The Scuttlebutt

May 1982 No. 39

Yankee Clipper Contest Club

Captain's Cabin

Out the Back Door

John Dorr, K1AR

Oddly enough, I find my final words as President nearly as hard to write as my first ones. As I sit back and review the past two years, I am proud to say that YCCC has come a long way. Frankly, I think that has less to do with my term as President than with a change in spirit in our club membership. If you analyze our people, you will find we not only have a good group of enthusiastic newcomers, but a significant number of top notch contributers who match up with the best. We also have (thankfully) a great crew who do the "behind the scenes" work...**Scuttlebutt** production and area managing to name a few.

The job of President is not an easy one. As John, K2VV, takes the helm, give him your support in order to make his job easier. Finally, thanks for making my term as President so much fun. You guys are sure hard to manage sometimes, but the bottom line is that YCCC is OK in my book!

In the Front Door

John Yodis, K2VV

Reflecting upon the recent election I can understand why some members prefer to stay home for the April meeting. Unexpected things tend to happen to those who do attend, such as ending up President. Thanks to John, K1AR, for overseeing the best two years we've had, and to Dick, AK1A, for a great job as Secretary. Welcome back to Bob, N1TZ, in his new position as Secretary-Treasurer. Bob deserves a lot of credit for again accepting what has become a ritual nomination. Bob doesn't want credit, though, he wants $10 from everyone before July 1 (more on that to follow). Bob, KR2J, is back for another year as Vice-President and I'm going to be relying on him heavily for keeping in touch with Area Managers.

We have two new Area Managers, Tom, K1KI, and Al, W1FJ. Tom will take over responsibility for Connecticut and Rhode Island. Al has assumed the formidable task of keeping Eastern Massachusetts organized. There has been a bit of border shifting done and you can expect a little bit more. The new areas and selfless souls in charge of them can be found on the back of each issue of the **Scuttlebutt**.

There is a strong feeling among the officers that YCCC can't afford a one year free subscription for people who have lost interest in the club. We can't let two or three meetings go by waiting for money that may never come. Effective immediately, dues are due April 1 and must be in by July 1. At that time the **Scuttlebutt** mailing list will be reduced to paid members and subscribers by a heartless computer. Your Area Manager will be kept informed of who had paid and has been authorized to take drastic action to get the coffers filled in time. The action may include, but is not limited to, having W8AH sit on your frequency in the CQ WW. **Scuttlebutt** subscriptions to non-members will now cost $10 as we have been losing money on these in the past. Reduced rate student dues will also be eliminated.

My sincere thanks go to Bill, K1GQ, for offering to stay on as Editor of the **Scuttlebutt**, which, more than anything, is the glue that holds this club together. Read and enjoy this issue — after writing a check to N1TZ. ■

Minutes

The spring meeting of YCCC was called to order on 10 April 1982 at 1346 EST by President John Dorr. Bob, N1TZ reported that the treasury balance was $92.86. John mentioned that dues are due, and to please pay N1TZ. John discussed briefly his feeling that the offices of Secretary and Treasurer should be merged into one.

Three new members were voted into YCCC. They are WA2PJN, Steve Holly, N1CQ, Bill Sheen, and W1WEF, Jack Watson.

Bill, K1MM gave a slide presentation on his recent DXpedition to Cocos Keeling and Christmas Islands.

The raffle was held by W1XK and K2OY, with KR2J taking home part of the loot. Contest Weekend Update was brought to us by K1DG and K2WR. K1GQ polled the crew on various CAC issues.

Elections were held and the following members elected as officers:

President	John Yodis, K2VV
Vice-President	Bob Neumann, KR2J
Secretary	Bob Czajkowski, N1TZ
Treasurer	Bob Czajkowski, N1TZ

Rich, K1CC finished off the day with slides of his trip to Poland.

The meeting was adjourned to Ground Round.

de AK1A

Introducing...

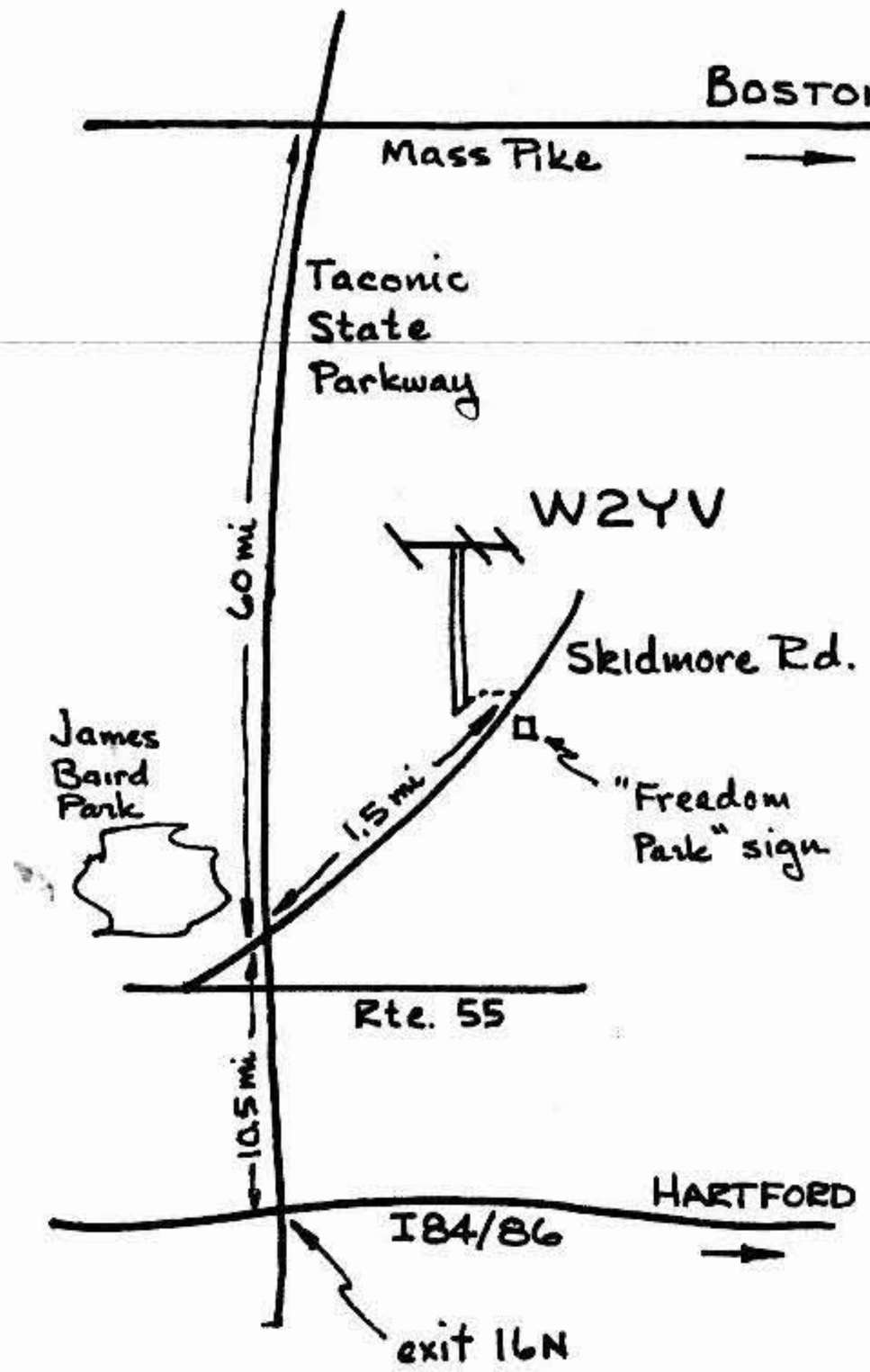
John, K2VV, is the most recent in an unbroken string of illustrious hams to assume the leadership role in YCCC. He is originally from Albany, NY, and now lives among the cows and sheep in Broadablin. His wife, Sue, is also a ham (KA2CUP), but their daughter Carolyn hasn't made the grade yet (she's 2 years old). John earned a BS in Chemistry at RPI in 1973 and now works as a research chemist in electical insulation at Schenectady Chemicals.

