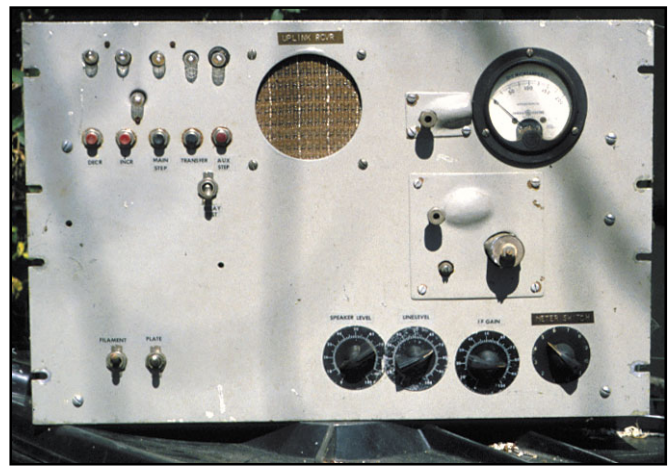
By Bill Pasternak, WA6ITF

Once Upon a California Hilltop

The story of repeater pioneer Art Gentry, W6MEP.

Every day, tens of thousands of hams around the world slide into their cars and turn on a 2 meter, 1.25 meter, 70 cm or dual-band FM transceiver and drive off. They may be headed to work, headed home, headed to the market or where have you. No matter, friends and emergency assistance are never more than a microphone click away.

Today we take FM and repeaters for granted. The mode and the relay devices sitting on hilltops or tall buildings are seemingly there at our command, 24 hours a day. Communication is crystal clear and there always seems to be someone to chat with, but it was not always that way.



The K6MYK repeater control receiver. It was on 421.28 MHz and was built around an old military ASB-7 receiver with lighthouse tubes in the front end.

The Way It Was

About a half-century ago, in the "Neanderthal" days of ham radio mobile operation, radio amateurs struggled for contacts. Back then, all VHF communication was point-to-point. If you were running mobile, you hoped that the station you were talking with had a good directional antenna and the ability to rotate it to track you. It wasn't unlike the way we operate ham satellites today.

Of greater consequence, from the 1940s through the late 1960s the majority of hams on the VHF and UHF bands operated Amplitude Modulation—AM. AM and other modes that rely on varying the amplitude of a carrier wave (or suppressed carrier SSB) are prone to interference from natural and man-made noise sources. From the dawning of the ham radio mobile era, hams worked to devise noise-elimination schemes. Some installed shielded ignition systems. Others modified the noise-elimination circuits in their radios in hope of better performance. Each worked to varying degrees, but none were foolproof.

Something better was needed—a way to extend the range of mobile-to-base and mobile-to-mobile contacts, and eliminate the noise inherent to mobile operation. The adoption of Frequency Modulation (FM) would solve the noise problems for VHF/UHF mobile operators. A device that was new to Amateur Radio would solve the range issue. One of its earliest appearances was in a blockhouse just above the famed "Hollywood" sign overlooking Los Angeles. It was a radio relay system called a *repeater*, and it was the brainchild of a broadcast engineer named Arthur M. Gentry, W6MEP.

From Garage to Mountaintop Site

The first documented Amateur Radio repeater in regular operation was AM, not FM. It received weak 2 meter AM signals and retransmitted them at high power. This particular repeater, developed by the late Arthur M. Gentry, W6MEP, was licensed as "Remote Station" K6MYK. It first took to the air in 1956 from his home in Northridge, California as an experiment in radio-relay technology with roots going back two years prior. W6MEP told me about it in a tape-recorded March 1979 interview.

Gentry: "We went to the present site in October of 1958, but there were sites in-between. The original license for K6MYK was issued in 1954 for a site in Burbank, which we never used. It went remote control—I think it was June of '57 when we finally got onto a hilltop."

A Trip Back in Time

Art Gentry never laid claim to "inventing" the repeater. If he was still with us, he would be the first to tell you that he was the one lucky enough to make a remote-control ham station work for the masses.

