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ONE MAN'S FAMILY

Of Antennas

by Vic Clark, W4KFC

RFD1, Clifton, Virginia

QTH, HR, OM, is on a hill in the country!"

Lives there a ham with soul so dead, that he hasn't yearned for a spot meeting that description?

The classic hypothesis of a rural hilltop with "a clear shot in all directions," materializes for all too few of us, as the vision fades before the more practical aspects of life . . . earning a living, raising a crop of harmonics and attempting to conform, in general, to the accepted patterns of society . . . (often difficult enough for the species infected with the ham virus!)

So, except for the fortunate hams who are foresighted enough to be born and raised in the boon-docks, most of us are to be found pursuing our hobby in an unfriendly environment of power lines, TV birdie-factories and zoning restrictions. It is worthy of more than just a passing note, therefore, when one of the clan casts off the traditional fetters and transforms the reverie into reality.

Meet Len Chertok, W3GRF, a Washington, D. C. amateur, who dreamed of a lofty ham sanctuary far from the city, and then proceeded to create one from a comparative wilderness. His remarkable station is the product of tremendous fixity of purpose, careful planning and hard work. It would seem to establish a high water mark for what one ham can achieve in assembling an effective DX factory—starting with only an idea.

Brief Biography

Len, by way of further introduction, was first licensed at the age of 15 and operated his completely home-built station from the family residence in a Philadelphia three-story row-house during the years

from 1936 through 1940. Antenna possibilities in this congested district were limited to a few bent wires threaded through housetop clotheslines and broadcast receiving antennas. From such an unfavorable ham location, Len managed a pre-war WAS and WAC, rounding up 56 countries—a fairly impressive total for those days. In September, 1940, he enlisted in the U.S. Army Signal Corps.

The notion of the "ham shack on the hill" persisted with Len through the war years, during which he saw service in the Pacific theater of operations, visiting spots such as VK9, JZØ, DU, KR6 and JA. Code-handling and technical proficiencies derived from his earlier hamming days qualified Len for a communications billet with the AACCS, and he held down one end of many a hot c.w. inter-island circuit.

Emerging from the war intact and as a Master Sergeant, Len went to work as a civilian operator at the Signal Corps communications center in the Pentagon at Washington, D. C. Here, with co-workers W3JTC (later SVØWP), W9NWX (later WØNWX, VP7NG, FO8AJ, etc.) and others, Len helped to organize the now widely-known Potomac Valley Radio Club of Washington; D. C. and environs. (Len has subsequently served terms as president, activities manager, secretary and treasurer of the club.)

Len's first postwar operation was under the call W4KXN from an Alexandria, Virginia, apartment, and later as W3GRF from his sister's home in suburban D. C. He established W3GRF as one of the country's outstanding DX and contest stations during this period.

In 1950, Len transferred to his present job as a



An important ingredient for good DX . . . a driveway, half a mile long!



Front view of the "shack" at W3GRF.

All photographs by M. H. Baller, Washington, D. C.

civilian Communications Specialist at the AACCS Overseas Communications Center at Andrews Air Force Base, near Washington.

A Hill is a Hill is a Hill

The desire for a rural hilltop QTH persisted and, early in 1954, routine sorties into the Maryland countryside became a weekend feature on Len's agenda. Armed with road and topographic maps and a fistful of real estate listings, Len scoured the hinterlands for "The Hill." The rest of us in the club followed Len's bucolic frolic with a mixture of admiration, skepticism and, knowing Len's penchant for follow-through, more than a little anticipation.

Finally, we learned, he had found It! Fifteen acres, including a hill, which, he said, dominated the surrounding terrain. He made the down payment to clinch the deal, then announced his good fortune to the rest of the membership.

"Great!!" we reacted, but what kind of a building did the deal include? No building at all, we learned . . . this could come later. Hmm-m, OK . . . but were there clearings to accommodate the Vee's and Rhombics? Hardly . . . the place was thickly wooded, with fifty- and sixty-foot pines, poplars and oak standing shoulder to shoulder over the entire hill!

Anyway, the location seemed strategic—a scant eight miles from the District line and only five miles from GRF's place of work at Andrews Air Force Base. Convenience of access was one significant redeeming feature, we all agreed. "Now, how do you get there to look the place over?" we inquired. We-ell, you don't, exactly, we learned; the hilltop is a good half-mile from the nearest road, and it would be necessary to cross a substantial creek and plough, shanks mare, uphill through a thousand yards of brambles and underbrush . . . there to peer

about among the trees only to see . . . more trees!

