HAM HUM

Published by
AK-SAR-BEN RADIO CLUB, INC. - Omaha, Nebr. 68101
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November 1967

Vol. XVII
No. 11

NOVEMBER MEETING

Let's take a "look" at what makes us tick! Dick Eilers, WØYZV, will elaborate on when your *Ham Hum* came to be, its history and effectiveness, where and how it is printed and published, and why it needs your contributions and help to be even better.

Also on the program will be Bob Miller, KØZLY, who will discuss with you the "Eye Bank Net."

These meetings are for your Eyeball QSO's, so we will see you there - Room 256, Engineering Building, University of Omaha, 8:00 P.M. on Friday, November 10th.

Meet the congenial Mr. Ak-Sar-Ben and be the third person to shake his hand to win a prize for your radio shack.

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WANTED

Emergency Coordinator appointments are open in the following Counties: Antelope, Buffalo, Burt, Butler, Cass, Chase, Colfax, Cuming, Dakota, Gage, Harlan, Kimball, Knox, Merrick, Nemaha, Nuckolls, Pierce, Phelps, Platte, Polk, Red Willow, Saline, Saunders and Stanton.

If interested, contact SEC KØOAL. Let's do our part Public Service-wise. Amateurs in Nebraska wishing to join AREC can do so by filling out an application form and giving it to his EC. If there is no EC in his or her respective County or if the EC is not known, forward the application form to KØOAL. Action Guaranteed.

V. A. "Tony" Cashon, KØOAL
SEC Nebraska
334 Pine St., P. O. Box 488
Chadron, Nebraska 69337

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RELATIVE POWER METER

Many modern transceivers include a meter which may be referred to as an output meter, relative power meter or similar designation. Can this meter be used for adjusting the transmitter controls for maximum output? YES!!!

Is a higher reading on this meter an indication of a properly tuned antenna? ABSOLUTELY NOT!

Odd as it may sound, the relative output meter will read less and less as the antenna is tuned or pruned to optimum. Why is this? These meters are usually simply uncalibrated R.F. voltmeters which read the R.F. voltage at the transmitter antenna connector. The antenna always presents its lowest impedance at resonance i.e. non-reactive. Consequently, the relative power meter or R.F. voltmeter will be measuring the R.F. voltage across a minimum impedance when the antenna is correct.

As you move up and down the band either side of the frequency for which the antenna is resonant, you will find the relative output minimum at the point where you are actually radiating best. Don't be fooled by high readings on the relative power meter. It may be used for tuning the *transmitter* for maximum output and as a relative indication of whether the transmitter and antenna are still like they were yesterday on a given frequency.

Leon, W5VCE

It is hoped that the above article will be of interest to the Mobile Hams as well as those operating fixed rigs.

73,
Wayne, K5QQG/M
de HARC News

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ELECTRO MECHANICAL TECHNICIAN

Challenging opportunity to develop products in the amateur, CB and business radio fields. Amateur radio experience preferred not required. Contact John Jones, Hy-Gain Electronics Corporation, NE Hwy. 6 at Stevens Creek, Lincoln, Nebraska.

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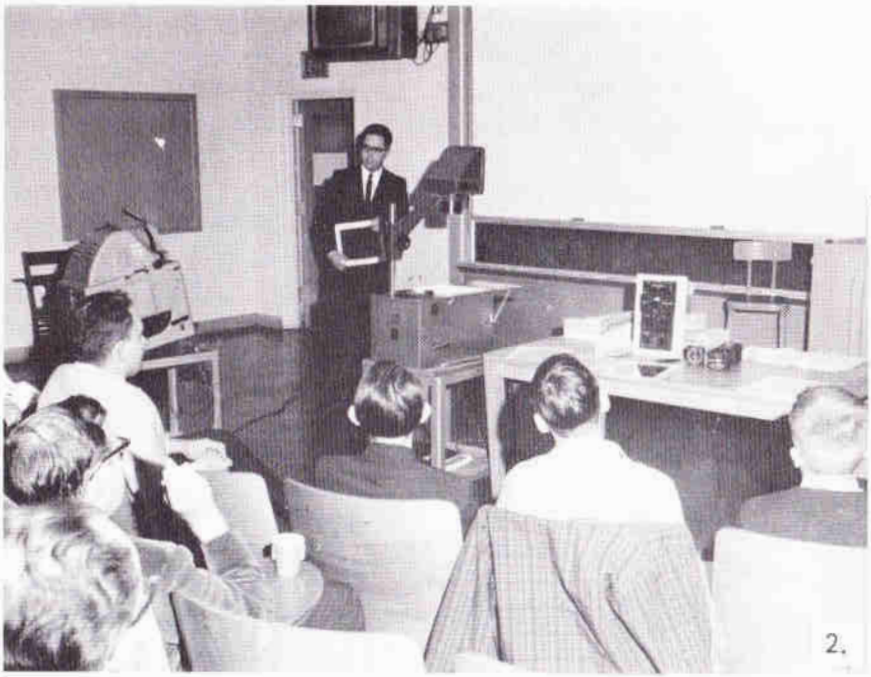
EDUCATIONAL OCTOBER MEETING

A very interesting and enlightening meeting was held on Friday, 13th! Charles Michel, KØQVL, demonstrated, with a maze of overhead transparencies, how a pilot uses aircraft radio for navigation purposes (see pictures #1 and #2). Charley then introduced Bruce Stackhouse, WØRIN, who continued the program on aircraft. As you can see in the photos, they brought along a typical radio system of a small aircraft as well as other instruments used to navigate a small plane. A lot of interest was displayed in their presentation, so Bruce showed some circuitry involved and explained how it worked (pictures 3, 4, 5, and 6).

