



Scuttlebutt

June 1992

Issue 99

Captain's Cabin

Rich Gelber, K2WR

Well, it finally happened. After 15 years as a member, I have wound up at the helm of the leading ham radio contest club in the United States. If you want to consider membership in Murphy's Marauders (most people hold YCCC, not the present Murphy's, to be the functional successor to the original Murphy's), I should really say 20 years. Since this is my first "Captain's Cabin", I am going to use this space to let you all know something about where I think we've been, and where we should be going in the future, as a Contest and DX Club.

Competition

This evening I dug back in the files and pulled out issues #3 and 4 (the earliest ones I have) of the Scuttlebutt. After you get past the white paper and primitive typography of those pre-desktop-publishing days, it's interesting to see, back then in the Club's infancy, how many of our concerns were the same as today. Exhortations towards operating various upcoming contests, meeting announcements, QSL card and hardline availability, station activity reports, and 2-letter call sign information (!) filled the 'Butt. What struck me in particular though, was the logo on the masthead. Long-time members will remember that the original Clipper Ship drawing we "sailed under", carried the text "The Clipper's Wake", and showed the vessels of NCCC, PVRC, FRC, and MM sinking in the wake of the Yankee Clipper. We no longer feature so combative a logo, but perhaps the attitude suggested is something we should try to reattain. Only NCCC and FRC

survive as our top-level competition in the Unlimited Category, and I want to emphasize the word *compete* as something we need to place more emphasis on, both as individuals and as a club. We're going to come in a very close second, I believe, in the ARRL DX Contest Club Competition this year. While it's possible I'm being too pessimistic, that's what the early indications are. There is simply no good reason we shouldn't be able to win in 1993. We have the operators, the stations, and the roster size. What we need is *activity*, on both modes. It's not too early to commit yourself and your station (and get commitments from your other operators, for the multi-op stations) for next winter. This is a goal within our capabilities and our sights: Let's go for it!

The CQ World-Wide DX Contest Club Competition is another story. Many believe that the structure of this contest, with no geographical limitations, gives a certain club a "bye", with the contribution of high point score DXpeditions. I'm not so willing to roll over on this one either. We can still mount a lot of medium-sized entries in the CQWW, and there are a few Caribbean islands not yet spoken for, in case any YCCC'ers want to resume our own traditions in this area.

Packet System

Those old Scuttlebutts I mentioned exhorted the club's members to check in to the "YCCC Net" on 3830 kHz. Yes, this was pre-packet! We now have a system of internal communication that is the envy of the entire ham fraternity! In fact, the existence of the Cluster is the only thing that makes it possible for me, living down here in NYC so far from the geographic center of the Club, to consider holding

down a Club office. Support your local node! There are lots of backbone enhancements in the works. Antennas will have to be put up, connectors will have to be wired. Ask how you can assist! Help the YCCC (and Tri-State) Clusters continue to be the best in the world.

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Next Meeting

Paul Young, K1XM

The next meeting of the Yankee Clipper Contest Club will be on Sunday, June 7, at the Sturbridge Host Hotel, beginning at 1 PM.

The Hosts Hotel is located on Route 20 in Sturbridge, Massachusetts, 1/2 mile West of I-84 (first exit off I-84 when coming South from the Mass. Turnpike).

To get to the Host Hotel, exit I-84 on to Route 20 West. You will pass through two sets of stoplights while noticing several motels on your right. Make a right turn just prior to the Burger King sign. This is the entrance to the Host Hotel. There is plenty of parking in front of the hotel.

The meeting dates for 1992 are:

DATE	DAY
June 7, 1992	Sunday
October 3, 1992	Saturday
December 5, 1992	Saturday

The October meeting will be at the ARRL New England Division Convention.

The August meeting will be the club picnic.

Captain's Cabin
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Club Badges

It's a little embarrassing to walk around Dayton and see the impressive call sign badges displayed by members of other clubs. We must be the only club of comparable size without a distinctive badge for our members to wear. The old shrunken QSL cards were nice for their time, but haven't been made in a few years. Will someone please volunteer to design and organize a new Club Badge program? See me at the June meeting.

W1 QSL Bureau

Almost 2 years ago, the YCCC, at the suggestion of K1KI, took over the operation of the ARRL W1 incoming QSL bureau. Lacking any volunteer to serve as manager, Tom became the de facto manager himself. He has done, along with the other bureau volunteers, a fantastic job, but must relinquish this responsibility to someone else as soon as possible. I'm amazed Tom has been able to do this as long as he has. My intention is to take a cue from the NJDXA and appoint a manager and (at least) two assistants, with specific responsibilities for each. This way it shouldn't get too overwhelming for any one individual. Please see me at the meeting if you're interested in any of these positions.

Local Meetings

At the April meeting, our outgoing President, Stu, KC1F, appointed a committee, co-chaired by KM1H and N2KW, to draft Constitution &/or By-law amendments to increase the YCCC's exposure, and help members fill the meeting attendance requirements, by holding a limited number of "special" or "local" meetings some distance away from Sturbridge.

Boxboro

It's been a tradition since the founding of this club to hold an official meeting at the ARRL New England Division Convention, whenever one is held. In fact, Scuttlebutt #3, which I cited above, contains an announcement for a meeting on Saturday, September 24th, 1977, at the Convention in Hartford. We will be continu-

ing this tradition in Boxboro, Massachusetts, on October 3, 1992. A special program is being planned to expose the widest possible ham audience to the YCCC, so circle this date on your calendar now and plan to enjoy one of the best ham gatherings anywhere. We also have an annual picnic/meeting in August, usually near Sturbridge. The date for this will (probably) be decided at the June meeting.