To shorten a long story, no one made it. We accepted Len's assurances that it was *the QTH*, but, appalled by the magnitude of the task ahead, we all began to have misgivings concerning the ultimate success of the venture.

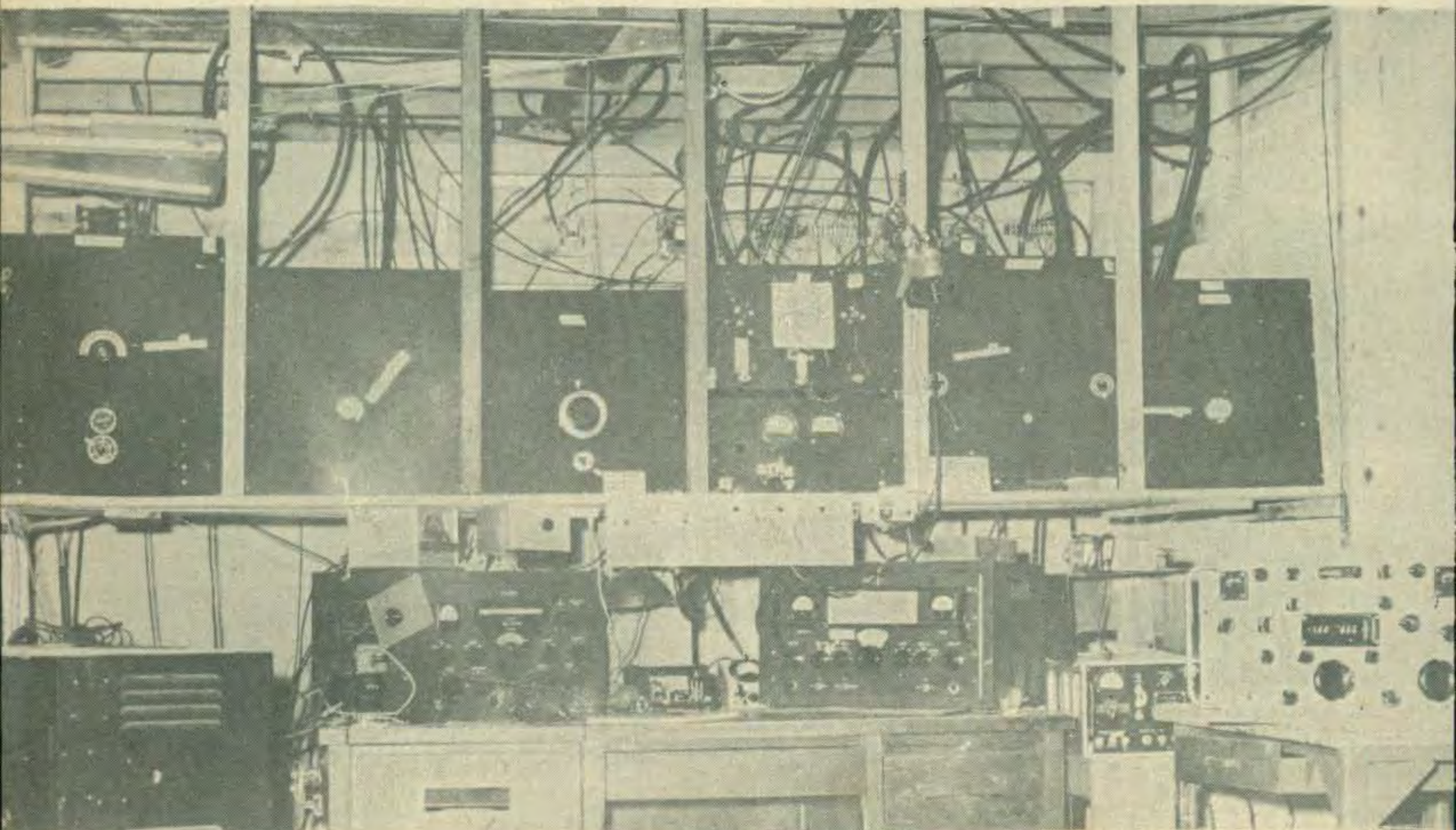
Well, we heard from Len once in a while after that . . . his appearance at club meetings were less frequent, and W3GRF all but disappeared from the air. As the weeks rolled by, reports of progress began to trickle in. Len couldn't make the meeting, we would hear, because he had a date with a bulldozer . . . or he was building a culvert to carry the embryo access road over the creek.