Those who came to the meeting were very grateful for the wealth of information presented. Charley and Bruce were as knowledgeable as anyone we've seen or heard on the subject of aircraft radio. A sincere "thank you" to them for a job well done!


1.



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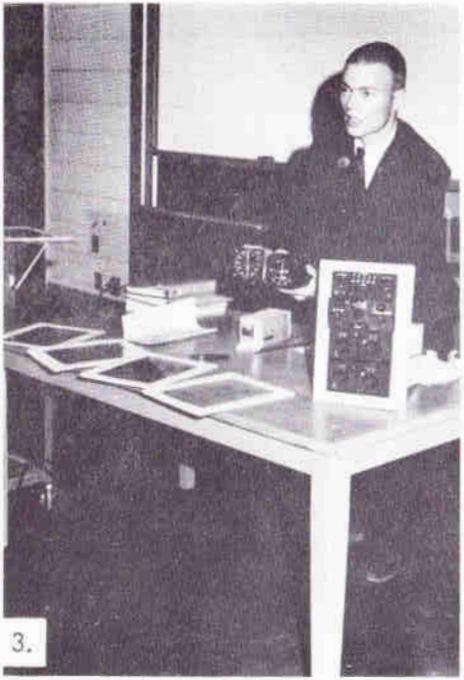

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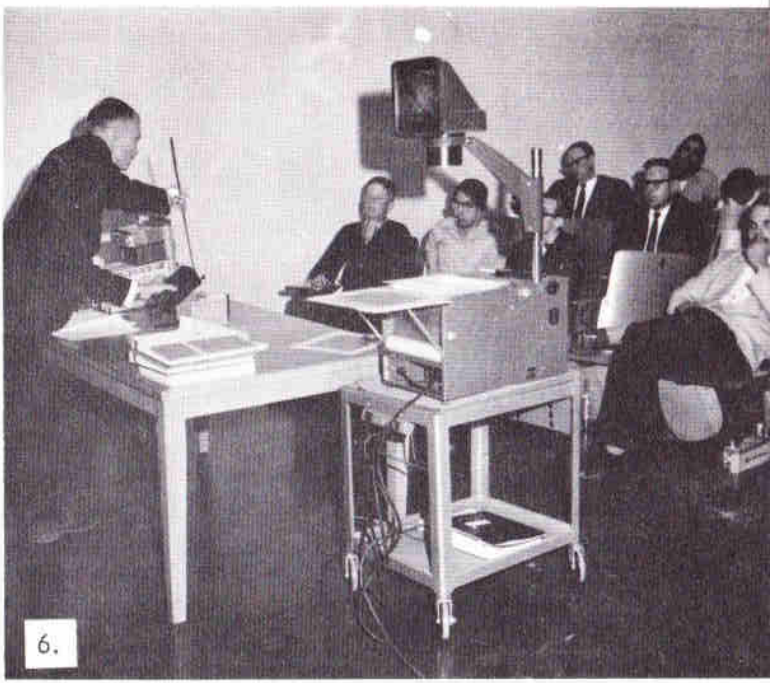

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From ARRL Affiliated Club Bulletin

LATE FCC NEWS

FCC has denied four petitions of long standing requesting the separation of a.m. and s.s.b. The Commission comments that one of the unique features of the Amateur Service is the wide choice of emissions and frequencies available and the desirability of continuing this freedom of choice. They observe that a voluntary self-adjusting separation of s.s.b. and a.m. has evolved and appears to be working well. In another action, the Commission has issued a Notice of Proposed Rule Making to permit slow-scan TV in the 3800-3900, 7200-7250, 14,200-14,275 and 21,250-21,350 kc. segments and in the full voice bands of 10, 6 and 2 meters. Note that the former are the eventual Advanced and Extra Class license sub-bands. The League's original petition filed in 1961 requested just portions of 10 and 15 meters. Comment date is Dec. 1; more info in Nov. *QST*.

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Do your worrying and planning before the race, mister; it's stupid to wait until your bet has been placed and the horses are coming down the stretch.

The Kiwanis Magazine

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REMINDER

All of you who are members of ARRL in the Midwest Division have received your ballots. We all have an equal say as to who will be our next Director and who will be our next Vice Director, that is, we all have an equal say if we *vote*. Those of us who are really interested in making sure our vote is counted have already mailed our ballot back so as not to mislay it. Those of you who are not willing to let others decide but are of the "I can do it tomorrow" type have probably mislaid the ballot already. But maybe you are in the "I don't care who is Director or Vice Director - let the other fellow decide for me" type. You probably didn't vote last time either! To be counted your ballot must be received at Headquarters by November 20, 1967.

We have had some pretty good Directors and Vice Directors in the Midwest Division, and I am sure we cannot be wrong with any of the fellows running. But the main point is to send in your vote. Somewhere I remember reading that only 30% or 35% do the voting. So right now while you are thinking of it, go find the misplaced ballot, read the biography of each of the candidates on the back, make your selection of the ones you think are best, and mail your ballot. Not only that, ask your fellow Ham if he has filled in his ballot and get him to do it. It is only by the decision of all of the voters that we will have true representative Directors. My choice is made, I have voted, I will be very disappointed if my men don't win, but if they don't, I will back your men to the hilt until the next election.

