



RF



ORANGE COUNTY AMATEUR RADIO CLUB

VOL. IX No. 11

P.O. BOX 95, ORANGE, CALIF. 92668

November, 1968

PRES: Dave, W6COJ  
V. PRES: Jerry, WA6ROF  
SECY: Dave, WB6RVM  
TREAS: Ralph, W6WRJ

MEMBERS AT LARGE  
Jim, WB6GPK  
Bill, WB6CQR  
TEEN REPRESENTATIVE  
Keith, WB6RJK

ACTIVITIES: Jack, WB6UDC  
PUB. REL: Bob, WB6IXN  
MEMBERSHIP: Dave, W6GPR  
TVI: Ted, K6LJA

\*\*\*NEXT MEETING\*\*\*

Monthly meetings are held on the 3rd Friday of each month at the Lincoln Savings & Loan Bldg., 17th & Bristol, Santa Ana. The next meeting will be held on Friday, Nov. 15, at 7:30 p.m. at the same location.

\*\*\*LAST MEETING\*\*\*

The meeting was called to order at 19:43 hrs. Officers were introduced followed by the introduction of three new members (this "RF" p. 4). Werner Escher of South Coast Plaza was introduced and he presented a talk and discussion on O.C.A.R.C. participation in a 'Messages for Overseas Servicemen at Christmas time' to be centered at South Coast Plaza. The club duly approved the venture and Bill Hall, CQR, was appointed chairman of the organization committee. (see this "RF", p.4)

Max, DEY, then covered pertinent ARRL news.

RVM, Dave, reminded club members about the Anaheim Club's annual dinner dance to be held Saturday, Nov. 9, at Michael's Inn in Fullerton. Cocktail hour from 7:00-8:00, with dinner at 8:00p.m.

Bill, CQR, raised a question concerning the club QSL. The following discussion resulted in a motion that YWN, Jack, design an appropriate QSL card for the club. The motion was seconded and passed by the club.

Max, DEY, desires schematics on an RME 45 receiver!!!

ROF, Jerry, V. Pres., who presided at this meeting, reminded members of the November election of officers! He also reminded members to be thinking of good ideas for the Christmas party.

For the program, IXN, Bob, presented an interesting movie on the 'Mariner IV' Mars shot.

W6FIT won the capsule drawing and the meeting was adjourned at 21:05 hrs.

Respectfully submitted, Dave Browers, WB6RVM, Secretary

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Look on page 3 to find a montage of pictures of the Anaheim-Orange County Club's picnic held on May 19, 1968.

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OBNR 192 dtd 24 Oct 68: Canada announces the conclusion of a reciprocal operating agreement with Nicaragua, supplementing list appearing on page 91 of Oct. QST. Additionally, the United States has concluded a reciprocal operating agreement with the Republic of Ireland. Amateurs of one country visiting or residing in the other may obtain permission to operate their own amateur stations there. This new U. S. agreement with Ireland, along with the Barbados and Surinam, adds to the QST listing noted above AR

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OCARC members take this opportunity to thank Jack, YWN, and Ted, LJA, for the Anaheim-Orange County Club's montage of pictures. We appreciate it, fellows!!!

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## 30 Years Ago (frm NRI)

(As recorded in the National Radio News)

Radio waves were used to cure ailing puppies! Shortwave diathermy treatments proved surprisingly successful in the treatment of distemper. Two special transmitting tubes connected to a 1000-volt power supply were enough to cure small dogs placed between flat metal electrodes. More power, of course, was necessary for larger dogs.

Radio was invading the farm. Loudspeakers operated all day in the hen-houses of a Long Island farmer, who discovered that chickens who were used to radio programs lost all fear of noise and consequently laid more eggs. A radio receiver in a Nova Scotia dairy barn proved so popular that the failure of the set resulted in a sit-down milk strike by the purebred cows. The animals stamped, "bawled", and were extremely nervous until emergency repairs brought music to their ears once again.

