



# HAM HUM

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



Vol. XX  
No. 2

February 1970

## NEXT MEETING

- WHEN: Friday – February 13, 1970 – 8:00 P.M.
- WHERE: Club Room – RED CROSS CHAPTER  
HOUSE  
432 South 39th Street, Omaha
- PROGRAM: LASERS UNLIMITED by Don Lukaszewski  
of Northwestern Bell Telephone Company

(Don't miss this one! Here is your chance to see a demonstration and to get your questions answered.)

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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.



Next copy deadline: February 27th

## PRESIDENT'S CORNER

Sorry for not writing something for last month's copy of Ham Hum. Will try to do better.

Our first Club meeting for 1970 was a tour of the SAC Underground. It was a real success for those who were able to attend. After the tour we met at Marchio's Italian Cafe for a meal made for a king plus entertainment.

Thanks to our Program Chairman, Dick Eilers, WØYZV, for a job well done.

Our next meeting will be at the Red Cross Chapter House. Hope to see you at this meeting.

Club dues are due. Please get them in because our Treasurer, Hank, WAØQLE, doesn't seem to have anything to do with all his spare time.

73s

Harold, WAØDGA

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## NEWS NOTES

We are happy to report that Royal M. Enders, KØLYO, is now recuperating at home after his recent surgery. Our best wishes to him for a very speedy recovery.

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Published by  
AK-SAR-BEN RADIO CLUB, INC.  
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## FUTURE PROGRAMS

At the February meeting you will learn about Lasers Unlimited, and now that the weather has warmed up a few degrees, no doubt you are beginning to think of spring-cleaning your shack. We are starting to plan an AUCTION for the APRIL meeting.

We are contemplating the annual steak fry in September, the Past Presidents' night in November, and the annual Christmas Party in December.

We have a tentative schedule for the March program, but not confirmed enough to announce as yet.

If you have any suggestions for programs or activities you would like to see, let us know. Perhaps we can arrange it.

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## IT PAYS TO ADVERTISE!

In the January issue of HAM HUM we mentioned we were trying to obtain the call of one of the Past Presidents of the Club. Our thanks to Bob Atkeisson, WØAT, for telling us that the present call of Dr. Leon M. Becker is W6AID. We agree with Bob, some call for a doctor!

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# UNITED STATES AIR FORCE

## HQ STRATEGIC AIR COMMAND

1.

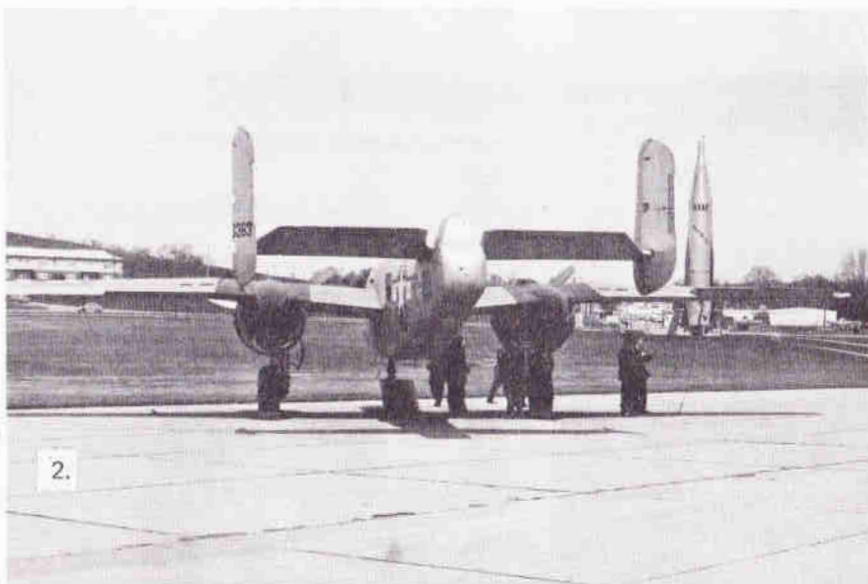
### SAC UNDERGROUND TOUR (picture 1)

The Ak-Sar-Ben Radio Club, Inc. was privileged to tour the United States Headquarters Strategic Air Command at Offutt (picture 2) on Friday, January 9th, instead of the regular monthly meeting.

Our group was amazed at the instantaneous communication control throughout the world which was

exerted during the briefing. Tight security requirements were maintained and in the interest of national security our remarks here have to be limited.

Our tour was limited to 40 people; thus some of our members who had previously been to the Underground volunteered to relinquish their place to other members who had not had an



2.