The culvert didn't work; heavy rains converted the tranquil creek into a destructive force and the roadway was washed away on two occasions. Thereupon, Len, undaunted, abandoned the culvert scheme and contracted for a thirty-foot timber bridge. Then the rest of the road went in—a half mile of it through the woods and all the way up the hill. Next came the power company, and after some negotiation, a special line was installed requiring nine widely-spaced poles . . . and terminating in a brand new 15 kva pole pot near the prospective homesite.

Len, meanwhile, had purchased a chain saw and—working every night after leaving the job and all day Saturdays and Sundays—the trees began to fall, permitting sunlight to reach the ground in steadily-growing patches. It was back-breaking work, but our city boy thrived on it and was soon sporting an enviable tan and a set of bulging muscles.

As funds permitted, Len would have a bulldozer in to help with the clearing of underbrush and to push the felled timber into huge piles for burning. Mostly, though, it was Len, chipping away with the chainsaw . . . summer and winter, in solitude on the hilltop . . . Gutzon Borglum was no more dedicated

The operating position at W3GRF—separate finals for every band.



or purposeful in his attack on Rushmore.

Len's unbachelor-like activities were, in fact, regarded with some concern by his family and friends alike. Some found it difficult to understand why he would squander his money on rural acreage and a house, when he could be investing it sensibly in cars, clothes and riotous living. But Len, the man with a plan, paid little heed to the critics.

With completion of the access road, the visitor-index rose sharply, and Len began to realize dividends on past favors to others (and few were the PVRC members who hadn't at one time been ably assisted by W3GRF in carrying out their own antenna construction projects!). Many of those who showed up were motivated largely by idle curiosity . . . these, too, were promptly pressed into service by resourceful Len, who laid in a supply of extra axes and shovels with which his "guests" might entertain themselves.

On Field Day, 1955, W3EIS/3, a one-transmitter, two-man entry, made the first radio contacts from Len's hilltop—operating from a tent in the center of a 100-by-100-foot clearing, with dipoles hanging from trees rimming the opening. The future home of W3GRF was confirmed as a very promising QTH, indeed; thirty watts, from batteries, produced a (then-record) score of 493 contacts to lead all one-transmitter entries in the event.

