HAM HUM

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August 1971

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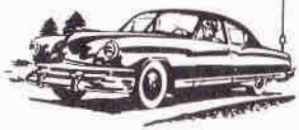
No. 8

Next Meeting
Friday, August 13, 1971
8:00 P.M.
Red Cross Chapter House
432 South 39th Street
Omaha

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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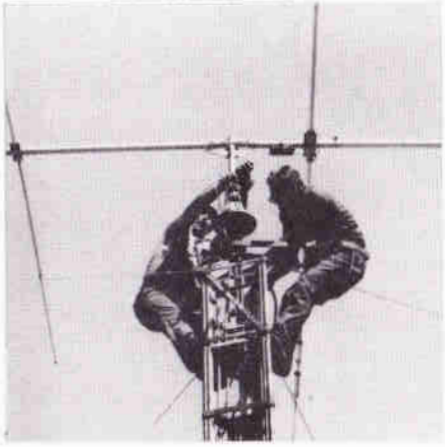
FOR MORE FIELD DAY PHOTOS SEE PAGES 9, 10, 11, & 12



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I don't think much of a man who is not wiser today than he was yesterday. – A. Lincoln

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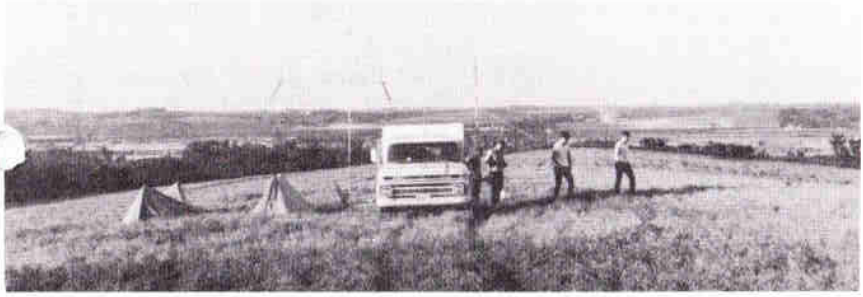

1971 FIELD DAY REPORT

By Ray Kydney, WAØWOT
1971 Field Day Chairman

First of all, I would like to thank all those who turned out for Field Day for helping to make it a success. I think the fact we made over 1600 contacts under conditions that are deteriorating speaks for itself.

I believe our biggest fault this year was logging. I think it would be a good idea to go through a refresher course on logging and operating next year prior to Field Day. Some stations were logged three times on one page. Many Calif. stations were logged only as Calif., New York as N. Y., New Jersey as N. J. Apparently some loggers did not know these and other states are subdivided, such as N.N.J. and S.N.J., etc. This year was the first year that signal reports were mandatory in the exchange; but many log sheets omitted the exchange.

I could thank some individuals by name here for what I considered outstanding effort, but for fear of leaving someone out, will not do so.

I am sorry that the novice station could not operate much due to interference to fone shacks. Some novices helped by logging in the fone shacks when we were short of help. We might give some thought to changing to a three transmitter class to take advantage of the free novice station. This would give the novice station a clear band at all times.

We might also consider a separate CW shack to operate any band; since the band is crowded on Field Day, ordinary fone receivers don't work well on receiving CW. This shack could be situated in the center with only a long coax, able to reach the antenna for the band the CW will run on. CW operators made over 20 contacts an hour on 40 meters. When the fone band slows down, they could run the coax to the CW shack and rest for a while.

Going back to the 3 transmitter class, I think 3 transmitters could take the gravy out of all bands. This doesn't mean we can't close 6 at night and run 40. The three bands that are in the best shape should be run. If 20 should close at night, it would pay to close it and try another band that is open.

I know there will be a lot of static, so let's hear it.

Thanks to all!

1971 FIELD DAY TOTALS

2 meter phone	42
6 meter phone	112
6 meter CW	4
15 meter phone	281
20 meter phone	503
20 meter CW	17
40 meter phone	315
40 meter CW	76
75 meter phone	225
80 meter CW	6
	1581
Novice	21
	1602
Power multiplier	2
	3204
Emergency power	400
Publicity	50
Message Originated	50
	3704

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NEWS NOTE

Just a note to say hi. Been getting the Hum every month and I appreciate reading about the old crew. There are just 2 of us 6er's here in Brainerd, so not a lot of activity.

I'm now the sales manager for the local "Culligan Man." I guess being engaged to his daughter helps. After just starting out in a new job on commission only, the pay is slow at first. Very soon I'll be able to afford a donation.

I'm out of the broadcast business but now my brother took to that stuff with my former competitor.

CU 73's
Jim Knudsen, WAØMHF
704 Fir
Brainerd, Minn. 56401

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NEWS FROM ARRL

From ARRL Directors Ltr. No. 1376, dtd Oct. 28, 1970--"A petition, marked RM-1695 by t[illegible] Commission, has been filed by WB4OBZ to expand the phone space on 80 thru 15 meters. Unlike other petitions awaiting action, this one is tied to public service work: the newly-available subbands would be only for channelized operation of ssb nets – with cw check-ins permitted as well."

ARRL Directors Ltr. No. 1377, dtd Nov. 6, 1970--"At the ARRL forum during the Roanoke Division Convention in Raleigh last weekend (it turned out really to be an FCC forum), one question was when did FCC expect to act on the repeater docket. Ev Henry's (W3BG, amateur and citizens chief) response was: not before they dispose of the various phone band expansion petitions confronting them. While not stated, the impression I received was that phone band actions might take place before the end of the year, with further repeater docket activity next Spring."

Official Bulletin NR 292 ARRL, Oct 8, '70 to all Radio Amateurs--"The Senate Commerce Committee heard testimony October 8 concerning Senate Bill 1466 which would allow amateur radio operation by future United States citizens. Senator Barry Goldwater K7UGA spoke in support of the bill which he had introduced."

de Pueblo Ham Club

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Having fun is like having insurance – the older you get, the more it costs you.