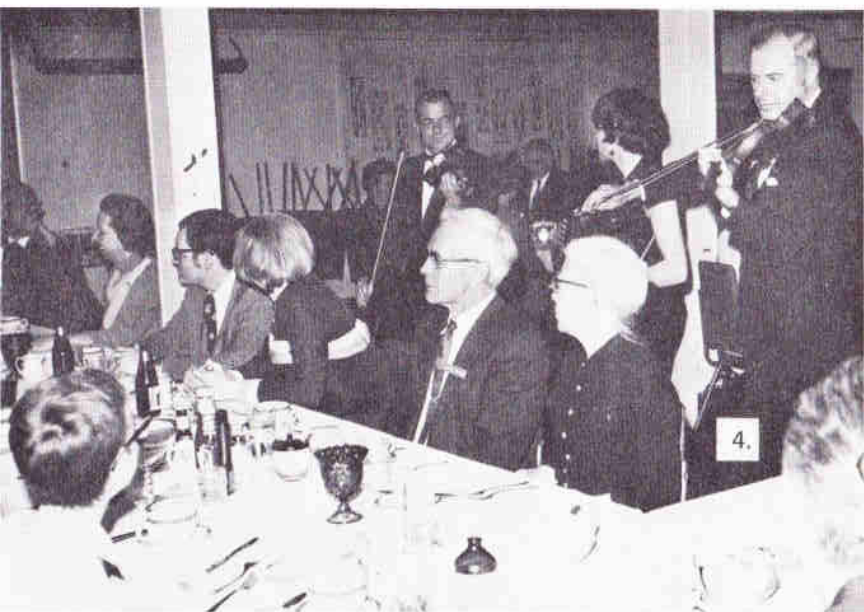


opportunity to take part in a SAC tour. These people, however, did join us for dinner and on behalf of the members who did get to go on the tour as a result, our thanks to them.

We are indebted to our Program Chairman, Dick Eilers, WØYZV, for

coordinating all the arrangements. The tour lasted about two hours and we then proceeded to Marchio's Italian Cafe for dinner and refreshments. Pictures 3, 4, 5, and 6 show our group being served and entertained.

—Erv Heinz, WAØEEM





(Ed Note: This dinner meeting represented a departure from the Club's usual format. A number of members mentioned to the Program Chairman their appreciation of this type meeting and suggested an occasional dinner

meeting be a regular part of our year's programming. What are your thoughts? Jot them down on the card enclosed so that we can inform the Program Committee.)

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Omaha, Nb.  
22 January 1970

Congratulations to Club members Dr. Ed Holyoke, WAØVSR, who recently passed the Advanced Class exam and to Ray Kydney, WAØWOT, who passed his General at the same time.

There possibly were others who have upgraded during the FCC Inspector's visit, so let us know who you are. For those who didn't make it, we are continuing our current series of code and theory classes on each Tuesday evening at 1930. Remember, you will never *find* time for anything. You will have to *make* time in order to practice the code and to study the theory for the exams. Good luck, too!

Lots of older AM gear on sale judging from ads in the paper as well as in Ham Hum. Seems this stuff is getting to be a drug on the market. One thing worth noting though... some of these old, big Class C amplifiers certainly would be useful for RTTY power amplifiers (e.g. Globe King, etc.).

In view of the fact that the newer FCC exams are stressing transistor circuitry, we will endeavor to keep including some amount of transistorized diagrams in Ham Hum as we go along.

Speaking for all of the instructors who are involved in the Club's code and theory program, I am sure that we cannot help but be amazed at the enthusiasm this program has received. Believe me, when the weather is sub-zero, it takes some real interest for this group to be there.

A pretty good turnout at the SAC tour and dinner at Marchio's restaur-

ant and it's kind of a disappointment that more of the fellows couldn't bring along the XYL's. I know from things I've heard many times over that plenty of ham wives are kind of sour on Amateur Radio. Taking the XYL along on a program like this will help dispel the notion that hamming is nothing but just yakking over the air all the time. Your comments are invited.

John Snyder, WØWRT  
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## OFFICIAL BULLETIN NR 256 FROM ARRL HEADQUARTERS NEWINGTON CONN JAN 22 1970 TO ALL RADIO AMATEURS BT

FCC has now taken final action in docket 18508. Following up an ARRL proposal of some years back, the two meter cw subband will change from 147.9 through 148.0 MegaHertz to 144.0 through 144.1 MegaHertz. Additionally, the F-1 subband on ten meters which is currently 29.0 through 29.7 MegaHertz will change to 28.0 through 28.5 MegaHertz. These changes become effective March 2. Details will appear in March QST AR

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## FOR SALE

Heath SB310 receiver 1 Khz readout  
Deluxe SSB filter and AM filter  
80-40-20-15 and SW broadcast wired  
by EE . . . \$220.00

Dave Messing, KØRWM  
(Toll) 296-4249  
Plattsmouth, Nebr.  
612 Chicago Avenue  
\*\*\*\*\*

## WHAT TO DO ABOUT ELECTRICAL SHOCK

By R. Willis

Every Ham, his wife, children, neighbors, and anyone who visits his shack even occasionally, should know what to do in the event anyone suffers from ELECTRICAL SHOCK! I have taken the following information from the L.A. City Textbook, *Modern Health*:

Electrical Shock causes stoppage of breathing. The Electrical Shock occurs when electricity passes through the body. It may paralyze the breathing center. Do not touch the victim if he is in contact with HIGH VOLTAGE. Turn off the current if you can find the switch. If not, then grasp the electric cord where it is not bare or wet and pull it from the socket. If you cannot do either, try to remove the victim from contact with the wire by taking a dry cloth, encircling the wire with it and pulling the wire from the victim, or use a wooden pole. NEVER CUT THE WIRE! A less safe method is to use cloth to pull the victim from the wire, being careful not to touch him directly until contact with the wire is broken. The wire may cling to him, and you may have to pull him some distance to break the contact. CALL FOR PROFESSIONAL HELP AS SOON AS POSSIBLE. THIS IS ASPHYXIATION, HE MAY NOT BE BREATHING! His breathing must be begun as soon as he is cleared from the wire; if his breathing is slow and shallow and finally reduced to twitches, muscles jerk and pupils of the eye dilate, skin turns blue, this is lack of oxygen in the blood. The heart continues beating even after respira-

tion has ceased. The length of time the victim can live depends on the amount of oxygen he had in his blood and the amount of exertion during the asphyxiation.

In past years several methods of artificial respiration have been described. All of these are of value and have been used to save lives. The most recent method, however, known as the Mouth to Mouth method, has many advantages and has to a great extent replaced all of the older methods. It has the advantage of being direct and easy to administer. Mouth to Mouth artificial respiration provides the pressure to inflate the victim's lungs immediately. This is of great importance, since time is a vital factor. In addition the operator has more control over the pressure and timing of his efforts. He can control the volume of air needed to inflate the victim's lungs and observe the movement of exhaled air. If you do not have an instruction book on this method of artificial respiration you should contact your local Red Cross, Park Director, Doctor, or Library and have every member of your family familiarize himself with it.

de W6SD Carrier

\*\*\*\*\*

## WANTED TO BUY

Used Collins 75S3, 32S3, and station console with patch, or any other gear with provisions for plug-in crystal operation suitable for use on 19.950 Mhz MARS frequency.

Capt. Don McMinds, WAØLGS  
Office: SAC HQ. 294-5381  
Home: 331-4607

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## REPEATER REPORT

I was looking for a diagram the other night and accidentally ran across the schematic that was drawn so neatly by Dave, whose call letters slip my mind, but who works at Radio Equipment Company, and I remembered I said I would send the schematic and an explanation of how it worked to Ham Hum. Well there were probably easier ways to do it with less relays, but with the amount of time and money I had, this is what I came up with.

When a closure of the squelch relay puts a short across the 146.34 squelch relay terminals, this goes through the first set of contacts of R1 through the 4 Ohm resistor and discharges C1 which turns on T1 and T2 which closes R1. C1 takes 3 minutes to charge to the point where R1 opens again, which is where the 3 minute time is arrived from. When R1 closes, a second set of contacts close which changes the voltage on one side of R4 from 24 volts to ground, and C3 has been charged while in ready state. When the ground is applied to the other side of R4, C3 discharges and pulses this relay for about 1 second, which closes relay R2. When R2 closes, three things happen: (1) the light that operates the photocell comes on; (2) the motor turns on; and (3) the transmitter and tape recorder turn on. There is a switch on the code wheel that keeps R2 closed until the wheel makes one revolution.

When R1 opens at the end of 3 minutes, one side of R4 goes from ground to 24 volts, and C3 which has been discharged, takes a charge

through R4 which starts the identifying process over again. If a signal is given to the system while the unit is identifying, R1 will close and R4 pulse; but R2 is already closed and motor running waiting for the end of the code wheel and the system will only identify once. If the system is given a pulse immediately after the code wheel stops, it will identify again. This is why occasionally you hear it identify twice in a row; if you hear it identifying and you know it is in its second identification, key your mike for one second and it will not identify again for three minutes.

The time out relay has a SCR which gets a pulse through a NE51 bulb when the 8MFD condenser reaches the firing point of the NE51, which locks the time out relay in, which opens the key line to the transmitter. If you notice, the ground side of the SCR goes to the squelch relay contacts so this SCR will stay in the on stage until the squelch relay opens, which resets the time out relay.

The photocell which gets light pulses from the code wheel turns the pulser transistor on and off, but the output is rounded or sloppy as far as CW signal goes, so its output goes into a shaper transistor which squares off the pulses and can be adjusted by Pot 1. This pulsed voltage is fed into a common audio oscillator which output goes to the transmitter.

The latching relay which is controlled by a tone decoder from the 440 receiver turns the filaments on and off, as well as opening the transmitter keying circuit. When there





If the tape recorder runs out of tape it sends a voltage constantly until it is reset, and this voltage is sent to R6, tape run out relay, which opens the circuit to the transmitter keying.

By the way I almost forgot, the GE509 diode in the time out circuit is used to discharge the 8MFD condensor to prepare it for the next time circuit. As the transmitter is turned off by the time out timer or between transmissions, the voltage falls to zero and discharges the 8MFD condensor. But when the voltage goes back on, the diode will not conduct and the 8MFD condensor takes a slow charge through the two resistors and the voltage regulator tube which is used to prevent any voltage changes in the transmitter from affecting the time of the time out circuit.