Hard to Believe

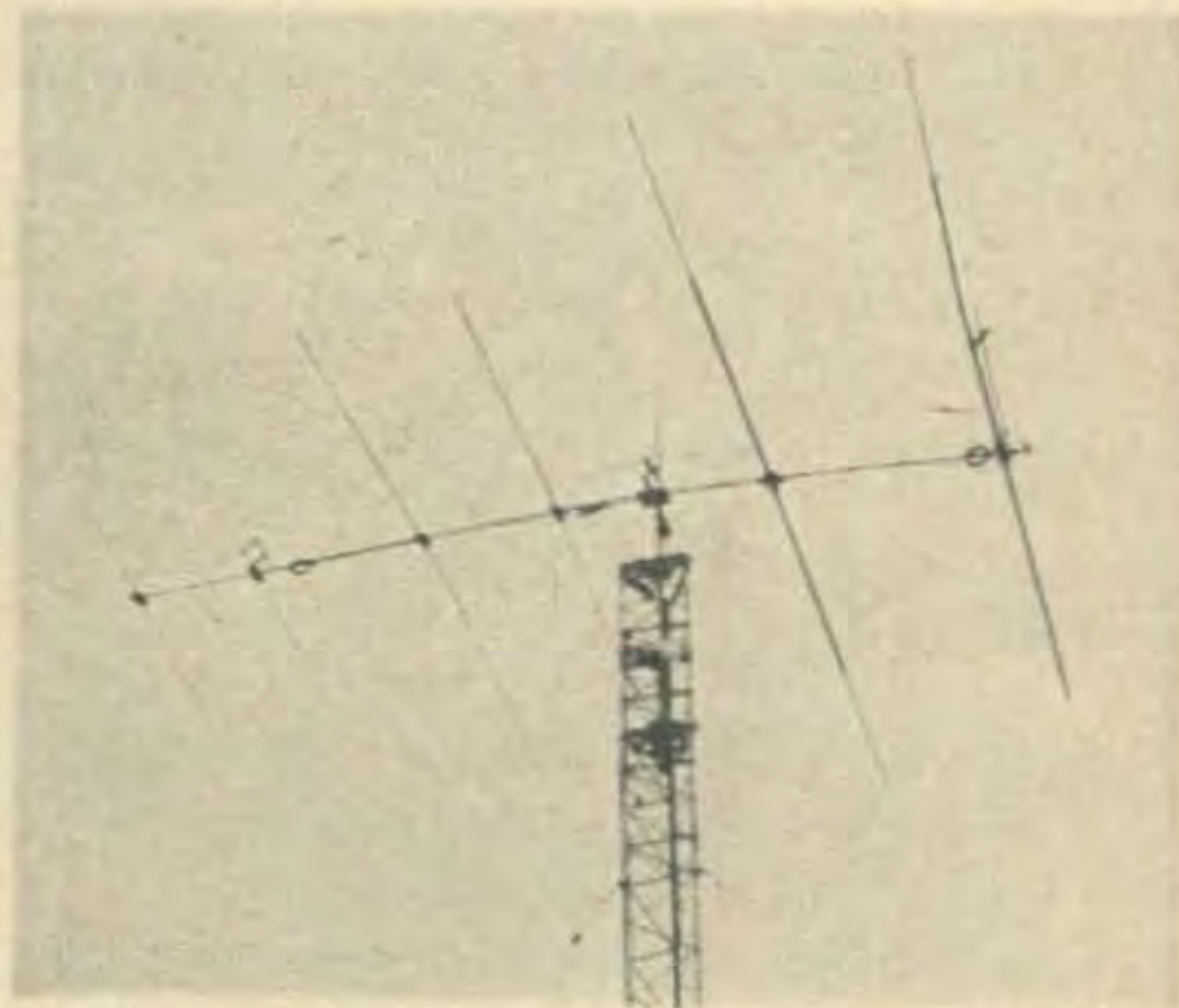
The success of any homesteading effort, we should explain for the benefit of you city-dwellers, depends heavily upon the availability of a suitable source of water. Before proceeding into the construction of the house, therefore, Len contacted a local well-digging outfit and arranged to have the job done. Well digging, for the uninitiated, is a somewhat speculative proposition wherein the well digger (or driller, as the case may be) gets reimbursed for his effort—but this does not necessarily produce water in the desired quantities. So it was in Len's case. A hole was dug some thirty feet into GRF's hilltop with negative results; a second attempt some distance away was no more successful. At three dollars per foot, Len's financial resources were dwindling rapidly. Even Len's indomitable enthusiasm waned somewhat; contemplating this distressing turn of events, he said to the well digger: "What do you suggest? I can't afford to have many more dry ones dug!" "Well," said the contractor,

mopping his brow, "you may think it's silly, but I know a fellow who claims to be able to locate underground streams by using a divining rod . . . I can't hardly believe it myself, but I've seen him produce results more than once. He charges ten bucks and makes no guarantees, but you're in a spot . . . and it might work."

It should be noted here that Len is a hard-headed realist, devoid of superstitions and holding no brief for witchcraft in any form. His decision, therefore, is indicative of his desperation at this juncture, for, with a sigh of resignation, he replied: "OK, call him over . . . I've gone this far, I can't quit now!"

A short time later, the advertised rhabdomantist put in his appearance at the GRF estate, complete with a forked stick and an air of self-assurance. His performance commenced to an audience consisting of the well-digging contractor, his two assistants and Len, the latter conscience-stricken at his role as sponsor of the ritual . . . and wondering, guiltily, what he would say if a friend should drive up unexpectedly!

The fellow held the stick in front of him and walked slowly forward . . . suddenly the stick dipped down; he recrossed the point several times with the same result . . . whereupon he scratched an "X" in the dirt, and took off along a parallel path. The diggers watched, bug-eyed. Len, writhing inwardly, looked on without enthusiasm. The ceremony continued for perhaps fifteen or twenty minutes, by which time two well-defined rows of X's had been marked on the ground; then the chap turned to the group and said: "Dig here, I think this is a good spot."



Three band beam for 10, 15 and 20 meters, on 70-foot mast.

