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# WATTS

12 - 2004  
Year 74+12m

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  
depending on season  
Swapshop: After bulletin 2m and 40m (also on-line)



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## in hierdie uitgawe

Redaksioneel  
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Ledenuus  
Dagboek  
Brokkies  
Tegnies  
Bladsy agt

## Next Meeting

Sosiaal / Sosial

Date: 02-12-2004  
Time: 19:30 for 20:00  
PARC Clubhouse,  
South Campus,  
University of Pretoria.  
SE cnr University and  
Lynnwood roads.

## Management team / Bestuurspan Aug 2004- Aug 2005:

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Co-opted / Geko-opteer:

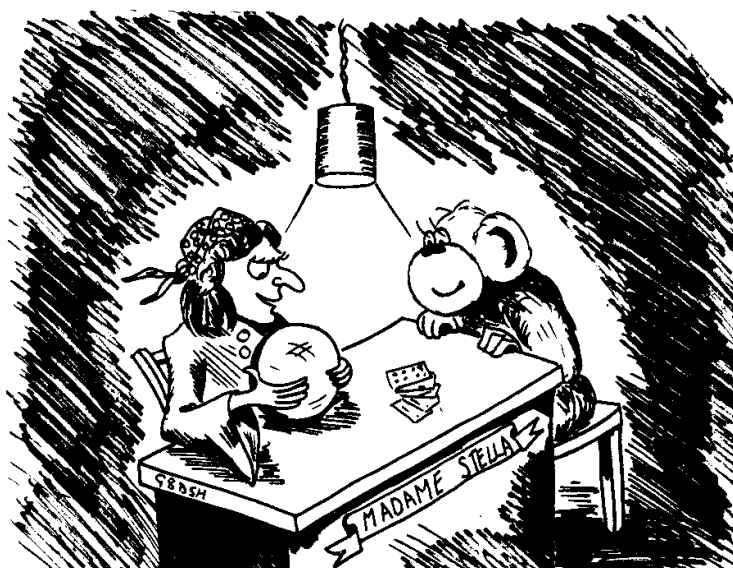
<b>Auditeur</b>	Egbert Begeman	ZS6AZG	<a href="mailto:begeme@unisa.ac.za">begeme@unisa.ac.za</a>	012-347-1905
<b>Tydrenne</b>	Johann de Beer	ZR6YV		011-918-1060
<b>Morse testing</b>	Bill Ingleson	ZS6KO		012-331-2327
<b>Tegnies</b>	Johan Lehmann	ZR6ANF	<a href="mailto:jlehmann@csir.co.za">jlehmann@csir.co.za</a>	083-300-8677
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<b>Repeater Maintenance</b>	Willie du Plessis	ZS6AEA	<a href="mailto:hesterdup@webmail.co.za">hesterdup@webmail.co.za</a>	012-565-5555 083-653-2101

## Editorial

In the coming holiday season HF and 6m conditions are probably up and down and the fickleness of the sun's behaviour - although known in long-term general trends - remains unpredictable in the short term. During this sun cycle minimum one should not go into DX hibernation and revert to braaivleis and TV modes for the months to come. The past CQWW SSB contest took place in surprisingly good conditions. By the time you read this, the CW contest may be over, and this mode should have had no trouble. Do not consult a DX fortune teller - keep at it and now is also the chance to make the most of the low bands when the higher frequencies are dead.

## Redaksioneel

Met die komende vakansietyd is HF en 6m toestande waarskynlik op en af, en die wispelturigheid van die son se gedrag - waarvan algemene langtermyn neigings wel bekend is - bly onvoorspelbaar op die kort termyn. Gedurende hierdie son-siklus minimum moet ons DX hibernasie afweer en nie in die komende maande na braaivleis en TV modusse verval nie. Die afgelope CQWW ESB kompetisie het in verbasend goeie toestande plaasgevind. By die tyd dat u hierdie lees, het die GG kompetisie seker ook al plaasgevind en hierdie mode behoort nie probleme te gegee het nie. Moenie 'n DX waarseer raadpleeg nie - hou aan, en dit is nou ook 'n kans om die meeste van die lae bande te maak as die ander dood is.



