

At The Field

Offbeat Stories About R/C Model Airplanes
And The People Who Fly Them

by David P. Andersen

January 2004



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Introduction

This book is an anthology of the best of David P. Andersen's writing to date. All of the material presented here has been published before in *Model Aviation*, *R/C Modeler*, *R/C Report*, *Flare-Out*, the newsletter of the Twin City Radio Controllers and other magazines.

This book is unique among modeling books because of its intentional lack of focus. It includes fiction, technical stuff, flying techniques, humor, aviation history, theory, building tips, the full gamut of R/C modeling. Consider the short story, *Fly It Again*, for example. It's about a man fondly remembering his dad and how they flew free flight airplanes before the invention of radio control. But it takes place while he is flying in a pattern contest, so the underlying message is a lesson in how to adjust aerobatics to a crosswind. Or consider the story, *Forbidden Flight*. It is about how a typical modeler invents solutions to modeling problems. But it takes place in ancient Egypt. It speculates on how a model airplane could have built at that time, maybe even a hang glider.

Alas, poor Dewey Goddit, a big-hearted ditz who takes everything literally. He gets into messes as most modelers do, but on a bigger scale. Yet he perseveres, as all modelers must.

There really was a Klotz the Kat. He was a homeless kitten someone "released" at the TCRC flying field. He hung out with the flyers who shared their sandwiches with him. He became so comfortable around model airplanes that he once climbed onto a wing while the engine was running. After that incident, one of the flyers found a new home for him, but the legend continues. The premise is that Klotz is present at the field all the time, so he observes everything that happens. Sometimes he stows away in a modeler's minivan to report from Toledo or Top Gun. The TCRC *Flare-Out* newsletter editor leaves his laptop overnight once in a while for Klotz to write his monthly column. He continues to this day.

This book was written for R/C modelers and their friends and families. Modelers will find much valuable information buried in the silliness and humor. Non-modelers will find insight into the lifestyle of R/C modelers.

Modelers who write for their club newsletter are welcomed and encouraged to copy anything they find here—permission to copy is granted to all, but please credit the source.

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Acknowledgements

Thanks to my fellow flyers in Minnesota and the many acquaintances around the world whom I have met thru R/C modeling. They taught me what I know about model aviation. Special thanks to the editors of the Twin City Radio Controllers *Flare-Out*, Bill Altenhofen and Jim Cook, who gave me a forum and tolerated my excesses.

Thanks to the editors of *Model Aviation* and *R/C Modeler* who cultivate writers like us and make our stuff look good. Thanks to Hilary A. Knight, Chipley and Art Nelson for their expressive artwork. And thanks to the late Dick Kidd and the late Bill Winters on whose wings I and all other model magazine contributors have been carried aloft.

“Would Your Club Mind If...?”



“Clear the helicopter pad. The President’s plane is about to land,” the loudspeaker shouted.

Reporters and officials scurried off the small grass landing strip in the back of the White House and gathered in the assembly area adjacent to the entrance of the famous residence.

The President’s plane appeared above the tall pine trees that decorated the outer limits of the White House lawn. It descended steeply, flared, slowed, touched down and rolled to a stop. It was a red, white and blue Kaos with a tiny presidential seal on the nose and the letters “AMA 1” on the fuselage.

The spectators applauded as the small radio controlled airplane taxied to the President’s field box and the propeller stopped turning.

It’s like flying in an air show every time he goes up, I thought as I watched from the back of the crowd.

I was, of course, surprised and flattered to be invited to visit the President. I had never met him before, so I was very

curious about why he wanted to see me. The only things we have in common are that we both fly R/C and I am also a president—but I'm only the president of a model airplane club.

"I must ask you to keep the details of this meeting in the strictest secrecy," the President said as he showed me to a seat in the Oval Office. "I, and therefore the country, need your help. You and your club can perform a great national service."

I responded, "We'll do what we can. How can we help?"

"As you know," he went on. "R/C pilots such as ourselves need to keep flying. The pressures and strains of the workaday world must be balanced by the refreshing diversion of our flying. For people like us, a good run thru Advanced Pattern is more than an afternoon lark. It is an emotional necessity to maintain our mental and emotional health. Some people unwind with a good book, or they jog, or they merely watch TV. But for an R/C flyer, the joy that comes with the grace of controlled flight against a deep blue sky revives his grasp of the meaning of the physical world and cleanses his tired brain of the chores of civilization. With an R/C transmitter in his hand, his reach is extended to the sky, and he can stretch out and feel space and time."

"You mean it's fun to fly," I suggested.

"Precisely," he said. "Furthermore, the more burdened the R/C flyer is with the problems of the world, the more he needs that occasional escape to the fantasy of flight."

"And you're not getting enough flying," I said.

"You're getting the idea," he continued. "You saw my problem out there on the White House lawn. No room to maneuver, too many trees and too many people. I've tried float flying off the Reflecting Pool at the Lincoln Memorial, but some folks said it was disrespectful."

"They never understand," I replied.

"Right. And I've been criticized for spending too much time on model airplanes. When I created the Department of Model Aviation, I was criticized. And what a storm of protest when I ordered the FCC to allocate a hundred new frequencies for R/C! In fact, if I get any more noise complaints about flying off the White House lawn, I might lose my flying site."

"Yes. We've had that kind of problem too."

"What I need is a flying site like your club field. I need a place where I can get away and fly without being observed. Your

field is surrounded by swamp, has only one road, and it is very secluded. Would your club mind if I fly at your field?"

"Well," I said, "you'll have to pay the dues."



It wasn't long after that meeting when the President arrived at the club field for the first time. By then the other club members had been informed and sworn to secrecy.

The President's helicopter came in low over the swamp and landed in the overflow parking lot. Secret Service men scattered all over the field while others set up the President's plane.

"I wonder if he will fuel it up himself or have some servant do it," a club member asked.

"He'll do it himself," I said. "That's part of the fun of flying."

Indeed, the President seemed to be like any other flyer. He had a good time flying with the club members, and he seemed to escape the cares of his weighty office while flying and joking with the other flyers. The President returned to the club field many times in the following months.

Then one day I was called back to the Oval Office.

"Your club field is a perfect flying site. So roomy. So private. How is the club taking to my use of the flying field?" the President asked.

“Well, you know we appreciate the field improvements you’ve put in,” I said. “The privacy fence is nice. The frequency monitor is great. The Marines who find lost planes in the swamp are super. Even the red telephone is handy. However, there are a few little things that some of the guys have been grumbling about. Like the helicopter traffic. Some say it’s distracting. And we’re afraid that the neighbors might complain. And the security clearances that we are required to have. It’s a bother. Then there are the field box searches. Well...couldn’t you make your own flying site at Camp David?”

“It would take too long---government bureaucracy,” he replied.

“Well, how about buying your own place?” I asked.

“It would have to go out for bids. Every congressman would want it in his own district. Impossible. I’m afraid that your flying site is the only place available to me.”

“Oh well,” I replied, “if it’s in the national interest.”

“By the way,” the President said, “did you know that the Premier of the Soviet Union flies R/C?”

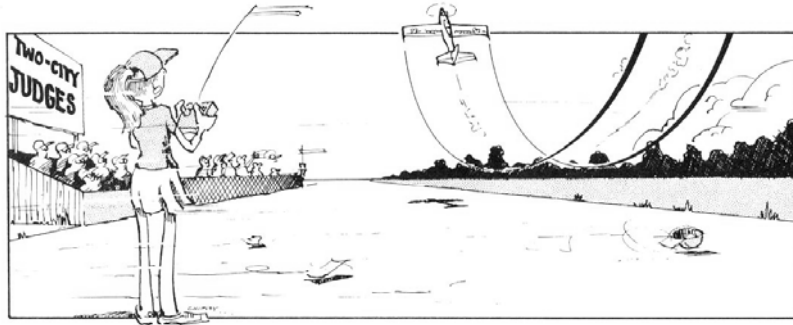
“No, I didn’t,” I said, rather surprised.

“He tells me that the Kremlin is a really bad place to fly. Too many walls. Too much radio interference. He needs a place where he can get away from the pressures of high office. Would your club mind if the Premier were to...”

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Reprinted from *Model Aviation*, August 1985

A Crosswind For Sally



“We’re in big trouble now,” said the president of the Two-City Radio Controllers during the new business portion of the club meeting. “We’ve received a letter from the Minnesota Human Rights Department. It says that they have noticed that all of the names in our roster are male names. They point out that all of our officers are men, and that our board of directors has been all male for the entire history of the club. This is proof of de facto sexism, they claim, and we must mend our discriminatory ways or lose our charter as a non-profit corporation.”

Several club members rose to their feet. “Unfair!” “Not true!” “Bureaucrats!” they shouted.

The president gaveled the meeting to order and motioned for the members to resume their seats.

“I know that we’ve never consciously excluded women from the building and flying part of our hobby,” the president continued. “Our wives participate in picnics, fun fly events and the annual banquet. But for some reason, thru no fault of our own, no woman has ever been a regular active flyer in our club.”

The room broke into pandemonium. At first, epithets were hurled at state government. Plans for retaliation were suggested, such as not paying the club’s property tax. Finally, when order was restored, discussion centered upon why the Two-City Radio Controllers had no lady pilots. Women participate in most other sports—they play golf, ride horses, fly full-size airplanes, etc. There are lots of women auto mechanics. Why not R/C flyers?

“Perhaps we allowed an unwholesome and untrue image to develop,” suggested one club member who had been contemplating the predicament. “They probably think that our flying field is a lot of mud, blood and beer,” he said. “They hear terms like ‘crap traps’ and ‘horney hinges,’ but they don’t know that the roughest language we use is an occasional ‘I ain’t got it!’ and that the strongest drink consumed after club meetings is root beer. The truth is we would love to have some lady flyers at the field, but there just doesn’t seem to be any of them interested.”

“Well, guys,” the president interjected, “we had better *get* some of them interested pretty soon. If we lose our articles of incorporation, we lose our field.”

In the discussion that followed, many schemes were proposed, and most of them were implemented in the weeks that followed. Months went by without recruiting a single female pilot. All efforts failed and the future looked grim.

Then one day Sally appeared at a club meeting.

She was wearing a black skirt with a slit up the side, black patent leather high heels, a red silk blouse and a white leather jacket. She had long brown hair. Her blue eyes were accentuated with a hint of eye shadow, and her red lipstick matched her blouse. She held a Falcon 56 fuselage under one arm, and she balanced a wing in her other hand. The red, white and blue airplane matched her outfit perfectly.

“Hi,” she said demurely as she stood in the doorway of the meeting room. “Would someone like to inspect my servos?”

Never in the history of the Two-City Radio Controllers was a novice to receive so much help from so many experienced flyers.

In the flying season that followed, Sally progressed from a beginner to an expert. Her rapid rate of achievement was due not only to the nearly unlimited assistance of the club members but also to her own natural ability as a builder and flyer. Her attractiveness was matched by her remarkable talent for building and flying R/C airplanes. Her interest was genuine. She liked the attention she received, and she enjoyed the camaraderie of her fellow flyers. But most of all, she thoroughly enjoyed the thrill of flight.

“I’ve sat in the seat of a 747,” she said. “There’s no feeling of flight at all. I’ve ridden in a light airplane and I’ve

soared in a sailplane too—there's a bit more there. But I really feel the thrill of flight when my feet are planted firmly on the ground and a light summer breeze is blowing thru my hair and my Sig Kougar is turning final, settling in for a touch and go.”

Sally made good use of the generous assistance she received from the other club members. Before long she had flown nearly every airplane in the club: hot pattern ships, unlimited-class sailplanes, scale biplanes, pylon racers and giant scale.

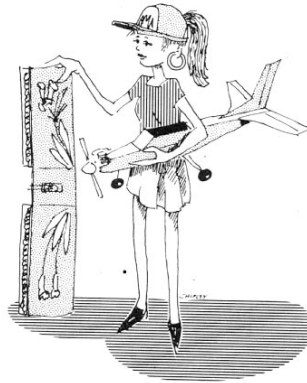
“I love them all,” she explained. The more airplanes that she learned to fly, the better she became at flying any one of them. Like a bunch of suitors, club members tried to woo her interest in their favorite type of airplane. Some of them even switched modes so they could teach her to fly their airplanes.

After experimenting with a variety of R/C airplanes, Sally finally decided to concentrate on Pattern. As the date of the club's annual contest drew closer, Sally was observed practicing certain aerobatic maneuvers more and more frequently. Speculation arose as to whether she would enter the contest.

Dawn broke on the first day of the Two-City Radio Controllers Annual Open Pattern and Sport Scale Contest. It was the beginning of a warm August day with light winds and a clear blue sky. As usual, Sally was the center of attention.

She was wearing a white tennis skirt and a yellow golf shirt with white tennis shoes and yellow socks. Her hair was pulled back into a ponytail that poked thru the expansion space in the back of her Two-Cities Radio Controllers cap.

Her field box was covered with yellow and white vinyl. It had large black calligraphic letters spelling SALLY across the side. Her airplane was a Dirty Birdy epoxy-painted white with yellow lace and jonquils airbrushed onto the wing and stabilizer. Yellow and white lace ribbons on her transmitter revealed her frequency to be 72.960 MHz.



Sally

“If I were to change frequencies, I’d have to buy a new wardrobe,” she explained.

When her name was called for round one, she picked up her airplane and transmitter and she carried them to the ready box. She required no caller because she had memorized the maneuvers. Not having to talk to a caller left more time to concentrate on flying, she had discovered.

Sally engaged the onboard glow driver and started the engine with one flip of the prop. The sun glinted off the glossy wings and the polished tuned pipe as Sally’s airplane taxied into the takeoff position. Sally stood beside the judges seated in folding chairs near the edge of the runway. Shouts of “Go for it, Sally” and “Show ‘em how it’s done” were heard from the spectator area, as all eyes focused upon Sally and her airplane. But Sally tuned all that out. Her concentration was devoted solely to her airplane.

“Take-off starting now,” she announced to the judges. She advanced the throttle slowly and held a slight amount of right rudder as the airplane accelerated slowly at first, then faster. It lifted into the air after passing by the judges’ position and transitioned into a steady wings-level climb. Sally flicked the retract switch with her left forefinger. The landing gear snapped up.

Sally listened to the engine and observed the effect of the wind drift as she flew the plane around the field in preparation for entering the first maneuver. A slight crosswind meant that

compensating for rudder had to be used in most maneuvers, she noted to herself.

“Double stall turn—starting now,” Sally announced as the plane approached the center of the field. As the plane passed before the judges, it arched straight up and began to slow. Sally reduced the throttle to a fast idle. As the plane stopped, full left rudder rotated the plane in place, and it dropped straight down with a slight wiggle of its tail. Sally continued to hold a little left rudder to prevent the plane from drifting with the crosswind as it passed the judges again and pulled up into a second stall turn, rotated in place to the right and dropped with another tiny wiggle, leveling out at the exact same heading and altitude as the entry. “Complete,” she said.

Applause burst forth from the spectators.

The remaining maneuvers of the Advanced Pattern were equally successful, receiving eights, nines and tens from the judges. After a well-flared and bounceless touchdown in front of the judges, Sally received a standing ovation of cheers and applause.

Sally’s final standing in the contest did not go unnoticed by other flyers in Minnesota. Attendance at contest and fun fly events increased dramatically. People came to see Sally fly, and they enjoyed flying more when they were flying with her.

Sally’s flying did not go unnoticed by women spectators either. When asked by other women why she enjoyed Pattern flying, Sally responded, “It combines the grace and beauty of figure skating with the excitement of Grande Prix racing. I wish more women would try it.”

Indeed more women did try it. Because of Sally’s example, more women joined the Two-City Radio Controllers.

There was Julie. She was fond of outdoor sports like backpacking and canoeing. Her sailplane was often seen above the river bluffs circling among the migrating hawks.

Alice gave up decoupage and macramé which she didn’t find challenging enough, to build scale models instead. She was asked, after winning a scale contest, if her Spitfire was really an appropriate subject for a woman to fly. “Why not?” she replied. “Women ferried Spitfires for the RAF during the Battle of Britain.”

Lucy became a star of model air shows. She pointed out that at last women were giving up the rough stuff like wing walking to become pilots.

Heidi preferred the silent art of flying her Gentle Lady two-meter sailplane. She hopes to become the first female Level Five in the League of Silent Flight.

Shirley didn't mind her reputation of being a fast woman. Her original design *Quiche Me Quick* won many pylon races.

As the years went by, the women flyers had a profound influence upon the club. Coffee and croissants were served at club meetings. Flowers were planted around the pits. The extra income from the overflow crowds at air shows and contests built a clubhouse at the field where afternoon tea was served. A Victorian gazebo was built in the spectator area. It was screened in so that children could play without interrupting the flying. A low hedge of well-trimmed honeysuckle bushes provided a decorative barrier between the pits and the runways.

It was truly a halcyon time for the Two-City Radio Controllers. By their dedication and hard work, the ladies became the major contributing influence in the club. In fact, their numbers grew to exceed the number of males.

The men welcomed this because the women maintained the field, they ran the business affairs of the club, and they were effective in keeping the club treasury filled with money. The men devoted all their time to building and flying and socializing and they left the work to the women—a dream come true for the men.

Then one day a letter arrived.

“We’re in big trouble now,” said President Sally during the new business portion of the club meeting. “We’ve received a letter from the Minnesota Human Rights Department. It says that they have noticed that the women in our club...”

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Reprinted from *Model Aviation*, October 1984.

Baron Melvin von Richtofen

“Don’t forget to carry out the garbage,” bellows Melvin’s wife as he puts his plane in the car. “And be sure to be home by two o’clock so the lawn gets mowed.”

“Yes, dear,” Melvin replies as he neatly stores the field box in the back of the station wagon.

An occasional Saturday morning is Melvin’s only time to himself. It is a time when he can escape the boredom of the office, the petty problems of his kids and the nagging of his wife. Once in a while, whenever he can escape the pressure of his routine world, he lets another Melvin deep within himself take control if only for a few hours. This other individual surfaces slowly as Melvin drives to the flying field. No one but Melvin is aware of this metamorphosis. No physical change occurs. It is more a change of attitude.

When Melvin bolts the wings onto the fuselage, he feels that he is in control. And when he taxis his red triplane out for takeoff, he is flushed with eagerness. This is a secret shared by man and aircraft—an unspoken agreement between man and machine that is conveyed by thought alone. Once airborne, he is no longer Melvin the office worker, dutiful father, obedient husband. He is Baron Melvin von Richtofen, defender of The Fatherland, hero of the western front. He is fearless under fire, calm and relaxed, a master of the sky whose name strikes terror into the hearts of the enemy, beloved throughout the Rhineland.

Cruising high above the field or out over the trees, he is on dawn patrol, searching for barrage balloons.

Suddenly, bullets whistle through the wing wires. He looks up. There, three Spads are diving from out of the sun and closing in fast. Should he dive to escape or turn and fight? The challenge is there to be taken—attack!

He pulls back on the stick and the nose comes straight up. A burst at the onrushing enemy to scatter their dives. Then hard right rudder as they pass to complete the *renversement* and gain the advantage of position. The enemy still has the advantage of speed, so the Baron pursues. By anticipating the direction of pullout of one of the Spads, the Baron heads him off and maintains the advantage of altitude. “Whatever is beneath me is as good as

lost,” Baron Melvin shouts as he presses the dive. Quickly there is another victory for his staffel.

A slow roll over the aerodrome signals to his fellow aviators another victory in the sky. Downwind, a split-S lines up the triplane for a landing approach. Idling back the Öberousel/Enya engine, he flares for landing over the grass airfield. Leveling out, slowing, touchdown at stall, full elevator to drive the tailskid into the sod—a perfect three-point landing. Then a slow taxi back by brrt-brrrt-brrt of the engine brings the famous aviator’s plane back to the revetment.

