# Ham Rag

**Rockford Amateur Radio Association**

**June, 1983**


•FIELD DAY 1983•
"KU7CN - 10 OVER $/9 CW ON SNOOKER KNOB"

# Novice Corner

Hello, everyone, from *Little Toy Radio*. I'm sorry that I didn't have a column for last month's Ham Rag. I won't bother trying to give any excuses for that happening, even though they're all true - HI! HI!

Now that summer is almost here (*my water ski is all cleaned up and ready!*), and with the economy begining to look a little stronger, one might be wondering what to do with some extra money that might be available for his hobby.

Probably one of the first things that comes to mind is the acquisition of a newer and **MORE POWERFUL** transceiver or a linear if you hold a license higher than a Novice (*or are going to upgrade shortly*). This brings up an old question - will that exra power REALLY help?

This question is practically as old as the hobby of Ham Radio itself. What brought this subject to my mind was the coming across an article in one of my old *QST* magazines - June, 1943. The name of the article was *"Watts or Decibels?"* and was written by Mc Murdo Silver, an early radio pioneer, inventor and manufacturer.

Mc Murdo came from the school that believed, and rightly so, that it wasn't as important how many watts input (or output) was being used as was the effeciency of the antenna system. He gave some figures to back up his beliefs.

It was pointed out that when the power was doubled, this made the signal 3 DB stronger - barely noticeable to most people's ears. Increasing the power three times resulted in a gain of 5 DB. This would make for a slightly more noticeable improvement at the other end. By increasing the power level ten times, one would realize a 10 DB gain. This gain would be very noticeable at the other end.

In review, increasing the transmitter power level two or three times, over what it presently happens to be, will not bring about nearly as noticeable improvement as a ten-fold increase.

By looking at these figures, it can be seen that a much more effective signal can be radiated by improving the antenna system, making sure it is as efficient as possible, instead of simply (*and usually not inexpensively*) increasing the transmitter power.

**73, Brad, KA9LTR**

# Field Day — 1983

Well, it's that time of year again for Field Day. We have some changes this year. Field Day will be at Rolland Ohlsen Forest Preserve, southeast of Roscoe on Atwood Road. The date for Field Day is June 25th and 26th. Frank and I have decided to go with the team concept, due to the great success we had last year. So far we have four bands with Team Captains. But we still need one more.

**40 Meters - Gene AK9N and Russ KU9G** (*The Animals*)
**20 Meters - Dale KC9BN**
**2 & 6 Meters - Moe N9CCE and Kay N9DRL**
**80 & 75 Meters - Brad KA9LTR and Gene K9IKP**
**10 & 15 Meters - HELP!!!**

There are the Team Captains. If you wish to be on a team or can be of any **HELP**, PLEASE call them. They need your help to make this a success.

**The Team Leader Need:**

Tent
Rig
3 prong, 12 GA 100 ft, Ext. Cord
Antenna
Guy wire and anchors
Microphone
Zulu Clock
Light
Coax
Cooler & Ice

**The Club Will Supply:**

Ground Rods
Paper & Pencils
Dupe Sheets
Generators
Pop
Log Books
Coffee
Plates, Cups & Silverware
Food - Saturday Supper & Sunday Breakfast.

**The Operators Need:**

Cot for sleeping
Paper & Pencils
Log Books
Coffee
Plates, Cups & Silverware
Key and/or Keyer
Gas can with gas
Flashlight
Bug spray
Extra Rig
Extra Clothes for climate

This is your club and only you can make this a success or failure. Frank and I would like to do better than last year. I again would like to thank Mrs. Dale Harner for all the help that she and Dale gave us. Without them we would not have eaten so well, let alone had coffee all night. The only time she would let me into the kitchen is when she went to bed. We should thin of them this year during Field Day and remember the tru Amateur spirit that they displayer for us.
Thank you again.

**Russ WD9FVI, Frank KS9X**

# Micro/Digital Corner

A few months ago I discussed AND gates. This month I'm going to discuss the OR gate. The symbol for the OR gate is most usually drawn on schematics as it is in figure 1. *(Next page)* Pins 1 and 2 are inputs, pin 3 is the out put. If both 1 and 2 are low (0v) the output will also be low. If either 1 or 2 are high (+5v INTTL) the out put will be high. The output will also be high if BOTH 1 and 2 are high. Figure 2 shows the equivelant of an OR gate made of switches. Sometimes it is easier to think of digital gates as switches. You can see that if either or both switches are closed that the LED will turn on.

Figure 3 shows the TRUTH TABLE for the OR gate. It shows the same information in another form. This is the form that is normally found in data books.