John's primary on-the-air activity is DX and prefix chasing (among other high honors, he's acquired 5BDXCC and is one of only three YCCCers on the ARRL DXCC Honor Roll). The indoor stuff is (what else?) a TS-830S, driving an Alpha 76A. Outdoors, a 70 foot tower supports 4 element homebrew monobanders for 21 and 28 MHz, a 100 foot tower supports 4 over 4 on 14 MHz, and there's a 2 element delta loop for 7 MHz strung between the towers. ■

YV Bash

The fourth annual YCCC gathering at the $1.99 contest station, is on for **July 10**, beginning whenever you get there. Plan on plenty of beer and fraternity, along with baseball, naughty movies, and for the diehards, some radiosporting. The **Bash** runs as late as you want, and there will be plenty of floor space for sleeping over 'til Sunday. Autos with ears try 146.52 or 146.97 MHz; here's the route:

- From the Mass Pike, get on Taconic State Parkway South, 60 miles to Skidmore Road (about 1 mile past James Baird Park).
- From CT, East MA, etc, take Interstate 84/86 into NY, get on Taconic State Parkway North (at exit 16N). Skidmore Road is about 10.5 miles from I-84, immediately beyond the second Rte. 55 exit.
- Turn east on Skidmore Road and drive 1.5 miles. The **W2YV** driveway is on the left (sharp turn and *up*), just past the Freedom Park sign (on the right).



[The following is excerpted verbatim from a newspaper obituary dated 26 May 82 (some facts appear to be missing; e.g., Jim earned his PhD at the University of MIchigan). It presents a perspective of this truly exceptional individual rather different from that seen by many of us who operated at W2PV. In the next **Butt**, I will attempt to describe Jim's station in detail.-ed.]

Lawson Dies at 66 Was GE Scientist

Dr. James L. Lawson, 66, a retired General Electric scientist and manager of research and development who made major contributions to radar, nuclear particle accelerators, electronics and information science, died yesterday after a brief illness.

Dr. Lawson was born in Pasumalai, India, where his parents were missionaries. He received a B.A. degree from Kansas University in 1935 and a master's degree the following year. In 1940, he became a staff member at the Radiation Laboratory of the Massachusetts Institute of Technology, where he played an important role in the development of radar.

Dr. Lawson joined the General Electric Research Laboratory as a research associate in physics in 1945 and later was appointed head of the nuclear investigations division. In the latter position, he planned and supervised construction of a gamma ray spectroscope and helped design and construct a new type of atom smasher know as the nonferromagnetic synchrotron.

Dr. Lawson was named manager of Electron Physics Research in 1950. Under his direction, G.E. scientists developed improved types of magnetrons, novel ceramic tubes, image orthicon and plumbicon tubes and advanced military communications systems.

He served as manager of the Information Sciences Laboratory from 1965 to 1970 and as a research and development manager of Information Science and Engineering from 1970 to 1974. In these positions, he headed research teams that made pioneering contributions in solid state physics, integrated circuitry, novel recording techniques, computer science and automation.

Dr. Lawson was appointed manager of R&D Planning in 1974 and in 1976 was named consultant — research and development, a position he held until his retirement in 1981.

"Dr. Lawson's leadership helped significantly to further four of the major advances of 20th century technology: the vital World War II effort to perfect and apply radar, the development of particle accelerators for research in nuclear physics and the post-war revolutions in electronics and information," said Dr. Roland W. Schmitt, General Electric vice president for corporate research and development.

Dr. Lawson was an avid ham radio operator and cultivated a unique "antenna farm" — with three towers ranging in height from 110 to 180 feet — next to his home on 2532 Troy Road. From this "super-station," the tallest in upstate New York, he won ham radio competitions as the top individual operator and as the best station in the United States.

The crew of one of the U.S. Navy's aircraft carriers presented Dr. Lawson with an award for his help in connecting crew members via "phone patch" with their loved ones. He also received an award of merit from the American Radio Relay League for giving aid to a doctor in Madagascar who needed emergency advice and supplies to save the sight of a young boy. Dr. Lawson set up a relay between the distant physician and a specialist at Albany Medical Center.

He also was an expert mountain climber, hiker, and skier.

Dr. Lawson was the co-author of Threshold Signals (a volume in the classic series of MIT Radiation Laboratory books) and the author of numerous technical papers. He held three patents.

He was a member of the American Physical Society, the American Association for the Advancement of Science and the Institute of Electrical and Electronics Engineers. ■

Clipper's Log

CW WAE 1981 Results

single-op

K1GQ #1 World
W1ZM #2
KC1F #3
WB2SJG #5
K1HI #8
AK1A #13
AK1B #21
N1EE #32

multi-single

W1IHN #1 (+AD1C, AI1E)

Phone WAE 1981 Results

single-op

W1ZM #1
AK1A #2
KC1F #4
AK1B #9
K1XM #10
K2QF #13

multi-single

K1AR #1 (+K1DG)

CW SAC 81 Results

AK1A #7
KA1CLV #13
KB1Q #16

Phone SAC 81 Results

AK1A #2
KB1Q #4

High Claimed Scores

Phone CQ WW

single-op

K1AR #1
W1ZM #2 (K1ZM op)
K2TR #3 (K3UA op)
WA1TFF #15
AK1A #16
W2YV #18
KA1R #19
W2TA #25

28 MHz

W1WEF #4

multi-single

WB2FZO #3
N1TZ #8

multi-multi

W2PV #1
K1OX #3

DX multi-single

PJ8UQ #9

CW

single-op

K1GQ #2

K1KI #3
K1AR #5
K2VV #6
W1KM #10
W2IB #20
KQ2M #24
W1PH #31
W2TA #35

1.8 MHz

K1MEM #3

3.8 MHz

W1ZM #1 World (K1ZM op)

multi-single

N1AC #2
N1TZ #8
K1RU #9
K1RQ #12
K1XM #13

multi-multi

W2PV #1 World
K1OX #7

DX single-op

P47A #21 (KF1V op)