"The next opening on 6 metres will be on . . . . ."

**Trivia** "typewriter" is the longest word that can be made using only the top row of a keyboard. In English the name of all continents end with the same letter that they start with.

**Notice in farmers' field:** "Walkers may cross my field for free but the bull charges"

# Minutes of the monthly club meeting of the Pretoria Amateur Radio Club held at the South Campus of the University of Pretoria on 11 Nov. 2004

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

**Attendance:** The meeting was attended by 20 members and 1 visitor, Ron Aylward. Apologies were received for Joe ZS6TB, Almero ZR6RY, Malcolm ZR6OLM, Helen Newton, Elmarie ZR6AXF, Hal ZS6WB and Ivan ZS6AUT.

**Personal Matters/Lief en leed:** Hans, ZS6KR reported that His xyl, Bertha is still in hospital and that her condition has improved slightly.

**Minutes of previous meeting:** The minutes of the previous meeting as published in Watts were approved. Proposed by Carlos ZS6AJW seconded by Roy ZS6XN.

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

## Club Activities:

**DF Hunt:** Johan ZR6JHB – DF hunt planned for January.

**Fleamarket:** Hans ZS6KR – Next Fleamarket – 27<sup>th</sup> November 2004.

**Rallies/Tydrenne:** Johan ZR6JHB – Reported that the club was involved in 13 rallies and 8 events on Kyalami thus far. Volgende Tydren – SCC All Tar Rally. Vind plaas op 27 November 2004 in Pretoria omgewing. Tydren sal afgehandel word oor 9 sneltrajekte.

Daar sal n braai gehou word vir almal wat die afgelope jaar betrokke was met tydrenne by PMC in Silverton op Sondag 21 November vanaf 11.00.

**Social:** Willie ZR6WGR, – Social gathering - 26/11/2004 - Year end function at Adlers Restaurant. Cost R60.00 p.p

**Financial Report.** – Richard ZR6CK – Reported on the club's finances. Receipts – R203.89 Payments – R346.00 – Cash on Hand R1679.34  
Membership status: paid up members 120 – unpaid 30.

**VHF/UHF CONTEST:** Pine ZS6OB - Work group on air every Monday evening from 20h00 on 145,725 to discuss technical issues.

Ham Dairy:

**NOV.** – 13 – Bring and braai – QRA - ZS6P.  
13 – 14 – SARL Field Day (2<sup>nd</sup> leg)  
21 – Year end Rally Function at PMC.  
26 – Year end PARC function at Adler's Restaurant UP.  
27 – 28 - CQWW DX CW Contest  
27 - Mega Fleamarket - PARC – South Campus UP  
30 – Closing date for SARL Council nominations.

**DEC** – 02 – PARC Meeting – Social – bring your HF/VHF project constructions – Desert Island story.  
03 – Schools close.  
04 – 05 – ARRL 160m Contest.  
10 – NARC closes

## Algemeen/General:

Hans ZS6KR – needs articles and pictures for Watts.

Johan ZR6ANF – 6m repeater – property of MRK – everybody can use – need folded dipoles for 6m.

**Presentation:** Speech Intelligibility – Spraakverstaanbaarheid – Hennie ZR6HEN.

**Baie dankie Hennie** vir jou moeite en die interessante aanbieding.

**Next meeting:** The next meeting is scheduled for 02<sup>nd</sup> December 2004.

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

ZR6JHB

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**-SARS:** We've got what it takes to take what you've got!