This explanation gets rather complicated, but sit down for a few minutes and follow through the diagram. It is very interesting.

By the way, the new receiver site is now in operation at the Old Methodist Hospital and it is working very well, as you can talk into it with a handie-talkie anywhere in downtown Omaha or Council Bluffs.

Jim Droege, WØYCP  
Your Repeater Chairman  
\*\*\*\*\*

## FOR SALE

Beautiful SWAN 350 with 117 XC power supply. Just back from complete factory reconditioning and new finals. \$300.00.

Jim Belt, WAØJH  
1006 N. 76 St.  
397-5720  
\*\*\*\*\*

## HINTS FOR HOME HUNTERS

By Howard Shepard, W6QJW

Before buying or leasing any property the Ham should investigate to be sure that his station operation and antenna installation will be permissible. No documents whatsoever should be signed without an appropriate clause which would permit the return of the amateur's deposit and his release from any obligation, if any, regulations, restrictions whether private or by public ordinance which would interfere with his station operation.

John Dundas, WA6ZCO, and I act as Co-Counsel for the Los Angeles Council of Radio Clubs and as such are always happy to answer any question from any Ham regarding specific wording for his situation. Our services have been and always will be gratuitous as our contribution to Ham Radio.

I might also add that before an amateur seeks to erect any substantial antenna, that he should check his deed restrictions that appear in the policy of title insurance that he received upon purchase of his property and should also check local building and safety ordinances. Time and time again Hams proceed to put up antennas without regard to these items only to find that they are subjected to great difficulties which could have been avoided by checking these matters in advance.

From Didi-dumdum-d.  
\*\*\*\*\*

December 30, 1969

Ham Hum

Ak-Sar-Ben Radio Club, Inc.

Omaha, Nebr. 68101

i:

The name of the game is "FORM."

Every instructor, coach, knows that "good form," once established, is the foundation for whatever success the student will achieve. Good form and practice and re-evaluation of form to correct any deviations results in instinctive response toward achieving the goal.

Bad form, once established, is difficult to overcome, so learn good form in the beginning, whether it is position in penmanship, archery, dancing, swimming, or Ham Radio.

ARRL and others do provide instructions on developing good form, but few concentrate on that phase, not realizing that if you develop good form, good performance is a sequence.

Test your own form. Tape a CW QSO, wait a week and play it back. Can you copy your own fist? True enough you can make out what the other guy sent, but how about your own? Now, tape some practice CW and listen to a play-back; you will notice some room for improvement.

Tape a fone QSO, and the next time you are in that group, tape again. Now how about that? Did you say anything new, different, interesting? Or is it the same old gripes? How about procedure, identifying, signing?

There are forms for layout when building. Have you studied these forms, and the reasons why? Or do you just stick it together and wonder what happened?

How about my own form? I just noticed, I am a mess.

73,

Dayton L. Phifer, WØVEA

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Tnx for printing my ad last issue. I will send some cash to continue the Hum in a few weeks. I now work at Radio Station KLIZ 1380 kc A.M. here in Brainerd, Minn. I plan on attending "Brown" Broadcasting Institute in 2 years after I finish Jr. College. KLIZ is affiliated with NBC as of Jan. 1st. It's a lot like amateur radio only nobody answers me. I'm still trying the Northern Lights to get down into Omaha but no luck yet. As of this letter I still haven't sold my tape player so please continue the ad into next month.

73's and tnx.

WAØMHF, Jim Knudsen  
704 Fir Street  
Brainerd, Minnesota 56401  
\*\*\*\*\*

## FOR SALE

Muntz stereo, 4-track tape player with 6 tapes and 2 speakers. Chrome case — easily mounted in car. Has volume, tone, track and on-off controls. Also has separation knob to distribute sound to either speaker or both.

Fantastic \$90.00 value only \$40.00 postpaid. Send cash, check or money order to:

Jim Knudsen, WAØMHF  
704 Fir Street  
Brainerd, Minnesota 56401

(Jim you will remember as a former member of this Club.)

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## THE TRANSISTOR — INCLUDING FET'S AND MOSFET'S

Ever since this strange breed of cat appeared on the electronic scene, it has been more or less a source of bewilderment for many people who have had to deal with it. It, of course, substitutes for the vacuum tube. But it does so in a rather left-handed manner, under new types of theory, different nomenclatures, and with a bagful of little tricks and idiosyncrasies all its own.

When we first became interested in radio, the theory of how a tube worked was not difficult to learn. It was easy. Any high school boy, and many grammar school children could understand the down-to-earth explanations given in any one of hundreds of books written on elementary theory of tubes.

But, when the transistor came along, there seemed to be a lack of writers who could present it to us ordinary mortals. Most of the stuff I read was for consumption by nuclear physicists and other big brains who think nothing of wading through two or three pages of advanced calculus before breakfast. What happened to the old boys who so easily taught us how a tube works?

Finally we did find some understandable literature on the subject, so we boiled it down and pass it along here for what it may be worth. The story may be old hat to many of you, but perhaps a brand-new Stetson for some of our young members who are just beginning to take up hamming.