Mice were making "radio news" too. Nesting in the main power transformer of Oakland, California's station KROW, mice short-circuited the terminals and left the station voiceless for 83 minutes. While mice in the United States were trying to get rid of radio, a farmer in Denmark discovered a way to make radio get rid of mice. Loudspeakers in each barn operated night and day, and in a few days all the mice on his farm had disappeared.

Station WEEL, Boston, broadcast a special program of the buzzing of 50,000 bees. Beekeeper John Van de Poelle accidentally stumbled while carrying a hive of 10,000 bees from the station after the broadcast, and vacuum cleaners and brooms were used to kill the escaping bees. Twenty-four hours and 300 bee stings later, Van de Poelle had the station under control once again.

California Institute of Technology research worker Chao-Ying Ming claimed to have made the world's smallest radio tube. Generating ultra-high frequency waves with wavelengths of about one centimeter and having a plate about 1/50 of an inch in diameter, the radio tube was about the size of an ordinary marble. The world's smallest 45-volt B battery also made its appearance. Smaller than a flashlight cell and weighing less than 2 ounces, the battery had a layer-built construction which gave it a life of several hours -- more than enough time necessary for use in broadcasting weather data from balloons.



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or blank  
on scanned original



OBNR 190 dtd 10 Oct 68: Concurrent with the Oct 27 shift to standard time throughout the country, WLAW will adopt new code practice and bulletin frequencies. The new channels will be easy to remember at 20 KH above the lower band or segment edge. Effective Oct. 27, WLAW code practice and code bulletins will take place on 1820, 3520, 7020, 14020, 21020, 28020, 50020, and 144120 KH. WLAW voice bulletins will be transmitted on 1820, 3820, 7220, 14220, 21270, 28520, 50120, and 144120 KH. Regular contacts will continue to take place on current WLAW frequencies. Full details on the change will appear in November QST AR

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OBNR 191 dtd 17 Oct 68: ARRL has filed comments with FCC supporting Operation Retread Docket 18266 which would make former amateurs eligible for Novice after a year off the air. The League asks that current Technicians also be eligible for the privilege if they have not held a Novice license in the twelve months preceding application. Another ARRL filing, RM 1352 asks FCC to keep the whole six meter band open to all licensees, Technician Class and higher, contrary to the FCC present plan restricting 100 kHz to advanced and extra Nov 22 1968 and 250 kHz to these licensees November 22, 1969. Other information will appear in Nov. QST AR

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## \*\*\*WELCOME TO THE CLUB\*\*\*

Ernest Duebendorfer 9292 Vons Dr. Garden Grove, Calif. 92641 Ph: 539-6469	K. Yamachika, W6NGO 11671 Santiago Orange, Calif. 92669 Ph: 538-8942	Bill Zellers, WB6YWU 1203 N. Fulton Anaheim, Calif. 92801 Ph: 635-4769
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Nice to have you with us, OMs, and we'll be seeing you at meeting!

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## O.C.A.R.C. ACCEPTS CHALLENGE OF SOUTH COAST PLAZA TO SPONSOR 'CHRISTMAS MESSAGES FOR OVERSEAS SERVICE MEN' PROGRAM...

After a short introductory talk concerning this program by Werner Escher, Director of Public Relations & Advertising for South Coast Plaza, O.C.A.R.C. Members voted to sponsor this program. Bill Hall, CQR, was nominated chairman and the following members were selected for Bill's steering committee: ROF, Jerry, RVM, Dave, BNX, John, BYY, Bruce, and PJU, Mildred. Mildred also offered messenger service one day/week. Bill, W6CPB, Pres. of NARS men, also offered to help providing his schedule permits. Alex, WRJ, Bud, VPP, Jack, YWN, Ted, LJA, Bill, WOO, Paul TDO, and Ralph, TYZ, also offered their services with the project. Also visiting with us at the October meeting was Stewart Millowick of Australia, VK5MS. Check further on Stewart in the DXCC section of June QST!

