Established 1936
SKY-SCRAPERS BKLYN NY
AMA Club Charter 470

FLYOFF

Round 22 / Summer 1993

The **SKYSCRAPERS** Quarterly

Edited by Bob Hatschek

What's up? XXII

We finally ate our annual dinner

Stratospheric dust left over from the Mount Pinatubo eruption last year—which, they say, has lowered the Earth's average temperature by 1° F—and atmospheric shenanigans associated with an unruly El Niño combined to destroy northeastern weather conditions on the last five or six weekends of Winter. These included the originally scheduled dates for the Skyscrapers' 1st Annual St. Valentine's Day Massacre (Feb. 14) and the Skyscrapers' annual banquet (Mar. 13). Well, we finally ate our Annual Banquet on Mar. 20 and rescheduled the celebration of St. Valentine's Day to May 2 this year.

The banquet was a grand affair! Attendance was excellent, the camaraderie superb, the meal a delight. Our principal guest (Jim Haught, Northeastern VP of NFFS and newest addition to the *Model Aviation* editorial staff) was brief but informative in his words.

Galeville Maintenance Fund, 5/18/93

Previous Contributions	Amount	Balance
Skyscrapers	2504.00	
Friends of the Skyscrapers	2742.00	
		5246. 00
Previous expenditures	—2200.00	
		3046. 00
New Contributions		
Skyscrapers		
Hank Struck (3/93)	50.00	
		3096.00
Friends of the Skyscrapers		
Anonymous (3/93)	10.00	
Bill Kidd (3/93)	10.00	
Don Srull (3/93)	20.00	
Tom Fennell (3/93)	100.00	
Len Wieczorek (3/93)	10.00	
Mid-Hudson Model Masters (3/93)	100.00	
Vince Vilardo (4/93)	20.00	
Bob Rambo (4/93)	25.00	
Ted Lewis (4/93)	20.00	
		3411.00
New Expenditures		
Privy rental for season (5/93)	—225.00	
Current Balance (5/18/93)		$3186.00

Sincere thanks to all donors. We welcome additional contributions. Funds are held in a separate account, and a full accounting is published here. Please send donations (payable to "Skyscrapers") either to Tom Waddington, 3504 Carol Ct, Yorktown Hts, NY 10598 or to *FLYOFF*. Thank you!

The 1992 High Point trophies were awarded to Vic Nippert, Jack Nix, and Bob Hatschek, in that order.

Winner of the Royal Order or the Purple Shaft—awarded for the worst stroke or string of bad luck in 1992 (and self-inflicted this time) was Jean Pailet, who, at the year's top meet (the USOC, at Muncie): 1–Inserted the battery into his tracking radio in reverse polarity, 2–Failed to check it, 3–And neglected to wind his d/t timer. This combination, of course, guaranteed that the model would find a thermal, which it did. It has not been heard from since. It should also be pointed out that the model was powered by a not-inexpensive Shuriken engine driving a not-inexpensive Rocca carbon fiber folding prop. A classic win for Jean!

The recently refurbished Geritol Award was presented to Henry Struck this year.

And finally, the Outstanding Modeler Award, which is presented annually at the whim of the three top point scorers of the year, went to club president Dave Acton for his unstinting and unselfish service to the club not only in 1992 but for many years. The Skyscrapers were unanimous in approval of this award, and the only member to express surprise was a totally befuddled Dave Acton.

Calendar correx...We're rescheduled again

Through somebody's goof, the annual WNYFFS Empire State Championships was listed in last issue's Contest Calendar for the wrong date. They scheduled it for their traditional weekend (Aug 7-8), then rescheduled it for Aug 14-15 without notifying *FLYOFF*. The correct date is Aug. 14-15 at Fayette, NY. We are also informed that, in addition to their usual events, the WNYFFS will include a "fun diesel event." Whatever that may mean, here's what qualifies: "Any era, size airplane and engine combination is welcome. Plain bearing diesels only. Fuse for dt. Fuel [supplied by the sponsor] will be thirds of K-2 kerosene, ether from automotive cold start cans, and castor oil, plus a dab of amyl nitrate. The flyers, as a group, may want to have the liberty of selecting either day, or both days to fly."

While that bit of rescheduling was going on with nobody in eastern New York aware of it, the Mid-Hudson Modelmasters went ahead with their plans for Aug. 15 at Galeville.

And then the powers at West Point required some date revisions because the FBI had never checked the model flying schedule (which they had approved) with their landlords at the Point! You really don't want to know all of what went on! *FLYOFF* issued a *Special Bulletin* with its Spring issue, then revised it with a special mailing. We hate to waste our space and your time, but because of its importance, here's the same info one more time. Suffice it

[Continued on page 2]

Printed by Fletcher Printing Company, Fairlee, VT 05045

[Continued from page 1]

to say that the following schedule is the valid one:

Feb. 14	Valentine's Day Massacre (postponed to 5/2)
May 2	Skyscraper May Monthly.
May 29-30	Skyscrapers International Challenge
June 19-20	Skyscrapers June Monthly (Sunday)
July 3-4	EFFC Championships
Aug. 14	Skyscraper August Monthly
Aug. 14-15	Tentative FAI Team Selection Semifinal
Aug. 15	Mid Hudson Modelmasters Annual
Sept. 12	Bath Area Modelaires BAM Bash
Sept. 19	Skyscraper September Monthly
Oct. 9-10	Skyscraper Fall Annual
Oct. 24	Skyscraper October Monthly

[For additional info on these, see Calendar in *FLYOFF 21*]

Please note that the field is available for flying **only** on the dates shown. There is to be **no** flying on the Saturday before a scheduled meet **unless** so indicated. And also note that if you go to the field on an unscheduled day and you find the gate open or unlocked, **do not enter.** An unlocked gate does not indicate permission to fly, and to do so will jeopardize future use of the field.

