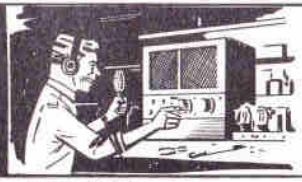

# HAM HUM

Published by
AK-SAR-BEN RADIO CLUB, INC. - Omaha, Nebr. 68101
Post Office Box 291 - Downtown Station

March 1970

Vol. XX
No. 3

## NEXT MEETING

WHEN: Friday – March 13, 1970 – 8:00 P.M. SHARP

WHERE: MAIN POST OFFICE
1124 Pacific Street, Omaha
(Meet in Postmaster's Conference
Room 201)

WHAT: Through Postmaster John P. "Red" Munnelly, we have been invited to tour the Main Post Office where we will see the mail sorting devices, parcel post sorting devices, and such exotic machinery as optical zip code reading devices.

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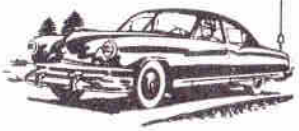
**HAM HUM** is the official organ of the Ak-Sar-Ben Radio Club, Inc., of Omaha, Nebraska, mailed monthly to all members and to others upon request.



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## FEBRUARY MEETING

At our February meeting we were very pleased to gain some additional knowledge of lasers and their use. We saw a very interesting film put out by the Northwestern Bell Telephone Company and presented to us by Don Lukaszewski. Luke ("my friends call me Luke, it's easier to pronounce") gave a demonstration of modulating the beam with music and, of course, with a genuine Northwestern Bell telephone, and gave us considerable background as to the advantages and problems of using the laser beam for communication purposes. We then went into a long question period during which Luke patiently answered all of our various and sundry questions.

Many thanks to Northwestern Bell Telephone Company and to Don Lukaszewski for providing us with such an informative and enjoyable meeting.

A 25-year Membership Certificate was presented to WØYZV and Club Secretary Connie, WAØMYF, commemorated the event by presenting him with a cake which was most beautifully decorated, complete with calls and antennas. Thus, in addition to the usual refreshments, we all enjoyed a piece of chocolate cake.

Your editor appreciates not only the Certificate but the extra thoughtfulness in providing the cake. He had several thoughts at the time: (1) that's almost half a lifetime; (2) he was a member before some of our Club members were born; (3) 25 years and still a technician – he should have attended the code and theory classes; (4) 25 years of association with many wonderful people – Hams.

**********

## NEW MEMBERS ADDITIONS TO ROSTER

Russell A. Minks, WAØVEE
1010 Center Street
Omaha, Nebraska 68108
Phone: 346-3629

Jon Russell Minks, WAØVEV
1010 Center Street
Omaha, Nebraska 68108
Phone: 346-3629

**********

## THE COMPUTER WENT NUTS

By Cecil DeWitt, WØRMB

This great big costly replacement for the human brain sometimes goes crazy. It will call a girl a boy and a boy a girl. It can and has made a person over 108 as an 8-year old.

The computer can design a bridge, a building, a car, but cannot keep track of how much it should pay a person or how much a person should pay it. The amount of $0.00 looks the same as $50.00 and quite often it will hang up on this to the point of suing someone.

When an English mathematician took some 20 years to compute pi ($\pi$) to the 707th decimal place, the computer figured pi to 10,000 decimal places in seconds. (It found that William Shanks had made a mistake.)

It can keep track of airplanes flying around the world, the last place they were, and where they should be at any time requested. But to keep two tickets straight for a trip from New York to Miami, it may route a person by way of Chicago.

The computer does not think to do any of these things. In fact, in the common concept it does not think, it only recalls. It only recalls what it is told to recall and what it recalls has to be put in first. Information from a set of encyclopedia can be stored almost as easily as the instructions for adding 2 plus 2, and takes about the same time to recall.

Anything that is put in can be taken out, but in one way or the other it must be put in. A new computer has no more memory than a blank sheet of paper. As a person would write or type on a sheet of paper, so does the input of a computer write on its memory bank. A computer has to be taught just as much as a baby has to be taught but there is one disadvantage in the fact that as the baby gets older it will accumulate information of its own; the computer cannot.

In a computer the eyes, ears, nose and mouth but most if not all of its information must be fed to it by injection. The ears do not hear, but some computers do have sound inputs which store information as a bit of some form of electricity. This is also true on all other types of inputs.

Well it has no way to think, that is to say that a brown dog and white cat are not two friends but are only two pets. It can compute or add, etc. at the rate of a million times a second (people compute or think at 100th of a second) and the computer's recall is sometimes even faster.

Computers can talk to one another sometimes if they are the same type or use the same logic, that is language. If they speak a different language, then there must be a translation to convert one language to the other just as two people that speak two different languages would need someone to translate for them.

The speed with which a computer can recall and compute is the big tool for people to use. When in a fraction of a second any part or parts of a large city library could be recalled, it is easy to see why it is an up and coming thing.

The COMPUTER has many uses and maybe HAL* isn't two far off, but for now we only get what we (people) give but at a much greater speed.

*Movie "2001."

**********

# UNDERSTANDING TRANSISTORS

by
Jim White
Associate Member, M.E.M.E.

**Lesson Seven**

The three most commonly used circuits are as follows:

COMMON BASE – See Figure 1

1 – Moderate power gain
2 – High voltage gain
3 – Large input/output impedance ratio
4 – Current gain less than One
5 – No phase reversal of input to output signal

COMMON EMITTER – See Figure 2

1 – High power gain
2 – Substantial voltage gain
3 – Moderate input/output impedance ratio
4 – Substantial current gain
5 – 180 degree phase reversal of input to output signal

(This is the most common transistor circuit, capable of high power gain, since both current and voltage gain is realized.)

