

Ham Chatter

The official publication of the Brightleaf Amateur Radio Club

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Greenville, North Carolina

Our 16th Year



Greg Fishel, center, answers questions after the meeting.

Weatherman Talks At Meeting

It was rather cloudy outside last meeting night. A storm was brewing inside for the guest speaker. Inside the conference room of the club building the smell of new paint was very noticeable, but it didn't stop things.

Soon there was the smell of fresh cake, supplied by Burney Nobles for the club's 15th birthday.

Greg Fishel, WRAL-TV meteorologist spoke to the approximately 40 members present about the "trials and tribulations" of forecasting the weather.

Fishel, using visuals and

some weather satellite photos, discussed the moving weather patterns and why we get certain types of weather in our area.

For a finish, Fishel answered questions of causes of weather disturbances effect on radio signals.

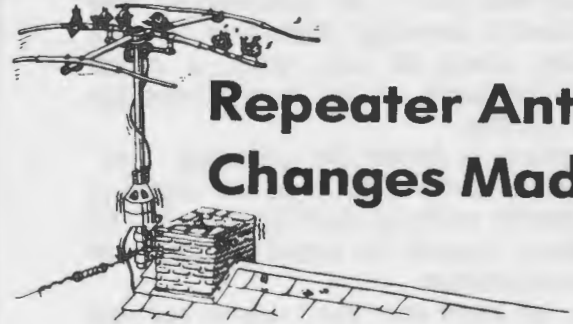
After the enjoyable lecture and question-answer session, members and guests were treated to the cake (which everyone smelled through the entire meeting) and ice cream served by Danny Shive's XYL, Lanie.

Everyone left - predicting the weather for the next day!

MEETING DATE

Tuesday, March 9, at the Planters National Bank Building, at the corner of Third and Washington Streets, in Greenville at 7:45 p.m. Please come and share your ideas with fellow hams.

It's A Suprise



Repeater Antenna Changes Made

by Murray Adams, WA4DAN

As most hams active on two meters know there have been some antenna changes on the 69/09 repeater.

To explain things, let me give you some background information. The repeater initially went on the air in December of 1974. It is a GE repeater with a Phelps Dodge duplexer and super-stationmaster antenna.

The antenna is located at the 750 foot level on the southwest leg of the tower. At the time the repeater went on the air both television Channel 9 and WNCT-FM were both pumping out considerable RF. Since duplexers are very sensitive to RF, the single antenna to receive and transmit simultaneously did not work. It was then that a Hustler G-6 antenna was installed at the 650 foot level and fed with $\frac{7}{8}$ hardline. Now the super-stationmaster was used to receive, the G-6 to transmit and the duplexer was no longer needed.

From early 1975 to January, 1982, the Greenville repeater operated with this arrangement.

In the present set-up, let me explain the background.

Back in November, 1981, Layton Clark/W4GLI, and myself (with the full blessing of the chief engineer) went to the new WNCT-FM transmitter facility in Grifton to hook a two meter rig to the FM antenna.

The antenna is circular polarized and cut for 107.9 MHz. Honestly, I didn't have

any idea it would work as well as it did. Danny/K4ITL, in Raleigh heard us on direct with just a hand held with a rubber duck antenna!

Layton and myself had a ball on the band for a couple of hours.

For the present antenna set-up I wondered of the FM antenna at 107.9 MHz. worked so well, why not the old Channel 9 TV antenna on the 800 foot tower in Greenville?

Basically the differences are the one here is only half as high and is mostly horizontally polarized. They are both approximately 40 MHz. away from the two meter frequencies. The only difference being the FM is 40 MHz. below and the TV is 40 MHz. above.

So back in January the big switch was made and the results have been amazing. The "Batwing" antenna, as it's commonly called because of radiating elements looking like bat wings, was used for receive and the super-stationmaster for transmit. We seem to be as good on receive as before but our transmit signal has dramatically increased.