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"OBSERVATIONS OF EXPO '71"

by John D. Snyder, WØWRT

WØWRT and family left Omaha on Thursday, July 8th, and headed east in our pickup/camper via Interstate 80, the first stop to be at a campground near Wyanet, Illinois.

The only radio communication equipment we had along was the Motorola H23 Handie Talkie running off the truck's 13 volts and the help of a coaxial antenna on the front bumper. We made a lunch stop on the north side of Des Moines and had a contact with another mobile through their repeater there. It did not appear to me that the Des Moines repeater had a very great range; however, with only one watt at my end, this probably isn't a very fair observation. Next radio contact was with a base station near Moline, Illinois and running .94 direct. Apparently no repeater there.

At the campground near Wyanet there seemed to be no 2 meter activity whatever. There was lots of activity from the flies though!

Next morning we headed on into the Chicago area and started discovering Illinois' miserly tollways. At thirty cents a crack, these can run you into the poverty class in no time. In continuing our search for the Lake County fairground, we had thought initally that we could rely on there being a .34/.94 repeater to assist guiding us in. Unfortunately, this was not to be had and when we got close enough, we had to rely on direct .94 contact. We later learned that our .34 signals were evidently being dumped into the .76 frequency, which wasn't of any help and probably added to the existing interference. After I got back to Omaha I heard a few more squawks because of this. This appears strange since many, many Chicago area mobiles come through here throughout the year and invariably they have .34/.94 and are able to use our Omaha and Lincoln repeaters. Enough gripes for the moment.

On the pleasant side, I felt that the Expo had lots of interesting exhibits from many segments of the communications industry, too numerous to mention here. Also, Army and Navy MARS booths were set up. Some of the ops manning the Navy MARS booth were Connie and Norv Bowen and Hugh Tinley. Other folks from the Omaha area who were present were Pres. Jim Droege and XYL Kay; Cec DeWitt; Bob Schellhorn; Leo Connolly and some of his family. Hope I didn't miss anyone. Also, there was good representation by all of the Ham journals, including the new one RPT. I hope it will survive longer than FM Magazine did.

There was lots of junk at the flea market but there were some good buys as well – terrific buys on brand new computer type electrolytics and various types of terminal lugs like the big ones that are always needed for mobile installations. Too bad I didn't have lots of money, Hi!

I met our old friend Bill McDonald, W9DTZ, who lived in Omaha a decade ago and at that time held the call of KØYIW. Bill got us squared away on our registrations, which helped greatly

since there seemed to be some sort of confusion here. I heard some complaints about not being any kind of a written format of the events. Bill explained to me that the lack of a printed format was the entire fault of a local printer who reneged on his contract to make these up. The printer gave as the reason "a lack of advertising"; however, by this time there wasn't time to get the job done anywhere else. Convention organizers, beware!

Bill also mentioned, and I must agree with him, that the "security" was somewhat overdone. They even had some clowns driving around half the night in a jeep with a flashing light on top. This isn't conducive to sound sleep. Some of the people at the fairground entrance were rather sharp in their demands that we all show our yellow cards. (The kids under 12 couldn't because they didn't have any.) Maybe they were considering a hippie invasion; however, I really don't think there was any possibility of this. I will let someone else comment on the QRM on .94 there.

After Sunday we left the Expo area and headed up through Illinois and reached the city of Dubuque, Iowa. I had never been there before and found Dubuque to be a picturesque city with some FM activity on .94 simplex. Talked to two fellows on the radio there and received some very courteous help with directions, etc.

After Dubuque, we drove up through part of Wisconsin, then Minnesota, without hearing a thing like a 2 meter FM signal until we neared Minneapolis. Heard some sigs. on .94 there but wasn't able to raise anybody. Perhaps they are guilty of the same thing that most of us are, that is, too much yak-yak and no time for any listening. We should all try to remember to take a short pause during conversations so a station with possible emergency traffic could break in. This has been a real problem all over the country. I think that Minneapolis has a repeater system or more, but I don't know the frequencies.

To sum up, the rest of the trip was completely without 2 meter FM activity; not a thing in the Park Rapids, Minnesota area and nothing around Lake Okoboji, Iowa, so I would conclude that most of this activity we hear about is centered around urban areas. Perhaps this unbalance will correct itself in time. I hope so, because there is still tremendous potential here. One manufacturer's representative, whose name we won't mention, suggested that he disliked repeater operation and likened it to a "CB" operation. Possibly this is true to some extent, but this is only his opinion and it nevertheless is a mode of communication which is rendering great public service already and gives us something to compete with CB and the channel 9 monitoring taking place all over the country. In other words, if we use our frequencies with intelligence and some self-discipline, we can have a great communications capability; if not, then we'll have a QRM filled mess.

John, WØWRT

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If you're thin, don't eat fast. If you're fat, don't eat – FAST!

Minn. MARS

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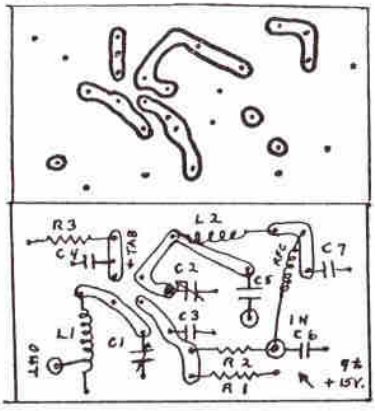
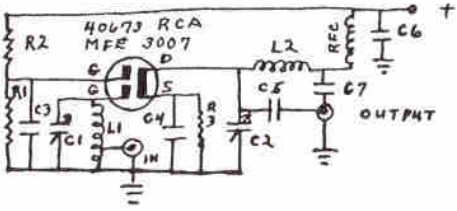
146 M/c RF AMPLIFIER

by Glenn Cox





There has been some interest in a good and cheap 146 M/c RF Amplifier.