COMMON COLLECTOR – See Figure 3 (Also called emitter follower)

1 – Power gain lower than preceding type circuits
2 – Voltage gain less than One
3 – High input impedance and low output impedance
4 – Moderate current gain
5 – No phase reversal of input to output signal

This circuit is used primarily as an impedance matching device.

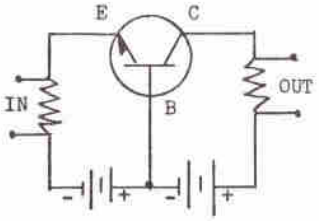


FIG. 1

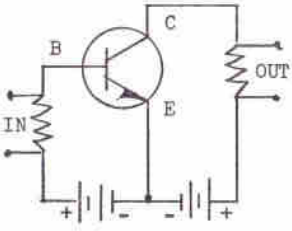


FIG. 2

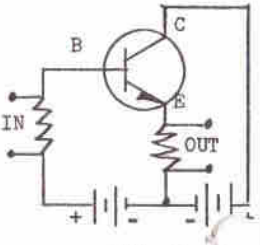


FIG. 3

de Fresno Log

**********

Jan. 11, 1970

Ham Hum:

Hi:

Articles and books have been ılished, and studied about the causes and correction of R.F. interference from the usual and unusual sources, but we do very little to prevent interference until we have to.

Consider the oxidization or corrosion of metals, especially dissimilar metals, and how we twist, clamp, solder them together, bright and clean, but do not protect the joint with any weatherproofing, and soon have a source of interference. Even joints on the ground system should be protected. Poor joints, loose wires, other metal objects moved by the wind, and make-break connection will cause electrostatic discharges, that is, QRN.

Weatherproof all joints with ignition spray, liquid plastic, and electrician's plastic tape. That temporary connection may work so well you will forget to weatherproof it.

Bond all loose wires, metal, and check that TV antenna. Loose joints, oxidization of joints, etc. may be causing more than poor TV reception.

Restudy the book about the causes of interference and do something besides blame the power company, the neighbor's TV. The interference you prevent or clean up may be your own.

Best regards,
Dayton L. Phifer, WØVEA

**********

Running into debt isn't so bad. It's running into the creditors that hurts.

de Ham Monitor

**********

## OFFICIAL BULLETIN NR 260 FROM ARRL HEADQUARTERS NEWINGTON CONN FEB 12 1970 TO ALL RADIO AMATEURS BT

Provided their correct club mailing address is on file, each active ARRL affiliated radio club should receive the January 1970 Club Bulletin during the next few weeks. This issue contains the annual club survey forms which must be completed and returned to ARRL as rapidly as is possible. In cases where recent officer elections have been held, the bulletin may reach a former officer. Thus, if your club is affiliated but has received no bulletin by March 2, it is suggested that the address of the current club secretary be sent to Headquarters with a request for a duplicate club bulletin AR

**********

## MEMBER NEWS

Congratulations to Clifford M. Hultgren on achieving General Class! Please change his call in your roster from WNØTHH to WBQASB. While you are at it, change his address to 12201 North 126 Street, Omaha, Nebraska 68142.

Congratulations also to the following: Joe E. Chastain from WNØVDD to WAØVDD; Joseph I. Eisenberg from WNØWRI to WAØWRI; and Raymond F. Kydney from WNØWOT to WAØWOT. We wish we knew the class license – perhaps they will tell us so we can congratulate them properly in the next issue!

If there are others who have changed calls, please let us know.

**********

## DERIVATION OF THE RESONANT FREQUENCY EQUATION

Marshall Burgh
WB6YIZ

When studying for an amateur license the resonant frequency equation $f_R = \frac{1}{2\pi\sqrt{LC}}$ is often encountered. Since the derivation of this equation is relatively easy but not often explained it will be presented in this article.

As everyone knows, at the resonant frequency of a circuit the inductive reactance

$$X_L = 2\pi f L$$

and the capacitive reactance

$$X_C = \frac{1}{2\pi f C}$$

are equal, hence we have

$$2\pi f L = \frac{1}{2\pi f C}$$

Clearing the fraction yields

$$4\pi^2 f^2 LC = 1$$

Now solving for $f^2$ we have

$$f^2 = \frac{1}{4\pi^2 LC}$$

and taking the square root yields the familiar resonant equation:

$$f_R = \frac{1}{2\pi\sqrt{LC}}$$

de W6SD Carrier
Van Nuys. Cal.