We have not finished yet. There is one more improvement (hopefully!) to come. The Greenville Repeater Association has on order a Phelps Dodge four dipole array and by the time your read this it should have arrived from New Jersey.

Next month we will discuss this antenna and what the plans are for it.

(See related photo on page 3)

OOPS!



Local hams took part in an unscheduled "fox hunt" on Sunday morning, February 14. The bugle sounded about 10 a.m. when a signal appeared on the input of the local Greenville repeater (147.09 MHz.)

At 10:30 efforts to locate the offending "fox" began: WA4MOK and N4CZT found the signal to be almost directly north of their stations; KC4IE in Rocky Mount located the signal at about 150 degrees from his station.

At 11 a.m. we knew the "fox" was in our own chicken-coup — right here in Greenville!

WA4DAN had already begun a mobile search and had an approximate idea of the location: somewhere in the 14th Street - Pitt Plaza area. W4LYM joined the hunt and located the "fox" — KS4O, Mac Whitehurst, who had left his Kenwood TS 700 in his car in the "send" position and gone to church services.

Mac apologizes for the trouble he caused, especially because that rig was the offending "fox" on two previous occasions (ed. anyone want to buy a nice all-mode two meter rig, but promise not to use it mobile?).

The experience did teach us a few things though:

- that we are not well prepared for D.F. exercises at the moment,
- that we use our two meter rigs casually and should watch them carefully, check them before leaving our cars, and lock them up,
- that "fox hunts" would be more fun on simplex (and scheduled says N4CZT),
- and finally that W4LYM can drive his car with two H.T.s - one in each hand, and the steering wheel in his teeth! Congratulations on finding the critter!

(AI4J)

The Chatter Box

Each month, hopefully, we will have space available for members to write a letter to the editor. Please try to keep the word count of your letter to about 100 words. The letter must be signed by the person writing it. No letters will be used that are not signed. This will be a good place for members to express their opinion of happenings and their thoughts on amateur radio.

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By

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Danny Shive/K4WKZ

Technical Hints



CMOS CONSUMER PACKAGES by Gary Ambert, AI4J

In the last issue of Ham-chatter I wrote about the Consumer Packages offered by National Semiconductor. This month I will examine one of those chips, a simple Programmable Oscillator/Divider.

This is product MM5369, a small 8-lead dual-in-line integrated circuit that supplies a highly accurate 60 Hz reference square wave from a supply voltage of -3 to -15 v.DC. Most amateurs are concerned with getting rid of 60Hz "hum", but there may be times when you actually need an accurate 60 Hz for a reference. Clock kits made to work in automobiles, boats, etc. need this reference signal because it is not available from an a.c. power source.

The main external component is a common crystal used in the color circuits of ordinary T.V. sets, a small crystal cut to exactly 3.579545 Mhz. It is placed across pins 5 and 6 with a 20M resistor and two capacitors (Fig. 1). Pin is grounded, pin 2 is the negative supply voltage.

If you want to experiment with this simple chip, and can not obtain the NSC 5369, try the Radio Shack equivalent, part No. 276-1769. It's easy to obtain locally and seems to be an exact copy of the MM 5369. The one I bought worked exactly as advertised and was "tuneable" to within 2 Hz. Bill Dawson (WA4SLC) and I checked it out with an accurate frequency counter. You will see that the oscillator output (on the crystal frequency) is set by the trimmer capacitor. The data book indicates a tuning range of 100 ppm (using the components they recommend); so 100 ppm times approximately 3 and 1/2 million Hz would produce a tuning range of about 350 Hz. Our chip had a "range" of 300 Hz and we were able to set it to within 2 Hz of the "target" frequency: 3,579,545 Hz. At that point we had exceeded the accuracy of counter!