And now for the camaraderie of his fellow fliers. They laugh and talk of things of flight—ailerons, castor oil and rpms. They drink root beer and joke under a clear blue sky laced with thin oil trails of planes dancing in the summer sun. How time flies among fliers! A few more patrol flights and aerobatic practice or leading his squadron of gallant colleagues into the air until the day grows old and it becomes time to clean the plane and put it away.

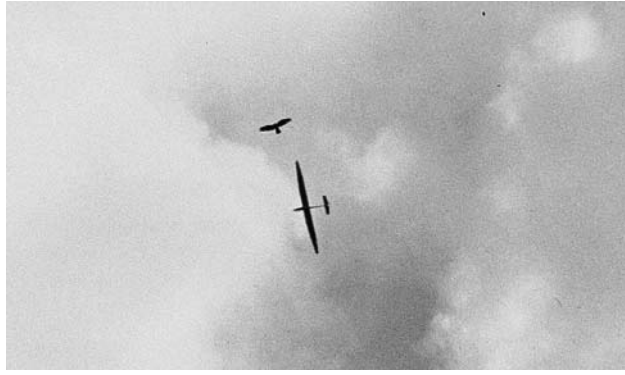
Slowly again, the clandestine Baron Melvin fades during the drive home and the more domesticated Melvin returns.

“Are you going to mow the lawn?” his wife whines as he unloads the field box from the car.

“Jawohl mein...I mean...yes dear,” he replies meekly.

###

Reprinted from TCRC *Flare-Out*, February 1980.



Borne Free

Pulling on a singing line
my longwinged craft begins its flight.
Flex-bent wings groan on
the old Ford motor's might.

True flight begins when
the silence steals.
And the world is free
of gears and wheels.

A hawk spirals into the thermal's core,
upward together and higher.
One bird of feathers and bone,
the other of wood and wire.

Twisting and turning and
yearning to be free.
To cast off the radio's grasp and
be a bird like thee.

Reprinted from *RC Modeler*, November 1977.

Channel Crossing



“Taxi into position and hold,” the ground controller’s voice droned in Jake’s earphones. Jake slowly inched the two throttles forward. The Old Heinkel 111 bomber began to move. Its huge tires rotated across the modern concrete taxiway of Dusseldorf airport. They would never again feel the sod airstrips for which they were originally designed fifty years ago.

The World War Two German bomber was the last of its kind. In a Frankensteinian way, it had been created from the salvaged parts of dozens of Heinkel 111s that had fallen long ago...the fuselage from Spain, a wing panel from North Africa, an engine from Corsica, the empennage from France. Once there were thousands that darkened the sky like a cloud sweeping out of Germany. But like an old soldier, this lonely survivor sedately warmed its engines at the end of runway 27L, its wings outstretched to remind those who remembered the war what awesome power those wings once held.

An experienced test pilot, Jake had been chosen to deliver this precious piece of history to the Shuttleworth Air Museum in London. Years of work and a lot of expense had been invested in restoring this aircraft, and Jake was determined to deliver it without a scratch.

And so he went over in his mind what he had learned by reading the yellowed pilot’s manual as he revved up the two Daimler-Benz engines—the brakes were too sensitive for steering and the rudder was ineffective at low air speed. Takeoff must be guided by throttle control. Once airborne, the old bomber was said to be as nimble as a fighter.

“Heinkel one-eleven, cleared for takeoff. Wind, two-one-zero at one-five. Have a good flight.”

“Let’s do it,” Jake said to his copilot, Charlie, as he released the brakes and pushed both throttles forward. Reaching out to those throttles was reaching out to history. The sound of those engines was the echo of a passing era. The vibration he felt in his right hand was the dying thunder of the world war...a memory for others perhaps, but alive in the hands of Jake right now. Lightly loaded and moving against a moderate headwind, the tail came up quickly. The ancient craft was airborne.

After reaching cruising altitude and completing the checklist, Jake relaxed. He tried to imagine what it was like when this Heinkel’s predecessors struck out for England. They were not equipped with transponders and radar as this plane is. There were no navigation aids to London either. They had little defense against the Spitfires that intercepted them over the English Channel. Every flight must have been terrifying.

“Storm in the Atlantic is picking up at Heathrow a bit,” Charlie said, interrupting Jake’s reverie. “Surface winds are twenty-five knots.”

Big old tail draggers don’t like the kind of gusty crosswind landings that summer storms create, Jake thought. He remembered the pilot manual’s advice about throttle steering during landings.

It was during such a summer storm in which Jake’s dad disappeared. His squadron of Spitfires was intercepting German bombers over the channel. Were they Heinkel 111s too?

The lush green coast of Holland passed beneath them and gave way to the water of the English Channel...cold blue water dotted with whitecaps. Somewhere over those mysterious depths Dad vanished in the summer of 1940.

My, how things have changed. This Heinkel 111 is being guided directly to London by a very friendly radio beacon, to be met by a group of celebrating Englishmen, Jake thought. Wouldn’t the world be better off if airplanes were built for fun instead of war?

Jake’s reverie was interrupted once again. This time the collision-avoidance microprocessor in the navigation radar blurted out a synthesized voice warning.

“Traffic, twelve o’clock, five miles, eastbound,” it said.

Jake looked straight ahead but saw nothing. Then he looked at the radar display. There was a small blip directly in his

flight path. Probably a bizjet climbing in the eastbound VOR, thought Jake. He made a mental note of the plane's position and then he returned to thinking about his father.

"This is a loop-the-loop," Dad said as he pulled back on the stick. Little Jake was seated on his father's lap of the Gypsy Moth. The biplane whistled as it pulled straight up and arched over on its back. That was the only time that Jake flew with his father but it was the biggest thrill of his life. He loved airplanes ever since. How he wished that that summer storm of 1940 had not taken his father away! How he wished that his dad were here to share this nostalgic flight.

"Traffic, twelve o'clock, three miles, eastbound."

"Hasn't that guy climbed thru the eastbound beacon yet?" Jake asked as he checked the computer display again.

"Traffic, twelve o'clock, two miles, eastbound."

"Heathrow, this is Heinkel one-eleven. Do you show traffic comin' at us?" Jake asked the enroute controller.

"Negative, one-eleven. We see no traffic in your area."

"Okay, Heathrow. We must be getting a clutter return."

Jake looked forward into the clear blue sky, not really confident about his conclusion of false echoe.

"Look there," the copilot said. "A small plane straight ahead."

Jake saw it too--a single engine monoplane on a head-on course. Its thin profile was barely visible, but it was growing rapidly.

"Traffic, twelve o'clock, one mile, eastbound," persisted the electronic voice.

"Heathrow, we do have traffic. I'm taking an evasive maneuver," Jake radioed. He returned the microphone to its clip so that both hands would be free.

"Traffic, twelve o'clock, half-mile, eastbound," the computer voice continued as Jake rolled the old bomber to the left and pushed the nose down.

The incoming plane was a blur as it rushed past and to the right and above the Heinkel, climbing and to its left just before the two planes passed within a hundred feet of each other.

"Did you see that?" Charlie asked as Jake struggled to recover the aircraft from the sudden rolling dive. "It was a Spitfire!" Charlie said.

Jake pushed the right rudder pedal and gently pulled back on the elevator, trying not to stress the wings.

“Heinkel one-eleven. Heathrow. Do you confirm traffic?”

“What will we tell them?” Jake said to Charlie, “That we were bounced by a Spit? Are we to ask them to believe that the Battle of Britain is still raging out here?”

Jake picked up the microphone slowly as he groped for words. Finally he pushed the talk button and replied. “Ah...we were passed by a small plane. Clear of traffic,” he said in his most calm and matter-of-fact monotone.

“He’s turning around,” Charlie said, twisting his neck to look backwards out the right window. “I think he’s returning for another pass.”

Jake saw the fighter better now. Its pointed wings wheeled against the summer sky. Its tan and green camouflage with red, white and blue roundels were typical Battle of Britain vintage. Leveling its wings, the Spitfire approached the Heinkel from the right. More than a hundred knots faster than the Heinkel, it quickly overtook the old bomber, passing in front by less than fifty feet, close enough for Jake to read the number 39 on its fin. In silence, Jake and his copilot watched the Spitfire race ahead. Flame could be seen in the hot exhaust ports of its supercharged Merlin engine.

“What the hell is he trying to do?” asked Jake. “Why doesn’t he make radio contact?”

Well ahead of them now, the Spitfire seemed to be returning to wherever it came. But then it pulled up and rolled inverted. Completing the half loop, the Spitfire was now returning for another head-on confrontation.

“This is no curious on-looker,” said Jake. “For some reason, he doesn’t want us here. I’m changing course before this guy mid-airs us.”

“Heathrow, this is Heinkel one-eleven. We are diverting to Glasgow...Request VFR at low altitude.”

Jake didn’t wait for a reply. He immediately turned north and descended. Curiously, the Spitfire changed its course also, disappearing from view beneath the Heinkel’s left wing. Jake waited for it to reappear beyond the aileron, but it never did. Jake

checked the radar. No nearby blip. Even the microprocessor stopped its chatter. The Spitfire was gone, never to be seen again.

The long runway at Glasgow stretched out across the green field like a welcoming hand, offering the friendship to all airmen passing by. Jake selected full flap and low throttle as the historic aircraft turned final, settling in for a long straight approach.

The wind was still strong, but it was directly down the runway. Had he continued to London, he would have had to land in a much stronger wind with a much greater crosswind component. Maybe this was better after all, thought Jake. Besides, now he had another opportunity to fly this piece of history tomorrow, completing the final leg to the air museum.

The big balloon tires touched the concrete runway with a squeak. Jake let the aircraft roll nearly to a stop before turning off at the taxiway by advancing the left throttle and standing on the right rudder pedal.

Later that evening, as Jake was closing his flight plan, he learned that Heathrow had been briefly closed.

“Wind shear,” reported the flight service station operator. “A commuter diverted after two missed approaches. So they closed her. Storms can do that this time of year,” he added. “Good thing you didn’t try to fly that old Heinkel into Heathrow. Who knows how an antique ship like that would handle in a wind shear.”

“Yeah,” replied Jake. “They didn’t understand those things when that ship was designed. They just called it an ‘air pocket’ and took their chances.”

As Jake finished the flight plan paperwork, he was beginning to realize the importance of the Spitfire encounter.



Jake rushed to the aircrew's lounge, found an available telephone and he called his mother.

"Hi Mom," he said. "...sure I'm fine. Do you have that photo of Dad when he was in the RAF? You know, the one where he is standing beside his Spitfire?"

Mom rummaged through the scrapbook that she kept in a drawer in the parlor and returned to the phone.

"Here it is," she said.

"Do you see a number on the tail?" Jake asked.

"Why yes, son," she said, adjusting her glasses to read it correctly. "It's thirty-nine. Why do you ask?"

"Oh, nothing important," he answered. "I thought maybe I saw that number on an airplane during my last flight."

"Your father would have been so proud to know that you've become such a fine pilot. He would have done anything to help you fly."

"I know, Mom. Yes, I know for certain that he would..."

###

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DUCK HERDING

The following article is fiction and should not, under any circumstances, be taken seriously. This imaginary tale is presented for its humor and entertainment value only.

It nearly caused a range war.

R/C flyers in Minnesota have long known that migrating flocks of ducks, geese and other birds can be maneuvered much as a sheep dog can control sheep. An R/C model can move a flock to the left or right, or even turn it around. Collisions are unknown. It's great fun.

Trouble started when duck hunters in northern Minnesota annoyed a local R/C club by hunting too close to their flying field. The flyers responded by diverting the birds away from the duck blinds. The duck hunters retaliated by getting airplanes of their own. Before long, camouflaged floatplanes arose from the duck blinds to regather the scattered flocks and guide them back into the range of the awaiting ground fire.

Monokote flashed in the sun as nimble escorts flew protective cover for the massed formations of ducks. Fast-climbing interceptors engaged them from below. Swirls of castor oil contrails formed above the lakes and marshes of Minnesota as

the models wheeled and swooped. The conflagration eventually spread to the whole state.

Thump, thump, thump went the shotguns. *Buzz, roar, zing* went the models. *Quack, quack, quack* went the ducks. Debris of feathers and balsa fluttered to the ground as the battle raged above the thousands of lakes.

Fortunes were made as hobby shops rushed in for the profits to be made on Almost Ready To Fly airplanes and model supplies. Gun shops began stocking propellers, while bait shops cleared their shelves for glow fuel. Cyanoacrylate glue could be purchased in every gas station, and Zap-A-Dap-A-Goo sold for \$5 per tube.

Each year, a temporary peace came with the end of the hunting season. As has happened many times in the past, technology originally developed for conflict evolved into a peaceful sport. And so was born the contest event known as “Duck Herding.”

It was created by merging the rules of Scottish sheep herding contests with the rules of AMA Glider Duration. The guidelines were simple:

- Take off
- Find some ducks
- Bring'em home

Points were awarded for the number of ducks gathered overhead, while points were deducted for elapsed time. The objective was to gather many birds as quickly as possible.

The event grew in popularity. Duck herding contests were held in many small towns in Minnesota. There were new airplane designs specialized for climbing and gathering. Onboard electronic duck calls quacked during the search phase; servo operated mufflers barked like dogs during guidance; and miniature radars and head-mounted binoculars with head-up LCD displays appeared.

As the technology advanced, duck herding grew expensive. In an attempt to limit cost, Sportsman and Expert classes were created. Laser range finders, onboard video and GPS receivers were restricted to the Expert class. It didn't help. Nor did the simplified Fun Duck rules. Participation in competitive

duck herding declined, and the popularity shifted to noncompetitive herd-ins.

The final blow to the sport came when an animal rights group formed a rare alliance with the hunting lobby, seeking a restraint against duck herding, arguing that it was animal harassment.

Today, northern Minnesota is quiet. The hastily built airstrips that once dotted the landscape have become overgrown with sandburs, and the hobby shops have been converted to gourmet coffee shops. A few flyers occasionally gather in Hibbing and Warroad to reminisce about the old air battles. Graying pilots can be seen chatting in truck stops and bait shops. As they tell and retell their stories, their hands twist and dive above hot cups of coffee.

###

Reprinted from *Model Aviation*, September 1997

Flight 140

“Flight one-forty to Minneapolis-St. Paul is now ready for boarding. Ticketed passengers may proceed to gate sixty on the green concourse.” The loudspeaker reverberated its message across the passenger terminal as work-weary John Olsen kicked his suitcase another six inches forward in the baggage check-in line.

Exhausted from a hectic week in a strange city far from home, he was not looking forward to the crowded environment typical of an airplane flight on a Friday afternoon. For this reason he purposely delayed making a reservation until he knew that only first-class seats would be left—the only justification his company permitted for such extravagance. This minor dishonesty was justified, he felt, because he had made personal sacrifices beyond the call of duty. Reward was overdue.

You wouldn't think that the work of a computer engineer would be seasonal, he thought as he settled into a right aisle seat. But it seemed that project crunches always occur in mid summer during the best model airplane flying weather.

His model airplane flying was more than amusement. The recreation that his hobby provided him was a necessary component for his mental and physical health. The harder he worked, the more important the emotional release his flying became. Like a model engine, a full power climb must eventually be balanced by the cooling airflow of descent for the engine to maintain peak performance.

But lately his brain and body had been in a climb too long, and he wished he could spend more time at the flying field, doing slow rolls against a deep blue sky and joking with his friends.

“This is your captain speaking. We'll be flying at an altitude of---.”

You call that flying? John thought to himself. Try doing a 9-point Top Hat with a Dirty Birdy. That's flying, he quipped to himself while trying to imagine what it would be like if this very same airplane were to perform such a maneuver.

Probably would spill coffee, tea or milk all over the place, he mused.

Unable to sleep in his first class seat, he sought a magazine to read. Newsweek, Time, New Yorker—nothing in the magazine rack looked interesting.

I think I'll go slumming back to tourist and see what magazines are back there, he thought.

He walked back to the partition that divided the first class section from the economy section. He pushed aside the curtain, stepped thru and let the curtain fold shut behind him. He stopped and stared.

“What is this?” he uttered as he gasped in disbelief.

What he saw was definitely not the economy section. It was something unlike he had ever seen. There were no seats, no aisle, no soft pastel colors. Nothing at all was as expected. Yet, what he saw was very familiar.

The walls of the airplane were made of wood. Stuffed between two plywood bulkheads was a large plastic object wrapped in foam rubber. Bolted to huge wooden crossbeams were three large plastic boxes. Each of these boxes was connected to long wooden beams that extended to the rear of the airplane. The third box was connected to a metal cable that ran forward someplace. These boxes hummed and clicked as a bewildered John Olsen tried to comprehend the arrangement.

He scrambled around the inside of this most bizarre airplane and climbed over the wooden longerons and stringers. He discovered three more of the big plastic boxes embedded in the floor amidships. Written on each box was the single word KRAFT in enormous letters.

He could feel the plane start to descend. Suddenly, one of the KRAFT boxes made a loud humming noise, the wheel on top rotated and a large metal air cylinder went *whoosh* followed by a loud snap that shuddered throughout the airframe.

He climbed up on a longeron to look out one of the windows. The view was blurred because the outside of the window was coated with oil. Nevertheless, he saw that the plane was about to land, and it was already below treetop height.

What followed was one of the most violent landings and rollouts he had ever experienced. As he hung on to the longeron and looked out the window, he noticed that the plane had landed in tall grass and was now taxiing through the grass toward an airport that was both strange and familiar. Other aircraft in bright colors

parked beside even larger plywood boxes passed by John's window as the plane bounced along the ground.

Eventually the plane stopped, and John rushed back to the curtained entrance from which he entered this strange experience. He pushed aside the curtain and stepped back into the first class cabin. The other passengers were gathering their attaché cases, putting on their coats and filing past two smiling flight attendants. Relieved and bewildered, he silently fell into line and exited this extraordinary aircraft.

"Welcome home, dear," his wife greeted him. "You look exhausted. I really think you've been overdoing it."

"Perhaps you're right," he said as he looked back at Flight 140.

###

Reprinted from *R/C Modeler*.



“Take-off...starting now,” Brian announced to the judges.

The shiny red and white Curare waited eagerly at the end of the runway, its straight wings held out low above its wide but short landing gear, squatting like an eagle about to leap off its nest. Its slender fuselage pointed straight down the runway while the impatient throbbing of its engine told Brian that it wanted to *fly*.

Brian took one last look at the movement of the grass near the other end of the runway. His was the last flight of the round—and now the wind had rotated to a 90-degree crosswind. He knew that as soon as the plane lifted off the runway it would be blown off course unless he applied just the right amount of left rudder to yaw the plane into the wind.

He had watched most of the other flights of the round and he saw that many of the pilots were unprepared for the wind shear. Too often he had seen an otherwise perfect take-off marred by a turn downwind on liftoff, instinctively corrected by left aileron and a loss of three points. But Brian had practiced in this kind of crosswind before and he knew how much left rudder to use.

He slowly advanced the throttle and the Supertigre Bluehead came alive. A little right rudder compensated for the engine torque as the nose wheel started the plane on a straight heading. Brian decided upon an early liftoff so that the judges would not notice the expected yaw into the wind.

The plane accelerated to flying speed. Brian pulled back on the elevator stick and applied the pre-calculated left rudder. The plane rose and, with only a slight yaw into the wind, proceeded on a straight course, wings level and steady—graceful, dignified and confident.

“Take-off complete,” said Brian as he savored the moment. An instant replay flashed thru his mind so that he would be sure to remember it later.

Brian flicked the retract switch as he banked into the first turn of a traffic pattern approach. He looked for signs of turbulence in the air and he listened to the sound of the engine. All was ready for the first maneuver.

“First maneuver will be a figure M with half rolls,” announced Brian to the judges seated in lawn chairs immediately to his right. “Starting now!” he called, concentrating on entering the maneuver with level wings.