Here it is – scrap box parts may be used except for the Mosfet.

L1–6 turns, #18 wire double spaced, ¼" i.d.--Tap at 1½ turns
L2–5 turns #18 wire double spaced, ¼" i.d.
RFC– Miller 144
R1– 33K
R2– 100K
R3– 270
C1– 5 to 12 pf. NPO padder
C2– same as C1
C3– 500 pf.
C4– 500 pf.
C5– 3.3 pf.
C6– 1000 pf.
C7– 25 pf.

C2 may be substituted with a 5 pf. NPO, and adjust L2 freq. by changing spacing of turns of L2.

de Grid Leak, Pueblo, Colo.

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AMATEUR EQUIPMENT ESTATE OF WØVAU

HF Equipment

Drake TR-3, AC-DC Supplies, Mobile and Base Antennas, Hunter Bandit 2000-B, Johnson Match Box W/O Bridge, Johnson Ranger I with 6 Meter.

2 Meter Equipment

Clegg 22er FM Model 25 with .22, .34, .76, .94 Xtals. Drake TR-22 FM Walkie Talkie with .34/.76-.34/.94-.94/.94, Rechargeable batteries, AC and DC cords. Hy-Gain 5/8 Ground Plane. Finco 6 & 2 Beam. Hustler 5/8 Mobile Trunk Lip Mount.

Many other items, test equipment, teletype, and miscellaneous. For complete list write:

Arnold Krauel, WAØGUD
301 Washington
Audubon, Iowa 50025

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COMMUNI-QUE or
Parley-Vou Espanole Deska
By Mark Morris, KØWZX

There seems to be a communications gap even in amateur radio. In our eagerness to get licensed, harrassed by code and stymied by theory, most of us take little time to study the FCC part 97 regulations.

If we wish to put up a tower, or operate more power, or more modes or bands, we can always look it up in the book. Operating procedures are not studied particularly and one can't look them up while operating vox or mobiling along at the legal limit.

Procedures alone permit a lot of meaning to be conveyed by a brief bit of information and even some by omission.

An air traffic controller in the interest of safety and brevity can recognize a student or low time pilot from the way radio transmission is planned. "Ah–this is Cherokee ah–85 Juliet 5 miles west of the airport" does little to make the ATC job easy, but would require the ATC to ask the pilot's intentions. "Pueblo tower this is Cherokee 85 Juliet 5 west with the numbers for landing" will convey the aircraft, identify, intention to land at Pueblo and that the pilot has the wind direction, velocity, active runway and altimeter setting. The ATC can then acknowledge and give only those instructions needed if a change in the approach and landing becomes necessary in the interest of safety.

Amateurs convey intent while meeting requirements of station identification. Even though safety is not considered, courtesy and the regs are.

In a round table discussion the station "picking up" the turn for transmission may state "W1ABC this is KØWZX" and in relinquishing the turn "W4JKL with W1ABC, this is KØWZX."

Notice that the station picking up the turn or relinquishing it always identifies his station last and identifies the station received from or turning it to, last. Other station calls are given in between and generally in their order of expected turn. This method informs listeners of at least the call area being heard, identifies according to regs and prevents lóng silences or dual transmissions or long silences followed by dual transmissions. If mobile, that station identifies the type mobile "aeranaughtical" or "maritime" if other than automobile, and the call area if outside the area of station license address. The identification of "portable" stations is required for portable stations and the call area must be stipulated. There is no "portable mobile," "mobile portable," "mobile in motion" or "fixed portable mobile" mentioned in the regs. It is either "portable" or "mobile" if operated away from the licensee address.

de Pueblo Ham Club

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REPEATER FUND

Sincere thanks to new Club member Robert M. Dalton, WBØEXW, of Glenwood, Iowa, for his handsome contribution to the repeater fund.

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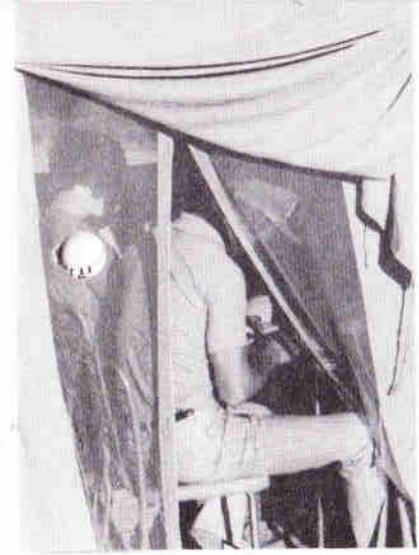