Phone ARRL DX

single-op

W1ZM #1 (K1ZM op)
K1AR #2
AK1A #3
K2VV #5
K1DG #7
K3UA #25
KG1E #27
K2XA #30

1.8 MHz

WA2SPL #1

14 MHz

K1KI #1
K2RD #4

QRP

KA1VQ #1

multi-single

K1OX #2

CW

single-op

K1GQ #1
W2IB #6
W2RQ #8
K1DG #11
W1IHN #17

3.5 MHz

W1ZM #1 (K1ZM op)

14 MHz

K1KI #1
K2RD #3

28 MHz

W1WEF #2

multi-single

W2YV #4

multi-multi

K1OX #2

Analysis of Reading Levels
Part 2

Tom Frenaye, K1KI

A while back [**Butt** 34 - ed.] I wrote a short article evaluating reading levels in June 1981 **QST**. The level according to the Flesch scale was approximately that of a person with some high school education (10th grade). I received only *one* response from the copies I sent to each of the 16 ARRL Directors. It was from Gay Milius, W4UG, who basically said, "I believe that you could spend your time in a better manner than to go into an analysis of reading levels in **QST**."

I also got some criticism from the AA2Z/K1WJ duo, who felt my analysis was a bit biased, which I admit. Careful reading of the book in which Flesch details his methodology and research reveals that writing is often *more* complex than it needs to be to get the point across. Flesch also developed a scale which determines how interesting a piece of writing is, rather than how difficult. These two scales together help in "targeting" writing for a specific audience.

In my first article, I promised to make the same evaluation of other amateur radio publications and some general reading material. My preconceptions about other Amateur magazines were that the writing would be quite varied (easy in **Ham Radio Horizons** and hard in **Ham Radio**). However, the results show almost no difference in reading levels of the big four, in fact **QST** was the hardest by a very small margin! (Lower numbers correspond to higher difficulty.)

QST	June 81	53.96
HR	July 81	54.82
CQ	July 81	57.79
73	July 81	59.00
Radcom	Apr 81	42.34

Radcom is short for **Radio Communications**, which is the monthly publication put out by the Radio Society of Great Britain.

I also felt that things have probably have been written at an easier level in the last few years as the hobby has gotten less technical in terms of the actual licensees. Looking back a few years to **HR** without **HRH**, **QST** ten years ago, and **CQ** under Dick Cowan also gave some interesting results:

HR	Jan 79	47.37
QST	Oct 68	48.88
CQ	Aug 77	60.01

A comparison with some non-amateur radio reading material is even more enlightening:

Computer Design (Dec.80 article by K1DG)	33.34
The Contest Cookbook, N6OP	44.71
Centennial	49.26
Robinson Crusoe	56.13
Penthouse (Sept 81)	62.53
The Jungle	64.51
The Martian Chronicles	69.58
Lord of the Flies	75.25
The Hobbit	80.69
The Bible (Genesis I)	96.86

If you look at amateur radio magazines in the context of some classic publications, they do pretty well.

Of all the articles evaluated in amateur magazines (65 in all), only three were written at a level that required more than a high school reading ability:

Apr 81 **Radcom**	*Technical Topics*, G3VA	20.30
Oct 68 **QST**	Editorial by W1LVQ	28.81
Jan 79 **HR**	*10 GHz Gunnplexers*, W1HR	29.92

Maybe this is the statistic that best explains my bias. There are plenty of easy and medium difficulty articles written on easy and medium difficulty subjects, but there seems to be a marked lack of material on advanced topics, perhaps because articles are always written for the middle-of-the-road amateur and skim over the difficult parts.

Flesch compared his reading ease scores with typical magazines:

Comics	90 to 100
Pulp fiction	80 to 90
Slick fiction	70 to 80
Digests	60 to 70
Quality	50 to 60
Academic	40 to 50
Scientific	30 to 40

American amateur radio magazines clearly qualify as "quality" publications, although none approach the academic or scientific levels.

If you want to make your own analyses here is the basic formula:

Reading Ease = 206.835 -
(avg sentence length x 1.015)
+ (syllables per 100 words x .846)

Contest Shock Syndrome

Andy Blank, N2NT

As I approach my tenth year in Amateur Radio, I find my attitudes toward the hobby have undergone a large metamorphosis. After exchanging views with many others on this subject, I'd like to elaborate on these changing attitudes, and analyze them in an attempt to expose the psyche of the contester.

We all remember the feeling of excitement during our early days in the hobby. The first QSO, the first DX, working across the pond with a wet noddle; each was a thrilling experience. But eventually we want something more substantial. Some try RTTY or SSTV; others migrate to VHF or OSCAR. For a few, the choices are somehow not satisfying. Then one day you overhear a rapid-fire roundtable about something called a "contest." The participants are intelligent, goal-oriented, and some of the best operators you've heard. "Maybe I'll try this," you think to yourself.

For many, contesting remains merely a casual activity. These people keep their perspective and derive considerable pleasure from contesting, over the long run. But others become obsessed, like me. Such unfortunates almost always become victims of a mental affliction which I call "Contest Shock Syndrome" (CSS).

There are two severe strains of CSS — Guest-Op and Host-Op. A third strain, Single-Op-from-Home-Station, has a much longer incubation period, and will eventually mutate into one of the other strains if left untreated.

Guest-Op CSS

The Guest-Op strain is the bug that bit me. If you're a guest-op, you are susceptible too, but the symptoms do not begin to develop until you win a contest. Just be a part of any winning operation and the virus has found its victim. CSS thrives on winning. It plays with your psyche. The more you win, the less you want to operate. Why waste another weekend working the same guys over and over again. There must be something better to do, anything.

What happened? The virus is shrewd. It taunts you while you strive to do well. It feeds the obsession. If you're not a top contender, the virus will begin to decay (it reads the results). But show it you can compete and watch out! Come close to the top of your category and it intensifies. You feel as though you have to win or die trying.

If you are lucky you do win eventually — certainly there are enough contests and categories around. When you do win, there is no feeling in the world like it. All you have worked for has paid off. The agony and struggling through all those contests has finally been rewarded. You've beaten all those guys who you once thought were unbeatable. Euphoria has set in! This is when CSS becomes malignant.

What happens next? Now that you've won one contest, you try to win another. Perhaps another mode, or type of contest, or the same one twice. In any case, the result is a sudden surge of confidence and increased activity in *all* contests. If you don't have the time, you make it, to the exclusion of all else. You arrange your schedule to operate every conceivable contest, even IARU. You look for the best stations to operate, making new friends as to attempt to get in good with the "Big Guns." As you do better, the Big Guns begin to cultivate you! How can you refuse? When one calls and says, "Please come by and operate the CQ WW single-op," and the smallest antenna he's got is 9 over 9 on 40, you don't say no, even if you've got to fly 6000 miles to do it.

Of course, CSS develops at different rates for each individual. It grows more slowly in those who truly enjoy getting on the air and thrive on the feeling of being the loudest signal. Others, like myself, soon begin debating themselves: here it is another Friday and I'm going to sit in front of the radio for 48 hours, without sleep, entering the same calls in the log as I did the last time. Am I nuts? There are so many other things I could be doing, why do this again?

