



HAM HUM

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No. 1

January 1971

NEXT MEETING

WHEN: FRIDAY, JANUARY 8, 1971
TIME: 8:00 P.M. SHARP
WHERE: CENTRAL POLICE FACILITY
5th Floor Auditorium Area
505 South 15th Street, Omaha

WHAT: The OMAHA POLICE DEPARTMENT not only has a new central headquarters building, but a new communication system that is truly outstanding for a city of our size.

A number of our members have indicated an interest in the facility. Thus we have arranged a field trip. We will meet in the auditorium area on the 5th floor for a very short business meeting and a briefing by the Police Department. We will then proceed to the radio room where we will have a chance to learn more about the multiple channel repeater system as well as the operation of the 911 emergency number. From there we will break into smaller groups for a tour of the rest of the building.

We will all wind up back at the auditorium level for the usual refreshments during which time we may have additional questions and discussions with the officers who will be conducting us.

DON'T MISS THIS VISIT WHICH WILL BE INTERESTING, INFORMATIVE AND ENJOYABLE. PLEASE BE ON TIME. THE MEETING WILL START PROMPTLY AT 8:00 P.M.

HAM HUM is the official organ of the Ak-Sar-Ben Radio Club, Inc., of Omaha, Nebraska, mailed monthly to all members and to others upon request.



Next copy deadline: January 29th

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WHY JOIN THE ARRL?

By Royce Johnson, WAØKIL

December 5, 1970

At one of the first meetings I attended of the Ak-Sar-Ben Radio Club, the principal speaker was a representative of the ARRL. This man spent two hours telling everyone about all the glory and benefits that would come to ham radio if we would all jump in behind the push for incentive licensing. He agreed that a large share of amateurs were against the idea but that this was just because we didn't understand it. By the time he had finished talking I had decided I would never be any part of that organization.

By making this decision I cheated myself out of any chance I might have had of influencing any decisions made for amateur radio. I accomplished the same thing lots of other people do when they won't register to vote or won't bother to go to the polls to vote. The ARRL apparently carries a good bit of weight with the FCC as far as decisions affecting amateurs are concerned.

If we (you and I) are going to make our wishes known to the FCC in a meaningful way, we must join the ARRL. I'm joining today and intend to become a vocal and active member. I think others should do the same, even if their views are different from mine. Remember - NO VOTE is a YES VOTE.

P.S. I mailed my check today!

ATTENTION

We need an Emergency Coordinator for Sarpy County and Douglas County. One E.C. for each county would be best. Qualifications are membership in ARRL and conditional license or any higher class license. If interested, contact either

Jay McAleer, WAØLLQ
839 South Polk Street
Papillion, Nebr. 68046

or

Lynn Bilyeu, KØODF
406 Henkens Drive
Chadron, Nebr. 69337

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1946	John F. Leeder, WØUFD
1947	Arthur R. Gaeth, WØFQB
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1949	Elmer N. Stein, Ex-WØAVM
1950	Dr. Leon Becker, W6AID (Ex-WØBBX)
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1952	John W. Orr, WØPHW
1953	Rev. R. J. Strange, WØQHG
1954	Frank W. Cooper, W3NV (Ex-WØIOS)
1955	Arthur E. Stadler, W9KHD (Ex-WØQMD)
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1957	Curtis D. Hicks, KØAMM
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*1965	Edmond E. Donze, WØYEV
1966	Byron J. Smith, Sr., WAØICK
1967	Ervan D. Heinz, WAØEEM
1968	Robert C. Lockwood, WAØDHU
1969	Royce E. Johnson, WAØKIL
1970	Harold E. McClenahan, Jr., WAØDGA

*Deceased



HAMS' ANNUAL MEETING AND CHRISTMAS PARTY

By Ervan D. Heinz, WAØEEM

Our annual meeting and Christmas eyeball QSO was well attended. (Pictures 1 and 2) – President Harold E. McClenahan, Jr., WAØDGA, President-elect James C. Droege, WØYCP, and Vice-President elect Henry J.

Dworak, WAØQLE, greet the members as they arrive. Many take this opportunity to pay their annual dues.

President McClenahan reflected over the activities of the past year and then turned the gavel over to our



newly elected President, Jim Droege, WØYCP (picture 3). In appreciation of Harold's past year at the helm, Board Member Connie Bowen, WAØMYF, presented him with a lovely plaque to hang at his QTH (picture 4).

The election was carried out in all its potentialities with vigor and dispatch. Candid camera caught Robert Serlet, WAØZPW, and YL Karen Storms looking over the ballots and contemplating the candidates of the nominating committee. It looks as if he needed Karen's help to mark the ballot with his free hand! (picture 5).





The newly elected Executive Council members along with your new President and Vice-President are (left to right in picture 6): Raymond E. Weghorst, KØCVA; Leo F. Connolly, KØJIU; Russell A. Minks, WAØVEE; Raymond F. Kydney, WAØWOT; James C. Droege, WØYCP; and Henry J. Dworak, WAØQLE. The 1971 Board of Trustees will consist of these plus Immediate Past President Harold E. McClenahan, Jr., WAØDGA, and the four remaining members of the Executive Council: Robert D. Andrus, KØLUG; Edward F. Askew, WAØRDZ; Dr. Stanley M. Bach, WAØIIX; and John D. Snyder, WØWRT.