Scheduling demands early action at AMA HQ

The 1993 Galeville schedule is only one small part of the overall free-flight scheduling mess. And while there have been many contributors to the disorganization—including at least two branches of the Federal Government—building of next year's schedule should already be under way at AMA HQ. The first thing on the free-flight schedule must be the free-flight Nats! Once upon a time that was first. It ought to be first again!

What happened this year, of course, was that AMA did plan a Nats (at Lubbock, Texas) that was to include FF. That collapsed, and AMA moved what it still calls "the Nats" to Lawrenceville—**but without free-flight.** AMA then latched onto the already scheduled USOC of NFFS at Muncie. Thus we lost one major meet—the AMA FF Nats—and AMA saves face by calling the USOC "the FF Nats."

But the AAAA-sanctioned USOC cannot truly be a Nats because there's another AAAA meet already scheduled for the same time slot, the USFFC at Lost Hills, Calif. Past history shows that both of these are indeed worthy of AAAA sanction—**but not simultaneously!**

The simultaneous scheduling totally precludes the possibility of either one being truly national in scope. There will be damned few USOC/Nats contestants from west of the Rockies, and damned few USFFC contestants from east of the Mississippi. How, then, can you call any winner of "the Nats" a National Champion in his event?

What's needed for 1994, **first, and very soon,** is for AMA to schedule a real FF Nats (with or without RC and CL). The date should be late Summer (fairly late in the FF season) but before Labor Day (to permit attendance by both students and teachers). The site could certainly be Muncie, but a suitable alternate would be quite acceptable. Care should be exercised in selecting time and place to avoid any conflicting events (like volunteer firemen's conventions and softball tournaments). AMA should then not sanction any other FF meet anywhere in the USA. That's the way it used to be done.

Then it would be possible to schedule the USOC and the USFFC so as not to steal thunder from the real Nats. And, finally, regional and local schedules could be dealt with.

But remember, those local schedules for 1994 should still be on paper before the end of 1993! That's mandatory for the use of Galeville—and probably for a lot of other free-flight sites throughout most of the USA—and highly desirable anywhere.

In the strongest terms possible, *FLYOFF* urges the Executive Council of the AMA to consider these points immediately and take action at the earliest possible time. *FLYOFF* also urges its readers to bring this matter to the attention of their district vice presidents. After all, free-flighters fly for fun and sport, and the Free-Flight Nationals is the pinnacle of fun and sport in our phase of the hobby. Let's not let another year drift by into competitive oblivion.

First Skyscrapers Valentine's Day Massacre

Galeville, May 2, 1993, Vito Gagliano, CD

After postponement from Feb. 14 because of excess snow and ice, our First St. Valentine's Day Massacre was held in sunny and HOT conditions on May 2. The wind was only moderate to brisk, but in a bad direction—essentially from the northeast but varying from almost due east to almost due north. This put "upwind" into the roughest part of the field and "downwind" into the FBI compound. This situation cut heavily into participation, as did the fact that it was the first day Galeville was available in 1993 and many models were not yet in trim. A few models spent the night in the FBI compound.

Coupe d'Hiver, F1G (4 flyers)

1	Bill Buss	120	120	120	120	74	554
2	Vic Nippert	120	48	91	120	120	499
3	Larry Pelatowski	87	62	120	66	88	423
4	Jack Rice	36	120	42	65	71	334

P-30 (8 flyers)

1	Ray Factor	120	114	120	354
2	David Ellis (Jr.)	80	120	120	320
3	Bob Hatschek	77	120	117	314
4	Vic Nippert	66	120	120	306
5	Larry Pelatowski	64	73	120	257
6	Hank Cox	76	92	47	215
7	J. P. Smyth (Jr.)	88	52	39	179
8	Art Ellis	70	62	—	132

Catapult Glider (Hand-Held) (4 flyers)

1	Al Vollmer	20	39	26	120	50	120	290
2	Vic Nippert	24	27	26	104	120	34	258
3	Kay Fags	34	50	16	120	—	—	204
4	Bob Hatschek	13	31	48	24	10	55	134

1993 Skyscraper Monthly Meet Results

May 2, (Hot, sunny, NE breeze to FBI compound. V Gagliano, CD)

