JOHNSON COUNTY RADIO AMATEURS CLUB, INC.
P.O. Box 93
Shawnee Mission, KS 66201

FEEDBACK

JANUARY 2016

JCRAC Turns Out for SKYWARN Recognition Day

The National Weather Service recognized its volunteer weather spotters at its seventeenth annual SKYWARN Recognition Day on December 5 at the National Weather Service office in Kansas City and 95 other sites around the country.

Radio operators around the country earn one of a variety of certificates based upon the number of NWS stations they can contact in a 24-hour period. Participants exchange call signs, signal reports, location and a one or two-word description of the weather.

JCRAC President and NWS Central Region Systems Manager **Bill Gery, KA2FNK**, reported that the KC NWS office logged a combined 865 contacts on CW, phone and PSK. This year's total, which was 250 more than last year, was the best-ever performance for the KC office.

To make those contacts, the NWS needs--and uses--local amateur radio operators to operate their radio stations, in this case, KCØNWS. JCRAC members were out in force for this event.

The National Weather Service reports that it relies on its nearly 290,000 volunteer SKYWARN spotters to provide essential local information during severe weather events. Volunteers go through both weather- and safety-training to prepare them to make severe weather reports.

Photos by NØCVW

JANUARY MEETINGS

***January 8** – Planning 2016 Programs*
***January 22** – Whatever we decide on January 8*

The Johnson County Radio Amateurs Club normally meets on the 2nd and 4th Fridays of each month at 7:30 PM at the Overland Park Christian Church (north entrance), 7600 West 75th Street (75th and Conser), west of the Fire Station.

Much of the membership travels to the Pizza Shoppe at 8915 Santa Fe Drive for pizza buffet and an informal continuation/criticism/clarification of the topics raised at the meeting ... or anything else.

Leave the church, turn right (west) on 75th. Turn left (south) on Antioch. Turn right (west) on Santa Fe. Pizza Shoppe is just past the Sonic on your left.

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A publication of the
Johnson County Radio Amateur Club, Inc.

Bill Gery, KA2FNK, President

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A CW Month ...

Sometimes things just come together.

One of your editors has--for his own edification, for FEEDBACK content and for a couple of other reasons--been casting about for a series of "even you can do this" beginner electronics projects. **Tom Wheeler, NØGSG**, was prevailed upon to simplify a rather more complicated code practice oscillator construction article that he had already submitted. **Jaimie Charlton, ADØAB**--who prepares Hambone articles several months in advance--submitted a Hambone CW story. And then the January QST arrived, with two articles about homebrew Morse code keys and a letter from a well-seasoned ham who extolled the virtues of rediscovering CW.

and a Beginner's Year

In past months, your editors have urged the members to engage in some personal exploration, to try something new without worrying about what the club's most experienced engineers will think of our efforts. After hearing about this for several months, Jaimie Charlton told your editor that he had done enough shouting from the shore and that it was time for him to step into the water and to get his feet wet.

Fair enough. On the theory that a public committment enhances the likelihood that something will actually get done, your editor hereby commits to learn Morse code, to assemble a variety of beginner electronics projects in 2016.

There will be successes and failures. Because each is likely to be either instructive or amusing, you will have an opportunity to read about them in the pages of the FEEDBACK during 2016.

What are you going to learn in 2016?

-- Chip ACØYF and Deb KDØRYE Buckner

PRESIDENT'S CORNER

I hope all had a safe and Merry Christmas and Happy New Year.

The year 2015 is now behind us and it is time to look forward to the new 2016. Our first program on January 8 will be for planning the programs for the coming year. We have worked our way through the list of ideas we had for 2015, so please come with new ideas for club programs. If you would enjoy an update--or a refereshser--on something we have had in the past, be sure to let us know of your interest.

As it happens, workplace responsibilities require me to be in DC during the first part of January, so I will miss the first meeting of the year. I'll be interested to see what you come up with!

Our 2016 Field Day plans will take us back to Shawnee Mission Park. The location has been very good in providing exposure for Amateur Radio. The Parks department has been very supportive as well.

– Bill Gery – WA2FNK

JCRAC Meeting - December 11, 2015

Photographs by NØCVW








JCRAC Day at the National WWI Museum operating WW1USA - December 12 & 13, 2015

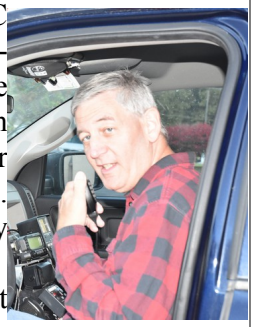





Learn CW: Build a Code Practice Oscillator - Tom Wheeler, NØGSG

In February 1991, the FCC enacted a major change to the Amateur Radio service. This change, the introduction of the No Code Technician license, was very controversial. Many saw it as the beginning of the end of ham radio, while others saw the Morse code as a requirement that was no longer technologically relevant in an unfolding Digital Age. What would become of Amateur Radio without the "gateway" of continuous wave (CW) telegraphy?