**-Daar is geen reguit spoor sonder dwarsleërs nie** – ook waar vir klub vooruitgang...

# A Blessed Christmas



It is difficult at the time of writing to realize that the Festive Season is soon upon us. The January issue of Watts will probably appear after Christmas. **The Management Team of PARC will now take the opportunity to wish you and your loved ones a Blessed Christmas and Happy New Year.** May there be new inspiration for the future through the Message and real meaning of Christmas for all. We also wish our Jewish members a happy **Chanukah**.

# 'n Geseënde Kersees



Dit is moeilik om nou ten tye van hierdie skrywe te besef te dat die Feesgety alreeds baie naby is. Die Januarie uitgawe van WATTS sal waarskynlik eers na Kersfees verskyn. **Die Bestuurspan van PARK wil nou van hierdie geleentheid gebruik maak om u en u geliefdes 'n geseënde Kersfees en Gelukkige Nuwe Jaar toe te wens.** Mag daar nuwe inspirasie vir die toekoms deur die Boodskap en ware betekenis van Kersfees vir u almal wees.

## Birthdays

Desember

## Verjaarsdae



December

## Anniversary

## Herdenkings

- 01 Beatriz, SW of Manny ZS6AKX
- 02 Antoinette ZS6D, SW of Danny ZS6AW
- 04 Wynand, son of Wynand ZS6RF
- 05 Hanlie, dogter van Freddie ZS6JC
- 06 Sylvia, LV van Tjerk ZS6P
- 07 Hansie ZS6AIK
- 07 Tim ZS6TIM
- 08 Hans ZS6KR
- 08 Magda ZS6MWW
- 14 Madelein, dogter van Tim ZS6TIM
- 15 Almero ZR6RY
- 17 Dominic, seun van Hans ZR6HVG
- 21 Retha, SW of Roy ZS6XN
- 22 Johan ZR6JO
- 22 Steven, son of Bill ZS6KO

- 01 Elize en Pieter ZR6AHT
- 12 Petro en Gert ZS6ZB
- 12 Mary and Bill ZS6KO (53)
- 17 Leanne and Allan ZR6AHL
- 22 Rita and Vitor ZS6VG (25)
- 29 Molly ZR6MOL and Richard ZR6CK

- 23 Niel ZR6AUK, son of Roy ZS6MI
- 25 Annemarie, SW of Bernie ZS6ANU
- 25 Chrissie ZS6JX, SW of Dave ZS6JW
- 28 Allan ZR6AHL, son of Frances ZR6AUT
- 30 Rika, SW of Errol ZR6VDR
- 31 Henk ZS6CS

## Nuwe Lede | New Members

Baie welkom aan Karel Johannes Bosch – RAE kandidaat

## Sick Parade

Bertha, LV van Hans ZS6KR is nog in die hospitaal



## Krukkelys

Jean ZS6ARA se pa was siek maar sterk nou aan

## PARC Diary | Dagboek

- Dec **02 PARC meeting / social**
- 03 Schools close
- 04-05 ARRL 160m Contest
- 10 NARC closes

## Snippets | Brokkies

- Obtaining a Class A1 (ZS) license will be a lot easier after Government Gazette promulgation of the new Regulations. The SARL has been appointed by the Minister to prescribe assessments. This is a 4-page document downloadable from <http://www.sarl.org.za/public/licenses/Assessments/Assessments.asp> In essence there are five possible categories in which you can choose to be assessed. Each Club appoints its own assessors who are registered with the SARL. ZR and ZU license holders not wishing to do this, can retain their call sign and operate HF with certain restrictions.

- 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.**
- Slim kind: Suzette, dogter van Magda ZS6MVW en Pieter ZS6PVW het by haar skool prysuitdeling funksie 6 akademiese toekennings, 5 prestasie toekennings, 'n top-10 leerders balkie en 'n 4e agtereenvolgende akademiese balkie gekry. Boonop is sy gekies as skoolierpatrollie-kaptein vir 2005. Baie geluk Suzette!
- PARC has applied for a ZS75PTA call for next year's 75<sup>th</sup> anniversary.
- PARC made use of an ICASA offer to update all repeater and repeater site details free of charge before Nov 30. Your club currently has 5 licenses for 2m fixed, 2m mobile, 70cm, 10m HF and the unmanned IRLP node.