Perhaps I am overly cynical as the result of an acute case of CSS, but I have seen many other cases, and can see more developing. But do not despair, all you up and coming young contesters. CSS can be prevented by keeping your activity in perspective. For those of us too far gone, the only remedy is a cold turkey period of inactivity. Those who have suffered this cure usually emerge with a clearer sense of objectives and goals in contesting. The Guest-Op CSS virus is always present, but moderation will keep it benign and allow you to live a normal life.

Host-Op CSS

The sister virus is just as deadly as the Guest-Op strain, but it tends to afflict the wealthier, more technically-oriented ham, who possibly may not have what it takes to be a top-notch operator, but has a strong desire to win. Typically the host-op begins small, slowly building his station, trying to make maximum use of his resources. He operates a few favorite contests, and eventually begins to place well. Sooner or later, an eager guest-op gets together with the potential host-op — the guest-op needs a place to show he can compete with the big boys, and the host-op wants to prove his station is really competitive. At first, this combo may not win, but given time, it usually does. The guest-op becomes the impetus for the host-op to expand his station. Soon, things are optimized, and the combo begins to win or place well in many contests. Now Host-Op CSS begins its assault. "Since I'm winning," the host-op thinks to himself, "my station must be nearly optimum." After all those years of designing antenna systems, building the station, always improving something; now there's nothing to do.

A few can sit back and enjoy it. They only want to see their call at the top now and then. Generally these few don't get too involved in the operation except to maintain the station, and pursue other interests during the contest. They urge their guest-ops on without becoming too involved themselves. This is host-op moderation, which will usually keep Host-Op CSS benign for many years.

However, for the host-op who gets involved and then is suddenly left with nothing to improve on, CSS becomes malignant. It is at this point that the host-op may begin to lose interest. Those host-ops who have planned and constructed their stations at a *moderate* and *tempered* pace, keeping everything in perspective, are able to enjoy the fruits of their labor without experiencing the "burntout" feeling. Others become too involved and are eventually left with an empty feeling. Cold-turkey withdrawal is the only method of maintaining sanity; it is amazing where a ham suffering from Host-Op CSS may be driven. I will not go into specific details, but many are not heard from for years to come.

After a period of withdrawal, both the guest-op and host-op usually experience a resurgence of interest. But, being older and wiser, they return to with a much better appreciation for moderation. Rare is the burntout contester who returns to his old ways. Remember, CSS never dies; it must continually be controlled through moderation.

Single-Op Home Station CSS

The third strain of CSS is the mildest form. The contesters who have lasted the longest as operators are those who operate from home. These hams satisfy two inner needs at once: they both build and operate a competitive station. The pride they feel knowing everything was done by themselves is so strong that it can keep CSS benign for many years. The SOHS contester encounters all of the problems alone (e.g., dealing with neighbor, wife or equipment trouble, getting out of bed after one hour sleep Sunday morning), but when all the pieces fit together, it has to be rewarding.

The SOHS often takes a stab at guest-operating or hosting a guest-op. Usually this is an experiment to garner experience for their primary interest — SOHS. However, CSS quickly becomes malignant in those who leave SOHS too long or fail to moderate their SOHS activities.

Summary

The foregoing is an analysis of my own experiences and of what I have observed in the many contesters I have been fortunate to know. Contesters are great people (with a few exceptions), and I hope that some of you may find these views helpful in your own situations.

In summary, I believe CSS will affect *every* serious contester. It has, in fact, hit everyone I can think of in one or another of its three forms. I also believe that if you keep contesting in perspective with the other aspects of your life, CSS can be kept under control. If you can do this, you will have a greater appreciation for the time you spend contesting; if not you are doomed to suffer the malady and the perhaps more dreadful cure. I hope to be a contester for the rest of my life, but you won't catch me going full time in the IARU or WPX again! ■

Flotsam

Saul, K2XA, and wife Edie are parents of a new addition: Addie Rebecca, born April 15 (carefully planned to avoid contest season).

Bob, W2NC, finally achieved Number One on the WPX Honor Roll.

John, KB2CR, had divine intervention in eliminating a CATV interference problem with his neighbor — the neighbor passed away.

Ev, AJ1I, has recently changed jobs — his new work phone is 617/894-8700 x244. He's looking for filters to fill out his new Drake R4C.

Jeff, WB8BTH, suggests that receiver performance freaks might want to check out the equipment review publications from the International DXer's Club, 1826 Cypress St., San Diego, CA 92154-1154 ($6.25).

Tom, N4KG, measured the following offset frequencies vs standard inductor values for the K1KI/K1JX TS-830 cw offset mod. (**Butt** 38): 1.3 μh = 800 Hz, 1.5 μh = 600 Hz, 1.7 μh = 500 Hz, 2.2 μh = 400 Hz.

Greg, W1KM, lost his 3.5 MHz phased verticals in the Dec. ice storm, after just 14 days on the air — but they really worked in the CQ WW! This summer's project is a 125' Rohn 45 tower. Greg requests that we run a "station of the month" series, something we've been wanting to do for some time. Volunteer authors/photographers (B&W prints) are needed.

Clarke, K1JX, says that if club members can put together a collective order of Cushcraft antennas adding up to more than $1500, extremely low prices can be arranged through Jay, W1VD (Advanced Receiver Research). Any interest?

John, W1RR, passes along the following two hints. Dow Corning Molykote 41 conductive grease (for your aluminum tubing joints) can be purchased from Eastern Bearings, 7096 W. Willow, Manchester, NH. Price is $10.50 for a 5.3 oz. tube, or $20.50 for a 14.1 oz. lifetime supply. And propagation enthusiasts should be interested in "Short Term HF Forecasting and Analysis," by Captain James A. Manley, AD A 096833. ■

Mail

April 19, 1982

Gentlemen:

Just a brief note to express my appreciation to the YCCC for its sponsorship of the Contest DXpedition Trophy presented to me this past weekend at the International DX Convention in Visalia, California. It's a beautiful trophy and one that I will take great pride in — especially when I reach the twilight of my years and going 48 straight is just a distant memory.

There are many places in the world that provide operating conditions much more severe than a DXpedition to Barbados; however, I think I'll keep the award. That my 1980 CQ CW operation was successful (and also the 1981) is very much a tribute to the FB operators in the USA and I know the YCCC contributes more than its share.

Thanks again. Will look for you all this fall from Barbados or elsewhere.

Vy 73,

Jim Neiger, 8P6J (N6TJ) ■

Antenna of the Month

Bill Myers, K1GQ

Most of you know of the series of articles in ***ham radio*** by Jim, W2PV. In that series, Jim showed that there are particular boom lengths which have naturally good radiation patterns (i.e., small back lobes). The two smallest magic boom lengths are 0.3 and 0.75 wavelengths. The yagi designs in Jim's series are based on these boomlengths, with equally-spaced elements.

