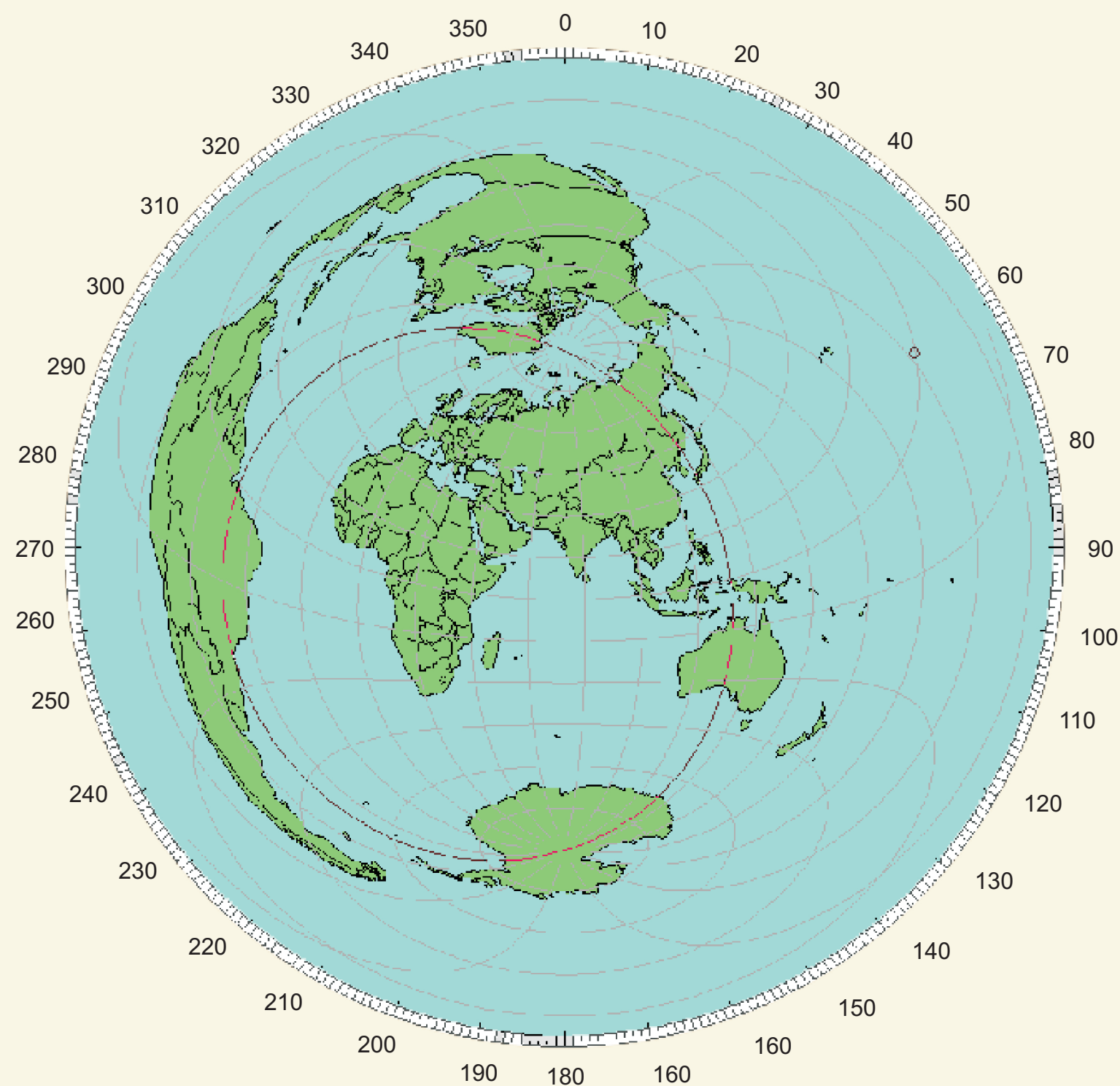


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HAM

# RADIO



NEWS

Vol. IX No. 1

January - March 2003

The Journal of Amateur Radio Society of India (Member of IARU)

"AMATEUR RADIO - A NATIONAL RESOURCE"



Unity Is The Motto



# HamFest India 2002



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They are Heroes. They were Hams.





## FROM THE PRESIDENT'S DESK



This issue of Ham Radio News comes to you after a big gap. This was as a result of severe illness of our patron and promoter of ARSI and editor and publisher of HRN. As you are all aware, Mr. Saad Ali, VU2ST, passed away on 01.11.2001 at the age of 83. He was a towering personality and his loss to the Indian radio amateurs is irreparable.

We passed through difficult periods last year. There were skeptics who predicted that the Society would not survive beyond Saad, more so because we had no place to run the affairs of the Society. These challenges were squarely met and we are now functioning from Delhi. The arrangement is certainly not satisfactory but the projects are being started and the modalities are in the process of being finalized. One veteran member has taken upon himself the responsibility of bringing more and more people on 2 metre band in and around Delhi.

Most of you are aware that work in W.P.C has been slowing down over the years. The Society has been providing help in following up such cases, but this work has now become unmanageable. Accordingly we had decided to look into the problems of only ARSI members. In one of our newsletters, we had requested our members not to refer problems of non members. This helped and now non members having problems are joining the Society to sort out their difficulties. A negative aspect of this has been that during 2001, over 30 persons, who became (or promised to become) members to get their licences, did not respond to become corporate members after getting their call signs.

Such a growth in our membership reflects a negative attitude. Membership to the National Society-which ARSI is, by virtue of its international recognition by IARU, should be a matter of pride and just a recourse to get a licence issued or renewed.

While we expect each member to enroll at least one member per year, we would like every member to emphasize that the achievements of the Society, like additional frequencies, reduced Morse speed test, etc be highlighted, rather than the assistance provided in W.P.C matters.

In the end, we need active cooperation from members. They should act, and react, on matters of importance to the amateur activities in the country.

Thank you,

Sahrudin,  
VU2SDN

## CQ ALL VU HAMS,



This is VU2SWS on her first stint as editor of HRN! I took this assignment with mixed feelings. I am sad at the death of my good friend VU2 ST who was the editor of HRN for so long. He shall be terribly missed. I am happy on the other side to do my bit towards this wonderful hobby.

After a hibernation period of about 2 years after ST's death HRN is back. I have tried to give the magazine a new look and have tried to make it as interesting and varied as possible. I hope all readers will read it from end to end and then please feel free to give me all your views positive and negative. Since this is the first issue after a long gap, there are no letters to the editor published. But in the next issue I hope I get enough letters to print under the column titled FEEDBACK. There are many new headings introduced and it can continue only if I get articles from all of you. I would love to have articles on homebrewing of equipment and antennas, club information, experiences, dx information, reviews of equipment, and all other information pertaining to our hobby. And please send photographs!! HRN also needs advertisements. Do send all this to my email address or via regular mail.

In the Columbia tragedy, among the crew were 3 Hams KC5 ZSU, Laurel Clark, KC5 ZTC, David Brown and of course our own beloved KD5ECI, Kalpana Chawla. The whole world mourns for them.

Band Conditions are like a yo yo. The only dependable band I found was 20 metres, though my favourites are 15 and 10, both of which are terrible most of the time!! 40 metres is alive and well with our regional groups of Tamil, Telugu and Malayalam doing great guns!!

Once again please do remember that the HRN magazine is from ARSI which is the representative body of India in the IARU. So please let's all get together to make the society stronger and this magazine one of the best in the Ham world.!!

Happy Hamming,

73

Sarla going QRT from this page till the next issue, chow chow

Sarla  
VU2SWS



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**The current address of the Society is Amateur Radio Society of India, C/o Sahrudin, 274, Paryatan Vihar, B-4, Vasundhara Enclave, DELHI - 110 096**

## PAYMENT INSTRUCTIONS

### **1. For those cities where there is a branch of ICICI Bank.**

Payment can be made by a local cheque or cash at the branch of the bank (**not the ATM**), quoting the name of the Society in full (not "ARSI") and the account number **629701081104**. The Counterfoil - either original copy or a photocopy - should be sent to the Delhi Office. **This is absolutely necessary.**

### **2. Where there is no branch of ICICI Bank.**

Payment can be made through a demand draft, obtained from any bank, drawn in favour of "Amateur Radio Society of India" (not ARSI) and payable at Delhi / New Delhi. As far as possible, please do not send outstation cheques to Delhi office.

## Payment of Subscription

Due to the unsettled condition of the Society consequent on our vacating the Kurla Office, members were not very clear as to where they should send the subscription.

As the situation has now stabilised and the Society is functioning properly from Delhi Office, all members who have not yet paid their subscription for 2002-03, may kindly do so as per detailed instruction given above.

Several associate members who have since received their call signs are now eligible for corporate membership. They are now required to pay Rs. 150 as annual subscription instead of Rs. 75. Some of them are in arrears for two years. They are requested to update their payments at the earliest. As licenced amateurs, they are no longer eligible for associate membership.

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## HRN LETTERS AND EDITING POLICY.

The Ham Radio News is published in India 4 times per year to provide Radio Amateurs, those interested in radio communications and electronics, and the general public with information related to the science of telecommunications.