We start off by assuming that you know an electron is a negative charge.

Then we will add to your knowledge that a "hole" is a positive charge. Never mind the why's and wherefore's of the "hole" — we'll come to that in a minute. And you know that like charges repel each other, and unlike charges attract each other.

Next we take a piece of germanium or silicon and chemically "dope" it so that it has an excess of electrons in it. In other words, some of its atoms are unbalanced — they have more electrons revolving around the nucleus than normal. In fact, the excess electrons get out of orbit and tend to float around aimlessly. Obviously, this piece of silicon is negative in potential.

Then we "dope" another piece of silicon so it has a deficiency of electrons. Where an electron should be, it ain't! So that leaves a "hole." Lacking some electrons, and being full of holes, this piece of silicon is positive. And these "holes" can move around just like the electrons in the other silicon piece can move around.

The great scientists at the Bell Laboratories found that if electrons and holes meet and mix together, they constitute a path for any electric current that comes along, just as does a piece of copper wire. It was also found that if an area did not have electrons and holes mixing together, no current could get through. The area became an insulator.

Now behold Figure 1, which is a pictorial (not schematic) diagram of a transistor which is serving as an amplifier. "C" stands for collector corresponding to the plate of a tube. "B" is base, corresponding to a grid. "E" is emitter, corresponding to cathode. And there the similarity to a tube ends!

FIG. 1  
STANDARD NPN TRANSISTOR

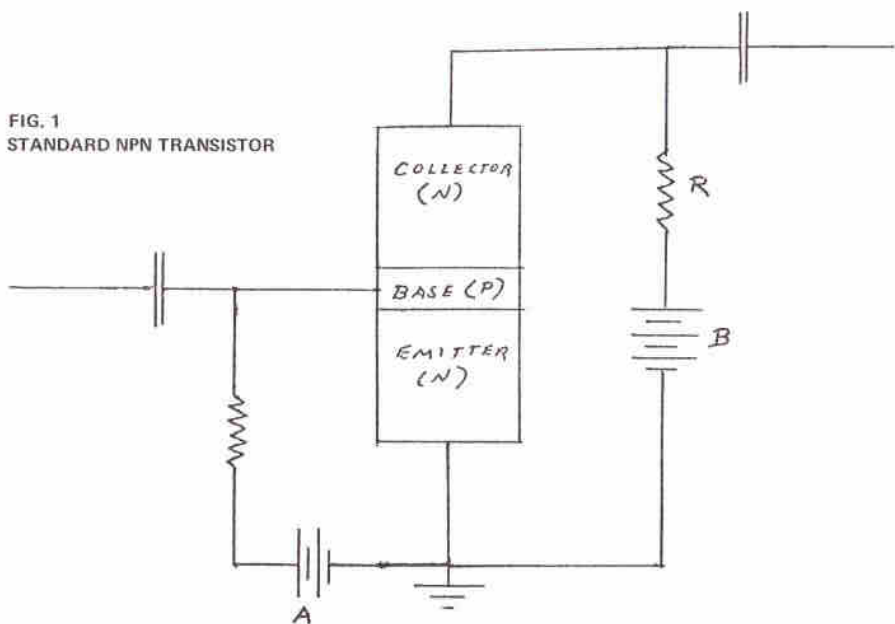
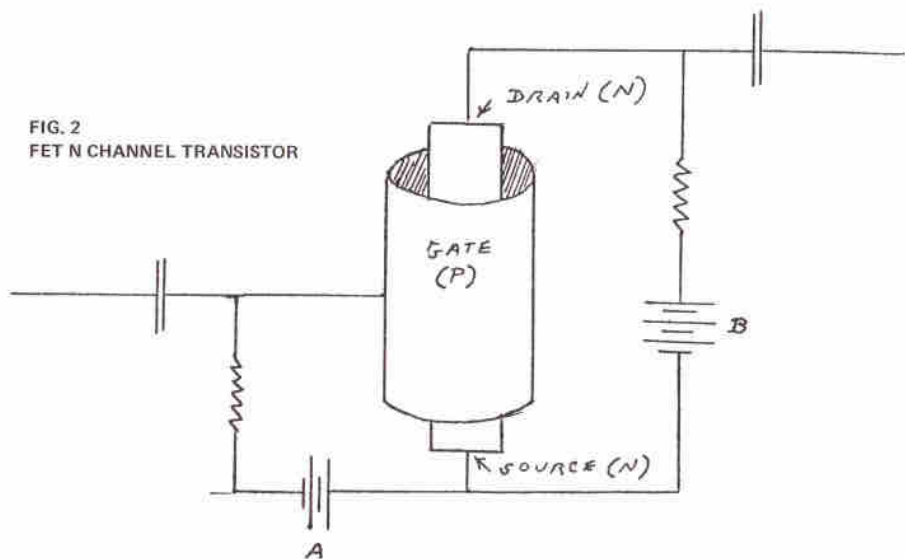


FIG. 2  
FET N CHANNEL TRANSISTOR



In this case, C is a piece of silicon with an excess of electrons doped into it. So it is "N" meaning negative. Welded to it is B, a very thin sheet of

silicon, doped positive (P), and welded to B is E, a piece of silicon doped negative (N).

