery discharge. Running several such systems in parallel obviously gives more data, if you can afford to tie up the lab equipment.

You can try to derive battery life from data-sheet specifications associated with the circuit components, but a calculated value is usually far short of the actual operating time. Current-drain specs tend to be conservative for low-power ICs, because they are tested with high-speed equipment that cannot easily measure low supply currents. Unlike many electrical parameters, battery life (in most cases) is better specified as a realistic typical than as a guaranteed minimum.

The movie "Chinatown" has inspired a simple alternative to the expensive data-acquisition systems and chart recorders normally required in these efforts. (Jack Nicholson placed a cheap watch under the tire of a parked car so he could return at his convenience to check the time of departure.) A similar trick marries a cheap (but low-power) clock to a low-power comparator/reference circuit (Figure 1).

The clock can be a "Spartus quartz alarm" at \$9.95, or any other drug-store style, non-digital, battery-powered analog clock. IC1 is a CMOS comparator/reference circuit that gates power to the clock. The IC's low current drain (4µA) lets it steal power directly from the circuit under test. Why not power the clock from the input terminals? Because it doesn't run properly that way—the clock has a stepper motor that draws its current in brief surges, with amplitudes as high as 100mA. For the circuit shown, a large filter capacitor at the clock's input terminal did not solve the problem.

When the test circuit's battery voltage (or output voltage, if desired) falls below a selected threshold,

the comparator output swings low and turns off Q1, removing power to the clock. The inactive clock then reads the running time, provided you set it to 12:00 before the test.

To set the operating threshold voltage, connect a power supply to the input terminals and adjust it to the minimum voltage for which the circuit will just operate. Adjust R1 so the clock just stops running. Then remove the power supply, set the clock to 12:00, connect the test circuit, and go home.

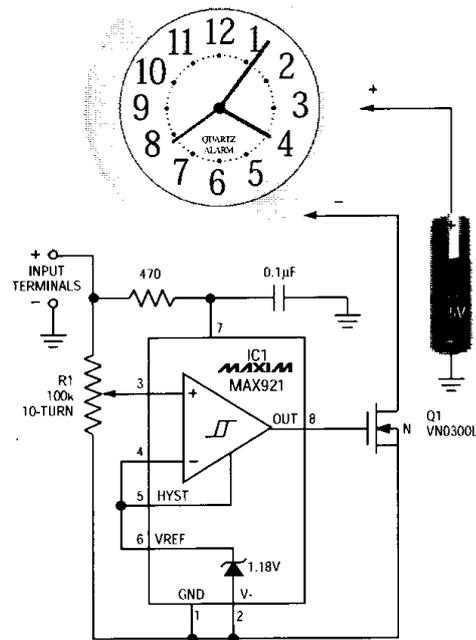
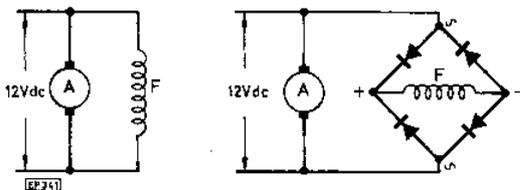


Figure 1. This inexpensive clock tracks the operating time for a battery-powered portable system. When the battery voltage (or a selected output) drops below the discharge threshold set by R1, the stopped clock retains the elapsed operating time.



HERE is an unusual and interesting application for a bridge rectifier. A colleague of mine was building a device which is powered by a shunt wound d.c. motor (actually a discarded windscreen wiper motor) and he required the motor to be reversible. Because supply reversal causes reversal of the current in both the armature A and the field F, the motor remains stubbornly unidirectional. Fitting a switch on the motor to reverse only the field current was not possible as the motor

was in an inaccessible place; likewise, adding two extra leads to bring the field winding out to a reversible supply was considered too clumsy.

The problem was eventually solved by supplying the (8Ω) field winding via a 2 amp bridge rectifier, thus enabling supply reversal to affect only the armature, and causing motor reversal. The bridge fitted neatly inside the motor, using the metal case as a heatsink.

Note that with some motors, such as the

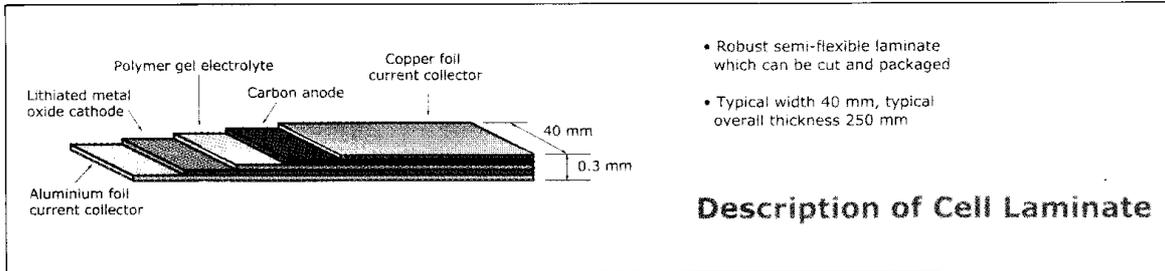
windscreen wiper motor used here, it is preferable to retain the 'old' direction of rotation as the 'normal' new direction, since these motors contain thrust bearings designed with only one direction of rotation in mind.