The magnificent magician, Walter Wizard Graham, performed his sleight of hand tactics to perfection (picture 7). Here he shoots the fire off of a firecracker to stimulate the Jr. Ops (picture 8). Many of the Jr. Ops





earned an official "Walter Wizard Graham Magician Helpers" certificate as is shown in picture 9. Mental

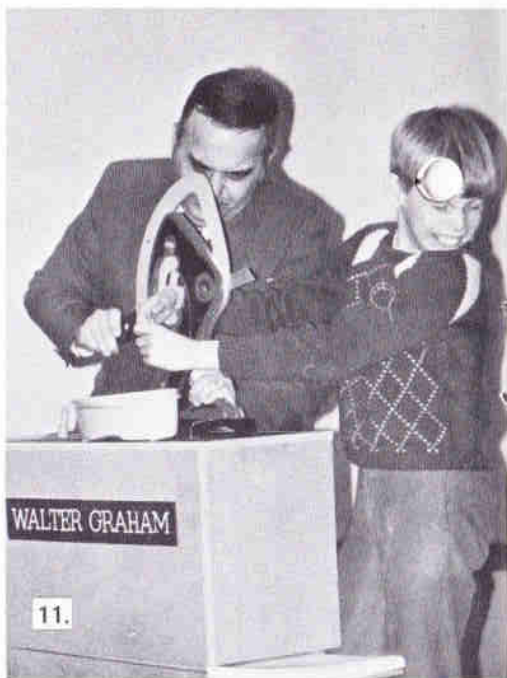
telepathy and extra sensory perception aided the magician in winning at bingo (picture 10). The climax to the



performance came when one of the Jr. Ops had his hand removed with the magic cutter! There was considerable blood, sweat and maybe some tears in picture 11. A real big thank you to Walt, the Magnificent Magician!

A gift exchange and refreshments followed for members and guests. Sharon Heinz, XYL of WAØEEM, is shown in picture 12 as she won the door prize for ladies.

We are again in debt to Dick Eilers, WØYZV, and World Insurance Company for their hospitality and facilities. Our Club members extend heartiest thanks and appreciation to all who worked so hard to make the Holidays Happy Ones.



EDITORIAL

By Bill Morgan, KØHVN

Amateur radio is a wonderful hobby, but on occasion when the spots are not right, the bands are dead or the E layer merges with the F layer to form a NG layer, a person needs a second hobby to fill the time.

A recommended hobby for these dreary stormy nights is the collection of the various excuses for not trying for that higher class license. Every month the letters to the Editor in the popular ham magazines have a new excuse or at least a new twist on an old one. If one listens closely to "on-the-air" confabs or at club meetings these sources may furnish a number of new excuses.

A few of the more common ones are:

1. "They can't take away a part of the privileges already given to me." It is funny, but my memory fails to recall any complaints circa 1952 about expanding the general class personal rights to the formerly forbidden 40 meter band.

2. "I am too old." As my age was rapidly approaching 60 years, it was fearsome to realize that my brain would soon turn to mush. (Some will say it already has.)

3. "All my friends are up here so there's no point in upgrading my ticket."

4. I ain't got the time.

5. They can't do that to me.

There are many more. Many are not new to me because I have been down that same road. As a teen-ager the ham radio bug hit me, but the 10 wpm of

code eluded me, because you see I was too busy and stayed that way for twenty years, only to find that the code requirements had been increased to 13 wpm — they can't do that to me!

When the new privileges were announced, memories of a lecture on Communism while in the military services came to mind. The instructor asked a Sergeant how he would like to be part of a country where 2% of the population had all the privileges. The smart-aleck Sarg replied, "I would see to it that I was part of the 2%." Maybe it was not such a smart-aleck reply after all. Now after much listening to CW on W1AW and about 12 hours of college credits in all the ham courses offered at the local college, I am part of that small % with an Extra Class. I still need instructions on which end of the soldering iron to plug in.

de Pueblo, Colo.

NEWS NOTE

I passed my extra class and my second class telegraph communication on the first and second of December 1970.

73's

Alan Lee Fleming, WØBNY

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HF - 144 M for Motrac radios -----		\$16.50
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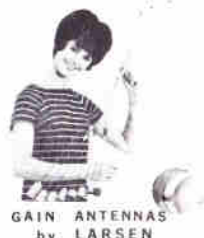
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MEDICAL ELECTRONICS

In 1895, Prof. Wilhelm Roentgen gave the medical profession one of its most valuable diagnostic instruments when he discovered the "X-ray." Less than a decade later, in 1903, Prof. William Einthoven's experiments with electric currents in the human heart led to the development of today's electrocardiograph (ECG).

Dr. Hans Berger applied the principal of the ECG to the measurements of brain waves in 1929, when he built the first electroencephalograph (EEG) and made

tracings of the brain-wave patterns of himself and his family. His invention came before its time; the medical profession wasn't ready to accept the theory that the brain could send out electrical impulses. As late as 1941, Dr. Berger's machine was still considered only "a promising tool" for diagnosis of cerebral diseases.