Operation is as follows: The

electrons from the negative end of battery A repel the excess electrons in emitter E and drive them to the junction of E and B. Similarly, holes from the positive end of battery A drive the excess holes in base B to the same junction. Mixture of these holes and electrons constitutes a path for current, so the electrons from the battery proceed to flow through the junction.

However, and get this, base B is so thin that it cannot handle all of the battery electrons that try to get through. So some of them splash up onto Collector C, which is adjoining. When they get up there, they see the strong positive pull exerted by the positive end of battery B, and go to it in spite of the lesser repelling force exerted by the surplus electrons in collector C. Electrons from battery B join them. Thus, we have current flow in the collector circuit, which builds up a voltage across load resistor R. This current flow will be greater than the flow between the emitter and base because more electrons will get onto the collector than can get through the very thin base-emitter area. So we have amplification. This transistor is an NPN. If it were PNP then polarities would be reversed, and holes instead of electrons would predominate.

It is now obvious that we can control the collector flow by varying the potential applied to the base. This variation is, of course, supplied by the incoming signal.

So much for the standard transistor – the first type invented. Next came the Field-Effect Transistor, and once again we have to open our minds to a new train of thought, because it is a horse of another color. In fact, it is a

little more similar in theory of operation to a tube than is the standard transistor. Regard Figure 2, a pictorial of an FET. Again we change nomenclature. Instead of plate or collector, we have "Drain," instead of base "Gate," and instead of emitter "Source." And instead of saying NPN or PNP, we say "N" channel or "P" channel. How complicated can this business of electronics get? Heaven knows what comes next!

Instead of having three pieces of silicon, we have two. The center one, in this case N material, (thus N channel), is surrounded by a collar of P silicon. The collar is the gate. It regulates the flow of B<sup>+</sup> current through the center piece. If the gate is made more negative by the bias or signal, the resulting increase in the number of electrons will repel electrons coming from the B battery and decrease the battery flow of current from the source to the drain. The gate creates a negative "Field" in the center piece of silicon, hence, the name. The input impedance of the FET is much higher than that of a standard transistor because it is reverse biased. In other words, in the input circuit, the holes and electrons are kept apart, whereas we have seen that in the standard transistor they are brought together to conduct easily. Study of the polarities will clarify this for you.

As regards the MOSFET (Metal Oxide Semi-conductor Field-Effect Transistor), this is just an FET which has insulation between the two pieces of silicon. The insulation is a thin layer of metal oxide. This results in an even higher input impedance, which might be necessary in some circuits.

1/16/70

We will end by advising you to be cautious when working on a transistor circuit. Do not apply voltage unless you are sure you do not accidentally forward bias a transistor and thus destroy it. In the case of a MOSFET, a  $1\frac{1}{2}$  volts from a VTVM can ruin it. Do not take the load off the collector circuit under operating conditions. For instance, don't disconnect the speaker on a transistor radio, because the electrons or holes then cannot get to the collector and they will pile up and burn out the emitter-base junction of the power output transistor. Also remember that in many types of circuits you cannot substitute transistors in the same manner that you substitute tubes in a tube circuit. Reason for this is that transistors of the same number may vary widely in characteristics and the circuit must be re-adjusted when you put in a new one. And just to make life more complicated, most manufacturers solder them in to save the expense of providing plug-ins.

If you want to learn a bit more about these difficult contraptions, go to Cooper's and get Motorola's free "Tips on using FET's," and Hickok Instrument Company's \$1 book on standard transistors.

de Ralph Stonemetz  
WB4DXB  
de SPARC-GAP  
St. Petersburg, Fla.  
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### FOR SALE

CDR TR44 rotor with 100 feet of control cable . . \$45.00.

Fred Fischer, WØEGP  
Phone: 391-4193  
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Hi,

Well, the FCC finally got around to sending my new call. I am now WA7NXP. Haven't been on the air much lately - and will try to set up a schedule with some of my old friends at an early date. Surely have enjoyed the Ham Hum. Keep it coming. Glad to keep up on the activities of the Club.

73's for now.

John C. Ebright, WA7NXP  
(ex-WAØQGZ)  
2606 SW 116th  
Seattle, WA 98146  
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### OFFICIAL BULLETIN NR 253 FROM ARRL HEADQUARTERS NEWINGTON CONN DEC 31 1969 TO ALL RADIO AMATEURS BT