For several years there has been a "4-element PV" yagi design drifting about in YCCC waters. The antenna was indeed designed by Jim, but it is not shown in the ***ham radio*** articles, or in his forthcoming book. This design is the exception that proves the rule: the boom is 0.57 wavelengths, yet the front-to-back ratio is exceptional. (Also violated is another old canard that the "optimum" reflector spacing is 0.2 to 0.25 wavelengths; Jim's design uses 0.12 wavelengths!)

The plots show the performance of the PV-4, as calculated by my yagi modelling program, using the original element construction given by Jim to Saul, K2XA. Notice that the front-to-back ratio versus frequency curve has a very sharp peak. (The dashed curve on this plot is a new feature. It is the front-to-sidelobe ratio, for the largest lobe off the back of the antenna — theta from 0 to -90 degrees.)

The gain and VSWR tend to degrade rapidly at the high end of the band. Greg, W1KM, wrote to ask why manufacturers often do not provide dimensions for the cw enthusiast — this is the answer. Most yagis (and particularly the PV-4) will perform well on cw if tuned at the center of the band, but will suffer severe degradation in the phone band if tuned for the cw end of the band.

Nevertheless, some diehards don't own microphones and want to peak up antenna performance for cw. Here's a method which has worked well for me:

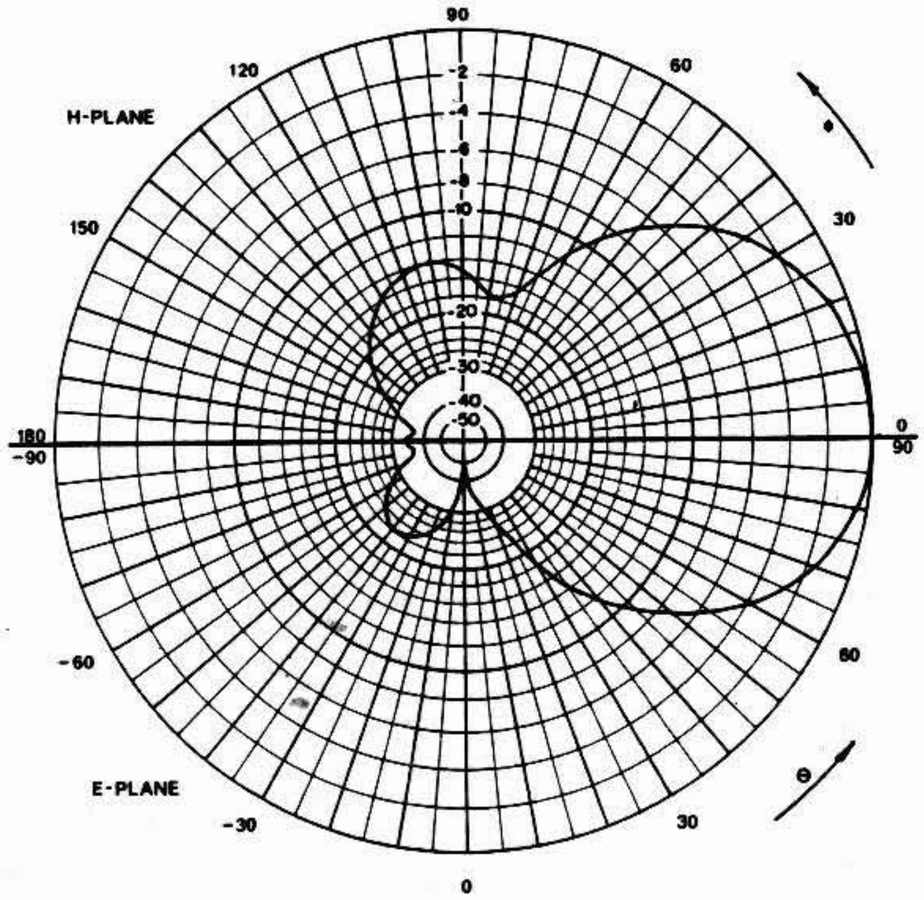
1. First, determine the frequency where front-to-back is maximum. To do this, find a ham within a few miles and record his signal strength with the beam pointed towards him and away from him, at several frequencies (2 meters is very helpful for test coordination). The difference between readings is proportional to front-to-back ratio; thus, you want to find the frequency where the difference is largest.
2. Compute the change in element length as
   $$dL = (F_{PEAK}/F - 1)L$$
   where L is the original element length, F_{PEAK} is the frequency where front-to-back ratio peaks, and F is the desired frequency for the peak. Add one-half of dL to each half of the element (subtract if dL is negative). Do this for each element.
3. Readjust the antenna matching network for minimum SWR at the center of your subband.

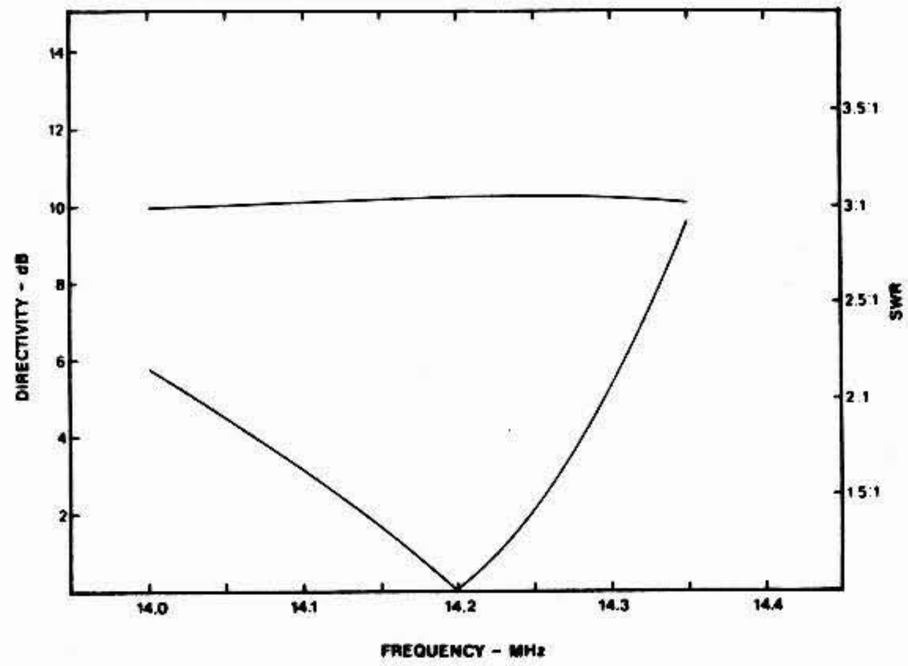
Incidently, if you are only concerned with improving the match between the antenna and transmission line, without shifting the gain and front-to-back curves, you can vary the length of the driven element considerably without changing the other element lengths. The dimensions shown here for the PV-4s have inductive reactance at the design frequency — my gamma matches like to see capacitive reactance so I've shortened the driven elements by 8 inches on 14 MHz, 6 inches on 21 MHz, and 4 inches on 28 MHz.