I discuss these gates, not that you are going to run right out and buy an OR gate and build a circuit, but just so those you you who don't work with them might have a better understanding. After all working with digital circuits is a lot different that working with "Radio Frequency" circuits... or is it? When I first started working with digital circuits I would only think of two states as shown in figure 4, 0v and 5v. However what about the period of time when it is CHANGING from 0v to 5v. After all, it doesn't happen that instantaneously! Most of the time it is assumed that it is, but if you were to observe a digital signal on an oscilloscope and spread the screen out timewise, you would see something as in Figure 5. When viewing it this way, you can see that it actually takes TIME to go from 0v to 5v. If this TIME if measured it can be converted to frequency (TIME AND FREQUENCY are inverse functions). All of a sudden digital signals can be related to radio frequency signals. I don't feel that many people realize this relationship.

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Larry Kleber, K9LKA, has recently aquired a VIC 20. He says he has an interesting story to tell about his Timex Sinclair but I haven't heard it yet. Larry has a program for the VIC which will help raise your code speed. As I understand, you can fill the screen with the code groups and then it will send them. The program is not copyrighted and he is willing to share it with anyone who would like it.

If anyone else has any interesting programs that would like to share, let me know. How about someone who has an Apple, Atari, or Radio Shack writing a guest article??? Any and all input is appreciated.

**73, Gene, WB9MMM**


FIG 1.

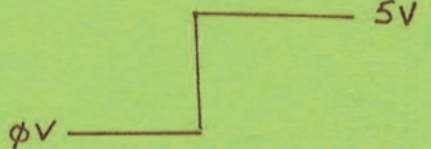



FIG 4

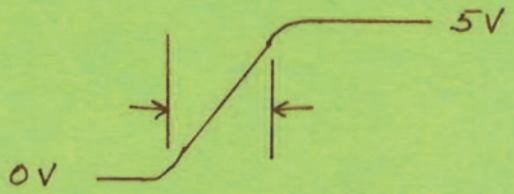



FIG 5

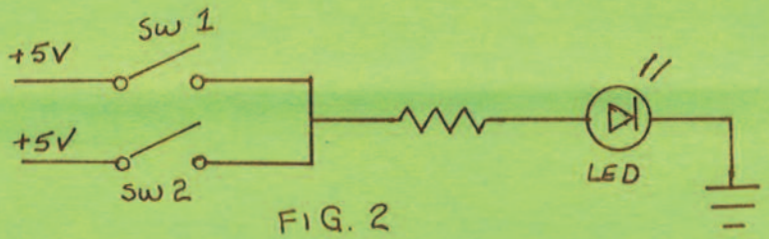
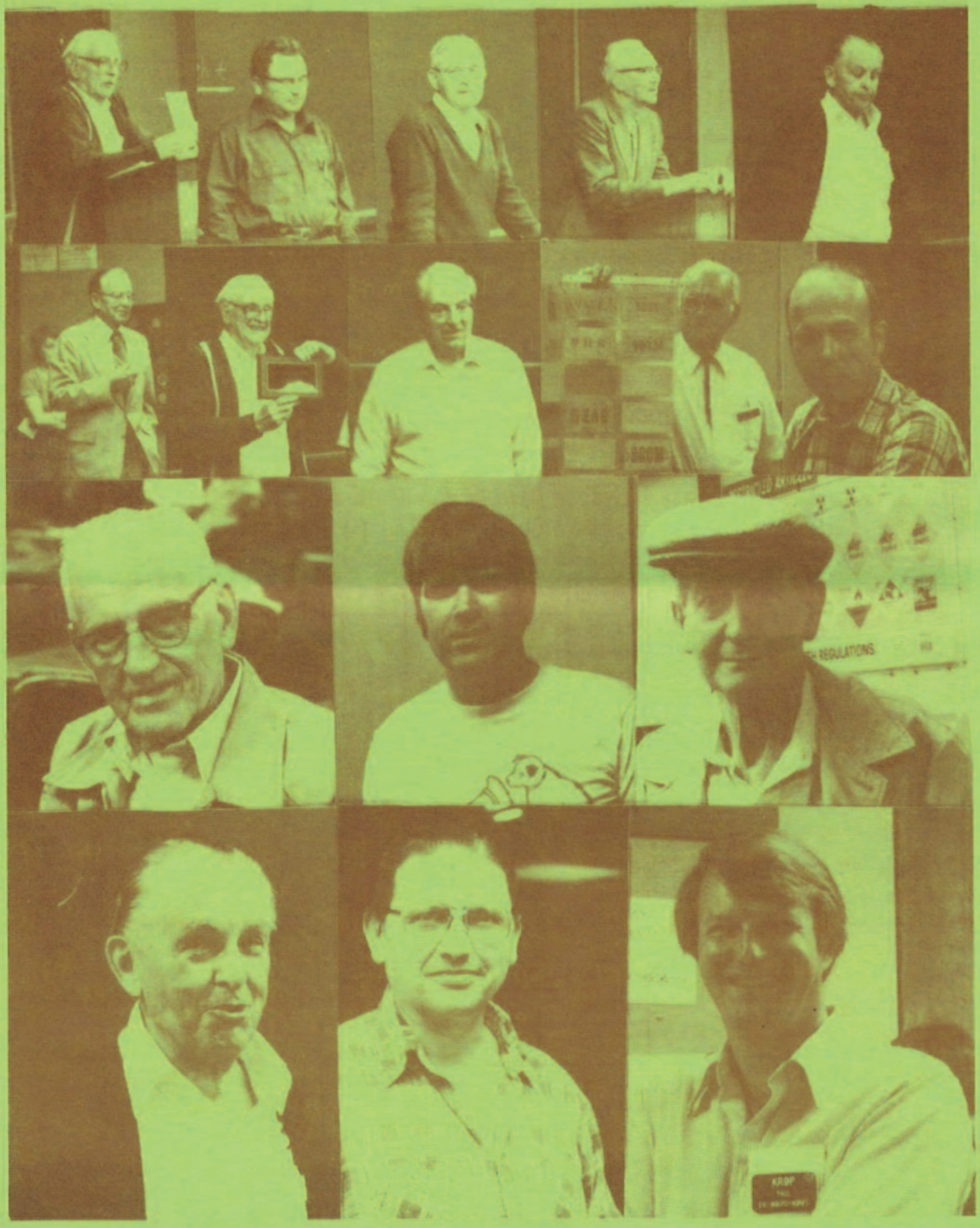