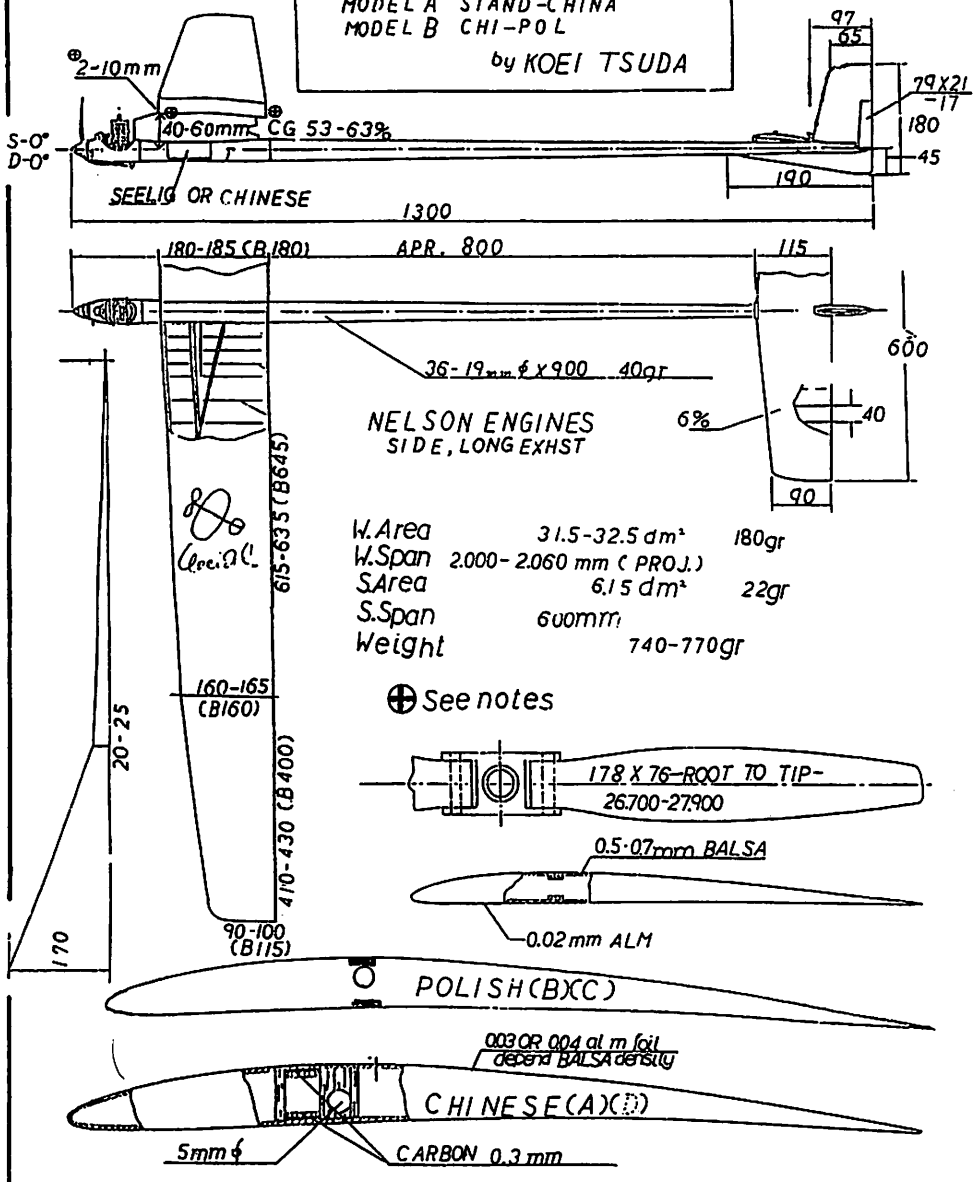
1/2A		Payload		PW-30	
Stu Wolff	314	Dave Acton	119	Al Abriss	1213
P-30U		**ABCD**		Bob Langelius	938
Art Phillips	318	Clark Darling	120	Dick Delinski	856
HLG		**Cat G**		**P-30**	
Al Vollmer	269	Bob Hatschek	297	Ray Factor	360
L. Pelatowski	237	Ed Pelatowski	230	L. Pelatowski	95
E. Pelatowski	198	Dick Delinski	82	**NosGas**	
David Ellis (Jr.)	153	David Ellis (Jr.)	51	Mike Chiado	288
J.P.Smyth (Jr.)	42	**Multihill**		**F1ABCn**	
Greg Abriss (Jr.)	12	Hank Cox	360	Art Ellis	189
		Jack Rice	354		