**********

## SILENT KEY

Leonard Jorgensen, WØOZE
Salem, Oregon

(formerly lived in the Dwight-Ceresco, Nebraska area)

**********

## OFFICIAL BULLETIN NR 259 FROM ARRL HEADQUARTERS NEWINGTON CONN FEB 5 1970 TO ALL RADIO AMATEURS BT

Western Union is offering surplus facsimile equipment for distribution among amateurs under the same conditions as are now set up through ARRL for distribution of surplus teletype equipment. Pending determination of the degree of amateur interest, the same clubs now distributing teletype gear will be asked to handle facsimile as it is released by Western Union. Most units are desk type and will need modification prior to use by amateurs but arrangements are being made for publication of details. Currently needed are volunteer clubs in Seattle and Spokane, Washington areas since none is currently authorized. Further inquiries are invited to Frank C. White, W3PYW, who is coordinating the program for ARRL at 2706 Harmon Road, Silver Spring, Maryland 20902 AR

**********

## A CR6CA PUZZLER

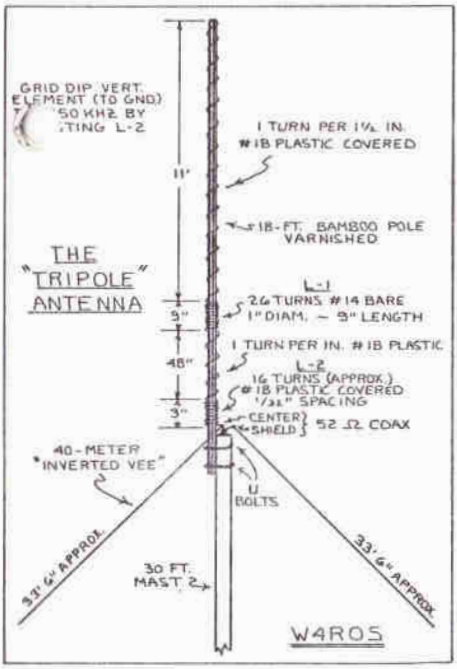
A clock needs 6 seconds to strike 6 o'clock. How long will it take to strike 12 o'clock?

Answer: (don't peek until you've worked it out!) It is the interval between the strikes that require time. In 6 strokes, there are 5 intervals, therefore, each interval is 6/5 seconds long. In 12 strikes, there are 11 intervals. 11 x 1.2 (6.5) = 13.2 seconds. Answer then is 13.2!

de FEARL NEWS, Japan

**********

## THE TRIPOLE ANTENNA




The antenna sketched on the adjacent drawing is a twist on the old inverted-vee antenna, submitted to us by John McFarland, W4ROS of Port Richey. Although at first glance it looks like a ground plane – it isn't.

An 18-foot bamboo pole is wound as shown and connected to the center of the coaxial cable, along with the existing "vee" element. The wire is taped every 18 inches and coated with fiberglass cement. The element is tuned by adjusting coil L-2 to electrical quarter-wavelength on 40 ers.

This third quarter-wave element changes the polarization of the antenna, and lowers the radiation angle. This results in improved reception of mobile stations and a signal increase of several DB on distant signals, according to John.

Ye SKIP ed has heard this antenna on the air, and it really seems to work, so here is a dandy one for you antenna experimenters to play with. 73,

WA4DHU
de FLORIDA SKIP

**********

## OFFICIAL BULLETIN NR 258 FROM ARRL HEADQUARTERS NEWINGTON CONN JAN 29, 1970 TO ALL RADIO AMATEURS BT

Australis Oscar 5 continues to operate successfully on 144.050 and 29.450 MegaHertz. Modulation of the 10 meter signal has been much lower in amplitude than nominal. Amateurs receiving signals from the satellite are urged to send reports to Amsat, Box 27, Washington, D.C. 20044. Special reporting forms are available without charge from this address by sending an addressed stamped envelope. Reception reports will be confirmed. Continue to listen to W1AW bulletins for orbital predictions and further information about Australis Oscar 5 AR

ARRL OVS: Please continue to spread the word on vhf. 73 – W1NJM

**********

## NEWS NOTE

Galaxy Electronics has installed a new phone system. Their new Council Bluffs number is (712) 328-3926.

**********

## HAVE WE FAILED?

**de MHz Times**

I was sitting at my desk the other day laying out my plans for Field Day. In the course of my preparations, I began to search for a way of maintaining contact with my family since there was a possibility that I would have to rush home on short notice, probably in the middle of the night, to assist my XYL in the generation of a new harmonic.

It dawned on me that there really was not instant, direct communications available despite the fact that I would have three acres of thousands of dollars of electronic equipment at my disposal. The best I could do would be to depend on the closest telephone to the FD site located in a farmhouse and hardly possible to being termed instant communications. Here I would be, in the middle of a simulated emergency, if you will, and the best that could be done to get a real emergency message through would be to utilize a device invented long before amateur radio or any formal wireless communications was invented.

Fortunately, the problem is now an academic one, the fourth harmonic having made the scene just hours ago. But unless there had been another ham in the family at home, I would be stuck. I could invest in commercial equipment for another type of wireless service, e.g., business radio or carphone, or I could resort to the Citizens Radio Service, again having to obtain new, additional equipment, but something seems amiss when with all the code practice, the several license examinations, the flexibility of a roomful of state-of-the-art amateur service electronic devices, and all the certificates on the wall, I can't make direct contact with home in this day and age.

Something to think about! 73's – Dick, WA3FOQ.

De Pack Rats, Phila.

(Ed. Note – I couldn't help but realize that the best answer to this situation is in the use of 2 meter FM and of Repeater systems such as the ones in use all over the U.S. currently. Next Field Day I advocate monitoring .94 throughout the *entire time*. As the author above (WA3FOQ) suggests, an extreme emergency could come up and if we go on as in the past, we'll have no means of contacting anyone. JDS, WØWRT)

**********

## OFFICIAL BULLETIN NR 261 FROM ARRL HEADQUARTERS NEWINGTON CONN FEB 19 1970 TO ALL RADIO AMATEURS BT

The Federal Communications Commission has now acted on Docket 18540. Effective March 23, amateur activity under a foreign license will be creditable toward the two year service requirement for eligibility to take the Extra Class license examination. Likewise, such activity will count toward the 25 year service requirement for two letter calls. Further information will appear in April QST AR

**********

Silence is sometimes the best way to express wisdom.

from Ham Monitor

**********

If an antenna radiates energy vertically downward, the energy will be reflected and a current will be induced in the antenna because of the reflected energy. The manner in which this induced current affects the total antenna current depends upon its magnitude and phase with respect to the original current, which in turn depends upon the attenuation at reflection and the height of the antenna above the earth. The resultant variations in total antenna current for a constant input power as a function of height of the antenna above the earth can be regarded as a change in radiation resistance.