Thanks, Stu!

This column would be woefully incomplete if I failed to acknowledge the terrific job done over the past two years by Stu Santelmann, KC1F, first as Vice President, then as President. I know I have a tough act to follow; I'll try my best to be up to the task!

Secretary's Report Yankee Clipper Contest Club

The April 4, 1992, YCCC meeting opened with introductions of the 78 members and guests present. The club welcomed four new members: Dennis Scolamiero, N1DS
Stan White, N1HEO
Thomas W. Hurley, NO1J
Curtis W. Rose, WA4VKD

The treasury balance stood at \$1889.14, with dues for the 1992-93 contest season due at this meeting.

Ed, NT2X, distributed some of the XY0RR cards and contributors' medals he had carried home from his trip to Russia. He spoke on current conditions in Russia and other parts of the former Soviet Union, and showed slides of Romeo, 3W3RR, and UA9MA answering XY0RR cards, as well as scenes of Moscow and St. Petersburg.

Club elections were held next, and the following members were elected officers for the 1992-93 contest season:

President:

Rich Gelber, K2WR

Vice President/Activities Manager:

Saul Abrans, K2XA

Secretary/Treasurer:

Charlotte Richardson, KQ1F

Following elections, Ken, K1EA, gave a demo of his new digital voice keyer running with CT version 8. The board was for sale for \$299, including the new version of CT, until after Dayton. CT version 8 also supports some additional contests, including the Radiosport and the All Asia. Don, WB2DND, announced that there would be a dinner for Martti, OH2BH, on April 27th in the Boston area. Martti would be in the area for a day en route from his South Sandwich operation to a promised trip to North Korea, P5, for which documents reportedly had already been issued.

After the break, Doug, K1DG, polled the membership on CQ contest issues. The current major issue was a protest lodged against a single-op station in last year's CQ WW contests, who logged only on an audio tape and later transcribed the tape into a computer, by another contestant. Nearly everyone present felt that technology improvements should not lead to disqualification.

Following this discussion, outgoing president Stu, KC1F, led a short discussion on changing the club bylaws to allow regional meetings as a way of improving ARRL eligibility of members in outlying areas. The club voted, with K2WR abstaining, to appoint a committee to report their recommendations at the June meeting. The following members volunteered to serve on this committee: N2KW, N2DU, AA1AA, KC1EO, KM1H, and WE1F. Following this business, Jack, W1WEF, showed a videotape of the PJ9W CQ WW SSB operation.

Respectfully submitted,
Charlotte L. Richardson, KQ1F
Secretary/Treasurer
6 April 1992

Dayton Diatribe

Doug Grant, K1DG

This year, K1AR and I decided to leave from Manchester instead of Boston, since the traditional Boston-Dayton non-stop flight doesn't exist anymore. As DG luck would have it, Thursday was the day that a plane blew out its landing gear at Laguardia, putting delays throughout the Northeast. After several phone calls and debates, the Manchester USAir desk suggested that they could re-route us through Atlanta (!) and arriving in Dayton at 2:30 AM (!) if we took a bus to Boston first. So we did. At Boston, we found a flight going to Cincinnati, convinced Delta to let us take it, and rented a car to drive the 60 miles to Dayton. Arrived at Stouffer's at midnight. Stayed up 'til 2:30 AM anyhow, explaining various unprintable colloquial American English terms to OH2MM.

James, G4CLF, was sharing the AR/DG room. This was his first Dayton, so I showed him the ropes, starting with breakfast. He got to the restaurant before me, and was told to wait for a table. I arrived, strolled into the restaurant, and found W6QHS and his wife with two empty seats. Bingo. Famous hams never wait...

Hit the flea market first, but it was too cold and dank to stay out there long. Went to the Antenna Forum for a while. W0UN described his 4-stack of 8-element 48-foot boom yagis for 10 meters. This array has 20.2 dBd gain! He tried various phasing tricks - putting one of them (the bottom one, I think) at -180 degrees seemed to have the best effect. He also had some tips in building all-coax 1:1 baluns, and wondered if guy wires can be made non-resonant by slipping ferrite sleeve beads at appropriate points instead of physically cutting, insulating, and splicing them. Should work, and would keep the tower and guys dc grounded, and mechanically sound.

His antenna is big enough that he can hear his echoes off the moon (he played a tape to demonstrate it)! K1AR, trying hard not to be impressed, asked if UN was going to try moonbounce long-path on 10 next. UN's answer was no, but the

meteorscatter pings blow your head off.

W3LPL discussed the optimization of high-band yagis for contesting. His contention is that from East Coast U.S. to Europe, about 50 degree beamwidth is needed at vertical angles of 5-18 degrees for 20, 4-15 for 15 and 3-13 degrees for 10 meters. Using the formula for gain achievable for specified E and H plane beamwidths, the maximum gain possible with those conditions is about 17 dBi on 20, 17.5 dBi on 15 and 18 dBi on 10. He praised the available antenna modeling programs, and demonstrated several arrays showing that the desired patterns and gain can be synthesized pretty easily.

He also showed that a 50/100' stack on 20 has the same pattern as a single beam at 83', but 1.5 dB more gain. He also showed that stacked yagis are tolerant of phase error up to 30 degrees or more. Then he showed how you can model Beverage antennas - he uses them for receiving on 40 instead of his stacked yagis!

WA3FET also discussed stacking - but side-by-side instead of the usual kind. He showed that he could side-by-side stack two 3 element 9-foot-boom 10M beams and get the same pattern as a single 6 or 8-element beam. He also played around with optimizing 4-element yagis for F/B ratio - he managed to squeeze out over 40 dB F/B by tweaking.