Editor's note: If you was a service man in Vietnam this Christmas, which would you rather have: some cold, inanimate useless present, or a message from your loved ones at home? If you chose the latter, contact Bill, CQR, at 546-9029 and volunteer your services at South Coast Plaza NOW!!!!

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"Sure, Pet, I know why so many women of forty have so many aches and pains—it's because most of them are fifty."

THE AMERICAN LEGION MAGAZINE

**DON'T MISS**  
 4th Annual  
**SAROC\***  
 THE NATION'S FUN CONVENTION  
**HOTEL SAHARA**  
 Las Vegas, Nevada  
 Jan. 8-12, 1969



"You drink first, to prove it's not poisoned."

THE AMERICAN LEGION MAGAZINE

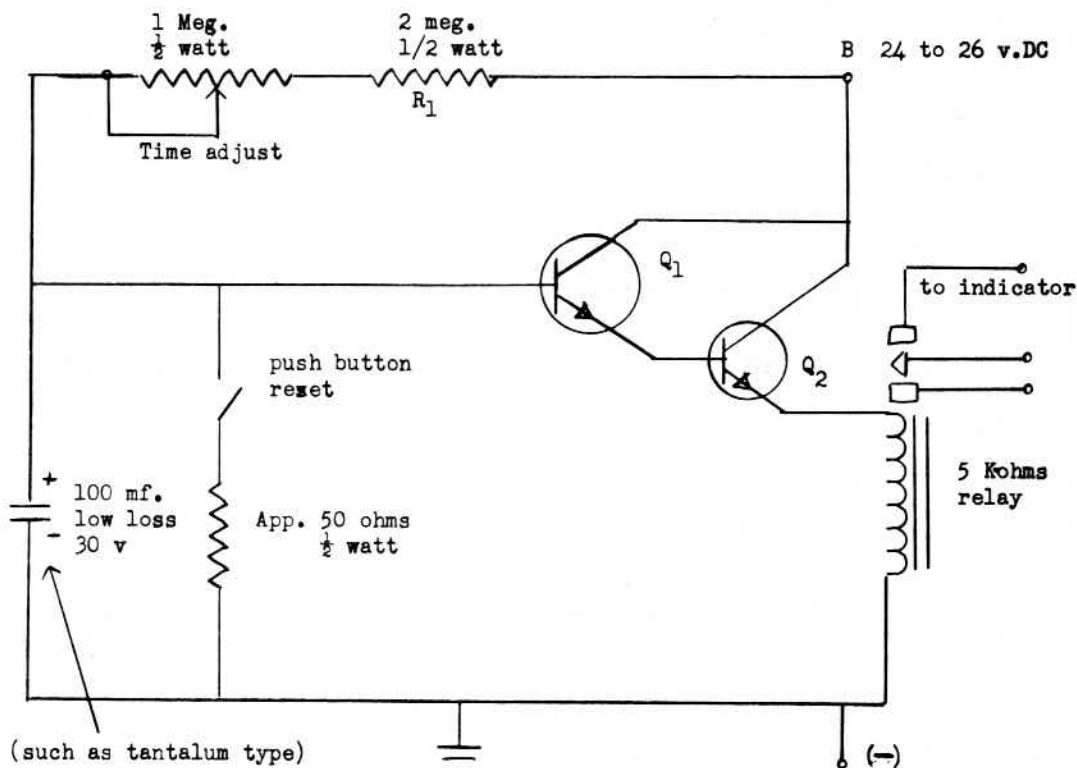
\*SAHARA AMATEUR RADIO OPERATORS CONVENTION

\$1,000.00 ADVANCED REGISTRATION  
 PRIZE DETAILS AT  
 "SAROC" JANUARY 8-12,



"I'd say he doesn't know much about grounding equipment."

TEN MINUTE TIMER



NOTE: If time range is out, try different  $R_1$  values.  
 $Q_1$  and  $Q_2$ --2N3646, or anything similar

de K6KOL, Roy  
 From Fresno Skip

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"Mickey Farad and Millie Amp"

Mickey Farad and Millie Amp  
 Chanced to meet in a radio lamp  
 Mickey was enthroned between plate and heater  
 He said of course, "He was glad to meet her"

Millie's path was blocked by a resistor  
 Mike knew a by-pass to assist her  
 Joining their hands in regal decency  
 They hummed together in resonant frequency.

