

K9YA Telegraph

Robert F. Heytow Memorial Radio Club

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Lightning Strikes Twice

Two Versions of the Venerable Lightning Calculator

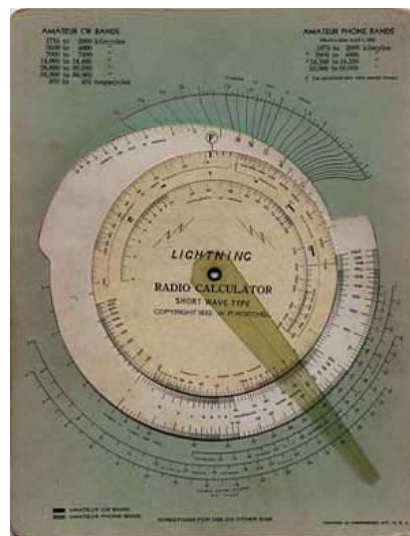
Philip Cala-Lazar, K9PL

I now have an original Lightning Calculator (See: *K9YA Telegraph*, “Ready Reckoners,” October 2007). Placed alongside the licensed ARRL version described in the “Ready Reckoners” article, they bear many similarities and more than enough differences to make

things interesting.

The Contenders

In this corner, the original LIGHTNING CALCULATOR CO., Owensboro, Kentucky.



Size: 8.5” x 11”

Front: Amateur CW Bands; Amateur Phone Bands; copyright 1932 W.P. KOECHEL; Pale green (faded) card; Dials, black on white; small dull (with age) metal grommet; short end of celluloid indicator terminates in a “bisected octagon.” The adjustable dial

sports two lightning bolts and features an angular, hard-edged form.

Back: Instructions on “The Use of the CALCULATOR” employing practical applications.

“Class 1 INDUCTANCE, LENGTH OF COIL, DIAMETER OF COIL, TURNS PER INCH (Or B. & S. Gauge Wire for Close Wound Coils)”

Example: Determine the inductance of a coil one inch in diameter, with a winding two inches long and thirty turns per inch. Answer: 37 microhenrys.

Example: Determine winding length of “No. 24 S.C.C. (Single Cotton Covered) wire” on a form two inches long to “secure an inductance of 100 microhenrys.” Answer: 1 1/8”.

“Class 2 FREQUENCY or WAVELENGTH, INDUCTANCE, CAPACITY”

Example: “To what frequency and wavelength will an inductance of 35 microhenrys tune when used with a condenser of 50 micro-microfarads?” Answer: “3800 kilocycles or 79 meters.”

Example: “What size condenser must be used with the following coil to tune to the amateur 80 meter band?”

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I Love CW, But...

Mitch Gill, YI9TU/NA7US (formerly K7TUT)



(L) Tyler Gill, KD7MJO;
(C) Bella (Mitch's
Grandaughter); (R) Mitch
Gill, YI9TU/K7TUT

I guess I am an odd duck when it comes to the Morse code issue. I know it seems we are beating a dead horse, but if you will bear with me, you might find this a little different.

I love CW as you all do. I was a Novice in the 70's and cut my teeth on CW. It was so ingrained in me that when I tested and passed my General in 1982 at 13-wpm I had not heard nor sent CW in 10 years. That is not to brag,

it is merely to demonstrate that CW was a second language to me. I love straight keys, bugs and keyers. I switch between all of them whenever I have the chance. Here in Iraq, CW is the main way for me to make any contacts as all the bands here are lousy due to noise, poor ground and poor antennas. But with CW, I can and do make contacts, over 1,000 so far and 76 countries. CW is my absolute favorite mode. You can recognize stations by their fist and you can have an entire conversation without ever saying a word. Yes, I do love CW.

Engaging the New

But here is why I accept and welcome the new rules. I have the pleasure of having a son who is a Technician. I helped him get his license at 11 years old and he is now almost 18. He grew tired of VHF within six months and passed the General theory but no matter how hard he tried he could not get the code. He has ADHD and it is just something he cannot concentrate on. He is a popular ham—the crowd on 2-meters loved him and you can see just how popular by looking at the number of lookups KD7MJO has on qrz.com. He was crushed when he failed the code and failed it miserably. He could not copy a letter. That is when he dropped ham radio. Imagine how bad I felt getting him all excited about ham radio and wham; he can't do what he really wants to do;

work HF. All those years I dreamed of having a son who had the same interest as me and it was squashed because of the Morse code requirement.