Left the Forum for a while, and wandered by the CQ booth. Some guy came up to the booth and produced a handful of DXCC cards to be checked. 'AR and K1MEM pondered the situation for a moment, looked over the cards, and proclaimed them OK. Another satisfied customer...

About this time, K4EWG arrived with Willy, UW9AR in tow. Instant pileup. It was good to see the boy again. We all noticed that N2AA and Willy had identical sneakers. Hmmm...

Wandered around the flea market some more, then back downtown. Dinner was enjoyed at the Spaghetti Warehouse with a fine contingent - Mr. and Mrs. QHS, KR0Y, KQ2M, 'AR, K1RX, and others I can't remember.

The NCC/FRC/K3TUP-sponsored suite (in the Stouffers lounge) was a great hit again. Upstairs, the NJDXA gang brought fresh oysters again. Yum.

Romeo, 3W3RR (etc.), was finally found sometime Friday night, with a big pileup looking for YA, XY, and D2ACA cards. K2WR was heard to say "I tried to get through the pileup and broke two ribs".

G3RZP amused everyone with the English equivalent of "dumb blonde" jokes (Essex girl jokes). N2AA, KR2Q, and I were in tears. G4BUO submitted his entry in the P d'A contest (see April CQ) in the Single-op, no transmitter category. Not bad.

K1MEM was sporting a badge that said "No - Bill's not here", so people would stop asking him. Who's this Bill guy?

Eventually the crowds thinned out and we convened "Lobby Suite" at around 2 AM. Pizza was ordered, and then another round about 3:30. Couple hours sleep, then back out to the arena, missing the beginning of the DX Forum.

Cold and wet again - made my way to a couple of talks at the DX Forum. Saw the VP8SSI talk - I think I will postpone my trip there for a few years. Whew! Even the penguins looked cold!

Leaving the forum, I noticed a huge mob around a table nearby - it was the XY0RR/D2ACA pileup! Since I had sent Ed the Red a packet message earlier with my QSO info, I cracked the pileup and emerged with my cards. Then on to the exhibits...

TenTec has a new radio - includes a CT-compatible interface, RIT/XIT that work like they should (unlike the TS850), and seems to have pretty good specs. Alas, it still looks sorta home-brew, unlike the jazzy front panels of the Japanese stuff. Speaking of which, Icom's new IC728 (the rig in the teaser ads in the mags) is cute in a minimalist sort of way. Supposed to sell for just under \$1K. Not many knobs, but a decent starter rig - maybe even for DXpeditions. Probably a dud on CW, though.

Kenwood's Ham Windows software package seems pretty nice, with lots of neat features, including PacketCluster inter-

face, SWL database, rig control, on-line access to rig operating manuals, the Callbook in 19MB of disk space, and the CIA World Factbook (some of these are optional, and I am not making any of this up.) The brochure gives you a glimpse into the future of ham radio. The list of required equipment includes a 286 (386SX or better preferred) PC, 2M RAM, VGA monitor, DOS 3.2 or higher (5.0 or higher recommended), Microsoft-compatible mouse, Windows 3.0 or higher. Optional equipment includes a TS-950S, TS-940S, TS-850S, TS-440S, TS450S, etc. In other words, this is a ham radio product that does not require a radio. Dig out the ole Dr. DX again. Is "virtual reality" ham radio far off?

They gave away 1000 demo disks by noon Saturday.

Kenwood also had the TS-950SDX. I couldn't see what they changed, but I imagine they added a feature or two (and raised the price...).

Saw a new badge - it said simply "Know Code".

Lance Johnson Engineering (of KC Keyer fame) is distributing a new paddle - the "Mercury", with mercury-wetted bearings or some such. It's got a massive base and seems real smooth. But at \$400, you gotta really love CW!

Saw K1EA sitting in the Pavillion Software booth - I asked him why he was there, and he told me he couldn't get near his own booth! I looked over there, and he was right - looks like the DVP is a hit (even though FCC certification wasn't received in time to permit delivery of the board).

Found a guy in the flea market with some of the old QSTs I needed - now down to 6 issues needed, all from 1916.

Saw one guy selling capacitors for "Electronic Jewelry" - priced by size and color, regardless of value (Large Green 60cents, Large Orange 30 cents, small orange 8 cents). I am not making this up - I have pictures!

Bought a fax/modem card for my new PC - \$69, including software. Works fine. Also bought a mouse (\$14). The Contest

Forum was FB, as usual. Only thing missing was the DG/WR humor segment. Next year...

'AR talked about the changes in contesting over the last 20 years or so, including observations on the ages of some of today's top testers in 1971. The consensus was that the slides were great, but nobody remembered what he said.

KR0Y talked about using two radios as a single op from WM5G. He described the antenna/radio switching systems, old and new, and I was pleased to see that my design is just about right. He uses manual switching for headphone audio with left-right-both switching. He also opined that it is a mortal sin to be on only one band for a whole hour in a DX contest. In the 1991 CQWW SSB, of his 2300 Q/600 Mults, he worked 490/280 on the "second" rig.

Several awards and plaques were handed out, including a long overdue 1979 CQWW SSB multi-single plaque to K4VX. Many kind words for Lew, who has trained many hotshot ops including KR0Y, KM9P, and 14-year-old rising star AA0CR. 'CR, at 4'10", was seen shaking hands with 6'7" N6TJ. Contesters come in all shapes and sizes, I guess.