Nearly 25 years later, it's evident that ham radio is quite healthy, even though the FCC subsequently removed the Morse requirement from all US amateur licenses in 2007. What's equally interesting, though, is that interest in the code has hardly waned; in fact, new hams tend to be fascinated by the Morse code, and after they get an initial taste of hamming though VHF FM and perhaps HF phone and digital operation, many want to learn more about how to operate CW.



This interest in CW can be traced to the special skill that's required to communicate with it. CW is the original digital mode (the transmitter's carrier is either on or off), and its efficiency is legendary. CW transmissions use very little bandwidth (often less than 100 Hz), and can reliably carry messages with very low power; one can work the world on CW with only a watt of power. Morse code can convey information in many unusual situations; patients unable to speak have been able to tap the Code into a "listening" hand, and hams have even been known to tap out the telegraphic "hello" (*HI..which doubles as the 'sound' of laughter in CW)* to each other using car and boat horns, signal lights and many other means.

Learning Morse Code

To learn the code you will work through a series of steps. These steps include learning the character set, developing good operating habits through practice, and improving your proficiency.

- The *character set* consists of the letters A through Z, the numerals 0 through 9, and a few punctuation and procedural symbols. The ARRL provides a host of training materials online at http:// www.arrl.org/ learning-morse-code.

- Be careful to learn correctly when you're in the first phase of learning. In particular, *do not* try to visualize or otherwise "think" about the Morse code symbols as you hear them. With practice, you will simply write each letter as you hear it with no "thinking" required, just as you understand the spoken word.

- As you learn the code you should also learn to send it properly. A code practice oscillator lets you practice this skill without putting a signal on the air. This initial practice is critical in developing a good "fist" (on-air CW signal quality). You are not just listening to copy Code, but send it as well. The current literature in learning research echoes what all good teachers have known for a long time--to learn something well, you have to do it. Learning and doing are practically inseparable functions within the brain.

- A good regimen for practice is to schedule two twenty-minute learning sessions each day, separated by at least four hours. Long practice sessions are counterproductive for most people, especially in the initial stages of training. Practice physically rewires certain regions of the brain*, and this remodeling requires the raw resources to grow and connect new nerve cells (amino acids, lipoproteins, carbohydrates) along with time. (If you don't believe this, think about how hard it is to learn while sitting in a long, boring lecture class!)

- Do not use anything but a normal telegraph key (sometimes called a "straight key") as you learn the Code. Keyers, "bugs," and other sending devices are great, but they may interfere with the learning process.

- Focus on sending evenly as you practice and never send faster than you can copy.

- Work with a mentor or "Elmer" to develop *good operating habits*. You will need to learn and practice the etiquette (rules) of CW. Using a code practice oscillator can be great for off-the-air sessions.

- Listen carefully to the code you're sending; try recording it and playing it back later to get a feel for how you're doing. Your Elmer will also give you feedback on what your transmitted code sounds like.

- Before you know it, you'll be ready for your first on-the-air CW contact. Don't worry if you feel that your speed is slow; there are plenty of contacts that you'll be able to make, and most hams are thrilled to work new CW operators.

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** Maguire et al (2000) was one of the first groups of researchers to make a quantitative study of the relationship between learning and anatomical change in the brain. See: http://www.pnas.org/content/97/8/4398.full for details.*

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• Continually work to *improve your proficiency*. As you make more contacts, your ability to copy will naturally increase. Continue to practice your sending so that you develop the "motor programs" that will enable you to send good Code with little effort.

• Musicians must continually practice in the same way to maintain and extend their skills.

Code Practice Oscillators

A code practice oscillator is a simple device that lets you practice sending without putting a signal on the air. Most consist of a tone generator and speaker connected to a battery through a straight key. Decades ago, Radio Shack and other electronic retailers sold ready-to-use units. Most of these were of horrible quality, but were reasonably serviceable.

Figure 1 illustrates a code practice oscillator set that you can build in just a few hours. It consists of a telegraph key and a simple oscillator circuit based on the LM555 timer integrated circuit (IC). It's powered by a standard nine-volt battery, which will probably last for years. If you don't have a telegraph key, it's easy to build a substitute.

Figure 2 is the schematic diagram of the circuit. This is a great starter circuit as it has few components and can be assembled in a single evening.

The circuit of Figure 2 is typical of LM555-based circuits. In this circuit, the LM555 is wired as an *astable multivibrator* (square-wave oscillator). It's connected to the 9V battery when the key is depressed. The tone frequency (CW pitch) is controlled by R1, R3, variable resistor R4, and C2. These components form the RC time-constants that define the overall frequency of the oscillator. Since R4 is a variable resistor, the RC time-constant is variable and this allows the frequency to be adjusted to suit the user's taste.