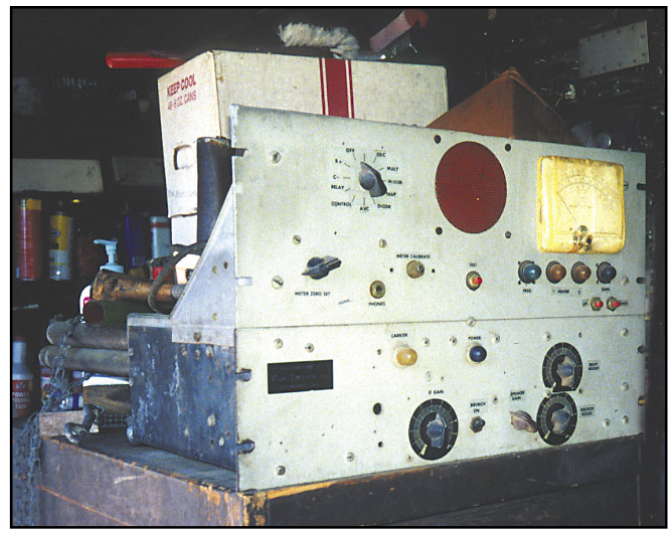
Gentry: "I can't say that we were the first because in 1954—I think it was in San Jose—a group of people put up a 2 meter AM repeater in the Berkeley Hills and they left it. Later that year—along around August—we went on a vacation to Colfax above Sacramento and we worked through the repeater from Colfax down to Lemore. That's about 300 miles total distance and, of course, that was unheard of on 2 meters."

According to W6MEP, that machine was K6GW. In its original incarnation, it was on-site controlled and stayed on the air for a few months before it fell by the wayside. Gentry believed that this was because it was not an "open" machine, and because it only operated intermittently.

Gentry: "If you were lucky enough to get in there when the guys had it up, it was fine."

From March 2004 QST © ARRL

Art Gentry, W6MEP (left) and Bill Arens, N6NMC.



The original K6MYK AM repeater receiver.

So why did Art Gentry decide to build a repeater of his own? Because it was a way of extending the range of amateur VHF communication.

Gentry: "I have operated VHF mobile since probably about 1940 when I went to 112 Mc [the old pre-World War II 5 meter band—what today would be called 112 MHz.—*Ed*]. I was on 112 Mc at one time running quite high power, running a 35T-modulated oscillator. The receivers were all regenerative. After World War II, when the 2 meter band opened up—which if I remember right was January of '46—I had acquired an ARC-4, which I made into a crystal-controlled tunable (receiver) unit. It had a crystal-controlled transmitter with 10 W power output.

"That was a mobile rig and I can remember going up to Mt Wilson one time for a drive. I came on the air and I was like a foreign country. We talked our lungs out going from one station to another as fast as we could for over two hours. This pointed out the advantage of high elevation."

Gentry immediately contemplated putting up a voice repeater, but back then there was little information on how to do it. As a result, necessity became the mother of invention.

Gentry: "I would look for remote-controlled transmitter articles, but I would find very little. In the late '40s and '50s, the only thing you ever found was information on how to remote control a transmitter. Nobody had ever thought of a remote-controlled station. Only a transmitter somewhere. Never was there a receiver around."

So, W6MEP set to work to make it happen.

Gentry: "Marrying of a receiver to a transmitter to become a repeater took a lot of long, hard work and a lot of channel separations. A lot of megacycles in-between and a lot of tinkering and puttering to try to get things so that you didn't get interference and desense."

Making it happen in that era also meant rolling your own.

Gentry: "We built a whole new receiver. You couldn't buy anything. You couldn't find anything on how to do this. So, we used our ingenuity. We had to find ways of getting rejection on the receiver to get away from desense."

Steps Forward And Steps Back

While California had repeaters since the 1950s, the proliferation really began after the first low-cost radios began arriving from Japan around 1969. When I conducted this interview a decade later, there were already thousands of hams on over 250 open 2 meter repeaters in Southern California, and the local repeater coordinator had a list that was close to 200 more waiting. The same percentages were found in most other populated regions, and I asked Art if he ever dreamed that his early experiments would revolutionize the way hams communicate on the bands above 50 MHz.

Gentry: "I think I can say yes to that question. Logic told me that this was a good way to get better communication. If you can imagine a 10-W AM mobile running all over the greater Los Angeles area in the early 1950s and never being out of communication range with somebody, you'll understand why I had faith in the future of this technology.