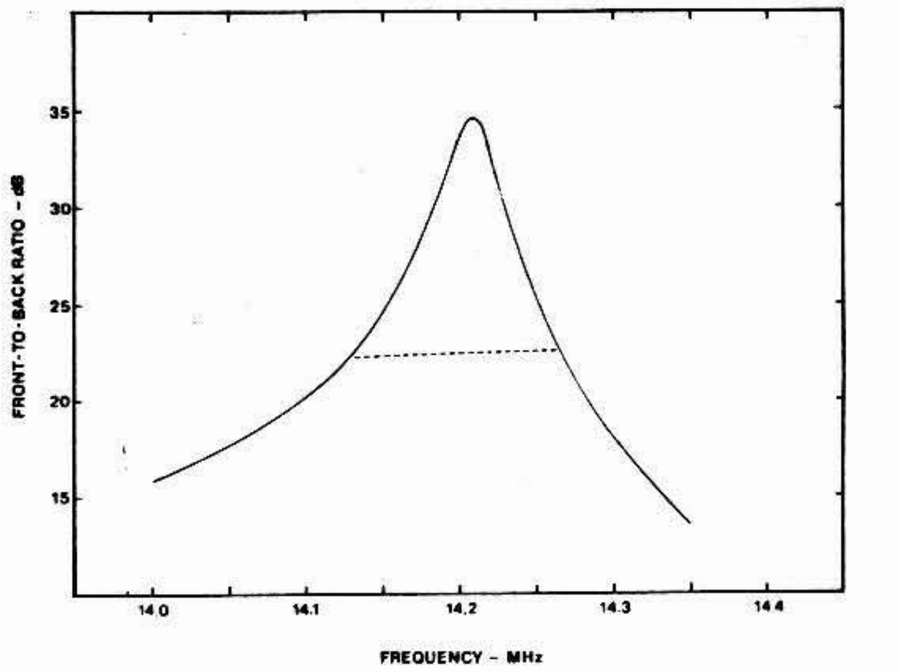
The PV-4 uses unequal spacing between elements, with three elements bunched together at the reflector end of the boom. As a result, the antenna is tail-heavy. The center of gravity of my 14 MHz PV-4 is nearly 2 feet behind the center of the boom. So don't count on being able to use the boom-to-mast bracket as a boom splice! Also, with more boom sticking out one side of the mast than the other, the antenna is unbalanced in the wind and thus generates more torque at the rotator than does a symmetric antenna.

The driven element of the 14 MHz and 21 MHz PV-4s can not be reached while you are belted to the mast, unless you're Fred Lass (K2TR). This complicates matching adjustments, but boom tilting arrangements and/or omega matches can ease the pain.

On the positive side, the 40' and 27' boom lengths (the funny code on the plots, like "W2PV-4-14.2-40" decodes as yagi designed by W2PV, 4 elements, 14.2 MHz design frequency, 40 foot boomlength) are not resonant in any ham band, so interactions between fixed and rotating antennas are less likely to be a problem. And, you get a ton of gain (to add just one more dB you would have to nearly double the boomlength), and an incredible front-to-back ratio (albeit over a narrow frequency range). ■