Millie lagged with some reluctance  
 Knowing Mike had great inductance  
 Because of their diverse admiration  
 Unknowingly, they emitted some spurious radiation.

Mickey was fixed, also variable  
 Millie became stable a condition most admirable  
 The grid was steady driving the amplifier  
 Midst the steady hum from the rectifier.

The "Ham" was content reading the dials  
 Knowing Millie also, her trials  
 Quite sure some R. F. was emitting  
 He was using a "Bucket of Bolts" for transmitting.

By: W4SGR, Fredrick

(Frm Fla. Sig. Rpt) (VIA AREA)

ELECTRONICS DATA

1. Conversion Factors and Constants

- $\pi = 3.14$
- $\pi^2 = 9.87$
- $\epsilon = 2.718$
- $\sqrt{3} = 1.732$
- 1 meter = 39.37 inches = 3.28 feet
- 1 kilometer = 0.621 mile (about 3/5 mile)
- 1 inch = 2.54 centimeters
- 1 kilogram = 2.2 pounds
- 1 liter = 1.06 quarts
- 1 ounce = 28.35 grams
- 1 horsepower = 746 watts

2. Ohm's Law Formulas for D-C Circuits

$$I = \frac{E}{R} = \sqrt{\frac{P}{R}} = \frac{P}{E} \quad R = \frac{E}{I} = \frac{P}{I^2} = \frac{E^2}{P}$$

$$E = IR = \frac{P}{I} = \sqrt{PR} \quad P = I^2R = EI = \frac{E^2}{R}$$

3. Ohm's Law Formulas for A-C Circuits

In these formulas  $\theta$  is the angle of lead or lag between current and voltage and  $\cos \theta = P/EI =$  power factor.

$$I = \frac{E}{Z} = \frac{E}{Z \cos \theta} = \frac{P}{E \cos \theta}$$

$$E = IZ = \frac{P}{I \cos \theta} = \sqrt{\frac{PZ}{\cos \theta}}$$

$$Z = \frac{E}{I} = \frac{P}{I^2 \cos \theta} = \frac{E^2 \cos \theta}{P}$$

$$P = I^2Z \cos \theta = IE \cos \theta = \frac{E^2 \cos \theta}{Z}$$

4. Resistors in Series

$$R_{total} = R_1 + R_2 + R_3 + \dots$$

5. Two Resistors in Parallel

$$R_t = \frac{R_1 R_2}{R_1 + R_2} \quad R_1 = \frac{R_t R_2}{R_2 - R_t}$$

6. Equal Resistors in Parallel

$$R_{total} = \frac{R}{n}$$

where n is the number of resistors

7. Resistors in Parallel, General Formula

$$R_{total} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots}$$

8. Sinusoidal Voltages and Currents

- Effective value = 0.707 x peak value
- Average value = 0.637 x peak value
- Peak value = 1.414 x effective value
- Effective value = 1.11 x average value
- Peak value = 1.57 x average value
- Average value = 0.9 x effective value

9. Conductance, Susceptance, and Admittance

$$G = \frac{1}{R} \text{ (for D-C circuit)}$$

$$G = \frac{R}{R^2 + X^2} \text{ (for A-C circuit)}$$

$$B = \frac{1}{X} \text{ (when resistance is 0)}$$

$$B = \frac{X}{R^2 + X^2}$$

$$Y = \frac{1}{Z} = \frac{1}{\sqrt{R^2 + X^2}}$$

10. Reactance Formulas

$$X_C = \frac{1}{2\pi fC} \quad C = \frac{1}{2\pi fX_C}$$

$$X_L = 2\pi fL \quad L = \frac{X_L}{2\pi f}$$

11. Resonant Frequency Formulas

$$f = \frac{1}{2\pi\sqrt{LC}} \text{ , or } f = \frac{159.2^*}{\sqrt{LC}}$$

$$L = \frac{1}{4\pi^2 f^2 C} \text{ , or } L = \frac{25,330^*}{f^2 C}$$

$$C = \frac{1}{4\pi^2 f^2 L} \text{ , or } C = \frac{25,330^*}{f^2 L}$$

\*where in the second formula f is in kc and L and C are in microunits.