Dick L. Eilers, WØYZV

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FOR SALE

Enjoy "Ham Hum" very much. Keep it coming! Would like to submit the following for sale item for next issue:

Hygain TH-2 Beam, Blue Slimline Traps. Traps need replacing. Make me an offer. Instruction book too.

C. R. "Chuck" Carey, WAØDXY
809 Wood Street
Norfolk, Nebraska 68701

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FOR SALE

7 novice crystals, 40 and 15 meters. All for $2.00.

Brian Hoag, WNØOXH
4422 North 80th Street
Omaha, Nebr. 68134
Phone: 393-0326

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FOR SALE

Complete Galaxy V with matching power supply, VFO, and rejector. Price: $450.00.

Pat Cronican, WAØMNF
5054½ South 36th Avenue
Omaha, Nebraska 68107
Phone: 733-2599

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From ARRL CD Bulletin

FCC FINALIZED 15928

The big subject, of course, is "incentive licensing." This has been in and out of the limelight several times during the past few years, but now seems to be pretty definite. The docket was finalized by a FCC "report and order" adopted Aug. 24. W1AW immediately started transmitting a bulletin once every hour on the subject, and releases were promptly prepared for directors and affiliated clubs. October *QST* will of course contain the full text and editorial comment. Since this bulletin will reach you at or about the same time, we'll restrict our comments to the effect of the new regulations on our field organization.

The most pronounced effect of course, will be on the nets. By Nov. 22, 1968, all nets operating in the restricted parts of the various bands will have to move to a higher frequency, or face the loss of their General Class members.

According to the current net directory, the way we figure it, this will be 31 nets, two on 80 c.w. and 29 on 75 phone. A year later, assuming there are no changes in the meantime (by no means necessarily a valid assumption), 77 additional nets will be affected, 9 on 80 c.w., on 75 phone, 2 on 40 c.w., 4 on 40 phone, 2 on 20 c.w., 4 on 15 phone and 10 on 6 meters. Of course there is the probability that some of these nets will elect to continue on the same frequencies, their members already possessing or acquiring the higher grade licenses necessary. Most public service nets, however, will undoubtedly find it necessary to move. We suggest to the managers of all affected that they start early to consider this problem and investigate ways in which it may be resolved.

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You can always tell a well-informed person: his ideas are the same as yours.

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Salesmanship is the ability to convince your wife she looks fat in a fur coat.

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To improve your memory, try lending people money.

de FRESNO A. R. C.

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OFFICIAL BULLETIN NR 138 FROM ARRL HEADQUARTERS NEWINGTON CONN OCTOBER 12 1967 TO ALL RADIO AMATEURS BT

Last week the Federal Communications Commission released study questions covering both the new Advanced Class and revised Extra Class license examinations. All active ARRL affiliated club groups have been mailed copies of this initial material, along with the new ARRL club bulletin. November QST will carry the new questions and the ARRL Manual is being revised AR

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AMERICAN RADIO RELAY LEAGUE

INCORPORATED

Administrative Headquarters

NEWINGTON, CONNECTICUT U. S. A. 06111

QST OFFICIAL ORGAN

October 5, 1967

TO ALL AFFILIATED CLUBS:

The Federal Communications Commission has released a set of example questions to show the scope of the written examination for the reinstated Advanced Class license and the revised material for the Extra Class license, both effective November 22, 1967. A new edition of the "License Manual" is in process, but will take several weeks for production and distribution. Meanwhile, we believe that our affiliated clubs -- particularly those currently engaged in conducting training classes -- could make use of this initial material.

ARRL Hq.

STUDY QUESTIONS FOR
THE ADVANCED CLASS EXAMINATION

1. Part 97 of the Commission's Rules which governs the Amateur Radio Service.

2. What is a good indication that a high standing wave ratio (SWR) is present on a transmission line? Where is the best point on a long transmission line to measure the SWR?

3. What methods are most commonly used to generate single sideband signals? Draw a block diagram of the filter method showing all essential stages. How can a low frequency SSB signal be converted to the desired transmitting frequency?

4. What happens to the voltage, current and impedance along a transmission line with an SWR of 1?

5. What are harmonics? How can the generation of excessive harmonics be avoided?

6. What factors affect the state of ionization of the atmosphere?

7. What types of emissions can be received with selectible sideband receivers?

8. The ratio of the peak envelope power to the average power in an SSB signal is primarily dependent on what?

9. How can receiver sensitivity and selectivity be improved?

10. How close to the edges of a certain amateur band can you safely operate a VFO c.w. transmitter if you are using a frequency meter having maximum possible error of 0.01 percent?

11. A transmission line that feeds an antenna has a power loss of 10db. If 10 watts are delivered to the transmission line input, how much power is delivered to the antenna? List possible causes of power loss. How can the SWR of the line be made as low as possible?

12. How do parasitic oscillations affect circuits? What can be done to prevent or eliminate parasitics?

13. What is backwave radiation? How can it be eliminated?

14. Define maximum usable frequency.

15. A resistor, capacitor and inductor each have 100 ohms of resistance or reactance. What is the equivalent series impedance of these three elements?

16. What do oscilloscope patterns showing 25%, 50% and 75% modulated signals without distortion look like?

17. What are some common types of oscillators employed in amateur equipment? How can each be identified in circuit diagrams? What part does feedback play in these oscillators? What points in the circuits should be coupled to provide good feedback?

18. Why is neutralization important in amplifiers? What points in an amplifier circuit should be coupled to provide good neutralization?