All submissions for HRN including letters send by email and regular mail are eligible to be included in HRN, space permitting at the discretion of the editor. Longer letters are subject to editing.

Letter writers should include their name, address, call sign and phone numbers (voice and fax as applicable and email/packet addresses) if any. All material in HRN is subject to editing for length, clarity, style, punctuation, grammar, libel and taste.

Please type, print or write clearly. Electronic files may be sent by e-mail (preferred), or on diskette. Please include a hard copy printout if material is mailed.

Please enclose a self addressed stamped envelope if you wish pictures or diskettes returned.

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# RADIOACTIVE

## Operation Green Bird

With the increase in the height of the antenna of the Delhi Repeater (installed and operated by Vigyan Prasar) from about 30 feet to nearly 100 feet, it was felt that more and more people should be encouraged to be heard on the network. The 2-metre net at 2130 hours was recording 12 to 15 check-ins daily, from places as far as Agra and some places in Haryana and Punjab.

The Monthly get together, jointly organised by Vigyan Prasar and ARSI, was usually attended by 30 or more people. Obviously, the rest of the gang did not have any 2-metre equipment and were unable to check - in. Among them were some new licenses too.

Mr. Lokesh Khanna, VU2LO, a veteran ham and a veteran member of ARSI, decided to do something about it. He went to the Agra junk market, found some old (and condemned ) base stations capable of operating in the band 140 - 170 MHz and tunable to 16 preset frequencies. Hoping that some of them can be repaired by using the parts from others, he brought quite a few with him and named them Green Bird. Since then, he has been extremely busy and has brought to life nearly a dozen of them, delivering about 15 - 20 watts output. Realising that some people may still not use them despite their very low cost (offering excuses like non-availability of power supply, antenna, etc.), Lokesh decided to build power supplies and 5/8 verticals, to be supplied along with the sets to anyone in Delhi and neighbouring areas (having access to the Delhi Repeater) on the condition that the buyer (1) presently did not have any equipment, (2) will regularly check into the 2-metre net and (3) will join ARSI by paying 2 years subscription.

The cost was worked out in detail and since Lokesh refused to collect a single paisa for his investments and marathon efforts (typical response of a genuine radio amateur), the price was fixed at Rs. 1,800, excluding the cost of coaxial cable, the length of which could vary from place to place. During the month of November, nearly 8 sets have either been installed or are likely to be installed.

## Offering Assistance To Home Brewers

On sustained demand from new home brewers, the Club Station, run by Vigyan Prasar, an autonomous body under Dept. Of Science & Technology, has offered its service equipment to any one who needs them in order to promote experimentation in Ham Radio. This offer should go a long way in promoting home brewing and help other hams too.

Accordingly, the club station, VU2NCT, located in Technology Bhawan on New Mehrauli Road, New Delhi is open during normal working hours (0930 - 1730) on all working days under the guidance of OM Sandeep,

VU2MUE. For help and appointments, he may be contacted on LL 2696 5985.

Here is a list of test & measuring instruments available at VU2NCT :

1. Universal Frequency Counter : 120 MHz/1.1 GHz
2. Synthesized Signal Generator : 0.2-550 MHz
3. LCR Sortester : Inductance : 0.0 microH-9999 H/ Capacitance : 0.0 pF - 9999 microF / Resistance : 0.0-100 M Ohms.
4. Oscilloscope : Philips Dual Trace Time Base Oscilloscope (100 MHz)
5. Digital Multimeter (Philips DM 312):  
Transistor testing (NPN/PNP/hFE) AC up to 10 Amps/DC up to Amps/DC Voltage measurement in the ranges of 200 mV, 20mV, 200 V & 1000 V/AC voltage from 2-750 V/Capacitance in the range of 20 microF / 200 nF/2000 nF/ Resistance up to 20 M Ohms.
6. Yaesu VHF SWR & Power Meter : 140-525 MHz  
Power ranges : 0-4 W/0-20 W/0-200 Watts
7. Yaesu HF SWR & Power Meter : 1.6 - 60 MHz/Power range: Up to 2000 Watts

## My Experience Of Assembling FC 50 Atanu Dasgupta, VU2ATN

Readers must be wondering about FC 50 as it is not a familiar piece of equipment. Well it is a cute little universal frequency counter sold as a kit by OM Charudatt Uplap, VU2UPX. Recently I had the experience of assembling such a kit. I am now the proud owner and user of frequency counter FC50.

Years ago I constructed a frequency counter based on a design by ARRL. Old timers will remember the popular ARRL publication called '*Learning to work with Integrated Circuits*' that describes fundamentals of ICs, frequency counters, DVMs etc. The publication gives details about design and construction of a frequency counter based on discrete ICs and other components. I still have the particular frequency counter that has been a reliable test instrument in my shack for about 20 years. I would be using the same frequency counter for many additional years unless I had this kit offered on Internet by Charudatt and informed of its existence through CQ-VU group email.

The most important components that are available as part of the kit include the glass-epoxy PCB with some surface-mount devices and a pre-programmed PIC Micro Controller type PIC16F84. What is not available as part of the kit include the crystal, a suitable cabinet etc. And other miscellaneous components. The salient features of the frequency counter type FC 50 are as here under :

- 16 Digit x 1 Line LCD Display with Resolution of 10Hz
- Settable IF offset for direct frequency display from VFO+IF / VFO-IF / IF-VFO



- Battery Operation at 15 mA @ 9Volts Measuring Frequency of more than 45 Mhz

The kit is available through mail order on [www.circuitsonweb.com](http://www.circuitsonweb.com) owned by OM Charudatt. The kit is described in great detail on this website with description of the circuit and all features. There is other relevant information - source of which can be linked through the said website. I placed an email order for the kit and deposited money as per instruction on the website. However, after I received the kit I discovered some additional components would be required to complete the project and I had to procure those components from the local electronics market 30 kms away from my home. So I placed an email order for those additional components again with [www.circuitsonweb.com](http://www.circuitsonweb.com). There is no dearth of such components in Delhi. However, I had chosen the email-order route as that was much more convenient than travelling 60 kms and the option was cost-effective too. I guess such a procurement would be most welcome to those who do not live in metropolitan cities like Delhi. After I received the kit and the other components, it took me a weekend to complete the project. The frequency counter was then powered and checked. As part of testing I measured the frequency range of my home brewed Gate-dip oscillator and was pleasantly surprised at the performance.

The final step was obviously to find a right shoe box to encase the instrument. The frequency counter FC 50 is a new utility test instrument added to my shack.

I hope mail-order route of procurement through Internet shall be increasingly popular in near future and provide a good alternative to home brewers for genuine components/kits in small quantities. Of course Internet sites must provide choice of projects for both newcomers and seasoned hams.

Happy home brewing!

## HOME BREW

### **RM96 SSB TXVER** (Diagram : Page No.8 &9)

By N.S.Harishanker VU3NSH.

This is an HF SSB Transceiver project for 40M and 20M developed by VU2RM-OM Ram Mohan Rao. RM96 is simple and cost effective and has already been assembled and used by more than 100 Hams. For the PCB VU2 RM can be contacted at 66-10-29/4, Hemanthachupuram, Kakinada P.O., Andhrapradesh-533 005. Ph:0884 372592. QRV:7.094 For the 9Mhz filter abd LSB-USB crystals, contact Bharat Electronics Ltd, Jalahalli PO, Bangalore 560013. Clarify your doubts with VU2-RM, PTR, HRS, DKX, GIP, LR, VIT, BFO and VU3VJY. The simple coilwinding, start to end data to simplify the project will be in the next issue

## **CW operators Award**

The award shall be called **B.S. Dutt, VU2AJ** award. The award shall be financed through the donation by B.S. Dutt, VU2AJ of Mumbai. The award has been instituted to encourage CW operation and participation in world-wide contests by operators in India. This award shall be organized and managed by Amateur Radio Society of India. The award shall be presented to the operator who makes the highest number of contacts with amateurs in DXCC countries in a calendar year, by participating in any one contest of their choice. Certificates of merit shall be presented to the second and third places. There shall be only one category for this award, irrespective of power and number of frequency bands used. Certificate of participation will be given to all.

### **Rules**

1. The award is open to any Indian radio amateur operator holding a valid license.
2. The award is presented in the name of the CW operator and station callsign if applicable.
3. The contest CW QSO's must be made personally by the applicant. Computer received QSO's shall not be recognized.
4. Computerized log is permitted and encouraged.
5. Eligibility for the award will be participation in any CW contest. The Awards Manager / Committee will satisfy himself / themselves that the applicant has actually submitted his papers to the Contest Organisers.
6. Duplicate QSOs with the same DXCC country in the same band or different band, shall be counted as one. Applicant submitting false or duplicate QSOs will be disqualified. The Rules governing the above Contests shall generally apply in all respect for this award also.
7. The applicant shall give a declaration that he has operated within conditions of his license.
8. The applicant shall submit a copy of the contest summary sheet or a letter of certification from the president of his/her local club attesting to the logs of the contest. The logs may also be attested by a member of the governing council of ARSI.
9. The top three applicants will be required to submit a copy their logs for scrutiny.
10. The decision of the award manager or committee shall be considered final and binding on the contestant.
11. The award shall cover the period January to December every year. Applications for the first award will be invited in January, 2004, from those who participate in CW Contests during 2003.