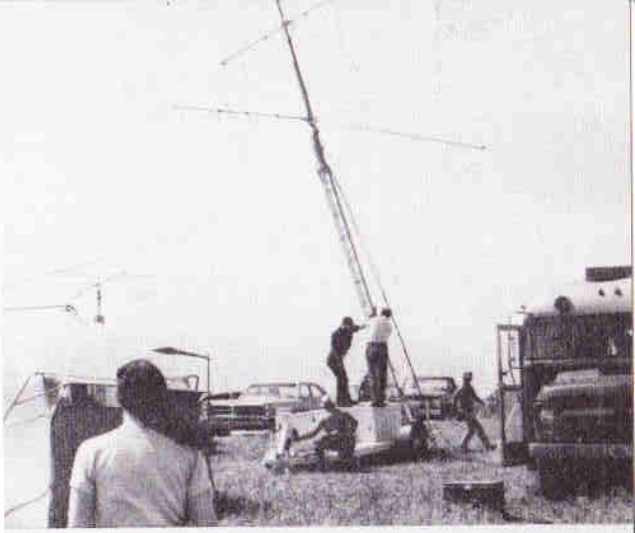

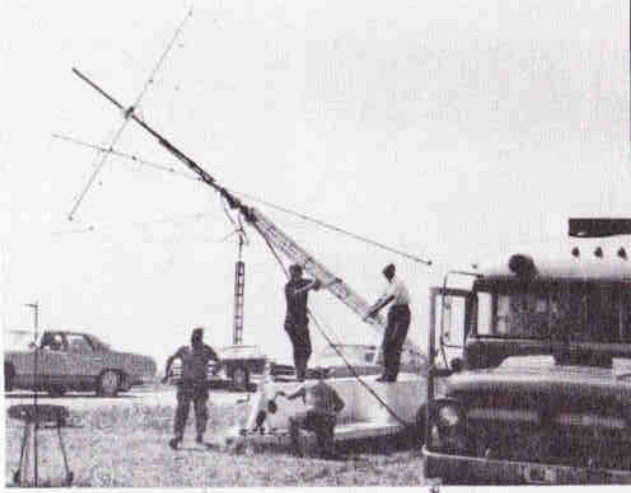

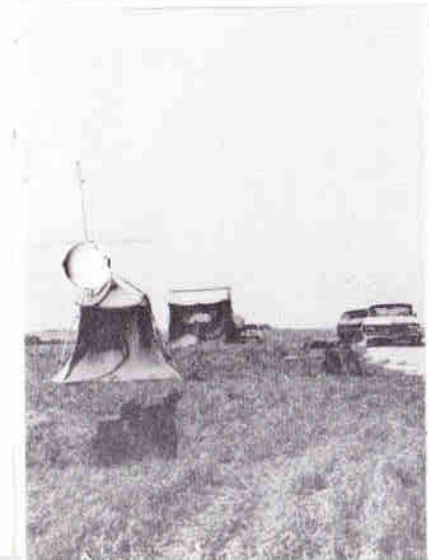


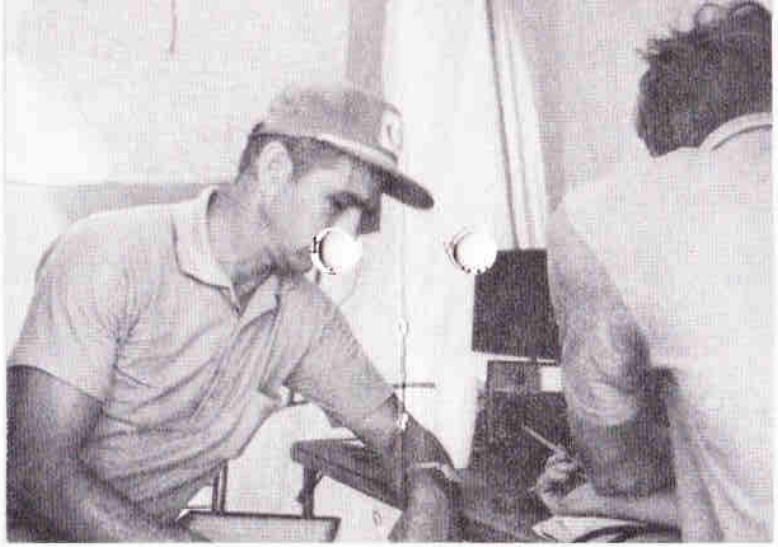
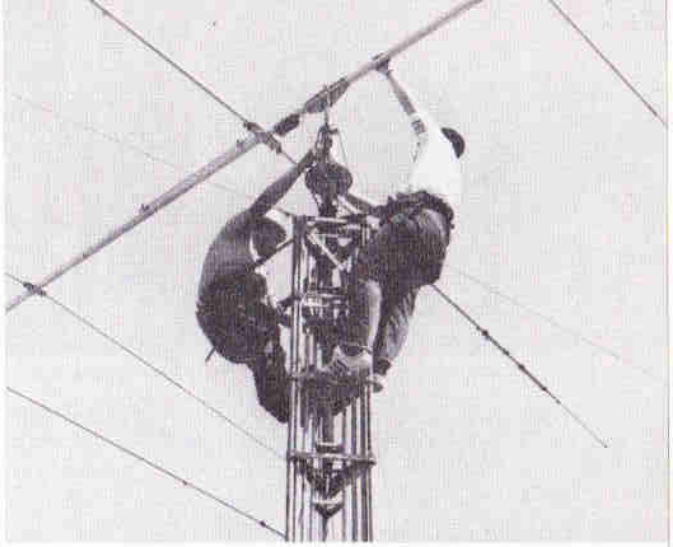

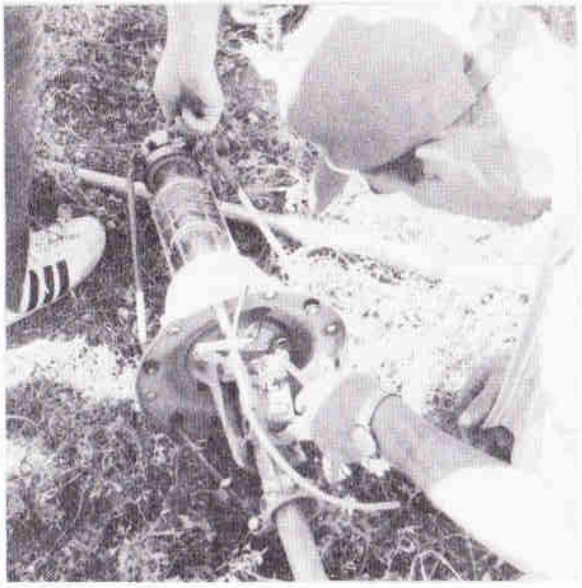
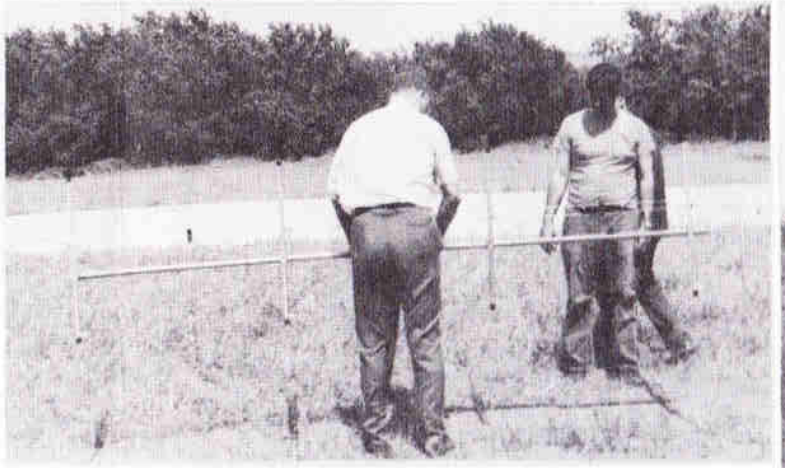