Antenna systems are usually designed to have radiation characteristics which vary with the direction from the antenna. A graphical representation of the radiation of an antenna as a function of direction is called the RADIATION PATTERN.

Radiation patterns may be specified in various planes through the center of the antenna, and such planes usually are chosen to include maximum radiation. A pattern in the horizontal plane is called an azimuth pattern, while a vertical-plane pattern is called an elevation pattern.

The BANDWITH of an antenna is defined as a range of frequencies within which its performance in respect to some characteristics conforms to a specified standard. The characteristic in question can be gain, beam width, impedance, or some related quality. If impedance is chosen, for example, the definition has physical meaning only when a standard value is selected. A representative definition of bandwidth is the range of frequencies for which the reflected power from the terminals of the antenna does not exceed one-third of the incident power. The term broadband is also subject to arbitrary definition. An antenna system possessing fairly uniform characteristics over more than a 15% band of frequencies is usually considered to be broadband.

The input or terminal impedance of the antenna depends on the physical configuration of the antenna and the frequency. The total resistive component of this impedance is the sum of the radiation and loss resistances.

Antenna elements separated by not more than several wavelengths will interact and produce mutual coupling. The magnitude and phase angle of spacing between elements, frequency, and orientation of the elements. The real component of the coupling impedance can be either positive or negative, and, in general, the resonant frequency of an antenna will be modified by coupling with another antenna. The coupling effect of a conducting surface on an antenna is the same as if the antenna were coupled to its image antenna, as reflected in the conducting surface.

RECIPROCITY. The properties of an antenna system are, in general, identical for transmission and reception. In particular, the radiation pattern of an antenna is the same regardless of whether the antenna is used for transmission reception. The power transferred between two antennas will be the same regardless of which is used for transmission or reception if the generator and load impedance are conjugates of the transmitting and receiving antenna impedances in each case.

**********

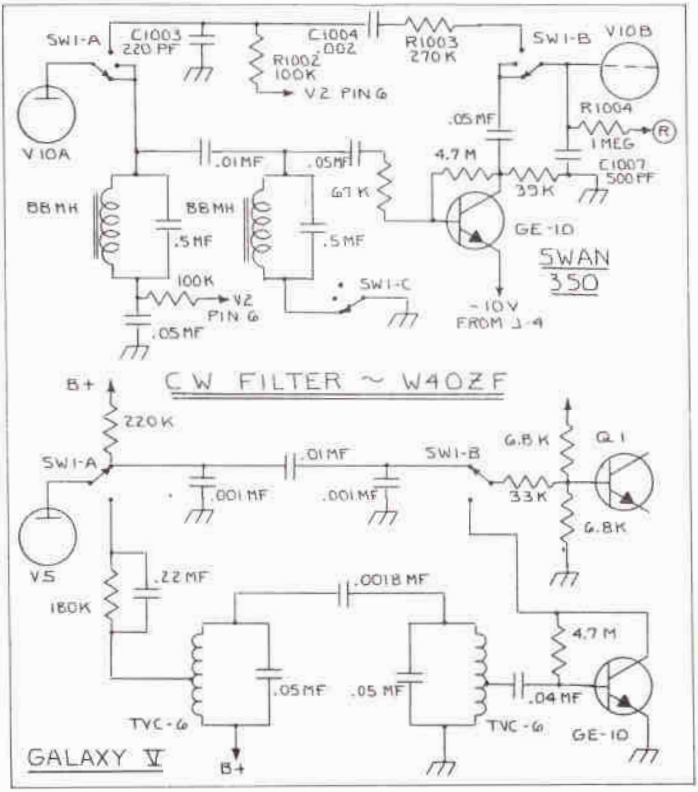
# AN 'INBOARD' AUDIO FILTER

**By Robert Patten W4OZF**
**2311 W. Nassau Drive,**
**Miramar, Florida 33023**

Most of the modern transceivers are great for SSB but have one common fault when it comes to CW operation. They lack selectivity. Many types of audio filters have been designed and built for these transceivers, but these also have one common fault. Most are designed to be used at the speaker terminals or phone jack instead of at the output of the product detector. With the outboard type of filter, signals outside its pass band will still develop AGC voltage and reduce the IF and/or RF gain of the transceiver. By putting the filter at the output of the product detector, the pass band of the AGC detector is also restricted.

"Inboard" filters were designed and built for the Galaxy V and Swan 350 transceivers. Each uses two capacitive coupled LC filters followed common emitter amplifiers to compensate for loss in the filters. Although different coils and capacitors were used for each filter, there is basically no difference between the two.

The filter for the Galaxy V uses two UTC variable inductors with 30% taps. Signal is fed into and taken out at these low impedance taps so that a minimum of loading takes place. With both coils being adjustable, band width and center frequency can each be easily changed.