C. P. Finn,  
Beverley,  
Yorks.

## MOTOR REVERSAL

## Will we soon use *Flat Batteries* ?

Rechargeable Polymer batteries made with a continuous extrusion process are not constrained in shape and size and have shown to hold numerous advantages over its Lithium Ion counterparts. Thin profiles as little as 0,5mm thick leave no restrictions to design engineers and there is no danger of flammability as no liquids are used. Developed in the UK by the University of Leeds, the cells' tough flexible gel films have conductivities approaching 10-2S/cm.



*Laminated cell fabrication via a continuous process. The polymer gel electrolyte: (i) holds the laminate together; (ii) separates the electrodes; and (iii) provides high lithium ion conduction.*

The Polymer Gel Electrolytic (PGE) is extruded as a melt and directly laminated between the Anode and cathode electrodes. On cooling, the solid PGE acts as both electrolyte and separator, binds the cell laminate together from within so the battery does not require an external case or container. In a commercial process cell very thin laminates yielded energy densities 170W/kg.

## RF Rectifier Bridge for Field Strength Measurements

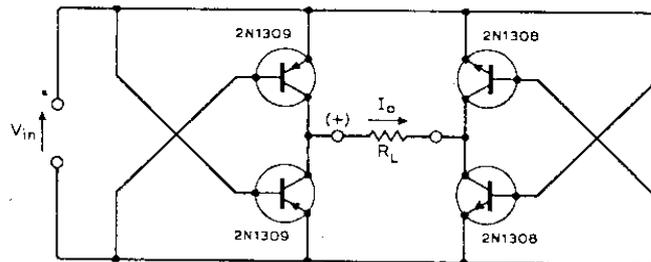
WW March 1978

This is an old idea not often seen in practice ? The offset voltage is an order smaller than conventional diode bridges.

The meter ( $R_L$ ) is protected by the b-e junctions of the transistors.

With the devices shown, frequency response is up to 300MHz.

The optimal load is about 2k $\Omega$ .



Curve 1: Bridge as shown.

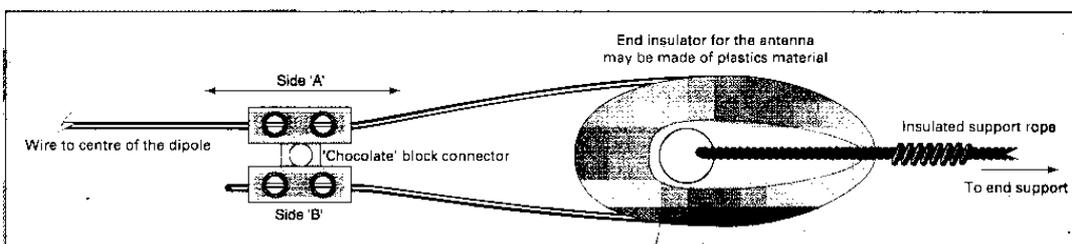
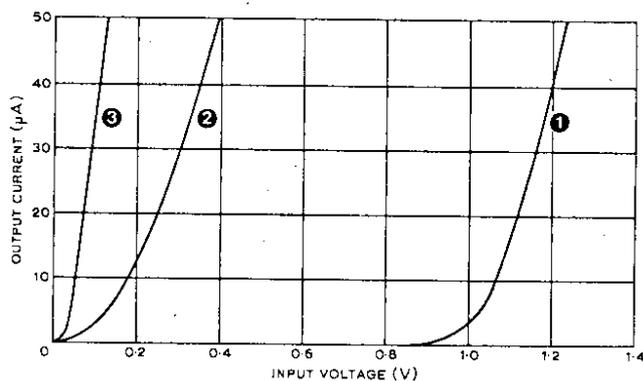
Curve 2: Germanium diode bridge

Curve 3: Silicon diode bridge

Linearity above the knee is extremely good and the minimum measurable voltage is around 30mV.

Introducing a tiny DC bias together with the input can zero the offset altogether.

With a small adaptation the circuit can also make an excellent RF probe in conjunction with a digital multimeter.