N2AA showed video of his tour of famous USSR contest stations last year. Lots of VERY big tubes in those 200 Watt amplifiers! In one scene, UW0AF noticed KE7V's P40V shirt, and complained he hadn't gotten his QSL yet. 'V signed the shirt and gave it to him. The UK4W/UZ4WZA club is sponsored by the factory that produced the SS-20 missile. The same building also houses a model airplane club, in which the members build their own engines (and you thought home-brewing antennas was a mechanical challenge...).

Willy, UW9AR, described the UZ9AYA (ex-UK9AAN) station. This was Willy's third try to make Dayton since 1978, and the first success. 'AYA includes an 8 element 15 on a 65' boom and a 4 element 40 on a 75' boom that has been up for 20 years. 'AYA (and several of the other big stations) use autotuning amplifiers - guess they got real early prototypes of the Alpha 87A.

Speaking of ETO, Alpha 87As were on display. The new Alpha 89 (manual tune-up version) is \$3495. They also have a new \$450 "Digital Antenna Switch Control" box - it hooks up to your 87A's RS-232 port and controls either a DX Engineering relay box or a "soon-to-be-offered" ETO relay box. Sure hope someone makes something like this (but cheaper, like \$100) to the PC that runs CT. Maybe CT Version 9 next year will do antenna switching through this \$100 box.

Saturday night was the traditional dinner at the Myung Sung Chinese/Japanese/Korean/GiveusabreakthisisDayton restaurant. The "head table" (the middle tatami room) was the scene of massive character assassinations. Head table participants included DG, W2GD, K1ZX, K5ZD, W6RGG, W6OAT, KQ2M, KR0Y, WR3G, and K3LR. We discovered that 'AR's QSL card was still in the chest where we left it last year. We endorsed it, and put it back for next year.

Lots of controversy about whether taping contests in lieu of real-time logging is kosher (W2GD, in a minority view, believes it is not). We wondered if GD (that's "Geritol Daddy") was going to bring a tape recorder to the KCDXC pileup tape contest. We all congratulated K1ZX on keeping his string of sub-1000 QSO SS efforts intact (he was barefoot with a Butternut this year). He was also accused of using a tape recorder in the TDXS Armadillo Run a few years ago (when beat W2GD). We all congratulated 'GD on being beaten in the WW by an OH we had heard of this year. We talked about DX nets and this last-two-letter disease. ZD admitted to occasionally dumping in his last two letters on nets, and then moving on. KR0Y admitted that he too, had dumped in Randy's last two letters on nets from time to time.

ZD's fortune cookie read "If you would be loved, love and be lovable". We wondered if 20M SSB was an exception.

Back, then, to Stouffer's. Got a photo of N8DM and N2RM side-by-side. Both named Moore, virtual twins, no relation. G4BUO claims he's training moles to pull radials underground for him. A beaming W4ROM was displaying his XY0RR

card - "Took me 7 hours last night and 3 hours tonight to get the card. Didn't take me that long to work him!"

KCDXC got the pileup tape cranked up. Big improvement over last year's debacle with the bogus headphones. N7BG greeted me with the reminder of my pitiful showing last year. I was determined to do better this year. Took the test with 'AR, ZD, GD, LR, and RGG. Tough competition! Feeling good. Tape starts - we're off. Getting calls OK - missing ones I think I should get, but I'm writing continuously. Get to the bottom of the sheet and jump to the top of the next column at the same time as ZD - everyone else seems behind - guess I'm in the chase! They're all real calls this year, supposedly. Gotta watch it, though, in case they switch the last letter on some to keep us honest. Go a few seconds not hearing anything to write - then hear two calls together, then another. Gotta write fast before I forget it. Time's up. Quick glance at the other papers - looks like only a couple of us got to a third column. Now to wait while they check the copy - how many partials and errors did I have?

A while later I learn that ZD is at the top with 56 calls. K3ZO right behind at 55. Then K1TO, then - wow! - I got 52, good enough for 4th and a prize. Now I am vindicated and razz N7BG and N2AA (not to mention 'AR) who are well down in the pack. Later, they are handing out XY0 cards in the suite, which have been filled out in response to cards handed in earlier. To "save time" they are calling guys by the last two letters. "OK, the next one is Bravo Radio...is Bravo Radio here?"...long pause...then 'AR yells "How about Alfa Radio?", and brings the house down.

Suite goes until about 1 AM, at which time we reconvene Lobby Suite. 'AR says he's too tired and is going to bed. At 3:30 he's still saying it, but going strong through the second round of pizza and learning an Atlanta-style goodoleboy handshake/footshake. You had to be there. And K6NA observed "With the things Mrs. 'AR wrote in CQ, I'm amazed that 'AR's even here". Even W9RE was there. Go re-read Mrs. RE's comments in CQ. Whew.

W8MAZ (offformer HZ1AB fame) was working on a video tape project on contesting. It'll probably find its way into the W5YI TV show on ham radio. 'MAZ interviewed several wellknown testers on camera, asking "Why Contests?", and similar questions. Hope I get to see it someday.

I kept hoping a clear theme would emerge this year. ZD thinks it was "Why are we all here again?", but I answered that last year. One might say that this year's theme was "If global warming is such a problem, why are we so cold here?" But I guess this year's theme is that computers have taken over. But I thought that last year, too.

Sunday I joined QCWA - I'm eligible this year, since I was first licensed in 1967. I am now officially an old f---t in this hobby at age 38. Got my pin and everything. Now to enter the QCWA QSO party - I'll do anything to find a contest I can bear 'AR in (he's not eligible for two more years...).