KOEI TSUDA
9 FLEMING RD., CHAPEL HILL
BRISBANE, QLD., AUSTRALIA. 4069

COSMO SKY-SCRAPER

MODEL A STAND-CHINA
MODEL B CHI-POL

by KOEI TSUDA

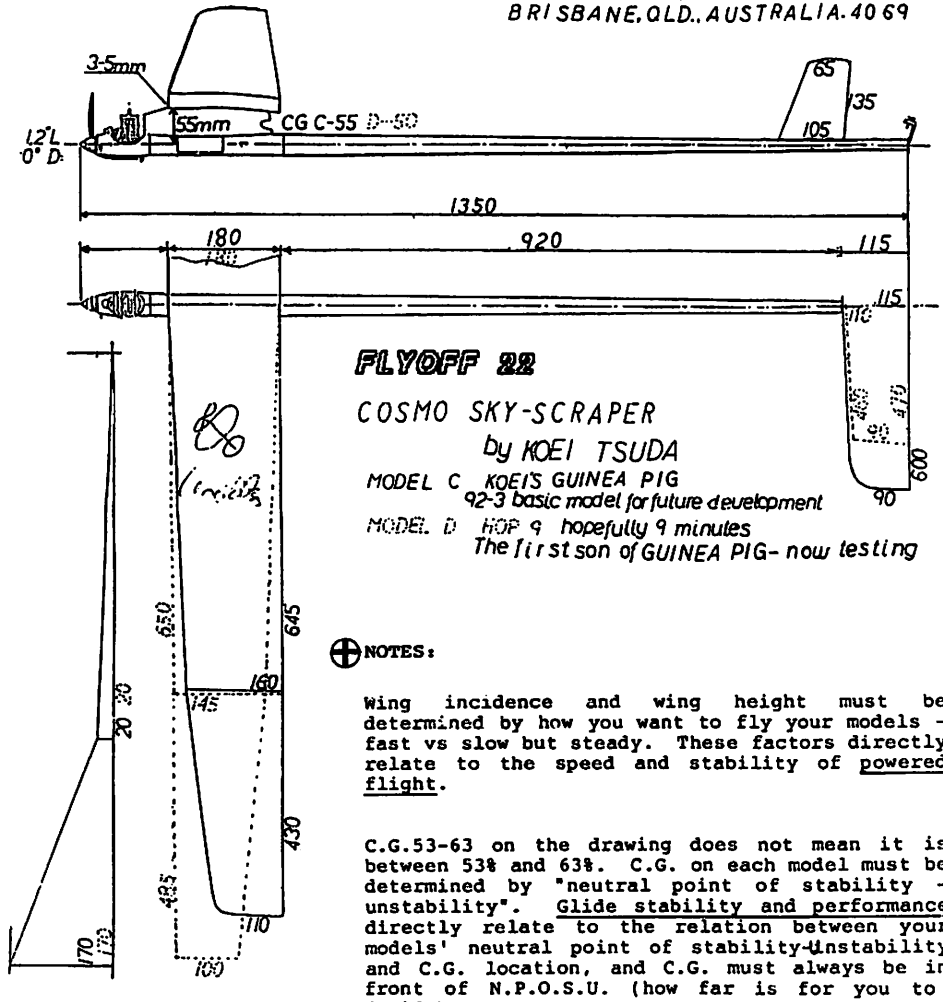


92 CONTEST RESULTS

1st	KOTUKU CUP	1.203	6-9ms	1st NSW STATE	960+300	0-1ms
1st	PACIFIC CHAMP	1.258	5-8ms	1st N.Z. NATS	671	6-12ms
1st	AUST. NATS	1.320	0-1ms			

WINNER '92 WORLD CUP

ms-WIND SPEED



FLYOFF 22

COSMO SKY-SCRAPER
by KOEI TSUDA

MODEL C KOEI'S GUINEA PIG
92-3 basic model for future development
MODEL D HOP 9 hopefully 9 minutes
The first son of GUINEA PIG- now testing

⊕ NOTES:

Wing incidence and wing height must be determined by how you want to fly your models - fast vs slow but steady. These factors directly relate to the speed and stability of powered flight.

C.G.53-63 on the drawing does not mean it is between 53% and 63%. C.G. on each model must be determined by "neutral point of stability - unstability". Glide stability and performance directly relate to the relation between your models' neutral point of stability-unstability and C.G. location, and C.G. must always be in front of N.P.O.S.U. (how far is for you to decide)

F.I.C. models should climb quick vertically and glide well, with great recovering ability. For these purposes W.I., W.H. and Neutral point are essential. Unfortunately there are no calculations for these; only test flying your models, moving wings for-and-aft, and up-and-down will tell you what I mean.

The most important thing on powered models is engine power. Smooth out any air-fuel passages, use the biggest venturi, change head shims and try any plugs you can imagine. If you get 1000 rpm more that means at least 15% up in performance. Power is the easiest and most effective improver.

Fly it, try it. Practice, practice, and practice - that's the only way you can be a winner !!

A Free-Flighter's Guide to Radio Trackers

By Bill Prensky, WNYFFS

Free-flighters, the most sophisticated, insightful group in model aviation, seem to know little more about radio than their RC brethren. After fending off "radio-assisted FF," they have used radio only for music and weather. But radio beacons have become a necessity and FFers can no longer luxuriate in ignorance.

Years ago, I tried audible sounders, CB transmitters and FM wireless microphones for model recovery. They were heavy, short-ranged, or unstable. The solution, in the VHF (Very High Frequency) spectrum required crystal-controlled transmitters—a point that eluded me. Clearer thinkers developed stable beacons to simplify the search process.

First, consider inexpensive audible sounders from Radio Shack. Simple: if you can hear it, you follow the sound. Low-power sounders have short range, while powerful ones use heavy batteries. The drain is high enough to warrant using the DT as a switch, even though it reduces reliability and saves only a small fraction of battery capacity. These factors make sounders a poor choice.

At least three RF beacons are sold for model use, and others may be built by the electronically inclined. Ground range can exceed 3/4 mile. In the air or in a tree, several miles is normal. Airborne weight is 4-8 grams with batteries that last for days rather than minutes. Good RF systems are more expensive (at least $100 for a transmitter and receiver) and proficient use requires practice.

There is a vexing problem. Receivers, sold with "rubber duck" or telescoping antennae, point coarsely at a beacon. A radio line is difficult to follow; instead, you try to walk in the direction of increasing signal strength. The receiver may saturate within 50 yards of the model. We'll describe hardware and techniques to deal with the problem.

Sale-$450- 404-434-4905

The Walston System—Jim Walston Retrieval Systems (725 Cooper Lake Rd. SE, Smyrna, GA 30080) offers a system consisting of transmitter, receiver, and Yagi antenna.

The transmitter is crystal-controlled in the 216 MHz range. It weighs 4 grams with batteries and a wire antenna, and pulses about once per second. Several different receivers are available, which can be tuned for additional transmitter frequencies, and which have a gain control to decrease signal level near the model. The receiver antenna is a 3-element Yagi with 28-inch elements that fold compactly. Directivity is not as acute as a visual line, but you can easily find a model quite rapidly.

7gr + 1-3gr Bat

The Bradley Transmitter—Jim Bradley's (Bradley Model Products, 1337 Pine Sap Ct., Orlando, FL 32817. 407/277-9132) transmitter weighs less than 8 grams with battery (6 grams without the battery holder). He selects frequencies in the 140-160 MHz range to avoid interference between flyers in the same area. It pulses 2-3 per sec, which is helpful, although it raises battery drain. But since the $2 battery lasts more than 120 hours, it isn't detrimental. The wire antenna is about 19 inches long.

Many receivers can be used. Jim likes a 2-channel Radio Shack PRO-27, which costs $50. You buy a crystal to receive your beacon's signal and another for a second beacon or some other use. It has an FM detector, which, while not ideal, can be adjusted satisfactorily. Its "rubber duck" or telescoping antenna is nearly omnidirectional but can be influenced by close proximity to your body. As patterns differ, tracking takes practice. A Yagi would help, but its elements are 40+" long. The Quad antenna described later is inexpensive and only half the width of a Yagi.