12. Impedance Formulas

$$Z = \sqrt{R^2 + (X_L - X_C)^2} \text{ (for series circuit)}$$

$$Z = \frac{RX}{\sqrt{R^2 + X^2}} \text{ (for R and X in Parallel)}$$

13. Power Factor

pf =  $\cos \theta$ , where  $\theta$  is the angle of lead or lag

$$\text{pf} = \frac{\text{true power}}{\text{apparent power}} = \frac{P}{EI}$$

$$\text{pf} = \frac{R}{Z}$$

14. Q or Figure of Merit

$$Q = \frac{X_L}{R} \text{ or } \frac{X_C}{R}$$

15. Transformer Relationships

$$\frac{N_P}{N_S} = \frac{E_P}{E_S} = \frac{I_S}{I_P} = \sqrt{\frac{Z_P}{Z_S}}$$

16. Efficiency (for any device)

$$\text{Eff} = \frac{\text{output}}{\text{input}}$$

17. Decibel Formulas

When impedances are equal,

$$\text{db} = 10 \log \frac{P_1}{P_2} = 20 \log \frac{E_1}{E_2} = 20 \log \frac{I_1}{I_2}$$

When impedances are unequal,

$$\text{db} = 10 \log \frac{P_1}{P_2} = 20 \log \frac{E_1 \sqrt{Z_1}}{E_2 \sqrt{Z_1}} = 20 \log \frac{I_1 \sqrt{Z_1}}{I_2 \sqrt{Z_1}}$$

DECIBEL TABLE

DB	Power Ratio	Voltage or Current Ratio	DB	Power Ratio	Voltage or Current Ratio
0	1.00	1.00	10	10.0	3.2
0.5	1.12	1.06	15	31.6	5.6
1.0	1.26	1.12	20	100	10
1.5	1.41	1.19	25	316	18
2.0	1.58	1.26	30	1,000	32
3.0	2.00	1.41	40	10,000	100
4.0	2.51	1.58	50	10 <sup>5</sup>	316
5.0	3.16	1.78	60	10 <sup>6</sup>	1,000
6.0	3.98	2.00	70	10 <sup>7</sup>	3,162
7.0	5.01	2.24	80	10 <sup>8</sup>	10,000
8.0	6.31	2.51	90	10 <sup>9</sup>	31,620
9.0	7.94	2.82	100	10 <sup>10</sup>	10 <sup>5</sup>

18. Frequency and Wavelength

$$f_{kc} = \frac{3 \times 10^5}{\lambda_{meter}} \quad \lambda_{meter} = \frac{3 \times 10^5}{f_{kc}}$$

$$f_{Mc} = \frac{3 \times 10^4}{\lambda_{centimeter}} \quad \lambda_{cm} = \frac{3 \times 10^4}{f_{Mc}}$$

$$f_{Mc} = \frac{984}{\lambda_{feet}} \quad \lambda_{feet} = \frac{984}{f_{Mc}}$$

19. Length of Antennas

Formulas assume velocity of propagation equal to 95% of the velocity of light.

$$L_{feet} = \frac{234}{F_{Mc}} \text{ (for quarter-wave antenna)}$$

$$L_{feet} = \frac{468}{F_{Mc}} \text{ (for half-wave antenna)}$$

20. Color Code

- |              |          |            |
|--------------|----------|------------|
| 0 Black      | 4 Yellow | 8 Gray     |
| 1 Brown      | 5 Green  | 9 White    |
| 2 Red        | 6 Blue   | 5% Gold    |
| 3 Orange     | 7 Violet | 10% Silver |
| 20% No Color |          |            |

Third color band indicates number of zeros to be added after figures given by first two color bands. But if third color band is gold, multiply by 0.1 and if silver multiply by 0.01. Do not confuse with fourth color band that indicates tolerance. Thus, a resistor marked blue-red-gold-gold has a resistance of 6.2 ohms and a 5% tolerance.