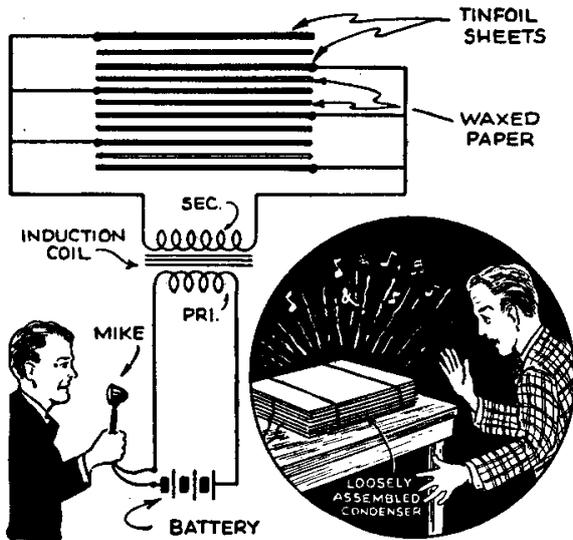


**Dipole adjustability trick**

## TALKING CONDENSERS!

### Cover Feature

● THE secret of the *talking condenser* lies in the fact that the alternate sheets of tin-foil and wax paper used in making up the condenser are not tightly clamped, but are held loosely with a couple of rubber bands or even allowed to lie in a loose pile. The condenser itself may be made up of 12 to 15 sheets of waxed paper, measuring about 5" by 7" and between every 2 sheets of paper, tin-foil or other thin metal leaves measuring  $\frac{1}{2}$ " smaller all around than the paper are interspersed. Every other tin-foil leaf is connected to a common terminal as the diagram shows. The induction coil used



to excite the condenser may be a telephone type coil, an old shocking coil or a small spark coil; even an ignition coil may be used in a pinch. An ordinary microphone is connected in series with a battery of a few dry cells and the primary winding of the induction coil. The condenser really forms an electrostatic loud-speaker, and as the fluctuating electric charges caused by speaking into the microphone reach the condenser leaves, they vibrate in unison with the voice.

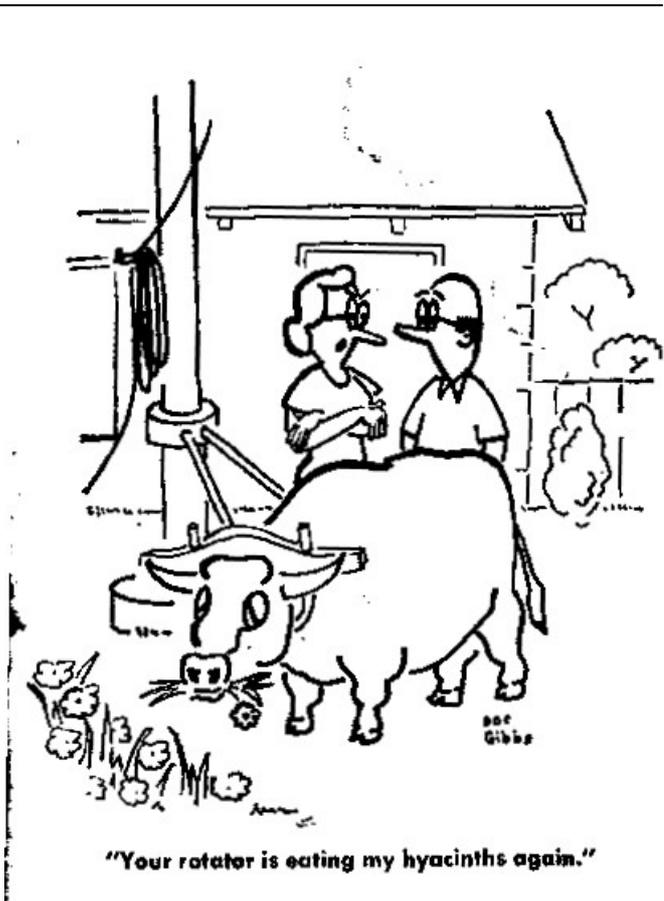
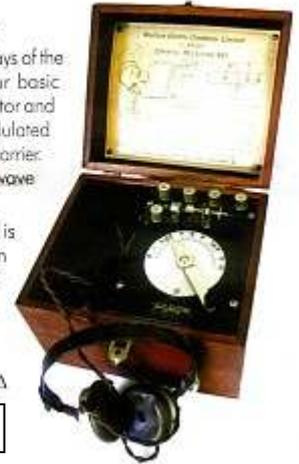
### Early production crystal radio receiver

The crystal set was the basic low cost receiver in the days of the first public broadcasts. The set comprises of four basic elements: an antenna, a tuned circuit, a crystal detector and headphones. The crystal converts the amplitude modulated radio frequency into an audio signal by removing the carrier. The antenna must be quite long to match medium wave frequencies.

The set shown here was built by Western Electric and is ready to use. The dial is used to tune into the station and the crystal is shown above the dial. The two vertical terminals are for the phones and the horizontal terminals are for the earth, the antenna and an auxiliary antenna.

Contact the SAIEE secretariat, Tel (011) 487-9049. Δ

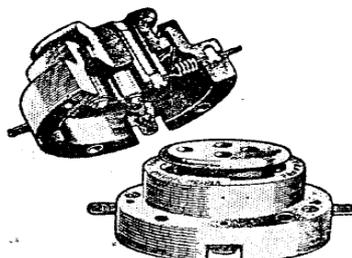
Ed: (They apparently have a museum)



## "Anti-Phonic" Valve Holder

By reason of our desire to increase further the Large Sales of the

"ANTI-PHONIC"  
VALVE HOLDER



We are reducing the  
Price from

5/9 to 3/9

from Sept. 1st, 1926