



# HAM HUM

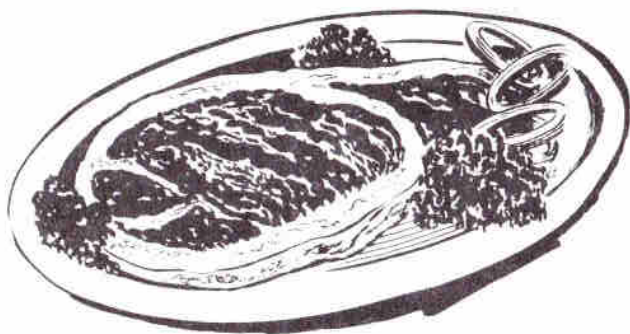
Published by  
AK-SAR-BEN RADIO CLUB, INC. - Omaha, Nebr. 68101  
Post Office Box 291 - Downtown Station



Vol. XXII  
No. 9

September 1972

See you at 2:00 P.M. at the  
Ham Fest and Steak Fry on Sunday,  
September 17, 1972, at  
MISSOURI VALLEY PARK  
MISSOURI VALLEY, IOWA  
(Just off I-29 at southwest edge of city)



**MAIL YOUR RESERVATION NOW**  
**NO REGULAR MEETING IN SEPTEMBER**

**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: September 22nd

Published by

AK-SAR-BEN RADIO CLUB, INC.

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## REPORTED BY MARTIN JOHNSON, AFØRJA, ALLIANCE, NEBRASKA

(Submitted by Royal M. Enders, AFAØLYO)

Sometime ago the Sand Hills Radio Club at Alliance, Nebraska was deactivated, and recently a meeting of a representative group of the former members met to dissolve the Club and dispose of the assets.

It was unanimously decided to donate the funds on hand for the relief of the citizens of Rapid City, South Dakota, who recently were victims of the flood. As a result a check for \$125.66 was forwarded for that purpose.

A reprint from the Alliance Daily Times-Herald indicated the gratitude of the Mayor and citizens of Rapid City for this assistance, as follows:

Editor: All citizens of Rapid City join with me in sincerely expressing to you, the members of the Sand Hills Amateur Radio Club, our sincere appreciation for your

wonderful contributions to the Rapid City Disaster Foundation.

Your contribution of \$125.66 has been used to expand the foundation to a total of over \$750,000. This money is being issued to the flood victims in the form of cash grants. We very much appreciate the wonderful spirit of the local radio club in your community and other communities in Western Nebraska.

Please accept our sincere appreciation for these wonderful gifts.

Donald V. Barnett, Mayor  
City of Rapid City, S.D.

(Ed. Note: Congratulations to WØNIK, WØINR, KØWPF, WAØSC, WØRJA and other Sand Hills Radio Club members who made this contribution possible!)

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## AUGUST MEETING

The meeting on August 11th was held at the NORTH OMAHA POWER STATION.

A few statistics for a starter;

Total cost of plant 91,000,000 dollars.

Three 12-story-high boilers, two 13-story-high boilers with enough water tubes in each to reach from the downtown Post Office to Boys Town.

Turbine room is 484 feet long with five turbo generators capable of generating 647,000 kilowatts.

110,000 gallons of water is borrowed and returned to the river per minute for cooling (condensing steam).

Power is generated at 13,800, 15,000 and 20,000 volts, then stepped up to 69,000 and 161,000 volts for transmission.

Railroad siding can accommodate 100 coal cars and OPPD owns its own diesel locomotive.

Coal storage yard has a capacity of 450,000 tons.

Coal bunker number 5 holds 2,580 tons.

Stacks are 200 feet tall and largest one is 16 feet inside diameter.

The steel towers carrying the 161,000-volt transmission lines are 80 feet tall.

We gathered in the parking lot of the NORTH OMAHA POWER STATION at approximately 8:00 P.M. The tour guides divided us into groups of four to eight to take us through the plant.

The plant and those smokestacks look tall from the road but when you

are close to them you can really see how tall they are.

Each turbo generator has its own boiler and control station. The boilers burn pulverized coal and gas. The coal is ground up to a face powder consistency and blown into the boiler along with gas and is ignited in mid-air immediately.

The turbines run on steam generated in the boilers. There are five boilers, five turbo generators, and five control stations all completely independent of the other.