The big pattern airplane arched upward. Brian corrected for the wind drift with left rudder again, rolled, and then switched to right rudder. He reduced the throttle and rotated thru a stall turn with full left rudder. As the plane began its descent, he continued to hold full left rudder in order to offset the crosswind drift, easing off the left rudder as airspeed increased. Rolling thru the descending half roll, he switched to right rudder again. The sunburst pattern on the top of the Curare shown clearly as the plane yawed into the wind. The sunburst changed into a checkerboard as the plane recovered inverted and pushed up into the second leg of the M.

Brian thought of his dad as his Curare stopped at the top of the M, rotated in place, dropped with a tiny wiggle of its tail. How proud Dad would be to see his son fly the Expert Pattern, he thought as the plane did its final roll and recovered to level flight. Too bad Dad never lived to see how far radio control had developed and what a proficient flyer his son had become.

“Next maneuver will be a Cuban eight, downwind,” Brian proclaimed to the judges as the plane did a split-S turn-around. “Starting now.”

Brian pulled up as if starting an inside loop, slowly increasing the amount of up-elevator as the airspeed slowed in order to form a constant rate of curvature. As the plane came over the top of the loop, he applied the anti-crosswind right rudder again.

Rudder control was the only radio control his dad ever knew, he thought. How Dad would have enjoyed pattern flying! And what a great team he and his dad would have been.

Brian hadn't thought of his dad recently. Why now, of all times? Perhaps looking up in the sky at a model airplane and listening to the sound of an engine overhead brought back the memory—of times when Brian was a little boy and he went flying with his dad.

"Complete," announced Brian as he rounded the bottom of the Cuban eight. He released the up elevator and right rudder to resume level flight. The plane grew smaller as it raced away from its pilot.

"Dad! It's getting awfully far away," he remembered saying to his dad as they ran to catch up with the free-flight model circling high in the sky.

"When will the motor stop? Will it stop soon, Dad?"

"Pretty soon, I hope...I think it's stopped now."

The sun shown thru the red and white silkspan as the Buzzard Bombshell ceased its clockwise spiral upward and transitioned into a counter-clockwise glide.

"Next maneuver will be..."

Sunlight flashed off the leading edge of the Curare as it turned back toward the center of the field. The plane leveled off above the cornfield, far off the end of the runway.

"It's not coming down, son. I think it's in an updraft,"

Brian recalled his dad's words—words and events long forgotten. He remembered how he and his dad walked thru a cornfield looking for the airplane after a really long flight. He remembered how hungry and sunburned they became, chasing the flyaway airplane.

"There it is. I found it, Dad. It's not broken...much."

He recalled the odor of banana oil and Comet cement used to repair the wing and how Mom complained about the smell. He remembered the paper bag that kept the rubber bands and fuel and starter battery. He remembered a bottle of Lion brand castor oil on the workbench that was so sticky that balsa dust stuck to it.

"Eight-point roll. Starting now."

The wing ticked across the sky like the hands of a clock, jerking in exact 45-degree increments. Brian heard the click of a stopwatch as one of the judges timed the roll. Brian counted to eight in a rhythm that he had practiced with his own stopwatch. The eight-point roll was at count four when the plane passed the

midpoint of the field. Shortly thereafter Brian heard the click of the judge's stopwatch as he shouted "Complete."

"How long was that flight, son?" his dad asked as the Bombshell landed in a hayfield.

Brian looked at his pocket watch. "Two minutes and twenty seconds," he replied.

He learned from his dad about lift and drag and yaw and roll. Dad showed him how the piston compressed the vapor and how the spark plug ignited it at the top of the stroke. He could hear his dad's voice explain how the propeller pushed the air backward and the air pushed back on the prop. How he wished he could share another Buzzard Bombshell flight with his dad!

Brian flipped the retract switch as the Curare banked into the base leg of the landing approach.

"I think we'll get to see it land, Brian" said Dad as he drove the Studebaker along a dusty country road, following a red and white airplane that circled above a pasture. He stopped the car and they ran into the field, climbing over a barbed wire fence along the way. They watched the plane's polyhedral wing banking slightly as it descended slowly above the flat green cow pasture. The nose of the plane bobbed gently up and down as it turned slowly in the warm evening sky. Lower and lower it came until it touched the earth and rolled to a stop.

"Landing complete...flight complete. Thank you, gentlemen," said Brian.

"Oh wow! What a super landing. That was fun. Let's fly it again, Dad," said the young Brian.

Brian taxied the Curare back to his field box and stopped the engine with the throttle trim lever. He picked up the airplane and carried it back to the spectator area where his flying friends gathered.

"Pretty good flight, Brian," said one of them. "But I've seen you fly better. You started out well, but the rest of the maneuvers were not your best. How come?"

Brian pulled a handkerchief from his pants and wiped the corner of one eye...

"I guess I just lost my concentration," he said.

###

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I couldn't sleep. I was tired but I just couldn't get to sleep. Perhaps I was too tired. I was wound up from too much business pressure and too much family responsibility. So I just laid there, body still but mind racing a mile a minute. Perhaps if I took a walk, or, better yet, went for a ride, it would help me relax. Then maybe I could get some sleep.

I got dressed and got into the car. It was a cool fall night with a full moon and a clear sky. The air soothed my face as I drove out of town.

I drove along the freeway until I came to the river highway. Before long I approached the turn-off to the club field. I wondered what the place would be like at night. It's secluded, peaceful and quiet and full of fond memories. I turned off the main highway and drove to the end of the county road to my model airplane club's flying field.

There, in the still night, was the old flyin' yard. It had been so long since I had been there. Somehow I just hadn't found the time to keep up with the hobby any more. That was too bad.

I could see the whole field in the bright moonlight—the taxiways, the outhouse, the picnic grounds, and of course, the runways. How I wished that I were still active in the hobby! I resolved to make an attempt to simplify my lifestyle so that I would have more time once again to fly model airplanes.

I shut off the car, expecting total silence to follow. But instead I heard a low humming coming from outside the car. I got out and looked around. There in the middle of the field I saw an

airplane. How could someone forget their airplane? As I walked toward the plane, I noticed a transmitter too. I picked it up.

There was no sign of anyone around. There was just a transmitter and an airplane—no car, no field box, no people—nothing. I called out, “Anybody here?” in spite of the fact that it was obvious that I was quite alone.

That was strange, and stranger yet: the airplane’s motor was running. The plane was resting there, engine ticking over as if it were awaiting clearance for take off.

With the transmitter in my hand, I walked to the plane to examine it.

“*Fly me,*” a voice whispered.

“Somebody there?” I responded with a start.

Nobody answered. It must have been a rustle in the leaves of the trees, I reasoned.

The plane was a precision scale Hawker Hurricane. I recognized the sound of an OS engine in the cowl. The airplane was magnificent—panel lines, cockpit detail and just a bit of weathering.

I moved the left stick of the transmitter. The tail of the airplane sashayed back and forth in response to the tail wheel.

“*Fly me,*” I thought I heard a voice whisper again.

I tried the other controls—ailerons and elevator. I inched the throttle up just a little bit. The engine crackled into a fast idle and the plane began to move. I stepped back to the edge of the grass and steered the plane along the ground until it came to the end of the runway. With full left rudder I turned the plane around and stopped it.

“*Fly me. Fly me.*”

I advanced the throttle slowly and applied a little right rudder and full up elevator. The plane began to accelerate. As it picked up speed, I eased off the elevator and applied more right rudder. The tail lifted off the runway. More throttle. As the plane rushed by me it became airborne and assumed a shallow straight climb.

Oh what a sweet sight in the moonlight! Those slender wings shadowed against a half lit sky. I throttled back and approached the field for a slow fly by. The moonlight flashed off the propeller as the plane leveled off at ten feet of altitude. I flicked the retract switch and watched first one leg fold inward

followed by the other leg. I heard the swish of the propeller blades over the hum of the engine as the sleek fighter cruised directly over the center of the runway.

Advancing the throttle, she shot forward. Turning around downwind, I decided to try for a loop. When the plane became centered before me, I pulled partway back on the elevator stick. The nose came up and the occasional four-cycle of the engine became a solid two-cycle as the powerful engine slowly arched the plane up and over onto its back. I momentarily eased off the elevator to stretch the top of the loop. I throttled back to idle as the plane glided downward, leveling out once again about ten feet above the runway.

After a straight flight out from the loop, I used both rudder and aileron to turn the plane quickly around in preparation for a slow roll.

“The next maneuver will be a slow roll,” I called aloud.

At full throttle in a shallow climb, I moved the aileron stick about a quarter of an inch to the left. As the wings began to roll, I began to slowly feed in a little right rudder followed by about a quarter of an inch of down elevator. When the wings became vertical I eased off the right rudder but continued to apply more down elevator. The rudder stick passed from left to right as the plane passed thru inverted flight. Continuing the roll, I slowly released the down elevator and applied more left rudder. The elevator almost reached neutral as the wings became vertical again, the nose being held up by the rudder alone.

At last the plane assumed upright flight and I released the ailerons. In joy of what I had just done, I shouted, “Maneuver complete,” and laughed aloud. What a thrill to fly such a splendid airplane!

I imagined that I was flying in the FAI Scale World Championships. I called double stall turns and a touch and go, and did the required figure eight. The plane responded to my commands with a smoothness and a steady stability that was unlike any airplane I had ever flown. I called a split-S and landing--commonplace during the Battle of Britain when fighters ran low on fuel, I explained to the judges.

The beautiful Hurricane streaked before me in a high-speed pass, pulled up at a 45-degree angle and rolled inverted. The nose dropped as I retarded the throttle. The plane arched over

as I pulled back on the elevator and I simultaneously snapped the retract and flap switches. By the time the plane leveled out, I saw that both landing gear legs and the flaps were down. I began the flair at about twenty feet of altitude. She slowed and settled for a soft three-point landing.

I felt exhilarated, yet relaxed. I savored the moment of accomplishment. Putting down the transmitter where I had found it, I walked back to the car. Glancing back at the Hurricane as I stepped into the car, I paused.

It was resting there where I had found it, engine still ticking over in a low idle. What an airplane! What a flight, I thought as I drove home.

Once again I experienced the relaxed contentment I had known so many times before when I used to regularly fly R/C. The satisfaction that comes from a good flight is a joy I had not experienced in a long time. I felt so contented that when I reached home, I got into bed and immediately fell asleep.

The next morning my wife asked if I had slept well.

“Oh yes,” I replied. “I feel very refreshed.”

“I thought you must have slept soundly by the way you were snoring,” she said. “And you said the funniest thing when you rolled over.”

“You rolled me over so I would stop snoring?” I asked. “What did I say?”

“You said in a very loud voice, ‘Maneuver complete!’”

###

Reprinted from *R/C Modeler*, August 1981.

Forbidden Flight



Ranhaka gazed upward as he lay on his back, watching the white storks soaring overhead. He was alone on the top of the hill that overlooked The Valley of the Kings.

The white birds' wings were stiff as they circled effortlessly in the desert thermal. Their wings were as outstretched and rigid as the wooden effigy that his father was carving.

The valley was in its busiest time of the year. When the Nile was in flood, most of the people from Luxor and Karnak came to the valley to work on the tombs. The Valley of the Kings was an exciting place for a young man to be, for this was the center of the civilized world. Artists and craftsmen from the two kingdoms of Egypt worked here. Ranhaka's father was one of the best of them. Ranhaka was proud to be apprenticed to such a fine man and skilled wood carver. He looked forward to the day when he will have the honor of working inside the pharaoh's tomb. But for now, he had to learn his craft by making woodworking tools.

But today he rested from his labors as he watched the birds circling overhead. He wondered what it would be like to fly to distant lands, to be free to move with the wind. Wouldn't it be exciting to visit Alexandria—a seaport! Or to meet people from Babylon. There are northern lands across the sea of which he had heard amazing stories—lands of civilization and learning like Egypt—and lands of cruelty and mystery.

Ranhaka wondered what the birds saw on their journeys. And he envied their liberty. Ranhaka imagined how he would

construct a bird that could fly. He imagined that his bird would carry his soul aloft to see the wonders outside the valley of the Nile. Perhaps if he built a bird that can fly, no matter how briefly, he would feel the freedom of flight.

And so he carefully studied birds in flight. He observed that each bird had a wingspan of about four cubits. The wing was wide at the body and it tapered to a blunt tip. He thought about how he could build a wing in his father's workshop—cypress spars covered with papyrus.

Excitement welled as he realized that perhaps it could be done. But he needed to examine a bird in greater detail. Remembering that one of his friends had captured an ibis, he leaped to his feet and ran down to the village.

The ibis was sacred. Many people had tried to domesticate the ibis to guard the temples and bless their homes. But, unlike the cat, the ibis proved to be too wild and independent to domesticate. Perhaps it valued freedom too much.

So it was with caution Ranhaka examined the wings of the captured holy bird. He noticed that the wing had a blunt forward edge and a sharp rear edge. He observed that the surface was arched from front to back. He made a few rough sketches of the wing and he measured its thickness in several places. Its weight was measured on a balance pan.

Later that evening he worked in his father's workshop. He warped three long spars of cypress into a slight upward bend, most of the bend occurring in the center. One spar was very thin for the rear edge of the wing, and another spar was rounded for the front edge, and the center spar was as thick as an ibis' wing. He asked his father for some papyrus paper that wasn't too wrinkled. His father gave him some papyrus that contained a sketch that was no longer needed.

Ranhaka mixed some wheat flour with water to make a thin paste. He smeared some of the paste on the bottom surfaces of the three spars with a feather and applied them to the sheet of papyrus. He propped up the wingtips with some wood scraps, raising the middle spar slightly to a slight undercamber. Then he glued straws across the top of the spars, forming a pattern of overlapping Xs along the entire length of the wing. This would add rigidity, he reasoned. As the paste dried, he glued a second layer of papyrus to the upper surface and left the wing to dry.

The next day he trimmed the forward and rear edges of the wing, being careful to make the right and left portions of the wing exactly the same shape.

Carefully he carried the completed wing to the field behind his father's workshop. He held the wing aloft and threw it forward. The wing tumbled end-over-end in a very unbirdlike descent to the ground. Disappointed, he wondered what was wrong.

He picked up the wing and ran into the wind. He could feel the air lifting the wing. He tilted the wing up slightly; the lift grew stronger. He tilted the wing downward; the lift disappeared. That must be what a bird's tail is for! The tail holds the wing to meet the air at the proper angle. Back to the workshop to make a tail.

Two spars protruding backward were attached to the underside of the wing and covered with a single layer of papyrus. Copying a bird tail, he made a small flat wing of papyrus with straw stiffeners and wheat paste and attached it to the spars at an angle slightly less than the wing so that the wind flowing over the tail would hold the wing at a slightly positive angle.

Holding his bird high, he ran into the wind. Feeling the wing lift, he ran just fast enough for it to support its own weight. It seemed to be flying! He let go. The device flew forward. It was flying. Then it arched upward, slowed and fell to the ground.

Ranhaka was both excited and confused. It flew for a short distance but couldn't keep on flying. He tried it again and again. It was trying to fly but couldn't quite.

Ranhaka looked at his bird-like invention. It resembled a bird except for one major difference—it didn't have a head. So he built a head that protruded in front of the wing. He reasoned that the head would be the first part of the bird to hit the ground so he made it extra strong, covering it with linen instead of papyrus.

It flew a little better. It flew a little farther before rising up and falling. The head out in front seemed to prolong the flight, but the bird still fell to the ground. After several trials, the head broke, so he quit for the day.

As he repaired the head with more paste and linen, he pondered why the head seemed to help. He thought he understood the function of the wing for lifting and the tail for steadying, but what did the head do? It seemed to contribute nothing but weight.

The next flight was better. In fact, each time he repaired the head, which broke often, the flights got longer. Aha! The weight of the head provided balance. He added more weight to the head until it flew straight ahead without the initial rise. Too much weight caused it to merely dive to the ground. He adjusted the weight to get the maximum forward flight distance. The principle is obvious to any carpenter who has carried a log on one shoulder—the center of weight must be balanced on the center of lift or else it will tilt.

It was time to try an even longer flight.

The creative young man chose a small hill that was well covered with tall grass to cushion the bird when it fell. He ran into the wind with the bird held aloft until it became light in his hands. Then he released it. It glided forward for about ten cubits. Then one wingtip swung forward. The bird turned and spiraled into the grass.

He tried it over and over. Each time, the bird flew forward a short distance, then either the right wing or the left wing would swing forward and the bird would spin around and circle to the ground like a leaf falling from a tree.

Ranhaka was discouraged but he didn't give up. Perhaps if he observed the birds more carefully he would see how they managed to keep from spinning around. He climbed to the top of the big bluff overlooking the valley in order to get a closer look at the storks and buzzards and eagles that soared there.

A large black eagle soared in the wind that day. It hovered nearly motionless above the crest of the bluff. The movement of its wings and tail fascinated Ranhaka. If flight can only be accomplished by constant moving of wings and tail in accommodation of the motion of the wind, it would be impossible for Ranhaka to make his bird fly. Nevertheless, he sometimes saw birds fly without moving their wings at all.

Watching the eagle hover in the wind, he noticed that the tail was the busiest part of the bird. It would twist back and forth. It wasn't always horizontal. Sometimes it rotated to almost vertical. Ranhaka thought of the paddle that steered a Nile barge. A vertical paddle kept the barge from turning in the river. Ranhaka reasoned that the eagle occasionally twisted its tail to a nearly vertical position to steer the bird so that one wing would not get ahead of the other. He had already proved the value of a

horizontal tail for keeping the bird level. Perhaps it needed a vertical tail too--to keep it from turning left or right.

It was beyond his ability to make a tail that would rotate. He thought about that for a long time. Then...aha...he could accomplish the same thing by adding a second tail—a vertical one.

Once again Ranhaka returned to his father's workshop. He coated a sheet of papyrus with wheat paste to make it stiff. When dry, he glued it to the top of the tail and another piece below the tail, hanging down. He rebalanced the bird by adding more linen to the nose, and checked its weight with a balance pan.

Ranhaka's father discovered his son gluing the vertical pieces in place. He asked his son what he was building. Ranhaka told his father that it was a model of a bird that he was trying to make fly. His father scolded Ranhaka for wasting his time with such foolishness. He warned Ranhaka that only the gods can make birds fly and that any attempt to challenge their authority would be blasphemous. He warned Ranhaka that his experiments could be dangerous, especially if the elders discovered what he was trying to do. Ranhaka took this advice seriously for he had heard of the fate of those accused of questioning the wisdom of the priests.

The next day, Ranhaka wrapped his bird in linen so that no one else would know of his experiments. He walked far from the town to the top of a remote bluff where no one would see what he is doing. Assuring himself that he was completely alone, he unwrapped the bird and held it aloft into the wind. He was not alone that day for in front and above the crest of the bluff was a tall column of white Nile storks circling in the desert air.

Ranhaka aimed the bird straight into the wind. He felt the wind lifting the wings of the bird so that it felt light in his hands. He turned it slightly to the left. The wind on the vertical tail returned it into the wind. He turned it slightly to the right. It returned again. The vertical tail seemed to be working.

Ranhaka gently pushed the bird forward into the wind, releasing it to fly free. The bird soared straight ahead, out and over the depths of the valley. It bobbed gently up and down, rising and turning to the left ever so slowly. Increasing its speed as it followed the wind, it flew toward the hill but kept on turning. It eventually returned into the wind again and flew directly over Ranhaka. He could almost reach up and touch it. Up and up it

went, turning slowly, around and around, gaining height with each turn. Ranhaka turned to watch it join the column of birds. He ran after it, but his bird became smaller and farther away. At last he could see his creation no longer.

Ranhaka was thrilled with his accomplishment--he had felt the sensation of flight. How he wished he could tell his friends about it! How he wished he could build a yet bigger and better bird.