Trip back was uneventful. No plane crashes causing rerouting, but since we went to Manchester, those two guys weren't on the plane. You know the two guys I mean - they're not testers or DXers, VHFers I think, but they're there every year, and I still don't know who they are. I saw the skinny guy with the reddish-blond hair in the flea market, but didn't see the big guy with the dark hair with him. Hoped nothing happened to him. Thought about asking the skinny guy, but it wouldn't be right to talk to him. Fortunately, I saw them both at Deerfield a week later. Glad the big guy's OK. Still don't know who they are, but good to see them keeping on keeping on.

A 5 Element Alternative to the W2PV 4 Element Yagi-Uda Array

Steve Miller, WD8IXE (reprinted from the April/May 1992 Mad River Radio Club "Flash")

Over the past decade, the W2PV 4 element (PV 4) Yagi-Uda array has been a

very popular design for HF contesting and DXing. The first description of this design, that I know of, was in the May 1982 issue of the YCCC Scuttlebutt by Bill Myers, K1GQ, although this article states the design had been around for several years. The PV 4 sports good gain, and a very high "Front to Back" (F/B) ratio at the center design frequency on a 0.57 wavelength boom. However, the original article also states:

"The gain and VSWR tend to degrade rapidly at the high end of the band... The center of gravity (is) behind the center of the boom... (and) The antenna is unbalanced in the wind..."

Calculations also show the F/B ratio is rather poor at both band edges. In the manner the PV 4 was first presented, its mechanical and (narrowband) electrical characteristics seem to have room for improvement.

The search for an alternative to the PV 4 began following a discussion with Bob Hayes, KW8N, after the ARRL DX SSB contest. Bob uses the PV 4 as the lower antenna in his 15 and 20 meter stacks. (The top antennas are a KLM 6 for 15 and a NBS 5 for 20.) During the SSB contest, Pat, NZ4K, blew up the gamma match on both PV 4 antennas. This was a surprise since a month earlier, I operated the ARRL CW contest from Bob's station with no trouble. After thinking about who else had mentioned problems with gamma match failure, I realized that most incidents involved a PV 4 antenna. The PV 4 input resistance gets quite low toward the high end of the band where, according to Bob, Pat had been occasionally CQing. Apparently, the low input resistance aggravates the gamma match problem (more on this later). Eventually, I told Bob the PV 4 design could probably be improved at which time he asked me to look into it.

This article presents a new, "optimized" Yagi-Uda design for 20 meters and comparisons to the PV 4. Design calculations used Yagi Optimizer software (YO 4.14) by Brian Beezly, K6STI. Keep in mind that "optimized" is a relative term in antenna design. To qualify as optimized, the design goals and philosophy must be well defined. During the design process,

the relative importance of the following factors were considered for the electrical characteristics: VSWR, Gain, Pattern, and Bandwidth. Physical factors include: Boom Length, Element Placement, Turn Radius, Wind Load Balance, Weight Balance, and Survivability.

As for the physical design factors, the boom length of the new design is kept the same as the PV 4, 40 feet on 20 meters. Since this design would replace the lower antenna of a stack, elements must be positioned to allow antenna rotation while side-mounted to a tower. The boom to mast plate is placed at the center of the boom. This results in a turning radius very near the theoretical minimum, an important consideration with nearby guy wires.

The constraints of element placement lead to the choice of a 5 element design. Wayne Hillenbrand, N2FB, noticed the parasitic elements of his fine 6 element design were nearly equally spaced (see NCJ Jan-Feb 1986, pp 16-18). The YO starting point for the new design had 4 equally spaced parasitic elements placing the driven element between the reflector and first director. This results in a tail-heavy, imbalanced design. The weight imbalance is easily remedied by weighting the light end of the boom. To ease rotor strain while turning the antenna, the wind-load can be balanced by proper placement of a "dummy" element (made from PVC or another nonconducting element). This information along with survivability aspects should be available in the new book by Dave Leeson, W6QHS, "Physical Design of Yagi Antennas", published by the ARRL. As of this writing (March 1992) the book was not yet available at the local ham store so specific details are unavailable.

The main motivation for the new design is to improve the electrical characteristics compared to the PV 4. Since Bob's station is active on CW and SSB (and the band is often full during major phone contests), it is desirable to maintain good VSWR, gain, and pattern across the entire band. YO was run with occasional adjustments of the optimization parameters to find a good overall design. After

roughly 20,000 iterations, a suitable design emerged.

Following the design work, I noticed a SHORT5.YAG file on the YO program disk that contained a nearly identical design to the one I had just finished. It had a slightly better VSWR using a longer driven element. I lengthened the driven element of my design then re-optimized and came within 0.25 inches of all element lengths and positions of the SHORT5. (I wish I had looked at that file sooner!)

Several plots show various electrical characteristics of the PV 4 (on the left) and the new 5 element (on the right). The plots are actual YO screens using the WordPerfect "grab" feature (the quality is poorer than hoped). Each plot is auto-scaled so be careful when comparing plots as the scales are different/ Dimensions of the design (neglecting boom and element clamp effects) are as follows:

Diameters:	1.000"	0.875"	0.750"
Position	Length	Length	Length
0.00"	72.00"	68.00"	74.97"
74.94"	72.00"	68.00"	63.13"
149.88"	72.00"	68.00"	57.98"
288.93"	72.00"	68.00"	55.28"
477.12"	72.00"	68.00"	45.53"

The VSWR of the new 5 element design is less than 1.5:1 across the entire band. This is a major improvement over the PV 4. The low VSWR results in less reflection loss from impedance mismatch. The better match also keeps the equipment happier and should require less amplifier retuning while moving up and down the band. At Bob's station, the low VSWR will provide a more equal power split between the upper and lower antennas for his stack configurations.