The control stations are a mass of knobs, meters, gauges and recording charts to observe and control all the functions of the individual systems.

We were first taken through the boiler room area where it was extremely hot as you can imagine, then through the control room of number 1 generator where it was comfortably cooled by virtue of an electric air conditioner.

From there we went to the pumping station where they pump water from the river to be used for cooling purposes, to condense the steam back to water so it can be reused etc.

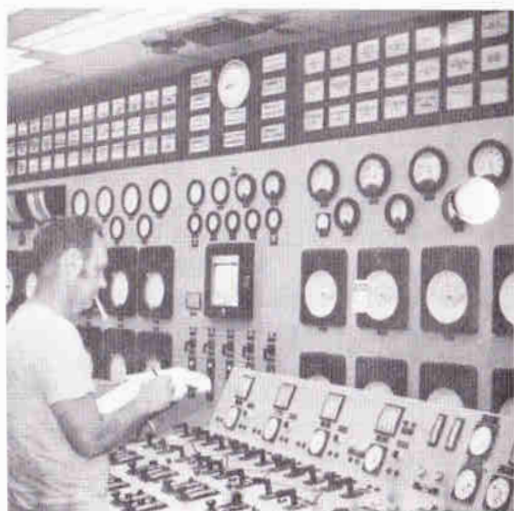
Then to the cafeteria where we had coffee and donuts, eyeball QSO's and a big round of applause for the tour guides in appreciation for the hospitality and fine job showing us around.

A very interesting and worthwhile tour enjoyed by all.

Russ Minks, WAØVEE



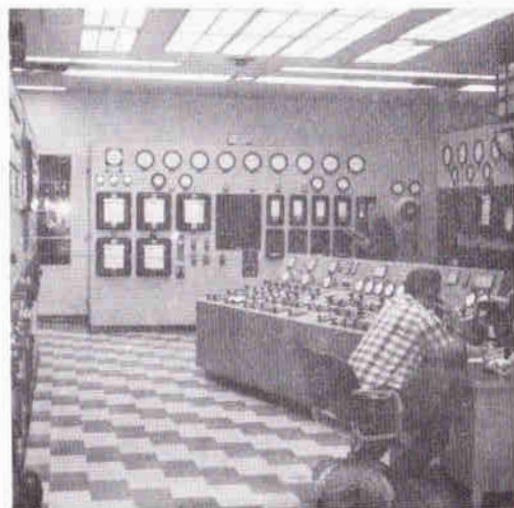
Tour guide Johnson and group in control room