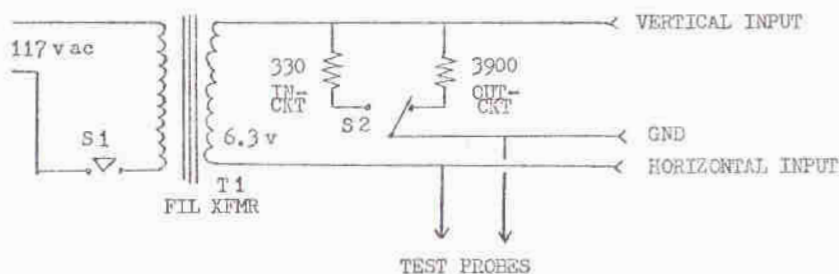
NASA has now established the launch of Australis Oscar 5 for January 15, 1970 at 1131 GMT. This represents a change in date and time from that announced on page 50 of January QST. The data in the QST article can be updated by adding to the times the difference between the reported nominal launch time of 1116 GMT and the actual launch time. Thus, with launch now expected at 1131 GMT, 15 minutes should be added to the times shown in QST. The amateur satellite is designed to transmit on 29.450 and 144.050 MHz. Listen to W1AW bulletins for further information on the launch, and for orbital predictions following the launch AR

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## TRANSISTOR TESTER

The unit shown here will check all jct. transistors and diodes, regardless of polarity. The catch, of course, is that it requires a 'scope readout. It will

indicate non-linear operation and marginal performance that most testers overlook, however, and can be used in-circuit or out.

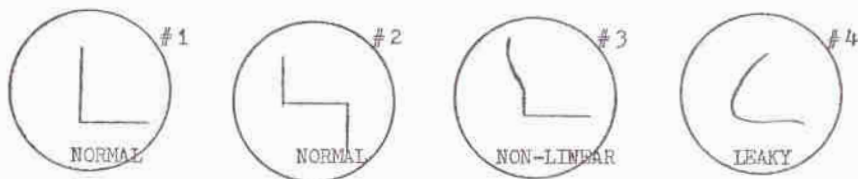


The unit to be checked is connected across the test leads and S1 activated. For diodes and transistors, a solid horizontal bar = open; solid vertical bar = short. Proper conduction will show as a sharp right angle.

Transistors must be checked in three steps: B-C, B-E, C-E. Scope traces will appear as right-angle UP, right-angle DOWN, and ZEE-shape, as

in trace #2. Angle direction indicates whether PNP or NPN.

Faulty units will show unstable traces or crooked angles. Trace #3 shows angle not square, indicates non-linearity. Trace #4 (or circular pattern) indicates leakage. Many other possibilities exist, as you will discover when tinkering with this gadget. HAVE FUN!



(Ed. This item lifted from a ham paper - we misplaced the credit line. Very sorry, we will print credit in next issue if we hear where we lifted it.)

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OFFICIAL BULLETIN NR 254  
FROM ARRL HEADQUARTERS  
NEWINGTON CONN JAN 8 1970  
TO ALL RADIO AMATEURS BT

The United Kingdom United States reciprocal operating agreement has now been broadened to include the following areas: Bahamas, Bermuda, British Honduras, British Virgin Islands, Cayman, Falkland Islands, Fiji, Gibraltar, Hong Kong, Montserrat, Seychelles, St. Helena, Turks and Caicos, British Solomons, New Hebrides, Gilbert and Ellice, Line Islands, Antigua, Dominica, Grenada, St. Lucia and St. Vincent. This information will appear briefly in the forthcoming February and more fully in March QST AR

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### ADDITIONS TO ROSTER

Joseph I. Eisenberg, WNØWRI  
2919 South 101st Street  
Omaha, Nebraska 68124  
Phone: 391-5060

John L. Giuliotti, K1MNF  
P. O. Box 31671  
West Dodge Station  
Omaha, Nebraska 68131  
Phone: 558-6060

Raymond F. Kydney, WNØWOT  
1315 South 27th Street  
Omaha, Nebraska 68105  
Phone: 341-9898

Robert F. Miller, KØZLY  
112 North 43rd Street  
Omaha, Nebraska 68131  
Phone: 556-3478

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### PACK RATS' PREZ SEZ

### NEW YEAR REFLECTIONS

It is time to think back and to look ahead. What will the new year bring? To the club? To you personally?

Many experiences lie ahead. Ham radio may be over 50 years old but we're just starting, just scratching the surface. Each year posts many advancements. Some gradual, some sudden. Some day our "modern" equipment will be curios to future hams.

Are you keeping pace? Stay active. Be on the air. Keep up with the news, the technology. Don't let yourself get stale through inactivity. The social contacts alone make activity worthwhile. Most advances in ham radio are due to group thinking and multiple effort.

There is no better time than these winter months to keep the rig working. Making new friends, talking to old ones, planning, building, testing, trying new techniques — the VHF-SS is the seed for this season's activity.

Contest-minded or not, it is a prime reason to perk up your gear or update it, get on a new band. Best of all, is the fraternal bonus. And after all, isn't this the bond that makes ham radio so great?

Warmest regards to you in 1970.

W3KKN, Ernie Kenas  
de Pack Rats, Pa.

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JUNK: Something you keep for 10 years and then throw away 3 days before you need it.

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## Tecknickle Topix

### COMMENTS ON BUILDING THE ELECTRONIC KEYER FROM THE 1968 ARRL HANDBOOK

I built the unit for two reasons: (1) I wanted to do a project involving solid state components and (2) I got tired of having my friends tell me to try the other foot.