Len, describing his feelings at this point, says that he had become somewhat impressed with the diviner's confident manner, but felt certain his ten dollars would have to be chalked up to "experience" and whatever comfort could be derived from the knowledge that he had tried *everything*. The spot which the man selected was not far removed from the two previous dry holes, so there was little basis for expecting better results. Len paid the man and he left; the digging resumed.

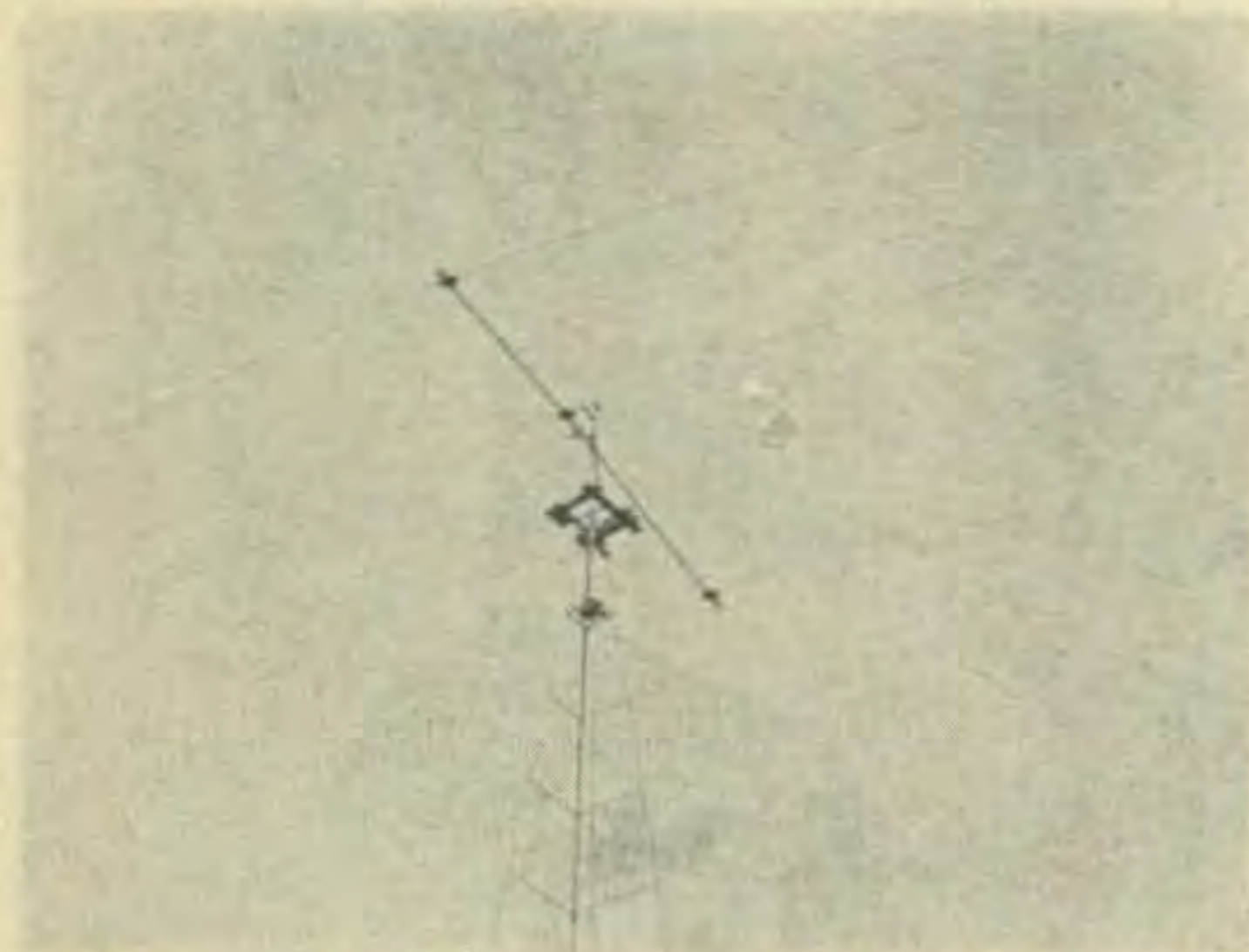


Len Chertok and his musical saw.