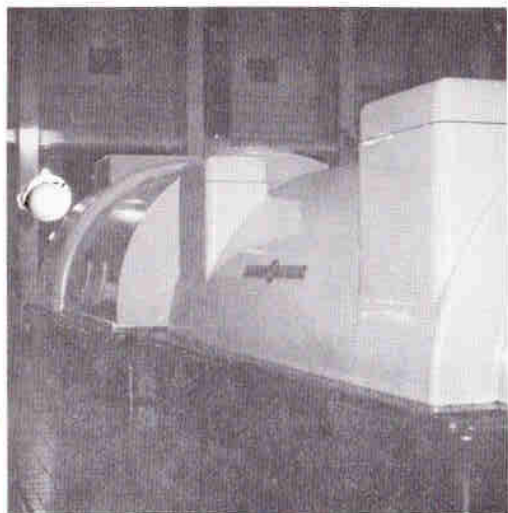
Control panel



Group in boiler room



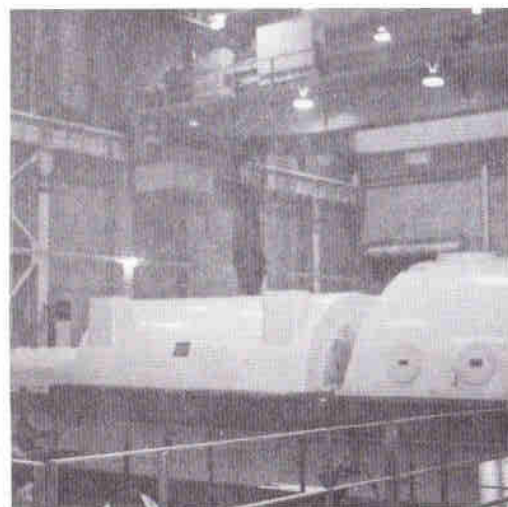
Overall shot of control room



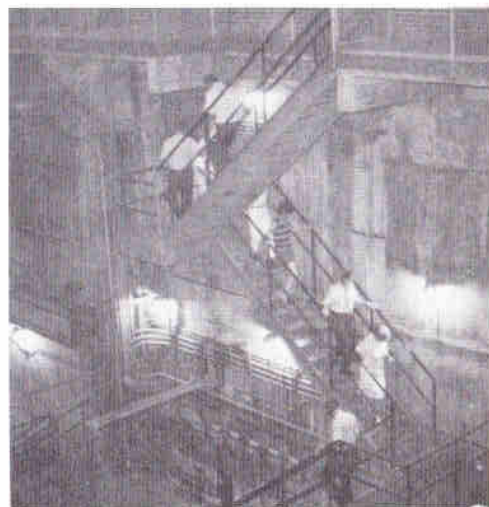
Turbo generator



Group going through  
pumping station



Turbo generator

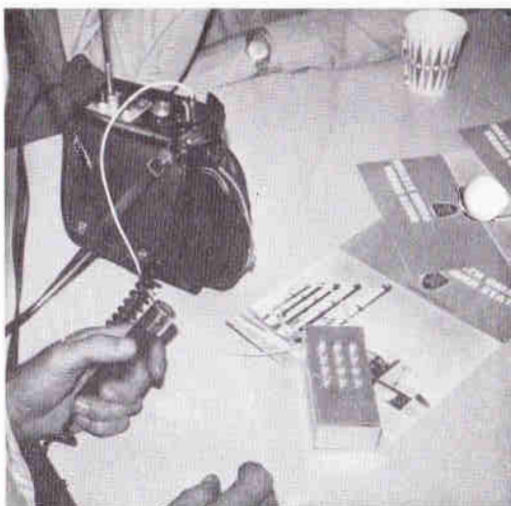


Group going to bottom of  
pumping station





Russ Minks, WAØVEE, conducts short meeting in cafeteria



Mike's TR22 and touch pad



Mike Wilczynski, WAØBVM, demonstrating 22-82 auto patch in cafeteria



161,000 volts

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## WE WERE READY!

By—Bob Lockwood, WAØDHU

It all started Wednesday evening, August 16th, with a phone call from KØGHK, Hugh, who informed me that telephone cable had been cut resulting in lack of telephone service in an area bounded by 72nd to 84th Street and Pacific to Cass Streets. The Nebraska Methodist Hospital is located in this area.

Hugh informed me that Wm. Dean Noyes, Civil Defense Coordinator, had requested ten mobile units to help supplement the communication blackout in this area. One-half hour later ten mobiles had volunteered their service. KØGHK was informed and we then waited for further instructions. I was later notified there was to be a certain location for each mobile. They were quickly dispatched to these assigned locations. The news media was informed of our positions and notified the public. During the succeeding hours more stations volunteered.

Word then came that this could be a long vigil, so relief units were organized to relieve the original mobiles at midnight. WØYZV kept in touch with the Nebraska Methodist Hospital until their communications were restored after which he and KØGHK toured the area. They kept vigil at the site of the telephone cable break and kept informed of the progress. They also toured the mobile sites.

The purpose of the mobiles was to supply communications for the general public if the need arose. We handled one message. One might say, "Is that all?" We were there to handle a volume of traffic if the need arose, but we thank God there were no emergencies in the area, so hence, very little traffic. The net closed at 0125 hours with clearance by KØGHK.

Following is a list of stations who volunteered for service during this emergency:

W3YYC/Ø	Jack	WAØUKE	Dave
WB9HJM	Wayne	WB6KVI	Bob
WA9WVX	Dan	KØJBC	Harold
KØJIU	Leo	WAØYHS	Jim
WAØWRI	Joe	KØGHK	Hugh
WØRMB	Cecil	WØYZV	Dick
WØEGP	Fred	WBØDLM	Bill
WBØEHU/Ø	John	KØQVL	Chuck
WAØIWF	Frank	WAØVEE	Russ
WAØZQX	Rick	WA3MKT	Rick
WAØZPW	Bob	KØBRS	Loyson
WAØROP	Rick	WAØODH	Lynn
WØGOJ	Frank	WAØNPF	Norval
WBØGXJ	Dale	WAØDHU	Bob

## NOTES FROM READERS

Once again it was proven that when an emergency arises, the WØEQU gang is there in force. To supply emergency communications at a moment's notice is a challenge, but we rose to it. A sincere thank you is in order to those listed and to others who worked in this emergency. A thank you for beautiful teamwork and a job well done!