21. Color Code for Power Transformers

- Primary Leads - Black or black-red
- Primary Tap - Black-yellow
- High Voltage Winding - Red (C. T. - Red-yellow)
- Rectifier Filament - Yellow (C. T. - Yellow-blue)
- Amplifier Fil. No. 1 - Green (C. T. - Green-yellow)
- Amplifier Fil. No. 2 - Brown (C. T. - Brown-yellow)
- Amplifier Fil. No. 3 - Slate (C. T. - Slate-yellow)

de Ham Hum de Signal Report  
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The first installment of the incentive licensing plan will go into effect November 22, 1968. Changes due on this date appear below.

Amateur Extra Only

- A1 3500 to 3525 kc. 7000 to 7025 kc. 14000 to 14025 kc. 21000 to 21025
- A3 3800 to 3825 kc. 21250 to 21275 kc.

Amateur Extra and Advanced Only

- A1 50 to 50.1 mc.
- A3 3825 to 3850 kc. 7200 to 7225 kc. 14200 to 14235 kc. 21275 to 21300 kc.

Novice class - Limited to A1 operation from 145 to 147 mc.



**#13: PHONETICS MAKES LIFE OF AMATEURS EASIER;** From Cleveland Plain Dealer, By, W8BAH, 10-22-61. Voice operation of amateur radio, without the use of the phonetic Alphabet, would be most difficult.

Below is an up-to-date listing of the Phonetic International Alphabet. Former Navy listings researched for history purposes by W8BAH.

USE;	TELEPHONE. LOC. LDIST.	TELEPHONE. OVERSEAS.	WESTERN UNION.	DX USE AMATEUR.	ARRL 1959.
A.	Alice	Alfred	Adams	Alabama	Adam A.
B.	Bertha	Benjamin	Boston	Boston	Baker B.
C.	Charles	Charles	Chicago	Chicago	Charlie C.
D.	David	David	Denver	Denmark	David D.
E.	Edward	Edward	Edward	England	Edward E.
F.	Frank	Frank	Frank	Florida	Frank F.
G.	George	George	George	Germany	George G.
H.	Henry	Harry	Henry	Honolulu	Henry H.
I.	Ida	Isaac	Ida	Italy	Ida I.
J.	James	Jack	John	Japan	John J.
K.	Kate	King	King	Kentucky	King K.
L.	Louis	London	Lincoln	London	Lewis L.
M.	Mary	Mary	Mary	Mexico	Mary M.
N.	Nelly	Nelly	New York	Norway	Nancy N.
O.	Oliver	Oliver	Ocean	Ocean	Otto O.
P.	Peter	Peter	Peter	Portugal	Peter P.
Q.	Quaker	Queen	Queen	Quebec	Queen Q.
R.	Robert	Robert	Robert	Radio	Robert R.
S.	Samuel	Samuel	Sugar	Sweden	Susan S.
T.	Thomas	Thomas	Thomas	Tokyo	Thomas T.
U.	Utah	Uncle	Union	Uruguay	Union U.
V.	Victor	Victor	Victory	Virginia	Victor V.
W.	William	William	William	Washington	William W.
X.	Xray	Xray	Xray	Xray	Xray X.
Y.	Young	Yellow	Young	Yokohama	Young Y.
Z.	Zebra	Zebra	Zero	Zanzibar	Zebra Z.