Now, he is all pumped up again and studying hard. He will pass and he will be trying to contact his Dad in Iraq (See: *K9YA Telegraph*, April 2007, pg. 2) on the only band (20-meters) and the only time I will probably use SSB over here.

So let's think this out for a minute. In today's society kids and young adults see no use for Morse code. They have been raised on computers, email and cell phones. Instead of rejecting them for their non-interest in CW, we need to change the way we think. If we want to keep CW alive, how do we get them interested? How do we make it fun? How do we integrate it into a part of their ham radio experience?

A New Way Forward

The answer is simple my friends, you find or create a computer program for Morse sending and receiving. Get them interested in going after DXCC and then show them that many DX entities use CW!

I personally believe this is a good decision on the FCC's part. We are going to see a mass of new hams on the air and if we open our arms to them and introduce them to Morse on a com-

puter, what difference should it make to us who can still pound the key? None! But if we want CW to live on (and we all do!) then we have to find a way to indoctrinate these new hams into the world of Morse code and I believe if we do it right we will see some who will want to learn code.

Growing the Service

Let's face the truth; I am a Dad first and foremost. I want my son on the HF bands. I want his friends on the HF bands and I want to see the hobby grow instead of die. Sorry fellas, but the code requirement was stagnating the hobby and I, for one, want to see it grow. We have a golden opportunity here. I can now go back to the 40-plus home school kids I taught the Technician license and help them get their General.

*"I am a Dad first
and foremost."*



Robert F. Heytow
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NONE of them were interested in Morse code and all but one dropped VHF and got off the air after a few months even though I kept trying to keep them interested.

The most important reason for my embracing the new changes is having a son who is an active ham. There are distinct advantages to it when your XYL is not a ham and every antenna is an encroachment on “her” landscaped yard. To have a son who can help encourage Mom to change her mind is a plus! Right?

“Hey Mom, now that I am getting my General and Dad and I are going to be operating together, it would be better if we had a shack in the spare bedroom! We also need that tower Dad has been wanting to put up!”

“Now hold on Tyler, Dad is not even back from Iraq yet and I am just not sure...”

“Well Mom, isn’t it better to have it all done before he gets home as a surprise. You know, he has been in a war zone and everything and you know he loves the radio. And Mom, we will take up as little space as possible and...”

“OK Tyler, you are right. It would be nice for Dad and I guess I can live with it!”

Tyler leaves at this time humming a little tune with a big grin. That was too easy he thought to himself. The following day Dad called from Iraq.

The Call from YI-Land

“So Tyler is Mom there?”

“No, she is at the store.”

“So, how did you do?”

“Oh Dad, it was awesome. I got the shack moved from the garage to the house, the tower is going up and we can use the spare bedroom!”

“That’s great Ty, I will let you know if I think of anything else but be careful, if Mom finds out we are playing her like a hooked fish, we will be in big trouble!”

“Oh Dad, it’s me remember? How about that time I got Mom to buy me the mobile antenna when I first got my license? I conned her pretty good didn’t I?”

“That was me you conned Tyler.”

“Oh yeah, speaking of that, I need an FT-817 so I can work QRP and work the satellites.”

“Tyler, WE are getting a shack in the room and a tower up. How do you think YOU deserve an 817?”

“Think about it Dad, I got the tower going up and I got the shack in the room. Be honest Dad, do you think you could have convinced her?”

“Alright, alright you win Tyler. Mom never would have let me do it, but only if you try CW on the computer!”

“OK Dad. So Dad, what do I get if there is more?”

“What are you talking about Ty, you already conned me out of the 817 and I think that’s enough!”

“Dad, Dad, Dad. Do I have to teach you everything? What about mobile? Wouldn’t you like to put the mobile in the family truck? You know Mom will never allow it. What if you come home and there is an HF mobile rig with a screwdriver antenna on the back of the truck?”

Father is drooling now. “You really think you can pull that off?”