The filter for the Swan 350 uses two of the popular 88 mh. toroids. Although fixed components are used for this filter, center frequency may be changed by changing the value of both of the .5 mfd, capacitors. Two degrees selectivity are obtainable by switching in either one or both of the LC circuits.

Bandwidths of less than 100 cycles were obtained with each version of this filter. Both filters were built into their respective transceivers. The filter switch for the Galaxy was mounted on the front panel; the switch for the Swan was placed on the rear apron. This type of filter could be easily adapted to any receiver using a product detector and audio derived AGC.

de Florida Skip

**********

## Comment by George Hart, Communications Mgr. for ARRL (W1NJM)

"There are probably thousands of amateurs who stay out of the League because of one thing, for one reason, one incident. What is it? Incentive licensing? DXCC policy? QRM from League-sponsored contests? A sharp letter received from headquarters? Dislike for the current SCM or director? One such item (or even two) is hardly sufficient cause to withdraw or withhold support of all the other things the League does, many of which you must approve. Are you against public service? Don't you want amateurs to be represented before FCC, at international allocations conferences? Are you opposed to the program of international good relations we are working so hard on?

**********

## HINTS & KINKS

**Dick Frederick, K4UGC**

Most of the following don't reach down to 2 meters, but this works fine. I tried it. For two meters and MARS, a surplus BC-906 ($12.00) frequency meter, 143 plus MHz to 149 plus MHz to resonate just add a five picafarad fixed capacitor across the main variable capacitor.

With a Clegg 22er, I feed a known frequency (crystal 7997.2 kc) through a dummy lamp antenna about 6 inches from the BC-906 antenna. You will get a dip about half-scale, the lowest part of dip will be dial number 15.7 on the BC-906.

The next dip with a crystal 8060 kc will be 18.4 on 906 dial.

Then put in a crystal 8150 kc for 146.7 MHz and the frequency meter dial will read 21.9.

Draw a line on the frequency chart (that comes with meter) connecting the 3 frequencies and you have a frequency meter for two meter band.

de Florida Skip

**********

## RECIPE FOR A HAPPY DAY

1 cup friendly words
2 heaping cups of understanding
4 teaspoons time and patience
Pinch of warm personality
Dash of humor

Mix together, keep temperature low, do not boil. Season to taste with spice of life. Serve in individual molds.

from: "YL INT SSB'ERS Newsletter," Miami, FL

**********

## Reflected and Directed

George H. Goldstone, W8MGQ
1010 Burnham Road
Bloomfield Hills, MI 48013

## FCC TAKES A SECOND LOOK

When FCC adopted its initial order in Docket 15928, setting aside certain frequencies for Extra and Advanced Class amateurs, effective on November 22, 1968, it could have been said that the first shoe dropped – with the other shoe scheduled to drop a year later. To the Commission's credit, it has "kept itself loose," in present day parlance – and after observing for the better part of 10 months what was going on, modified its original order slightly.

On September 24, FCC adopted an order modifying the schedule of frequency allocations to go into effect November 22, 1969. All Extra Class CW segments will remain at 25 kc. in width. But other phone band restrictions, which enlarge the areas restricted to Extra *and Advanced Class* will go into effect.

It seemed pretty clear that the Extra Class licensees were not filling the Extra Class CW segments to overflowing. Not that the Extra Class segments were vacant; but except in contests, there seemed to be enough room for all the Extra Class licensees who preferred a key to a mike. Especially on 80 and 15! Considering that CW is a narrow band operation – where a truly selective receiver, and stability in both the receiver and the incoming signal permit more stations in a 25 kc. segment than could be accommodated on any 'phone mode – the 25 kc. reserved for Extra Class CW at the bottom of 80, 40, 20, and 15 should suffice, at least for another year. We assume FCC will periodically re-evaluate the incentive requirements, as is now being done.

How about the incentive for 'phone men to get an Extra Class license? There wasn't too much in the first place – and there isn't any more now. True, the bottom of 75 meter 'phone is a great place to operate, and you'll talk to more VE's there than you ever did before. But there are no Extra Class frequencies on 40 or 20 'phone – and the 20 meter 'phone band is the logical place to plant an "incentive," if incentive is needed.

But the incentive to get the Advanced Class license is now much greater! The Advanced Class licensee, just like the Extra Class ticket holder, will have 100 kc. (3800-3900) on 75; 50 kc. (7200-7250) on 40; and 75 kc. (14200-14275) on 20, with no General or Conditional licensees around. Ah paradise it were now!

This really is getting things back on the basis they had prior to 1952, or more accurately, closer to the old incentive plan. But tell us, just how is FCC going to get Advanced Class licensees, many of whom have held that ticket for 35 years, to move up to the Extra Class? If an Advanced Class licensee doesn't care a hoot about CW operation on the bottom of the CW segments – and many Advanced Class licensees don't care to operate CW at all – they are NEVER going to make a move toward the highest grade license. To avoid this stagnation, W3JM (Capt. Paul Lee, ex-W3JHR and other calls), has suggested that Extra Class licensees be given another 25 kc. for phone on each band just *below* the present dividing line between CW and phone:

E.g., 3775-3825; 7175-7225; and 14175-14200. He would broaden this to an exclusive 75 kc. on 15.

We think there is only one really meaningful incentive to get the Advanced Class licensees into the Extra Class ranks; namely, a special Extra Class 'phone segment on 20 meters. The logical place is exactly where W3JM suggests. Until there are some DX band privileges going with an Extra Class ticket, the only hams to move up will be the CW DX chasers, most of whom we suspect have already gone Extra. The Advanced Class will greatly increase, but the Extra Class is going to stagnate.