USE;	NAVY-1918;	NAVY-1937;	NAVY-1950	MILITARY-1959 to-1968.
A.	Able	Affirmative	Able	Alpha A.
B.	Boy	Baker	Baker	Bravo B.
C.	Cast	Cast	Charlie	Charlie C.
D.	Dog	Dog	Dog	Delta D.
E.	Easy	Easy	Easy	Echo E.
F.	Fox	Fox	FOX	Foxtrot F.
G.	George	George	George	Golf G.
H.	Have	Hypo	How	Hotel H.
I.	Item	Interrogatory	Item	India I.
J.	Jig	Jig	Jig	Juliet J.
K.	King	King	King	Kilo K.
L.	Love	Love	Love	Lima L.
M.	Mike	Mike	Mike	Mike M.
N.	Nan	Negative	Nan	November N.
O.	Oboe	Option	Oboe	Oscar O.
P.	Pup	Prep	Peter	Papa P.
Q.	Quack	Queen	Queen	Quebec Q.
R.	Rot	Roger	Roger	Romeo R.
S.	Sail	Sail	Sugar	Sierra S.
T.	Tare	Tare	Tare	Tango T.
U.	Unit	Unit	Uncle	Uniform U.
V.	Vice	Victor	Victor	Victor V.
W.	Watch	William	William	Whiskey W.
X.	Xray	Xray	Xray	Xray X.
Y.	Yoke	Yoke	Yoke	Yankee Y.
Z.	Zed	Zed	Zebra	Zulu Z.

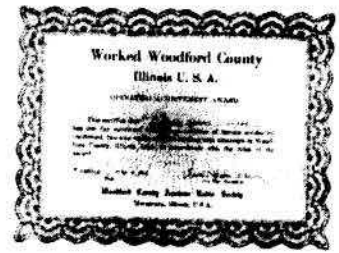
(A W8BAH ARENA Service, 2-26-68.)

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## Verboten Notischer

ACHTUNG: Alles lookenspeppers in das hamshaken. Das radiomachinen is nict fur gefingerpoken und mittengraben. Ist easy schnappen der springenworks, fuseblowen, und poppenkorcken mit spitzzensparken. Ist nicht fur gerwerken by das dummkopfen. Ich hab license from der Sammy Uncle. Running das radio machinen by das dummkopfen mitout license, makkin hoosegow geput or marks gepayen. Das rubbernekken sightseer keeppen das hands in pockets, Relaxen, - to das goofy sprechen gelisten, un das bouncing meterish pointer gewatchen. (frm Fla. Sig. Report)

COMPLIMENTS OF K7GPZ, PHOENIX, ARIZONA



WORKED WOODFORD COUNTY AWARD

BY: WOODFORD COUNTY RACES NET

Certificate is given for contact with amateur radio stations in Woodford County, Ill. W/K/VE work any 4 Woodford County Stations (can be a Mobile operating here). DX/KH6/KL7 work 2 stations.

Send QSL's or list with log data certified by two licensed amateurs or 1 radio club official to Custodian.

Some active stations are: W9ALU, DHY, GVP, HMC, RVH; K9ACW, KBJ, OAU, JHP, RQT, TGX, VGC, VSK, UQF, VVP, YUG, YUS, ZQW; WA9DOW, JTD, NQE, OHG, OHL.

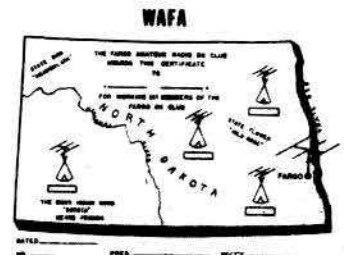
COST: 50c or 4 IRC's.

IRC INFORMATION: IRC's accepted.

ENDORSEMENTS: None.

CUSTODIAN: WILLIS HOEHL, K9ZQW, METAMORA, ILLINOIS, 61548.

## Awards & phonetic alphabet frm Florida Signal Report



WORKED ALL FARGO ASSOCIATION AWARD

BY: FARGO DX ASSOCIATION

Award given for working four (4) of the 5 members in the Association. If all 5 are worked, a special endorsement is available. All bands and modes may be used.

Members are: W0CAQ, DIV, KZZ, RRW and K0SPH.