Although these first machines were hardly electronic in operation, their present day versions are totally electronic.

de Crosstalk, New Jersey

APT (automatic picture transmissions)

By Tom Middleton, WB4CKY

Satellite communications to all types lend excitement, intrigue and knowledge to those who are interested. Here at station WB4CKY we have a great interest in APT. I am sure that everyone has at some time or another seen the "ESSA 8" pictures.

If you have interest in recording these signals you need an antenna (Yagi will do), FM receiver and readout device. Of all systems experimented with at this station I recommend the circuits of W7UGV, (QST June 69). All circuits are straight forward and self-explanatory. Most bits and pieces are already on hand in most ham shacks.

Now some facts. Where can one get information on weather satellites?

U.S. DEPT. OF COMMERCE
ENVIRONMENTAL SCIENCE
SERVICE ADM.
NATIONAL ENVIRONMENTAL
SATELLITE CENTER
WASH. D.C. 20233

Request APT users guide from Govt. printing office (\$2.25)

NASA:
Goddard Space Flight Center
Greenbelt, Md. 20771

Request publication X-730-67-240: "Construction of Inexpensive APT Ground Station."

The meteorological satellite program of the U.S. is made up of two agencies, ESSA & NASA. ESSA does the operational work while R&D falls to NASA.

As of May 70 our weather satellites that were in operation were ESSA 8, and 9, Nimbus III & IV, & ITOS-1. ESSA 9 is an AVCS spacecraft and

does not transmit data which can be received on APT gear. (See chart for data on above Spacecrafts.)

ESSA 2 was placed in a standby position in March 70 because it caused QRM to ITOS-1 telemetry. It can be reactivated on command from earth.

ESSA 8 is operational and is the primary APT satellite. Pictures are taken with camera 1; camera 2 pictures appear displaced. Pictures are taken on the southbound portion of the orbit, beginning about 28 minutes before the spacecraft crosses the equator and continuing for about 15 minutes after the crossing. The eight picture sequence starts near 76 degrees N and ends near 44 S.

There are about 500 APT receivers in operation around the world. Many are operated by government agencies, the majority of them are used by private individuals, business and universities.

APT pictures are used on TV and in newspapers as a means of describing weather to the public. They have also been used in Mexico as an aid in forecasting a potentially dangerous flood situation, in Canada, Alaska and Antarctica for ice reconnaissance, and for meteorological, hydrologic, and oceanographic purposes. Needless to say, Florida uses APT to follow all storms.

The cost of an APT station can run as high as \$80,000 or as little as \$300. Most amateurs have tracking stations for even less than this.

The ARRL, through WIAW, provides orbital data of spacecraft passes over the U.S. This information is transmitted via phone, CW, and RTTY on the OBS Skeds.

Smile—you are on A.P.T. — 73
Tom.

Satellite	Readout Sensors	Freq.	(Mcs Inclination)	Period	Height nmi
ESSA 8	APT	137.62	101.8°	114.7 minutes	763790
Nimbus III	DRID	136.95	99.9°	107.3	578612
Nimbus IV	DRIR	136.95	99.9°	107.1	589591
ITOS-1	APT	137.5	102.0°	115.1	774798
ATS-1	WEFAX	135.6	2.3°	24 hrs.	19,327
ATS-3	WEFAX	135.6	0.5°	24 hrs.	19,354

de Florida Skip

FCC

By Wm. G. Welsh (W6DDB)

Chairman Dean Burch is not too disturbed about the recent White House memo which details plans to set up a new Office of Telecommunications policy. Mr. Burch believes that the new policy reflects increasing White House interest in communication satellite systems and TV news programming. He does not expect any interference with FCC judicial procedures. Congressional opposition to expanded Office of Telecommunications influence may be high because the FCC was established as an arm of Congress.

Dean Burch is attempting to determine:

- (1) What should the FCC be doing, beyond what it presently does?
- (2) Should some current FCC responsibilities be dropped?
- (3) Can the FCC do more to protect consumers?
- (4) Is the FCC doing a good job for the money it costs?

Since the FCC operated at a loss of \$15,000,000 last year, we can expect all application fees to be raised. The Bureau of the Budget has advised the

FCC to become as self-supporting as possible.

We hams know that there is no finer Federal organization than the Federal Communications Commission; they are an excellent group!

The FCC established a new air-to-ground communication service which became effective 16 February 1970. This 12-channel service is just one of the many changes we can expect. The land mobile services are fighting to (1) share UHF-TV Channels 14 thru 20 or (2) obtain 115 MHz of additional spectrum in the 806-960 MHz range.

de LERC Bulletin

I dreamed death came the other night
 And Heaven's Gate swung wide
 With kindly grace an angel came
 And ushered me inside - - -
 And there to my astonishment
 Stood folks I'd seen on earth - - -
 Some I'd judged and called unfit
 And some of little worth - - -
 Indignant words rose to my lips
 But never were set free - - -
 For every face showed stunned surprise
 Not ONE HAD EXPECTED ME !!!

YLRL Magazine

HARMONICS



Announcement was made at the annual meeting by Robert C. Lockwood, WAØDHU, of the Code and Theory Classes which began January 4, 1971. It is still not too late for anyone interested to attend. Total of 15 sessions — every Monday at 7:30 P.M. at the Red Cross Chapter House. Sessions end April 12, 1971.