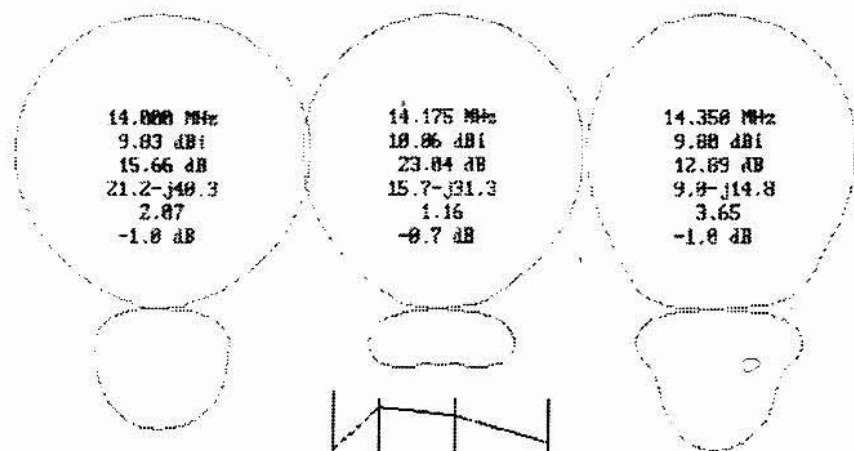
The antenna input resistance remains almost constant across the band and is higher than the PV 4 design. This makes the gamma match less prone to capacitor breakdown. The gamma match calculator in YO had a difficult time finding reasonable rod diameters and spacings to match the PV 4. Gamma match designs for the 5 element design were much easier to obtain. Some 50 ohm gamma match values are listed below

Dia.	Spacing	length	Capacitance
0.50"	2.0"	49.1"	329 pF
0.50"	4.0"	36.6"	408 pF
0.75"	2.0"	63.0"	571 pF
0.75"	4.0"	47.9"	725 pF

Capacitance values for the 5 element design average 2 to 4 times more than those for the PV 4. The voltage across the gamma capacitor is therefore lower by roughly a factor of 2 to 4 for the 5 element design thereby reducing the chance of gamma capacitor breakdown. Larger gamma rod diameters and spacing increase the required matching capacitance which further reduces the chance of failure. This problem is more prevalent when a higher impedance step-up is required to match the antenna (those of you with 75 ohm feedlines take note).

Directivity of the 5 element design is between 9.74 and 9.85 dBi in free space. The PV 4 directivity ranges from 9.80 to about 10.15 dBi in free space. Thus, the PV 4 has a slight edge in directivity however the reflection loss due to impedance mismatch is higher for the PV 4. A loss of 0.18 dB occurs at a VSWR of 1.5:1 increasing to 0.50 dB at 2:1 and 1.25 dB at 3:1. Taking this into account, the gain of the 5 element design is slightly better on average. The gain difference between the PV 4 and 5 element designs are probably inconsequential over 99% of the time.

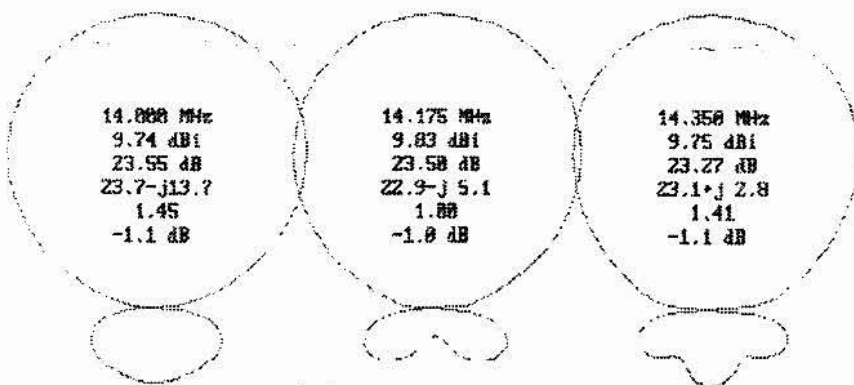
The new 5 element design has an improved pattern. The "Front to Back" ratio plots shown for both designs would be more accurately described as "Front to Rear Lobes" ratio. The rear lobe region is 90-180 degrees for E-plane plots, labeled as F/B (E), and 135-180 degrees for H-plane plots, labeled as F/B (H). Four cases were plotted, free space, and above perfect ground at 50, 75, and 100 ft. [Only free space E plots are shown - Ed.] E-plane patterns above ground are taken at the main lobe elevation angles, 18, 13, and 9 degrees for 50, 75, and 100 ft. respectively. In each case, the 5 element outperforms the PV 4 "Front to Back" particularly near the low and high ends of the band. The additional rejection from the rear should provide better signal to noise/QRM levels and hopefully will result in fewer repeats when working weak stations.