### **Contest Calendar**

**Mar 29-30**

**CQ WW SSB WPX Contest**--SSB--sponsored by CQ Magazine, from 0000Z Mar 29- 2400Z Mar 30 (CW is May 24-25).

For more information--

<http://www.home.woh.rr.com/wpw/>. Logs due May 1 (CW, July 1) to [wpsssb@kkn.net](mailto:wpsssb@kkn.net) ([wpxcw@kkn.net](mailto:wpxcw@kkn.net)).



# ICLUBNEWS

## Agra

The Agra radio club conducted a demonstration of amateur radio on 19<sup>th</sup> and 20<sup>th</sup> October, 2002, (JOTA) at Saket Inter College, Agra, which was attended by about 200 scouts and guides from various schools and colleges accompanied by their teachers. They showed a keen interest in the hobby and were guided by the club members to talk to other scouts and guides from India and Bangladesh on the band. VU2MCC, Dr Mukesh Chandra gave a talk on all aspects of Ham Radio. The District Commissioner of Scouts requested the club members to act as coordinators for JOTA every year.

With the permission of Adm. Col. A.K. Das (509 ABWS Agra) the Agra Radio Club gave a lecture/demo on ham radio on 26<sup>th</sup> October 2002. VU2MCC gave a lecture which was attended by about 35 Army Officers and Brig. A.K.S Chandale, who was interested in starting an Army Radio Club in Agra in the near future. VU2TRI-Dr Anil Aggarwal, VU2RNC-R.N.Sharma, VU2BX-Sandeep Choudhary, VU3AKL-Dr. Akhil Singh, VU2MCP-M.C.Pippal and VU3JAT, also took part in these events.

## Chennai

The Ham Fest India 2002 was held at the Lakshmi Hall on the 5<sup>th</sup> and 6<sup>th</sup> of October. There were over 250 delegates. Dr. E. Balaguruswamy inaugurated the function and the Postmaster General Mrs Karuna Pillai released a special first day cover to mark the occasion. Many sessions were conducted during the Fest.

Shri S.K. Nanda, IAS, E. Radhakrishnan, IPS, and others gave a first hand account of their experiences with Ham Radio Volunteers and their immense help during disaster management. An audio visual presentation on Digital Mode for Amateur Radio and Amateur Satellites was made by B.S. Gajendra Kumar (VU2BGS), A.R. Pratap Kumar (VU2POP) and B.A. Subramani (VU2WMY). Nagesh Upadhaya (VU2NUD) gave an account of India's Amateur Satellite programme. Gopal Madhavan (VU2GMN) spoke about the new mode of communication-IRLP (Internet Radio Linking Project) which is becoming very popular worldwide. India's first node No 8900 is now operational in Chennai. A very useful session on homebrewing was conducted with S. Rama Mohan Rao (VU2RM), J Peter (VU2STF) and G. Hari (VU2PTH). Sarla Sharma (VU2SWS) spoke on her experiences in the USA and screened the video of the ARRL Dx Contest which she took part and her sky dive experience. The vexing problem of Long range cordless phone interference on the VHF bands and the inability of the government authorities to do anything about it was discussed at length and ESA Saifuddin (VU2SF), Ganesh (VU2VTK) and AR Pratap Kumar (VU2POP) took part. Older Hams were felicitated with a shawl and a

momento. All speakers in the Hamfest were presented with the momento. The valedictory Function was chaired by SN Rama Raju, (VU2RMJ) and the address was delivered by Mr. Venkataraman IAS. The election for the holding of the next Hamfest went uncontested and VU2RAI, Ravikrishnan declared that Ahmedabad would be the next hosts. The 40<sup>th</sup> Annual Day Celebrations of the Madras Amateur Radio Society was celebrated and a group photo of those present was taken. A nice entertainment programme was performed by the students of Narthanasala on the first day. On both the days there was a flea market on the first floor of the hall.

## Mangalore

The VUIOTA group consisting of VU2 JRO, VU2 MTT, VU3 DMP, VU2 PAI, VU2 RDJ, VU2 RDQ, VU2 JIX, VU2 SBJ and 2 SWLs operated from Sacrifice Island in Kerala (IOTA-AS-161) on 26<sup>th</sup> and 27<sup>th</sup> of January 2002. They logged 3800 QSO's in less than 30 hrs. of effective operating time. They operated 4 HF stations on all bands in SSB and CW.

## Mumbai

The Mumbai Amateur Radio Society (MARS) proved again that even in a crowded place like Mumbai, foxes can be chased and hunted, by conducting its 2<sup>nd</sup> Foxhunt cum Treasure hunt on the 19<sup>th</sup> of Jan. 2003. 67 participants from the age group of 6 to 60 yrs, divided into 17 teams first searched for the treasure, which was the frequency of the fox, through 5 spots in a 5-6 km radius in 5 motor cycles and 12 cars. With the frequency of the fox known, the Hunt began in a radius of 7 km and first to track the fox was team VU2 UGO, Sandip in 50 minutes followed by team Kadam in 57 mins. The 2<sup>nd</sup> Fox was a sly one and the teams searched for it in a 10 km radius. Team VU2AUA caught up with it in 85 minutes followed by team Kadam in 105 mins. Last team was that of Zorben Zend. The whole event was planned and executed by Zyros, VU2ZRS and Nilesh VU2NLF, with all direction finding antennas, brewed and supplied by the club.

On 1<sup>st</sup> Feb. 2003, an awards distribution ceremony was organized by MARS at the Garware Club, for students who cleared the Amateur Radio License Exams. 72 students appeared for the exam. 47 passed with grade I, 8 with grade II and 5 with restricted. The chief guest was Shri Satishchandra Pradhan-VU2PDT (M.P) who was conferred an honorary membership of MARS, with a society cap, membership certificate and a silver coin. He awarded prizes to winners of the Foxhunt, Treasure Hunt and Scramble Team Exercises (Disaster Communication). 110 Hams and SWLs including VU2 GT, George attended the function.

**Worldwide DX nets** (Collected by HB9CIC Compiled by  
VU3BKY Basappa & VU2UR Arasu)

Day	UTC	Description	Contro- ller	Frequency KHz
Daily	0000	ARRL Bulletin in CW	W1AW	3581,7047
	0030	Manitoba Traffic		3660
	0100	ARRL Bulletin in RTTY	W1AW	3625,7097
	0200	Pacific Maritime Mobile		14313
	0200	HI-DX	NI5I	14222
	0200	INDIA CHARMINAR NET		7080
	0300	ARRL Bulletin in CW	W1AW	3581,7047
	0400	247 Group	KB7SO	14247
	0400	ARRL Bulletin in RTTY	W1AW	3625,7097
	0400	Mexican DX	XE1PEP	3742
	0430	ARRL Bulletin in SSB	W1AW	3990,7290
	0630	USA DX Grp with QSX7085	W8KLI	7240
	0700	Intermar Ship Service	DK0MC	14313
	0745	Medical Assistance	DJ5RT	14332,21330
	0800	Pacific Island	V63JC	14315
	1100	Friendly Caribbean	W2MIG	14165
	1100	Southern Cross DX	VK4AAR	14225
	1200	South East Asia	4S7OF	14230
	1300		OE6EEG	21205
	1400		GW3CDP	21335
	1400	AIR NET India VU2AF/CBE/DPD		14150
	1500		4L5A	21288
	1600	US Country Hunters CW		14066
	1700	French		21170
	1800	African	NX5B	21335
	1800	Family Hour	KB2HK	21345
	1800	US Country Hunters		14336
	1815	French		14170
	1830	African Safari		21292
	1900	Marians		14340
	1900	FM CA	K4CAV	14275
	1900	Emergencia Argentina		3550, 7075
	2000	Family Hour		18145
	2100	Butterfly	KA1JC	14226
	2100	Ramadan(only in Ramadan)	JY3ZH	14252
	2100	Index A DX-Info	WA4JTK	14236
	2200	Latin America	LU7HJM	14143
	2200	South Atlantic Maritime	Mobile	21267
	2230	Index A DX-Info		14236
	2230	Antilles Emergency and Weather		3815
	2230	Central American M M	8P6QL	21400
Monday	0200	W6TT Broadcast in CW	W6TI	7015,14002
	0600	YL Pacific DX	VK9YL	14222
	0615	Central European Wx	DJ2MV	3683
	0900	Brazil DX	PT7BI	14200
	1400	W1AW Bulletin in CW	W1AW	3581,14047 ,21077
	1500	European DX	4X6DW	14243
	1800	AGCW DL	DK0AG	3557
	2300	Royal Tikai	YV3DSD	14285
Tuesday	0500	Triple Two	VK9NS	14222
	0615	Central European Wx	DJ2MV	3683
	0900	Brazil DX	PT7BI	14200
	1500	European DX	4X6DW	14243
	1800	Desert Storm	9K2YA	14282
	2030	J5J5	5UAB	7065
	2300	Royal Tikal	YV3DSD	14285
	2330	UN Amateur Radio Readlines	4U1UN	14268
Wed	0615	Central European Wx	DJ2MV	3683
	0900	Brazil DX	PT7BI	14200
	1500	European DX (HA5CQ +)	I0MPF	14243
	1800	DIG in CW	DK0DIG	3555
	Thursday 0615	Central European Wx	DJ2MV	3683