Happy All ‘Round

“Dad, you keep forgetting! So here’s the deal Dad. I want a three-element beam. If I get you the mobile in the car, you get me the beam! Besides that Dad, what were you thinking of putting on the tower? You don’t even have a beam!

So, do we have a deal?”

“Son, are you sure you don’t want to go into sales? I swear son that you could sell refrigerators to Eskimos! The part that scares me most is that I believe you just sold me a refrigerator!”

“I love you Dad, but just remember you can use the beam, but I own it.”

“I love you too son, but I have to go, I am getting a headache”.

Tyler hangs up the phone humming a little tune with a big grin on his face.



Mitch Gill, YI9TU,
Working a Pileup

“You really think you can pull that off?”



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CONTINUED - I LOVE CW ON PAGE 7

Serving Our Country

Scott Laughlin, N7NET



I'd been an active member of Oregon Army MARS only a couple of years when the '91 Gulf War began. The Internet was still a military secret, leaving MARS the primary mover of health and welfare traffic to and from combat zones.

The rig I used was a third-hand Swan 400 tube-type transceiver. They were notorious for drifting off frequency. Mine was no exception. And it became known as the "Swooping Swan." The only means for keeping the VFO stable was to leave the power on

and the filaments glowing, and with that came the heat. My cramped Yellowstone travel trailer, where my MARS station was housed, became a Turkish bath before my fifty, or so, messages were handled and I was done for the evening.

One of my regular message originators was a local fellow calling himself James. His son, Bob, was assigned to an armored division in Europe, and James voiced concern for the Gulf War and how that might affect his son.

Though we never met and shook, he and I became well acquainted during the weeks that passed. During the air war, Bob's inbound messages were often a daily event. Then, one day, and without explanation, his traffic came to an abrupt halt.

I assumed Bob was home on leave until the phone rang one evening, James was fit to be tied. MARS was his only electronic link with his son, and it no longer worked.

Unfortunately, I was only a cog in a large wheel. My job was to communicate through other MARS operators. Like a bucket brigade, a 25-word message was passed from operator to operator until it reached a gateway station where it and hundreds of others would be transmitted to the Middle East by digital means. We were at war, and using military frequencies. The inner workings, operator identities, and their locations were not open to public discussion.

At my request, James provided a dozen addresses we'd used on previous occasions, and each evening I sent a message to

one of those older destinations. However, in time, each one returned with the same response: unknown.

My suggestion that Bob's division might be en route to the Middle East, and that radio silence would be the general order, was not what James wanted to hear.

I felt James' anxiety. His concern brought back the grief that families suffered during the Vietnam era. But I couldn't dwell on the negative side and allow myself to lose focus. There were other folks in the same boat as James. Keeping the traffic moving was my priority.

Days passed, the phone in my sweatshop continued ringing, and a host of messages to and from other GIs continued without interruption.

Then, one evening, when the phone rang, James was on the line. His voice was so shrill I was unable to follow him.

"I heard from Bob. He's okay. He called me collect from Iraq," he repeated more slowly.

"Called you collect... from Iraq? How so?"

After flushing out a group of Iraqi soldiers, and chasing them out of Kuwait, Bob had spotted a pay phone next to an abandoned service station. There was a dial tone, so that's where he made the call.

"Really! I'm surprised that a phone in the middle of a war zone still worked. How long did you talk?"

"Only a minute or two. Bob's tank commander was pretty nervous about being in Iraq, and ordered Bob back aboard."

James and I chatted until my call waiting tone was activated.

The radio traffic between James and his son resumed that week. But not long after Bob's collect call troops started coming home and my sweatshop duties returned to a prewar level.

Several months later, after the numbers were tabulated, we Oregon MARS radio folks were credited with passing more than ten thousand messages.

People my age are limited in the ways they can serve their country, but possibilities still exist. I'm proud to have found a way. ■

"We were at war..."



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K9YA Telegraph

"Ionospheric Communicator"

Taken Into Custody for Observation

Dean Lewis, WA3WGV

AP, UP, Reuters

Scruffsborg, Ill. The local fire department of this small northern Illinois town was dispatched to the home of Frank Brakish and his wife Elma to assure a small but smoky fire in their kitchen stove was completely out.