19. When is an amplifier operating Class A? Class B? Class C?

20. What happens to even-order products in r.f. linear amplifiers?

21. What is a third party agreement? What countries have such agreements with the United States?

22. What are lissajous figures in oscilloscope operation? What scope patterns would be produced if the signal applied to the horizontal input has a frequency equal to two, three and four times the frequency of the signal applied to the vertical input?

23. How are bypass capacitors used? How should its impedance compare to the element it shunts?

24. How can TVI caused by cross-modulation be remedied?

25. How can SSB signals be amplified with little or no distortion?

26. A superheterodyne receiver having an intermediate frequency of 455 kc/s is to be adjusted to receive a signal on 3900 kc/s. What frequencies can the high frequency oscillator be set to, to give a beat signal at the intermediate frequency?

27. What circuit factors affect the peak envelope power of a transmitter?

28. How does a full wave bridge rectifier operate? What is the schematic diagram of this rectifier circuit?

29. When can a low pass filter be installed in a coaxial cable without causing a large power loss?

30. How can the resonant frequency of an antenna be increased? Decreased?

31. A 70 Ohm half wave antenna operating on a frequency of 7300 kc/s is to be matched to a 50 Ohm transmission line. Calculate the characteristic impedance of a quarter wave matching section and the physical length of the antenna at the frequency given. What is the SWR between the antenna and transmission line without a matching section?

32. Power dissipation in what part of a transistor warrants careful observance of power ratings?

33. Define the shape factor of a crystal lattice bandpass filter.

34. Compare the pentode, tetrode, and triode for use in an r.f. amplifier stage. Give advantages and disadvantages of each.

35. What is meant by describing a radio wave as horizontally or vertically polarized? Which type is most suitable for sky and ground wave propagation?

36. Which amateur band is the most suitable for daytime communication over a distance of about 200 miles?

37. Should a voltmeter have high or low internal circuit resistance? Explain.

38. A transformer with 115 volts applied across the primary terminals has a primary to secondary turns ratio of 10 to 1. If a 5 ohm load is connected to the transformer secondary, the reflected primary impedance is what? How much voltage appears across 1/2 of the turns of the primary?

39. What functions does a variable-mu tube perform in an r.f. amplifier stage of a receiver?

40. Compare transistors and tubes. What are the advantages and disadvantages of each?

41. How do noise limiters operate?

42. How do inductors combine in series and in parallel? Capacitors in series and parallel?

43. Define frequency deviation in FM transmissions.

44. How does the peak-envelope power input of an amplifier used for c.w. compare to the PEP of an SSB amplifier when using the maximum legal d.c. power?

45. What are the advantages and disadvantages of using the same antenna for receiving and transmitting?

46. What is the vacuum tube counterpart of (1) a grounded-base circuit; (2) grounded emitter circuit; (3) grounded collector circuit?

47. How does the sunspot cycle affect wave propagation? What are the best frequencies to use for day and night, short and long distance communications during the cycle?

48. How does automatic gain control operate? When can it be used for SSB operation? CW operation?

49. How should a linear amplifier be adjusted for linear operation?

50. How is the power output of a 100% modulated AM signal related to the carrier power?

51. Why does a type 6146 tube have 3 prongs connected to the cathode?

STUDY QUESTIONS FOR
THE AMATEUR EXTRA CLASS EXAMINATION

1. What are sideband frequencies? During 100% sinusoidol amplitude modulation, what percentage of the average power is in the sidebands?

2. What do the modulation envelopes of amplitude-modulated waves with 75%, 100%, and greater than 100% modulation look like?

3. How may a limiter be employed in an FM receiver?

4. What percaution(s) should be taken when measuring the rectified grid voltage in an oscillator with a d.c. voltmeter?

5. What is meant by frequency shift keying and how is it accomplished?

6. Why is there a practical limit to the number of stages that can be cascaded to amplify a signal?

7. What are A5 and F5 emissions? On what amateur frequencies can these emissions be transmitted?

8. How does amateur TVI usually affect television reception?

9. In what section of a properly operating SSB transmitting system is distortion most likely to originate?

10. What is the meaning of the time constant in a resistance-capacitance circuit?

11. How does a squelch circuit operate? Draw a commonly used squelch circuit.

12. An oscilloscope is used to study the relationship between the input and output of an amplifier produced by a voice signal. How would the scope pattern display a linear relationship?

13. Draw a block diagram of an RTTY system showing the function of each stage. What is the proper way of identifying an RTTY transmission?

14. How can the two-tone test output of a linear amplifier be used to tell if a transmitter is working properly?

15. Define the alpha cut-off frequency of a transistor. How is this parameter of use in circuit design?

16. What are inductive and capacitive reactance? How are their phase angles related?

17. How does the positioning of a powdered iron tuning slug affect the frequency of the oscillator it is tuning?

18. Define the deviation ratio in a frequency modulated signal.

19. What type of signal will be produced when the output of a reactance modulator is coupled to a Hartley oscillator and multiplied in frequency?