The results? You guessed it! Len's well stands right where the mystic with the twig said "dig!" It has produced an ample flow of cool, clear water right through severe droughts. With a gesture of resignation, Len simply says: "I just don't understand it, but there it is!"

Construction Underway

In the spring of 1956 the site for the house had been cleared and leveled, and Len contracted for a three-bedroom rambler with a full 25 by 42 foot basement. The building proceeded rapidly and Len, meanwhile, set about to erect suitable towers for his dream beams. By this time, nearly three acres had been cleared, including a central clearing for the house and three tower sites, and four 50-foot-wide swaths through the woods in various directions for the long wire Vee's. When Len moved into his new home in the late summer of that year, three towers loomed above the trees. These included a 100 foot Vesto self-supporting tower and two guyed towers, one a 100 footer and the other 90 feet in height.



A full-sized forty meter beam, 100 feet above the ground.

By the advent of the 1956 contest season, an impressive set of antennas had been installed and W3GRF boomed forth with real authority on the DX bands. Len turned in the third high national score in the CQ DX Contest that year, and followed it up with a fourth high national score in the 1957 ARRL DX Test.

Into Each Life . . .

Life at the Chertok Estate has never been dull. On one well remembered occasion, Len, working with an electric drill at the sixty foot level on one of his guyed towers, found himself providing a direct circuit to the well grounded tower for the 115 volt line current; the drill had shorted internally! Frozen solidly to the tower and unable to release his grip on either the drill or the tower, Len shouted for help to W6HOH/3, who was assisting from the ground below. Fortunately, HOH reacted swiftly, dashed over and pulled the plug, thereby releasing Len from a very serious predicament. A much chastened Chertok has established use of rubber gloves and an isolation transformer as S.O.P. for future use of electrical appliances on the GRF towers.



Dual 10-15 meter beam, 125 feet straight up!

Then there was the time when Len, removing a few trees standing close to vital guy wires, felled a forty-foot pine which went over in exactly the opposite direction from that intended. Before Len's horrified gaze, the errant tree deposited itself across a guy wire from his 90 foot tower; the tower promptly buckled and fell into a pile of twisted metal, topped off with the wreckage of two four-element beams (10 over 15 meters). The entire catastrophe required an estimated ten seconds from the time the tree started to tip until the pile of tangled metal stopped bouncing. Reporting the disaster on the club's two meter net that evening, Len wryly observed, "This has not been one of my better days."

A few months later the calamity was repeated when a bulldozer, clearing land near one of the guy anchors for the 100-footer, backed into the guy wire . . . and down came 100 feet of steel tower and a four-element wide-spaced twenty meter beam! A lesser spirit than Len's would have turned to stamp collecting or, possibly, drink. Not Len, however, who began planning for bigger and better towers even while the rubble was being cleared away!

UR 599

Today the monument to Len's persistence and courage stands near completion:

The 100 foot Vesto tower supports a *full-sized* three element forty meter rotary . . . the reflector is 73 feet long! A 100 foot guyed tower is topped off with a five element twenty meter beam employing a 45 foot boom. An in-line beam with three ten meter elements arranged in front of four fifteen meter elements perches atop a 125 foot guyed tower, while a diminutive 70 footer near the house carries a three band in-line beam which combines a total of six elements for ten, fifteen and twenty meter operation. All of the rotaries were constructed in the basement on long winter evenings. A single section 8JK, suspended about ninety feet above the ground, is oriented for Europe and New Zealand

80 meter DXing. A 270 foot long wire for 80 and 160 completes the present antenna set-up.

Len's hamshack now occupies one end of the large basement room, with the remainder devoted to equipment storage and an outsized workbench. Separate home-built finals are available for each band from ten through one-sixty, and these are driven by a Collins 32V3. Look at this firepower:

160 Meters	single 4-65A, 200 watts
80 Meters	p.p. 810's, 1 kw
40 Meters	p.p. 833's, 1 kw
20 Meters	p.p. 833's, 1 kw
15 Meters	p.p. 450TL's, 1 kw
10 Meters	p.p. 833's, 1 kw

"One kw, hah!" you say? Len has documentation. Smack in the middle of the 1958 CQ DX contest, the FCC wheeled up to confirm the point, as they did in many places on that fateful day. It cost Len a vital hour of contest time, but he can point with pride to a rig that is U.S. Government Inspected.