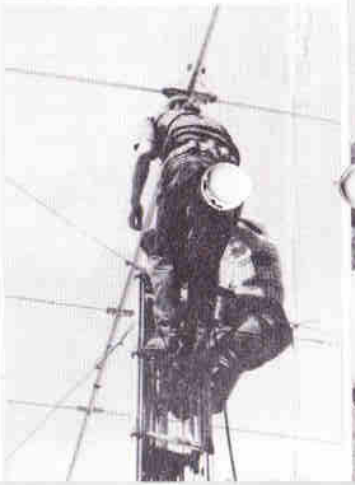


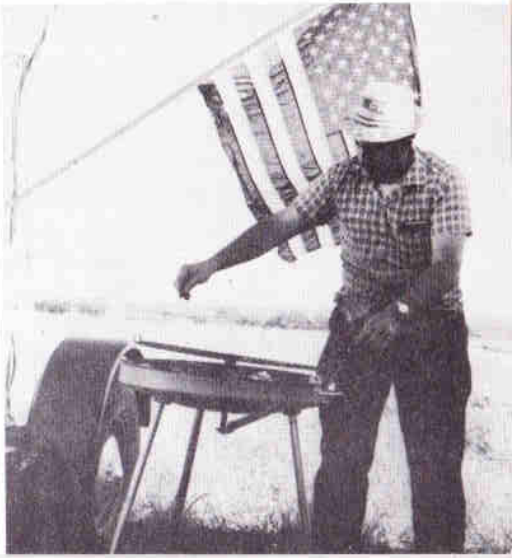

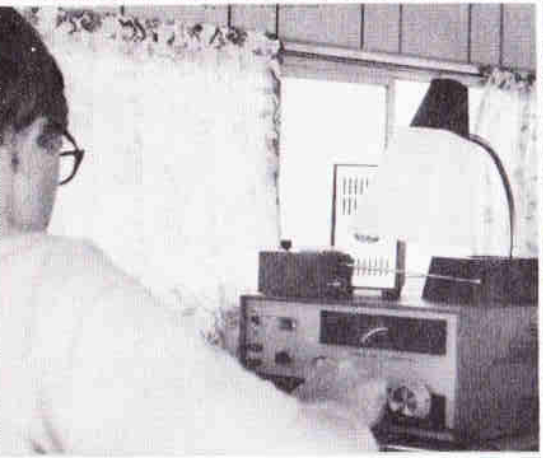

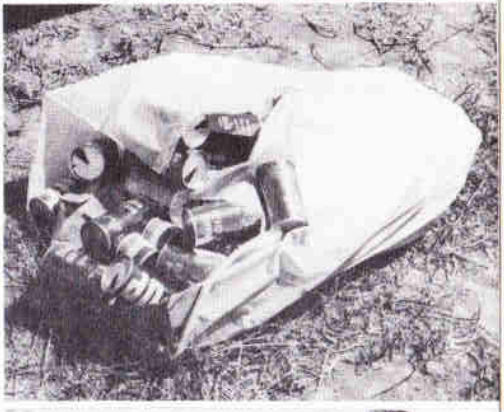

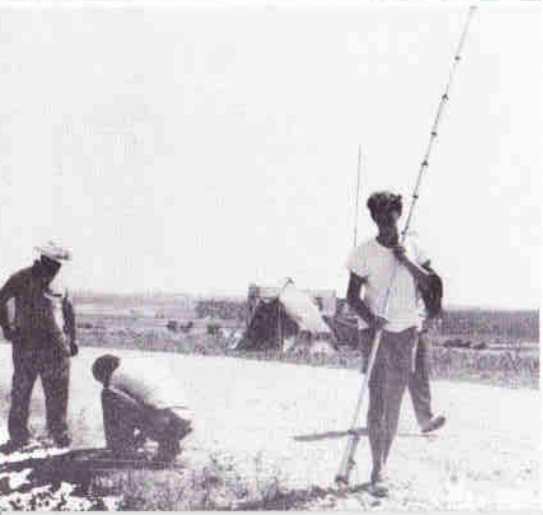

"1971 FIELD DAY THROUGH THE EYES OF A NOVICE"

When the Novices showed up at the (ven's "Signal Hill" on June 26, they were about as enthused as you would expect a bunch of hams to be at their first Field Day. Being a typical Novice myself, I arrived two hours before the 1 p.m. starting time and the antenna trailer was the only thing there to greet me.

I carefully threw my gear on the ground and decided to check the place out. As I cleared the crest of the hill, a panoramic view of the Platte River suddenly appeared over the golden vegetation; I was spellbound. Certainly, if this wasn't the most scenic Field Day QTH in the country, I thought, it had to be the most gorgeous spot in Sarpy County. (A safe guess, judging from my travels.)