## ZS6P Braai 13 Nov.

Die tradisie is weer hierdie jaar voortgesit danksy die gasvryheid van Tjerk en Sykvia – Hier is so'n paar van die vuurmakers: Ed ZS6UT, Mike ZS6AFG, Tjerk ZS6P en Hermann ZS6SN



## PMC Braai 21 Nov.

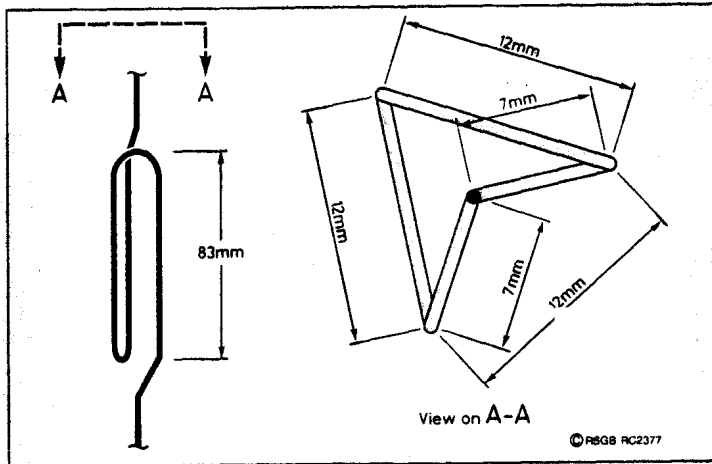
Last Sunday saw the great get-together of all involved in motor sport assistance at the PMC, Silverton. The photo shows all in a relaxed mood after 'JB' ZR6YV related the events of a very busy year and thanked everyone involved. There were at least a dozen more members who could not attend. There was also a show-off of member's mobile installations and Richard ZR6CK won the mast/antenna category and Sander ZR6SW the best radio set-up



# HOME BREW: The PA0HMV dual-band antenna

(Originally published in Electron 4/99, translated and published in Radcom 9/99. Condensed by ZS6KR)

This antenna acts as two stacked  $\frac{5}{8}\lambda$  radiators on 435MHz with a gain approaching 5dBd. To end-feed such an arrangement with 50Ω coax, the lower  $\frac{5}{8}\lambda$  must be extended to  $\frac{3}{4}\lambda$  by adding  $1\frac{3}{4}$  turns on top of the 145MHz coil. The latter, together with a trimmer capacitor, is part of a parallel resonant circuit at to provide a high-impedance end-feed for the 2m  $\frac{1}{2}\lambda$  radiator on 145MHz. On 435MHz, resonant radials are required; these being insignificant on 145MHz.



Bending details to form the phasing stub

## Materials required

- Copper or brass tubing 28mm OD 220mm long.
- PVC tubing 32mm OD, 28mm ID 1200mm long + cap
- N-type coax socket PTFE with square flange
- Brass rod/tubing 3mm OD for 4 radials 720mm
- Cu wire bare 2,25mm dia. 1600mm
- Trimmer capacitor good quality 10pF max
- Polystyrene centring discs (2)
- 32mm SS hose clamp, Sealing compound.

## Construction

Saw or file off the N connector flange corners to make it fit snugly into the mounting tube. Drill a hole for the earthy end of the coil. Pre-bend two sets of adjacent radials, leaving the ends longer than required. Flatten the centre bit and make a jig to be able to hold and solder the flat bits to the socket. The socket must have PTFE or other heat resistant dielectric.