At the Brakish's home, fire officials noticed 160 feet of thin copper wire neatly routed along ceiling edges in some rooms. Asked about the wires, Brakish explained they were there because condominium regulations prohibited them being placed outdoors, "where they would be more effective," according to Brakish.

The wires were traced to an upstairs room of their two-story townhouse, where they were attached to several interconnected pieces of equipment containing various dials, lights and switches; some of Brakish's own construction, and some apparently of commercial manufacture and Japanese origin.

Suspicious of Brakish's sanity, police and paramedics were called to the home for further investigation. Brakish claimed he used the equipment to communicate with other individuals, mostly throughout the United States and Canada, but occasionally with persons in other countries, when spots on the sun created "favorable conditions of the Earth's magnetic field and the ionosphere," according to information relayed by police to the press.

Despite his claims, officials confirmed the "equipment" had no connection whatever to either telephone lines, TV cable, or the Internet.

Brakish apparently uses an alias when communicating with these other people, referring to himself as "WA9QKE."

Brakish, noting the officials' skepticism, claimed confirmation of these communications, pointing to post-card-size documents covering most of one wall of the equipment room, bearing similar aliases in much the same format as his own. These cards were said to be

those of the "communicators" he claimed to have contacted. "Documentation" of his ruse included a detailed log with dates, times, "frequencies" and the same aliases indicated on the cards.

He provided further details, claiming his communications involved both spoken voices (a microphone was found on the equipment table) and a quasi-binary code, which he referred to as "Morse," and "CW." His outrageous fabrication included claims that

other communicators also use various digital and video modes of transmission, that some use Earth-orbiting satellites to relay their "signals" and that some even reflect their signal beams back to Earth from the Moon.

An otherwise respectable mechanical engineer employed by an industrial trade association, family members confirmed Brakish's obsession with this equipment dates back to when he was in the fourth grade. At that time he began building "receivers" for the "voices" he claims to hear, and progressed to

actually *transmitting* these signals when he attended high school.

When asked, his wife of many years indicated she had no objections to his activities, noting that "at least he comes home after work, and he has no other vices."

Neighbors were completely unaware of Brakish's "ionospheric communications," noting that, although not reclusive, he "pretty much kept to himself." They said Brakish's married children live in the area, visit them often, and that their young grandchildren have friends in the neighborhood.

Although no tinfoil umbrellas or colored landing lights were found in the home, and Brakish ada-



Scruffsborg's Ladder Truck

"...he has no other vices."

CONTINUED - IONOSPHERIC ON PAGE 7



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Gildersleeve's Restless Ghost?

A Touch of Wilde's Dorian Gray

Rod Newkirk, VA3ZBB/W9BRD



For most of the 20th century ham radio was a fairly close-knit community. Every proud radio amateur's callsign was a vanity call, signifying diligent achievement. With loss of the symbolic Morse bond, SDAR—Software Defined Amateur Radio—appeared. Remember your packet address? When the digipeater rage quickly fizzled, clever new digital Modes of the Month followed, most due for early obsolescence. Now we have assorted self-styled networks whose ever-changing platforms and protocols can't communicate with each other. A virtual Tower of Bable.

Towers, in fact, are the subject of this little précis. ARRL National Conventions, before all this comical progress, regularly took over suites of famous hotels in major cities. *K9YA Telegraph* readers whose *QST* files go back through 1974

will be intrigued by the promotional July convention cover. Phil Gildersleeve, W1CJD, ARRL illustrator and cartoonist laureate since the 1920s, died in 1967. Through the years his lively art attracted young blood to The Game. That July '74 cover posthumously reproduced one of his earlier masterpieces and announced an encore gala ham radio conclave at New York's elite Waldorf Astoria. As usual, Gil's work radiated fun and festivity.

However, since W1CJD became a Silent Key seven years earlier, the Big Apple's skyline had changed drastically. The new World Trade Center's twin towers, built in 1970, were added to the picture by League staff artist "BJD" as acknowledged near Gil's signature. (Some purists thought this was like corrupting a Rembrandt but, after all, the Mona Lisa now peddles wine and cosmetics.) Well, we all know what catastrophe occurred on September 11, 2001. The New York skyline suddenly reverted back close to the way Gildersleeve originally drew it.