The internal binary stages of the chip divide the frequency by 59,659 - so the output square wave is a super accurate 60Hz. A true long-range test of this chip is in order to see how accurate it is over a period of time. Remember, we are talking about a \$2.69 IC, not a \$75.00 oven time base or TXCO. The output of the IC we used was 10 V.(P/P) for the 60Hz. square wave, and about .7 V.(P/P) at 3.5 Mhz.

Well, with that much R.F. floating around the shack, I couldn't resist turning on my Drake R4/C, and there - right on frequency - was the oscillator (along with all the signals from our neighbors' color T.V. sets). Across 50 ohms this turns out to produce .0012 watts of power, or a bit more than one milliwatt. Next came a ten foot wire antenna on the buffered oscillator output, a code keyer in the D.C. supply voltage line, and bingo! - a super QRP transmitter was born. By the way, this is one of the few oscillators I've fooled with that does not "chirp" when keyed at the supply. You low power fans - how about hooking up one of these transmitters to your 80 meter antenna and see if you can make a contact?

If you have never experimented with digital integrated circuits before, these little packages are a good place to start. They are easy to bread-board and have potential applications in the ham shack. (AI4J)

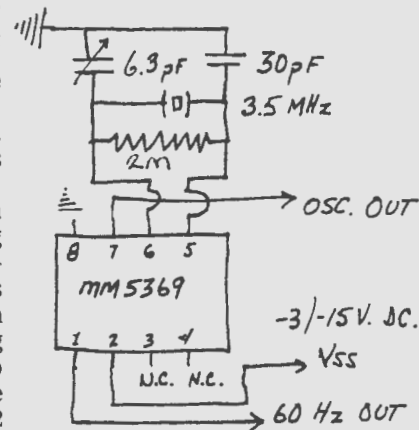


FIG. 1

dateline... Washington, D.C.

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FCC Authorizes Beacons On New Amateur Bands

In an attempt to permit amateurs to become familiar with propagation characteristics on the new bands allocated to the amateur service at WARC-79, the FCC has authorized an experimental beacon on the bands 10.1-10.15, 18.068-18.168, and 24.89-24.99 MHz.

Initial operations will use 3 watts ERP on the 10 MHz band, with identification occurring at 2, 12, 32, 42, and 52 minutes past each hour. The station is assigned call sign KK2XJM.

Operations should have commenced on 1 October 1981. Depending on the results obtained, the schedule will be expanded to include transmissions on the 18 and

25 MHz. bands using power levels of up to 30 watts ERP.

Persons copying KK2XJM are encouraged to send reports to R.P. Haviland, W4MB, 2100 S. Nova Rd., Dayton Beach, FL 32019. Reports should include the following information: date, time, signal strength, location of receiver, nature of receiving installation, and other signals heard on the band. All reports will be acknowledged by a QSL card.

U.S. amateurs are cautioned that the three new bands noted are still not yet available for general use, since, among other reasons, the U.S. Senate has not yet ratified the WARC treaty. Be aware, by amateurs in countries which have already implemented the WARC changes may have begun on 1 January, 1982.

Operator Fined

In Late October, 1981, the operator of an unlicensed low-power television station at Southern Pines, N.C., was issued a Notice of Apparent Liability for a forfeiture of \$2000 for broadcasting without a license.

The operator was broadcasting on v.h.f. Channel 7, and was retransmitting "adult" and other programming from a satellite receiving station. Intermittent operation of the station began on 15 October, and overnight programming began on 22 October. During the nighttime hours, the operator rebroadcast The Movie Channel and Eastern Sports Programming Network programs, all of which he received on his own earth station.

Stray Parts

K4WKZ has a clock that will run eight days without winding! We wonder how long it would run if he'd wind it?