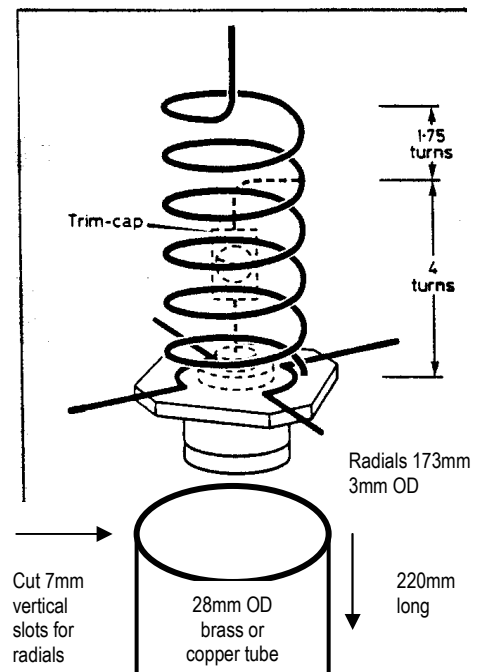
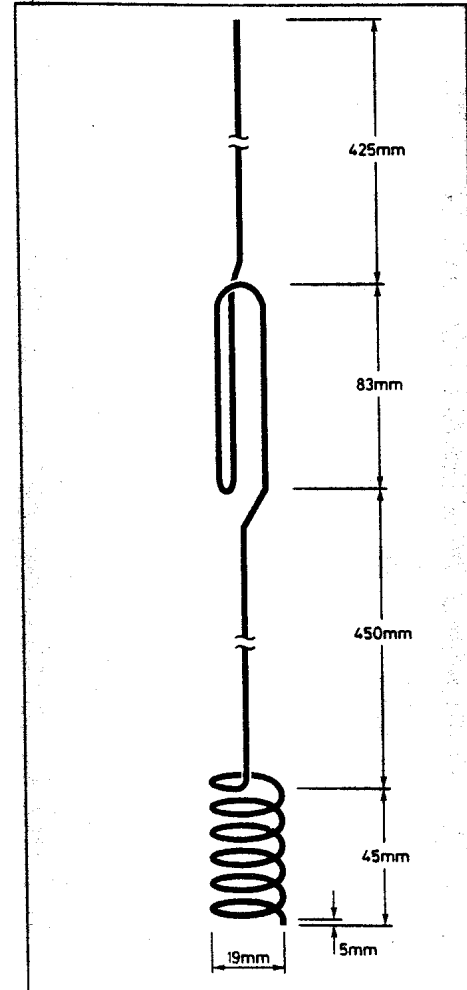
Cut each radial to 173mm, measured from the centre of the socket. Solder the cold end of the trimmer capacitor to the centre contact of the socket.

Bend the phasing part as shown using a 10mm drill bit as a former. Trim the lower wire end so that it is 450mm long, slide on a centering disk, and butt-splice to the top of the coil using thin brass tubing.

Lastly cut 7mm and 70mm deep slots into the brass and PVC tubing respectively to accommodate the radials. Slide the assembly down the brass tube till the radials are against the bottom of the slots.

## Tune-up

The PVC tube lowers resonance by about 3MHz, so without the tube, go for best SWR at 438MHz by progressively snipping the top section. Possibly coiling the coax feed below the mounting tube can help optimize tuning. Glue both centering disks to the radiator at the voltage nodes 170mm from the top and centre of the bottom straight piece. Slide the PVC tube home onto the radials and verify the SWR to be lowest where required on 70cm. Finally, raise the tubing a little to gain access to the trimmer and adjust for best SWR at 145MHz. Again lower the tube and fasten with the clamp.



## VHF/UHF Ducting in the Troposphere.

by Carl Luetelschwab K9LA *World Radio* May 2004 (abridged)

Ducting allows propagation beyond line-of-sight distances in our VHF/UHF bands. The *troposphere* is defined as that portion of the atmosphere from ground level to the altitude where the temperature stops *decreasing*. This altitude is called the *tropopause*, and typically around 11000m.

Most of our weather occurs in the troposphere.