A point about crystals. Transmitter and receiver crystals may be 8 kHz away from their marked frequencies, resulting in a tuning error of up to 15 kHz. A programmable scanner, such as the Radio Shack, Uniden, or Bearcat, will avoid this problem. But scanners cost $100 or more.

Rocket Transmitters—Rocket flyers developed similar transmitters in the 27 MHz Citizen's Band. But CB is a poor choice because, at frequencies below 30 MHz, receivers can be overloaded by "skip" signals reflected from the ionosphere. The phenomenon is rare at VHF where Walston and Bradley units operate.

FM Broadcast Band Transmitters—Kits or assembled "FM wireless microphones" are available for the 88-108 MHz band. (One source: Ramsey Electronics Inc, 793 Canning Pkwy, Victor, NY 14564. 716/924-4560.) Any FM receiver will work with them and a total system could cost under $25. Two problems: The transmitters are rarely crystal-controlled and may drift with temperature. And it is difficult to find a weak signal among FM broadcasters; even stable beacons may be overloaded by their signals.

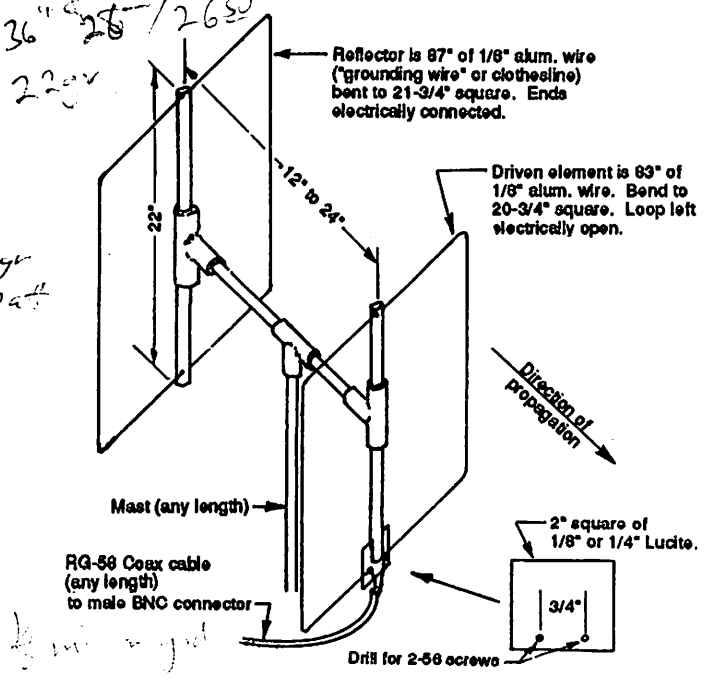
Directional Antennae

VHF Cubical Quad—The Quad is a popular Amateur Radio antenna on the 144-148 MHz band, and the antenna illustrated is resonant at 146 MHz. Dimensions are inversely proportional for other frequencies.

The rear element (reflector) is an 87" length of 1/8" aluminum wire bent into a square. Two 11" lengths of PVC pipe are glued into a Tee with 1/8" holes through the pipe 21-3/4" apart. The wire ends are flattened and drilled for a 2-56 screw, which shorts the loop.

The front element is 83" long. A 2" Lucite square is glued in a slot at the bottom of its pipe. The element ends

36" $25-/26$ 22gr



and RG-58 coaxial cable are attached with 2-56 screws through holes in the plastic about 3/4" apart. An end of the square is connected to each screw, the coax center conductor is connected to one screw and its shield to the other.

The boom is two pieces of pipe glued into a Tee with total length of 12-24". Increased length improves front-to-back ratio, which is useful in direction finding. The elements slip over the ends of the boom and are taped in place. A vertical mast slips into the boom Tee. My Quad is 1/2" pipe. The 5 ft vertical mast is a bit whippy and could be of wood or 3/4" pipe instead.

The receiver end of the coax must be "terminated". Many receivers have BNC female connectors. For these, connect a BNC male to the end of the cable. If your receiver has a single threaded hole, ignore the coax shield and connect the center conductor to a suitable screw.

This antenna pattern isn't very sharp in the forward direction but it has a good front-to-back ratio. You will notice a reduction in signal strength when you point it away from the beacon. Large metal objects, like cars, may create nulls in the pattern. It is best to hold the quad a few feet above your head on a mast. My quad has received a beacon on the ground over 2 miles away.

Ham-Band Yagis—Several manufacturers sell Amateur Band Yagis, or they can be home-made. Characteristics and list prices of three models from Cushcraft Corp (P.O. Box 4680, 48 Perimeter Rd, Manchester, NH 03108. 603/627-7877) are listed below. Prices are usually discounted.

Model	Freq	Boom	Elements	Gain*	Price
124WB	144-148	48"	4-40.75"	10.2 db	$87.00
224WB	222-225	38"	4-26.7"	10.2 db	$84.00
A449-6	440-450	35"	6-13"	10.5 db	$54.00

*Gain relates to signal strength and beam width. A "rubber duck" has less than 0 db gain on this scale.

The 124WB or longer 144 MHz Yagis may be used with Bradley transmitters. They don't fold and may be a burden in cornfields. While it is not critical, the elements may be shortened in inverse proportion to the desired frequency. The 224WB will provide more gain with Walston systems than the antenna supplied. The A449-6 may be used with either system in an unusual manner described below.

Search Techniques

Unless you spend a fortune, radio direction-finding must be art rather than science. The cost of "James Bond" systems makes F1C look cheap. Fortunately, a little money and some practice will do the job.