\* \* \*

Ak-Sar-Ben Radio Club, Inc.  
Attention: Mr. Dick Eilers, Editor  
P.O. Box 291, Downtown Station  
Omaha, Nebraska 68101

Dear Dick

My thanks to the Ak-Sar-Ben Radio Club and to the individual members that so willingly and quickly responded to my request for radio mobile units to cover the West Omaha area effected by the telephone outage last night.

Fortunately no emergencies occurred. If they had, I am sure your radio operators would have handled them expeditiously.

Omaha and Douglas County are fortunate in having such a civic minded group as yours to assist during times of emergency. Thanks again for your enthusiastic cooperation.

Sincerely,  
(Bill)

Wm. Dean Noyes  
Civil Defense Coordinator  
City of Omaha, Nebraska

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"Don't you and your wife ever have a difference of opinion?"

"Sure we do. But I don't tell her."  
de Midwest C.B. 9er's paper  
\*\*\*\*\*

Ak-Sar-Ben Radio Club, Inc.:  
Please find enclosed a check to help with the postage on Ham Hum which you have been sending to the Knox County Radio Club. The new president is Ora J. Ballard, KØJRH, Center, Nebraska 68724.

There is a bunch of us working around 3950-3955 most every morning starting at about 7:30 A.M. to 8:00 A.M. Thus if anyone would want a message into this Northeast Nebraska area....

We read every bit of your Ham Hum and hope to get to one of your meetings in Omaha this fall-winter.

73,

Edward F. Kind, WØKYM  
Box 606

Creighton, Nebraska 68729

(Ed. Note: We appreciate your check. Many thanks! Happy to have you attend any of our meetings any time.)

\* \* \*

I recently answered a CQ being radiated on 20 meters lower sideband and after several tries with no luck, put my transceiver on upper sideband and received an immediate reply (still on LSB). I informed him that he was transmitting on LSB and receiving on USB. Finally got squared off and had a fine QSO. Perhaps this is one point in favor of transceiver operation.

Always enjoy reading "Ham Hum."  
Keep up the good work.

Dick Bowman, WØWZR  
Alliance, Nebraska

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## Musings of A Good Father on A Bad Day

By STU PIDD

(Condensed from W6SD Carrier)

There is nothing sadder than a childless couple. It breaks one's heart to see them stretched out relaxing around swimming pools in Florida, all suntanned and miserable on the decks of their boats, or trotting off to Europe like lonesome fools.

It's an empty life. They don't fight over the children's discipline. They don't blame each other for the child's nauseous characteristics. They miss all the fun of doing without things for their child's sake.

They go along in their own dull way, doing what they want and liking each other. It's a pathetic picture.

Everyone should have the wonderful experience and happy memories of sleepless nights, coughing spells, debts, diapers, baby sitters, soggy mattresses, spilled food, tantrums, emergencies and never-ending crises.

The real fulfillment comes as the child grows like a little acorn into a real nut. The wonder of watching your overweight ballerina making a fool of herself in a leotard. The bright smile of the small lad, with the sun glittering on 500 bucks worth of braces ruined on peanut brittle. The rollicking, merry, carefree voices of hordes of hysterical kiddies at the birthday party.

How dismally vacant is the peaceful home without the constant problems that make a well-rounded life and an

early breakdown, the tender discussions when the report card reveals the progeny to be one step below half-wit, the close-knit end-of-the-day reunion with all the joyful happenings related like well placed blows to the temple.

But every moment of anxiety, every sacrifice, every complete collapse pays off as a fine, sturdy, adolescence is reached. The feeling of reward the first time you took the boy hunting. He didn't mean to shoot you in the leg. He was just excited. Remember how he cried? How disappointed that you weren't a deer? These are the poignant memories that are captured forever in the heart and the limp.

Think back to the night of romantic adventure when your budding beautiful daughter eloped with the village idiot. What childless couple ever shares in the stark realism of that drama. Isn't it better to have lived richly, fully, and acquired a tic in the left eye along with the realization that, after all, your baby is a grown woman with the mind of a pigmy.