The *stratosphere* is next and the temperature *increases* up to the *stratopause* at about 47000m.

The *mesosphere* is next where temperatures *decrease* up to the *mesopause*.

Note that from an electrical point of view the *ionosphere* (D region) starts at about 50km.

A gradient in the index of refraction is required to effect wave bending. Since the troposphere is way below the ionosphere, bending is not defined by electron density, but by the index of refraction due to atmospheric pressure (P), absolute temperature (T Kelvin) and water vapour pressure.

At ground level we can calculate a typical value of refractive index = 1,000315. Because it is very little above 1, the remaining figure is defined as *refractivity* N = 315. This figure will decrease by 40 units/km of altitude (*Lapse Rate*).

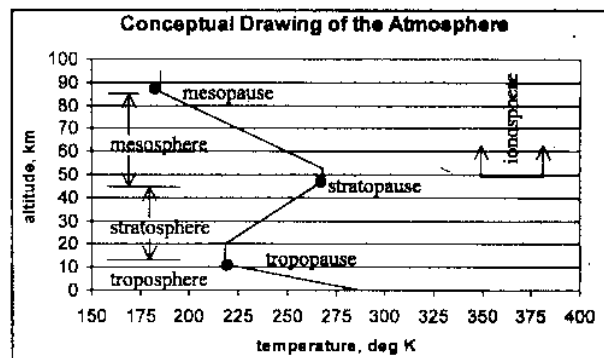


figure 1

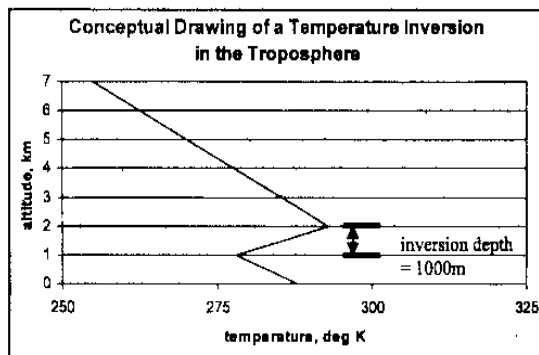


figure 2

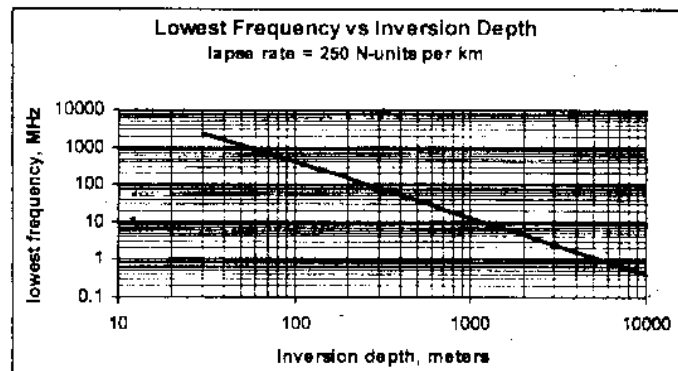


figure 3

This refraction gradient results in line-of-sight propagation being extended by an additional 33% also known as the *4/3 factor*.

Getting beyond this requires a greater lapse rate, and such conditions are possible in temperature inversions, and are greatest when accompanied by a decline in moisture. Fig 2 shows an inversion and it is not uncommon to have lapse rates in the hundreds of km.

An electromagnetic wave will only benefit when inside such an inversion. Just like a waveguide, there is a low frequency cut-off. See fig 3 for various inversion depths at a lapse rate of 250 N-units /km.

Upper-air soundings have indicated that inversion depths larger than 1000m are very rare, generally limiting low frequency possibilities to 10MHz.

From ZDnews.com: **Talk about unwanted new features in fancy televisions, college student Chris van Rossman got more than he wanted with his Toshiba set – as he learned when emergency and law enforcement officers came knocking at his door.**

Rossmann's one-year old 20 inch flat-screen TV started broadcasting over the 121,5MHz frequency, the channel used for distress signals used by search-and-rescue workers to find crashed aircraft or missing boats. Rossmann's TV was picked up by search-and-rescue satellites and emergency crews were alerted.