20. How would the reception of a single sideband signal be affected if the carrier is not completely suppressed?

21. How does the beat frequency oscillator affect the tuning of a single sideband signal?

22. Can a lossy transmission line be used to transmit signals? Explain.

23. How can you distinguish between a product and an envelope detector?

24. How can a receiver be adjusted for SSB reception when the receiver does not have a product detector?

25. How do mica and paper dielectric bypass capacitors compare at different frequencies?

26. How do filter capacitors made of mica and paper compare at different frequencies?

27. Where in a receiver circuit should a limiter/blanker stage be placed to provide maximum utility?

28. What frequency should a crystal oscillator circuit be tuned to for maximum stability?

29. What determines the fundamental operating range of a multivibrator?

30. What does the term "power factor" mean in reference to electric power circuits?

31. What factors determine the frequency at which a quartz crystal will oscillate?

32. Explain the properties of a quarter-wave section of r.f. transmission line.

33. How should a wave trap be connected to a receiving antenna circuit to attenuate an interfering signal?

34. Why are synchronizing pulses transmitted with television signals?

35. How may an amateur check his transmitter for spurious sidebands?

36. How can the safe power input to a crystal oscillator circuit be determined?

37. How is the decibel used for voltage and power calculations?

38. How are transistors biased for amplifier operation? How are they biased for cutoff (open circuit) and saturation (short circuit)?

39. How do N-P-N type transistors differ from P-N-P type? How does their bias differ?

40. How is the output circuit of a transmitter adjusted to increase or decrease its coup-

ling to the antenna systems?

41. How do filters attenuate harmonic emissions?

42. List several advantages and disadvantages each for Class A, Class B, and Class C amplifier operation.

43. What are some different types or sources of noise voltages in reception? How is each type generated?

44. What are the current and voltage characteristics along a transmission line when it is matched and mismatched?

45. How do receivers for remote control of objects and regular type communications receivers differ in basic operation?

46. How will a long and a short time constant A.V.C. circuit affect reception?

47. What useful functions does a balanced modulator perform in a radio transmitter?

48. How does the directivity of an unterminated "V" antenna and parasitic beam antenna compare?

49. If a crystal lattice bandpass filter has bandwidths of 1.5 kc/s at the 6db points and 3 kc/s at the 60db points, calculate the shape factor.

50. What would happen if the grid-bias supply of a Class C modulated amplifier was suddenly short-circuited?

51. How do trimmer and padding capacitors affect receiver tuning?

52. What is the phase relation between the input and output signals in the common-emitter, common-base, and common-collector transistor circuits?

53. How can a transmitter be tested for self-oscillation? What precautions should be observed during testing?

54. How can unwanted VHF resonances in a transmitter amplifier be moved from TV channel frequencies?

55. A 70 ohm transmission line is connected to a 35 ohm antenna. Calculate the standing wave ratio (SWR), the reflection coefficient, and the per cent reflected power. If 10 amperes are flowing in the antenna terminals, what is the current in a transmission line node?

56. What is a grid-bias modulated amplifier? Should the source of fixed bias have a high or low internal resistance? Explain.

57. Of what importance is the signal-to-noise ratio of a receiver? At what radio frequencies is this ratio most important?

58. What are Aurora-reflected VHF signals? If such a signal is heard, what does it sound like?

59. Define the conversion efficiency of a mixer tube.

60. How does a cathode-ray tube operate? How should the plates of a cathode-ray tube be biased?

61. What are some causes of the excessive production of harmonics in r.f. amplifiers? How can these causes be remedied?

62. What effect does an untuned antenna and transmission line have on a transmitter?

63. How are reactance tubes used?

64. How are phasing condensers used in crystal filters?

65. What means may be employed to measure low frequencies? High frequencies? VHF and UHF?

66. How are grounded-grid amplifiers used in electronic circuits? List some advantages and disadvantages of their use.

67. What constitutes a parasitic antenna element?

68. What is the image-response of a receiver? How can it be reduced?

69. What is a third party agreement? What countries have agreements with the United States?

70. What effect will extending the low-frequency response to a signal have on the design of an SSB receiver?

71. List some different types of beam antennas.

72. What radiotelephone transmitter operating deficiencies may be indicated by a decreasing antenna r.f. current during modulation of the final r.f. amplifier?

73. What improper operating conditions are indicated by the upward or downward fluctuation of a Class A amplifier's plate current when a signal voltage is applied to the grid? How can this be corrected?

74. What improper operating conditions are indicated by grid current flow in a Class A amplifier?

75. What may be the cause of a decrease in antenna current during modulation of a Class B r.f. amplifier?

76. What determines the skip distance of radio waves?

77. How can parasitic oscillations be prevented?

78. Give some proven methods of harmonic reduction in transmitters.

79. Describe briefly some well known types of antennas and antenna systems used by amateurs which do, and do not, reduce harmonic radiation.

From ARRL Affiliated Club Bulletin

COPY W1AW

For many years, affiliated clubs have been on the mailing list for the weekly Official Bulletin issued from the headquarters on Thursdays. Most of you probably don't get it until Saturday, and many not until the following week, or the next club meeting. This may be all right, because usually the bulletins are not especially thrilling, and you don't feel you have missed so much, but occasionally something breaks you wish you had known of in time for the club meeting. Depending on when your club meets, it's just possible you might have known if someone in your club had copied W1AW before the meeting!

W1AW is Official Bulletin Station No. 1. It gets the new OB before anyone else, and puts it on the air first. Mailing to OBS appointees and clubs goes out from headquarters in the late Thursday mail. However, OBS who copy it direct from W1AW can put it on the air the same night, and clubs which meet on Thursdays can have the latest info at their meeting that night *if* one of its members copies W1AW.

Most clubs meet at 8:00 P.M. local time. This is the exact time of W1AW's first c.w. bulletin transmission by *eastern* local time. In western time zones, it's of course earlier, so there is no problem there. Eastern clubs could delegate a member to do the copying just before coming to the meeting--or even at the meeting place if a receiver is available. As a matter of fact, not a bad idea for all club members to get in the habit of taking a listen to W1AW bulletins *every* night. All you really have to do is listen to the call up to find out which bulletins are to be transmitted; if you already have them, you need not copy.