A further note or two on the rig: It is almost completely unshielded and its configuration (see photo) conveys a bit of nostalgia from the pre-TVI days. Len's nearest neighbors are a good half mile away and any harmonics radiated directly by the finals peter out before they reach the sensitive ears of a TV set. "After all," points out Len, "if I stopped to shield and beautify the rig, where would I get the time to do all the other things that need attention around here?" A single power supply is used for the final amplifiers, and all transmitter and antenna combinations are available for use from the operating position at the flip of a switch. A seldom-used modulator is available, which functions with any final; it employs a pair of 833's, lighted only once or twice a year when some of the gang show up to put W3GRF on for one of the phone DX contests. Needless to comment, Len's first love is c.w.

Feed lines to the various antennas consist for the most part of RG-17/U cable, suspended from messenger cables between poles erected for the purpose. The longest feedline measures about 325 feet.

Receiver

A trusty Collins 75A-2, with an 800 cycle mechanical filter and augmented by a DB-33 preselector, carries the receiving burden.

As for the house . . . it's looking better every day. Recent improvements include wall-to-wall carpeting and fancy drapes. A hi-fi set and ample collection of big band jazz records serves to liven the rustic environment. Lacking the assistance of an XYL, Len hires a cleaning lady to drop by and set things in order once a week, and (excepting the workshop end of the basement) the appearance of the place belies its role as a bachelor's abode.

Tourist Attraction

Len's once-inaccessible wooded hilltop is now a Mecca for Washington area hamdom; visitors come and go on various errands ranging from sightseeing to soliciting Len's assistance and advice on antenna construction projects or other ham-oriented undertakings. The Potomac Valley Radio Club has held summer meetings there and, during June, 1959, the

W3GRF establishment was the scene of the annual joint meeting between the Frankford Radio Club of Philadelphia and the PVRC. On that occasion, Len's thirty-foot bridge supported a Greyhound bus laden with forty-five beefy linemen from Frankford's first team!

W3GRF is always activated for the operating contests; if Len himself is not at the key, one or more of the local gang takes the helm to enjoy a memorable operating experience. W6HOH/3 piloted the station to a top U.S. score in the 1959 European W.A.E. contest, for example. Len himself achieved one of his major goals in the 1959 CQ DX contest, by topping all U.S. entries with a 388,010-point score. (See June, '60 CQ, page 36). His sights now are set on a national first place in the ARRL C.W. DX Test. He almost made it in 1960 . . . and the smart money says it's W3GRF in '61!

Other Activities

Not all of Len's efforts go into development of his homestead and contest operation. He has managed to edge his country count up to 275 or so, occupies an active role in PVRC affairs and presides as anchor man on the club's two meter net. He maintains a lively interest in political and rulemaking activities affecting ham radio. Len will be remembered by several hundred DXer's as the master of ceremonies for the DX luncheon at the National ARRL Convention held in Washington, D. C., in 1958, under sponsorship of the Foundation for Amateur Radio, Inc. He now serves as secretary for the F.A.R., an organization with representation from nineteen Washington-Baltimore area radio clubs. No social slouch, Len rarely misses out on weekend dancing dates . . . except, of course, during the contest season!

Len has built a better hamshack, and the world, so to speak, is beating a path to his door. His spectacular demonstration of what can be done along these lines, and his enthusiasm on the subject has motivated a number of his fellow PVRC members to "take to the hills." While none of them, to date, has attempted a raw pioneering effort to match Len's, the shift from the suburbs into rustic areas has proven equally beneficial for all . . . W3MSK, W3PZW, W4YHD, W4KFC and W3MSR, to mention a few, have followed suit and established new and more favorable antenna sites for themselves. Others now are combing the hinterlands around Washington, D. C. with a calculating eye.

Now that the skywires are all in place and working well, Len's homesteading efforts are mainly directed toward further clearing of underbrush, leveling of the terrain, stump removal and planting of grass. His aerie proved to be atop a deposit of almost solid bank gravel, a useful road-building component, for which he has already received an attractive offer. But Len's reaction to this is in character: "Why should I sell? I'd just have to go out and do this all over again!"

Next time you're sightseeing in Washington, D.C., be sure to include, along with your visits to Mount Vernon, the Lincoln Memorial and the Smithsonian, a sidetrip to W3GRF . . . it'll put you in a hill-hunting mood ■