He thought about building a bird big enough for him to hang on to and fly out over the valley himself. It would be made of linen and bamboo and he would control its flight by shifting his weight or maybe controlling a moveable tail. How exciting it would be to run off the bluffs and soar above the Valley of the Kings.

He was flushed with excitement and pride as he walked home. But it soon turned to fear as he remembered his father's warnings. He feared what could happen to himself, and, more importantly, to his family if someone were to discover what he had done. If he wished to pursue his experiments in flight he would have to leave his beloved Egypt. He would have to leave the security of the Nile that was protected from the barbarians by the mountains to the east and the desert to the west and the wilderness to the south. He would have to strike out alone and unprotected to another land, another language, and live among the enemies of his people. But worst of all, he would have to give up his calling of being a woodcarver in service of the pharaoh.

At dinner that evening, his father asked Ranhaka whether he was still trying to build a bird.

He looked up into the evening sky. He saw a single white ibis circling slowly above the temple of Ra. It seemed to beckon him to join in adventure, to seek freedom, to fly. Ranhaka turned to his father and looked into his face. It was a face of strength, knowledge and pride. He knew then what his purpose was and what his destiny must be.

"No, Father," he said. "I threw it away. Only the gods can make a bird."

###

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Joe Brenland's Transmitter



As Jim rummaged thru the mess on his workbench, his wife shouted to him, “Hurry up or you’ll miss your plane!”

Jim was searching for a magazine ad that was somewhere in his workshop. He brushed aside a pile of balsa scraps and lifted up the torn remains of a model airplane plan. Nothing there. He picked up a saucer containing some crusts of bread that had dried to stale crispness and set it on the table of his scroll saw with a *clank*. Pushing aside the electric drill, a couple of screwdrivers and an unopened package of raisins, he found the magazine. He picked it up and brushed off the wood dust. The cover was stiff with five-minute epoxy.

“You shouldn’t be down there in your good suit,” his wife reprimanded thru the air register from upstairs.

Flipping hurriedly thru the last few pages of the magazine, he saw a small want ad for Gotham RC. Tearing it out and stuffing it in his pocket, he walked out of his shop. Some tiny balsawood shavings clung to his pants cuffs as he said goodbye to his wife and he dashed out of the house.

“I’ll call you when I get to New York,” he said.

Jim thought about his workshop during the flight to New York. It was a place that was his alone, that even family and friends did not share. Jim’s shop was his sanctum sanctorum: a place of quiet retreat that knew no schedules, no externally

imposed goals. It was a place for meditation as well as a place of creation. His shop was perhaps the only place in the world that was his alone. He wished he could spend more time there. His business and family seemed to prevent him from becoming the accomplished flyer he wished to be. Yet he persisted, enjoying the attempt and relishing the goal of a better flying model airplane.

Business in New York was as hectic as ever. So it was with an eager spirit of adventure that Jim set out to visit Gotham RC after finishing the day's work.

A small sign in a second story window confirmed the presence of the hobby shop in a warehouse district off 35th Street. Jim was disappointed at the dingy appearance, but he reasoned that the place was mostly for mail order so it didn't need to look fancy.

He climbed the flight of stairs and walked into the old hobby shop. It was cramped and musty. A tissue-covered free-flight biplane hung from the ceiling. It was so dusty that it looked like it was covered with dirty snow. Fuzz bristled along the wing wires, making them look like pipe cleaners. Kits hung from pegboards all over the very high walls. There was a Berkeley Bootstraps and a Comet Zephyr and a Sterling Corsair—nostalgic old model airplanes that he remembered from his boyhood. Hanging by its tail along one wall was an uncovered control line airplane, its balsawood turned light brown from oxidation.

“Good evening,” an elderly man behind the counter said.

“Good evening,” responded Jim. “Do you have R/C equipment?” he asked, just wishing to browse.

“Oh yes, in this case,” the gray-haired gentleman said. “Both new and used.”

The top of the glass display case was so scratched that it was difficult to see what lay beneath, so Jim bent over and looked thru the side. There were Bonner servos, a field strength meter and a Kraft radio with the K looking like the symbol of an NPN transistor. In a cardboard box on the floor beside the counter was a relatively modern piece of equipment—a ProLine transmitter.

Jim picked up the transmitter and put his thumbs on the sticks. The corners of the transmitter were worn smooth, the meter was cracked and the sticks moved loosely. Jim tightened the right stick by turning it as he examined the scratched and stained vinyl case.

“The transmitter works,” said the man behind the counter. “I will let you have it for fifteen dollars.”

This old box has had a lot of use, thought Jim, turning the transmitter over in his hands. He wondered what kind of person had owned it and what kind of airplanes it had flown. He turned it upside down to see what frequency it used. A name was engraved on the edge of the frequency label. It read Joe Brenland. Jim recognized that name. Joe Brenland was one of the most famous designers of pattern airplanes before the more powerful engines changed things. Joe Brenland was on some of the international teams too. He was one of Jim’s idols—a master build and flyer—and this was his transmitter! It was like finding a Stradivarius in a pawnshop.

“Well, okay,” said Jim in a bargaining tone, trying not to reveal his surprise. “Maybe I can use it in a model boat.” He bought the transmitter and left, excited with his find.

Why is it that Joe Brenland was such a talented flyer and I’m such a klutz, pondered Jim as he traveled home after concluding his business in New York. I have what it takes—keen eyesight, good motor skills, and I’m an excellent builder. Perhaps Brenland’s skill was because his transmitter was something special, he fanaticized, wishing it to be true. After all, what distinguishes a fine bottle of wine from a bad one? What is the difference between a Rembrandt painting and ordinary oil? What makes some cars last forever while others of the same manufacturer are lemons? Nobody knows. Maybe that mysterious extra was in Joe Brenland’s transmitter too. Jim was about to find out.

Normally Jim flew only three or four times a year. He didn’t have much self-confidence and flying made him nervous. So he managed to find excuses not to fly. But this time he was eager to get out to the field and try out the new transmitter. After giving the transmitter a check-up and retuning it to match the receiver in his Falcon, Jim packed up and set out for the field.

Nervous as always but eager to fly, Jim’s hands shook slightly as he taxied the Falcon to the end of the runway. The plane turned into the wind and stopped. Jim wiped his left hand on his pants one more time, took a deep breath and let it out. He advanced the throttle. The Falcon accelerated straight down the runway and lifted into a gradual climb.

“Nice take-off, Jim,” another flyer said. “You been practicing?”

“No. This is the first time I’ve been out this year,” replied Jim as he guided the plane into a climbing right turn.

He concentrated on making his other maneuvers as smooth and precise as that take-off. He was pleasantly surprised at how well the old Goldberg aircraft flew. After a few flights he felt relaxed at the controls, and this improved his power of concentration. He flew more flights than he had ever flown in one flying session before. Between flights he joked and laughed with his fellow flyers. He returned late for dinner.

“You were out there a long time,” his wife said. “Did it go down in the swamp again?”

“Oh no. I was flying the whole day. I had a marvelous time.”

Jim returned to the club field the following Sunday and he flew all afternoon. He returned the next Sunday too. Then Saturday and Sunday. Sometimes he even went flying in the evenings after work. Eventually he moved on to low wing aircraft and then competition pattern planes. At long last he found the thrill of flight and he gloried in the feeling of accomplishment.

“It’s Joe Brenland’s transmitter,” said Jim to his wife. “For years I was only an occasional Sunday duffer. But since I bought that transmitter I’ve progressed to a proficient pilot in only one season.”

“Well maybe,” she answered, “it’s because you fly more. I’m reminded of your friend Bob who said that his success was all luck. But he noticed that the more he practiced the luckier he got.”

“No way. Look, I’ve been flying for years. But I never really got anywhere until I started using that transmitter. My attitude toward flying changed the first time I used it. I feel more confident. I feel in control. Rather than reacting to what the plane does, I’m anticipating it.”

“If what you say is true, why don’t you try using your old transmitter again just once,” she prodded. “See if it makes any difference.”

“Yeah, maybe I will. I bet I can handle that thing too.”

Jim changed into his workshop clothes and went down to the basement. His shop was carpeted now and the walls were

freshly painted. A wing jig on one side of an L-shaped bench held a row of wing ribs in precise alignment. In spite of the fact that a scale model was under construction, the shop was neat and dust free. Tools were hung from special brackets on the wall or carefully stored in shelves when not in use. Small airplane parts were filed away in labeled parts bins in alphabetical order.

He knew precisely where the unused transmitter was. He opened the door of a wall cabinet, reached inside and removed the transmitter wrapped in plastic.

Unwrapping the transmitter and holding it in his hands, he was reminded of the years he had struggled to learn to fly with it.

“No. I don’t want to go back,” he said as he re-wrapped the transmitter and put it back into the very farthest corner of the cabinet.

###

Reprinted from *R/C Modeler*, September 1982

The Courting of Longeron Lovely

John Barrington was so in love with Longeron Lovely that he nearly cross-threaded a wing bolt as he watched her long legs dangling over the edge of the picnic table. She was gorgeous: tall and slender, blue eyes and blonde hair. And she could out-fly most of the other Balsa Buzz Bugs. Her father and her brothers flew R/C too. She grew up with a transmitter in her hands. Flying was in her blood. She was John's dream girl.

"You know, John," she said as she watched a Sig Kougair in knife-edge flight slicing its way across the sky. "You are not the only one to propose marriage to me." John's screwdriver slipped out of the wing bolt, punching a small hole in the epoxy surface of the wing. "Your old flying buddy Jim has asked for my hand too. Both of you would make ideal husbands. I love you both. The reason that I haven't given you an answer is that I just can't decide which of you I want to marry."

John slid one hand under the fuselage of the airplane and lifted it out of its Styrofoam stand. Putting the other hand flat on top of the wing, he rolled the airplane upright and set it gently on the grass. He stood up and wiped the dust off his right knee. He looked at Longeron (her father had picked the name in a moment of jest, but her mother, not knowing what it meant, thought it sounded so romantically French) and said, "What can I do to help you decide?"

Lonny looked back at John, her eyes intense. She paused to withdraw the prop reamer from the propeller she held in her left hand while she blew the dust from it. Then she looked back again at John and spoke.

"One thing a girl really enjoys is to watch two men fight over her. I don't mean a barroom brawl. I mean a civilized competition between two gentlemen. So here's what I offer...I will marry whomever of you does the best in next month's fun fly."

John could hardly believe what he had heard. "You mean that you are going to choose a mate based upon balloon busts and egg drops?", his mouth agape in astonishment.

"Well, why not?" she replied. "The winner will have to show skill and devotion. He will have to make a gallant effort. He must demonstrate intelligence and concentration under

pressure, a cool head and a steady hand. These are the things I want in a man. Since both of you are R/C flyers, a fun fly is as good a test as any. And besides, it will show how much you want me.”

John looked to the parking lot where rival Jim was unloading his car. The hatchback was raised and Jim’s Pulsar biplane rested on the rim like a giant dragonfly on the lower lip of a yawning hippopotamus. John thought about all the contests he and Jim had flown together. Lonny was correct in implying they were of equal flying ability. Winning on the wind would require an extra measure of effort...far more than any mere model airplane contest. But John had no choice. He knew Lonny too well and she knew R/C modelers too well. She meant what she said. There was no other way. He must accept the challenge or lose Lonny forever.

“I can do it,” he said.

A smile slowly enveloped her face. “Good luck,” she said playfully, picking up another propeller.

In the weeks that followed, John spent all of his time preparing for the fateful fun fly. He took a leave of absence from his job. He overhauled his engine and broke in a back-up. He cleaned the pots in every servo and checked every wire. He cycled his batteries. He measured the center frequency and sidelobes of his transmitter with a spectrum analyzer. He even xeroxed his AMA license in case the original got lost.

“I can’t tell you what the events will be,” the club’s contest director told John. “It would spoil the fun for the others if you could practice for them.”

“But it’s very important for me to know. It’s personal,” pleaded John in desperation.

“Sorry, John. Good grief. I think you contest flyers tend to get too worked up over these things. It’s just for fun.”

Without knowing what the fun fly events would be, John decided that the only way to be prepared was to practice for all possible fun fly tasks. So he looked up old issues of The Balsa Buzz Bugs’ newsletter, “The Buzz,” and he poured thru his collection of model magazines. From these he compiled a list of all known fun fly events and he developed a plan to practice every one of them.

He converted the strip ailerons on his plane to flaperons so he could fly low and slow under limbo lines. He bought crepe paper by the box and practiced streamer cutting by chasing his own tail. He released helium balloons by the dozen until he could shoot them down every time. He adjusted the center-of-gravity and elevator throw so that his plane could spin over a hundred turns. He learned to count accurately to two minutes from takeoff to landing. He refined the speed at which he could put on a prop and start the engine. Every day he flew from sunrise to sunset, returning home exhausted, sunburned and oil soaked.

At the next club meeting, the president remarked about signs of unusual activity at the field. “There are eggs splattered all over the runways, and there are pieces of crepe paper dangling from the trees, and there are lots of pieces of broken balloons in the grass. Does anybody know what is going on?”

John sunk a little lower in his chair.

At last the day of the momentous fun fly arrived. The weather was perfect. Clear blue sky, cool and dry, light wind. John counted forty airplanes in the pits. There were giant scale behemoths, shiny pattern ships, diminutive racers, seldom flown hanger queens and rugged old beaters. The atmosphere was one of light-hearted frolic. There was laughter and joking everywhere. Planes buzzed in and out of the pits continuously as engines were tuned and trim settings adjusted in preparation for the events. In contrast, John was grim and determined. For him this was very serious business. He made sure that all his equipment was in perfect working order and that his concentration could not be broken.

Lonny walked up to him, carrying the wing of her Dirty Birdy. She immediately perceived his seriousness. “Relax, John. Not all of these people are competing for me,” she whispered with a giggle.

The first event was three timed loops. The winning flight would be the one who took off, did three loops and landed in the shortest amount of time. John was relieved, for he had practiced and he had a strategy.

The first plane took off, climbed and turned downwind, did three loops, then turned and descended for landing—97 seconds. Jim was next. He taxied far downwind to the extreme end of the runway. Holding the tail, he revved the engine and let

go. The plane accelerated to flying speed, lifted off before the center of the runway and climbed up, up and over into a loop followed by another and another, almost touching the ground at the bottom of each one. On the bottom of the third loop, he landed and rolled off the runway into the weeds—20 seconds.

John's heart sank. That would be hard to beat, but John thought he could do better by not climbing so high and stretching the top of each loop, drifting downwind for a faster landing. It worked! But just barely—17 seconds—a new club record.

The next event was a two-minute flight. Each airplane had to remain airborne for as close to two minutes as possible without a helper or a clock of any kind. When it came time for John to fly, he started his engine and taxied to the runway. An official stood by with a stopwatch. John pushed the throttle forward and the plane raced into the wind. When the wheels left the ground John began counting aloud, "one chimpanzee, two chimpanzee, three chimpanzee..." Meanwhile he flew the plane to the opposite end of the field and circled downwind. At "one-ten chimpanzee" he started the descent for the landing and touched the ground at exactly "One-twenty." The official looked at his watch and said, "Pretty good, John, but I read two seconds over the mark. Too bad."

"Too bad?" asked John. "Isn't that pretty good?"

"The rules state that the winner is whomever comes closest to two minutes without going over two minutes. You lost."

John quickly shut off the engine and ran to the contest director. "I didn't know that flights over two minutes don't count," he protested. "You gotta give me another chance!"

"Don't take it so seriously," the CD said. "First prize is only a bottle of glue."

Lonny, who was standing near the score-keeping table, overheard this. She turned and covered her mouth in order to not show her amusement.

The last event was a spot landing. An old Tower T-shirt was pinned to the center of the flying field. Pilots were expected to stop their engines in flight and roll to a stop as close as possible to the target. Distance would be measured from the center of the target to the nose of the airplane. To discourage crash landings, the plane must be flyable after landing.

Once again, Jim's turn to fly preceded John's. Each had won one event, so this task would determine the winner. As John thought about how important this normally frivolous event had become, he noticed something strange about his opponent's landing gear.

"Brakes!" he said aloud, horror stricken. Nobody uses brakes anymore! But there they were: two wires leading down to the axles of the main wheels, probably attached to the elevator servo. Jim merely had to push full down elevator and the brakes would stop the landing roll. What a grim turn of events.

John watched his nemesis start his engine and takeoff. Cruising to downwind, Jim made two full-circle turns in order to gauge the drift of the wind. Then he reduced the throttle to idle and killed the engine with the throttle trim lever. The propeller stopped and the plane descended. John watched, holding his breath. The biplane dropped lower and began to flare. It slowed, barely clearing the weeds at the end of the field and touched down. But its speed wasn't sufficient to bring it to the spot. The plane halted about twenty feet from the target without Jim ever using the brakes. John exhaled. There was still hope.

After several other contestants, it was John's turn. As his plane climbed, he reflected on Jim's mistake of lack of airspeed. Turning back toward the field, he stopped the engine at a slightly higher altitude. The landing approach looked about right as he concentrated first on heading and then on glide slope. As the plane neared the landing zone, John felt the wind on his face shift. This was trouble! The wind direction had changed so that the headwind changed into a tailwind. Now the airplane was too high and too fast, and it was too low to spill altitude by turning. The plane cleared nearly one fourth of the runway before touching down, racing toward the spot with too much speed. While John's left thumb steered the plane toward the target, his left index finger reached for the retract switch. When only twenty feet away, he flicked the switch. The landing gear collapsed immediately and the plane slid on its belly, stopping with its nose under the T-shirt.

The spectators cheered. John held his transmitter aloft, making a victory sign. Lonny ran onto the field, put one arm around him and said, "Congratulations, flyboy. You've won the grand prize."

Later that evening, John and Lonny were celebrating their engagement at an elegant restaurant. They toasted each other by clicking their wine glasses, and they talked about their future. After dessert, John brought up the subject of Jim for the last time.

“Tell me,” he asked “Was Jim heartbroken?”

Lonny looked up from the chocolate mousse, her eyes sparkling in reflected candlelight. “Oh no,” she replied, pausing to swirl her spoon in the long-stemmed glass. “All he lost was a roll of Monokote. I never told him what I told you because I had already decided to marry you.”

“So there never was a contest between Jim and me? I did all that practicing for nothing?”

“It wasn’t for nothing,” she answered. “It was well worth it. You did it all for me. And that’s what I want in a man.”

###

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Seaplane Fever

--by John Masefield

I must go down to the seas again
to the lonely sea and sky.
And all I ask is a floatplane
and a transmitter to fly her by.
And the prop's kick and engine's song
and antenna ribbons waving.
And a grey mist on the sea's face
and the pontoon's spray waking.

I must go down to the seas again to be
part of a vagrant gypsy class.
To the gull's way and the whale's way
where the water is smooth as glass.
And all I ask is to touch and go
with another laughing fellow rover.
And fly off the water until my fuel is gone
or the damn thing flips over.

###

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The Raven-Fli

--by Edgar Allen Poe

Once upon a midnight dreary, while I pondered,
 weak and weary,
Above my workbench hung a stately Raven-Fli
 of saintly days of yore.
Once of balsa wood I made him; now
 the wing racks have gently stayed him.
But, with mien of Lord or Lady, perched above
 my workshop door---
Perched, and sat, and nothing more.

Then this castor-oily bird beguiling my sad
 fancy into smiling,
By the grave and stern decorum of the
 countenance it wore,
“Though my thumbs doth ache to fly thee, thou,”
 I said, “ art sure too oily.”
Dusty, fuel-soaked, ancient,
 unforgiving, and what’s more---
Tell me, will I ever fly thee when again
 spring comes once more?

Quoth the Raven-Fli, “Nevermore.”