Reason we make such a point of this is that we get many requests from individuals who want to be added to the OB mailing list so they can put the bulletins into their nets, etc. If we do much of this, we are defeating the purpose of the Official Bulletin system. Besides, all important information is not made into Official Bulletins.

Let's cite a couple of f'rinstances. The incentive licensing docket was released by FCC on a Thursday (because the Commission meets Wednesdays). This made it just right. We whipped up a bulletin on the subject and had it on the air as an Official Bulletin that night. We even made extra transmissions of it. Nevertheless, by Friday we were deluged with telephone calls by people who "heard rumors" (most of them exaggerated or erroneous). While W1AW had the information on the air, they had us on the telephone.

More recently, we received a call from the watch officer at FCC, on a Saturday, about the voluntary clearance of frequency segments in connection with the Texas floods. This was put out over W1AW as a "special" bulletin and not mailed at all--because it was likely to be of brief duration. Yet, as late as the following Wednesday we were getting telephone calls inquiring if it

was true that FCC had requested clearance of these frequencies.

You say W1AW doesn't come in at your location? This is possible, on occasions. The headquarters station has been refurnished, modernized, and new beam antennas have been erected in an effort to obtain better coverage at different points. Surely, under most conditions, the station is copiable on at least *one* of its seven frequencies.

Try it. Delegate one of your c.w. hotshots to copy the W1AW bulletin before or during your club meeting, to make sure you're not missing anything. Maybe eventually we can cease mailing these weekly postcards to clubs, because they'll be superfluous.

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OFFICIAL BULLETIN NR 139 FROM ARRL HEADQUARTERS NEWINGTON CONN OCTOBER 19 1967 TO ALL RADIO AMATEURS BT

The 34th ARRL Sweepstakes will take place the middle weekends of November, phone November 11 and 12 and c.w. November 18 and 19. Basic exchange information remains the same as last year and full rules appear on page 58 and 59 of November QST. Send for your log forms promptly and be sure to include your zip code with your return address. Mail your requests to the ARRL Communications Department 225 Main Street, Newington, Connecticut 06111 AR

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W4EWL, USA -- Jim Rush (W4EWL) is an amateur radio operator on the move. He moves from one end of the country to the other as if he were just going to work everyday. As a matter of fact, that's what he *is* doing!

Rush is industrial and military product sales manager for General Electric's Tube Department in Owensboro, Kentucky. At the present time, he travels all over the country in a unique "show on wheels" known as the GE Microwave Van. The brightly colored, converted Ford Econoline is loaded with sophisticated electronic devices ranging from ceramic planar tubes to aircraft distance-measuring equipment. Rush offers information and technical application experience to manufacturers and firms throughout the country during his tours.

But as Rush rides along the highways of America, he sometimes reaches down and picks up the microphone on his Galaxy V Mark 2 transceiver to talk to other amateur radio operators throughout the country. He installed the 5-band transmitter to make the trip a little more interesting.

Each morning and evening Rush usually checks into the Kentucky nets (3960 kilocycles on the 80-meter band) to maintain a contact with his "home country." But his main thrill is talking with other amateurs all over the nation as he travels its roads.

According to Rush, "We have logged about 40 contacts so far, and we hope to hit 100 before the year is out." The Microwave Van has been on the road since May, and the GE sales manager has spent much of his riding time on the radio.

After a contact with other ham operators, Rush sends out his special QSO card that describes his activities. Although the radio activities are not a part of the travelling show, Rush says he finds most hams interested in anything electronic -- and that their interest in microwave devices is growing.

At the recent "Louisville Ham Kenvention" held at the Executive Inn in Louisville, Rush demonstrated his unusual mobile rig and microwave applications to interested onlookers. He pointed out that "several of our ceramic tubes would be valuable in high frequency radios. We feel that our famous GE compactrons (multi-purpose tubes) would be ideally suited for amateur transmitters."

Rush remarked that he spends part of his time on the "Professional Loafers Club" frequency at 7240 kilocycles on the 40-meter band. He invites other hams to give him a call sometime.

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Via Key Klix: ARE YOU INSURED???? Some fire insurance policies won't pay off if a loss can in anyway be attributed to a ham radio station on ur premises. Better get your insurance broker to check fine print in ur policy to see if this loophole exists.

de RF, Orange, Calif.

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I have observed--to my horror--that opportunities are never lost. Someone else has always grabbed the ones that I didn't.

The Kiwanis Magazine

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QRM FROM THE EDITOR

QRM on the air may be hard to deal with at times, but a lack of it is much harder to deal with, especially if it is a permanent condition. A crowded band is a band where one can get a response to a CQ, but an uncrowded band like 10, for instance, is one where one can call indefinitely without any response when the band is dead and even when it isn't dead, if everyone listens and no one calls. Imagine what ham radio would be like if all the bands were like 10 and 6 most of the time. This condition may come to pass if present trends continue. The number of new licenses has been gradually dropping for some time and if the trend should continue, there is some indication that ham radio could die due to an insufficient number of participants. What many hams forget is that we operate under a license which is granted as a privilege to to use "public domain" and that privilege can be withdrawn by the agency that grants it. There are many groups which would like to have some of our bands, and if we do not maintain our numbers we may lose all or part of them.