All of the solid state components cost just \$10.00, and were purchased from Semi-Conductor Specialities on 6 Mile Road. The whole project cost about \$15.00 with most of the miscellaneous coming out of my junk box.

Be sure to get the insertion tool for the Vector push-in terminals. If you ever tried to install these terminals with a pair of pliers, you know what I mean. Invest in sockets for all the solid state components. It's a good feeling to know you don't have heat damage on an I.C. If you do go without plugs, invest in a clip-on heat sink.

Watch out for the diagram in the handbook that locates the pin numbers on the I.C.'s; - it's wrong. The flat spot is actually opposite pin No. 8 on my I.C.'s.

Replace the 270 ohm resistor in the monitor part of the circuit with a 1-K ohm pot. This will give you a poor man's volume control. I had to go back and do it!

The keyer worked like a charm on 80M and 40M. When I got to 20M the darn thing wouldn't drop out. It didn't take me long to figure out it was due to all the RF I keep around the shack. That's what happens when you end-load a random wire with the loading coil in the shack. This led to my building a transmatch, as suggested

by McCoy in one of his articles. The transmatch cleaned up the RF nicely, and only cost me another twenty (20) bucks.

Everything was going along just fine when the reed relay contacts started sticking from time to time, usually during a QSO. If you don't key a couple of cathodes like I do, you shouldn't have that trouble.

I got out of this situation nicely by simply using a power transistor to key the DX-100, and the reed relay only has to turn the transistor on and off. I made this a separate little package that mounts right at the key plug on the DX-100.

All in all, I think the keyer is a good project for the builder who doesn't want to get too elaborate, and besides, it makes CW a lot more fun!

Dave Gaines, K8YHX

de DARA Bulletin

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### OFFICIAL BULLETIN NR 257 FROM ARRL HEADQUARTERS NEWINGTON CONN JAN 23 1970 TO ALL RADIO AMATEURS BT

Australis Oscar 5 was successfully launched at 1131 GMT, January 23. It began transmitting on 29.450 and 144.050 MHz at 1237 GMT. Australis Oscar 5 is in a circular orbit at 790 nautical miles with an inclination of 102 degrees and an orbital period of 115.1 minutes. Each equator crossing will progress westward by 28.8 degrees. W1AW will transmit orbital predictions Monday through Friday 1345 and 1900 GMT on regular cw bulletin frequencies in addition to all regular official bulletin schedules AR

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## STATION IDENTIFICATION

Are you familiar with Sec. 97.87 (a) of the FCC regulations? Amateur Station identification requirements stipulate that the last transmission of your exchange must include your own call sign. This is a common oversight during contests and has resulted in FCC Citations. The traditional practice of placing the transmitting station's call last or preceding by "de" is acceptable for identification. For phone operation, the voice equivalent is acceptable.

... from SW Div. Dir. Bulletin  
de W6SD Carrier  
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## OFFICIAL BULLETIN NR 255 FROM ARRL HEADQUARTERS NEWINGTON CONN JAN 15 1970 TO ALL RADIO AMATEURS BT

An exciting new challenge for award minded amateurs officially came into being on January 1, 1970 with the inauguration of the ARRL Five Band Worked All States Award. Contacts with the 50 United States made after that date count towards this achievement. Full rules for the 5BWAS appeared on page 51 of October, 1969 QST. A WAS outline map and Operating Aid number eight, which contains an alphabetical state listing, are available to aid your 5BWAS record keeping. When requesting this material, please send an addressed stamped envelope to ARRL, 225 Main Street, Newington, Connecticut 06111 AR

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## INTERESTED IN FM GEAR?

Motorola lunch box style handie-talkie, 1 watt FM and one battery rechargeable 6 volt with mike and earphone ... \$50.00.

See Jim Droege at the next meeting or contact by phone either Royce Johnson (558-4941) or Jim Droege (Council Bluffs 322-6272). These sets need ham band crystals, then retune. We think the rigs are in good condition but may need some attention. These units can be had if we can get 10 buyers; we now have 3.

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## LICENSE PLATE FEES

While Hams in California have recently recognized that the State Legislature can and will raise the fees for license plates with their call letters imprinted, several papers from ARC's across the U.S. have printed items in relation to this problem. "Ham Shack Gossip," from Toledo, Ohio: "A letter sent to the State protesting the proposed special license plate fee brought a response from the office of the Registrar. Of 24 states (I question that number, it is closer to 48 ... -Ed) offering plates, Ohio and Wisconsin are lowest at \$1.00 in addition to the regular fee, five charge \$5, nine charge \$10, one charges \$20, three charge \$25, and North Dakota gets \$100!!

From the Denver Round Table we learned that the State of Colorado just passed a law requiring \$5.00 in addition to the fee for Ham Plates!

de W6SD Carrier

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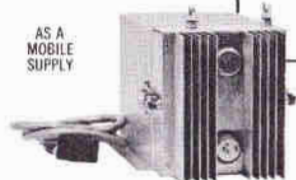
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