###

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So, We'll Go No More a Flying

--by Lord Byron

So, we'll go no more a flying.
 It's getting too late into the night.
Though the heart is willing and trying
 And the moon be still so bright.
For the batteries recharging need
 And the fuel is gone at last.
And the heart must pause to breathe
 And the pilot too must rest.
Though the daylight is quickly dying
 And the night returns too soon.
Yet we'll go no more a flying
 Not even by the light of the moon.

###

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Composed On Minnesota River Bridge

--by William Wordsworth

The floodplain has nothing to show more fair.
Dull would be he of soul who could pass by
a site so touching in its majesty.
This flying field doth, like a garment wear
a contest day's morning; silent, bare.
Planes, cars, tents, field boxes lie
open unto the airfield and sky.
All bright and glittering, soaring thru the air,
a Pitts Special descends on final, steep
in glide over the swamp, lined up for the hill.
Never have I seen a landing so sweet.
First plane in the air, I think I will try---
Dear God! The CD's still asleep
and these pilots are ready to fly!

###

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Ronnie The Rat



I think it was Ronnie The Rat, the kid who lived across the alley, who got me interested in model airplanes.

On the way home from school one day, Ronnie and I stopped at the radio shop. This store sold “solid model” kits that cost only a nickel including the glue. The kits weren’t much—a block of balsa for the fuselage and some small sheets of balsa for the wings and tail, plus a three-view drawing with templates.

Ronnie The Rat bought an ME-109 and I bought a P-47. We agreed to compare our planes after we had completed them. And so my first model airplane was also my first entry in a model airplane contest, just between Ronnie The Rat and me.

My airplane was assembled with great difficulty. My mother wouldn’t let me use her paring knife so I couldn’t carve the fuselage. It remained a rectangular block of balsa. The wings remained in their original form too: squared-off flat sheets of balsa glued onto the fuselage and held in place with a couple of Mother’s dress pins. The unshaped fin stuck up from the rear of the fuselage block while the equally unsculpted stabilizer stuck out of the sides, one side drooping noticeably more than the other. The propeller broke because it was too small for my clumsy hands, and I didn’t even attempt to make the landing gear. The canopy outline and insignias were drawn with a pencil.

I was rather proud of the result because it sort of looked like an airplane and I had built it all by myself. I was eager to show it to Ronnie The Rat.

A couple of weeks later, Ronnie announced the completion of his airplane. He invited me to bring my airplane to his house but, because I was afraid it would fall apart if I moved it, I asked Ronnie to bring his airplane to my house instead.

Ronnie's airplane was the most perfect miniature replica that I had ever seen. It was painted in camouflage colors and brilliant markings. The frames of the canopy were accurately painted, panel lines appeared in super fine detail. The propeller spun around when blown on, and the wheels turned when the plane was pushed across the table.

And then there was my plane. I was humiliated when I looked at it. Its drooping left wing just made it more pathetic. In shame I acknowledged the superior quality of Ronnie's airplane, and I vowed that someday I too would get even with The Rat by building an even better model airplane.

Sometime later I learned from my mother who heard it from Ronnie's mother that Ronnie's plane was actually built by his older brother. This stiffened my resolve for vengeance. It also explained Ronnie The Rat's nickname.

It's quite possible that this traumatic emotional defeat was, in part, a cause of my fervor for building model airplanes. There was a need to redeem my own self image, to prove to myself that I was capable and worthy. But, whatever the cause, I was driven.

In the years that followed, I graduated from solid models to "stick" models, then on to Wakefields and Nordics to control line. Much later I survived a mid-life crisis by intense concentration on R/C scale. I became a contest director, president of my R/C club and a well-known exponent on the joys of R/C flying.

One day I found myself at the culmination of my model airplane career—a finalist in the International Olympic Scale Championships of the World.

After a week of static judging and many rounds of flying, I was tied with the leader of the German team for the world title.

Somewhat more nervous than usual, I prepared my scale P-47 for the final round of the competition. It was good to be a

little tense for it increased my power of concentration to fly as smoothly and accurately as possible.

As luck would have it, my German opponent and I were scheduled to fly the final round simultaneously. He was waiting in the ready box when I arrived at the adjacent flight line.

“Guten Tag,” I said in my limited German.

“Hi there,” he responded in a mid-western accent. “Ready to do battle?”

As we shook hands, he explained that he was originally from America but he moved to Germany as a child. I asked where in America he used to live and, much to my surprise, he described my old neighborhood.

“Did you live across the alley from a yellow house on Englewood Avenue?” I asked.

“Why yes, I did,” he said.

“Ronnie The Rat! You are Ronnie The Rat,” I exclaimed. We both laughed and shook hands again and we reminisced about our childhood in the old neighborhood.

Then the flight line judges called for us to start our engines.

As we prepared our airplanes I could hardly conceal my joy at being given the opportunity to re-match my skills with my ancient and original opponent. I was being given one more chance to prove that I could out-do Ronnie The Rat. No one knew how important this contest had suddenly become except, perhaps, Ronnie himself.

I drew the antenna out of my transmitter like a warrior drawing his sword, and I put on my cap like a knight donning his helmet. I knelt beside my P-47, now a weapon of revenge, and I started the engine.

Likewise, Ronnie started the engine of his ME-109G and we taxied our airplanes, side-by-side, to one end of the active runway.

“Take-off starting now,” Ronnie announced to the judges, and the engine of his ME-109 growled to life. The plane accelerated slowly as Ronnie held a well-rehearsed amount of right rudder. It lifted into the air as it passed by the judges so smoothly that one could not perceive the exact point of ground to air transition. The landing gear legs rotated outward, one leg ahead of the other.

“Take-off complete,” Ronnie announced as the judges marked nines and tens on their score forms.

I watched his take-off carefully, searching for an idea of how to do a little better. I decided upon a longer ground run and a slightly shallower climb-out. It was good but no better. My take-off received nines and one ten. Already I was behind.

I pulled my Jug in behind Ronnie’s Gustav so that the flyby maneuvers were done almost simultaneously, as if my plane were stalking its prey.

Our figure eights were identical and our aerobatic maneuvers were interwoven like two enemies locked in a dogfight. We followed each other thru loops and rolls and split-S’s.

Ronnie was the first to call landing. As his Messerschmitt turned base and dropped its gear, I asked my caller, who had been looking over the shoulders of the judges on both flight lines, to total our flight scores so far. We were exactly tied. The outcome now depended only upon the landings.

Ronnie’s ME-109 started to flare at six feet of altitude and it touched down in front of the judges, main wheels first, then the tail wheel, for a score of several nines and one eight.

I decided to try for a three-point landing in order to beat Ronnie’s score. As my plane turned base, I flicked the retract switch.

Only *one* landing gear leg came out of the well.

“This will be a flyby,” I said to the judges as I waited for the other gear to appear beneath the wing. Flying around the traffic pattern, I cycled the landing gear once again. Still, only one wheel came down. Only one flyby is permitted, so my plane was now committed to a landing approach.

I could hear people chattering behind me, all telling each other about my problem. My caller advised me in whispered tones that the tallest grass was about a hundred feet to the west of the landing area. But I was not about to surrender victory to Ronnie The Rat without a struggle.

“Gentlemen,” I said to the judges. “My P-47 has sustained battle damage over the Rhine causing a landing gear malfunction. I shall therefore follow exactly the same procedure that full-sized P-47’s followed—a belly landing on the grass beside the runway.”

Slowly I lowered the flaps to a full-down position and I retracted the only operational landing gear leg. The P-47 slowed and started a descent; turning base and final far out for a long, low and slow approach.

I began to flare before the plane was over the field, applying up-elevator and advancing the throttle to a low-power setting to achieve a nose-high attitude dangerously close to stalling. As the plane passed in front of the judges, the fuselage kissed the grass, breaking the prop and stopping the engine. The airplane slid straight ahead on the slippery grass another fifty feet.

Tumultuous cheers erupted from the spectators. My caller slapped me on the back. My knees became weak. The judges marked tens on their score forms. Victory and the world championship were mine!

At the awards banquet that evening I reminded Ronnie of our solid-model competition of years ago. As I suspected, he had not forgotten it, so I pointed out that at last we were even. He had beaten me once and now I had come back.

“So it seems,” he observed. “But in fact, you really won both times because my brother built that little ME-109. That’s been bothering me all these years,” Ronnie continued. “In fact, it is quite possible that the guilt I suffered from that incident is partly responsible for my fervor for building model airplanes. I needed to prove to myself that I could do as well as you, to prove to myself that I was capable and worthy. Too bad there isn’t just one more round in this contest.”

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STRAIGHT FLIGHT BACK

The chairman of the board of COMCO said, “COMCO stock has reached a new record. It might be to our advantage to divest ourselves of this division at this point in time.”

Sam Barrington didn't listen to the words of the chairman. He was watching the smoke from a cigarette rise from the ashtray. He was absorbed in the transition from laminar flow to turbulence occurring about ten inches above the polished mahogany boardroom table. Crushing the top edge of a book of matches until the edge was rounded, he formed the matchbook into a reasonable copy of a Clark-Y airfoil. Then he held the matchbook, leading edge down, in the rising column of smoke so that the smoke flowed around both sides of the matchbook. Tilting the airfoil slowly, he watched the smoke flow smoothly over the surface of the matchbook until the matchbook was tilted about ten degrees. Then the smoke flow became turbulent. The airfoil had stalled.

“Lack of follow-on contract potential indicates that COMCO stock is artificially high. It's only a matter of time before it drops dramatically,” the chairman droned on. Sam was too fascinated by his simple wind tunnel to hear what the chairman of the board said.

Now he was imagining the rising smoke to be a summer thermal, and an R/C sailplane was about to fly into it. As the tiny sailplane approached the edge of the thermal, it was bounced

about by the turbulence at the edge but once inside, its flight was smooth. Sam imagined a tiny sailplane circling inside the column of smoke—climbing higher and higher.

“How high do you think it will go, Sam?” said the distinguished gentleman at the head of the table.

Partially aroused from reverie but not quite entirely returned from sailplane flight, Sam responded, “It could go out of sight. We should get out before we lose control.”

“Sam has never been wrong before. I trust his judgment—we’ll sell.” The other board members nodded in agreement with his wise decision, and the monthly meeting of the board of directors of the mighty international conglomerate was adjourned.

Sam didn’t get home until well after dark that summer evening. But that was not unusual. In recent years he usually worked twelve to fourteen hour days and weekends too. The responsibility of being a director was a big burden. So many people were dependent on him to make correct decisions. He didn’t dare take chances.

“We have to have a serious talk,” Sam’s wife said to him after dinner, “about our life together and your career.”

“Yes, dear what’s on your mind?”

“It’s not what’s on my mind that matters. It’s what’s on **your** mind that is the problem,” she said. “Work is all you think about and all you do is work. That’s not the way to live. It makes life miserable for your family and it’s beginning to affect your health.”

“Yes, I’ve been feeling tired lately,” he replied. “And I’ve been having trouble concentrating. You know, I daydreamed thru most of the board meeting today. I don’t even remember what happened.”

“Do you remember how it was when we were newlyweds?” she continued. “You worked regular hours and you left your work at the office. You even found time to fly model airplanes. We were happier then. I think we should return to that lifestyle before it’s too late.”

“Well I can’t just quit my job and become a draftsman again. Who would take my place? And it would be a big loss of prestige—a director returning to the drafting department. I can’t do that.”

“Leave it up to me,” Sam’s wife said with a clever and knowing look in her eyes. “I have ways of changing things that you can’t even imagine. After your trip to Minneapolis we’ll return to the way we used to live. Okay? Trust me.”

“Maybe this business trip to our home town will stimulate some ideas for me too. I’m going to drive thru the old neighborhood and look up the little house we lived in when we were first married. Okay. It’s a deal. You figure out how to return to the way we used to live and we’ll do it.”

Sam’s trip to Minneapolis was for the purpose of initiating the transfer of ownership of COMCO to its new owners. After arriving in Minneapolis, Sam reported directly to the local COMCO office.

“I can’t imagine why the board of directors decided to sell COMCO,” Sam said to the president of COMCO. It has more potential than any of our subsidiaries. Maybe it will be better off on its own.”

“I know that these decisions are not made lightly,” assured the president. “The board studied the matter thoroughly I’m sure. They know best.”

“Yes. Well, we’ll discuss it further tomorrow,” said Sam. I have some other errands to run today. Minneapolis is my home town, you know.”

And so Sam set out to try to remember some of the pleasant experiences of his life in his old hometown. One of the fondest of his memories was flying model airplanes and the friends that he had in those days. So he drove his rented car to where he and his friends used to fly.

The old flyin’ yard used to be on the edge of town, surrounded by farms. But now the area was in the middle of an industrial park. Sam drove in and found the exact place that once served as a miniature airport. There was still a small piece of open land but it was surrounded by buildings, telephone lines and a railroad track. It was clear that nobody flew model airplanes here anymore.

Sam parked the car where the parking lot used to be. He got out and walked into the open field. A couple of sand burrs stuck to his pant cuffs as he explored the old flying site. He stooped to pick up a fragment of asphalt that had once been part of the runway, now overgrown with weeds. He looked up in the

clear blue sky and felt the light and warm wind blowing over his face. What fun he had had here, flying with his friends. He could almost hear a model engine high in the sky and he could almost smell a hint of castor oil in the air.

As he stared skyward, he *did* hear a model engine sound. Could there be a model airplane up there somewhere? He shielded his eyes from the sun and scanned the sky. There, ahead of a light vapor trail airbrushed on the blue background was, indeed, a model airplane. It was very high.

“Hi Sam,” a voice said. “What ya flyin’ today?”

Startled, Sam looked around. Behind, he saw a young man holding a blue F&M transmitter in his hands and squinting skyward. The man looked familiar, and after a moment Sam recognized him. It was Mike Collier. And he hadn’t changed a bit since Sam saw him so many years ago.

“I haven’t see you for a while. You been away?” Mike asked, eyes fixed on the airplane.

“Yeh, I have,” said Sam, surprised and at a loss for words. He calculated that he hadn’t been here for thirty years.

The plane was at a much lower altitude now and it was approaching the field. Sam recognized the drone of a throttled-back Veco .45 engine. As the plane neared its pilot, Mike offered the transmitter to Sam and said, “Wanna fly it?”

“Yes, I would,” said Sam and he slowly eased the transmitter into his own hands. Sam tapped the throttle lever of the ten-channel reed transmitter down once to reduce engine speed slightly and then he pulsed the elevator trim lever downward once to compensate. The plane slowed and maintained a level cruise as it passed in front of the pilots.

“Hey Sam. Do you got it?” another voice shouted. Sam quickly glanced in its direction and saw another familiar face. It was Jim Grace.

“Oh yeah, I got it good,” Sam said and he laughed aloud, delighted to see another old friend. He tapped the throttle upward two times and then pushed the aileron switch to the right, pulling the plane into a right turn. An occasional tap on the elevator lever tightened the turn and held the nose up. Leveling out after a 180-degree turnaround, Sam began a roll by holding the aileron lever to the left. As the plane rolled inverted he pulsed the elevator lever to prevent a turn and to hold the nose up, then released the

aileron switch as the wings rolled thru vertical. The plane resumed straight and level flight. Sam was thrilled. “Wonderful. I love it!” he said.

“Well, it’s just about out of fuel. Do you want to land it?” asked Mike.

“No. You had better. I haven’t flown for a long time. And those buildings are too close for me,” Sam replied, not wanting to risk his friend’s airplane.

“What buildings?” asked Mike as he regained the transmitter from Sam’s hands and turned the plane into a pattern approach.

Sam looked around, taking his eyes off the plane for the first time in several minutes. The buildings were gone. So were the railroad tracks and the telephone lines. He was standing in the middle of a large open field beside a small well-paved model airplane runway. Behind him, Jim and several others were working on their model airplanes, preparing them for flight.

Sam felt confused and a little frightened. He turned toward the airplane which was now on final approach. Mike removed his right thumb from the aileron lever, moved it up to the throttle lever and pulled the throttle all the way down. Then he moved his thumb back to the aileron switch. He began tapping the elevator switch slowly with his left thumb to begin the flare. The plane floated nose high toward the end of the runway. Three red balloon tires hung below the blue and white Mambo airplane like a hawk’s talons reaching for the runway. The tires went thunk-squeek as they touched the ground. Mike moved his left thumb from the elevator switch up to the rudder switch and pulsed it to the right to steer the airplane to a stop.

Sam turned and looked toward his rented car. It was gone. An old Dodge was in its place. It looked like the same Dodge he owned when he graduated from college. He walked over to it and ran his fingers along the hood and looked inside. A model airplane was on the back seat—a red and white Orion with cow pessary wheels. Beside it was a black Orbit transmitter.

Sam remembered the promise to his wife to go to the house they had lived in when they were newlyweds. He reached into his pocket for the car keys. Somehow, he knew they would fit.

“Hey, Sam. Aren’t you going to fly some more?” yelled one of the other flyers.

“No,” said Sam. He hesitated a moment and then said, “I need something from home. But I’ll be back.”

The Dodge bounced along the sandy road as he drove with eager anticipation back to the main highway. He looked at the fuel gage. It read nearly empty. He laughed and said, “I might have to spend a couple of bucks to fill ‘er up.”

Rounding the corner of the street where he and his wife had made their first home, he slowed the car and looked for the house he remembered so well. There it was—exactly as he had imagined it would be. He pulled the car over to the curb and stopped in front of the house. He shut off the motor and got out.

As he walked across the lawn, a young woman came out of the front door and walked toward him.

“Welcome back, Honey,” she said as she ran up to him and threw her arms around him. “It’s so nice to have you home again. Anything unusual happen while you were flying today?”

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STUFF

Stuff on the ceiling and stuff on the floor.
Stuff on the workbench, there's more and more.
I look in my workshop and what do I see?
It hangs from the ceiling, it comes up to my knee.

It takes a long time to accumulate all this stuff.
I love it so much, I can't get enough.
I buy it in boxes or delivered in bags.
It comes in plain wrappers with bright shipping tags.

I whip open a kit, it's all full of nice stuff.
I cut it and sand it til my hands are quite rough.
I trim stuff and fit stuff, pile stuff upon stuff.
More glue and epoxy and even Hot Stuff.

There's wires and pushrods and gear trains and pots.
There's fuel tanks and craptraps and lots and lots
Of stuff for the engine and stuff for the fuel,
Stuff for the wings rods and stuff for the tools.

I've got stuff in my workshop and stuff in my car.
It fills up my house and spills into the yard.
Stuff stacked upon stuff and if that ain't enough,
My mailbox is stuffed with more stuff that says
please buy more stuff.

So here's the sad truth. I just can't ignore it.
Each little doo-dad needs more-dads to support it.
It's really quite bad, I know where it will lead.
The more stuff I've got, the more stuff I need.

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The Plane

The new plane gleamed amongst the litter of my workbench. How could such an impeccably neat object arise from such rubble I pondered as I swept the wood shavings and scraps of trim tape from the workshop floor. The plane had an eager, ready-to-go look about it. Low winged, sleek and slightly sinister. I had the feeling that it wanted to fly.

That Saturday I put the new bird in the car and prepared myself for the ritual of a first test hop. “There’s an invasion of evil doers advancing toward the field and only a lone monoplane can save the free world from the enemies of democracy,” I shouted to my wife as I shoved the field box into the station wagon.

“Have a nice flight,” she replied.

I grew a little tense as I drove into the flying field’s parking lot. First flights always arouse a little adrenalin. “Hi Doc, Hi Bruce,” I said to my fellow fliers. “Yea, it’s new. No, I haven’t flown it yet. Today’s the day. Who’s on yellow and white?”

The first part of the Ritual for New Planes was performed: range check, center the trims, check for glitches with the engine running, nose up—not too lean, nose down—idle okay. Then the grand taxi out to the runway. Engine still okay. I wiped my hands on my pants, tilted the peak of my cap to the sunny side of my head and held the antenna ribbons aloft to measure the wind direction. Fine. Ready. Let’s do it.