Friday	0900	Brazil DX	PT7BI	14200
	1500	European DX	OE6EEG	14243
	1700	International YL DX	GM4YMM	14243
	1730	Medical Assistance	DJ5RT	14332,21332
	1800	DIG in SSB	DJ8OT	3677
	1830	FDXF in RTTY	TV6MHZ	7035
	0615	Central European WX	DJ2MV	3683
	0630	Arabian Knights	JY3ZH	14250
	0900	Brazil DX	PT7BI	14200
	1500	European DX (HA5CQ +)	4X6DW	14243
Saturday	1500	W1AW in RTTY	W1AW	3581,14047, 21077
	1700	DX bulletin DARC	DK0DX	3745
	1900	Night DX	UN9LX	7040
	2030	J5J5	5UAB	7065
	0400	Desert Storm	9K2YA	14282
	0630	European DX	OE6EEG	14243
	0700	Russian Round Table	UA4PW	14300
	1200	Brazil DX	PT7BI	21225
	1230	160 M Band Info	UA9CBO	14339
	1300	European DX	OE6EEG	21205
Sunday	1300	SRAL Bulletin		3685, 7075
	1300	IOTA	I1HYW	14260,21260 28460
	1400	European DX Bulletin	EA6MR	14212
	1530	Lazy DX (OP-Bandi)	HA5CQ	14183
	1600		CU2YA	14183
	1700	EC DX	EC1ECI	21200
	1700	IPA	WB4QJO	21410
	1900	Antarctica	EA8BGY	14280
	0300	Sri Lanka	4S7VK	7075
	0400	HIDX A Club	VK2HD	14222
	0500	Tanzania	5H3NS	7078
	0600		VK4MZ	7083
	0600	Pitcairn Stations	VR6MW	7043
	0700	Russian Round Table	UA4PW	14300
	0800	Arctic Polar	UA1MU	14150
	1200	Brazil DX	PT7BI	21225
	1300	IOTA	I1HYW	14260,28460
	1600	CU2YA		14183
	1900	Antarctica	EA8BGY	14280

Any corrections or additional dates are welcome.

UA0B-/X-/Q-, UA1 Q-/Z/-, RA1AN- Antarctica South Pole Stations

R2 -- Antarctica North Pole Stations

By Getting 70 Points you get Antarctic Russian Award very few get this awards. Work all above callsigns.

## VU2LO'S CORNER

### Lets clap for

VU2LO, Mr. Lokesh Khanna, VU2DCT Mr. D.C.Sharma, VU2IRH, Mr Syed Ibrahim, who enrolled nearly 24 members.

VU3FUN, Rajesh Bakshi who assisted VU2LO in providing 2 metre facility to several call sign holders who joined as Corporate Members of ARSI.

VU2TXZ, Mr.Alex Chandy of Kuwait who enrolled 10 members, all based in Kuwait.

The Mumbai Amateur Radio Society for giving a fitting tribute to Mr Saad Ali by adopting VU2 ST as their club call sign.

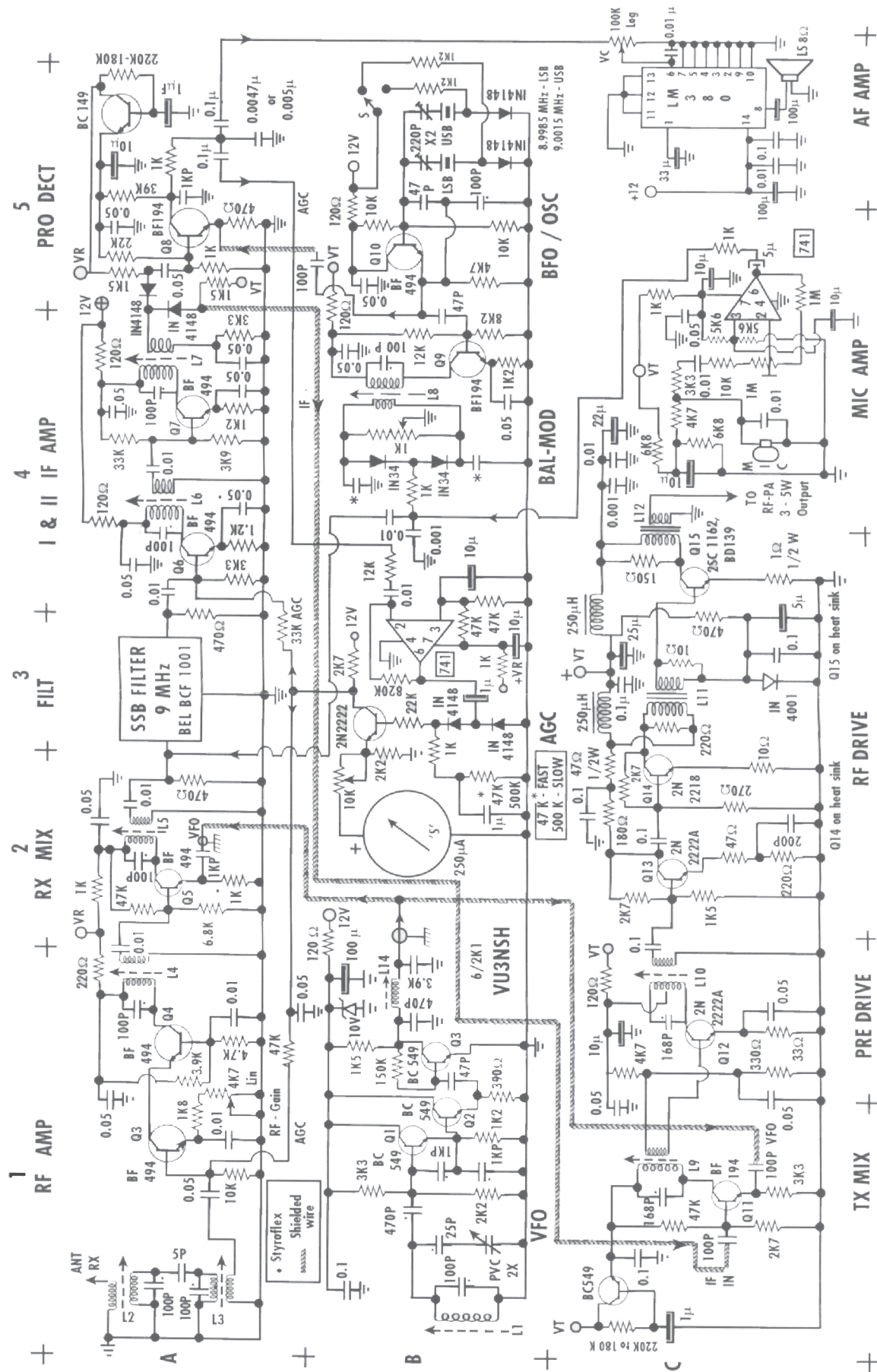
The VUIOTA group led by VU2PAI on their 2nd IOTA expedition to Sacrifice Rock. Congratulations Manikant, Murali, Chets, Sukanya, Rohit, Prakash, Shri, Laxminidhi and Adarsh. (Continued on Page No. 15...)