FIG. 2

| INPUT | | OUT-PUT |
|---|---|---|
| PIN 1 | PIN 2 | |
| 0 | 0 | 0 |
| 1 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 1 | 1 |

FIG 3

# OLD TIMER'S NITE



Photos & Layout Carol, KI9G

# Tech Topics

Let's face it, when we get to the top of a tower project, we look at the mast pipe and think, "*Gee, if I put up the antenna a few feet up from the mast, it will be higher, and that's* better." Or we wasnt a 40 meter beam "up top", or monobanders eight feet apart, So how high is safe?

The mast pipe can only take so much stress, which for the common iron water pipe normally used is 30,000 psi or for less common aluminum (6061-T6 alloy) pipe is 38,000 psi, before it will bend. How much force is that? For a mast sticking up out of a tower top an applicable formula is: **S=Fl/Z** where f= force in pounds, s= the stress, l= the length in inches, and z= the section modules. This section modules (Z) is different depending on the diameter of the pipe. For the pipes we normally end up with there are noth think wall (schedule 80) amd thin wall (normal or schedule 40) and the respective section modules Z for each is: for 1½ inch pipe schedule 80 = .4118 and schedule 40 = .3262, for 1¼ inch pipe schedule 80 =.2913 and schedule 40 = .2346. As you can see, thicker walls help and larger diameters help even more.

With the above, let's assume a "normal" situation, one that lets us work through the equations. We have a towe with room for a 2 inch diameter mast, for which we are using 1½" (1.9 inches outside diameter) galvanized water pipe - the normal schedule 40 (about ⅛ inch wall) pipe, because it's easy to find, and heck, it's iron, it must be strong. Also let's assume we have a "typical" tribander that is about 8 square feet area. At 70.7 mph wind force is 20 pounds per square foot, at 86.6 mph it is 30, at 100 mph it is 40. Around here the guidelines are to design to 100 mph, and if we reach maximum allowed stress there (or above there) we will have a safety factor of two at 70.7 mph. Finally, let's assume we want to mount the antenna 3 feet above the tower apex. The force on the antenna is then (at 100 mph) 40 pounds per square foot times 8 square feet, or 320 pounds. The length of the mast (1) is 36 inches and z=.3262. For these the stress on the mast is:

**S=(320) (36)/.3262=35315 psi**

As you can see this exceeds the 30,000 allowed on the iron pipe, but is all right for the aluminum. Note for the schedle 80 iron pipe (Z=.4118) the stress would be 27974 psi, and would be acceptable. Note also, that for two antennas, you can make this calculation for each, add the stress and see where you stand. So, go find some large diameter, thick mast, and calculate what you can stack. A final side comment — stainless pipe will have a yield stress of 150,000 to 180,000 psi, which would support a bunch, sombody find some cheap—— PLEASE!!!