"I observed the growth of commercial radio at elevated sites. Having seen that growth, I knew what eventually would happen with amateurs. I knew that this would be a very widespread thing, and with the adoption of FM (by both commercial and amateur communicators). I knew this would happen because I knew what the performance of FM was as compared to AM. For my own personal communications, I went to FM in the early '60s."

Even so, the original K6MYK repeater was an AM device and remained so into the early 1970s.

Gentry: "It did so because it served a great many people using AM. It was still 'their repeater,' if I may use the term. When the activity dropped to where there were no customers, then there was no sense in staying on AM.

"We knew that there would be new repeater rules out and we did not want to make a change until they were announced. Concurrent with that was the channelization of Southern California repeater frequencies. We applied for, and got, a (coordinated) repeater pair at that time with the intention of going FM.

"So it wasn't necessarily my personal desire to remain with AM. The control system has been FM since the beginning, and some of the original control equipment is still in operation because it is reliable."

K6MYK, by then on its way to becoming WR6ABN, began its conversion to pure FM operation in the early 1970s. Not long afterward it was assigned a frequency pair, and Art added a second receiver to detect FM signals and an FM exciter to the plate-modulated AM repeater. For a while, K6MYK was a one-of-a-kind dual-mode repeater, accepting and retransmitting both AM and FM signals. When the last AM signals disappeared from the 2 meter repeater sub-bands, so did the AM portion of the K6MYK/WR6ABN repeater.

The Man, His Life and His Career

If the repeater rules enacted in the

early 1970s were meant to stifle growth of FM relay systems as some claim, the effect on California in general and Southern California in particular was insignificant. While some hams to the East made lots of anti-FCC "noise," those in the Golden State pooled resources to make sure that every "i" was dotted and every "t" was crossed in their repeater license applications. Little did the people in DC know that much of the help in preparing these applications was coming from hams involved in the two-way and/or broadcast professions. These hams were used to dealing with the Washington bureaucracy and its myriad of paperwork.

By profession, Art Gentry was one of them. He started his career at Channel 13 (now KCOP a Fox-owned UPN affiliate), but spent most of it at KTLA channel 5, a station then owned by Gene Autry's Golden West Broadcasting.

Gentry: "I did not get into the broadcast industry until about 1951, but I got into it because of the extensive knowledge I have of communication and television. The people who hired me at channel 13 had known me for a good many years. I've been with Golden West for 10 years now, and was with this same channel for two years on an earlier tour of duty. I have about 12 years with that station."

His contributions while at Golden West are legendary. Working under the aegis of broadcast pioneer Klaus Landsberg, Gentry had the opportunity to be involved in many firsts. This included the first live telecast of an atom bomb test in the Nevada desert, the first live coverage of an actual police investigation, the first color telecast of the Tournament of Roses Parade and helping in the design and fabrication of the first helicopter-mounted TV news camera system, the "KTLA Telecopter." But in his off hours, his two main loves were his wife Millie, K6JJN, and the K6MYK repeater. Art and Millie were a team united not only in marriage, but in the world of Amateur Radio repeaters as well.

A Champion of the Little Guy

W6MEP was also the first advocate of the repeater user. In an age when many repeater owner-operators were setting strict user rules, Gentry placed his faith in his fellow man.

Gentry: "Very early in operating K6MYK I learned that 'users' are paramount for the simple reason that if they do not grant you permission to use the air, you have got a lot of trouble on your hands.

"We went through some very bitter battles to prove this to people—that you just could not come on (the air) as one individual and say 'I don't like what you are doing and I have the right to use the channel 3 kilocycles away.'

"And while we still have battles, it's the people who made the repeater stick. It's not the ownership of a repeater that enforces anything. It's the users, and this is particularly true in an open-channel machine."

Art's Essay on Repeater Growth

One of the questions I asked Art was why repeater growth in California had outpaced that of the rest of the country. He said there were two reasons he could think of: altitude and attitude.

Gentry: "I think an example is worth more than anything else. Take WR6ABN (the call sign that replaced K6MYK under the authoritarian 1970s repeater rules). At about 1800 feet above sea level, there were probably 5 to 7 million people within reach of that signal at the time. Today there are probably 20 million people. I doubt if there is any other repeater that covers a larger group of people. We happen to be roughly in the center of a heavily populated area with an ideal site.