Yagi 4
YO screen - W2PV 4, 40' boom

W2PV 4-Element Beam

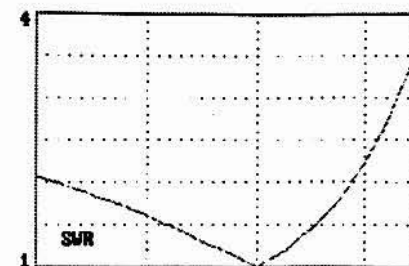
Z8MPV4



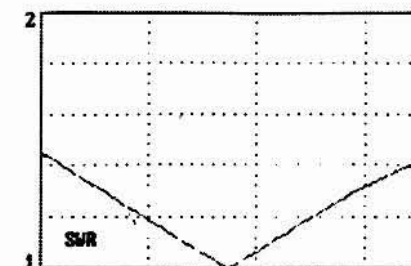
Yagi 4
YO screen - New 5, 40' boom

28 Meter 5-Element Beam, 40' Boom

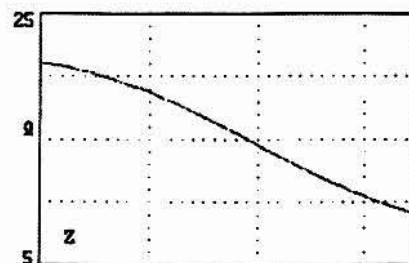
SL28-40



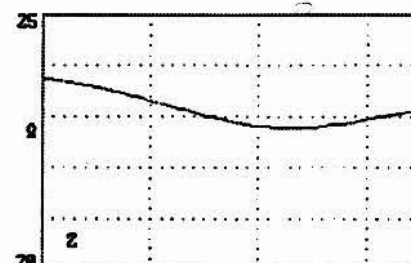
VSWR - W2PV 4, 40' boom



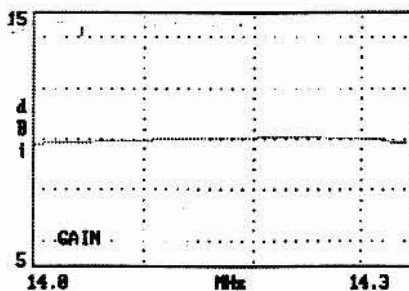
VSWR - New 5, 40' boom



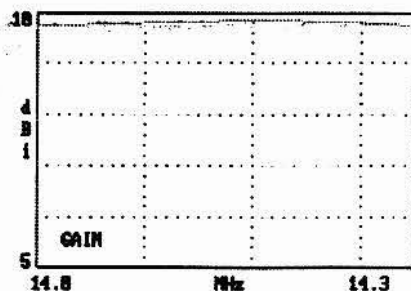
Resistance - W2PV 4, 40' boom



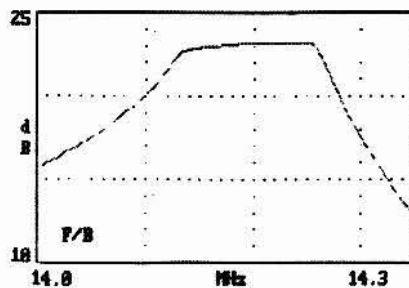
Resistance - New 5, 40' boom



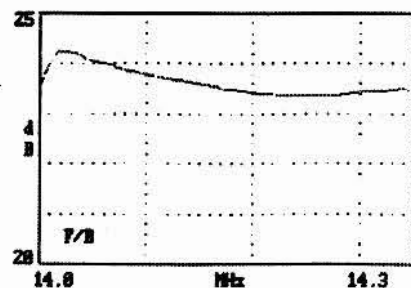
Gain - W2PV 4, 40' boom



Gain - New 5, 40' boom



F/B (E) - W2PV 4, 40' boom



F/B (E) - New 5, 40' boom

The new 5 element design is an attractive alternative to the PV 4. The electrical design has been improved with respect to the chosen design goals and philosophy. The cost (or disadvantage) of this improvement is the additional wind loading presented by the 5th element (and "dummy" element if used). From my point of view, this cost would be well justified. For those using the venerable 204BA, this design would be a nice step up (more gain, better F/B) and the old 204BA boom could be used for the following 15 meter version:

Position	Length	Length	Length
0.00"	72.00"	44.00"	27.15"
50.05"	72.00"	44.00"	18.74"
100.10"	72.00"	44.00"	14.73"
185.47"	72.00"	44.00"	13.02"
309.00"	72.00"	44.00"	6.55"

Good luck to those who try this design. It should work well.

New Crew

Please welcome the following members who joined at the April meeting:

Dennis Scolamiero, N1DS
182 Redington St.
Swampscott, MA 01907-2135
Home phone: (617)593-5095

Stan White, N1HEO
26 Phebe Ave.
Lowell, MA 01854
Home phone: (508)454-9649

Thomas W. Hurley, NO1J
109 North Triangle Drive
Plymouth, MA 02360
Home phone: (508)747-6168
Work phone: (617)329-8100

Curtis W. Rose, WA4VKD
80 Fitch Road
Mechanicville, NY 12118
Home phone: (518)664-3410
Work phone: (518)385-8956

Movers and Shakers

New work phone number for Joe, K2VUI, is (617)426-1661.

New address for Craig, NX1G:
Craig Clark, NX1G
P. O. Box 209
Rindge, NH 03461

Floating

Paul Young, K1XM

Look at the issue number on the masthead of this issue, and you will understand why the next issue will be special. I've asked several people to write articles for it - if you have something to contribute, let me know.

This year we will try to put club eligibility status in the Scuttlebutt. I have not figured out exactly how I will do this. For now, nobody is eligible for the ARRL DX contest, and those who paid dues at the last meeting are eligible for the CQ WW contest.

Dues

The new Dues year starts in April. If your mailing label says you owe dues, please send \$15.00 (\$10.00 for subscribers) to the club treasurer. Thanks.

KP Interface

The KP interface connects a PC to an Icom transceiver at less than half the cost of a CT-17. Looking like no more than an RS-232 Cable and requiring no power supply, the KP Interface is available from Tony, K1KP for only \$25.00. Of course, it has been thoroughly tested with CT!

Call Tony Brock-Fisher at (508)-689-4126 to order the KP Interface for delivery to the next YCCC meeting.