Consider this scenario. You see the model into corn 1/2 mile away. You have a good line with uncertain depth —and the corn is high. The signal will be fairly weak if the model is at ground level. As you walk the line it gets stronger, and at 50 yards it is too strong to discern change. You walk a few hundred yards farther and the signal weakens.

When the signal becomes very strong, remove the antenna and listen for a weaker signal. If you hear it, walk toward a stronger signal. You can get within 25 feet before the signal saturates an antenna-less receiver. If that isn't good enough, wrap the receiver in aluminum foil with a small seam near the antenna connector. You might also try holding the receiver in a fixed position against your belly and rotating 360°. The body is a shield at distances sufficient to discern changes in signal strength.

A variant is useful for close-in work. Walston and Bradley units emit harmonics. A Walston at 215.2 MHz also transmits on 430.4, 645.6, etc, and a Bradley on 147.4 MHz does so on 294.8, 442.2, etc. The 400 MHz signal can be tuned on most programmable scanners. The Cushcraft 449-6 may be the best tracking antenna for either system. It is a 6-element 440 MHz Yagi with 13" elements on a 35" boom. At about 1000 feet it can direction-find to ±10°. It doesn't have much range because the transmitter signal is weak. You can switch between the fundamental frequency and the harmonic using both signals to best advantage.

In a second scenario, you have lost it into a cloud. You get into a car while the plane is high in the air and receive a strong signal for miles. That is comforting until it comes down 10 miles away and you don't hear a thing.

You can do several things now:

1) Ride around the countryside in some search pattern looking for a signal. Sooner or later it might work.

2) Better is to use a real antenna instead of a rubber duck. A 1/4 wave 144-148 MHz vertical (19" high) on a magnetic mount costs $15 and is useful about 10 MHz higher. Similar antennae for the 222-225 MHz Ham Band work with Walston units. They usually come with 10 ft of RG-58 coax and a PL-259 connector. Adaptors are available to fit the BNC connector found on most scanners, or you can cut off the PL-259 and put a BNC on the cable. The mount is placed on a car roof with the coax fed through the window. It has twice the range of a rubber duck.

3) Best is to use a Yagi or Quad, which concentrates its beam in one direction. With these antennae, increasing the number of elements reduces the beam angle and strengthens the signal. Pointed at the transmitter, a two-element Quad has a gain of perhaps 8 db over a rubber duck. That lets you hear a signal at 2 to 3 times the range and to do direction finding. Stop the car periodically and rotate the antenna until you hear a signal. Then drive toward it. A 3-element Yagi has still more gain, but is cumbersome.