W8AP
de Auto-Call

**********

## REPEATER CONTRIBUTIONS

Additional cash contributions toward the operating expense of the repeater will be gratefully accepted. Our thanks to Club member WAØSOW for his recent contribution to the fund.

**********

## FOR SALE

Waters-COMPREAMP Model 359 – $15.00.

Fred Fischer, WØEGP
Phone: 391-4193

**********

Only one thing matters – that wherever we go and however we go, we hear the music of life . . .

Theodor Fontane
from: "YL Int SSB'ERS Newsletter,"
Miami, FL

**********

## THE FOUR–WAY TEST

Of the things we think, say, or do

1. Is it the TRUTH?
2. Is it FAIR to all concerned?
3. Will it build GOODWILL and BETTER FRIENDSHIP?
4. Will it be BENEFICIAL to all concerned?

Apply the Four-way Test in business and you will find the habit carrying over into your home, your social and community life. You become a better parent, a better friend, and a better citizen!

Rotary International

**********

## INCREMENTAL TUNING FOR THE HEATH HW-100 TRANSCEIVER

**Ambrose Barry, W4GHV***

Many excellent articles have been written on varicap, or varactor diode, theory. Basically, the varicap is a voltage-controlled variable capacitor. Its most distinct advantage is its ability to be incorporated into critical resonant circuits and then controlled "remotely" by a variable DC voltage without a loss of frequency stability. A regulated voltage must be used of course.

By using a varicap in a transceiver VFO the convenience of "incremental" tuning can be added at a very nominal cost. This allows reception on frequencies of approximately – 3 KHz of the transmit frequency. The transmit frequency is not altered.

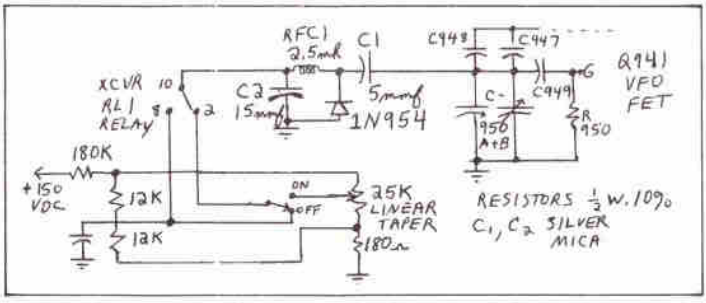
In this particular case, the transceiver modified was a Heath HW-100 which has a 5 to 5.5 MHz VFO. The schematic used is similar to that used to modify a SWAN 240 and can be used for almost any VFO. The amount of frequency deviation can be varied by a choice of C1 since it is in series with the varicap. The varicap varies in capacitance between 14 mmf and 88 mmf when the voltage applied to it is varied from 25 to 0.1 VDC. For a larger frequency deviation a larger value is chosen for C1 and vice versa. In my case the 5 mmf value resulted in a deviation of about – 3 KHz or just enough to let me listen to three stations 'at the same time' during crowded band conditions.

**Construction:**

RFC1, C1, C2 and the varicap can be mounted on a small piece of perforated board and the board mounted on the VFO variable capacitor (C950 A&B). A flat head screw through the hole in the back of C950 can be used if care is taken to avoid contact with the capacitor rotors. The perf board connections should be carefully insulated also. The 'output' of the perf board is connected to C950 A&B using short leads. To compensate for the added capacitance, C947 or C948 is changed from 56 mmf NPO to 47 mmf NOP. This allows proper calibration of the VFO. The wire to the XCVR relay can be brought out of the VFO through one of the phono jack mounting hole (after removal of the screw). The remaining parts, except for the switch and potentiometer can be mounted on a small perf board and installed on the RF cage using standoff spacers. The 150 VDC can be obtained from the terminal on the back of the VFO. The switch can be mounted to the left of the S meter and the potentiometer to the right. Additional matching knobs are available from Heath Company and the use of a miniature toggle switch does not distract from a neat appearance. The task is completed after the VFO has been recalibrated. Incidentally, the only place I could find the varicap was from Newark Electronic Corporation, Chicago, Illinois.

*"Do-it-yourself Increment Tuning," Lou Dezettel, CQ Magazine, Oct. 1967.

Ambrose Barry, W4GHV/A4GHV
de Florida Skip

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## TWO METER FM OPERATION

**Adapted from Suffolk County Radio Club QTC**

When a ham is just getting started on 2-meter FM, he discovers that different operating practices are used. However, there is a strong tendency to slip back into the old phrases and wordy transmissions which are still used in 2-meter AM operation. It is hard to remember that 146.82 MHz and 146.94 MHz are monitored channels because just one station (or no station) may be heard in operation. The apparent lack of activity does not mean that the channel is wide open and available for tests or long transmissions. One must remember that the whole local 2-meter FM world is listening when he hits that microphone button. Operating courtesy is natural and necessary on 2-meter FM! One must follow a few self-imposed rules (within the FCC rules) to provide operating room for everyone, including:

(1) *Listen before transmitting.* Even if you just hear a distant base station working a mobile, there is a chance that you will clobber the mobile's signal at that base.

(2) *Keep transmission short.* Avoid long monologues and useless phrases. A few seconds should suffice for each transmission in this push-to-talk operation.

(3) *Identification.* Give the call letters of your station and the station(s) you are working just at the start of the first transmission and at the end of the last one. As long as each intervening transmission is less than 3 minutes long, one just has to identify the stations every 10 minutes during a series of these short transmissions.