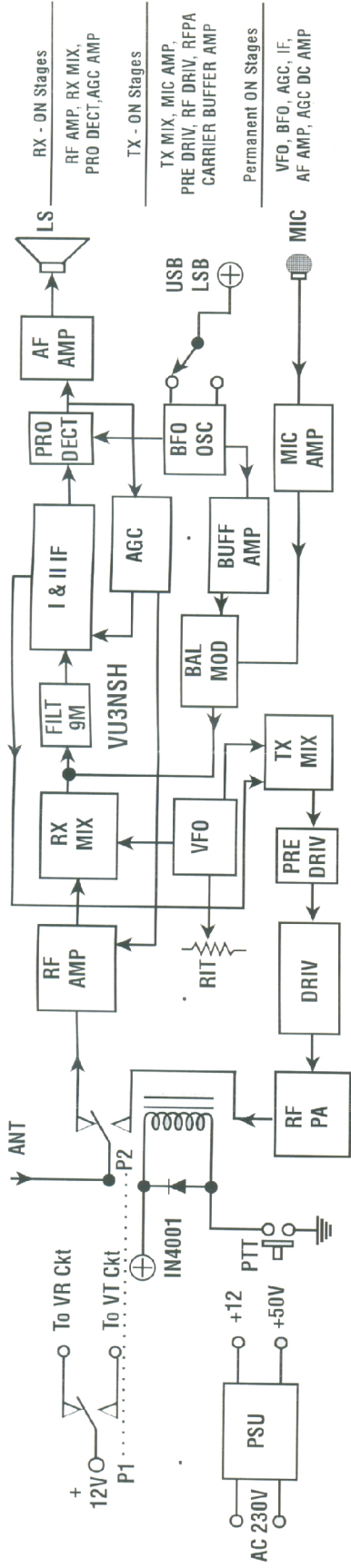
## HF TXVER RM-96 / VER. 2

CIRCUIT REDRAWN BY HARI - VU3NSH



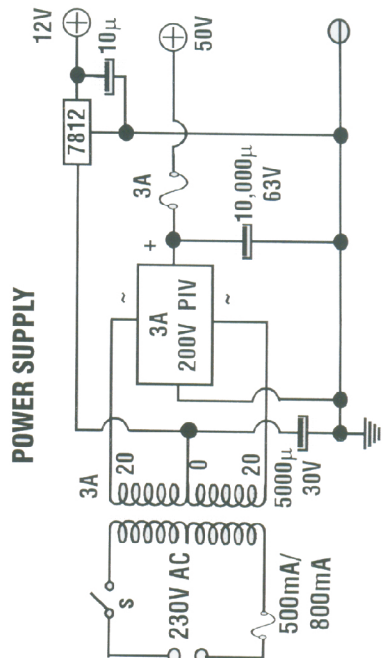


# RM96 BLOCK DIAGRAM

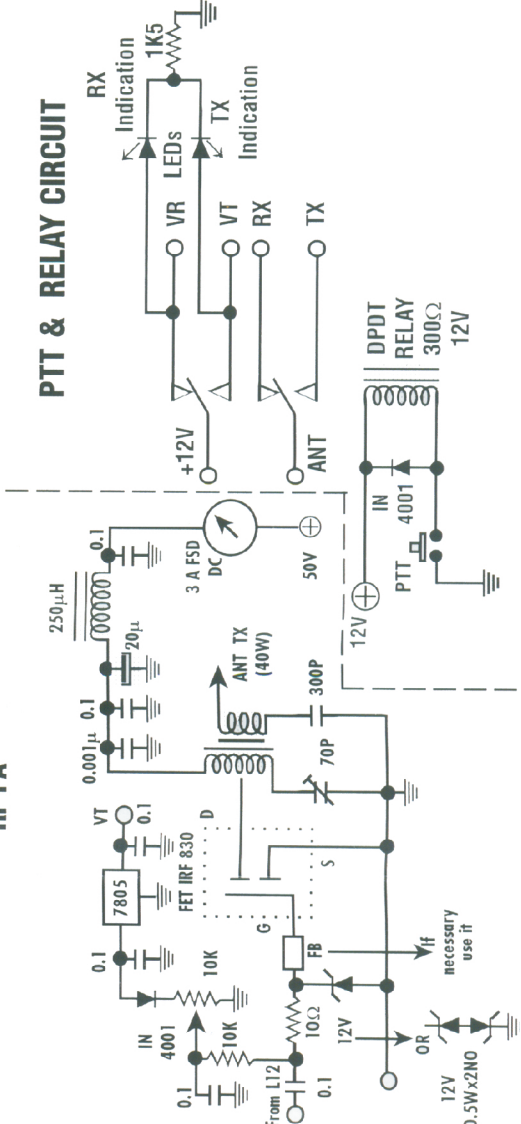


## RF PA

### POWER SUPPLY



### PTT & RELAY CIRCUIT



# Amateur Radio :100 Years Of Discovery

As

We approach the new millennium, it's happy coincidence that Amateur Radio is now almost exactly 100 years old. It seems appropriate to stop for a moment and take a thoughtful trip to our beginning years, and even before. Why should we bother, you ask ? Well, for many this will be a pleasant and nostalgic look back to the early days, the early days, of course, being any day earlier than today! Moreover, as will be seen as we progress through the events of this past century, there is much to be learned from our history. As Confucius once said, "Study the past if you would divine the future."

This articles deals, for the most part, with Amateur Radio in the United States. This restriction is not due to a lack of interest or a lack of importance of the broader topic of worldwide Amateur Radio, but purely for practical reasons. Consider that Clinton B. DeSoto's classic *200 Meters and Down* covers the history of Amateur Radio in the US only to 1936 - but contains 184 pages.

## The 1800s-Prehistory

The last few years of the 19th century set the stage for rapid development of commercial radio and established the foundations of Amateur Radio. There were numerous early contributors to the radio art, such as the great Oersted, Ampere, Faraday, Henry, and others. However, discovery really shifted into high gear in 1873 with the controversial work of the Scotsman James Clerk Maxwell (not related to the author of this articles!). His work presented his theory of the electromagnetic field. Maxwell was the originator of those sublime equations loved so dearly by students throughout the world. (Heaviside also made major contributions to Maxwell's equations as they appear in modern text-books, but that's another story.)

Those who came before him, especially Faraday, heavily influenced Maxwell's work, but many of Maxwell's contemporaries weren't convinced that his new theories were valid. It would take nothing less than rock-solid experimental efforts to break down those walls of doubt. The German physicist Heinrich Hertz did just that, performing a series of classic experiments in the late 1880s during which he generated, detected, and measured the properties of electromagnetic waves predicted by Maxwell's equations. Hertz, though, had no

particular interest in those waves except for the intellectual challenges their discovery provided. Development of radio for the use of mankind was left to others. The race was on.

One of the participants in the race to develop radio was the young Italian Guglielmo Marconi. He had a strong interest in physics and electrical science as a boy. He studied the subject in school and became aware of the possibility of using electromagnetic waves for communicating. In 1894 he started to work on the project in earnest. Two years later he was in England with what he felt was a useful radio device. During a demonstration before British officials Marconi managed to communicate over a distance of 2 miles without wires. It was an astonishing feat at the time and it launched Marconi's professional career.

The rest, as the old saw goes, is history.

Who was the first Amateur Radio operator? We'll probably never know. Some would say it was Marconi. Marconi had a great fondness for Amateur Radio throughout his life, and considered himself an amateur at heart. Still, he chose to devote his life to competing in the commercial wireless marketplace; he never operated nor was licensed as an amateur.

Back to the original questions, we'll probably never know who the first Amateur Radio operator was, but the Englishman Leslie Miller is surely a leading contender for that honor.

Leslie Miller has a solid place in amateur history as the first person to have published a description of a simple-to-build transmitter and receiver for an amateur (and he used that word) audience. His articles appeared in the January 1898 issue of *The Model Engineer and Amateur Electrician*, published in London. Some of his readers clearly took the article to heart, for in the March 1898 issue. "E. A." Wrote that he had a 2-inch spark coil ad three solid brass balls, but needed more construction details. (The three brass balls were called for in one of the transmitter designs given in Miller's article.) No fewer than three more letter on the subject appeared in 1899 issues of the little magazine. The Yanks weren't far behind, with a construction article in the *American*

In 1896 Marconi managed to communicate over a distance of 2 miles without wires. In 1901 he spanned the Atlantic.



*Electrician* in July 1899. An explosion of interest would occur over the next decade, but as the 19th century drew to a close, Amateur Radio was on its way.

### **The '00s - The Beginning**

As the 20th century began, commercial development gained speed. Marconi spanned the Atlantic with wireless in 1901, using high power and giant antennas. Amateurs continued to tinker and experiment with their modest installations. A detailed construction article appeared in the Boston magazine *Amateur Work* in June 1902. It's clear that the experimenters at that time had already discovered the skill of scrounging that amateurs adhere to even today: one of the components recommended in that article was baling wire.

These early transmitters all generated RF by means of discharging a capacitor across a gap, creating an oscillatory spark. These early spark transmitters did produce RF, but were broadband by their very nature, making it difficult, and often impossible, for two neighboring stations to be on the air at the same time. Receiver were simple detectors, generally coherers, later giving way to the more sensitive galena crystal sets. There was no regulation during those days, of course. Amateur call letters were self-assigned, and often consisted only of the operator's initials.

A hint of what the future held occurred in 1904 when the Englishman J. A. Fleming developed the first vacuum diode: the Fleming Valve. In 1906 Lee DeForest added a grid to a Fleming Valve to make the first triode, naming it the "Audion." Audions made very effective detectors, but were generally too expensive for most amateurs to use. It wasn't until some years later that it was realized that triodes could be made to generate RF. Meanwhile, crystal receivers and spark transmitters ruled the airwaves.

### **The '10s-Regulation**

The range of an amateur station in the early 1900s was measured initially by yards, then by city blocks. As power increased and technology improved, ranges increased so that by 1912 a well-designed kilowatt spark station had a range of perhaps 100 miles. Those with more power could work several hundreds of miles. Higher power generally meant more interference and the clamor for regulation intensified.

Congress had actually been investigating problems related to wireless since 1910. In 1912, after agonizing appraisal of more than a dozen different bills, Congress finally approved the Radio Act of 1912. For the first time amateurs were to be licensed. The law also had a provision that at first was thought could bring the death of Amateur Radio: hams were restricted to the single wave-length of 200 meters. The general belief in those days was that long distance performance improved with longer wavelengths. The "short" wavelength of 200

meters was thought to be useless, and some expected that the amateurs, all crowded around this "use-less" wavelength, would eventually give up and pursue other interests.

The plot didn't work. Although there was an initial drop in number following the Radio Act of 1912, Amateur Radio in the US started growing again. There were more than 6000 amateurs on the air by 1917.