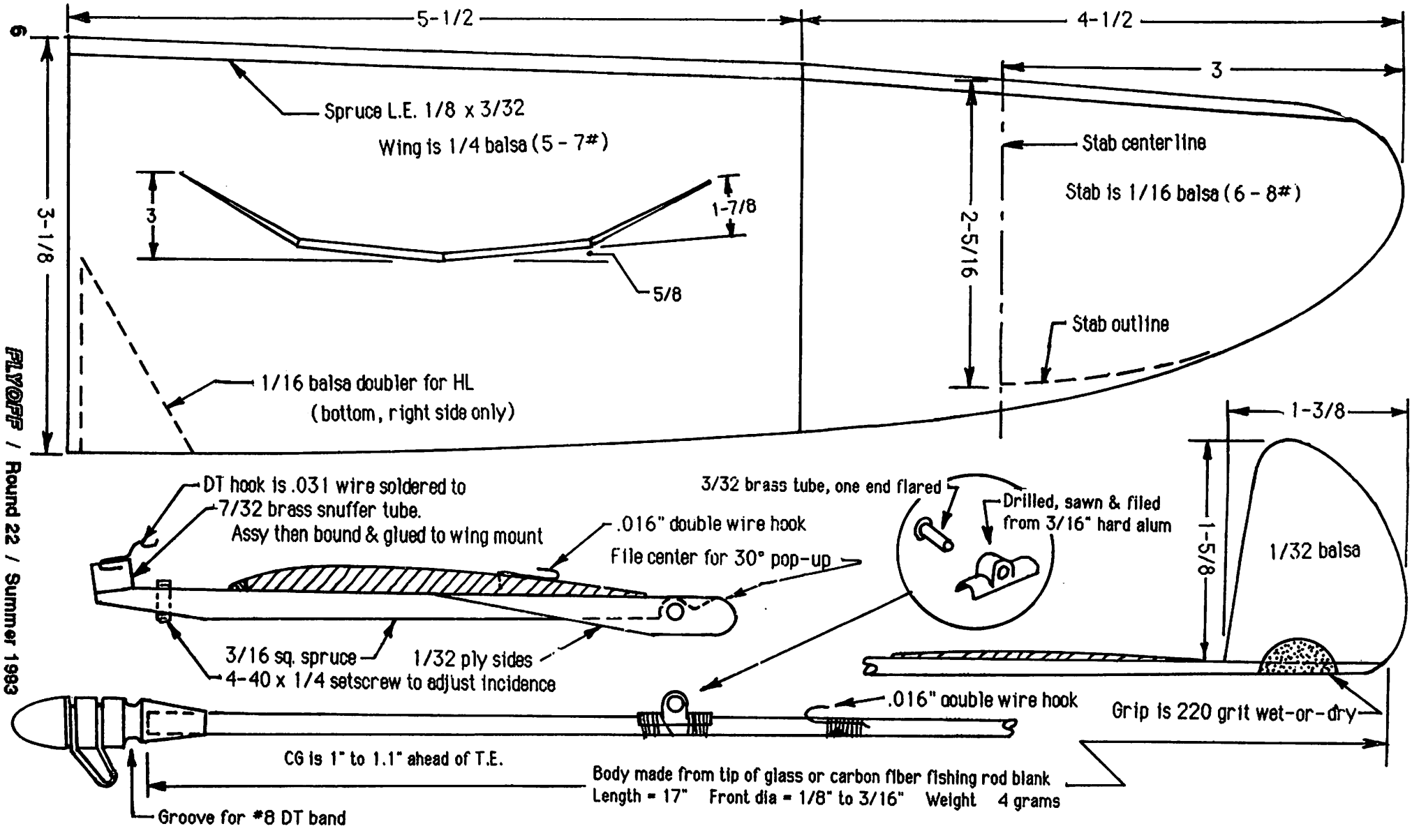
Receiver Improvements

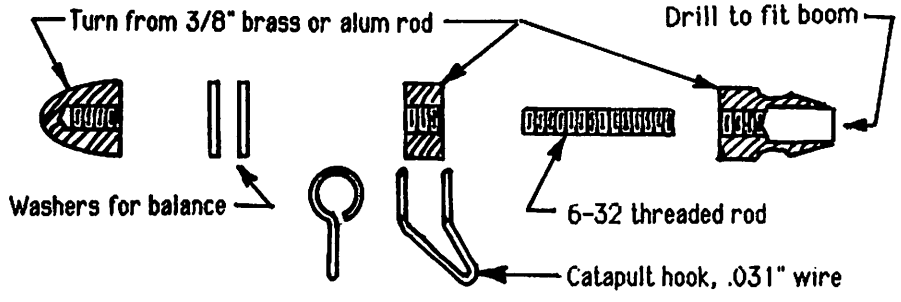
FM receivers are not ideal for our use. The signal is better suited to an AM receiver with a Beat Frequency Oscillator (BFO). In simple terms, a beeping receiver is easier to hear. An ideal receiver should have a signal strength meter to indicate relative proximity to the beacon. Finally, the receiver should have an RF gain control (not an audio volume control) which makes it possible to get close without overloading. Many professional receivers have these features, but none is inexpensive and portable. It is possible to build one at low cost from modules like those sold by Ramsey Electronics.

Conclusions

I have used Bradley beacons since 1987—accumulating a collection of boring search stories. I haven't lost a model equipped with a beacon and have saved many hours of search time. My receivers are a Kenwood TR2500 (an old 2-meter Ham Band FM transceiver) and a Radio Shack PRO-38 programmable scanner. I use rubber ducks, a home-built Quad, and Cushcraft 449-6 antennae. A Bradley transmitter and a programmable receiver comprises an excellent and economical system.

[Note: This article was prepared before the Bauer and Whittemore systems became available. FLYOFF regrets the inability to publish it earlier.—the Editor]





Hat's Cat

An 'Idea Glider' for Hand-Held Catapult

Designed and drawn by Bob Hatschek

FLYOFF 22, **Summer 1993**

Hat's Cat — A serendipitous 'Idea' glider for hand-held catapult — by Bob Hatschek, the Skyscrapers

Once upon a time I had a good throwing arm. Back in the late '50s, I once threw a Hi Hat in Lakehurst's Hangar #5 for 11 consecutive flights between 1:06 and 1:14. (For plans of Hi Hat see Zaic '59-'61 Yearbook, page 202.) That was then. Over the intervening years my arm got older and sorer, and my joints—including my right elbow—began to suffer from gout.

In the mid '80s I went on a gout medication that made those joints feel great, and I decided to try my arm again. Thus was born Hat's Cat, but as a HLG. All was fine—until a side-effect of the gout medication ate a hole in my gut. With a switch in medication the ulcer healed—but my elbow just won't make it back to 100%. Hat's Cat languished in the corner of the shop.

Next, AMA added a catapult glider class and I added a hook to the Cat. But results with the pole-type catapult were abominable. The rubber's too long and the pole's too short. Stretching the rubber a decent amount to get some thrust into the launch makes the trajectory virtually horizontal—"grazing fire" we used to call it in the military—and any slight error in trim or bank puts a high-speed glider into the ground, or an innocent bystander.

Finally the hand-held catapult with a 9-inch loop of 1/4 flat was proposed and approved. This makes sense! (Thanks, you Midwesterners.) Now you can aim the glider upward at an angle that is both much safer and more productive of **altitude**, and you can stretch the rubber sufficiently to get some real thrust into the launch. With this, and the added catapult hook, Hat's Cat comes into its own.

Why do we call it an "Idea Glider"? I have never thought of the Cat as a demonstration machine, but many modelers who ask to inspect it comment about many of its "innovations." Some of these are so old they've probably just been forgotten. Others are borrowed ideas. And still others just seemed obvious to me—suiting the tools and materials in my shop.

General Design—Both the concept and the name are derived from the Hi Hat. The principal features are relatively small wing area (49 sq. in.) to suit an aging arm, moderately high aspect ratio (8:1), short nose for reduced mass moment of inertia in pitch, relatively long tail moment arm to minimize "loopiness," modest stab area (giving a tail volume coefficient of approximately 1.0), and fairly generous polyhedral combined with small rudder for good rollout characteristics. It seems to have worked.

Fuselage— Making the body out of the tip end of a fishing rod blank was a natural. It was what was left over after using the butt end for an A-2 boom (or a 1/2A boom), and the central portion for an A-1 boom. It was cheap, easy, and indestructible. The original blank was glass fiber, about 7 feet long, and was purchased in a shop that catered to fishermen who made their own rods. It only cost $2 or $3 (many years ago) because it was a "second," but I could never discover what flaws might have made it less than perfect. More recently I built a Cat using the "scrap" end of a carbon-fiber blank; the stiffness of this 4-gram body is unbelievable.