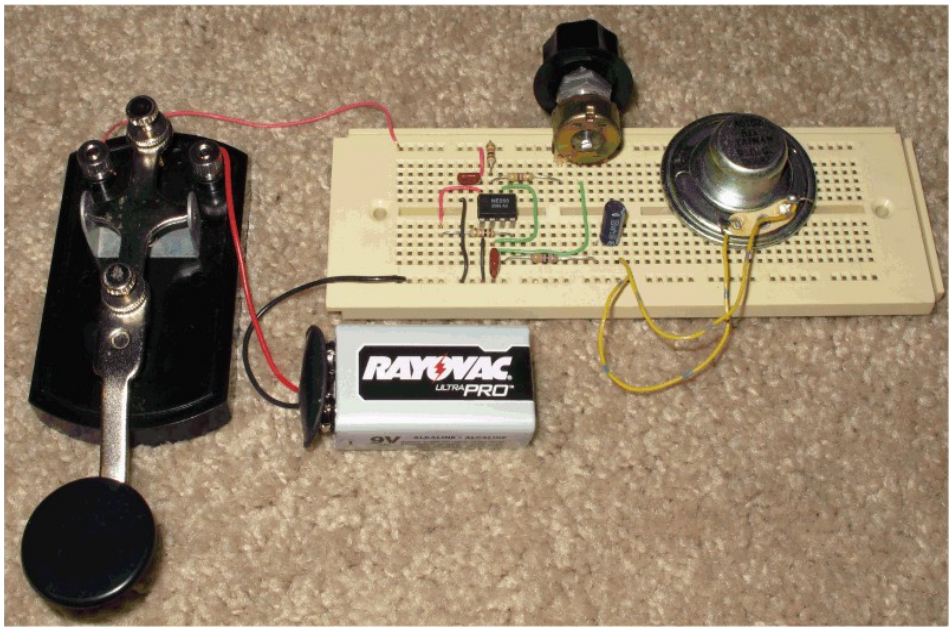

Figure 1: A Simple Code Practice Oscillator

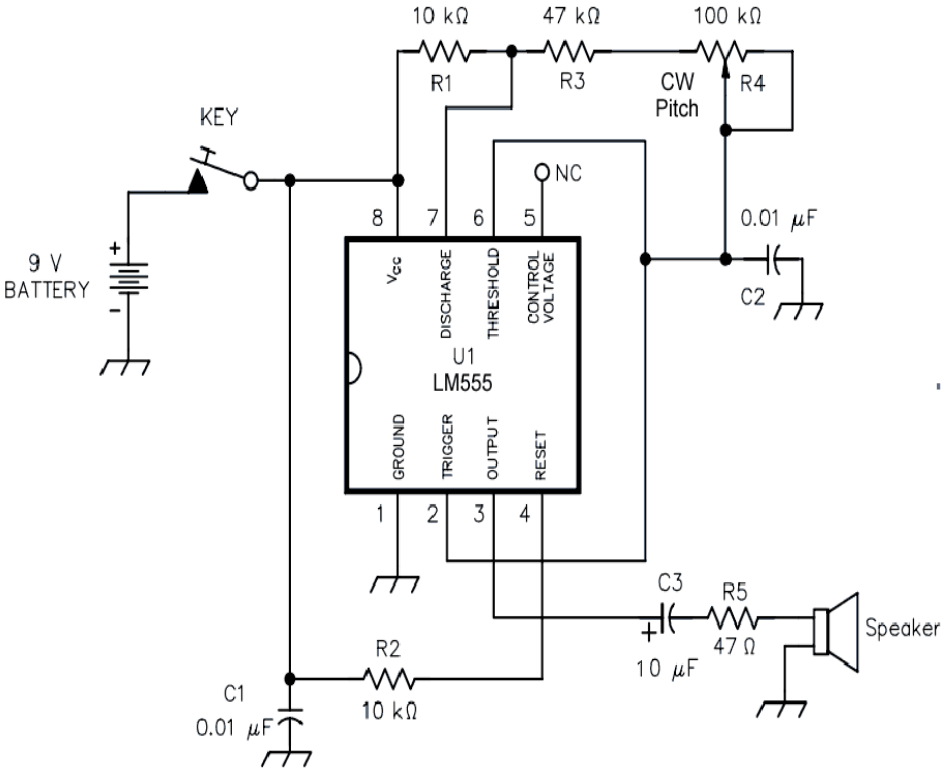

Figure 2: ARRL LM555 Code Practice Oscillator. (Adapted from http://www.arrl.org/files/file/Technology/tis/info/pdf/NYT.pdf*)*

The LM555 output is a square wave with a significant DC component; the DC is blocked by C3, and passed to the speaker through R5, which controls the volume by limiting the current.

Inserting a variable resistor (500 ohms is suggested) in series with R5 will give you control over the volume of this oscillator.

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Construction

The code practice oscillator can be built on a universal breadboard. Keep wiring short, and make sure to use the top and bottom "busses" for power (9 volts) and ground. Figure 3 illustrates a suggested layout for the circuit elements.

Take care to observe the orientation of U1, the LM555 IC chip. Pin 1 is adjacent to a notch or dot on the actual IC package. Inserting U1 backwards is a sure way to release "magic smoke" from the device!