Some hams had extended their effective range by relaying messages through others, but it took a Hartford, Connecticut ham, Hiram Percy Maxim, 1WH (later 1AW) to recognize that messages could be sent more reliably over long distances if relay stations were organized. So, in 1914, the American Radio Relay League was born, and by late 1915 *QST* started publication. The calls "1 WH" and "1AW" look strange to some today, but they were the norm for the early years. Commerce Department rules issued in 1913 provided for amateur call letters, but prefixes were not defined or required. Prefixes came later, in the mid to late 1920s.

About that same time a miracle in receiver technology appeared on the scene. A New York amateur by the name of Edwin H. Armstrong invented the tube-operated regenerative receiver in 1913, and in 1915 its design became public knowledge. This new receiver had greater sensitivity than the crystal detectors then in use. Although vacuum tubes were expensive at the time, some amateurs started experimenting with Armstrong's design.

The year 1914 brought the madness of the Great War in Europe. By 1917 the US was fully involved and all ham operations in the US ended. The fact that amateurs formed a pool of trained radio operators didn't go unnoticed-Hiram Percy Maxim made certain of that!-and some 4000 hams eventually wound up in the service of the nation. The word "service" is important here, for it emphasizes one of the fundamental functions of Amateur Radio-to be of service to the public and to the nation.

The war finally came to a close on November 11, 1918. During the hostilities the Navy had been placed in control of all US radio. As hams in uniform streamed home they expected, quite reasonably, that the Navy would rescind the 1917 order that had closed them down. That was not to be the case. The Secretary of the Navy refused to permit amateurs back on the air. The future of Amateur Radio in the US was in doubt once again.

The Navy seemed determined to maintain control over all radio services, even in peace-time, with Amateur Radio seemingly not on their list of useful radio services. Legislation was written that supported the Navy's objectives. The ARRL and others objected strenuously to congress and also appealed to all hams and their families to write to their congressmen. The political pressure torpedoed the pending legislation, but the Secretary of the Navy still refused to permit the resumption of amateur operations. Finally,

Representative Williams S. Greene of Massachusetts heard the call for help and interceded with a House Resolution *directing* the Navy to end the prohibition on ham operations. The Navy complied, the logjam was broken and Amateur Radio returned to the US in November 1919. This episode was a nearly textbook example of how the collective strength of thousands of amateurs can move mountains in Washington....sometimes.

### The '20s-Discovery

As the nation entered the '20s, amateurs were solidly back on the air around their 200-meter wavelength. The ARRL relay network was up and humming, with records being broken regularly. One of the most impressive was a showing in early 1921 during which a message was transmitted from Hiram Percy Maxim, 1AW, in Connecticut to V.M. Bitz, 6JD, in California. *A return reply was received in only 6 1/2 minutes, round trip!*

Still, few would have predicted the revolutionary changes that took place in Amateur Radio in only a few short years. If one had to point to a single most significant reason for those changes it would be the vacuum tube, accompanied by an almost insatiable curiosity by hams.

By the 1920s the price of vacuum tubes had fallen, which caused an upsurge in the use of Armstrong's sensitive regenerative receiver design. This development led to an increased range achievable by spark stations, for with the new receiver hams could hear weak signals that previously hadn't been detectable. Some advanced amateurs were also experimenting with the superheterodyne receiver, invented by Armstrong as well as the Frenchman Lucien Levy during the war years. Increasing numbers of amateurs also used tubes in their transmitters, generating uniform, continuous wave (CW) signals. The CW signals were narrow, scarcely 1% the width of a spark signal, reducing interference and making it possible to increase the number of stations that could be on the air at the same time.

As the range of amateur stations increased, thoughts turned to *reals* DX. Transatlantic transmitting and receiving tests were kicked off in 1921 to see if low power amateur signals could cross the pond. The tests ultimately showed that they could, and they also showed conclusively that CW was far superior to spark. By 1923 Europe-North America two-ways seemed only a matter of time. All the preparations, sweat and tears finally paid off on November 27, 1923, when French station 8AB worked Connecticut hams Fred Schnell, 1MO, and John Reinartz, 1XAL, using CW on a specially authorized wavelength of 110 meters. Testing continued and by late 1924 a CW contact was made between England and New Zealand, almost halfway around the world. In 1926,

Brandon Wentworth, 60I, achieved what was considered by many to be the ultimate in DX prowess: he worked and confirmed all continents, from a station in a pasture on the Stanford University campus in California. The next year saw the beginning of the ARRL International Relay Party, the predecessor to the ever-popular ARRL International DX Contest.

By the mid-1920s the value of short waves was clearly recognized by the government as well as commercial entities, due in large measure to the work of the amateurs themselves. By the end of the decade the wide open spaces were gone, but the amateurs did have harmonically related bands from 160 through 5 meters, plus a narrow band at 400-MHz.

Two other events in the '20s also deserve mention: First, the International Amateur Radio Union (IARU) was formed for the purpose of representing Amateur Radio within the international community. The IARU is still the single most important body for representation of Amateur Radio internationally. Second, the broadcast industry in the US was in chaos due to insufficient legislative authority for the Commerce Department to control it. As a result, congress passed the Radio Act of 1927 and the FRC (Federal Radio Commission) was created.

**Transatlantic  
transmitting and receiving  
tests were kicked off  
in 1921**

### The '30s-Growth

As ham radio entered the 1930s, spark was a thing of the past (some would have said "good riddance!") And all amateurs were using vacuum tube transmitters and receivers. Phone operation wasn't as common as CW, but was gaining in popularity. A few years earlier, in Japan, Professor Hidetsugu Yagi had studied an array of dipoles that formed and directed a microwave beam. By the 1930s the design had been adapted to HF, and a few hams were experimenting with these new-fangled "Yagi" beam antennas. They were built with both wire and metal elements, but generally sported wooden booms. Some of the more technically sophisticated hams also continued to experiment on the 5-meter band and on even higher frequencies.

The ARRL Sweepstakes contest was introduced in 1930, and 1933 brought the ARRL Field Day. The ARRL DX contest continued to be popular with the DXers.

Almost unnoticed at the time, the small Los Angeles magazine *R/9* published a three part article starting in the September-October 1933 issue titled *Single Sideband Transmission for Amateur Radiophones* by Robert M. Moore, W6DEI. Moore described a system of single sideband that he and others were experimenting with and had actually put on the air. The articles didn't generate much interest, however, and it wasn't until 1947 that new experimental work was carried out on the ham bands.

The Radio Act of 1927 lasted only seven years: in



**The ARRL Sweepstakes Contest was introduced in 1930...1933 brought the ever-popular ARRL Field Day.**

1934 Congress passed the Communication Act of 1934, It had no immediate effect on hams, except that their affairs were henceforth handled by the FCC (Federal Communications Commission), which exists to this day. The Old Man himself, Hiram Percy Maxim, one of the cofounders of ARRL and IARU, passed away in 1936. He was a man of many talents-leader, author, photographer, engineer, entrepreneur - Amateur Radio everywhere lost a friend.

Interest in DX continued to be high, and in 1937, after extended discussion of what should be called a "country", the DXCC program was announced by ARRL. The question of what kind of entity deserves to be credited to DXCC awards continues unabated today, over 63 years later.

In September 1939 war came to Europe once again. Amateur operations immediately halted in most European countries. Most of the British Commonwealth nations went off the air as well, including Canada. US hams continued operating, although DX pickings were mighty slim. Even with DX disappearing from the bands, the West Coast magazine *Radio* announced their first annual *International DX Contest* in 1939.

### **The '40s-War and Peace**

The '40s arrived with US hams still active on the air, but DXing was essentially a thing of the past. By June 1940 the FCC issued an order prohibiting American hams from contacting foreign stations. Portable and mobile operations on frequencies below 56 MHz were also prohibited, although the FCC made a specific exception for Field Day, and later for the Amateur Emergency Corps.

Then came the Pearl Harbor attack on December 7, 1941; the US was suddenly at war. Amateur activity in the US screeched to a halt, although those on the home front kept their technical and operational skills honed on 112 MHz as members of the War Emergency Radio Service. This service was important and was taken very seriously by the participants, but it still lacked the freewheeling pleasures of normal ham operations.

At the start of hostilities some 60,000 Americans were licensed as radio amateurs. It has been estimated that approximately 25,000 of those served in the armed forces during WW-II. Another 25,000 served in critical war industries, or as instructors in military schools. Unlike WW-I, ARRL stayed open of business for the durations. *QST* continued to be published, although with fewer pages than before as a result of wartime paper rationing. ARRL publications were used heavily for military and civilian training, and a special Defense editions of the ever-popular *Handbook* appeared in

**By September, 1947 Mike Villard, W6QYT, and a group of student hams started experimenting with SSB.**

1942.

By the beginning of 1945 it was clear that it was only a matter of time until the war would draw to a close. Some hams in New York were so certain that peace was nearly at hand, and that ham radio would have a future following the war, that they kicked off a new magazine called *CQ* in January 1945. Hostilities finally ended on August 17 of that same year. Only four days later, amateurs were back on the air on VHF. By summer 1946 nearly all amateur bands were restored, from 3.5 to 30 MHz, with the old bands at 5 and 2.5 meters replaced by new bands at 6 and 2 meters. HF DXing was back, the DXCC program was restarted, and interest in VHF/UHF operations took a jump upward as surplus military gear became available at prices that were near giveaways.