Club Stuff

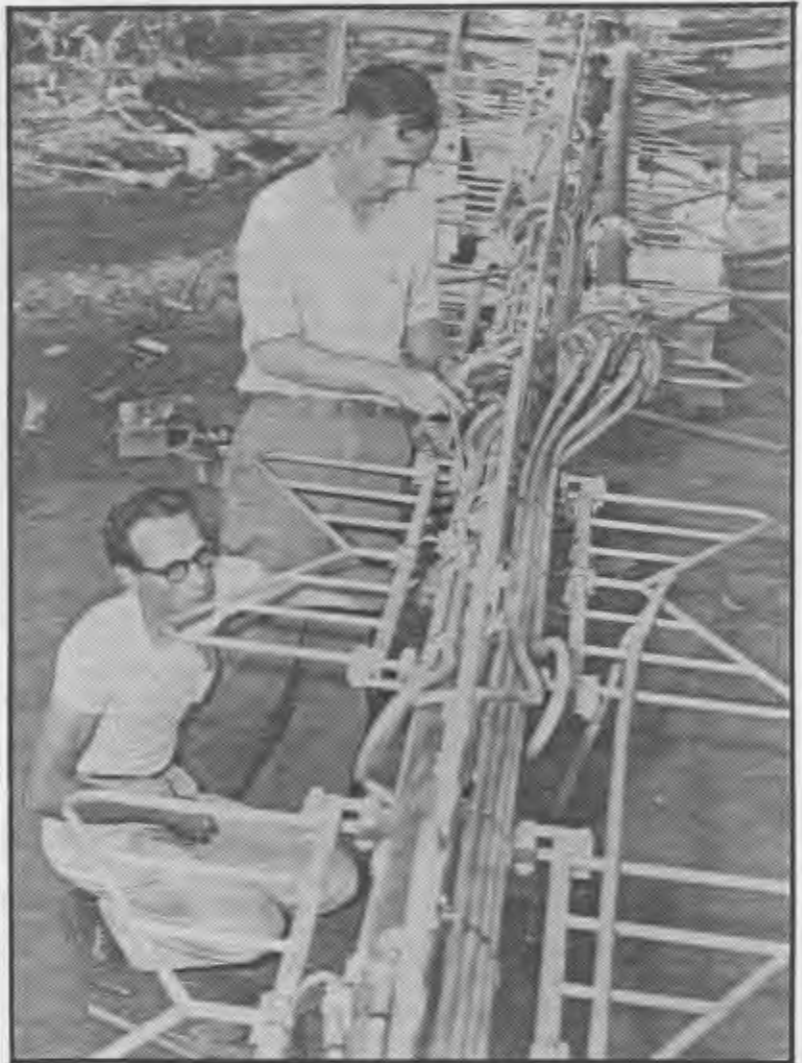
By Danny Shive, K4WKZ
Dust off the climbing belt and start making antenna plans. It'll be springtime soon, and time to clean those rusty connections.

Some say that if antenna stays up, it isn't big enough. Word has it that Murray, WA4DAN, will be making a change soon. Look out pileups! This is reportedly a new 10 and 15 meter dual bander to compliment his 20M monobander. I wonder who he hasn't worked?

Bernie, WA4MOK, and Donnie, KE4FK, (two of the local tower squirrels) will probably start the season in about a month helping WB4UOU get a TH6 up 60 feet in Grifton. I'm sure all available help, both physical and verbal, will be most helpful.

Jack, W4DXJ, and Rachel recently returned from the "Big Apple" where they took in some of the latest Broadway shows. I'm sure Jack showed those New Yorkers how to have a good time.

DUES: Don't forget to mail your dues or give them to Richard Kelly. Richard's address is BARC, P.O. Box 8387, Greenville, N.C. 27834



REMEMBER WHEN? . . . This is a photo from the collection of Murray/WA4DAN. The photo was made in about September 1953, and shows Heber Adams/W4GDF and the late Hank Tribble/W4JVP putting the

final assembly touches on the "Batwing" television antenna now on top of the present 800 foot tower. The W4GDF repeater is using the antenna for receive.

antennas

By Bernie Nobles, WA4MOK

Spring has sprung and with this in mind, we start planning the new antenna projects. One question often asked is what kind and size rotor is needed? First find the square footage of the antenna. Next, decide what type mountings fit the installation best. If the rotor is to be installed inside a tower, the full capacity of the rotor can be used.