When I wandered back, KØTVD was waiting for me, and a few minutes later, Pat, WNØEGR, made his appearance. "There is actually a majority of Novices here . . . we'll dominate Field Day!" I told myself excitedly. Later, I would laugh at such an asinine thought.

As the day progressed, more WN's made the scene. We all brought the staples of life – canned pop, potato chips, candy, etc. We even brought ham radio equipment.

One o'clock came and went. Most of us had never seen a guyed ham (er before, let alone try to put one up. In fact, WNØAJI/Ø was the last of the five stations to get on the air. And the first to go off.

Two minutes after our first CQ on 40 meters, Bob, WAØZPW, one of the 40M phone boys, came running down the hill. Grinning, he said that we had to QRT because we were "coming in all over the band." Of course, Bob is the kind of guy who would offer a taste-tempting box of chocolates to a diabetic. So, he enjoyed it greatly and made it a point to stop by the Novice shack as often as he could to let us know what a bunch of tyros we were.

After putting up our second antenna, a dipole, we slid down to good ol' 15 meters. But quicker than you can say "CQ Field Day," we got the same bad news that kicked us off 40. It was at this point I first began to feel the Novice setup was one notch above a waste of time, and other WN's started grumbling at the higher-class hams. So, at two hours into FD, we had to resort to calling on 80M, which, obviously, at 3:00 p.m. proved to be fruitless.

Suddenly, an idea! As swiftly as our Novice fingers could fly, we connected our antennas to a completely different transmitter/receiver setup. With spirits soaring and hearts pounding, we took the air once again, hoping to avoid causing QRM.

And, once again, we were told to cool it. The rest of the afternoon saw the Novice ops reading magazines, catching forty winks, and consuming canned pop, potato chips, and candy.

As if to say, "We're not the finks you think we are," Harold, WAØDGA, and Ray, WAØWOT, paid us a visit in the early evening. They carried with them a peace offering – a 14AVQ vertical antenna. Not that it did any good when they set it up for us. But, after all, it's the thought that counts.

Saturday night was a pleasant one (all of my cake got eaten at the pot-luck supper) and I soon bunked down. I placed my cot about 75 feet from the shack. Nevertheless, I suffered several direct hits from flashlight beams, before I finally fell into tranquil slumber.

Around 7:00 a.m. on the Sabbath, I was rudely awakened by a strange clicking sound. I gathered all the energy I could and forced my eyes open. There, standing 25 feet in front of me, was a man taking pictures of me, half naked in my sleeping bag. I never did catch the guy's name.

We soon fired up the station again, and the boys up the hill came running. However, by sneaking in a QSO here and there between WØEQU/Ø's transmissions, we were able to make a grand total of 21 contacts in 27 hours.

The highlight of Sunday was a rap session with Dick, WØYZV. When the 4:00 p.m. closing time finally rolled around, a disappointed but more experienced group of Novices packed up, shook hands, and parted.

All the Novices who attended will agree: the best thing this last Field Day did for us was to enhance our desire to become General class amateurs. I, for one, will never forget . . . my first Field Day.

Brian R. Zdan, WNØAJI
Chief Novice Operator at
WØEQU 1971 Field Day

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Pico and Giga aren't the only new expressions of our expanding knowledge – ever hear of:

Prefix	Multiple or submultiple	Symbol
Tera	1,000,000,000,000	T
Giga	1,000,000,000	G
Mega	1,000,000	M
Kilo	1,000	k
Hecto	100	h
Deka	10	da
Deci	.1	d
Centi	.01	c
Milli	.001	m
Micro	.000001	u
Nano	.000000001	n
Pico	.000000000001	p
Femto	.000000000000001	f
Atto	.000000000000000001	a

de W9JP, Amachewer, Indiana

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AM HF SKED

Dear Sirs:

Daily at 9 A.M. and 4 P.M. on 3955 KC there are AM A3 stations active. Any audio modulated stations within hearing range are invited to join with the round table QSO's. Times shown above are CDST while in effect, and remain at the same times when CST becomes effective.

WØRHS, J. O. Bostwick

(Editor's Note: Information on this schedule also sent in by WØTIP, Rocky.)

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CORRECTION FORTHCOMING

Associate Editor John Snyder, WØWRT, informs us the diagram of the code-practice oscillator shown on page 18 of the July 1971 issue of Ham Hum is erroneous. The corrected diagram will be published in a subsequent issue of Ham Hum.

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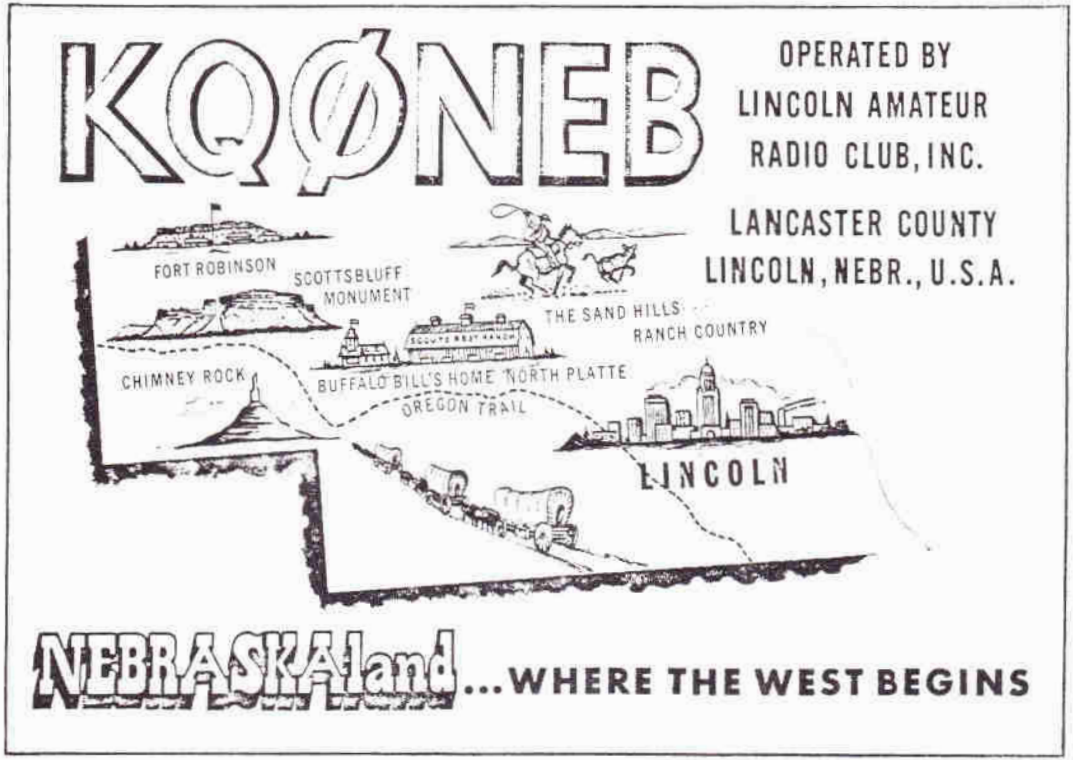