(4) *Calling.* Don't call CQ; a simple statement that "W6LS is listening 94" or "W6LS 10-8 94" suffices. Anyone who wants to speak with you will respond. Remember that many are monitoring but most won't want to become involved in any QSO because they are listening while they are busy doing other work.

(5) *Breaking in.* Do not yell "Break-Break." If it is necessary to bust in on a QSO, use the name of the person you want while he is listening. (FM operators have names, not handles). Simply call "Tom" if you want to tell him something. If Tom hears you call his name, he will say "go ahead, breaker." Then, you give his call followed by yours, but nothing else. Wait for his further acknowledgement before transmitting anything else.

(6) *Testing.* Do not test on a busy channel such as 146.82 or 146.94 MHz. Test into a dummy-load or a less-busy channel. If you must test using your antenna, particularly avoid 146.34 MHz, because you never know what you may be keying up.

(7) *Private channel.* If any group with a special interest (such as a club net) wants to, it is good to pick a "private channel," using equipment which can operate on two (or more) channels. If desired, they can call on 94 and shift to their "private channel" to handle traffic. It is necessary to check with all other FM groups in the area before selecting the frequency of the "private channel" and to do some careful listening and operating on the desired frequency before a final

decision is made to purchase crystals for the group.

(8) *Uses.* FM has been fun and (more important) it has served as a very useful tool for many individuals, teams, and special groups. FM operation seems a natural for our short-range club communications during Hamfests, Prizefests, Field Days, Parade control exercises, etc.

(9) *Summary.* It appears that FM Magazine is going to commercial FM. Ken Sessions (K6MVH) has left FM Magazine and is now Managing Editor for 73 Magazine. This little magazine did a good job of getting several W6LS members interested in FM. We've sold our 2-meter Poly-Comm and we are looking over the available 2-meter FM equipment. If there's enough interest, we can establish a very useful 2-meter FM net on our private channel. Are you interested?

de LERC, Burbank, Cal.

Ed Note: Couldn't agree more with item 2; keep transmissions brief! — WØWRT.

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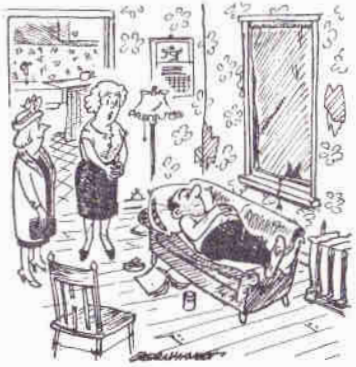

**"What has held Fred back more than anything is the law of gravity."**

## I RESPECTFULLY REQUEST...

In Manchester, England, a bricklayer, seeking time off from his job, wrote the following letter to his employer, a construction firm:

. . . When I got to the building, I found that the storm had knocked some bricks off the top. So I rigged a pulley and hoisted up a couple barrels of bricks. After I had finished, there were a lot of bricks left over, so I hoisted the barrel back up again and secured the line at the bottom. Then I went up and filled the barrel with the extra bricks; then I went down to the bottom and cast off the line.

. . . Unfortunately, the barrel of bricks was heavier than I was and before I knew what was happening, the barrel started down, jerking me off the ground. I decided to hang on, and half way up, I met the barrel coming down, and received a severe blow on the shoulder. I then continued to the top, banging my head against the beam and getting my fingers jammed in the pulley.

. . . When the barrel hit the ground, it burst out its bottom, spilling out the bricks. I was now heavier than the barrel and started down again at high speed. Halfway down, I met the barrel coming up and received severe injuries to my shins. When I hit the ground, I landed on the bricks, getting several painful cuts from the sharp edges.

. . . At this point, I must have lost my presence of mind because I let go of the line. The barrel then came down, giving me another heavy blow on the head, which put me in the hospital. I respectfully request sick leave!

de FEARL NEWS, Japan

**********

## From the Editor's Desk

EDITOR, AUTO-CALL
R. V. ANDERSON, KØNL
528 MONTANA AVE.
HOLTON, KS 66436

This Cuban refugee, Jose by name, was telling his friends about how he was honored on his trip to the football game. He says, "Shortly after I arrived, the band started to play and everybody started to sing, 'Hosé can you see . . . . . Lotta fun in this country. Marijuana grows wild here – in great big batches. So many foreigners are harvesting it in the "dead of night." And the law is catching lots of them. But the joke is on the harvesters – this stuff might as well be potatoes as far as potency is concerned (so say the newspapers – I never tried it!) So they go to all that trouble risking arrest for a worthless product. . . . Wife to husband: "I'll meet you halfway. I'll admit I'm wrong if you will admit I'm right." . . . The Foundation Hamfest is coming up. In this country a big hamfest will have an attendance of about 300, and if it goes higher than that, it's really a big one!! . . . This fellow picked up a derelict on the street and invited him into the nearest bar. He said to the bartender, "Two martinis please." The bum spoke up, "I'll have the same." . . . All the swap papers are full of Field Day news. Some did good, some did bad, some mediocre. But at least it appears that all had fun, and that's part of the whole thing. . . . Mother: "Wash your arms!" Junior: "For long or short sleeves." . . . Someone who doesn't know how to sign his name sends us a blurb entitled "The Saga of the Great VK2BFI DX Expedition" – said sheet alleges that someone collected a considerable sum of money for a DXpedition, then decided not to go. He'd lost his job and used the money to pay his bills. We are not hep to these expeditions and all that, but it does seem that a lot of money changes hands for which someone doesn't get value received. For this reason the Auto-Call has always held off publishing requests for money for any purpose; we can name at least a dozen that didn't turn out right. For this same reason we did not publish the "million dollar suit" information until it was firmly established that it was on the up and up. We don't want to be a party to any con game. . . . Our Reflected and Directed column brought forth a thought on this; the remarks were based on a noted DX'er who admitted he wasn't where he said he was. Now then, says R & D, is not this fraud through the United States mail? One of these days someone is going to get mad enough to find out. . . . "What did you get your wife for her birthday?" "A new set of dinner plates; upper and lower." . . . This month ye ed journeyed to Kansas City and got a blue piece of paper called a Commercial Second ticket. Don't ask us what we'll do with it, 'cause we're not going into any business. But it's a bit of personal satisfaction and I can work on my friend's two way radios – after spending a thousand dollars for equipment!! . . . Didja hear about the feller who was lucky on his wedding day. He got a wife and a cigarette lighter and they both work. . . . We're somewhat short on club columns this month – reason unknown. Maybe they'll be back next month. . . . "Your