THE CLUB RESOURCES PAGE

The Place to Find Club Information

DUES are due at the April election meeting, which begins our club "contest year", with a grace period until the end of June. Membership in the club will lapse at the end of the grace period if dues are not paid up. In order to re-join the club, a lapsed member must attend a meeting, like any new member, and be welcomed back into membership, or may become a subscriber to the Scuttlebutt by paying up (see below). Club members who move out of club territory and so are not eligible to contribute to club aggregate scores automatically become subscribers. New members who join at the last meeting of the club's contest year (February) are credited with dues for the following year (that is, the contest year beginning that April). You can tell if you owe dues by checking your 'Butt mailing label. Only paid-up members are eligible to contribute to the club score in contests.

FAMILY MEMBER Members of the same family living at the same address may elect to receive only one copy of the Scuttlebutt. One member of the family must pay full dues, enabling the rest of the family to join as family members. Being a family member is currently free.

STUDENT MEMBERS Full-time students are eligible for dues at half the regular rate.

SCUTTLEBUTT SUBSCRIBERS Anyone may subscribe to the club newsletter, the Scuttlebutt. A subscription currently costs \$10 per year. At the present time, overseas subscriptions cost the same as domestic (we have very few overseas subscribers). The subscription period begins at the beginning of the club year, in April. New subscribers who begin their subscriptions after the December issue are considered to have paid for the following year (that is, they receive as many issues as new members joining at that time do). You can tell if your subscription is current by checking your 'Butt mailing label. The grace period for late subscriptions is the same as for late memberships.

SCUTTLEBUTT ARTICLES should be sent to the Scuttlebutt editor, Paul Young, K1XM, 11 Michigan Drive, Hudson, MA 01749, home phone (508)562-5819. The deadline for each issue is usually three weeks before the next meeting.

CLUB JACKETS We are looking for someone to coordinate club jackets. If you can help contact Ed Kritsky, NT2X, 580 East 17th Street, Apt. 2F, Brooklyn, NY 11226, home phone (718)284-4493.

CLUB QSL CARDS are ordered through John Dorr, K1AR, 2 Baldwin Street, Windham, NH 03087, home phone (603)434-5661.

PACKET NET information is available from Dick Newell, AK1A, 8 Golden Run Rd., Bolton, MA 01740, home phone (508)779-5198, or Dave Robbins, KY1H, Baumann Road, Peru, MA 01235, home phone (413)655-2714.

CONTEST SCORES are sent to the club scorekeeper, Kurt Pauer, W1PH.

CLUB ROSTER appears in the summer issue of the Scuttlebutt every year. Updates are published when members move or change callsigns. If you want a new copy of the club roster, contact the club secretary/treasurer, Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson, MA 01749, home phone (508)562-5819.

CONTRIBUTIONS The YCCC welcomes your contributions, be it money to help offset the cost of the Scuttlebutt and club operations, scores for the club aggregate score, time spent helping other members, articles for the Scuttlebutt, or presentations at club meetings.

DXCC LIST The club maintains a one-page version of the ARRL DXCC Countries List. To get a copy, send an SASE to the club secretary, Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson, MA 01749. Complete DXCC rules are only available from the ARRL.

CT by K1EA is available from Bill McGowan, KC1EO, 33 Truell Rd., Hollis, NH 03049. Send \$40 (US funds) to register and receive the latest version. CT phone: (603)465-2392. CT BBS: (603)465-2161 (1200/2400 N81). Visa/MC accepted.

W1 QSL Bureau is sponsored by the YCCC. Keep your account up to date with SASEs, or send a check. Stamps are sold at face value, envelopes are 10 cents each. W1 QSL Bureau - YCCC, PO Box 216, Forest Park Station, Springfield, MA 01108.

ARRL LIAISON For ARRL matters, contact Tom Frenaye, K1KI, PO Box 386, West Suffield, CT 06093, home phone (203)668-5444.

Dues are \$15 per year, payable 1 April. Non-members may subscribe to the Scuttlebutt by sending \$10 to the treasurer: Charlotte Richardson, KQ1F, 11 Michigan Drive, Hudson MA 01749. Subscribers who subsequently become members will be credited as having paid \$10 towards dues.

The Scuttlebutt may be reprinted in whole and in part, except for separately copyrighted articles, provided proper credit is given.

The Yankee Clipper Contest Club (an ARRL affiliated club) holds six official meetings per year, on the Saturday or Sunday afternoon of the first full weekend of every even month, usually in the Sturbridge, Massachusetts area. The deadline for article submission to the Scuttlebutt is usually three weeks before the next meeting date. The next meeting will be on Sunday, June 7, 1992. Attendance at an official meeting is required in order to become a member. Club members congregate on 3830 after contests. The packet frequencies for DX spotting are 144.95, 145.69, 144.93, 144.97 and 144.99 MHz.

Rosters are mailed to all paid members each summer. For more information and/or assistance, contact the area manager nearest you.

Officers:

President	Rich Gelber	KC1F	212-580-1075
VP-Activities Manager	Saul Abrams	K2XA	518-439-5700
Secretary-treasurer	Charlotte Richardson	KQ1F	508-562-5819
Editor	Paul Young	K1XM	508-562-5819

Area Managers:

Area	Call	Name	Home	Work
CT/RI	K1RU	Gene Frohman	203-393-1772	203-386-6137
EMass	N1AU	Bill Santelmann	617-862-1753	508-692-6000
WMass	W1GG	Gary Gaudette	413-443-3404	
VT/NH	K1GW	Glen Whitehouse	603-673-6290	603-627-7877
ME	N1AFC	Peter Archibald	207-767-2169	207-797-8931
NLI	NQ2D	Jim Metcalf	516-744-9422	516-467-4800
NNY	K2TR	Fred Lass	518-355-4813	518-346-6666
SNY/NJ	K2EK	Bill Gioia	914-221-1672	914-697-3250

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Hudson, MA 01749

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