If the rotor is to be mounted on a pole or pipe as an inline installation, then the capacity of the rotor drops. The most common rotor is the CDE Ham IV, which when used inside a tower has a full load capacity of 15 square feet of antenna surface.

The inline installation drops from seven to five square feet. All CDE rotors are made to fit the Rohn 25G tower and rotor plates. With most other brands, the rotor plate has to be redrilled.

The Alliance HD73 will handle up to ten square feet. This rotor use a seven wire cable and the CDE452, HamIV, and Tailtwister use eight wire cable. Two of these wires should be at least 18 guage up to 125 feet, others being 22 guage. Any length other than 125 feet, should be 16 guage and others 18 guage.

Let's get those new antenna projects planned now for the coming season.

Let me know if I can be of any help. 73's — WA4MOK

Have any good news items?
Please let us know.

Kit Building

by Joe Garzik, KA4TAU

In 1972, "electronics" was just another word in the dictionary to me. I didn't know a resistor from a transistor. However, for some unknown reason, it was then that I decided to build my first kit.

Needing a real challenge, I chose a \$700 Heathkit 25 inch color TV for starters. After two months of dilligent work, I finally plugged it in — and it "smoked".

I clearly remember my wife's tears as I spent another week searching for my error. I found the "bug" though, fixed it, and have been hooked on kit-building since.

For the non-technician type, the thrill of fixing something as complex as a TV had a powerful influence on me.

Since that time, I have built many kits as my primary hobby — (mostly Heathkits). I've assembled a computer system, a second 25 inch color TV, an oscilloscope, an engine analyzer, several meters, and a few other miscellaneous pieces of test equipment.

This, quite, naturally, led me into ham radio; not so much because I wanted to be a ham, but more so because I wanted to build a SB-104A transceiver.

The SB-104A was my most challenging kit. It has an incredible number of wires, but it worked well from day one. My station is now self-assembled Heathkits, and it includes their memory keyer (which, by the way, is a real dream).

Unassembled kits, particularly Heathkits, are not always cheaper than ready-made gear, and they are not always state-of-the-art. Their advantages, at least for the non-technician like me, are that (1) I'm not afraid to disassemble something I've assembled, (2) I can generally repair my own units, (3) they give some much needed technical experience, and (4) they are more fun.

As for some kit-building tips, I recommend:

- Test as many components as possible, particularly capacitors before assembly.



TOOLS OF KIT BUILDING. . . A kit waits to be assembled on the work bench. Good tools and a good heat

controlled soldering pencil are very nice.

- Know how to solder well.
- Read the instructions
- Read the instructions again, this time carefully.
- Take frequent breaks from your work, and don't rush
- Double check all circuit board work

- Triple check all wiring
- Drink only coffee!
- Enjoy the experience, for you too may soon have your own Heath revolving charge account, loaded to the "gills" with charges for your new hobby.

Rare Planetary Rendezvous No Threat To Earthlings

National Geographic
News Service

EDITOR'S NOTE — Even though the following article is not directly related to amateur radio, I thought it would be of interest.

WASHINGTON, D.C. — March 10, 1982. That's the day that all nine planets will be closer together than they have been in about 500 years, but nothing earthshaking will happen.

A day in 1982 was suppose to be the time, according to the 1974 book, "The Jupiter Effect," that all the planets would line up in a row and trigger a chain of events that would result in the worst urban earthquake of the century, destroying Los Angeles.

"As far as we know there's never been such a 'Grand

Alignment' and probably never will be," said astronomer LeRoy Doggett of the U.S., Naval Observatory. "Studies of planetary motion over millions of years have not uncovered a time when the planets would ever be in a straight line or even very close.