The childless couple live in a vacuum. They fill their lonely days with golf, vacation trips, dinner dates, civic affairs, tranquility, leisure and money. This is a terrifying emptiness, but they are too comfortable to know it.

You just have to look at them to see what the years have done. He is boyish, rested and unlined. She is slim, well-groomed and youthful. It isn't natural. If they had kids they would look like the rest of us, tired, gray, wrinkled and sagging. In other words, normal.

—ARNS Exchange

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## RESULTS OF ARNS PUBLICATIONS CONTEST

Again this year the Amateur Radio News Service sponsored the ARNS Publication Contest. There was a total of 61 entries, broken down into the following classes: A-1 with 13 entries; A-2 with 9 entries; Multiple A with 6 entries; Regional A with 10 entries; B-1 with 10 entries; B-2 with 11 entries; Multiple B and Regional A with one entry each.

Several 1971 issues of HAM HUM were submitted for judging. The contest is over and we are happy to report that in Class A-1, HAM HUM received *first place* in general format, editorial, and photo process.

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### FOR SALE

Model No. 15....reconditioned....100% perfect (just reconditioned) lots of spare parts, plenty of paper.... TU-Tuning unit, with scope indicator....ready to go!

Contact—Ora J. Ballard, KØJRH  
Center, Nebraska 68724

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### FOR SALE

Drake TR-3, RV-4 remote VFO and AC supply. Excellent condition — \$395.00

Mosley RV-4 vertical — \$25.00

Collins R-388 receiver — \$225.00

Jim Howard, K5TNP/Ø  
1106 Hackney Drive  
Papillion, Nebraska 68046  
Phone: 339-5318

\*\*\*\*\*

## ANYONE INTERESTED?

If anyone is interested in some older copies of such publications as Radio and TV News, some VHF publications, etc., contact me at 556-1538 and make arrangements to pick up same. Most of these publications would be about 10 years old and in gud condx. I'm simply running out of storage room at my place and have wished many times that we had a Club library for material such as this.

John D. Snyder, WØWRT  
Associate Editor

P.S. Best regards to Bob Schellhorn, WØYSX, in his new job. The Club is very indebted to Bob for a lot of the digital logic design work connected with the Omaha repeater. Drop us a note once in a while Bob to let us know how things are going. Hope to work you on 20 m.

John  
\*\*\*\*\*

### ADDITION TO ROSTER

David Benton, KØVVO  
3616 South 101st Street  
Omaha, Nebraska 68124  
Phone: 391-8975

\*\*\*\*\*

### FOR SALE

HW-12 80 M transceiver with AC and DC power supplies; also 80 meter mobile antenna — \$100.00

Phone: 341-3800  
Craig A. Loseke, WAØYGS  
3212 California Street  
Omaha, Nebraska 68131

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## REFLECTED AND DIRECTED

### SOME 2 METER EQUIPMENT HOTTER THAN THE BAND!

We have had called to our attention several recent cases where "highband" equipment lacking an honest pedigree is being offered for sale to hams. By this euphemism, we refer to some very modern 2-way FM gear that is being stolen from time to time from commercial users and their vehicles. In buying used commercial gear which is of a type currently in use — the "narrow-band" gear that is approved by FCC in commercial service — it would seem the better part of discretion to insist on a detailed bill of sale from the seller, and to have the seller's name and address.

An interesting example of how stolen equipment was identified in the hands of a "bargain" user recently cropped up in Michigan. A public utility had 6 tiny hand-carried FM units stolen. Unknown to the thief, these units had 4 channel capability — and they were custom-made by the manufacturer for this utility only! The only legitimate owner of the equipment was that utility. Two of the units were offered for sale to an officer in Northern Michigan, who was sufficiently alert to note the set's frequencies — plus the license number of the car driven by the would-be vendor. Since there was exactly one owner in the whole world who owned these small 4-channel sets, using those specific frequencies, it wasn't too hard to locate the true owner through the manufacturer.

Everybody loves a bargain. Most hams have a basement full of "bargains" which haven't yet been put

to use, and obviously we are fair bait for the seller of cheap (but stolen) radio gear. The sensible thing to do when you are buying any used gear is to insist on some sort of Bill of Sale that will identify the goods purchased, (by serial number, preferably), the name and address of the seller, and the price. If you pay by check, it is not difficult to put this information right on the back of the check, thus: "In full payment for one Nikknakk Linear Amplifier S/N 1314 purchased from John Jones, 123 Fourth St., Dearborn, Mich." Sort of simple, isn't it?