The August issue of 73 Magazine has an editorial about proposed changes in the Novice class license which are worthy of consideration. These proposals, however, involve government action which may never come to pass. In the August issue of QST is a letter, on pages 71 and 72, which is worthwhile reading, indeed compulsory reading for any ham who

is concerned about our hobby. The editor presumes that neither the writer of the letter nor QST will object to reprinting the letter in its entirety here for the benefit of those who do not subscribe to QST as they should. The following is the letter exactly as it appears in QST:

"I reside in a county with only four ham license holders (so far as I can find) and two of these are not on the air. Instead of complaining about the CB operators and lack of new members, I decided the only way to increase membership was to increase interest on the part of *anyone* who would listen to me. It took a lot of talking, calling of meetings when no one would attend, but in the end I have made some progress.

I contacted the executive of both Boy Scout districts and had them to pass the word to Explorer advisors and Scoutmasters; I contacted certain young people leaders in churches and asked their aid. I talked with radio supply houses to find names of people who were purchasing parts to repair radios; I talked with maintenance men in TV and radio shops to see if they knew boys interested in radio; I talked with teachers in high schools; and, in general, worked at the job of finding people interested in radio.

This resulted in 19 boys under enrolled in class, 10 adults on a waiting list for a new class, and a CB club which wants a course of instruction for their entire membership (about 35).

I believe interest in ham radio by newcomers will be in direct proportion to the interest of ham radio license holders toward the newcomers. It will be in direct proportion to our interest in finding people who are interested in teaching them the code and theory so they can become license holders.

Not always can interested people find us. But with a little effort on our part, we can find a part of them."

de R. B. Buthrie, WB4APP
Sanford, N.C.

The letter needs no comments from the editor. It speaks for itself, but have you noticed that those people who put the most into something get the most out of it?

de WB6OSH

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OFFICIAL BULLETIN NR 140 FROM ARRL HEADQUARTERS NEWINGTON CONN OCTOBER 26 1967 TO ALL RADIO AMATEURS BT

The British liner Queen Mary has been bought by Long Beach California to become a convention center. During her final cruise, October 31 to December 9, from Southampton England around Cape Horn to California, an amateur station GB5QM aboard the ship will be in operation daily. The probable transmitting frequencies will be 29.0, 21.29, 14.23 and 7.05 Mc. for phone, 7.0 and 14.18 Mc. for c.w. QSLs should be sent to the Associated Radio Amateurs of Long Beach, Box 7493, Long Beach, California 90807 AR

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NOMOGRAPH ACCURATELY CONVERTS HERTZ INTO CYCLES PER SECOND.

From AMATEUR RADIO FACTS,
William I. Orr, W6SAI, Editor
Copied from ARNS Bulletin.

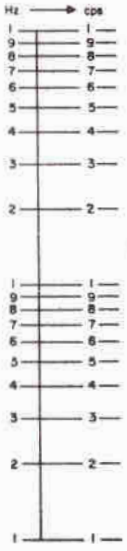
The accompanying nomograph was designed to facilitate conversion from Hertz into cycles per second. Although as shown it spans only two decades, it can be extended to higher and lower frequencies by making use of the well known relationships:

$$10^{-x}\ 10^{x} = 1$$

and slipping the decimal point.

Another nomograph is now in the process of validation by extensive computer runs. It will mechanize the conversion from cycles per second into hertz.

Ed.: We'll run this one as soon as it is received. Anything that will mechanize such complicated computations is well worth the space.



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The FCC has added nine new questions to the study material for the novice examination. Here are the new ones, as released by the Commission:
(frm Anaheim SQUELCH)

42. When is one way communication permissible?
43. What is a Hertz? KiloHertz? MegaHertz?
44. What are some correct ways to call and answer other amateur stations via telegraphy?
45. What do QRZ, QRM, QRS, QRT mean when transmitted as questions via telegraphy?
46. What important functions do diodes perform?
47. What units are used to measure capacitance?
48. How are transistors made, used and diagrammed? What are some common transistor parameters?
49. Why is impedance matching necessary?
50. What is chirp and how can it be remedied in a C.W. transmitter?

Remember, these are Novice questions. How many can you answer?

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From ARRL Affiliated Club Bulletin

SEALED BID AUCTION

Have you ever attended a "sealed bid auction"? Most clubs conduct open-bid auctions, but the Valley AR Club (Mass.) last March did it a little differently.

The mechanics of a "sealed bid auction" are simple and interesting. People who have items to sell bring them to the meeting to be tagged "lot numbers." Each item or group of items is identified with a tag showing the lot number and displayed prior to the meeting. To bid, you simply write your name, call-sign and the amount you wish to bid on a card and drop it in the box provided for the item or group of items you are bidding on. After all bids have been made, the auctioneer opens the boxes and declares the item to the highest bidder. In case of a tie, the tie bidders are run off by a conventional open-bid auction.

The club receives 5% of the total sale price of all items. An owner can protect his gear by bidding his minimum acceptable offer himself. Any junk that doesn't even draw a bid has to be carted away by the person who brought it.

While on the surface it may seem that this type of auction might be less fun than the open-bid type, a sealed bid auction will often bring out the "shy" bidder, who will not open his mouth at an open-bid auction but who will readily write a bid and slip it into the box. Sometimes a combined open and sealed bid procedure can be used--that is, when the auctioneer opens the bids he announces the highest bidder but is open for higher bids from the floor. --Adapted from *The Oscillator,* Valley AR Club (Mass.).