Pop-up Wing—A dethermalizer on a HL or catapult glider is a great idea. It makes it more worthwhile to put effort into the model—just because you're less likely to lose it. But swinging weights are poor (the line can tangle on tree branches, for one thing), and pop-up tails tend to be a bit flimsy and add weight where you least want it. The pop-up wing is not only an effective dethermalizer, it also allows the use of a setscrew tapped through the wing mount (or thin shims) for fine-tuning of incidence (which can be critical in a glider), and it further permits the wing to be removed for packing into a very well-stuffed model box.

Aft-mounted rudder—Putting the rudder behind the stab was really done on a whim. In the past I typically mounted the rudder below the fuselage. But the Hat Cat configuration provided two benefits that I originally hadn't anticipated: (1) It made an excellent place to mount a sandpaper grip for catapult release, and (2) It allows two (or more) fuselages with wings removed to be "nested" in little more space than needed for one.

Metal Nose—My Nordic front ends had been machined from aluminum and brass for years. Why not do it on a HLG? It's a lot neater than the wads of clay I'd need for the very short nose moment I planned. And there's no molten mass of clay in the pocket of my flying pants, just a few No. 6 steel washers. Further, when I decided to convert to catapult launch, it was a simple matter to bend up a wire hook that would simply slip on the central threaded rod and clamp firmly. Also a shallow "dimple" drilled on the top surface provides both a solid "key" and a hard surface for the setscrew incidence adjuster.

FLYOFF Subscriptions & Renewals

Subscriptions: *FLYOFF* is published quarterly for active (dues paid) Skyscrapers. Others may subscribe to a minimum of five issues at a rate of $2.00 per issue in North America ($10.00 minimum) or $3.00 per issue overseas ($15 minimum). Payment must be in US funds, drawn on a US bank, payable to the "Skyscrapers."

Guarantee: All funds go into escrow and only when an issue is mailed is $2.00 ($3.00 overseas) withdrawn. Thus, if an issue is not published for any reason, money is available for refunds.

Expiration: Your subscription expires with the Round Number in the code on your address label. If that number is 22, this is your last issue. If you are an active Skyscraper, please pay your dues. If you are a non-member, please send appropriate payment.

Back Issues: Some back issues (numbers below) are available at the original price of $2 per copy ($3 overseas). Circle desired Round No. on coupon, enclose payment, and mail to *FLYOFF*.

Articles: We also seek your free-flight contributions (letters, articles, drawings, ideas, etc). Unfortunately, we cannot pay in any currency other than the heartfelt gratitude of all *FLYOFF* readers.

Mail coupon and payment to:

FLYOFF
c/o R. L. Hatschek
316 Grosvenor Street
Douglaston, NY 11363-1011
USA

Enclosed is $_____ in US funds (payable to the Skyscrapers). Please enter my subscription starting with the (Check one) Current issue___, Next issue___, Extend present subscription___
Please also send circled back issues: No. 3 4 5 7 9 10 11 12 14 15 16 17 18 19 20 21

Name_____

Address_____

_____

1993 United States Free Flight Team

I have been selected by AMA's FAI executive committee to serve as the 1993 Free Flight Team Manager. The contest will be held in October at the Lost Hills, Calif. site. The opening and closing ceremonies will be at the Bakersfield Civic Center Auditorium. National, state, and local authorities plus delegations from more than twenty countries will be present.

One of my duties as team manager is to raise money for team uniforms, shirts, equipment, decals and pins. We have an excellent team and we would like to have them dressed and equipped in a way that we will all be proud.

This letter is a request for donations from individuals or clubs to support the American Team. In return, you or your club will receive a number of decals prior to the World Champs. You will also be listed as a supporter in the Free Flight World Championships report in *Model Aviation*.

Please make checks to: *Hector Diez, 93 Team Fund*
2293 Homewood Ave.
Simi Valley, CA 93063

Update on Lakehurst

Welcome to another full year of Indoor Flying at Lakehurst. We are currently (Mar. 18, 1993) in our flying date approval process with the Navy. Our requests this year should yield flying opportunities approximately every weekend into the fall..

Multiple improvements are under way that will make Hangar No. 1 even better than before! Replacement of the main door concrete weights are complete on the east and west ends. New concrete is also now in place on the lower portion of the western doors. The eastern doors are in their final phase of this repouring. Four of the original catwalks are being replaced with new metal catwalks. Gutters and drains will be repaired this summer.

Our biggest news though will be a new neighbor joining us. The Ocean County Vo-technical School will construct a new facility within the hangar structure. It will consist of a two story building extending from the east doors approximately halfway down the hangar. The entire structure will be contained within the southern portion of the hangar wall. I need not explain the importance of this project to the Navy and the future of our home.

ECIM (East Coast Indoor Modelers) dues for the year 1993 will be $40.00 per family. As before, this will cover all your flying fees per session. Helium will be arranged in bulk, a club steering balloon, model processing equipment, and record sanctions will be arranged for every session. Modelers will also be able to purchase helium for their individual steering balloons.

If you were an ECIM member in 1992, your vehicle and identification information is still current. If you are a new member or your information has changed, you will need to provide us with the following:

1. Name
2. Address
3. Telephone number
4. AMA number
5. Are you a Contest Director?
6. Driver's license number
7. Vehicle make
8. Vehicle model
9. State & license plate

Flying should commence in May, and all flyers must hold a current AMA license and ECIM membership.

Gary Underwood
East Coast Indoor Modelers
9 Treelawn Terrace
Mercerville, NJ 08619