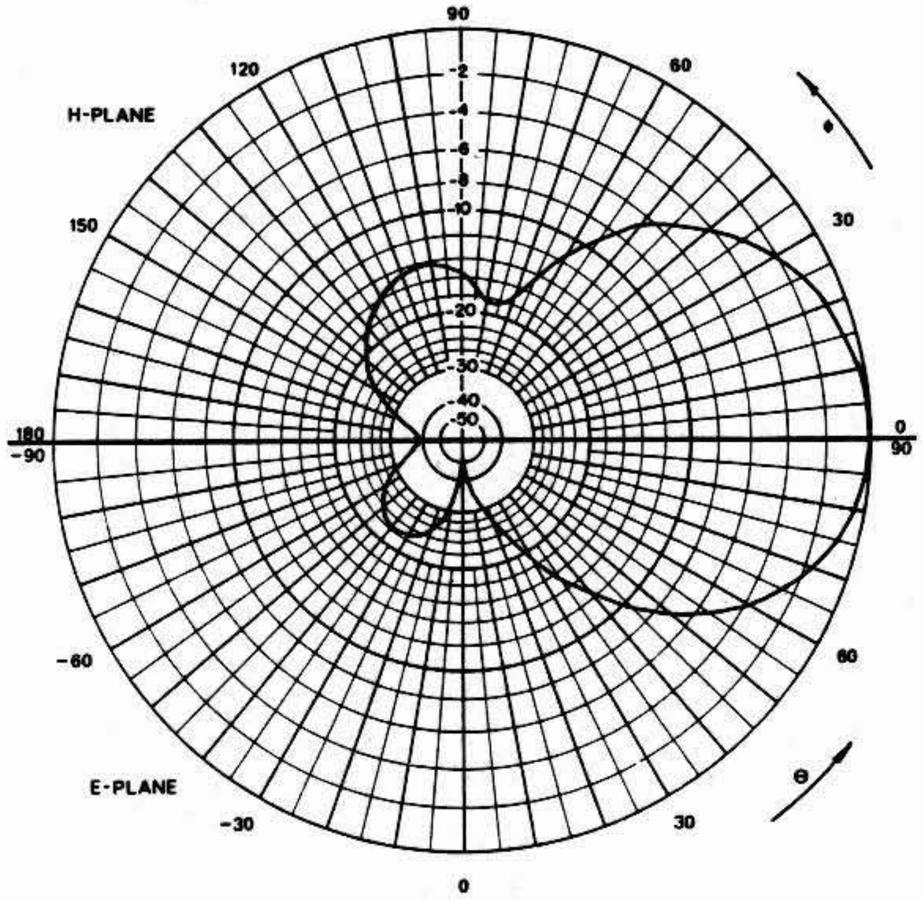


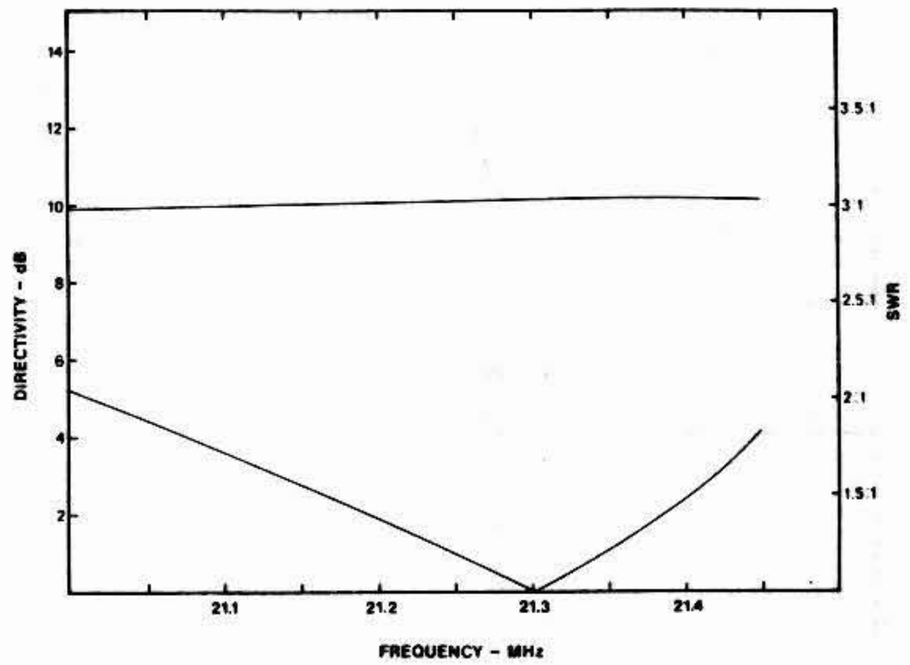


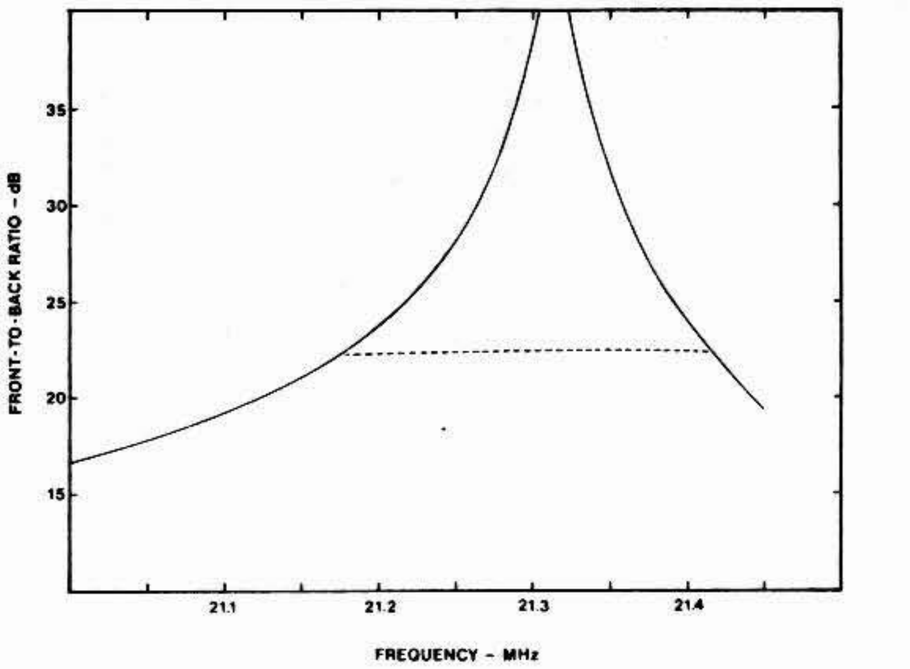


Designer	W2PV
No. Elements	4
Design Freq.	14.2 MHz
Boom Length	40 feet
Directivity	10.14 dB
Impedance	16.6+j6.1 ohms

Element	Equivalent Cylindrical Element (wavelengths)		Half-element Construction (inches)						Spacing From Reflector (inches)
			Center		Middle		Tip		
	halflength	dia	length	dia	length	dia	length	dia	
Reflector	0.2525	0.0010419	72	1	68	7/8	73.2	3/4	0
Driven El	0.2411	0.0010419	72	1	68	7/8	63.5	3/4	102.3
Director 1	0.2341	0.0010419	72	1	68	7/8	57.5	3/4	268.7
Director 2	0.2270	0.0010419	72	1	68	7/8	51.5	3/4	475.8