Advancing the throttle, the plane hesitated as if it too were apprehensive about takeoff, then it accelerated forward. Suddenly it ground looped.

I cut the throttle and taxied back. I made a special mental note—the engine hesitated because it was loaded up from too much idling, and the unexpected turn was probably caused by nose wheel play. Perhaps. But it seemed more like the plane *feared* that first takeoff. And why not? The first flight is an important landmark in the life of a plane. One fraught with hazard too.

To bolster my courage—and perhaps the plane’s as well—I held the tail and revved up the engine. This time the plane eagerly dashed straight down the runway and gradually lifted off.

We put in many flights that day. Mostly routine maneuvers, nothing daring. The only unexplained phenomenon was that first ground loop. It never did any more that day—or ever. I puzzled about that as I drove home.

I began to suspect the plane was more than an obedient machine when I entered it in its first contest. The weather was bad—cold, windy and overcast. The judges looked surly and critical too. I couldn't expect a plane to enjoy flying under these circumstances and it showed. The plane's engine gave me trouble. It was stubborn to start, wouldn't peak out and idled rough. I became frustrated. My name was called for round one and the engine wasn't ready. In disgust, I threw a rag into the turning prop. Like an insolent child, the prop broke and the rebuffed plane threw the splintered blade into my leg, leaving a nasty gash.

We didn't do well in that contest of course. It was enough to be angry at the plane. But with the plane also mad at me, the necessary collaboration between man and machine just wasn't there. Like an angry couple, we drove home in silence.

Later that season, after a fine aerobatic flight, I taxied the plane back to the pit and shut off the engine. While checking the controls, I discovered that the aileron servo was inoperative. A broken transistor lead was later found to be the cause. It could be that engine vibration caused the wire to make enough intermittent contact to keep the servo functioning. But maybe not.

At first, I was ashamed of myself for thinking that a mere model airplane could have a spirit of its own. Such thinking smacks of the dark ages. All of the plane's actions must be explainable in terms of cause and effect: clogged fuel lines, radio interference, air turbulence and so forth. But then again...

Is it possible that the plane no longer needed my commands from the ground? Or worse yet, maybe it has always ignored me. Could it be that the plane fooled me into thinking that I was in control, but in reality it is master and I am servant? How else could I, who has never excelled at any motor skill sport, accumulate so many trophies—all with the same airplane?

Shortly thereafter my hobby ceased to be fun. It became, as my friends said, a compulsion. I *had* to practice every Saturday afternoon, even when more important matters pressed. I found myself taking time off from work to fly. Contest schedules consumed my vacation time in spite of the fact that I would rather

be elsewhere. I longed to be with my family, but instead I found myself perfecting hammerheads. My function was no longer that of pilot. Instead, I served to provide fuel, transportation, cleanup and repair. I was becoming the remotely controlled one. The positions of model and modeler had interchanged. The PLANE now consumed all of my energy.

After several years of devotion to The PLANE, we were selected to compete in the world championships.

“We, I mean I am from the United States,” I said, introducing myself to one of the competitors, almost revealing that The PLANE, not myself is the real representative.

“How do you do,” he said. “My PLANE is from Australia.”

“And my PLANE is from South Africa,” another said.

“Yes, we wish your PLANE luck against the other PLANES,” someone else replied.

“Indeed, indeed. May the best PLANE win.”

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Reprinted from TCRC *Flare-Out*, January 1980.

Too Realistic



“It’s a letter from England,” John’s wife said as she invaded the sanctity of his workshop.

The shop floor was covered with curls of balsawood shavings, old contest posters hung from the walls, and parts of well-worn model airplanes hung from the ceiling. Her husband’s hands moved quickly as he stood before the workbench. He had finished coating the holes in the trailing edge of a wing with 30-minute epoxy. In his haste, he dropped an epoxy-coated T-pin on the floor as he picked up an aileron. Carefully sliding the protruding Robart hinges into the holes in the wing, he moved the aileron up and down to assure its range of movement. Then he clamped the aileron in place with an inside-out clothespin.

“Open it and read it to me, please,” replied John as he collapsed into a worn-out chair beside the workbench and started to look for the T-pin among the wood shavings on the floor.

She read the letter in silence to herself and summarized the contents. “You’ve been invited to a model airplane contest in Farnheath Down, England. It’s called the Battle of Britain Memorial Scale R/C Contest. The flying field is an abandoned World War Two aerodrome.”

“Wow,” he said, dropping a handful of shavings. “I suppose they read about my Spitfire placing third in the NATS. I’m flattered to be invited,” said John as he hurriedly smeared more epoxy on a plywood bulkhead. “I’ve never competed in a foreign country. It sounds really exciting. I wanna go.”

John spent the next two weeks in eager anticipation of the English contest. He built a plywood shipping box for his Spit and he read as many British R/C magazines as he could find.

“The Brits are fanatics about scale,” John said to his wife as he packed his transmitter, well wrapped in clothes in his suitcase. “They are famous for painstaking attention to detail. I’ll have a tough time competing in static scale points. Maybe I can make it up in flying points.”

“It should be a jolly good show,” she answered. “Keep a stiff upper when you fly.”

John thought about the stiff upper lip and other cultural differences on the flight to London. What practices will the English expect him to follow that he has never heard of? Will the subtleties of the rules of competition be too much to learn in one day?

On the contest morning, John drove his rented car to the old Farnheath aerodrome. He was met at the entrance by a uniformed guard. The place must still be a reserve air base, John thought as he stopped the car.

“Your credentials please,” the man said.

“I’m John Wheatly from America. I’m here for the model airplane contest,” he said as he handed the guard his AMA license and passport.

“Good morning, Lieutenant Wheatly,” the man said after examining the papers. “Please proceed to headquarters where you will be assigned quarters and crew.”

A strange formality, John thought as he continued into the old airfield. Checking in at “headquarters”, John found a bunch of other pilots registering for the event.

“Shall I set up my plane now?” John asked the contest director---a dignified gentleman dressed in an old RAF uniform.

“You brought your own?” responded the official. “That won’t be necessary. The planes are all supplied, ready to fly,”

“I don’t fly my own plane? I’m *given* a plane to fly?”

“Yes. You are assigned to a Spitfire Mk I, number 47. You will find it parked on the ramp in front of the hanger,” replied the contest director. “But first, Major Haversham will check you out on the controls.”

A most curious way to run a contest, thought John. The English certainly have a different way of doing things.

John milled around until he found Major Haversham—a typical pilot type—tall and thin, in his mid twenties, with a military bearing, a mustache and, like most of the others, wearing an RAF uniform. They proceeded to the ramp and there the planes were—a neat row of quarter-scale Spitfires and Hurricanes, lined up alongside a scale runway. They were all alike except for the letters on the fuselages. John and the major quickly found number 47.

The plane’s upper surfaces were painted dull sand and olive drab camouflage. Red, white and blue bars marked the vertical stabilizer, and roundels decorated the fuselage sides and both wings. The paint was worn around the cockpit, engines and wing tips, bare aluminum showing thru. Inside the cockpit, a pilot awaited flight with one hand on the control column ring, the other resting on the throttle. Underneath, the wing and fuselage were duck egg blue. Simulated oil stains under the engine streaked backwards on the blue surface. Dark streaks flared backwards from the four gun ports on each wing.

“Your Spit is mode one, of course,” instructed Major Haversham as he turned on the radio. “Orders from Fighter Command, you know.”

John examined the controls on the transmitter—aileron, rudder, elevator, throttle, flaps, retracts and guns.

“Guns?” asked John.

“Of course,” replied the instructor, puzzled. “The black button on the top of the transmitter fires the guns.”

“Wow! That will be fun to try,” said John. “I’ve never had simulated guns before. When do we fly?”

“You are new here, Wheatly, so I’ll tell you the procedure. You must be ready to fly at all times. When the enemy bombers are sighted, a siren will sound and you must get airborne as quickly as possible to intercept them. Is that clear?”

“Very clear, sir,” replied John, getting into the spirit of a World War Two British fighter pilot. “We’ll give them a bloody good thrashing.”

John milled around the field as he waited for the signal to fly. He chatted with the other fliers and he examined their planes. Before long he became restless with the waiting, and he wished they would get on with the day’s events. Just then the alarm sounded—a loud siren screeched, and everyone started running toward the planes. “Scramble,” someone shouted. “The Gerries are over the channel.”

John started the engine of his Spitfire just as a few other planes took off. There was tremendous din and commotion as over a dozen quarter scale fighters started their engines and took to the sky.

“There they are,” someone shouted as John’s plane lifted off the short grass runway and he flicked the retract switch. The landing gear rotated outward and backward, one leg behind the other. A group of model Heinkel and Junkers bombers accompanied by ME 109s appeared high above the trees to the east of the field. The Spitfires and Hurricanes climbed; the 109s dived. And soon there was a swirling dogfight of model airplanes overhead.

“This is fun!” exclaimed John as the sound of machine gun fire reverberated against the roar of engines, and the paths of the two groups of planes intersected high in the sky.

The bombers passed over the field and started a sweeping turn to the left. John turned his Spitfire toward one of the Messerschmitts and pushed the gun button on his transmitter. Tiny puffs of smoke streamed from the leading edge of the each wing as his Spitfire overtook the German model.

To his surprise, the 109 burst into flame.

“The yank’s got one,” shouted a ground crewman.

Man. That’s realistic! They must have smoke bombs in the planes somewhere, John thought as he watched the smoking plane. It did a diving roll all the way to the ground and crashed.

The spectators cheered.

The poor guy just crashed and they’re cheering, John thought. That’s carrying realism too far.

Soon the bombers completed their turn and were now low, approaching the field. Streams of small bombs were cascading

from each bomber. John split-S'ed his Spitfire to intercept the lead bomber. Explosions were heard from the far end of the field.

Sound effects too. Incredible, thought John.

The explosions grew louder and closer. Clods of dirt landed near John's feet. The headquarters building blew up.

"Wait a minute," said John. "This is too realistic. This is real! Those are real bullets and real bombs and that Heinkel 111 is coming after *me*."

John dove his Spitfire full throttle at the oncoming bomber. The bomber's gun's blazed as it came directly toward John. Bullets kicked up pieces of dirt near where John stood. John pushed the gun button once more. At the same time, he threw himself on the ground to avoid the bomber's gunfire. His own plane's guns fired for a while and then stopped, out of ammunition. The bomber was almost overhead now; it's bomb bay doors open. John pushed down-elevator and right rudder and rammed the Spitfire into the side of the bomber. A tremendous explosion ensued.

Bombs were exploding all around him, debris was falling, and bullets were whistling thru the air. John dropped the transmitter and ran for his car.

"How was the contest, dear?" asked John's wife after he put his suitcase on the bed, ready to be unpacked. John opened it and unwrapped his unused transmitter. As he held it in his hands and moved the sticks with his thumbs, he said, "Well...uh...it was... uh... very realistic."

"I'm glad you had a good time," she replied.

She paused to open an envelope. "You received another invitation in the mail while you were gone." Opening the letter, she read, "It's from Japan. The Hiroshima R/C Model Airplane Club is having their annual Kamikaze Fun Fly."

"That's nice," he said. "But I think I'll pass it up."

###

Reprinted from *R/C Modeler*, November 1984.

Two Kinds of Mischief

“So, Grunhilda,” announced Thorvold, the Viking chieftain, to his wife. Our clan will join together with the neighboring clans to the north and we shall build the finest fleet of longships ever to sail the North Sea. Then we sail against England. We attack in the spring. Conquest and glory will be ours!”

“The club is going to have a float fly next spring, and it’s going to be a really big affair. All the clubs in town will be there. I don’t want to miss out, so this winter I’m going to build a seaplane,” Eric said to his wife, Karen.

Thorvold supervised the cutting of the oak and spruce trees for the construction of the longships. Massive pieces of oak were carefully cut to shape according to the traditions of centuries of craftsmanship. The keel was laid first and then the step for the mast. The lighter spruce was sawed into planks for the sides while boards of oak were bent into ribs.

Eric immediately placed an order for balsawood and plywood to build his floatplane. He preferred to scratch build because he felt that he had better control of the materials. And this produced a stronger and lighter airframe. Before long, the formers and wing ribs were cut, and assembly was about to begin. He built the fuselage crutch first and carefully aligned each former as they were glued in place.

“Ja, a yar ship,” proclaimed Thorvold as the longship neared completion. “Fit for a Viking king.”

The massive longship gleamed in the Norwegian sunlight. The raw wood needed only caulking and painting before it would be ready to sail. But the Viking chieftain already envisioned it in full sail, splashing spray as it sailed for England.

“This is gonna be a fine airplane,” said Eric as he admired the plane while he sanded the airframe in preparation for covering. “It might even win the fun fly.”

The white balsa airplane sat amongst the litter of his workbench under a fluorescent shop lamp, but Eric imagined it skimming across the water, shooting a touch-and-go.

At last the warships were completed, and the Viking clans gathered on the shore to bid farewell to the departing warriors. The cargo of weapons and provisions were loaded into the ships, and the sails were hoisted. Those remaining behind cheered as the longships cast off from shore and proceeded down the fjord.

Grünhilda cried as Thorvold's ship advanced toward the open sea. She knew that she might never see him again.

"Why does he go a-raiding, Momma?" asked her young son.

"For adventure...and for excitement...and because he must," she said as she wept.

Finally the floatplane was ready to fly. Eric and his family drove to the lake to test the new plane in the evening calm. The air was still, and the lake was smooth as glass. Eric quickly assembled the plane, fueled it, and started the engine.

Eric taxied the plane back and forth in front of the beach as he proudly displayed his creation to his family. As he turned the aircraft towards the long side of the lake, he advanced the throttle. The plane accelerated, creating a fury of spray and noise and leaving a long wake behind. As it lifted into the air, water dribbled off the pontoons and splashed behind the plane as it rose.

"Daddy really enjoys his hobby, doesn't he?" asked Eric's son.

"Yes, he does," replied Karen. "It's good for him too. It's a challenge and an adventure. And it's something he has to do. If he didn't have his hobby, I can't imagine what he would do. Who knows what kind of mischief he would get into.?"

###

Reprinted from TCRC *Flare-Out*, February, 1981.

Unity Scale

Recently, while waiting for some epoxy to set, a friend observed that there is a trend to larger and larger models developing in the hobby of R/C model airplanes. His mind, fogged with resin, saw a vision beyond quarter scale or even third scale. The ultimate scale—Unity Scale.

So impractical. So absurd. I quickly calculated that a unity scale J-3 Cub would require 10 large rolls of Coverite. A total of 85 horsepower would be needed just to get the monster off the ground. And control response would be terribly sluggish compared to conventional models.

My friend went on, his speech slurred by the catalyst. He suggested that a radio would not be needed. The pilot would ride along *inside* the airplane and move the pushrods directly.

“How crude! And it wouldn’t work, you drunken sot,” I replied. “The pilot would become disoriented. He would no longer have the flat earth as a reference. He wouldn’t know up from down nor left from right.”

“Not only that,” he said, avoiding my rebuttal by changing the subject. “The pilot could take off from one field and land at another.”

“Ludicrous,” I said as I opened a window and pushed his head into the fresh air. “Flying big airplanes all over the countryside with people in them would surely lead to government regulation. Then what would become of our hobby?” I screamed. “What if the Defense Department were to get this technology? They could turn it into an weapon of war.”

“Don’t be silly,” he replied, glossy eyed. “They are too set in their ways.”

I continued my attack on this pitiful, solvent-crazed individual with the following barb. “Where would you get all the balsa wood?”

“No problem,” he said. “We’ll use some cheaper material, maybe steel tubing or aluminum. Titanium would do nicely for supersonic models.”

The poor devil babbled on incoherently for some time thereafter. He mumbled something about improved stability, higher Reynold’s numbers, less induced drag, and other pseudo-

technical rubbish. Eventually he fell asleep on an old pile of Berkeley kits in the corner of his shop.

The following weekend I saw my friend at the field, flying a Quickie 500. “Have you started building a unity scale ship yet?” I asked.

“Unity scale? What’s that?” he replied.

“You know, the ultimate scale—12 inches to the foot,” I prompted.

“You gotta be kidding!” he snapped. “Say, have you been sniffing something lately?”

###

Reprinted from TCRC *Flare-Out*, December 1979.



Where Ancient Craft No Longer Fly

Where ancient craft no longer fly
Except in model form I
Paint a Wootton scene across the sky.

Today I fight the Battle of Britain pretended
As if sixty years later it's still unended.
I hurl and twist by radio arm extended.

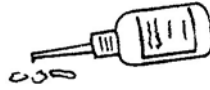
Snuffler growling in a plywood cowling
I search for Heinkels with Zinger howling
Thru loops and rolls and split-S prowling.

Balsa guns lay silent in wings whose only chore
Is the beauty of flight and nothing more.
Oh why must airplanes be built for war?

###

Reprinted from *R/C Modeler* plan #1195, Boulton Paul Defiant, July
1995

Still There



“If you’re going to build model airplanes, you must learn to be more patient,” shouted Susan Nelson to her young son Billy in the basement workshop. “I’ll be right there. Give me a break.”

She put down the dish she was drying and, without turning, reached for the handle of the cane that hung from the handle of a nearby drawer. Her recovery from the automobile accident was progressing well but walking was still painful. She limped slightly as she stabbed the rubber-tipped cane into the Congolium floor and she began the arduous journey to the basement.

Ever since Billy was a little boy, Susan had been the one to help Billy with mechanical things. She showed him how to build model airplanes, how to ride a bike, and even how to change the oil in the car. Her husband Jim just wasn’t very mechanically inclined. In many ways, this made the relationship with her son especially strong. She had grown ever closer to Billy since they were injured. He was a comfort to her in this time of stress.

The workshop was ablaze with light from the overhead fluorescents reflecting off the white sheetrock walls and the white tiled cement floor. An L-shaped workbench against the walls supported countless drawers while pegboards above held the everyday tools of an active R/Cer. In the middle of the workshop floor, a card table held the fuselage of a Sig Kougat up side down in a cut-out Styrofoam cooler. Susan reached for the volume control on the FM tuner that was suspended high above one end of the workbench.

“How can you think with that music so loud?” she complained as she rotated the knob a full quarter turn. It was still quite loud. “Now what’s the problem?” she inquired.

“The throttle levers of these four-strokes are all alike,” she heard her son say, his voice barely audible above the music. “The carb is in the rear so the throttle lever is right up against the firewall. That doesn’t leave room for the clevis.”

Susan picked up the obstreperous engine and moved the throttle lever back and forth. Then she placed the engine on the engine bearers and slid it in place. Sure enough, the idle position brought the lever up against the firewall.

Hhhmmmmm.

“I have an idea,” she announced as inspiration struck her. “Use a flexible steel cable thru the firewall about two inches above the throttle lever. Then loop it around in a half circle so that the clevis connects from the front. You’ll also need a small wooden block to support the end of the cable.”

Without waiting for a response, she picked up the electric drill, chucked a 1/8th inch drill bit and drilled a hole in the firewall. Then she opened the drawer where leftover pieces of Nyrod were kept, found an outer throttle cable tube and pushed most of it thru the hole. Finding a scrap piece of basswood engine bearer material in the box, she cut off a one-inch piece and drilled another 1/8th inch hole thru it. This she screwed to the motor mount and looped the end of the Nyrod thru it. Finally, she secured the throttle cable tube with ZAP cyanoacrylate glue at the firewall and at the support.

“Now you’re home-free, Billy,” she said. “Just make a stranded steel cable and slip it inside.” Just then she heard the garage door open.

“There’s your father already and I haven’t even begun to make dinner yet,” she said with a tone of disgust with herself as she looked around the shop for her cane.