W8AP

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### WANTED

Need a 1H5 tube.

Call Lou Olsen, WNØFFA

Phone: 451-0557

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### SELL OR TRADE

Sell or trade for R-C equipment: Swan 260 Cygnet 10-80 meters. Waters phone patch.

Jay McAleer, WAØLLQ

Phone: 339-3448

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Pastor (at end of sermon): "And now, brethren, let us all give in accordance with what we reported on our income tax."

de Fresno Amateur Radio Club, Inc.

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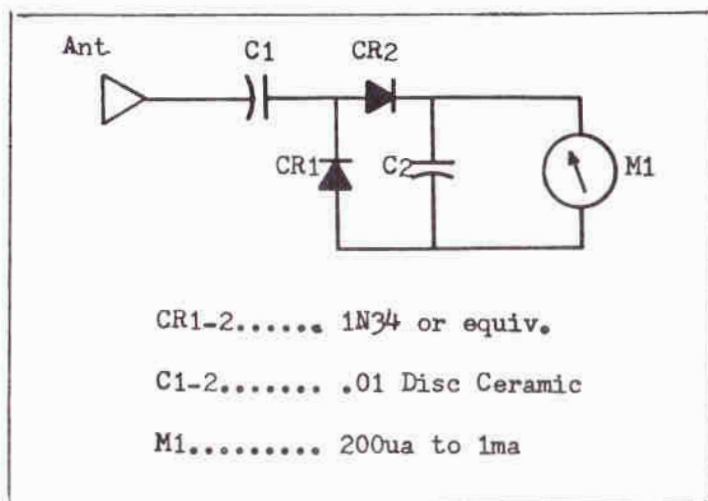
## UNTUNED VOLTAGE DOUBLING FIELD STRENGTH METER

By AE1MC (Lone Star Bulletin) & Florida Skip

It is often very useful to have a FSM in the shack to monitor the rig. The one described here is fairly inexpensive and should give you some indications of how the rig is loading. The original unit used a 500ua meter and deflected about one half scale with a one foot antenna when used with a typical sideband transceiver. The circuit is non-critical. Components may be replaced so long as the leads are kept short. The diodes are small signal diodes similar to the 1N34. The

meter can be any DC current meter with a full-scale deflection of 200ua to 1ma.

Basically the circuit is a half-wave voltage doubler, so the meter is reading twice the induced voltage. Therefore, this effectively doubles the sensitivity of the meter. The FSM can be built in just about any manner since shielding is not critical. The meter is bypassed for RF by C<sub>2</sub>. Sensitivity can be adjusted by the antenna length.



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### FOR SALE

2 - Teletype machines, Model 15 page printers at \$25.00 each.

Roy M. McCabe, WØUVU  
R.F.D. No. 1, Sunset Addition  
Fremont, Nebraska 68025  
Phone: (402) 727-4250

\*\*\*\*\*

### FOR SALE

Model 15 TTY, good condition; TV camera, ATV Research type, puts out good video sig.

Pat Snyder, WAØTTW  
Route 3  
Fremont, Nebraska 68025  
Phone: (402) 721-4457

\*\*\*\*\*

## FOR SALE

Aug. 21, 1972

Drake 2-C triple conversion rcvr with spkr and Q-mult. Vry gud condx. - \$160.00

Ceath HX-10 Marauder AM-SSB-CW and RTTY. A real work-horse. - \$100.00

Model 19 TTY with loop supply and supply of paper. - \$50.00

Eico 753 Xcvr with AC supply and spkr. (80-10 meters), clean. - \$85.00

TA-33 senior - \$40.00

Duo-Bander 84 with AC and DC supplies. Works fine - \$100.00

HAX-48 Spaulding 48 ft. self-supporting tower with auger type base (no cement needed) - \$85.00

Model 28 typing reperf and reader with gear shifts on both. Removed from Collins Research Project. Vry clean - \$100.00

John F. Thompson, KØJBD

Phone: (712) 328-2764

21 Kurtwood Drive

Council Bluffs, Iowa 51501

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A little boy was lost at a Sunday School picnic. His mother began to search for him and soon heard a childish voice calling, "Marie, Marie!"