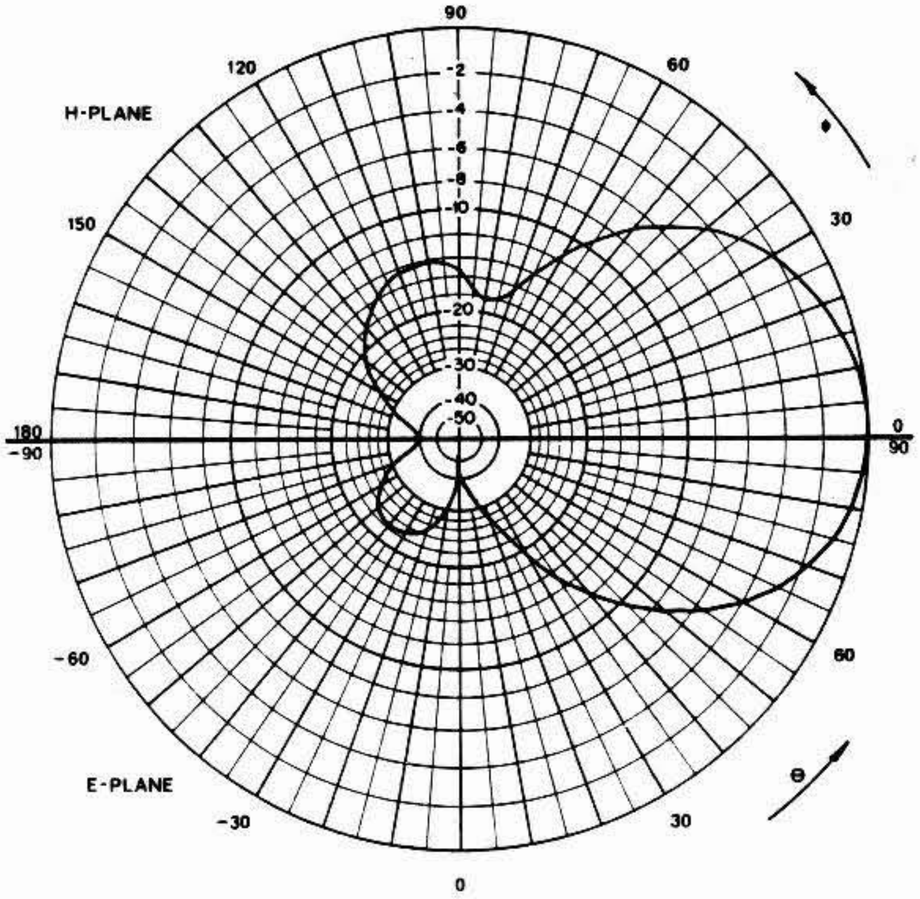


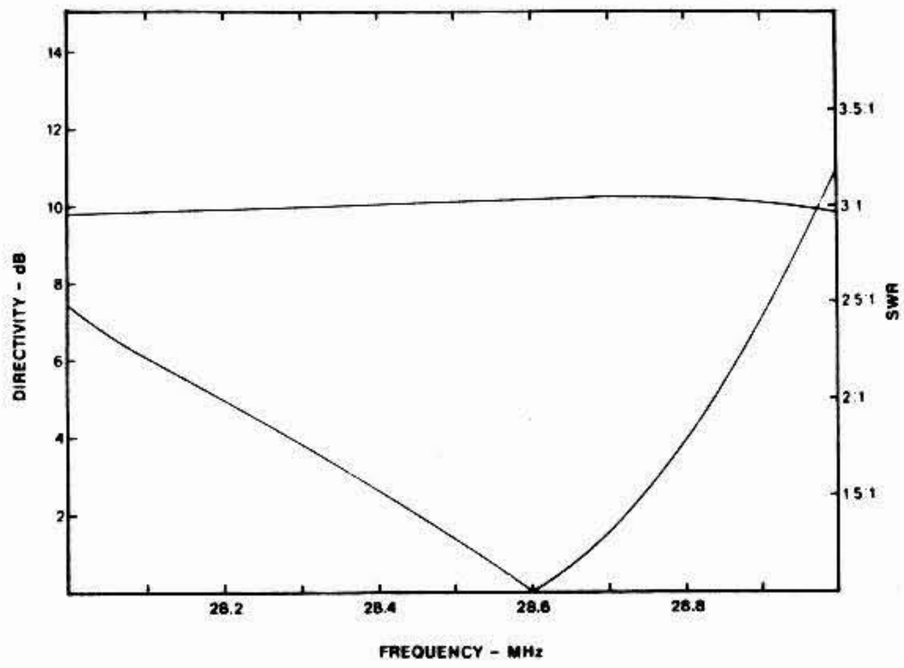


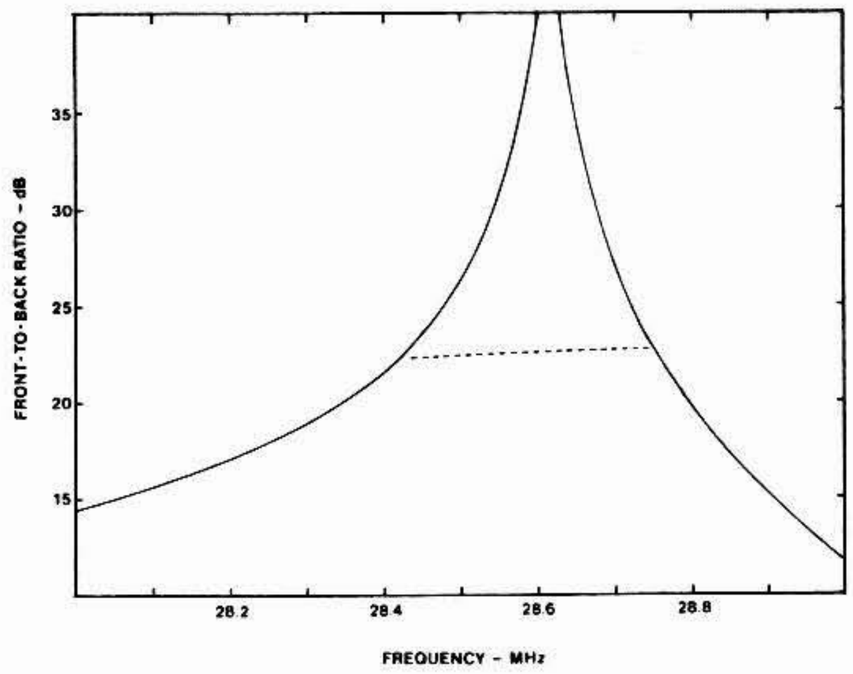


Designer	W2PV
No. Elements	4
Design Freq.	21.3 MHz
Boom Length	27 feet
Directivity	10.11 dB
Impedance	17.1+j7.1 ohms

Element	Equivalent Cylindrical Element (wavelengths)		Half-element Construction (inches)				Spacing From Reflector (inches)
			Center		Tip		
	halflength	dia	length	dia	length	dia	
Reflector	0.2529	0.0014619	72	7/8	69.6	3/4	0
Driven El	0.2406	0.0014619	72	7/8	62.7	3/4	68.2
Director 1	0.2330	0.0014619	72	7/8	58.4	3/4	179.1
Director 2	0.2251	0.0014619	72	7/8	54.0	3/4	317.2







Designer	W2PV
No. Elements	4
Design Freq.	28.6 MHz
Boom Length	20 feet
Directivity	10.11 dB
Impedance	16.8+j7.ohms

Element	Equivalent Cylindrical Element (wavelengths)		Half-element Construction (inches)				Spacing From Reflector (inches)
			Center		Tip		
	halflength	dia	length	dia	length	dia	
Reflector	0.2521	0.0019630	72	7/8	33.4	3/4	0
Driven El	0.2401	0.0019630	72	7/8	27.9	3/4	50.8
Director 1	0.2320	0.0019630	72	7/8	24.5	3/4	133.4
Director 2	0.2238	0.0019630	72	7/8	21.0	3/4	236.2

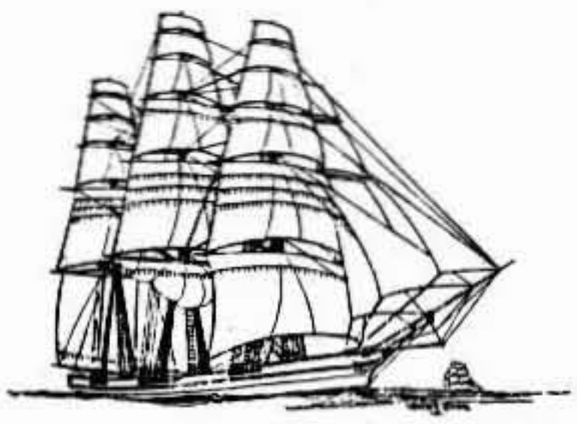
The **Scuttlebutt** is the newsletter of the **Yankee Clipper Contest Club** and is mailed about nine times per year to all paid up members. Dues are $10 per year, payable 1 April with grace period through 30 June. Non-members may subscribe to the **Scuttlebutt** by sending $10 to the Treasurer: Bob Czajkowski, N1TZ, North Brookfield Rd., Spencer, MA 01562. Subscribers who subsequently become members will be credited as having paid dues.

The **Yankee Clipper Contest Club** (an ARRL Affiliated Club) holds four official meetings per year, on Saturday afternoons in March/April, October (at the New England Division Convention), November/December, and January/February. Also, W2YV hosts a summer social gathering each July, usually on the second weekend after July 4. Attendance at an official meeting is *required* in order to become a member. Club members congregate on 3830 kHz Monday evenings; many routinely monitor this frequency other evenings as well.

Rosters are mailed to all paid members each summer. For information and/or assistance, contact the Area Manager nearest you on the following list:

YCCC Area Managers

		home	work
K1KI	Tom Frenaye	(203) 673-4014	(203) 549-0107
WB8BTH	Jeff DeTray	(603) 525-3796	(603) 924-3873
W1FJ	Al Rousseau	(617) 598-3744	(617) 599-7500x173
KR2J	Bob Naumann	(201) 427-8881	(201) 684-1400x25
K1SA	Bernie Cohen	(207) 773-6589	(207) 774-1334
N1TZ	Bob Czajkowski	(617) 885-3841	(617) 885-3841
K2VV	John Yodis	(518) 843-3897	(518) 370-1922x600
W1ZT	George Johnson	(413) 443-3084	(413) 494-2269



Box 501

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YANKEE CLIPPER CONTEST CLUB

FIRST CLASS