Jim met her in the hallway as she climbed the stairs. He was a cheerful and distinguished-looking businessman in his mid-forties, a few strands of gray hair. He was wearing a three-piece suit and he was carrying a briefcase in one hand and Wall Street Journal in the other. He embraced his wife and asked her how her leg felt today. He preceded her to the kitchen in order to prepare a chair for her so they could talk.

As she sat down, she hooked the cane on the edge of the table. Doing so, she realized that the bottle of ZAP was still there in her hand. Jim noticed it too. His face became white as porcelain, his mouth opened as if in horror. He dropped into the other chair at the kitchen table, held his head in his hands.

“You’ve been working in the shop again,” he declared, frustrated and disappointed.

“Well, Billy needed help with...”

Jim interrupted by placing both hands palm down on the table. With anguish in his eyes he said, “But my darling, that won’t bring him back.”

###

Reprinted from TCRC *Flare-Out*, March 1985.

Badger Hair Brush

by Dewey Goddit

Someone brought a really gorgeous airplane to a club meeting a while ago. It had a sunburst color scheme on the top and a checkerboard on the bottom. The fuselage was an elaborate flow of pinstripes in about five colors. He said he painted it by masking the pattern with plastic electrical tape, and then he laid down each color with a badger hairbrush.

Well, I decided right then that I wanted a fancy paint job like that on my Smog Hog. So I went down to the pet store and asked for a badger hair brush. They told me that they don't get much call for hair brushes for badgers, but they assured me that a regular dog brush would work just as well.

So I bought a dog brush. It was a big job with stiff nylon bristles, a wooden back, and a plastic handle. I bought a can of dope with a big opening in it so that I could dip the brush into it, and I painted on the first color.

It didn't work very well. The bristles scratched the surface, and the paint went on really streaked, not at all like the uniform coverage I saw on that plane at the club meeting. Big globs of paint dripped all over the place, and the brush pulled up some of the tape, and the paint ran under it.

Then the bristles started to dissolve. They came loose and stuck to the wing. Eventually the handle dissolved, and the brush fell into the paint can with a "kathoop."

About then I realized that I was the victim of a hoax. There just ain't no way to get a good paint job with a hair brush. I'm not going to listen to anything at club meetings any more...

Editor: Dewey! I think it's your ears that are clogged with globs of dope. You were given good advice, but you didn't listen carefully. That's a Badger Air Brush, dingdong, not a badger hair brush. It's a small spray gun that gives a fine, controlled spray.

Dewey: Well. Why didn't he say so!

Reprinted from TCRC *Flare-Out*, May 1982.

The Bolton Wing

by Dewey Goddit

Balsa USA's ad in the July 1984 issue of *Model Aviation* lists the marvelous features of their new Phaeton kit. Among these they mention that the plane has a Bolton wing. That's a new one for me. Being an aeronautical expert, I am familiar with the Eppler airfoil, the Hörner wingtip and the Fowler flap; but I have never heard of the Bolton wing.

And so I went down to my shop to consult my vast library of aviation knowledge. I searched thru the Sig catalogs, books authored by Higley, Platt and Zaic, even old issues of *Flying Widgets* magazine—not one word of the mysterious Bolton wing. I searched the public library and the university's engineering library, learning only that the Bolton River flows thru a remote part of England. I wrote to aircraft manufacturers and professional societies, all to no avail.

Apparently other people became interested in learning more about the Bolton wing too. Shortly after I let everyone know that I was researching the Bolton wing, a strange man in a trench coat, sunglasses and a wide-brimmed hat tried to purchase plans from me. This aroused my curiosity about the Bolton wing still further.

Digging deeper into more and more obscure manuscripts, I eventually uncovered several Boltons, all of which turned out to be dead ends. I discovered, for example, that the Bolton Wing of an abbey in Sussex was completed in 1742, and that the Bolton Wing of the Royal New Zealand Flying Corps maintained a fleet of Ford Trimotors in the late twenties, and the Bolton Wing was a dance step that enjoyed some popularity in Chicago in 1937.

I pressed on.

With a host of people helping me look for information about the Bolton wing, it was inevitable that rumors would begin to spread among the R/C community. Contestants preparing for the NATS heard that a contingent from the Middle West was developing a spectacular turn-around pattern airplane based on the Bolton wing. Newsletters buzzed about a new design from Japan that would revolutionize R/C flying. Protest committees formed among established contest flyers to prohibit the Bolton wing from

AMA sanctioned competition. *Model Aviation* was deluged with telephone calls and letters inquiring about this new technology. Ban-The-Bolton bumper stickers appeared.

As I found myself becoming embroiled in international controversy, the need to solve the Bolton wing mystery became greater and greater.

At last I think I have found the answer. It seems that an amateur kite flier, Count Max von Bolton of Austria, rumored to be an associate of Dracula, discovered a new method of making box kites. He used bamboo and ...

Editor: Dewey! Forget about Russian spies and Austrian vampires. There is no such thing as the Bolton wing. There was a minor typographical error in Balsa USA's ad that should have read "bolt on" wing, meaning that the wing is attached to the fuselage with nylon bolts.

Dewey: Ya but... what about...oh...ah...yeh? Good grief, why don't they be more careful!

###

Reprinted from TCRC *Flare-Out*, September 1984.

Flying in the NATS

by Dewey Goddit

Every year about this time I hear people talking about the experience of flying in the nats. “Are you going to the nats?” they ask. “Have you flown in the nats?” It sounded like a lot of fun; so I could hardly wait to try it myself, just to see what all the excitement is all about.

I read that the first week in August is nats week, so with eager anticipation I went out to the field in the evening in the middle of nats week. Sure enough, as the sun was descending low over the end of the runway, the nats activity was buzzing all around me. There were a few horseflies and lots of mosquitoes too, but I was eager to find out what the joy of flying thru one of the big clouds of bugs was all about.

I fueled up my Smog Hog and swatted mosquitoes as I pumped the Six-Shooter. Then I started the engine and taxied the plane to the end of the runway. Clouds of nats were lingering everywhere in the calm of the warm, humid summer air.

I advanced the throttle slowly and held a little right rudder as the sleek aircraft raced down the runway. It lifted off and transitioned into a gradual climbing right turn.

Just then, a swarm of nats swirled before me, forming an inviting target that lingered above the center of the runway. I turned my eager craft around and started a descent toward the cloud of pesky insects. After leveling out at about ten feet of altitude, I reduced power to half throttle and hurled my craft around, toward the hovering target.

I missed!

Aha, so that’s why people who have flown in the nats are so respected by their fellow flyers—those buggers are hard to hit.

But I was determined, for I have heard the term “a flier of nats quality” many times. I knew that it was a goal not easily reached. I wheeled my plane into a climbing turn in preparation for another strike. After turning towards the center of the field, I pushed the throttle all the way forward and aimed my plane into a shallow dive towards the shivering swarm. The engine screamed, the wings shook, my beady eyes glistened as my face snarled at the cowering enemy.

Brrt...brrt...kaaputt...brrt went the engine as it hit the center of the target. Great hordes of insects were drawn thru the carburetor and spit out the exhaust. The plane staggered thru the air for a while until the engine cleared itself. Then I executed a victory roll.

So that's what it's like to be a nats winner—ace of aces, flier amongst fliers. The sweet taste of victory was mine!

After I landed the plane, I noticed that there were thousands of dead bugs glued to the bottom and sides of the fuselage in great globs of castor oil. Yuk, what a mess to clean up! But alas, such are the burdens of fame.

At the next club meeting, the president asked if anyone would report on nats activity. I stood up and told about how the field was swarming with them in the evening and what fun it was to fly thru them. I related the experience of my victorious flight, completely revealing every detail.

When I finished, the meeting room was totally silent (they were obviously very impressed). After a long pause, the president said, "Thank you, Dewey. Now, would anyone like to report on the National Championships?"

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Just a Bit Nose Heavy

by Dewey Goddit

“Shoes must be worn,” said the sign on the door of Pete’s Pancake Palace. I looked down at my feet. Yup, my shoes were well worn...and muddy too. I wondered why Pete didn’t like new shoes. Perhaps he wanted to encourage a casual atmosphere. I looked for my flying companions. We met every Saturday morning before going flying.

“Hi Dewey,” Flip said as I took a seat in the booth beside him. Flip Smartly is the club’s engine wizard, and I had lots of questions for him.

“Flip,” I started, “I’m thinking of building a canard. Should I put the propeller on backwards too?” Flip choked on a mouthful of pancakes. After he recovered he said, “Golly, Dewey. I don’t quite know how to answer that.” I had stumped the experts again.

I continued to ask Flip more questions, but before I finished, the other guys got up and left. I guess they were eager to start flying.

When I arrived at the field, I was eager to fly too, but balancing my Smog Hog revealed that it was just a bit nose heavy. I explained this to Flip and on his advise I decided to add an ounce of weight to the tail. I rummaged thru my field box for a weight that would fit in the tail. There was a bottle of Hot Stuff—too light; a Higley Heavy Hub—too heavy; an old spinner—too bulky; a screwdriver—too long. Rats! Then I scrounged thru my pockets. A pocketknife, my watch, my wallet, my keys. Keys! A key ring with 6 keys on it was perfect. It was just the right weight, and the keys could easily be jammed between the longerons ahead of the tail wheel. I turned the plane over, wedged the keys in place and secured them with just a drop of Hot Stuff.

Now I was ready to fly. I understand that Hanno Pretner has to practice 8 hours every day in order to fly mode one. But a couple of flights once a week is sufficient for me. So I started the engine and taxied to the end of the runway. I tipped my cap in the direction of the sun and wiped my oily hands on my pants. Advancing the throttle slowly and holding a slight amount of right rudder, the graceful airplane accelerated down the runway. It

lifted off a little early and climbed steeply, so steeply that it was doing a loop right over the middle of the runway. I pushed down-elevator to stop the climb but it was already at the top of the loop, inverted. Too much down-elevator caused it to snap-roll upright. It seemed that the extra tail weight was not so desirable after all.

“Great Immelman take-off, Dewey,” someone shouted.

The elevator was much too sensitive now. A slight amount of down-elevator made it dive, and a slight amount of up-elevator made it shoot straight up. Up-down-up-down it went with the wings visibly bending every time I even thought about touching the elevator stick.

At last, mercifully, the engine quit during one of the more violent transitions. I tried to stretch the glide to bring the errant child home but it snap-rolled and spun into the swamp---deep into the swamp.

After several hours of trudging thru the muck with the help of three other sympathetic flyers and all of us looking like lost Yeti's, we were forced to give up. It was getting late.

Dejected, but not discouraged (never discouraged), I prepared to pack up my field box to go home. To my dismay, I discovered that in my haste to glue the weight into the tail of my airplane, I must have thrown the bottle of Hot Stuff into the field box where the CA spilled over everything, gluing together #64 rubber bands, tools, props, and all the other stuff in my box. Even my glow plug starter was glued--to the side of the fuel jug. I tried to unstick it by breaking it loose, but I pulled so hard I split the side of the fuel jug. Fuel began to glug-glug-gurble out the side and all over the floor of the field box. What a mess, I thought as I leaned over the box, surveying the damage and wondering how to clean it up.

At that very moment my sunglasses fell out of my shirt pocket into the field box. The metal rim of the sunglasses landed right on the terminals of my starter battery. Sparks flew. KAH-FWUMPF went the field box as it burst into flames. There was no way to put it out because the giant scale guys with their fire extinguishers had gone home. In fact, everyone had gone home, leaving me to helplessly watch the flaming field box in the semi-darkness of the setting sun. It was kinda pretty though.

I waited until the fire completely burned itself out. And then I walked to my car, more dejected (but not discouraged). I reached for my car keys.

Oh sh--!

Do you know how hard it is to hitchhike on a Saturday night when you are dirty, muddy and scorched?

On the following Saturday, I put on my worn shoes and met my friends at Pete's Pancake Palace again. Flip Smartly asked me if I had solved the nose-heaviness problem.

"Well I think so," I replied. "And I learned that if it ain't broke, don't fix it. And if it ain't fixed, don't fly it."

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Reprinted from TCRC *Flare-Out*, December 1984.

None for Me

by Dewey Goddit

A while ago I decided that my bachelorhood should run its course. I should find a wife and live in a house with a nice big workshop. Looking over the spouses' names in the club roster, I noticed that there were several similar wives' names. There were Marilyn's and Shirley's, but by far the most numerous name in the spreadsheet was "None." Isn't it odd that so many women named None would be attracted to R/C flyers?

No doubt these ladies are impressed by the dashing aviator sunglasses and the oily T-shirts that we wear, or our rugged outdoor lifestyles trudging thru the soybeans and climbing trees. Some probably like the urbane glider flyers, while others prefer the macho chainsaw engine types. What is it about women named None that they cannot resist R/C flyers?

And so I set out to find an eligible young woman named None with whom to share my R/C lifestyle. There couldn't be very many with such an unusual name, so I enlisted the help of a computer dating service to help my search.

"None?" asked the computer operator. "Is that pronounced *No-nay*?"

"Maybe," I said. "It sounds so romantically French, doesn't it?"

He couldn't find anyone in his database by that name. At first I feared that they had all married at a very young age to the first R/C flyer they met. But then he suggested that perhaps it was a nickname for Nanette. That struck pay dirt. There were lots of girls named Nanette. Before long I was dating one.

"No one ever called me None or Nonay before," she said, "just Nan or Nanny. But you can call me Nonay if you like. None sounds too ecclesiastical."

When I told her I was a pilot, she seemed very interested.

"Do you have your own airplane?" she asked.

"Oh yes, a Smog Hog," I replied with Yankee fly-boy nonchalance.

"Is that anything like a Cessna?" she inquired.

(Aha! She knows and understands airplanes, I thought. This is my kind of woman!)

“Well, sort of,” I said, “but a little smaller. Would you like to see it?”

She agreed, so we walked to my car. I threw open the trunk and said proudly, “There it is. How do you like it?”

“It’s a lot smaller than a Cessna!” she answered, her mouth wide open in astonishment. I could see that she was really impressed.

The next Saturday she accompanied me to the field to partake in the flying fun. I could tell that she felt right at home there, for as soon as I started the engine, she went back to the car and read a book.

I lost track of my lovely None soon thereafter. Whenever I telephoned her, I got a recording saying that the number had been disconnected. I often wonder if she ran off with one of the guys to whom I introduced her at the field.

Heartbroken but undaunted, I shall continue to search for another love with whom to share my R/C lifestyle. Somewhere there must be a gal who enjoys the sweet smell of dope fumes emanating from the basement, the sparkle of balsa dust in the sunlight of household air, the contented hum of a Dremel tool late into the night. And somewhere there must be a woman who enjoys long afternoons standing in the hot summer sun, inhaling exhaust fumes, and squinting into the sky amidst the roar of engines. Whenever I ask if there could be such a person, the reply is always “None.”

Oh where can she be?

###

Reprinted from TCRC *Flare-Out*, June 1984.

Painting the Outhouse

by Dewey Goddit

I was so flattered when the president of my model airplane club asked me to paint the outhouse. He knows what a good painter I am. I commend him for having the wisdom and the foresight to pick me for such an important assignment.

Being a good president of an R/C club, he knows what club members' talents are. Being asked is recognition of one's accomplishments in one's chosen field of endeavor. Our president certainly picked the right person for the job. I was so proud that I decided to put forth nothing but my best effort.

And so I gathered my brushes and tubes of oils, my palette and my palette knife. I packed my easel and my smock and my beret and I drove out to the field.

As I was setting up my equipment, I wondered why our president chose the outhouse. There really are better subjects—moonlight over the creek would be pretty, or the old rustic barn at sunrise, or even the woods off the end of the runway. Perhaps he wanted a memorial for the club's twenty-fifth anniversary. It was a challenge that only a painter of my caliber could handle. I was up to it.

I waited until twilight when the outhouse cast a long shadow into the parking lot and the bushes in the background glowed a rich green color. The outhouse was well weathered, chips of paint were falling off, and the bare wood underneath was exposed. It would have been a good subject for an Andrew Wyeth painting. The president surely has a sense for the artistic. I decided that the picture would be a pure still life. To show people might be indiscreet.

Then I made several pencil sketches in order to work out the right perspective. I labored for several days carefully selecting the proper shading and hue. When finished, it was beautiful. I could hardly wait to show it to the board of directors.

"It's done," I said to the president on the telephone. "The outhouse is finished. Would you like to see it?"

"Wonderful," he said. "I am eager to see it. I will look at it the next time I go flying."

“Oh, you needn’t wait ‘til then,” I interrupted. “I’ll bring it right over so you can see it right now.”

“Bring it over?” he asked with a puzzled tone in his voice. “You don’t have to go to that much trouble,” he said.

“No problem,” I replied. “I’ll be right there.”

I carefully put the completed canvas in my car and drove to the president’s house. His wife greeted me at the front door. She told me that he was working in his shop. So I followed a trail of balsa chips in the carpet to the workshop.

“How do you like it?” I asked as I held up the oil painting under his shop lights.

I told him all about how I had painted the outhouse. I told him all the details about how I had made the sketches and tried viewing the outhouse from every angle and every lighting situation and how much work I had put into it.

“That’s marvelous, Dewey,” he said, “but it’s not exactly what I had in mind...”

I asked, “Well, what did you have in mind?”

He looked deep into my eyes for a long moment. Then he looked at the painting. And then he looked back at me again and shifted his weight from one foot to the other as if he were deep in thought. Finally, his eyes lit up and he said, “Well, you see...I expected just an ordinary picture. But this...this is a real work of art---a beautiful still life that truly captures the spirit of our flying field. I’m sure that future generations of club members will treasure this painting far more than any mere photograph. Thank you so much, Dewey. You’ve done a wonderful job.”

I was so pleased.

The next weekend I went flying at the club field. As I was unloading my Smog Hog from the trunk of my car, I noticed the president himself working on the outhouse. He was scrapping the old, peeling paint with a paint scrapper.

It’s so good to belong to a club where one’s skills are put to good use, and an artist like myself is appreciated.

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Reprinted from TCRC *Flare-Out*, June 1982.

Float Fly Outbreak

by Dewey Goddit



What's all the commotion about the Mediterranean Float Fly? Apparently it's some sort of insect that attacks the pontoons of water-based airplanes. It probably started back in Monaco during the Schneider Cup seaplane races. For several years they had those races on the Mediterranean in the same spot, and the destructive little pests flourished in the warm water and the wooden hulls of those exotic airplanes—the fastest and most beautiful airplanes in the world at that time. Eventually the insects spread to the other Schneider race countries—England, The U.S., Italy and France. I don't know how the recent epidemic started in California. Perhaps the recent uncovering of Howard Hughes' Spruce Goose released some dormant hatchlings that survived from the great days of seaplanes.

Closing the California/Arizona border to float-borne airplanes seems a bit extreme to me because I don't think there are enough floatplanes in all of Arizona to allow the insects to spread. Aerial spraying also seems counterproductive, especially if floatplanes are used. That might spread the float flies even more.

But the biggest danger to us local flyers is the Annual TCRC Float Fly that will be held at Bush Lake. This will be the largest gathering of floatplanes and flying boats in Minnesota. And this event is held every year, just like the Schneider races used to be, so there is the danger that the next big outbreak of the dreaded float flies could occur among the beautiful seaplanes gathered there. It would be wise for all participants to carefully examine their pontoons and hulls before setting them in the pristine waters of Bush Lake. Look for the tell-tale worm holes and ...

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Reprinted from *R/C Modeler*, June 1982.

A Perfect Elephant

---by Klotz the Kat



Bob Hansing claimed that there is a perfectly carved elephant inside every bar of Ivory soap. All you have to do is remove the pieces that are not part of it.

He also observed that the less he moved the sticks, the better his airplane flew. Try this experiment: Watch the thumbs of someone who does not fly very smoothly. They are busy. Now watch the thumbs of a really smooth flyer. He lets the plane do the flying. As Bruce Anthony once said when lining up for a cross wind pass, "Just let the wind bring it in."