WIRING COLOR CODES

It is usually a Grade-A task to trace the rat's nest of wiring in the average commercial piece of gear—and even more so in a ham-built receiver or transmitter. Most hams do not know that there is a standard color code for wiring, as follows:

Color	Circuit Name
Black	Grounds, grounded elements and returns
Brown	Heaters or filaments, off ground
Red	Power Supply B plus
Orange	Screen Grids
Yellow	Cathodes
Green	Control Grids
Blue	Plates
Violet	Not Used

Gray A.C. Power Lines
 White Above or below ground returns, AVC, etc.
 de Florida Skip

A Friendly Drink

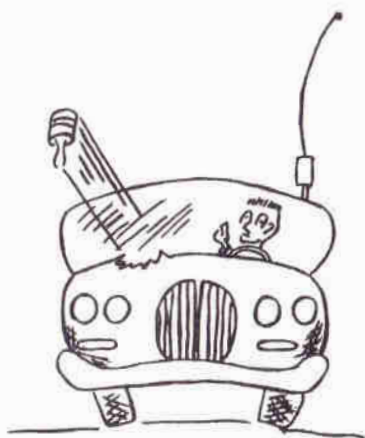
Two drivers were surveying the damage to their respective cars following a collision.

One pulled out a whiskey bottle and offered the other a drink, saying: "It'll help calm you down."

"Thanks," replied the other, taking a swig and returning the bottle. "Are you having one, too?"

"Yes," said the other, "but I think I'll wait until *after* the cops go."

2 METER FM VACATION WA0UZO & WA0WAD



We left Pueblo on August 19 for the West Coast to visit relatives and friends. Worked a repeater in Salt Lake on 34/94. A very interesting setup. The 450 control gear sends a tone every three minutes to maintain the repeater on the air. A timer turns the system off at midnight and on again at 6 a.m. The time out timer (three minutes) only takes the repeater off the air for 5 seconds.

The next repeater we ran into was in Boise, Idaho. It had only been on the air for one week when we got there. It has a code wheel that cuts off the audio when it comes on every three minutes. It's kind of an adventure to work the repeater, as you don't know if the code wheel has you cut off or not. They are going to change this, however. Everyone was getting a laugh out of it.

We next picked up the Pendleton, Oregon repeater. It's a good sounding machine on 34/76 and has been on the air for quite a few years. The repeater

in La Grande, Oregon was temporarily off the air so we didn't get to work it.

We then cruised on up into Washington to visit for a week. Next stop was Seattle, Washington. Now let me tell you, them boys have got a system. .34 & .16 inputs and .58 output. The odd output is necessitated by local conditions. The transmitter and receiver are remote. 450 links are used and they have several receivers linked into the system. Quite elaborate and very good construction throughout. We met with Phil, W7PUG, who sent us the solid state ID system. By the way, his system is published in "73" magazine.

We had a long talk with Phil and picked up some good ideas and circuits from him. He demonstrated his computer to us in laying out the code stream for his ID system. All he had to do is type out and computer comes back and types out the location of the diodes and resistors on the circuit card for any code stream he has requested. He estimates that it would take over 2 hours to figure it out without the computer. The computer spit out six programs while we stood and watched it in about three minutes.

Our next repeater was in Spokane, Washington. They are on 34/76 and have a very nice sounding machine. They are using horizontal separation on their antennas of only 50 feet with no vertical separation. This is necessitated by conditions and doesn't seem to degrade the system. They had a board of directors meeting the night we were there and we were invited to attend. We had a very interesting visit with the boys and exchanged ideas on repeater operation.

That brings us up to Friday, the 11th of September. What are we doing? Why does the story end here? The answer is very simple - we are spooned in Missoula, Montana with a broken-down automobile.

We were running down the road about 70 miles an hour when the engine sound changed from a soft, lovely purr to CLANK, CLANK. We deemed this to be telling us something, so we stopped and had it towed 45 miles into Missoula to the Chrysler-Plymouth garage. A rod is out and the crank shaft is flat. See ya some time after September 18!

de Grid Leak, Pueblo, Colo.

WHY ADHERE TO A STANDARD PHONETIC ALPHABET?

Anyone listening to our phone traffic nets can hear a vast conglomerate of phonetics from the large majority of traffic stations. No doubt is has not been evident to many amateurs why a common standardized phonetic alphabet is far preferable to using a mixture of old obsolete phonetics plus individually devised phonetics.

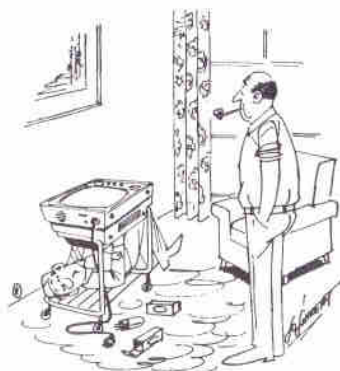
The principal reason for adhering to a nationally standardized phonetic alphabet is mainly because such an alphabet, used by all stations, is readily recognized by all receiving stations, domestic and foreign, that employ same themselves. Many times odd phonetics are misinterpreted by the receiving stations because they do not bring to mind a familiar letter of the alphabet.

It is urged that we all employ the current standard international phonetic alphabet as used today by all commercial and military services as well as now recommended by ARRL for amateur use.