If Gil's ghost had anything to do with this, I'm sure he would have been on our side. Yet the sequence is mighty mysterious, especially the two aircraft drawn heading for the towers. I was privileged to collaborate with W1CJD for twenty years while

we both contributed to *QST*. Besides being a true artistic genius, he was just too nice a guy to be involved. ■



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Scans by Jim Miccolis, N2EY



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Ham History DICK SYLVAN, W9CBT



REMEMBER THE NATIONAL NC-240D RCVR

Typing in Radio School

Jim Davis, NW5F

I took typing for one semester when I was in the 9th grade. I passed the typing class at 55-wpm. In Air Force radio school they asked if any of us could type. I said I could, as did several other guys, they then gave us a test which I passed at better than 50-wpm.

They phased me out of typing that one night and that was that. The mill we used was an old Underwood, upper case only. I wish I had one of those here in the shack. A line of five letter groups looked like this:

JUGY4 IASHR JAMES DAVIS
MIKE3 PIMN5 EXRST TULSA
WKLNT QRZDS

There were five groups, double-spaced in the middle, and then five more groups. We worked hand in hand with the crypto section.

When you copy in the code in the military your superiors want to see everything that comes in on that circuit. I was copying position reports on aircraft coming in from the North Atlantic through the Azores Islands, Iceland, Greenland and all those places headed towards the U.S.A. We nailed every dang one of them. If it happened to be an unknown A/C and we didn't get a flight plan on them, our fighters were scrambled to go up and see who or what they were. Generally it was a civilian airliner ahead of their flight plan.



I used to copy the Navy Fox stations for practice when in Newfoundland. There was one station called NSS that would really rip the code. They would come on with this VVV VVV VVV DE NSS NSS NSS BT BT BT, then they would let it go, that was a beautiful station to copy because they had all the messages on tape and the code was smooth and solid all the time, never a hitch, and when they finished they would say DE NSS AR. Then at set times those messages would start all over again. Those were the days. ■

CONTINUED - I LOVE CW FROM PAGE 3

I love my son and he is a lot of fun to be around but he is the master con artist. He manipulates his Mom and I all the time. We know it and he knows it and it makes for a great laugh down the road. I am lucky and there is nothing more gratifying than to have him a part of this hobby we so dearly love and treasure. We just have to love the hobby more than our own personal desires. Times have changed and as much as I long for days of old, I cannot repeat the excitement I felt making that first contact. The only thing I can do is re-live it just a little bit through my son and through all the other kids who, once again, will start seeing the excitement of ham radio.

Embrace the change because it has happened. Remember that, as hams we are ambassadors, salespeople in a way. If you sell a new ham on computerized CW, who knows what you will have started. We, who know the code, will be looked at in awe. "You mean you can copy all that in your head and can send it as well? Can you teach me how to do that?"

CW is not in their hands it is in ours. ■

Mitch was evacuated from Iraq in 2007 due to health issues. He is now living with his family in Washington state and serving in the National Guard near his home. By the time this article is published, Tyler will have tested for an upgrade to General class.

CONTINUED - IONOSPHERIC FROM PAGE 5

mentally denied that UFOs or aliens were in any way involved in his activities, he was taken into custody for psychiatric observation and evaluation.

While being led to the waiting ambulance, Brakish was heard to mutter something about "...extending PRB-1 to CC&Rs..." and "I should've stayed on two-meter FM." Authorities were unable to explain these comments.

Mrs. Brakish assured fire officials she'd be more careful using the kitchen stove.

As a follow-up, the press learned Brakish was released later the same day at the insistence of local emergency management officials, who seem to know him. Friends and family members said he plans to sell the equipment (and wires) and purchase a telescope. Brakish added that he and his wife plan to dine out more often. ■



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Coil size—3 inches diameter, 3 inches length, 10 turns per inch.” Answer: “44 micro-microfarads.”

Model SWP-1; Price, 50 cents.

and,

In this corner, THE AMERICAN RADIO RELAY LEAGUE, Inc., West Hartford, Connecticut.



Size: 8.5” x 11”

Front: Left page margin, Centimeter scale; Right page margin, inch scale; Under copyright 1932 W.P. Koechel; White card with greenish-black (faded) surround; Dials, red and green on white; large bright metal grommet; short end of celluloid indicator terminates in a semicircle. The ARRL's version boasts three lightning bolts radiating from the grommet and presents a more rounded, “organically” shaped adjustable dial.