Finally, note that C3 is an electrolytic capacitor and is a polarized part--it goes in the circuit in only one direction. On the schematic there is a (+) sign that marks the positive lead (which is usually the longer of the two leads). On the actual part watch for the polarity marking--usually the negative lead is marked with heavy black line, or outright '(-)' negative indication.

Adjustment

There's only one adjustment, and that's the pitch of the CW signal. Most hams prefer to hear tones around 700 Hz (this is close to the pitch of F above middle-A on a piano keyboard, which is 698.46 Hz). For initial practice this pitch is recommended as most ham transceivers are properly tuned to a CW signal at this frequency.

Conclusion

A code practice oscillator is a great tool for learning the Morse code and teaching it to others. In one evening you can build a circuit that will help you (or a new ham) on the way to becoming proficient in CW. To paraphrase Pete Townshend of *The Who*, "Morse is Dead, Long Live Morse!"

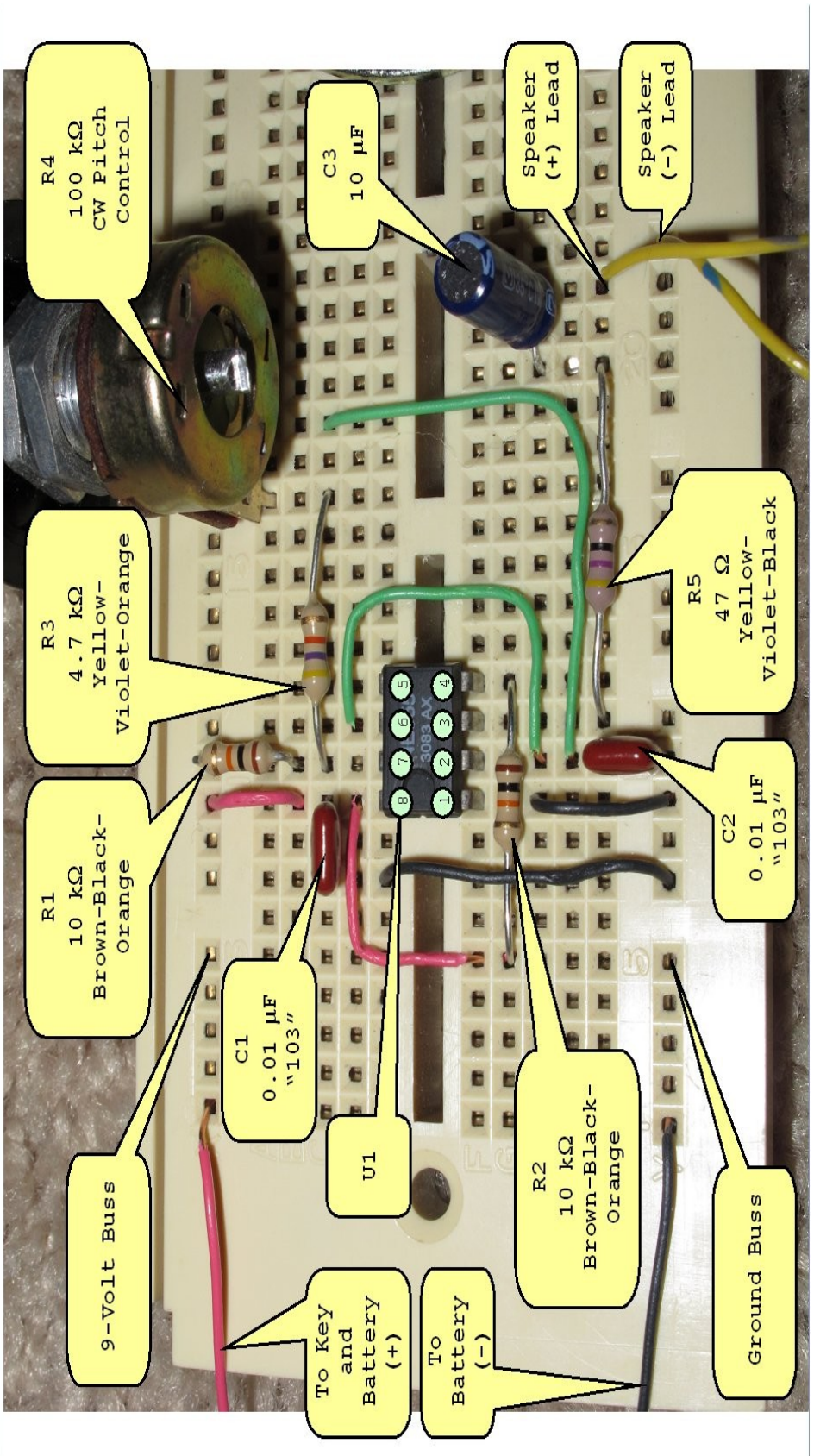
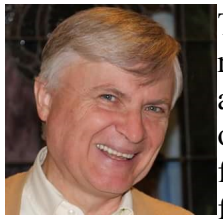


Figure 3: Suggested Component Layour for the Code Practice Oscillator

The "Amateur" in "Amateur Radio" -- Chip Buckner, ACØYF

Even YOU Can Build Tom's Code Practice Oscillator



Typically, when I read a "project" article in QST or on the Internet, my first reaction is frequently "that's neat" or "I wish I could do that" or "how clever". My second thought, however, is invariably "You know, I wouldn't have a clue as to how to get started. If, when you finished Tom Wheeler's article on building a code practice oscillator, this article has nothing for you. Just flip the page to learn about Hambone's latest adventures.