Although this phonetic alphabet is today available from many sources, it is given below for your convenience.

A-Alpha	N-November
B-Bravo	O-Oscar
C-Charlie	P-Papa
D-Delta	Q-Quebec
E-Echo	R-Romeo
F-Foxtrot	S-Sierra
G-Golf	T-Tango
H-Hotel	U-Uniform
I-India	V-Victor
J-Juliett	W-Whiskey
K-Kilo	X-Xray
L-Lima	Y-Yankee
M-Mike	Z-Zulu

73, W4FPC
de Florida Skip



"Yes, I was in the car repair business, why do you ask?"

SOLID STATUS

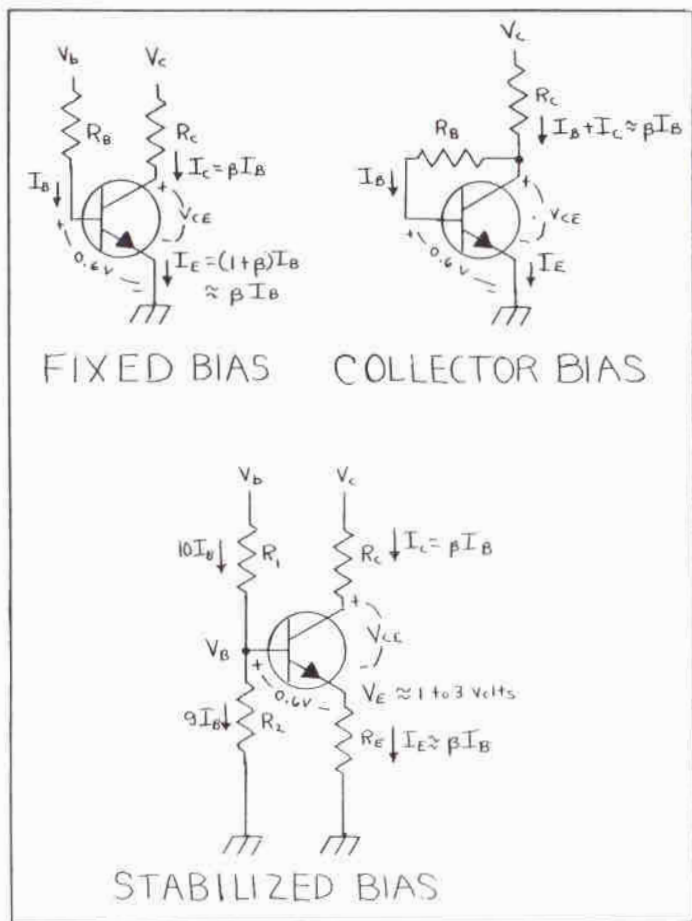
By Dick Blasco, WA4DHU 2

Part 3 — Unbiased Biasing

This month we get into the real "nitty-gritty"; biasing. This is the part where many hams might want to turn the page and read the HAMBARS or something. But hang on, fellas, it's not really too bad. All that you have to remember is three things: 1) The base-emitter voltage drop is roughly 0.3 volts for germanium and 0.6 volts for silicon; 2) Collector current (I_c)

equals base current (I_b) times beta and 3) Ohm's Law= $E=IxR$.

Rather than giving a lot of formulas, let us assume that we have an NPN silicon transistor with a beta of 100 that we would like to bias so that the collector-to-emitter voltage (V_{ce}) is 5 volts and the collector current (I_c) is 10 mls. (Notice that collector voltages and currents normal-



ly determine how the transistor is to be biased.) We have a 10 volt power supply.

The three fundamental biasing circuits are shown in the figure. Most other biasing techniques are variations of these three. They are fixed, collector, and stabilized bias. There are some formulas on the figure, but don't let them confuse you. They are merely included to help you remember some of the relationships that can be deduced with common sense.

The fixed bias circuit is very easy and straightforward. If we have a 10 volt supply and want 5 volts on the collector, then R_c has to drop 5 volts at 10 ma. Ohm's Law tells us that $R = E \div I$, or 500 ohms. Base current is simply I_c divided by beta, or $10 \text{ ma} \div 100 = 0.1 \text{ ma}$. Remembering the 0.6 volts from base to emitter, R_b must drop 9.4 volts at 0.1 ma if we have $V_b = 10$ volts. R_b is then 94 K.

Now, that wasn't too bad. However, a typical transistor type may have beta varying from 10 to 200 from transistor to transistor. Beta will also change when a transistor heats up. Both these conditions would cause our bias results to deviate far from 5 volts and 10 ma. Worse yet, as the transistor heats up, it tends to draw more current, which of course heats it up some more and the transistor keeps heating and drawing current until it burns up. This situation is called "thermal runaway," and really makes the fixed bias circuit undesirable.

The collector bias circuit is much more stable. Let's see why. If the transistor were to start drawing excess current, more current would flow through R_c , increasing its voltage drop. Since R_c would drop more

voltage, V_{ce} would become smaller. But since base current depends on V_{ce} , due to R_b being tied to the collector, base current will also be less. The reduced base current will tend to reduce collector current, since the two are related by beta. However, this is just what we wanted. A "negative feedback" has occurred wherein if collector current starts to increase, the circuit will try to correct the situation.