hair needs cutting badly," remarked the barber. "It does not!! It needs cutting nicely; you cut it badly the last time I was in here." . . . Note Mac, W3EPC, is running for Director of the Atlantic Division. Ye Ed has been re-nominated along with the incumbent Director again this year; haven't heard of any opposition up to date. . . . Kids don't run away from home anymore; if they can't use the car to run off, they stay home. . . . Do we have any Rotarians in our Auto-Call gang? Maybe we could get a contact sometime; lemmeno. . . . Short Auto-Call this issue, very little club news. 73 Andy

de Auto-Call

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## SHOULD I OR SHOULDN'T I?

**By Don Klobe, WA4KJV**

Did you know that almost every telephone subscriber line in the U.S. now has a nominal impedance of 900 ohms? Did you know that the power of the signal from your phone patch must not exceed 12 db below 1 mw averaged over any three second interval at the central office? Did you know that the power in the band 3395 to 4005 Hz must be 18 db below the limit (that is, 18 db below the 12 db below 1 mw at central)? Do you know the line loss from your QTH to the central office? Did you know that not knowing the answers to these questions could cost you $10 each time the telephone company traces a problem to your phone patch?

As you can see, there is a little more involved to connecting a phone patch to your equipment than you had imagined. The telephone company has long been opposed to hams connecting into their equipment and you can well see why. A ham not familiar with telephone equipment specs could cause a lot of trouble at central office. Such things can occur as a too high receiver output causing cross talk, band of frequencies coming thru and triggering auto tone systems, etc. Familiarity with phone company standards and tariffs could save you a lot of trouble with the phone company.

I suggest that all hams who are considering hooking up a phone patch read the following article: To Patch Or Not To Patch, May 1969, 73 Magazine; Phone Patching — Legitimately, March 1969 QST. (W4NLX LOG) (FROM MARS SCOPE)

de Florida Skip

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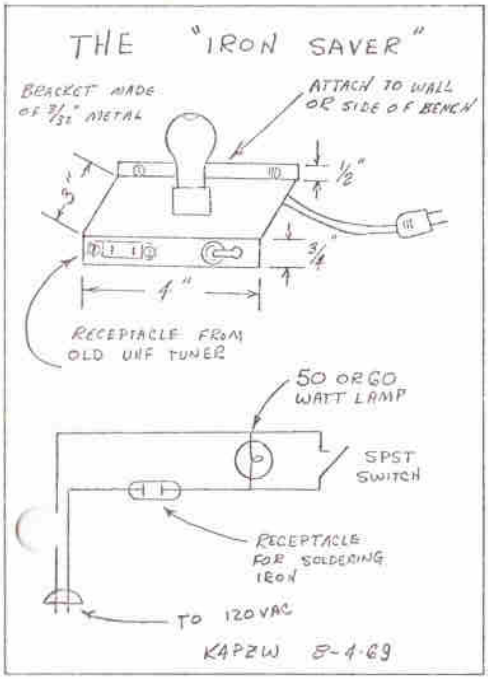
## TRY THIS 'IRON-SAVER'

de K4PZW

Although this little gadget has been used at this station for many years, visitors still show interest in it. Much time is spent on construction projects here and the soldering iron is plugged in ready to use many hours at a time.

This "saver" can be used with any iron, but my favorite for economy, size and endurance is made by Unger. Their handle equipped with a 47½ watt, silver-plated, chisel tip is standard here. This iron provides enough heat for all but the very largest jobs and eliminates those "cold" joints. BUT, when plugged in and idle for long periods, scale will build up on the tip and over long periods of time the iron clad will separate from the tip. This is where the "Iron-Saver" comes in. It is simply a suitable light bulb wired in series with the iron and a switch to cut out the bulb for heavier tasks. With the series bulb in the circuit, the iron may remain heated for days without oxidation scale building up and is ready for instant use.




With the 47½ watt tip I use a 50 to 60 watt bulb, with a lesser wattage tip, use a bulb with a wattage rating approximately the same as the tip.

If you are a constructor, and if you try the "saver," I doubt that you will ever use a gun or a large clumsy iron again.

Robert J. Murphy
7103 Wendy Circle
Jacksonville, Florida 32211

de Florida Skip

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The only exercise some people get is jumping to conclusions, running down friends, sidestepping responsibility and pushing their luck.

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de Signal Report, Fla.

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