If, on the other hand, your reaction was something like "I wish I knew enough to try that", you and I may be kindred spirits. Let's do some exploring. Let's make some mistakes. And let's build Tom's code practice oscillator.

PARTS

Many construction articles urge the builder to take things out of his "junk box". My "junk box" contains paper clips, dried up ballpoint pens and eraserless, broken-leaded pencil stubs. With the exception of a re-purposed computer speaker, I needed to buy every single part for this project.

Once upon a time, Kansas City was littered with Radio Shacks where you could buy one or two units of common parts. If you live near one of the few remaining stores—I don't—you might look there. Otherwise, you have three choices. First, you can go to Electronics Supply, on Main Street, north of the Plaza. Second, you can do mail order. Third, you can hit up somebody you think might have the parts. Each approach has its advantages and disadvantages.

Electronics Supply will have something in stock. You may pick it up and take it with you. You will, however, pay the for the privilege of having a knowledgeable human being retrieve the part from a well-stocked inventory maintained in a clean, well-lit building in a pleasant commercial district. Wanting a single 1N34A germanium diode for an as-yet-unattempted crystal radio project, I walked in, paid $1.64 plus tax and walked out with a "replacement" NTE109 diode.

Buying single units by mail order won't save you any money. The unit prices are high and shipping costs push the price beyond what I think is a casual purchase. Jameco sells the 1N34A for $1.95. Various retailers sell single NTE109's for $1.64 and up. If, on the other hand, you want 10 or 100 of the diodes and are willing to wait for delivery, it is not hard to find vendors who will sell the diodes for a $0.10 or less. (I suspect that Tom or Jaimie will jump in here to tell me that the NTE109 is a much better diode than is a 1N34A. It could be, but for things like crystal radios and code practice oscillators … who cares?) You will get similar numbers for the LM555 timer IC (a little black chip—an Integrated Circuit or "IC"—with eight legs) in this circuit.

If you know someone who has the parts and will give them to you, my only advice is not to make yourself a pest. This person is probably better used as a technical advisor for your electronics projets than as a source for free parts.

A BREADBOARD?

When Tom Wheeler, Jaimie Charlton, Bill Brinker and I were discussing this project last fall, Tom observed that if a sufficient number of club members expressed interest in the project, Bill might make printed circuit boards, which would make construction easier. Bill observed that poor soldering technique was likely the principal reason that beginners failed with introductory electronics projects. He suggested the use of a "solderless breadboard". The implication was that *anybody* could assemble a project on a breadboard.

A "solderless breadboard" for any reader who knows as little about electronics as I do, is a piece of plastic with a bunch of holes in it. If you stick a wire in a hole, there's a little spring that will (a) hold the component in place and (b) form an electrical connection to other wires inserted into other holes in the same row of holes.

Let's see how this works.

Look at Figure 2 in Tom's article, the schematic diagram of Tom's CPO. Find pin 4 on the LM555 integrated circuit. Pin 4 is con

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Need Help with Parts?

I bought multiple units of everything online and, as a result, have things I never expect to use. I've packaged some of the leftovers into several CPO construction kits. Each kit includes (reference prices are from jameco.com) a re-usable breadboard ($5.95), an LM555 timer IC ($0.25), capacitors (including the 10-for-$1.50 electrolytic), resistors (including the two $1.25 potentiometers), a 9V battery connector and a foot or so of solid core wire ($7.95/100 feet). You'll need to come up with a 9V battery and a speaker. Because I don't want to be bothered with making change, your $5 purchase will include donation to the club.

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nected to one end of R2. The other end of R2 is connected to C1 and to the key and to pin 8 ofthe LM555 and to one end of R1.

Now refer to Figure 3 in Tom's article, the photograph of the breadboard. Find pin 4 on the LM555 IC. Pin 4 is at the top of a column of five holes. There is only one other thing in that column: the right-hand side of R2. That matches the schematic! (I love it when that happens.) The other end of R2 is in a different column of holes. It connects to a wire that crosses above the middle of the board and turns right into another column of holes. Below the wire in that column is pin 8 of the LM555 IC. Above the wire is one end of capacitor C1. Above the capacitor connection is a wire that leads to the top row of holes.

You'll note that on two of the outer edges of the breadboard, there is a gap and then a long row of holes. The connection on the outer row runs perpendicular to the interior connections, so everything in the outer row is connected together. This means that the top end of the wire we are following is connected to both the key (to the left) and resistor R1 (to the right). So, in what should come as a surprise to no one, Tom wired his breadboard to match the schematic diagram.