Back: “How to Use THE LIGHTNING CALCULATOR,” provides detailed information and practical suggestions for determining “WAVELENGTH AND FREQUENCY,” “INDUCTANCE, CAPACITY, FREQUENCY (or Wavelength)” and “INDUCTANCE CALCULATIONS.” A small table assists with frequency (kilocycle/megacycle), capacity (micromicrofarad/microfarad) and inductance (microhenrys/millihenrys) equivalents.

“No. 11A in the A.R.R.L. series entitled *The Radio Amateur's Library*.” Price, \$1.00.

In the midst of the cash-strapped Great Depression, the ARRL assumed marketing of the Lightning Calculator, doubled its price and deleted its

band reference features, while substituting inch and centimeter measurement scales and augmenting the instructions.

Two Decades Later

Interested in furthering your Lightning Calculator skills? In the 1950s the League obliged with at least three *QST* articles: April 1953, Donald H. Mix, W1TS, “Getting Acquainted with the ARRL Lightning Calculator”; September 1954, Yardley Beers, W2AWH, “Extending the Range of the ARRL Lightning Calculator: Tuned-Circuit Problems Made Easy”; and Walter E. Bradley, W1FWH, “Extending Ranges by Self-Calibration.” (For more on Don Mix see: *K9YA Telegraph*, January 2007, “The Hassell-Cramer Flight,” pages 1 and 5.)

Yawn?

Not interested in furthering your Lightning Calculator skills? How about a surplus “cost the government” \$1,850, six-tube, 20 watt, “Portable Electronic Megaphone and Amplifier” (U.S. Navy Model PAE-2) at Lafayette Radio for only \$89.50—total weight for the three component unit—71 pounds. Limited quantities available in September 1954. ■

NOW HEAR THIS

A BUY OF A LIFETIME

PORTABLE ELECTRONIC MEGAPHONE and AMPLIFIER SYSTEM

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YOURS FOR ONLY \$89.50

20 WATT POWER AMPLIFIER

MEGAPHONE-DYNAMIC MICROPHONE PISTOL GRIP-TYPE

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BATTERY CHARGING RACK Included

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Here is an ideal system for such applications as fishing boats, youth, traffic control, sports events, construction crews, surveys, seminars, car shows, fire-watching, etc., or any place where handling of large crowds is necessary, and wherever convenient power line connections are not available. Includes and operates from self-contained rechargeable 8-cell storage battery. Each unit is used as a transmitter or permanent system when used with charging rack. It is designed to have active portable amplifier and battery.

System consists of portable amplified electronic megaphone—operated by a trigger switch in the pistol-grip handle—dynamic type microphone and rated at 20 watts at 1000 cps, and a recharging rack, all contained in rugged carrying case and housing.

A powerful 20 watt 6 tube amplifier, housed in a water-proof, two-piece, portable metal case is constructed, having compartment for and supplied with 8-cell storage battery. Amplifier built with finest quality parts to rigid Navy specifications.

A UNIVERSAL BATTERY CHARGING RACK that operates from 110 volts AC, 60 cycle system, 110 volts DC, 24 volts DC, 24 volts AC, 48 volts DC, or 48 volts AC. The charging rack consists of a battery recharger with time switch and also provides a space for cleaning the portable amplifier. Turn pilot lights in the front panel of rack indicate a “Low” or “High” charging rate. Timing switch controls the rate of charging. This separate 9x10 1/2 inch.

Approximate Dimensions & Weights: Megaphone 10” long, diameter 12 1/2”, Wgt. 12 lbs. Amplifier dimensions—4 1/2” x 6 1/2” x 11 1/2” Wgt. 10 lbs. Approx. 28 lbs.

Charging Rack 19 1/2” x 12 1/2” x 12 1/2” Wgt. 12 lbs. Wgt. 24 lbs.

Complete System consisting of electronic megaphone, 20 watt portable amplifier with tubes and storage battery in case, as illustrated, Universal Battery Charging Rack with all necessary interconnecting cables and plugs and 30 page Instruction Book with schematic diagrams of all units. Net \$89.50

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FAMOUS IN RADIO FOR 32 YEARS



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