The Lincoln Amateur Radio Club, Inc. will again operate a station from the Nebraska State Fair. Pictured above is the new QSL card for the 1971 operation which is made up in green and brown and contains QSO information on reverse side.

de Lincoln Log

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FOR SALE OR TRADE

1. Audio generator (20-200,000 cycles) "odel TS-382 D/4 $ 60.00 cash
2. 19 Drawers of Sams Photo Facts #1 to #1145) $500.00 cash
   Car Radio Manuals #19 to #59)

Please call or write:

Tony Klein, WØQQU
Box 218
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QST-QST-QST-DE WAØWRI/4X4

I decided to inform Ham Hum of my encounters with our fellow hams here in 4X4 land because I know that Jim is hurting for something decent to put in our magazine.

On July 9 I went up to Kibbutz Sasa on the Lebanese border to visit Joe, 4Z4HF, and Bill, 4X4FV. Joe is running a R4-B-T4XB combination through a Heathkit Warrior Linear 1 KW to a TA-33. From the top of the mountain on which his QTH is located, on a clear day you can see Beirut. I operated 4Z4HF for 7 hours and got into W2, 3, 4's at 20 over 9. I met Lou, 4X4VX-K2HOI, who is planning a 2 meter FM repeater for Mt. Carmel in about a year. It will be wide band, but no 34-94 because 2M here is 144-146 Mhz. So long for now from Omaha's Kosher Ham.

73's and gud DX (even on 2)
(signed) Joe Eisenberg
WAØWRI/4X4

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SOLID STATUS

By Dick Blasco, WA4DHU 2

MORE BIASING

This article presents a very practical and widely-used biasing circuit – the stabilized bias circuit.

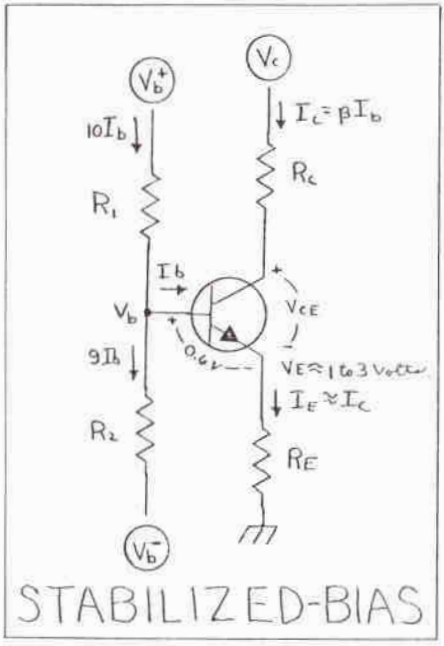
You might recall from Part 1 that transistor currents are extremely sensitive to changes in base-to-emitter voltage. For silicon, for example, a Vbe of 0.4 volts will cause a transistor to be cut off, while a Vbe of 0.7 volts will cause it to be saturated. Thus, a swing of only 0.3 volts can cause the device to change from cutoff to saturation. This important property is used in the stabilized bias circuit to give excellent control of transistor currents.

It is obvious that if the emitter were held at constant voltage and the base voltage increased very slightly, the transistor currents would increase sharply. It is also true, however, that the same thing can be accomplished by decreasing the emitter voltage while holding the base constant. This is what is done in this circuit. Assume that base voltage Vb is held absolutely constant. Any increase in transistor current would cause more current to flow through Re, increasing emitter voltage Ve. But this has the effect of decreasing Vbe, since we are holding Vb constant. Current will tend to fall off sharply, and we have the same "negative" feedback effect observed in the collector bias circuit. The big difference here is that Vbe is being changed instead of base current, and much better control of transistor current is obtained by utilizing the extreme sensitivity of Vbe.

Of course, getting Vb constant is a bit of a problem. If we hold Vb TOO constant, we won't be able to put any signal on the base without resorting to expensive chokes. On the other hand, if Vb isn't constant enough, base voltage will always change in such a way as to undo the effects of Re. A compromise "rule of thumb" is shown in the Figure. Putting voltage a divider between Vb (+) and Vb (–) provides a fairly stiff voltage source, but with ability to handle small signals on the base. By choosing R1 so that ten times base current flows through it, and R2 so that nine times base current flows

through it, a good compromise is obtained. Choosing Ve to be 1 to 3 volts under normal currents determines the value of Re. Vb (+) and Vb are flexible. For example, tying Vb (+) to Vc and Vb (−) to ground will allow operation from a single power supply or battery. This is indeed the most common arrangement.

This circuit can be applied using Ohm's Law.



de Florida Skip

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A lie travels around the earth while truth is putting on its shoes.