The advantage of the breadboard--for those of us with limited experience--is that fixing a mistake does not involve moving molten solder. Instead, all you have to do is remove the component lead from one hole and put it into another hole.

TOOLS

You are going to need to cut and strip the ends of solid core 22 AWG wire. AWG is "American Wire Gauge". Bigger numbers refer to skinnier wire. Cheap speaker wire at Best Buy is 18 gauge. Short extension cords at WalMart are 16 gauge. Audio shops want you to get 14 or 12 gauge wire for high-end audio. There is a formula to convert AWG to more familiar units, but you do not need—or want—to know what it is.

What you DO want is "solid core", as opposed to "stranded" wire. It is not fun to try to make little tiny strands of wire go into the holes on a bread board. It can be done—I have done it—but it is not fun.

You might be able to do this with a pocket knife or diagonal cutters. For those of us who lack fine motor skills, the right tool makes the job easier. Because I decide—every few years—that I want to learn this electronics stuff, by which time I have misplaced the wire stripper I purchased the last time I got excited about this cutting and stripping wires, I have several varieties.

CONSTRUCTION NOTES

I used Tom's photograph as a guide for component placement, using the circuit diagram to help me orient the 555 IC and the electrolytic capacitor (the longer capacitor lead is the "+" side). Part orientation is not otherwise relevant.

My potentiometer--or "pot"--(variable resistor R4) had three connections. (Perhaps every potentiometer has three connections. I wouldn't know.) The problem was that I saw only two wires in the photograph. Not wanting to wait to exchange emails to get instructions from Tom, I conducted my own experiments. It would appear that, so long as one of the wires goes to the middle connection and another lead goes to one of the outer connections, you can use the pot to change the pitch of your beep.

Tom suggests that, because we are doing audio circuitry, leads should be kept short. This (I suppose) is sound engineering. I, for three reasons, chose to leave component leads uncut. First, because this is a breadboard project and because I am (perhaps excessively) frugal, I can pull the pieces out of the breadboard and use them in a future project. If I trim the leads, it may be difficult to use the pieces on another occasion.

The second reason is a bit more subtle. I don't own a telegraph key. This means that the wire leading from the 9-volt buss (the top row of holes on the breadboard) to the key and battery cannot go "to a key". Thus, instead of connecting wires from the battery to the key and from the key to the 9-volt buss, I had a loose red wire coming from the positive terminal of the battery. To complete the circuit, I *could* poke the wire into any of the holes. Or because everything in that long row of holes is connected to everything else on that long row of holes, I could simply touch my red battery wire to the lead of R1. If the lead to R1 is flush with the breadboard, it presents a small target. If the lead to R1 is an inch long, it presents a big easy-to-hit target.

Third, if left to my own devices, I would have used connected wires "as the crow flies", directly from one point to the next. Tom Wheeler routed wires in straight lines and turned them at right angles. I decided that this looked cool. And, I figured that if *those* wires don't have to be shortest-distance-between-two-points wires, it probably doesn't matter that the component leads aren't cut short either.

NOW WHAT?

I triggered my CPO by touching the red battery-connector wire to resistor R1. We can improve upon that.

If you have a telegraph key, by all means use it. If (like me) you don't, you need a substitute.

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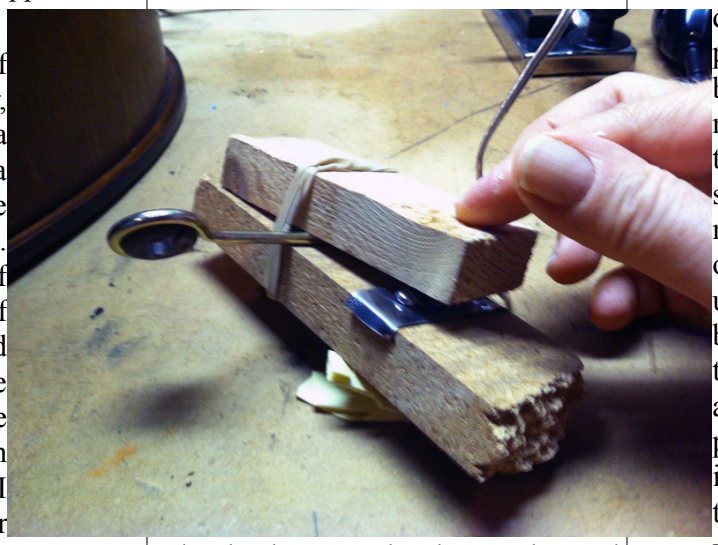
from THE AMATEUR on page 8

I asked Jaimie Charlton about inexpensive keys. He produced a home-made key--consisting of a rubber band holding a church-key can opener to a piece of scrap wood--at the next club meeting. He suppplied me a photograph of the church-key key, which appears on this page.