At Worst, Not Bad

But even if the planets were to line up one behind the other, he pointed out, there is no known scientific evidence that their gravitational attraction is linked to earthquake activity. At worst, they would raise the tidal forces on Earth, but not enough to "trigger" an earthquake that was already about erupt.

What will happen on March 10 then? "An unusual celestial phenomenon with no cosmic consequences or significance," Dr. Doffett said. "It won't be at

all earthshaking," agreed astronomer Kenneth Franklin, of the American-Hayden Planetarium. "Just enough of a planetary lineup to make people ask if the solar system will tip over."

All the planets will be on the same side of the sun. Viewed from the sun, they will form a jagged line within a 98-degree arc. Earth will be sitting on the edge on one side, Uranus and Neptune farther from the sun on the other side.

According to calculations by Belgian astronomer, Jean Meeus, the last time all the planets lay within a slightly narrower 90 degree quadrant was the year 949. The next time will be 2492.

Celestial Mechanics

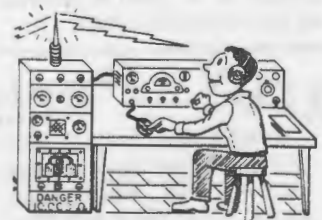
If pluto, the outermost and smallest planet, is excluded from the lineup, the other eight come into rough alignment more frequently, about once every 179 years. The closest these eight are known to have been was within a 40-degree arch in 1128.

What brings the planets into alignment? It's all a mater of

celestial mechanics. The planets travel at different rates, depending on their distance from the sun. The fastest, Mercury, lies closest to the sun and circles it in 88 days. The slowest, Pluto, takes 248 years.

At the naval Observatory in Washington, D.C., March 10 will be observed by routinely tracking the planets as part of its continuing study of planetary motion. "It will be business as usual as long as it's a clear night," Doggett said.

Across the country in southern California, there sould be no eartly reason to sell those condominiums on the coast, after all.



February 2, 1982



Amateur Radio in Morocco.

After a decline of amateur radio activity over the years an enlightened and progressive licensing procedure has swelled the ranks of amateurs in the Kingdom of Morocco. The re-activated Royal Moroccan Amateur Radio Club and its over 100 members nationwide are doing excellent public relation work in educating officials and the public. Press releases on specific and general amateur topics are being printed by the local papers. A TV program with listener participation is in the works. ARRL films were requested for showing on national TV. License approval for qualified resident amateurs are issued within a few weeks. Reciprocal agreement are being considered.

In the northern Moroccan city of Tangier, Hans Dankerl (CN8AT) and Wayne Houser (CN8CU) are helping to put Morocco in the forefront of progressive countries and its amateur population. Hans managed to obtain a number of ARRL's project "Good Will" 20 meter QRP transceivers for distribution to qualified hams without a station. Wayne started a second round of a novice training course at the American School of Tangier. Practical training in electronics for the budding amateurs consisted of QRP rig assembly and subsequent on the air test. Code practice keys were made from Hacksaw blades, a 555 chip and parts from the Junkbox. Local purchase of amateur radio equipment and parts is very difficult if not impossible due to the scarcity of such things. Radio shack does not (yet) have a store here.

A license for a future club station (CN8MT) should be forthcoming soon. Both, Hans and Wayne, are not too proud to solicit help and support from U.S. Amateur Radio Clubs and its members not only for the creation of a Tangier based club station but also to make it possible for the many amateurs here who are willing but not able to become active participants to do so with equipment donated by American hams.

Moral support or active assistance may be sent to:

Hans Dankerl (CN8AT)
AmEmbassy/T
APO, N.Y. 09284

Hans is a Voice of America employee who is deputy manager of the Tangier Relay station. He was stationed in Greenville from about 1970-1973. He sends this letter of interest.



CELEBRATING — Club members help themselves to cake and ice cream at the last BARC meeting as WRAL-TV meteorologist

Greg Fishel talks with members in the background.