**73, KB9IW, Steve**

**Photos and layout by Carol, KI9G**

# Editor's QRM

Have you ever been to another town and asked for directions, via 2 meters, and had a person come back and give you assistance after what seemed to be an eternity and then you have half a dozen "*helpers*" come in to offer their ideas? Who do you listen to? Sometimes I feel like saying I only want W9XL to answer because he was the one I heard in the first place. Where were all the helpers when I first asked for help?

Many times on our local repeater I hear calls for help for local directions. No one responds— then another call— if anyone answers there is always someone waiting in the "*wings*" to help. This to me is irrating- speaking in the terms of the driver looking for directions and confusing. Perhaps you do have a better way to get to a particular location but sometimes it is best to keep it to yourself.

This happened to me many times when I've tried to give directions. I give a particular direction and someone else comes in and shouts '*NEGATIVE, NEGATIVE go this way*", and proceeds to give his own directions. Now— where does the driver go?

Usually all the short cuts we know through town are great for us. Perhaps they are shorter and will take less time. However, all the right and left turns can be confusing and bothersome to someone pulling a 20' travel trailer. Keeping to the main, well marked streets is the best way to direct someone through town. Another good tip is to keep your transmission short. The driver can go by a turn very quickly before you unkey.

*JUST SOMETHING TO THINK ABOUT!*

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## USE THE NEW ID RULES

Score another victory in the win column for unregulation. You are no longer required to identify the station with whom you are in contact. The sole exception is INTERNATIONAL third party traffic.

Part 97 of the commission's rules was amended as follows. In section 97.84, paragraph (a) is amended and paragraph (h) is added to read: 97.84 Station Identification (a) Each amateur radio station shall give its call sign at the end of each communication, and every ten minutes or less during a communication. (h) At the end of an exchange of third party communications with a station located in a foreign country country, each amateur radio station shall also give the call sign of the station with which third party communications were exchanged.

As this change in rules applies to those of us using repeaters the commission felt that the simpler i-d requirement would mean smoother flowing communications in emergencies and in emergency-preparedness exercises such as nets and round tables. To reiterate, IT IS NO LONGER NECESSARY TO GIVE EITHER CALL AFTER EACH TRANSMISSION. HOWEVER, YOU MUST STILL IDENTIFY ONCE EVERY 10 MINUTES OR MORE OFTEN!

*From the* **NAPLES FM ASSOCIATION NEWSLETTER**

# Raising Your Code Speed

Many amateurs who have difficulty with Morse code have simply given up at a certain point and contented themselves with a lower class license and limited priviliges as a consequence. This need not be. To understand the code at 20 wpm or even well above that speed should be possible for anyone who wants to learn.

Since Morse code remains the most simple and cost-effective means of communication accurately over long distances and in poor conditions, it still is widely used in Amateur Radio as well as several other services. The code is something that reaaly is worth learning well. There is musch to be said for just knuckling down and concentrating on copying codes from broadcasts or tapes, presumably ever faster day-by-day. If this has proved to be incompatible with your nature, be of good cheer. There are some other methods you might try.

It is truly said that, "*There is no free lunch.*" If you reject the "*grind*" method, you will have to pay in another way by devoting more time to the learning process. Once you learn the code, it is a much easier, almost painless procedure to raise your code speed.

Have you ever visited a foreign country while having no knowledge of its language? On first overhearing the natives conversing, chances are you got the impression of complete gibberish and incomprehensible mass of sounds oly vaguely resembling human speech. If you stayed in that country several days or weeks, you notices certainly that a few of the common words and phrases of the foreign language began to take on some sort of meaning. You might have found yourseld understanding words such as yes, no, please, and thank you, even if you didn't have your Jim Dandy Bi-lingual Pocket Dictionary at hand all the time. In other words, the barrier of incomprehension between you and the foreign language began to show some cracks!

Psychologists tell us that this barrier is, in a way, a deep-seated fear of the unknown. With increased familiarity, as some of the unknown becomes known, this fear diminishes and the barrier lowers.

The "*incomprehension barrier*" tends to impede your progress in raising your code speed, too, so our first step is to defeat it by increasing our familiarity with code. This involves simply HEARING a quantity of Morse code WITHOUT CONCENTRATING OR CONSCIOUSLY LISTENING to it. The code should be heard at a speed of several wpm, even 50% higher that your present top speed. Your listening periods should be at least half an hour each day over the course of several weeks while you gradually raise the code speed to keep it well above that which you can fully comprehend.