She quickly spotted her child and rushed up to him.

"Why did you call me 'Marie' instead of 'Mother?' " she asked, as he said never called her by her first name.

"Well," the child answered, "it was no use calling 'Mother' because the place is full of them."

A magazet

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Gentlemen:

My husband, B. M. "Jim" Boyce, WØKSP, died late last year and I am now trying to dispose of his ham gear. Al McMillan of World Radio suggested I contact you to help solve my problem, advising you would run an ad for me in your magazine.

Here are some of the items available:

Head Phones

Mike

Phone Patch (never used)

Bug

Tube Tester

Multitester

Crystals

Tubes

SX-100 Receiver

Speakers

Connections

Match Box (all apart)

Call 731-0898 for appointment to inspect. No reasonable offer refused.

Thanks for your assistance.

Yours Truly,

Mrs. Byron Boyce

4103 Valley View

Omaha, Nebr. 68147

\*\*\*\*\*

One thing about listening to other people's troubles is that it takes your mind off your own.

de Florida Skip

\*\*\*\*\*

First fisherman: "Good Heavens, it's almost noon - too late to go to church."

Second fisherman: "Well. I couldn't have gone anyway - I've got a sick wife at home."

de Midwest C.B. 9er's paper

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## SOLID STATUS— GRAND FINALE

By Dick Blasco, WA4DHU 2

This final article of the Solid Status series is intended to take the information of the first 5 articles and "put it all together" in the form of a final example. Remember our description of amplification as control of a large current with a smaller one. Remember also our three assumptions, which are included in the Ohm's Law and Transistor Formula entries on the figure. In previous articles it was mentioned that parameter  $g_m$  (transconductance) was not useful for biasing. It was also mentioned that biasing information (desired collector voltage and current) was obtained from other considerations.

All of these and other concepts are tied together by examining one AC amplifier scheme—the common emitter amplifier. The first thing to notice from the figure is that the circuit is the same as the vacuum tube equivalent, except for the extra biasing resistor  $R_1$ . Design of the circuit is simplified due to  $g_m$  being constant for transistors (it varies with tube type). Voltage gain of the transistor circuit is exactly the same as the tube equivalent:  $u$  (stage voltage gain)  $\cdot g_m \times R$ , where  $R$  here is the parallel combination of the stage output impedance and the load impedance. Using the voltage divider relation of Ohm's law for the input signal, overall stage gain can be obtained by noting that the divider network is the source resistance and the stage input impedance.

Without boring you with the mathematics, applying the rules of

circuit theory, and assuming that impedances are matched (stage output impedance equals load impedance, etc.), the simplified procedure in the figure is obtained.

Notice in the procedure that the stage is designed by STARTING AT THE OUTPUT AND WORKING BACKWARDS. This is a general procedure for design of cascaded stages. Load and desired stage gain are specified. The parameters  $h_{oe}$  and  $h_{ie}$  can be obtained from transistor manuals. Rough values for these are .0001 for  $h_{oe}$  and 2000 for  $h_{ie}$ . Beta is also available from the transistor manual. It is listed as  $h_{fe}$ .

Following the procedure step-by-step as indicated will yield a design. The biasing procedure is also shown on the figure for your convenience. You start out obtaining  $R_c$  and  $I_c$ . Then you do the biasing to get the other resistors. You then compute input and output impedances for the stage. The coupling and emitter bypass capacitors are sized to give good gain down to  $f(\text{low})$ , which is a lower cutoff frequency. Using  $R_{in}$  as the load impedance, you duplicate the procedure for the source stage until you have designed all the stages. This procedure is quite similar to that used for tubes.

You must check your design by noting if  $V_c$  is smaller than  $V_e + 1(V(\text{load}) \text{ RMS})$ .  $V_{\text{load}}$  is usually specified. If so, the check fails, and you must *reduce* stage gain and try again.