"Also, California has unusual geography. It has lots of elevated sites. The early people (hams) who got into repeaters were the people in commercial two-way radio. Commercial relay systems led the way. Not so much as repeaters, but rather remotely controlled base stations. A telephone line would control them. This showed what the amateurs could do and it only took a few sharp ones to find that they could couple a receiver to a transmitter. This brought about the tremendous growth.

"Repeaters in the West have line-of-sight ranges of a couple of hundred miles. You go back East, or in the Plains states, and if you can get 500 feet up you are

Art and Millie Gentry

By Burt Weiner, K6OQK

I must have arrived on Earth with an inborn interest in radio. It didn't develop; it was just there from the very beginning.

It happened that my folks were close friends with Sam and Mildred Balter. Sam was a sports announcer on radio and television and quite aware of my interest in radio. One day, when I was about 5 years old, Sam took me to work with him. He introduced me to the announcers and engineers. This one event probably did more to turn my interest toward broadcasting than anything else.

I went back to the station as often as I could talk someone into taking me. When I was old enough, I would take the bus to the station. I went almost every Saturday and Sunday and just "hung around." I drove people nuts! Some, but not all, of the engineers found it easier to give me something to do than to make me go away.

One of the engineers was named Art. I sensed that Art thought I should be home, or at least somewhere else. When I would see Art coming, I'd go somewhere else. This was an often-repeated ritual.

When I was in junior high school, I received my ham call, KN6OQK, and found my way to 2 meters. Then one day I heard this "thing." It just stayed on the air and I could hear people talking to each other. Not only that, from time to time it beeped. I listened for a few days and finally figured out that this "thing" was called a repeater. I discovered the input frequency and climbed aboard. I remember a female voice welcoming me. Her name was Millie, K6JJN.

Millie's husband, whoever he was, had built the repeater thing. One day I struck up a conversation with Millie's husband, Art, W6MEP. Art and I got on well together. It never dawned on me, and I'm sure not to Art either, just who either of us really were. At least *I* never put the two Arts together. I was still going to the station, just not as often now. The distant relationship with the Art at the station remained.

One day a ham radio buddy told me he was going out to visit Art and Millie and invited me to go along. We arrived about four in the afternoon. Art had just called Millie on the radio to let her know he was leaving work. Who knew what he did for a living? I certainly didn't!

She handed me the microphone and told me to keep Art company. We had a great time. He was telling me about the "repeater thing" and "how he did it."

As Art got closer to home, I was getting really excited. I was finally going to meet him. He parked in the driveway, I heard the car door open and close, footsteps, the kitchen door opened and there he was. Art's mouth gaped. He just stared. I was trapped in a corner of the kitchen with nowhere to go!

Then something happened. He slowly started to smile, walked over to me and gave me a hug. One of the warmest hugs ever. This was the beginning of a very special bond between Millie, Art and myself that would last a lifetime.

On May 10, 1996, Art passed away. Millie joined him on August 5 the same year. I miss them more than words can describe. They changed my life in a way I could never have imagined.

doing good. New York City has a few sites at 1000 feet, but look at what you have to contend with. The 'concrete canyons' are one of the worst things in the world to try to get signals through.

"And it's a fact that the West has always been innovative. The West is a big, wide-open country with a strong sense of individualism. People bring that Western spirit to radio and do what they've always done—innovate. We're pioneers. The pioneer spirit that came West in the beginning is still here."

Honors to the Mind that Created the Medium

In April 1987, the Dayton Amateur Radio Association recognized Gentry's contributions to Amateur Radio by honoring him with its Hamvention Special Achievement Award. The proclamation published by DARA in the souvenir program that year read in part: "The technical achievements of Arthur M. Gentry, W6MEP, have touched the lives of more Amateur Radio operators than any other in the history of the hobby. Although Art lays no claim to being the first to put up a repeater, his research and development led to the operation as we know it today. A man of vision, Art foresaw the need for rulemaking and was instrumental in forming the first VHF Repeater Advisory Committee."