–Sunshine Magazine

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We didn't all come over on the same ship, but we're all in the same boat. *–Bernard Baruch*

****

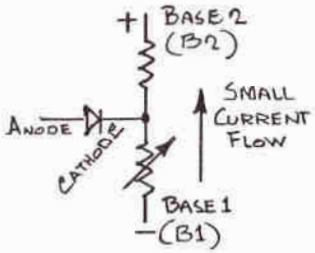
"It's hard to believe he's the same kid who used to take the blade out of my razor and pretend he was shaving!"

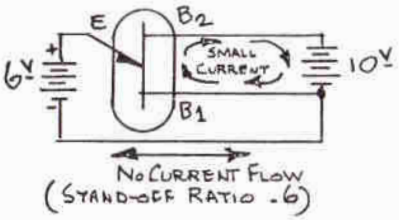
UNDERSTANDING TRANSISTORS

by Jim White
Associate Member, M.E.M.E. (WB6RAG)

THE UNIJUNCTION TRANSISTOR:

The unijunction transistor may be considered a diode-controlled resistor or voltage divider. With Base 1 connected to B- and Base 2 connected to B+, current will flow from B1 to B2. The strength of the current flow will depend on the voltage and the resistance between B1 and B2. This resistance value varies with the unijunction transistor type between the values of 4K and 10K ohms. The strength of the current flow between Base 1 and Base 2 is normally several milliamps.





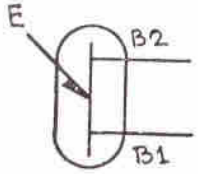
The total resistance between Base 1 and Base 2 is tapped at a point by the cathode of the controlling diode; this forms a voltage divider and creates an emitter junction. The current flow from Base 1 to Base 2 applies a positive voltage to the cathode of the controlling diode. This particular voltage varies with the unijunction transistor type and is determined during manufacture by the actual physical location of the emitter junction in relation to Base 1 and Base 2. If this junction is formed exactly half way between Base 1 and Base 2 the voltage at the cathode would be of positive polarity and exactly half the value of the voltage applied across Base 1 and Base 2. Moving the junction point closer to Base 2 raises this voltage and, vice versa, moving the junction point closer to Base 1 reduces or lowers this voltage. This particular voltage is known as "standoff" voltage and is usually expressed as a ratio or percentage of the total voltage applied across Base 1 and Base 2. This percentage or ratio is known as the "intrinsic standoff ratio" and varies in value from .4 to .8 depending on the transistor type.

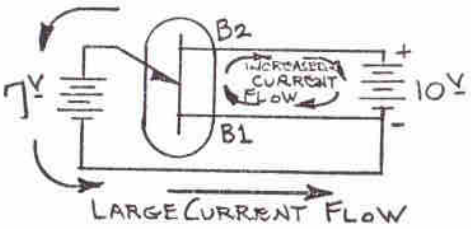
For example: If the voltage across Base 1 and Base 2 is 10 volts and the standoff ratio is .6 the voltage at the cathode of the control diode would be .6 x 10, which is equal to 6 volts.

Unijunction transistors are used extensively as oscillators, timers and triggering circuits. The unijunction can be easily checked for open or shorted elements by using an ohmmeter. (Refer to sketch.)

a. The resistance from Base 1 to Base 2 should be several thousand ohms, depending on unijunction type. (Usually about 4K to 10K ohms.) Reversing lead polarity should not change the resistance reading.

b. The resistance from emitter to Base 1 or Base 2 should behave as a resistor in series with a diode. Placing the positive lead on the emitter and the negative lead on either Base 1 or Base 2 should result in a reading of 1K ohms or somewhat more. Reversing polarity should indicate practically infinity.





With reference to the above diagram, the emitter diode will be reverse biased and very little current will flow in the emitter circuit – that is, providing the cathode voltage remains greater than the voltage present at the anode of the controlling diode. If the anode is made at least .6 volts more positive than the cathode of the controlling diode, the diode will then be in a forward biased state and a large current will flow in the emitter circuit due to the sharp reduction of resistance from emitter to Base 1.

(This very informative and highly interesting feature is forwarded to us regularly by the Editor of "Grid Leak" – the publication of the Tulare County Amateur Radio Club.)

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HOW THIS OLD WORLD HAS CHANGED!

Author Unknown

Since I was born, some years ago, this world has changed somehow;
We use both milk and butter that have never seen a cow,
We have instant coffee, instant tea – and instant this and that
With lots of instant foods not fit to feed a cat.
We have substitute sugar, and a substitute for salt,
We have so many substitutes we don't know whos' at fault.
Boys and girls both dress alike, can't tell one from the other,
Same way, though, with Mom and Dad, can't tell Dad from Mother.
They moved the cookstove out-of-doors and moved the out-house in!
I don't know how far this will go, but up until this minute
I love this old world of ours – because I still live in it!

(de Oklahoma Army MARS "POW-WOW")

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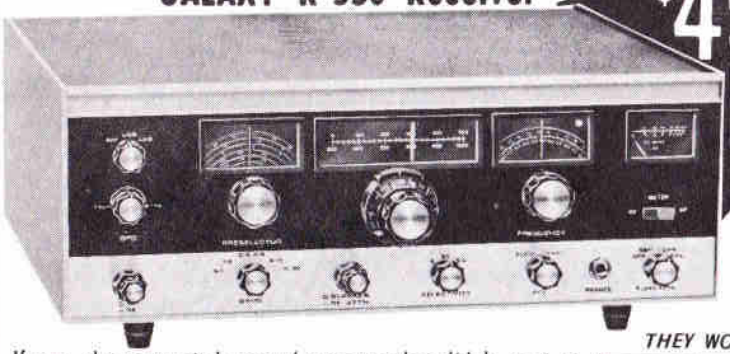

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