Seems like a lot to ask? Well remember, since you are NOT concentrating on the code, you can edo any number of other things that don't require auditory concentration. Clearly, interference from TV sound, broaecast radio, the stereo and any but the most sporadic, desultory conversation of a no-no. Before long you'll find yourself recognizing an "a" here a "*to*" "*and*" or "*for*" there at a much higher speed with no conscious effort. You are persistently and surely breaking down the "*incomprehension barrier*" with aminimum of effort.

Obviously, some sort of tape recorder is required for this process. Either reel-to-reel or cassette will do. The later can be found in qualities good enough for this purpose for under $30. Record code from W1AW or from any of the several commercial stations sending press copy. There are several code-teaching tapes services available commercially too.

After you find a few short words easily recognizable as such, not as seperate letters, try the same tactic with number groups, your age, your home address figures, your social security number or your phone number in groups of no more than four figures.

You should soon find that you can identify small, common words and familiar groups quite readily, even at speeds that are nearly double your earlier top speed. Such recognition will come faster to some than to others, but often so quickly that you'll find it amazing. Pay a bit of attention; that is, listen instead of just hearing. Your subconscious mind, however, still should be doing the lion's share of the work by allowing the higher-speed code to sink in. You should devote several hours a week to this phase, interspread with periods of "*just hearing*" higher-speed, unknown text.

**by Robert F. Franklin, K6TP**
*from the* **ARRL INSTRUCTORS NEWSLETTER**

# Potpourri

Shame on you if you didn't make the May meeting, you definitely missed a great evening. We had a fine attendance with many of those in attendance genuine "*old* timers". It sure was interesting to hear about hammng in the old days. Claude, W9VZ, was presented an award for being the Grand Master of 6 meters. He takes over for any net control that is unavailable. Fine Business, "*uncle*" Claude! We had many fine presentations by several of our members, including slides of hamfests, picnics, stc. Shari, WB9SFT, did a great job as MC while standing on a ladder. They really should make podiums lower! Right, Shari? Gene, KA9BOD, was a terrific help everywhere. N9CCH, Chuck, did a fine job of Prez that night. Better watch it, Bob! The coffee area provided more memorabilia. Thanks to those who helped identify people in old pictures.

Fred, W9PGQ, is on the air with his new TS-430S. His first QSO was with a ham in Belgium so it's really doing that it's supposed to do. Go get 'em, Fred.

There are no doubt a lot of hams who have purchased new gear that have a lot of bells, whistles and switches. Of course they all have a purpose and are nice to have, but some take time to understand. Sometimes I've had to scratch my head and read the manual over and over and play with the controls for some time before it sinks in. New equipment has come a long way over those times manufactured only a few years ago.

W9TAG, Chris, is in the hospital in Madison in very serious condition. Let's all pray Chris has a speedy recovery. Also in the hospital is WA9NTT's mother. Bob has been in Pennsylvania helping his fater care for her.

Advancements during the month of May were: Pete N9CWQ and Roger, WB9VLN. Both received their Advanced ticket. Look for a new call sign in the area, KC9BN has sent for a new two by one call.

Field Day is coming up very soon. A sketch is enclosed with this month's issue which should help you find the site. Club activities during the year must have help from the membership in order to be successful. So join in and be a part of the event. Help make it all worthwhile. I'm sure you will not only have fun but also feel good about having been a part of it.

**Cheerio, Chuck, N9CCH**

# Ham Mart

**FINAL ITEMS FROM THE ESTATE OF KC9IJ. CUT OFF DATE FOR ALL OFFERS FOR ITEMS LISTED IN THE MAY ISSUE AND THE JUNE ISSUE OF THE HAM RAG WILL BE JUNE 15.**

**PLEASE CALL BILL RIGDON AT 963-3391**

2 element tri band quad made by Hygain;
50 foot of Rohn 25G tower;
1 quarter wave 2-meter trunk mount antenna;
1 5/8 wave mag mount 2-meter antenna

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**NETS:**

**28.7 Mhz. Monday 9:00 p.m.**
**50.4 Mhz. Nightly 9:00 p.m.**
**146.01/.61 Mhz. Monday 8:00 p.m.**

**BLACK HAWK VALLEY**
**TEN TEN INTERNATIONAL**
**28.925 Mhz. Wednesday 9:00 p.m.**
**21.130 Mhz. Thursday 9:00 p.m.**