Passing On the Flame

On April 4, 1996, Art Gentry, W6MEP and his wife Millie, K6JJN, left the smog of Los Angeles to be near their children in Beaver, Oregon. Art was now 89 years old and Millie, 83. Both were in failing health. He passed away a month after the move; Millie followed in August.

Art's repeater lives on. About two years before his death he turned the day-to-day operation of the system over to Bill Arens, N6NMC. After Art passed on, Arens petitioned the FCC and obtained W6MEP as a club call for the machine. That's how it identifies these days. Arens says that this is a lasting tribute to the man who made repeaters available to all hams, many of whom have never even heard the name Art Gentry or the call sign W6MEP.

Bill Pasternak, WA6ITF, is a broadcast engineer with KTTV Fox 11 / KCOP UPN 13 Television in Los Angeles and a broadcast consultant specializing in the design and installation of video post-production systems. He is the co-founder and Managing Editor of the all-volunteer Amateur Radio Newsline *bulletin service and creator/administrator of the annual "ARNewsline Young Ham of the Year Award" program that each year honors the accomplishments of a radio amateur age 18 or younger with a trip to Spacecamp in Huntsville, Alabama. Bill is the only person ever chosen to be recipient of both the prestigious Dayton Amateur Radio Association's "Specific Achievement" and "Radio Amateur of the Year" awards. He also was presented the ARRL National Certificate of Merit in recognition of his contributions to the furtherance of the goals of the Amateur Radio Service. Bill and his wife Sharon, KD6EPW, reside in Santa Clarita, California. He is a member of the ARRL, QCWA and the Radio Club of America. In addition to being the author of three books, Bill is a production staff member for several educational films and videos. He writes a monthly column for* Worldradio Magazine, *is a contributing writer to several broadcast trade publications and is a frequent contributor to* CQ Magazine. *Bill can be reached by e-mail at* **billwa6itf@aol.com** *or* **wa6itf@arnewsline.org**.

NEW PRODUCTS

MFJ-1401 VHF MOBILE GROUND PLANE KIT

◊ This new kit converts most mobile VHF and UHF antennas into a ground plane base station antenna. It is said to handle up to 200 W and accepts mobile antennas with a UHF (PL-259) connector. The kit includes four 20.5 inch radials, stainless steel mounting hardware, two hose clamps and an Allen wrench. The kit is designed to mount on a 2 inch pole or pipe with clamps or mounting holes. Price: $19.95.

To order, or for your nearest MFJ dealer, call MFJ Enterprises at 800-647-1800 or order at **www.mfjenterprises.com**, fax 662-323-6551; or write MFJ Enterprises, Inc, 300 Industrial Park Rd, Starkville, MS 39759.

MACLOGGERDX V3.8 FROM DOG PARK SOFTWARE

◊ Dog Park Software has announced that version 3.8 of *MacLoggerDX,* logging software for Macintosh computers, has been released and can be downloaded from their Web site. A free upgrade for registered users of *MacLoggerDX* version 3.5 and newer, this release provides improved support for the Ten-Tec Orion transceiver. In addition, it adds popup support for multiple logs and provides a number of other fixes and upgrades. Check **www.dogparksoftware.com/MacLoggerDX.html** for the complete list.

MacLoggerDX tracks DXCC, IOTA and WAS awards, and has a bands display panel that tracks activity by HF amateur band. For more information, contact Dog Park Software Ltd, **dagro@dogparksoftware.com**, **www.dogparksoftware.com**.

180s EAR WARMERS WITH HEADHONES

◊ 180s, a company providing clothing and accessories for winter sports enthusiasts, has a product that may be of interest to hams, especially those who enjoy operating outside year round. They offer ear warmers with special pockets for high fidelity ear phones. They're a pair of stereo headphones that fit inside special pockets in their warm fleece ear warmers. The ear warmer wraps around the back of the head, allowing the wearer to don a hat or scarf or to pull up the hood of a parka.

180s Ear Warmers feature a patented design with a custom band that adjusts to fit any size head. This design protects the user's ears from the outside elements. With a twist, the ear warmers fold and collapse to fit into a coat pocket.

Price: ear warmers: $25 to $30, headphones: $15.99. They are available at outdoor and sporting goods retailers. For additional information, see **www.180s.com**.—tnx *Scott Verity, KC2FBV*