Solving the circuit for our example, we can assume that I_c is still 10 ma, since the 10.1 ma that actually flows is pretty close to 10. R_c is thus still 500 ohms. R_b must now drop 4.4 volts at 0.1 ma so that 0.6 volts will appear on the base. R_b is thus 44K.

The stabilized bias circuit is a further improvement over the collector bias circuit. It will be covered in the next article. Meanwhile, try to guess why it works.

de Florida Skip



"I'm conducting a survey to find out if poll-takers are annoying to the general public."

DON'T BE A DO-DO

In the last few years, a new crop of do-do-birds has crept into our ranks. We accept them only because to object to their presence would be to admit openly that we are not a "good guy," and of course, everyone wants to be a good guy.

What would you think, if while talking to an acquaintance on a street corner, a perfect stranger came screeching over to you, yelling, "BREAK-BREAK-BREAK"? Now the "What's your handle, OM?" followed by "Where you from?" By this time you have forgotten what you were talking about, but that doesn't matter; your "DO-DO Bird" is full of important information and he usually takes over the subject of conversation anyway.

This happens only too often on the Ham Bands today. Just yesterday, I heard a couple of technical chaps expounding on the theory of some new beam antenna; it was getting real interesting. Would you believe it? Some DO-DO wanted to break, and did just that, and after getting an acknowledgement, proceeded to tell all about his DXCC-5 Band WAS project, or something. It wasn't even good listening matter, let alone polite etiquette.

If the shoe fits you, but I am sure it won't, because you are the fellow who takes the trouble to read this; next time before you break, study the conversation. Do you have anything to add? Would it be worthwhile? Do you know these guys? Do you know where they are? Can I get on their exact frequency? By this time, with all negative answers, wouldn't it be better

to slide down a few KC's and bat out a CQ of your own?

Now that you've got something going on your own, why not stand by for breakers once in a while? This is the best way to meet new friends and new conversation ammunition. At the sign-off of your QSO, make it known what your intentions are, so that listeners or would-be breakers will know where and when to look for you. Lack of this information marks a poor operator and often times encourages this silly "BREAK-BREAK-BREAK" practice. Make it well known that you will listen on the frequency, or some mentioned frequency for at least five minutes before you QRT for good.

It is good etiquette to try to give the frequency back to the operator you are talking to, at the very end of the QSO. Most of the time he will be so surprised at your fine ethics that he will tactfully withdraw, even though it might be his favorite frequency.

In the lifetime of every radio amateur there had to be a beginning. You asked yourself, "Now can I get that license?" Look around you now, you will find many budding amateurs that it is your duty to help, just as someone helped you. Don't forget to teach him well. Teach him how to use that license after he gets one; warn him about being a DO-DO, a darn onery-dumb operator. Teach him this simple fact; "If more than one break is required, you're not exactly welcome." Teach him that when someone says, "Let's move down a KC or two," he means far enough to prevent a heterodyne, or QRM to someone else. Teach him that the tradition of amateur radio is the mark

of being a good operator, and not a dumb operator.

The Old Timer
de Florida Skip

PHONE PATCHES

FCC has authorized the telephone companies to file tariffs to cover interconnection of customer devices, to be effective on January 1, 1969. This action legalizes the phone patches affected by the decision. In general, an amateur may now use a "voice coupler" device between the telephone company lines and his patch unit. There are certain criteria prescribed for the performance of units which may be interconnected, largely to avoid peaking of energy at certain switching control audio frequencies. Briefly, the criteria specified for systems connected to the telephone company's lines by direct electrical connection (of which type most amateur installations are) including the following:

A. The power of the signal at the central office shall not exceed 12 db below 1 milliwatt when averaged over any 3-second interval.

B. The signal at the interface on the customer's premises shall be controlled so that:

1. The power between 3,995 and 4,005 Hz shall be at least 18 db below the signal specified in A. above.

2. The power between 4,000 and 10,000 Hz shall not exceed 16 db below 1 milliwatt.

3. The power between 10,000 and 25,000 Hz shall not exceed 24 db below 1 milliwatt.

4. The limitations for the 25,000 to 40,000 Hz and the band above 40,000 Hz shall be 36 db and 50 db below 1 milliwatt respectively.

5. The signal shall have no energy solely in the 2450 to 2750 Hz band and any signal in this band shall not exceed the power present at the same time in the 800 to 2450 Hz band.

de Florida Skip

LEAVE IT TO GEORGE

A number of years ago, there was an expression, "Leave it to George," which was in wide use. Roughly translated, it meant, I'm in favor, but let someone else do the work.

Amateur Radio in general, and HARC in particular, is operating with this type of attitude in the past year or so.

How many have you talked to who said, "Yeah man, that's a good idea, but I just don't have time to do the job myself. Why don't you get someone else for the job?"

It is a problem getting people to come out to our meetings (too many other things to do; watch the boob-tube, parties, other meetings, camp-outs, etc.) and you can't have a speaker to come out to our meetings and have a small group in attendance.

A person is appointed Chairman of an event, and you assume it is well-handled, until you find out at the last minute that he forgot or just didn't take the time to do it and never thought to tell anyone that it wasn't handled. End result — a big fat flop.