HF operators weren't overlooked, of course. Surplus transmitters, receivers, power tubes, components - just about anything the heart desired was available from the friendly, local surplus emporium. Surplus also gave a big boost to a new mode, at least new to hams: RTTY. Many hams had worked with RTTY while in the military during the war, and when machines appeared as surplus, they quickly disappeared into ham shacks throughout the country.

As hams were joyfully getting back on the air, the public was just as joyfully buying TV sets: one of the greatest threats ever to ham radio arrived under the name of Television Interference, the dreaded *TVI*. The TVI "problem" has decreased over time, although it has never been completely solved. Interference to and from home entertainment devices continues to plague us to this day, but it doesn't seem to be as threatening as TVI was in those gloomy '50s.

Remember the 1933 R/9 articles on Single Sideband? Well, others did too, and by September 1947 Mike Villard, W6QYT, and a group of student hams started experimenting with SSB at Stanford University. It took a decade before SSB was a common sound on the bands, but it did ultimately displace dual-sideband AM phone, except for a relatively small number of AM aficionados. These folk, quite simply, enjoy operating the old rigs and enjoy the sound of a well adjusted AM transmitter.

*(Article to be continued in the next issue)*

*Reprinted from QST Magazine.*

### **Did you Know ?**

That there are over 80 Islands in India, listed in the IOTA directory out of which only 2 have been activated. !!!

## The QRP Commando Stealth Dipole

This project started innocently enough with a posting by Doug Hendricks, K16DS, on the QRP-L (qrp-l@lehigh.edu) e-mail reflector. Doug decided to build a 20-meter dipole using #26 AWG computer ribbon cable for the dipole legs *and* the feed line. I read Doug's posting and decided to build a half-size G5RV antenna with a parallel feed line.

I dropped by my local Radio Shack store and bought two 50-foot lengths of #24 speaker "zip-cord." I measured 27 feet from one end (you need a little "fudge factor" here ) and marked that point with a magic marker. Then I started splitting the zip-cord speaker wire, separating the parallel conductors to form the 26-foot dipole legs. This is a s-l-o-w process since the Radio Shack speaker wire (especially the smaller diameter wire) is very hard to separate without tearing the insulation. This is where my Leatherman Micra pocket tool came in handy (you *do* have a Leatherman, don't you?). The Micra has a very nice pair of stainless steel scissors, which are well suited to splitting the insulation on speaker wire.

The purpose behind Doug's use of #26 ribbon cable was to fabricate an extremely light-weight backpacking antenna for field use. Since I no longer backpack, I wasn't too worried about keeping the weight down to bare minimum; using the larger, slightly heavier #24 speaker zip-cord didn't really concern me. I know that in my installations I will be locating the rig and tuner more than 23 feet away from the center feed point of the antenna, necessitating additional feed line length. That's where the second 50-foot spool of #24 speaker wire came in. I peeled off about 27 feet of parallel speaker wire and soldered this to the ends of the feed line coming down from the dipole. This gave me a half-size G5RV multiband dipole with 50 feet of parallel conductor feed line (see Figure 1).

Now fold the ends back about 6 inches and either knot them or use small wire tie wraps to form end loops. You can now use the monofilament fishing line or light string to tie off the ends of the antenna. A #3 fishing swivel is used at the feed point as a way to suspend the antenna as an inverted V. This is affixed using two small wire ties, one around the feed line portion, and the other at right angles to the first one. The swivel is placed on the second tie wrap and snugged down. This makes a nice little "lift point" and insures that the dipole legs don't pull apart. Some of you may argue that the two tiny #24 AWG parallel conductors makes a very poor feed line with excessive loss. I agree. However, there are few alternatives when it comes to constructing a portable

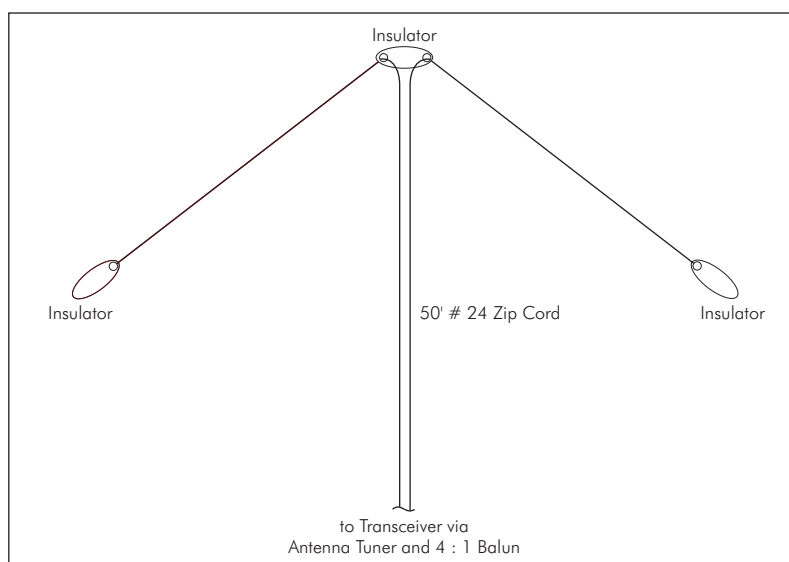


Figure 1-The 20-meter QRP Commando Stealth Dipole antenna.

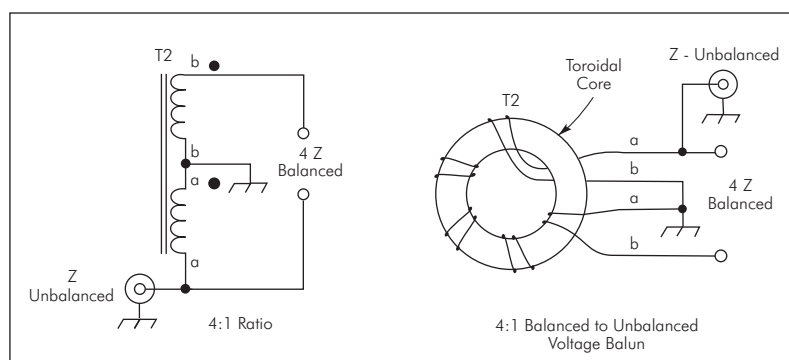


Figure 2-You can purchase a 4:1 balun from a number of QST advertisers, or make your own as shown here using a T-502 core.

multiband antenna. Fanned dipole elements fed with RG-174 lightweight coax is one idea, but it adds weight (and there is that little problem with the fanned elements detuning each other). A series of folded dipoles (one for each band) made from lightweight 300- TV twinlead is also an option but this, too, adds weight and bulk. I don't like verticals for portable work because they are difficult to install properly with the associated RF radial system.

The QRP Commando Stealth Dipole uses a balanced feed system that requires an antenna tuner capable of terminating balanced feeders, or an external 4:1 balun (see Figure 2). This small balun can be used with any antenna tuner that terminates un-balanced 50- coaxial lines.

### QRPWebSurf

Let your fingers caress the keys and slide on over to <http://www.qrparci.org> and look at the QRP ARCT's Web sit (Don't forge to join!)



## QUA A TOPICAL DIGEST

by Bob Eldridge, VE7BS

### OLD AND NEW IRC

W6SL in WorldRadio explained some of the facts and myths surrounding International Reply Coupon (IRCs), many of which go floating around like currency without ever being "redeemed". The cost in Canada is now so out of this world that I doubt that anyone ever buys one (and maybe that's what Canada Post wants!) In the US they are \$1.75. W6SL says that the widely held assumption that older ones bought for \$1.05 or \$0.95 are all worth the same value and accepted by foreign post offices at the same rate is technically true but practically false.

The current wording on the back of the IRC ends "...the minimum postage for a priority item or an unregistered letter sent by air to a foreign country". The much older ones did not mention "air mail". The agreement makes no reference to the purchase price as having any influence on the value received by the redeemer. That IRC agreement is accepted at face value in the US post offices, but not in most foreign countries, which is the reason some QSL managers demand 2 or even 3 IRCS.

Three IRCS redeemed in three different post offices in Germany and Austria were redeemed for the postage stamps that equaled the purchase price converted into local currency. This was much less than the air mail postage for the lightest possible letter. I do not know whether the Canadian situation is unique, but we pay much more for an IRC than we would pay to send an air mail letter.

### LOSSES IN TOROIDS

In the course of a discussion on the Topband Reflector, my favourite technical guru, W8JI had this to say:

"In a tank circuit, the amount of inductive reactance required is typically in the low hundreds of ohms, in the output inductor of a pi-L much less. The inductors are part of a system with low reactance shunting capacitors, so the stray C of a toroid doesn't hurt the system very much. Toroids fit into some tank applications very well, even though properly designed air-core inductors (if you have space) almost always have higher unloaded Q's. In loading systems requiring high amounts of inductance with very little shunt capacitance, the distributed capacitance in a toroid (and to a lesser extent core losses) make for very poor performance compared to conventional inductors. That's why we never see toroids in Q-critical systems requiring high values of inductance when the toroid is operated without low shunting capacitances in the external system, but they work OK in tank systems, baluns, and other applications".