Send list of stations you have worked giving date, time, frequency and mode to Custodian.

COST: 5 IRC's for surface mailing in mailing tube or 10 IRC's for Air mailing.

ENDORSEMENTS: Available if all five members are worked.

CUSTODIAN: DOUGLAS H. CLASSON, W0CAQ, 445 ELMWOOD AVE., FARGO, NO. DAK., 58102.



TECHNICAL JARGONESE by Wm. G. Welsh (W6DDB) - of LERC Bulletin

\* Have you ever received business correspondence which sound highly technical but does not really say anything? The writer may be using the following well-known buzz phrase generator to dazzle you with his typewriter.

\* Become an expert the easy way; just select any three-digit number at random, extract the corresponding buzzword from each of the three columns, and insert the three-word buzzphrase in the text of the material you are preparing. Here are the three buzzword columns:

<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
0 balanced	0 digital	0 capability
1 compatible	1 incremental	1 concept
2 functional	2 logistical	2 contingency
3 integrated	3 management	3 flexibility
4 optimal	4 monitored	4 hardware
5 parallel	5 organizational	5 mobility
6 responsive	6 policy	6 options
7 synchronized	7 reciprocal	7 programming
8 systematized	8 third-generation	8 projection
9 total	9 transitional	9 time-phase

\* One of my lucky numbers is 333 which provides buzzphrase "Integrated Management Flexibility"; surely I can find some use for that somewhere!

\* I guess you'd have to say that this phrase system is a 851!

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TRK-TOPIX . . . . by Milt Smith, W6GMC  
San Gabriel Valley Loudspeaker

Hints on VTVM conversions.

I sent to Circuits Maximus, who advertised in 73 ham ads a month or two ago, for the conversion kit which makes a VTVM completely portable - - no more a.c. cord limitation.

It involves removal of the power transformer and selenium rectifier, replaces the 12AU7 with two field effect transistors, and substitutes two silicon diodes in place of the 6AL5. The solid state devices are soldered directly on the tube sockets. A 9 volt transistor battery is mounted on the chassis, and a few resistor changes and substitutions are made. Not a difficult job at all. Since the directions are basically for a Heath VTVM, I found that in my Paco V-70 VTVM, I had to add 1000 ohms in series with each calibration pot. These were for ohms adj; d.c. positive; d.c. negative; and a.c. calibration. Very likely this additional modification is not required in the Heath VTVM.

I anticipate that this modification will obsolete my multimeters, as the VTVM is just as portable now, with the advantage of better accuracy, since this type of instrument does not appreciably load the circuit. Neither the RF or DC probes are affected.

The kit includes all the components, battery, and instructions. If, however, you have to modify the calibrating pots, you do it yourself at extra cost.

With this modification, tube warm-up, and a.c. line pickup is eliminated. The kit costs ten bucks, for Heath and Paco gear.

ORANGE COUNTY AMATEUR RADIO CLUB, INC.  
P.O. BOX 95  
ORANGE, CALIF. 92668  
Vol. IX No. 11 dtd November, 1968

FIRST CLASS!!!

DATED MATERIAL!!!

HAMAD: ALL BRAND NEW!!!...A complete RV 16 xmtf and a GF 11 rcvr, low band coverage, in original packing cases wid dynamotors, racks, all connectors, etc., and junction boxes. You make an offer. Call Bud Barkhurst, WA6VPP, Anaheim, at 744-6361 for further details NOW!! Bud also has a rack-mounted 1000v power supply wid variac for Collins equipment. He'll part wid this for \$25.00, or you make an offer!

HAMAD: TYZ has a 60 Hz, 115 v ac, 3600 rpm motor, like the ones he sold at auction, plus another reduction motor made by Electric Motor Corp. Make an offer! Need a Vibroplex lightning bug (right hand), or how about 4 boxes of parts, including a pH meter wid damaged case, a power supply and converter unit, and, a distribution amplifier. Again, make an offer!! Call Ralph, TYZ, at 630-2674.