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THE OLD GROUCH

ANONYMOUS UNKNOWN
c/o Editor, Auto-Call
528 Montana Ave.
Holton, KS 66436

Beatniks! Ugh! My latest contact with a member of that persuasion leaves me with a feeling of nausea and a complete failure to understand the mental processes which permit an apparently sane, clean, well-bred and reasonably well-educated boy or girl to grow into a slovenly, mentally distorted, apparently ignorant and quite impudent specimen of the current younger generation.

A recent example will illustrate what, in my opinion, is possibly a slightly extreme example of the "lost" generation, of whom, I am sorry to say seem to be more and more evident each week. I was in a neighborhood store which I visit quite regularly. At the counter, paying for a purchase, was a person whom I identified quite casually as a teenage girl, in a rather dirty, ragged parka type of coat. "She" dropped a coin which rolled under a pile of goods near me and the clerk started to feel around for it. I said, "Wait, I'll get it for her," whereupon "she" whirled around and, in a deep male voice said, "I don't need any help from an old man!" To say that I was flabbergasted is to put it mildly. "Her"

hair was a long shoulder length, blonde with indications of peroxide treatment, and as she whirled around it was very evident that "her" neck hadn't been washed in quite some time.

I was quite irritated and offered "her" a two-dollar bill with the suggestion that "she" go get her hair cut, then go home and take a bath. Well, maybe that got under "her" skin, because "she" cursed me and threw out a threat of indefinite future revenge. The clerk, meanwhile, stood transfixed and, after "she" had left, asked me if I knew who "she" was. I had not identified anything beyond a dirty, saucy, teen-age beatnik, but was advised that "she" was "Bobby so-and-so," whom I knew as a baby boy several years ago before the parents moved away; they returned here just a few weeks ago. The parents are a very respected and quite highly educated family, with a background reaching into the early 1800's when the venerable grandfather arrived in the United States from an European country.

I blame the decadence of many of our present younger generation on failure of the parents to raise their progeny under proper discilipinary arrangements!

The Old Grouch

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"No man undertakes a trade he has not learned, even the meanest; yet everyone thinks himself sufficiently qualified for the hardest of all trades--that of government."

No, I didn't say that. Socrates did.

The Kiwanis Magazine

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AN F.C.C. LETTER.

from ARNS Bulletin

(This letter is over a year old, being dated February 4, 1966, but it's importance has not decreased. It is believed that the cont[illegible] should be printed rather often, since it still governs. While addressed to an individual it might well be addressed to all amateurs).

Interference involving the operation of your amateur radio station has been reported to the Commission. Accordingly, this letter will advise you of the Commission's rules and policies applicable to general interference between stations licensed to operate in the amateur service.

As you are undoubtedly aware, frequencies allocated to the Amateur Radio Service must be shared by all licensees. Consequently, interference between stations is most likely to occur during periods of heavy activity on, and occupancy of, an amateur frequency band. Experienced amateur operators are expected to anticipate and minimize this interference. Their failure to do so indicates either ignorance of the practical realities of amateur communications or a selfish lack of consideration for others. Assuming that it is your desire to alleviate interference between amateur stations, the following guidelines and considerations are presented.

Licensees of stations which are already in operation should remember that no amateur licensee, group[illegible] network has a right to the priority of exclusive use of a given frequency nor may freedom from interference be expected (exception is provided under the emergency provisions of rule

Section 97.107). In addition, common courtesy, as well as good amateur practice, dictate that incessant or continuous non-emergency operation so as to preclude others from operating is highly undesirable and unwarranted, and, if willful or malicious, could result in the imposition of punitive measures.

Licensees of stations who are attempting to utilize an occupied frequency should note that Section 97.125 of the rules provides that: "No licensed radio operator shall willfully or maliciously interfere with or cause interference to any radio communication or signal." Moreover, operation on a frequency where it is obvious or likely that such operation will result in harmful interference.

All licensees should avoid the following frequently observed improper practices, some of which constitute willful interference for which severe penalty is provided:

A. Knowing and repeated operation on, or unreasonably close to, a net frequency at times when the the net is obviously active.
B. Requesting or demanding protection of a net frequency at times when the net is inactive.
C. Requesting or demanding protection of a net frequency over a long period of time in the absence of an emergency situation.
D. Calling, testing or tuning on a frequency without first determining that the frequency is not already being used.
E. Carrying on an exchange of communications on two (or more) separate frequencies when there is no technical or operational necessity for such multi-frequency usage.

As noted, the foregoing is furnished for your guidance. From long experience, the Commission has found that in most instances neither party to an incident of alleged deliberate interference in the use of frequencies is entirely blameless. The keynote to resolution of these interference problems, therefore, is cooperation and consideration by all persons involved.

You are permitted and encouraged to read and discuss this letter via your amateur station. You may be assured that any effort on your part to contribute to better amateur radio practices and operations will be greatly appreciated

Very truly yours,
Ben F. Waple, Secretary,
Federal Communications
Commission.

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Stubbornness does have its helpful features. You always know what you are going to be thinking tomorrow.

The Kiwanis Magazine

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The difference between a man and a woman is that a man will pay $2 for a $1 item he wants, but a woman will pay $1 for a $2 item she doesn't want.

de ARNS Bulletin

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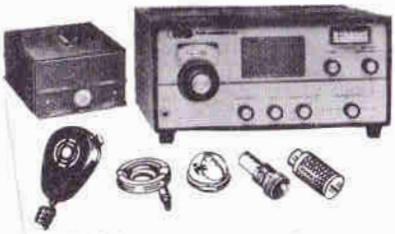

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