### DISSIPATION IN A TRAP

If you are using a trap in a single wire antenna (like a Marconi or an Inverted L) take account of the fact that

power fed into an antenna unbalanced and fed against ground produces about twice the current and voltage through and across the trap, when compared to the power fed to each side of a dipole. So traps rated at 1500w for use in a dipole should be rated at 750w when in a Marconi.

You may find that a trap in the side of a dipole connected to the shield of the coax feeder is running cooler than the corresponding one in the side connected to the feeder center conductor. If this is the case, suspect that a significant part of the current destined for that part of the antenna is going back down the outside of the coax shield. Sellers and Yeatman would term this a bad thing, for the system as a whole that is. I suppose it is a good thing for the trap.

### FERRITE CHOKES

Larry, VA3LK, writes enthusiastically about his experience with Amidon RF choke kits. He has always had trouble with feedline radiation and computer noise when using dipoles. He fitted an Amidon RF choke kit to a 40m inverted vee, and the result was no RF in the shack and no computer noise in the receiver despite the existence of a 5m open wire lead from the keyboard keyer output to the rig. He is not able to detect any RF on the coax outside at all even using the relatively sensitive output meter he keeps on the shelf so he can see that the RF really is radiating. Without the choke he could hear computer noise, mainly from the monitor, and could see considerable RF in the shack.

The choke kits are \$15 US a piece, have 5 large beads 1/2 inch i.d. and over an inch long each. He put them on the new LDE antennas at the remote site, the 3 element beam and the vertical. Both are now clean as a whistle. By the way I saw somewhere that if you use these chokes on a feeder for the only band that really matters, you need 2 of them in series.

### HALOGEN RFI

W6LSN reported to QST "Hints & Kinks" that the RFI from halogen spotlights comes from the power supply which produces a square wave at about 25kHz resulting in harmonics through most of the HF bands. He rewired the lights and replaced the power supply with a regular 12v AC transformer with a power rating suitable for the string of lights, and can now operate in peace and quite.

### SOFTENING SILICONE SEALANT

Squeezing silicone sealant out of the cartridge when it is cold is a chore. KI7VR in "Hints & Kinks" says a few seconds in the microwave oven (try 20 seconds for a start and increase it in 20 second increments until you get the consistency you want) will do the trick. He says it would be a good idea to put the cartridge into a plastic shopping bag before heating, just in case.

(The Canadian Amateur Radio Magazine July/Aug 01)

(Kudos Corner Continued)

The Madras Amateur Radio Society for organizing an excellent Hamfest in Chennai.

## ACROSS

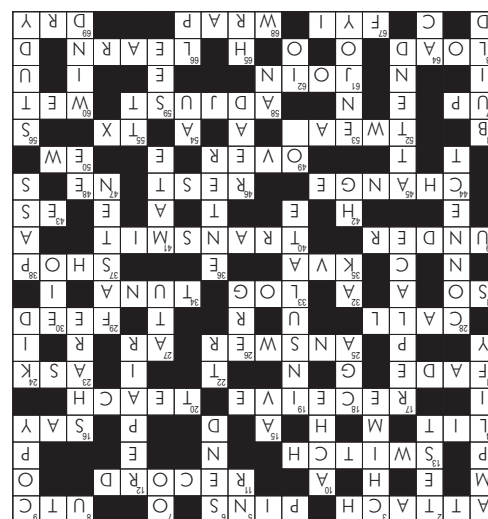
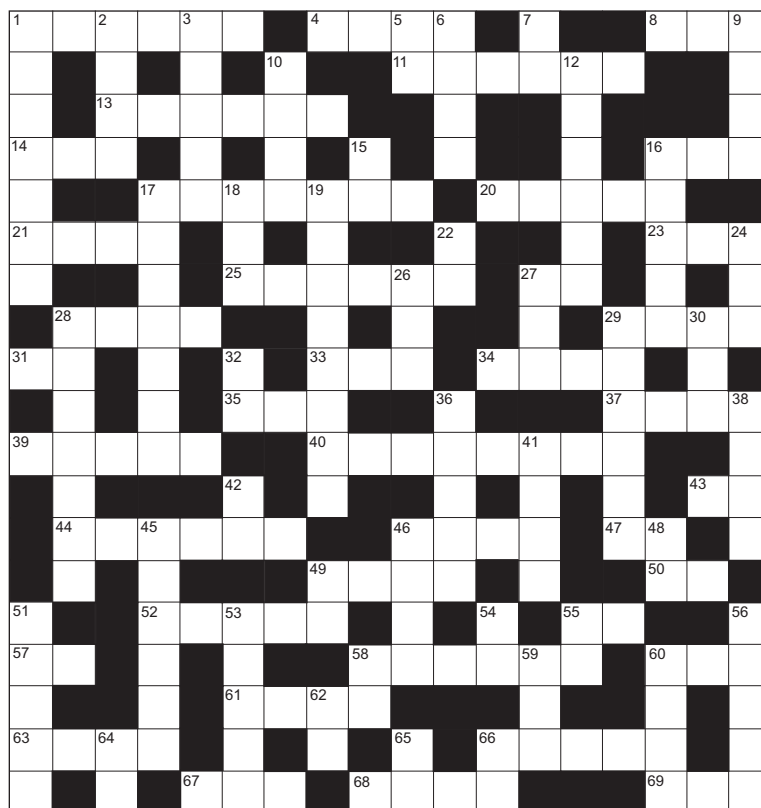
1. Mechanically connect.
4. Field Day Award.
8. Universal Coordinated Time(abbr.)
11. Save audio for replay.
13. Change from one to another.
14. A filament is....
16. Speak.
17. Listen to a signal.
20. Educate.
21. Become slowly weaker.
23. Pose a question.
25. Response to a question.
27. End of a message(CW abbr.)
28. Attempt to contact.
29. Supply power to.
31. Arrange,make just....
33. Record of contacts.
34. QRP.Transmitter.
35. Power(abbr.)
37. Look for the best price.
39. Opposite of over.
40. Send a signal.
43. And (CW abbr.)
44. Make different.
46. Take a break.
47. Northeast(abbr.)
49. Opposite of under.
50. East-West(abbr.)
52. Small adjustment.
55. Transmit(abbr.)
57. Signals go \_\_\_\_\_ to the ionosphere
58. Change a setting.
60. Best conditions for antenna work.
61. Associate with a club.
63. Add power.
66. A teacher helps you \_\_\_\_\_
67. For your information(abbr.)
68. Cover
69. Remove water.

## DOWN

1. Make louder
2. Determine quality
3. Clocks do this on the hour
5. No response(abbr.)
6. Transmit a message.
7. Official observer(abbr)
9. Receive a message
10. Dull soreness.
12. Fix
15. Audio-Visual(abbr)
16. Make available to a friend.
17. Substitute a new unit.
18. PC video mode(abbr)
19. Prevent electric current from flowing.
22. Transmit/Receive(abbr)
24. Joke

# LIGHTS! PENCILS! ACTION!

26. Tiny unit of energy.
27. Automatic Tuning Unit(abbr)
28. Join together.
29. Make secure
30. E-I-\_-\_-
32. Alaska(abbr)
36. Go into
38. Succeed at a test.
41. Join matching connectors.
42. Mercury(chemical symbol)
45. Go to club meeting.
46. Understand written text.
48. Electrical Engineers(abbr)
49. Everything is A-\_\_\_\_\_
51. Construct.
53. Be entertained.
54. Gold(chemical symbol)
55. Indefinite article
56. Observe in order to learn.
58. An indefinite article.
59. Observe visually.
60. Coil in a spool
62. Input-Output(abbr)
64. Alternating current(abbr)



## "Poor Ham's Gray-line Visualizer".

Courtesy John, NT5C



A very useful and cheap concoction, which obviously can be done in software, but this will be right at your operating desk.

The key is that the gray-line is always a STRAIGHT line through your QTH on a great-circle map of the world centered on your QTH. (At any time OTHER than your exact sunrise or sunset, the terminator is a complex mathematical curve not going through your QTH - but for this purpose we don't care).

Get a piece of cardboard thick enough to hold a pin or thumb-tack of some sort. Tape a copy of a great-circle map based on your QTH to that cardboard. From your computer/printer, make a transparent foil circle exactly the size of your great circle map. One half that foil circle should be clear, one half shaded (not too dark). Cut out the foil circle and pin its center to your QTH, so that you can rotate it.

The terminator line will be exactly vertical on March 21 and Sept 21, and will rotate to  $\pm 23.3$  degrees on June 21 and Dec 21 respectively. In theory, the months are not evenly spaced (SR/SS changes faster near Mar/Sep), but that's minor. Obviously the preceding SR/SS and terminator items can be replicated in software, or even in clever (and expensive) hardware such as the Geochron. But there's a catch - Most of them use the Mercator world map projection, rather than great-circle. Not so easy to visualize those radio waves! **(Use the great circle map on the back cover of this issue for making this tool-Editor.)**