Mine consists of a piece of wood from a broken chair, a wooden ruler, a screw, a washer, a bolt, a nut, a pencil, a penny and a piece of old speaker wire. Speaker wire has a pair of conductors. On one end of each conductor, I attached alligator clips. (They were $0.40 a piece on the Electronics Supply bargain table.) On the other end, I soldered one conductor wire to the penny (and glued the penny to the wooden base). I wrapped the other conductor around the bolt and used the nut to hold the wire to the bolt and the bolt to the ruler. The pencil ... oh, just look at the picture.

Press. “Beep”. Success!

TROUBLESHOOTING

There are undoubtedly, any number of things that could go wrong. I can only comment on the mistakes that I made.

I finished assembling the project and told my wife that I was headed out to get a 9V battery. My wonderful wife told me that she had a package of 9V batteries on the shelf above the washing machine. I took the package, broke the seal, removed a battery and connected it to the CPO.

I touched the wires together to complete the circuit and ... nothing happened. I guessed that I might have the pot turned up too high, so I moved it to the middle position. Nothing. I reviewed the photograph. I reinserted every part. Nothing. I reached for the package of 9V batteries my wife had supplied to me and noticed that they were "best used" ... eighteen years ago. I removed the battery and touched it to my personal organic 9V battery tester. Nothing. (I was on a grade school playground when I learned that if you touch the terminals of a live 9V battery to your tongue, you will know that you have a live battery.) I obtained and connected a replacement battery. I touched the wires together and got a very satisfying "squawk".I reported my findings to my support group. Tom Wheeler asked if I had a good 9V power supply for my lab. My lab consists of as much space as I can claim on the bed or the breakfast room table before my wife makes me clean up my stuff. It does not contain a good 9V power supply--or an oscilloscope or a multi-meter for that matter.

My second failure came the following morning. The thing just wouldn't work. I won't tell you HOW I made the discovery, but I did determine that if, after completing the circuit, you drop the breadboard on the floor, you need to remember to reconnect the speaker. If you fail to do so, it does not matter how many times you check the rest of the connections. The unconnected speaker will not beep. Especially if you decide that, because you need additional light to diagnose the problem, you take the CPO into a different room and leave the speaker behind.

But now I have a working "beeper". And, flushed with the success of having made something that works, I'm ready to move to the next project.

Next month -- One of the advantages of using a breadboard to build a circuit is that you can change your design. Let's start with this code practice oscillator and make some additions.

A wooden ruler is sufficiently flexible that it will bend around the pencil, but sufficiently rigid that it snaps back when you release it. In the depressed position, the bolt touches the penny to complete the circuit.

Hambone Decodes Code - Jaimie Charlton, ADØAB

"Hi Unck, whatcha doin'?" asked Hambone as he stepped into his Uncle Elmer's ham shack. Elmer was wearing headphones and staring off into space with a determined expression.

"Oh, hi Hambone. I'm brushing up on my code. These dreary winter days are perfect for CW practice. I'm really going to work the next CW contest. Those guys run over 30 words per minute or more and I'm a bit rusty at those speeds."

"Why not just use a decoder and a keyer? I know that's what a lot of those really fast operators do."

"Well, Hambone, you're right. Some do, but it's no fun because it takes all the skill out of the contest. If you have to use software crutches like decoders and automatic keyers, you might as well switch to RTTY. In fact, I suspect that one of these days a good software writer will write an app that allows the radio to enter contests without the operator. Just turn it on and let 'er rip."

"You're kidding, Unck, aren't you?"

"Only a little. Apps like FLDIGI can send CQ, decode CW responses and, when the operator pushes a button, send a canned response that even includes a unique serial number. My logging app can tune the radio and my spectrum analyzer app can find signals. Now, when some clever devil writes an app that links these all together, my laptop/radio combination will be able to locate stations, tune them in, call them, complete the exchange and log the contact. It won't need me at all."

"So, Unck, are you working on that 'master app'?"

"I don't have to. I already have it, right here in my head. It just needs a little sprucing up and that's what I'm doing now. I've almost got 25 words per minute, but I want to get at least 35 to be sure."

"I don't know," said Hambone. "It seems like a lot of work for something that has no commercial value. Why do you old guys like CW so much?"

"First off, Hambone, not all of us CW operators are old. There are more CW operators on the air now than ever before. And that's in spite of the FCC dropping CW as part of the licensing test. Something about it still has appeal."

"Yeah, Unck, but what?"

"I've asked that question a number of times and gotten a lot of different answers. Some hams say that CW conserves both power and bandwidth because it goes farther than any other mode and takes less bandwidth. That's nice, but sort of superficial since there is no reason to conserve either.

One guy, however, was very insightful. He said that many hams, especially those who started in their teens and are now in their dotage, believe that CW lies at the root of radio communication and they don't want it to get lost in all the technological advances that are occurring.

Most of the old guys started as novices back in the day when they had to pass a five word per minute test to get a license."

"Sort of like you, Unck."

"Yeah." Elmer continued. "Then they could only operate CW with limited power on limited portions of the bands. They didn't like it at the time, but they became pretty darn good operators. For these guys, CW lets them remember their roots."

"So, CW is just there for old guys to remember their pasts?"