The Club Members of 10 years ago, now unheard and unseen (except on

Old Timers Night) worked in unison to build HARC into the biggest and best in the State. Are we going to let them down? We, the Amateurs of today, must put our shoulder to the wheel and make it work. Offer suggestions to our Officers. Offer HELP to the Club. We MUST have unity and aggressiveness in our fraternity.

K5OLJ
de HARC News, Texas

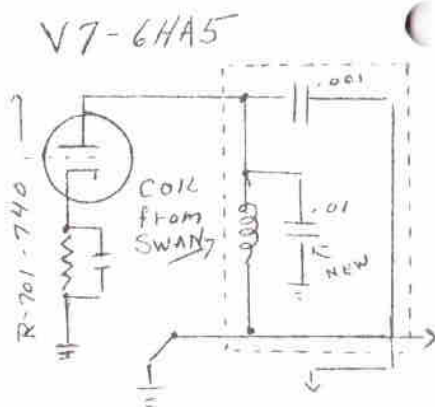
SWAN 250 AND CHANNEL FIVE

Submitted by Byron Jay, K8WGJ
TVI Committee Chairman

This TVI complaint was referred to me by a Club member. His Swan 250 was in competition with Channel 5 and the TV station was coming out second best. Letter to Swan produced the following information: The interfering signal was produced by the receiver oscillator mixer section. The company stated in their letter that complaints had been received concerning this, with indications that the 250C is the worst offender, especially when the Noise Blanker was installed.

The problem is a high-level signal on 78 MHz showing up on the filament circuit of the RF amplifier and mixer tubes. The recommended correction calls for replacing several by-pass condensers to ground and installing a coil (from SWAN without charge) and installing several additional condensers in the coil circuit in series with the Crystal Filter. This greatly reduced the level of the 78 MHz radiation to a VALUE BELOW 20

THAT WHICH WOULD CAUSE THE INTERFERENCE. It is suggested to other owners that you contact SWAN and make the modification.



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This is the first of a series of articles about radio frequency propagation (microwave) in wave guides. The author is Don Griffin, WØEWO of 514 East 12th, North Platte, Nb. 69101.

EXCITING THE WAVE GUIDE

In the two wire and coaxial transmission lines it is a simple matter to feed power to them, as they have two conductors, but the wave guide has only one, which is a hollow tube; this means that we must radiate the energy down the tube as if it were radiated into free space. It is impossible for a plane wave to exist in a wave guide as it is completely bounded with a conducting material; this would short out the electric lines of flux and the wave would not exist.

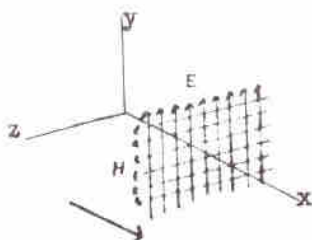
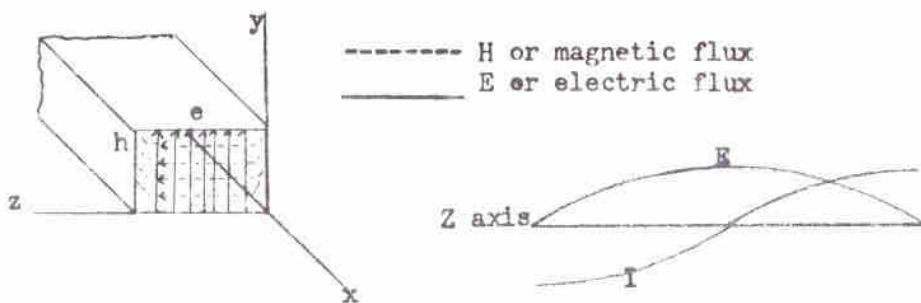


Figure at the left is a section of a wave front, propagation is the direction of the arrow. Note that the electric flux lines are equal in strength all along the Z axis. Such a wave is impossible inside a hollow tube.

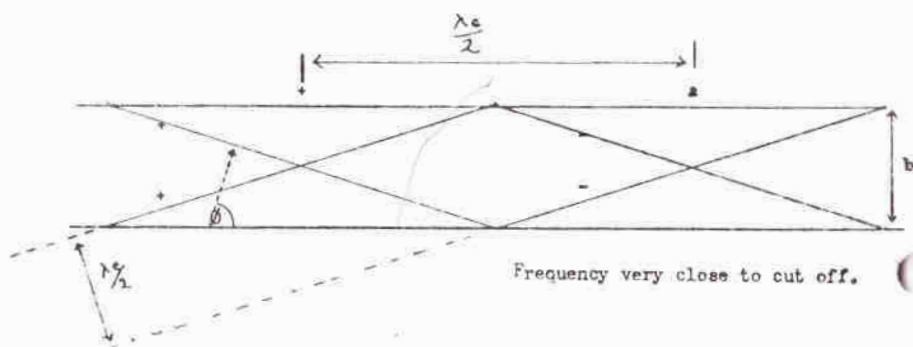
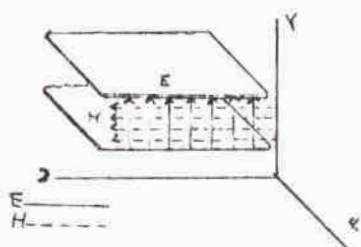
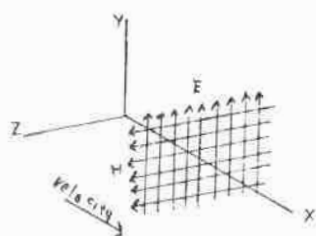
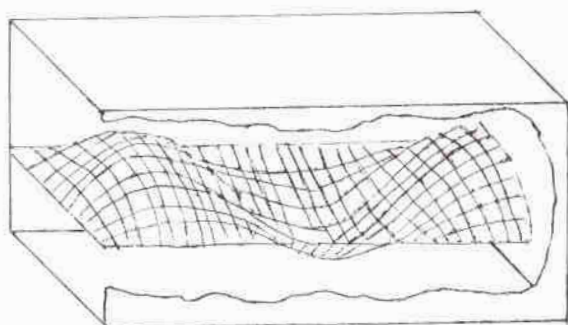
It is obvious that the wave must be formed before it will fit the guide and allow propagation. If the electric lines of flux were zero at the edge of the guide, the wave would exist. Such a wave form is shown below.