The formula for  $R_c$  in the DC case

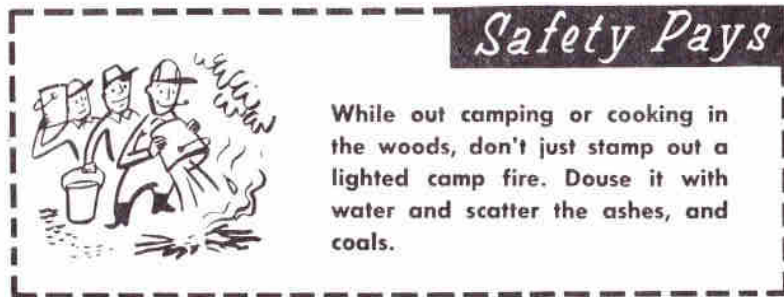
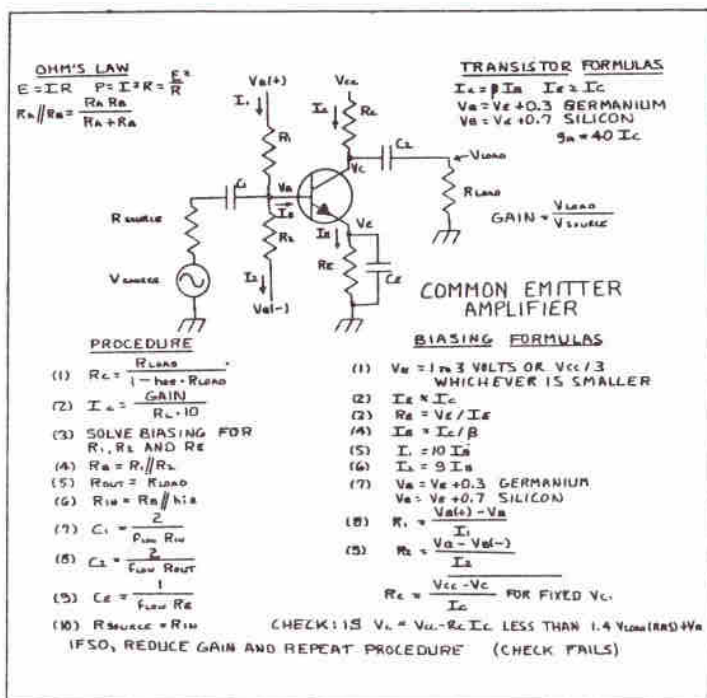
is repeated in the figure for reference. It is useful when designing flip-flops and similar digital circuits.

It is highly recommended that you make up values for transistor parameters, and desired load impedance, voltage, and stage gain, and work out your own example following the procedure shown. You might even want to build it and see if it works! This should make all of the information fit together for you.

This concludes the series. Please notice that many simplifications have been made, and much circuit theory bypassed in order to keep the series simple. Further theory and information can be obtained in a good transistor manual or even the ARRL Handbook. You should find these sources much more readable, now that you have achieved "solid status"!

73 and good luck.

de Florida Skip



# HAM-HUM TRANSCEIVER SPECIAL

## For SEPTEMBER

# The Argonaut

A "COMPLETE"  
6 Pound (1/5 cu. ft.)  
80/10M  
SSB/CW Station



- \* Full 80/10M Coverage
- \* Just 1/5 cu. ft. Size

- \* Selectable Sideband
- \* NO MOBILE SUPPLY NEEDED

# \$288<sup>00</sup>

Here is an action packed, and high performance, SSB transceiver ready to perform out of a suitcase, car, etc. In spite of it's diminutive size, it's really packed with the latest design techniques — but easy to service with modular design & straightforward construction. Permeability tuned, you just tune one output control! No extra crystals for full coverage either. Dial provides direct linear readout with 25 kHz/knob revolution. The 9 mHz filter provides excellent selectivity too. Additional features like: "S" meter, internal SWR bridge, off-set receiver tuning, break-in CW, sidetone & more. The 5 watts PEP/CW may not sound like a lot, but it will pack a mighty "punch" & give you the added advantage of no DC supply—operate from lantern batteries, etc. It's 1/2 uv sensitivity doesn't take a back seat either. And it's all in a rugged and attractive case (HWD) 4.5x13x7".

### BONUS OFFER!!

FREE!! — Astatic Microphone  
and Matching Plug

ORDER #81HH030 — ALL For \$288.00



PRICES ARE F.O.B. COUNCIL BLUFFS, IOWA, AND  
APPLICABLE SALES TAX AND SHIPPING CHARGES,  
OR DROP-IN AND PICK IT UP.

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WORLD RADIO



# WORLD RADIO

3415 West Broadway \* Council Bluffs, Iowa 51501  
Phone: (712) 328-1851