By the next morning officials had narrowed the signal to an apartment and later to a point on the wall of the apartment where the TV was located.

Van Rossman was instructed to cease transmitting a false distress signal – to stop watching TV – or face a fine by the FCC of \$10,000 per day.

Toshiba representatives were not immediately available to comment on whether they had similar complaints from this model with built-in DVD, VCR and CD player....

Our 10m repeater antennas were kindly donated by:



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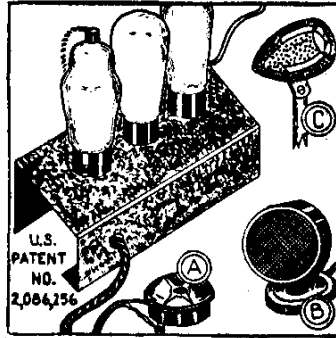
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The Editor/ Proofreader is awaiting your contributions to WATTS..

Artikels in Afrikaans sal baie waardeer word

# Ideal Xmas Gifts



## HUNDREDS

of practical applications. Will broadcast voice or music from any room or floor in home, office or store in same building **WITHOUT CONNECTING WIRES!** Operate from any lighting socket. Transmit your favorite recordings thru any radio without connections between radio and phonograph. Your radio becomes a public address or inter-communication system with a Transcaster.

Home broadcasting without wires. Great fun for parties, auditions. Use as a detective device to listen to secret conversations. A few other uses include wireless nursemaid, pipe line tracer, mind reader, trick ventriloquist, bingo announcer, talking dog, etc. Impossible to enumerate many other uses in this limited space.

**TRANSCASTERS** are available in **FIVE** models, all completely wired, laboratory tested and ready to use. All fully guaranteed as to materials and workmanship and also against damage in transit.

**STANDARD MODEL** Excellent beginner's outfit. Permits use of earphone or small mag. speaker as microphone, or any high impedance magnetic or crystal pickup record player. **POWERFUL**, not to be confused with one-tube toy-type outfits. Priced amazingly low. Works from a.c. or d.c. Price, complete with 3 tubes, ready to use (less mike) ..... **\$2.95**  
 Earphone Mike (Fig. A) ..... **95c** additional

**SENIOR MODEL** All electric. Can be used with all types of power mikes. Extra amplification of 50 db. provided. Adjustable frequency range between 1500 and 1750 kc. or if preferred between 500 and 800 kc. Price, (less tubes and mike) ..... **\$3.50**  
 Set of 4 matched Tubes for Senior Model .... **\$1.45**

**DE LUXE MODEL TRANSCASTER-TRANSMITTER** Powerful, high-gain device engineered so that it will transmit high-fidelity music without connection wires to remote radio set. No sacrifice of quality or power. Operates from a.c. or d.c. Same frequency range as Senior model, but greater db. amplification. Price (less tubes and mike) ..... **\$4.95**  
 Set of 4 Matched Tubes for DeLuxe Model .. **\$1.95**

**SPECIAL 5-TUBE TRANSCASTER** This ultra-efficient device has been engineered especially for advanced experimental and professional uses. Employs two extremely high-gain pre-amplifier stages ahead of the audio modulated oscillator. When used with crystal microphone it will pick up and transmit a whisper, with mike concealed anywhere in room. Suitable for special police work, for use with recorders, etc. Price, complete with 5 tubes, ready to plug into any a.c. or d.c. outlet (less mike) ..... **\$15.00**

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**TRANSCASTER ACCESSORIES** Dynamic Microphone, 50 db. (Fig. B) **\$1.95**; \$25 List Wide Range Response Crystal Mike (Fig. C) **\$7.95**; High Impedance Crystal Pickup **\$2.45**.

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