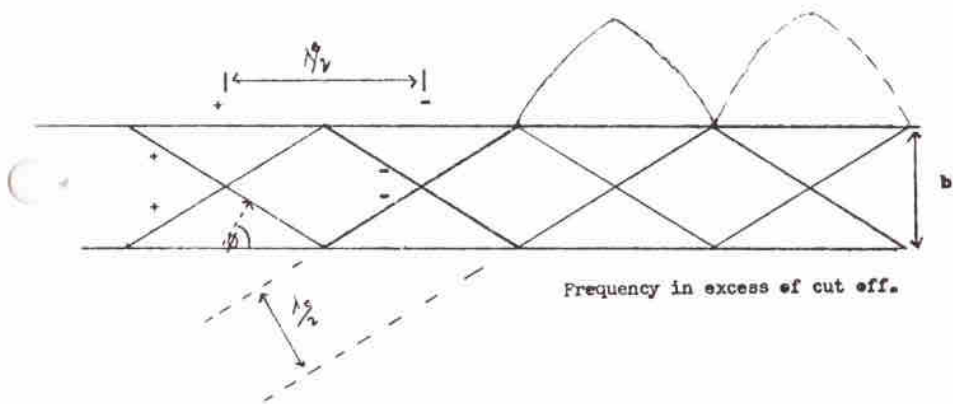


The electric force is along the y axis just as if the top and the bottom of the guide were the two plates of a condenser, only the stress dies to zero at the edge of the guide along the z axis. The magnetic lines of force are closed loops and look like whirlpools inside the tube. In order to have our electric and magnetic lines of force in the positions shown above, the radiating element must be perpendicular to the z axis.

This wave is formed by two separated plane waves; one a reflection of the other; many types of wave forms will be set up within the guide but only the one taking the form shown above will be propagated. To the right of the above diagram is shown the current and voltage distribution along the z axis; it is

apparent that the dimension along the z axis must be at least a half wavelength, this is known as cut-off wavelength.





Solid lines are wave fronts; the dashed line with the point is the direction of propagation.

By looking at the above diagram it can be seen that as the frequency approaches cut off that the angle ϕ will be 90° and the wave front will be parallel to the axis of propagation. As the half wave in space $\lambda_c/2$ approaches the width of the guide, the angle ϕ becomes 90° ; the wave front is parallel to the axis of the guide and the wavelength inside the guide $\lambda/2$ will become infinitely long. This explains why the guide has a cut-off wavelength that is equal to $2b$.

IC KEYER POWER SUPPLY

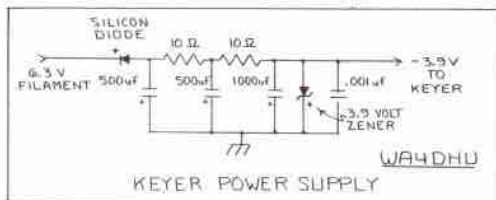
By Dick Blasco, WA4DHU

Here's a little circuit for the gung-ho CW man who wants to build his integrated circuit keyer into his rig. Power is borrowed from a nearby filament line, rectified, filtered some, and regulated with the Zener diode. The .001 uf capacitor helps bypass RF which may foul up the keyer circuits.

This circuit was used to build a "Digi-Key" electronic keyer into a HW-16, and is compact enough so that anything can be placed in vacant spaces under the chassis. This supply has not been tried on audio circuits, and you might watch out for some AC hum if you try it. The filtering shown is quite adequate for digital circuitry,

however, and the keyer works perfectly inside the rig.

If you have any "custom installations," send them along to SKIP, P.O. Box 501, Miami Springs, Florida 33166, and we'll send you five bucks if we print it.



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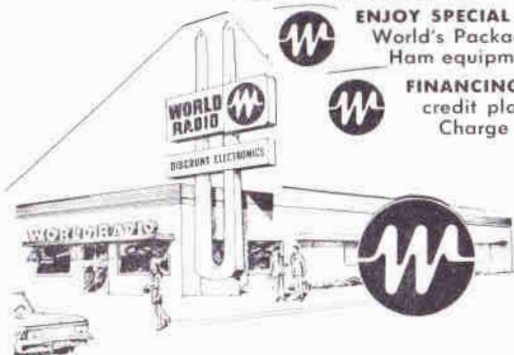
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