"For some, maybe, but not all. For most CW operators it's about developing a personal skill they can be proud of. That, in some sense, makes them special - sort of like the guy who can play the piano at a party."

"They like to strut their stuff," added Hambone.

" Yes we do. It's not easy to learn the code and we like to show that we have done it. A lot of people start, but very few ever actually make an on-air contact with it. Remember when you were trying to learn it?

You had to spend several weeks of daily practice memorizing all 26 letters plus ten numbers before even trying to make a contact. There was no instant gratification."

"Yeah, it was painful."

"But once you made that first slow, shaky contact, you were hooked and wanted to make more. Since then, you've gotten pretty good it."

"Thanks, Unck. But a lot of the credit goes to my very excellent teacher who badgered me relentlessly to keep at it--you!

There's a guy in the school ham club who says he wants to learn CW. But, he seems to obsess over what key to buy, what training software is best, what is the order he should learn the letters, small stuff like that.

I told him to start with any straight key, use any training software app

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or tapes or ARRL files and start practicing. But, he doesn't like hearing that. He's looking for some sort of short cut. I think he likes talking about CW more than actually doing it."

"One thing you might tell him is that tapes and apps are fine for learning to read code, but he should start sending early on to a real person who can help him develop his fist. There are a lot of excellent CW operators in our club who are very generous with their time and would be glad to help him," added Elmer.

"I hear a lot of new CW guys on the air who clearly have only practiced with an app. Their dots and dashes sound almost the same and they put no space between letters and words. Then, they think they are being ignored because nobody answers their CQs. They aren't being ignored, it's almost impossible to copy them."

"I'll tell him that."

"But, you're right," continued Elmer. "CW operators are sort of special. We have special CW tee shirts that we wear on Field Day and other occasions. We also get pretty big audiences when we operate in public. Visitors seem fascinated by the messages hidden in those beeps coming out of the radio."

"Another advantage of CW is that it's actually easier to understand a foreign station's call sign," said younger brother Dude, as he walked into Elmer's shack.

"I was listening to a pileup during the last SSB DX contest. I don't know who the DX station was because he had such a strong accent I couldn't catch his call. I never have that problem with CW."

"That reminds me of another advantage CW operators have," said Elmer. We don't usually have to register in advance for timeslots to operate most special event stations. All we have to do is show up. The sponsors are always glad to have CW operators."

"I agree with all that, Unck, but I've also heard some operators say that there is something special, almost mystical, about making a CW contact."

"That's true, Hambone. I've experienced it myself. Most operators use headphones to block outside noise, but the 'phones also create sort of a cocoon-world in which it's just you and beeps coming from somebody out there. At first, you hear those beeps as code. But shortly, something changes and they become sort of a voice."

"Unck, you mean you've started hearing voices?" asked Dude.

"No, no. Your brain seems to shift gears and you know what the person at the far end is saying without first translating his code into words. It's an eerie feeling when you first realize you're doing it. After a few times, you begin to look forward to it."

"That must be what they call head copy," added Hambone.

"Yes, that's head copy and it is one of the keys (pun intended) to high speed CW. But the lure of CW goes even deeper than that.

There was a story going around a few years ago, well, make that a few decades ago about a local ham that worked mostly phone, but tried a few CW contacts just for the heck of it. He was pretty shaky and decided to stick to phone, but he sent one last CQ with CW.

An equally shaky response came back and the two exchanged signal reports and rig details. It turned out that the guy at the far end lived in a log cabin in a tiny town in northern Alaska and was very interested in what life was like in Kansas, especially in the winter.

As is the case with beginning CW operators, not much was said, but it took a long time to say it, so they agreed to meet again in two days. And they did. In fact, they developed a twice a week schedule that they kept for over ten years."

"Wow!' exclaimed Hambone.

"Wow is right, that is impressive. Our guy here in Kansas occasionally suggested they switch to phone, but the Alaskan always had some reason not to, like his sideband transmitter didn't work or his microphone was broken. So, they both stuck with CW which they had become very good at.

To shorten this story, one day the Alaskan missed their sked. Then he missed another and another until the Kansas guy gave up trying to make contact. Then, a couple of months later, a letter arrived.

The letter was from a nephew of the Alaskan operator informing that he had died. It also thanked the Kansan for giving the operator his life back.

It turned out that some time before their first contact the Alaskan operator suffered significant brain damage from a stroke. He could not walk or speak, but could still move his hands a little. So, he learned CW and the Kansan was his first contact.

The remoteness of his location and his handicaps meant that he had virtually no life outside of his house --except through his twice a week sked with the Kansan. The nephew went on to say that, thanks to CW, the Alaskan gradually regained some of his ability to move and communicate. And he believes it was those skeds that gave his uncle the last 10 years of his life.

So you see, Hambone, CW contacts can be as real as any voice contact."

"That's a nice tear-jerker story," said Dude. I just work CW because it's fun!

Oh hey, it's almost time for the Code Monkeys net on 7.032 MHz. You guys are welcome to join us--if you think you can keep up."