The electricity that powers your stereo contains every note of music ever written or will be written, perfectly performed. The stereo's purpose is to remove the sounds that are not part of it.

Inside every kit lies a perfect model airplane. All you have to do is to assemble the pieces that are part of it. The result will be an airplane that can fly perfectly. All you have to do is not interfere with it.

Perhaps this principle can be applied to life itself. You have all the abilities you need to become any kind of modeler and person you want to be. You need only avoid what is not part of it.

See ya at the field. Bring perfect sandwiches.

###

Acoustic Impedance

---by Klotz the Kat

Acoustic impedance and engine noise.

First, let's review electrical impedance. It is more familiar to most of us.

Electrical impedance is sorta like electrical resistance, but it includes the effects of capacitance and inductance as well as resistance. Like resistance, it is measured in ohms. It is important for a-c signals, especially those having a wide band of frequencies.

When connecting two electrical circuits together, it is generally desirable to match the impedance of the two circuits. For example, a speaker having an impedance of 8 ohms should be connected to an audio amplifier whose output impedance is also 8 ohms. This results in an efficient connection of the two devices.

But what happens if impedances are not matched?

Bad things happen, even to nice people. The signals will be attenuated, some frequencies more than others. Worse yet perhaps, some of the signal will be reflected back into the source where a piece of it may be sent again. For an audio circuit, the signal will be reduced, reverberated and distorted—very bad. The bigger the mismatch in impedance, the more the signal will be hammered.

There is an acoustic analog to electrical impedance. Consider the bugle.

The bell of a bugle is flared in order to match the acoustic impedance of the brass tube to the acoustic impedance of free space. Without it, the sound of a bugle or any brass instrument will be greatly reduced and distorted. One can hear this by playing the mouthpiece of a trumpet without it being attached to the horn. A tune can be played but it is weak.

If bends are necessary in a musical instrument, they should have a large radius to minimize internal reflection—this is why a Fluegel horn is mellower than a trumpet.

The muffler of a model airplane engine can be thought of as a low-pass filter acoustically coupled to the exhaust port (mouthpiece) of the engine at one end and free space at the other end. One can measure the low-pass cutoff frequency of the muffler by holding the muffler to one's ear (engine not running,

please). Notice that all sound is attenuated, especially the higher frequencies. You can compare one muffler to another by this means. Bigger mufflers lower the cutoff frequency just like bigger coils lower the cutoff frequency of an electrical low-pass filter. Baffles act like capacitors. Backpressure is like resistance, etc.

But virtue is sometimes in the ear of the beholder. For a muffler, we don't want an efficient coupling of the exhaust port to the air. We want a poor connection with a low cutoff frequency. So we build a muffler to be like a really bad bugle.

Instead of a bell, we round the exhaust tube inward to reflect sound back into the muffler. We install baffles to create further internal reflection without interfering with the passage of gas and sharp bends to misdirect sound into self-cancellation.

See ya at the field. Bring sandwiches quietly.

###

Biplane Ailerons

--by Klotz the Kat

I'm often asked why biplanes with ailerons on only one wing don't roll very fast. It's because the wing without ailerons resists the roll. It's simple to understand. Just pick up a wing and hold it in your hands. Roll it left and right and fan the air. Feel the resistance with your hands. But no. There's much more to it. The resisting force in flight is much greater than that. Let me explain why.

Imagine that you are an air molecule. You are just sitting there, minding your own business, when suddenly a wing comes along and bops you on the head. That's lift at your expense.

Now imagine that the wing is rolling downward when it strikes. You get smacked even harder. In fact, the faster the wing is rolling, the harder your poor bean gets bumped. The wing gets even more lift at your expense. Is there no end to this indignity!

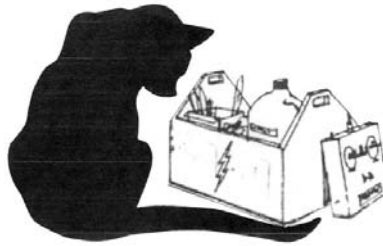
If the wing were not moving forward, only you and your immediate neighbors would get hit. But a moving wing wallops all the air molecules along its flight path. Not just your immediate neighbors, but your cousin Bob in the next neighborhood and even your far-away aunt Wilma (you never liked her anyway). The faster it's going, the more of your friends and family get whacked, all of them pushing back on the wing. Their revenge is a huge increase in induced drag.

Thus the aileron-less wing that is being forced into a roll increases its lift in the down-going panel and reduces its lift in the up-going panel in proportion to the forward speed of the airplane times the roll rate. It's like it has virtual ailerons opposing the roll. This explains why biplanes with ailerons on only one wing fly slowly, roll slowly, lose speed in a turn, need big ailerons and interplane struts.

###

Bounce

---by Klotz the Kat



“That was a good landing—all ten of them.”

In order for a taildragger to not tip over on its nose, its wheels must be ahead of the center of gravity. The further forward, the rougher the ground that can be tolerated and the better the tailwheel will grip the ground, but the worse the tendency to bounce.

When a taildragger lands, the impact of the main wheels tends to push the nose up, increasing the angle of attack, lowering the tail, and increasing lift. And the plane is flying again. Eventually airspeed is reduced and it falls to the ground again, maybe harder. The nose is rotated again and the plane becomes airborne once again. This process continues until all flyable airspeed is exhausted. The plane may continue bouncing due to a phenomenon known as “loping.”

Loping occurs in a taildragger when the bounce of the main wheels causes the tailwheel to slam into the ground while the main wheels are in the air. Then the tailwheel bounces, slamming the main wheels onto the ground. This argument between the front and rear continues until momentum is lost. But the severity of the loping can increase in the interim.

Loping can occur in trike-gear aircraft too. If the nose wheel strikes the ground before the mains, the nose is pushed up severely, slamming the mains onto the runway. Being behind the CG, the rebound of the mains rotates the nose downward so that

the nose wheel slams down again, maybe even harder than the first time. This process repeats.

Loping in a trike airplane can start just by taxiing. If the mains hit a bump, weight is shifted forward onto the nose gear. It rebounds, returning weight backward. This pingponging can grow, especially if the plane is accelerating. The only way to stop it is to stop the airplane. The longer the distance between the mains and the nose wheel, the greater the tendency to loping. The mains being too far aft of the CG will increase loping too. Stiff struts and bouncy wheels will aggravate matters.

Trike gear has less potential for bounce because the main wheels can be placed closer to the center of gravity. Also, when the mains touch down, the impact tends to lower the nose and the angle of attack, reducing lift. Some trike gear designs actually have negative angle of attack when sitting on all wheels. This holds the plane on the runway much like a spoiler on a racing car. Trikes have more positive ground steering because the nose wheel makes firmer contact with the runway than a tailwheel, especially at higher speeds.

Another little-known cause of bounce is main wheels being too far apart. You may be shocked to hear this, for wide apart is generally considered to be good for ground handling. It usually is because it improves directional stability when rolling along the ground. But what happens when the plane lands and one wheel hits the ground before the other? A lateral form of bounce occurs from one wing to the other. A common sight for P-47s.

What to do ?

One might think that soft tires and springy struts would increase bounce. Generally not. More often, bounce is aggravated by the landing gear being too stiff. Rigidity does not absorb energy, it reflects it. The hardness of the runway contributes to bounce for the same reason. Some early racing planes, such as the Howard Ike, had landing gear so rigid they could not land on concrete runways because of the uncontrollable bouncing that happened.

Moving the main gear close to the center of gravity reduces bounce because impact does not rotate the airframe. The Spitfire, for example, is quite bounce resistant, but it tips over easily on rough ground.

Moving nose and main gears closer together reduces bounce and loping but it degrades tracking and increases the tendency tip over on rough ground and cross winds. A widely used compromise between noseover and bounce for taildraggers is to locate the main-gear axle directly below the leading edge of the wing.

Oleo struts help to absorb impacts. But the spring tension must be just right—stiff enough to not bottom out, but soft enough to absorb shock. The same may be said of tires—not too hard and not too soft.

If your plane rebounds into the air as a result of a severe impact, head off further bounce by inching up the throttle slightly. Apply down elevator if necessary to bring the nose level. This will increase airspeed, prevent a stall and lower the rate of descent. If done correctly (these things are learned by experience), no further bouncing will occur.

See ya at the field. Bounce a sandwich off me.

###

Call It in German

---by Klotz the Kat

The next time you fly your Fokker or Focke Wulf, call out your maneuvers in German. Here are a few translations.

<u>English</u>	<u>German</u>
Take off	Start
Figure eight	Liegende Acht
Roll	Rolle
Loop	Looping
Stall turn	Turn
Fast flypast	Snell vorbei Flug
Slow flypast	Langsam vorbei Flug
Traffic pattern	Platzrunde
Descending circle	Sink Kreis
Split-S	Abschwung
Landing gear	Fahrwerk
Retracts	Einzieh Fahrwerk
Flaps	Klappen
Landing	Landung
Airplane	Flugzeug

Translation by Stephen Durstein, Lufthansa pilot and Top Gun competitor.

See ya at the Field. Bring bratwurst und beer.

###

Be Careful What You Wish For

---by Klotz the Kat

Be careful what you wish for...
If you get a big shop,
 you will have clutter.
If you have too many tools,
 you won't find them when you need them.
If you fly only when the weather is good,
 you will always be a mediocre pilot.
If you have many airplanes,
 you will spend all your time in maintenance.
If you design your own,
 you will have few airplanes.
If you fly only ARFs,
 you will miss the joy of creation.
If you build to museum quality,
 you will miss the thrill of flight.
If you're perfect at what you do,
 you won't learn anything new.
If you don't try something new,
 you won't learn.
If you don't learn something new,
 you will be bored.
If you try too many new things,
 you will have endless malfunctions.
If you say, "that's good enough,"
 it won't be.
If it's never good enough,
 it won't get done.
Be careful what you wish for...

See ya at the field. I wish for sandwiches.

###

Cooling

---by Klotz the Kat

There's an urban legend going around that says the ratio of cooling outlet area to cooling inlet area for cowled model engines should be 3:1. Is it true? Maybe.

I ask you to look at the cowls of the Nieuport 28, AT-6, B-29, P-47, Pitts Special, FW 190, GeeBee, Cessna 152, Zero, Extra 3000, Sukoi 31, or any full-sized air-cooled airplane of your choice. You won't find this ratio or anything even close to it. In many cases, the exit is less than the inlet.

Haven't the designers of these airplanes read the chat rooms?

To be fair, under certain very specific conditions, the 3:1 rule sorta works. But those who spread this legend don't tell you all you need to know. Here's the rest of the story.

The 3:1 rule applies only to cowls ...

1. without baffles or any other internal air direction,
2. whose internal volume is much larger than the volume of the cylinder(s) and
3. in which the incoming air travels straight to the cylinder without any change of direction.

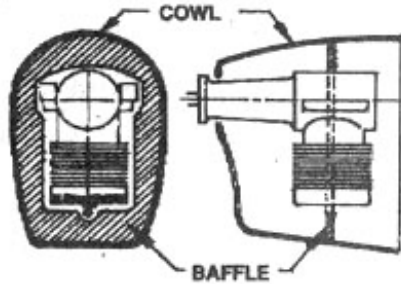
Under these conditions, the 3:1 rule approximates the airflow of an uncowed engine. It is an attempt to get the air to flow around the engine as if the cowl weren't there!

The location and shape of the inlet and outlet must be carefully adjusted to accomplish this. For example, if the inlet hole is too big or improperly positioned, air will flow *around* the cooling fins instead of *thru* them. For this type of cowl to work, the inlet hole must squirt air directly on the engine, especially the cylinder head.

It is an inefficient and unreliable method, requiring a lot of tinkering to get it working right. It may not work at some airspeeds and some attitudes. It is uncalculatable. It's a kludge. That's why it is never found in full-sized aircraft. And the holes make it useless for scale models and draggy for racers.

A much better method is to follow full-size methods—use a baffle, duct or other airflow direction methods.

A baffle directs all incoming airflow thru the cooling fins of the engine. It has nowhere else to go. The volume of air flowing thru the cooling fins (the only air that is useful for cooling) is proportional to the pressure difference between the front and back of the engine times the area of the space between the cooling fins. As long as the intakes and outlets are at least as big as the area between the cooling fins, airflow will be at least as great as an uncowled engine. If either is made larger, the airflow will be even greater. A cowl of this type is known as a “pressure cowl” because of the large amount of compressed air inside.



So why aren't baffle patterns included in engine user manuals? Because we modelers don't ask.

And what about the fact that heated air expands? How much bigger should the outlet be to accommodate the increase in volume due to heat?

By actual measurement of the exiting air of a cowled and baffled OS 108 2-cycle engine in flight at full throttle in ambient air of 90 degrees F, we have observed an increase in temperature of 30 degrees F. Using Charles Law ($V/T = k$), we calculate the increase in volume to be only 6 %.

See ya at the field. Bring really cool sandwiches.

###

Copyright Law For Modelers

---by Klotz the Kat



The Copyright law says you cannot copy copyrighted material. However, there are lots and lots of exceptions known as the Fair Use Doctrine. The law on fair use is murky and no real definition has ever emerged. It all depends upon the particular facts and circumstances involved. But here are the common exceptions that are important to modelers.

Libraries are allowed to make copies for you without permission from the copyright owner. For example, you can call the AMA Library and ask them to send you a copy of a three-view from a book in their collection.

The Fair Use doctrine of the copyright law allows you to photocopy material that you own for your own use for pattern-making purposes. For example, you may photocopy the wing ribs from a copyrighted plan so that you can glue them to a sheet of balsa and cut them out on your scroll saw. You may also photocopy insignias and markings in order to make paint masks.

You may quote excerpts from a copyrighted article when writing a product review for your club newsletter.

A copyright extends only to the material contributed by the author, not to preexisting material included in the work. For example: a photo of the Red Baron's tri-plane in a magazine. It's yours to copy.

You may copy material for your own use in order to avoid destroying the original. For example, you can copy a kit's instruction book for use in your messy shop where it will have 5-minute epoxy spilled on it.

You may include copies of color schemes, 3-views and photos in a documentation book for competing in sport scale contests. FAI scale contests require three copies. It would be unreasonable to require you to buy three originals and rip out the

pages in order to make up a set of scale documentation. It's okay to make copies instead.

You may enlarge copyrighted plans that you own in order to scratch-build a larger version of the airplane. The owner of the copyright would want you to do that.

You may make back-up copies for your own use in case the original is lost or destroyed.

You may sell or give away copyrighted material that you own.

Copying for the purpose of criticism, comment, parody, news reporting, teaching, scholarship, research, or personal use is generally okay.

As a general rule, you may copy if it doesn't deprive the author of income.

Here are some cases in which modelers should not copy:

Don't copy plans, decals or articles for the purpose of giving them away or selling them.

Don't copy an entire article or most of an article and reprint it.

Crediting the original author doesn't make it right.

Don't make patterns for someone else.

Don't make scale documentation books for someone else.

Don't copy for commercial gain.

If a copyright owner objects to your copying, all they can do is ask you to stop. If you continue to copy after being asked to stop, they can sue for damages.

If a copy service balks at copying something for you, ask to sign a waiver. Kinkos and many other copy services have these forms. Signing says you take responsibility and lets them off the hook.

For more information google "fair use" on the web. Start with <http://www.copyright.gov/title17/92chap1.html#108>.

If still in doubt about your rights, see a lawyer.

See ya at the field. Bring non-proprietary sandwiches.

###

The Detail Man

---by Klotz the Kat

During World War One, the German navy discovered that their brightest people did not make the best submarine captains. The successful *Kapitäns* were well above average intelligence of course, but not the most brilliant. Very bright people are constantly being distracted by ideas. Light bulbs flash above their heads and bells ring in their brains. They cannot concentrate on a single task for long periods of time. They belong in boardrooms, coffee houses and lecture halls. They lack persistence. They lack control. They are not well suited to command a submarine. The Kriegsmarine needed commanders who could patiently track every detail of a complex boat all of the time, minute after minute, day after day, month after month. They had to know what's important and be ever thorough and constantly vigilant. It needed people who could follow rules but have the wisdom to change the rules when necessary. It needed the Detail Man.

The Johns Hopkins University made a similar study. It tabulated pilot errors, cataloging them by type. It found lack of attention to detail to be the major cause of pilot error. Pilots would fly with known mechanical problems, run out of fuel or land with the gear up. Interestingly, women pilots "tend to be more cautious and pay greater attention to details and rules." The Detail Man can be a woman.

But the Detail Man is not merely a perfectionist. The Detail Man does not waste time on unnecessary details. Knowing what's important is the essence of the Detail Man. He is not distracted by clutter. He knows how to know what's important. Like a U-boat commander, he hunts down the tiny but important in the ocean of the unimportant.

Wilber Wright was a Detail Man. Madame Currie was a Detail Man. Patty Wagstaff is a Detail Man. Even Albert Einstein was a Detail Man.

It is fascinating to watch the best modelers in action at an event like Top Gun. People like Greg Hahn, Terry Nitsch and Corvin Miller are admitted perfectionists. Every move oozes attention to detail-- planned, prepared, rehearsed and perfected.

They fly every round. Their equipment is neat, everything works as it should. No frills. Nothing fancy, nothing unnecessary, nothing fails. Surrounded by noise and commotion at the flight line, they are oblivious to it all. They speak softly and clearly to the judges as if no one else were around. They are focused. Being confident, they are relaxed. Even their score forms are so neatly printed one suspects that a calligrapher is on the pit crew. They are consummate Detail Men.

You could be a Detail Man. Does the flat on your music wire match the taper of your setscrew? Do you test paint for compatibility? Do you inspect a new glow plug to be sure the coil is exactly in the center? Do you eagerly rip out a part and redo it if it is not right? Do you use an expanded-scale voltmeter before every flight? Do you wonder why your engine sounds a little different and develop a plan to find out why? Do you enjoy doing a hundred loops in a row until you get it right every time? Have you planned where to land if your retracts fail? And do you love it all?

Are you a Detail Man?

###

Epoxy or Polyester?

---by Klotz the Kat



Which is better for glassing, epoxy resin or polyester? It's a Ford/Chevy and Beta/VHS question.

Being a cat, I don't use either. It's too hard to lick the stuff out of my fur. But here's what I've learned at the field.

Both produce sufficiently hard surfaces, but polyester is softer. This makes polyester sandable. Epoxy is harder, it is more difficult to sand. Wet sanding works best for both types.

No difference in weight. However, polyester can be spread a little thinner and it is sandable, so less of it tends to remain on the model.

Polyester stinks. It takes weeks for the smell to go away. Epoxy is nearly odor-free. Epoxy favors peace at home.

Polyester cures with a slightly sticky surface. Primer adheres well. Epoxy requires a light scuffing.

Epoxy resin must be mixed exactly. Try this experiment. Mix some epoxy resin precisely, pour it on waxed paper. Now mix some epoxy at 45:55. Pour it out and let both batches cure. Note that the mismatched batch is softer and has a waxy surface—it didn't cure completely.

Polyester is not fussy about proportions. A variance in the amount of catalyst affects only the setting time.

The catalyst of polyester resin has a short shelf life. Don't use old stuff—it won't cure.

Polyester catalyst is more toxic because it is more concentrated. Always wear latex gloves when working with any kind of resin. For large jobs, wear a respirator and use a window fan.

Don't thin either. Try this experiment. Mix some resin (either one); pour half of it on a sheet of waxed paper. Dilute the

remainder 10% with alcohol or a thinner of your choice. Pour it on waxed paper and let both cure. Observe that the thinned resin is soft, flexible and it has an oily surface. Thinner prevents complete curing.

Epoxy resin seems to adhere to balsa a little better, but that might vary with conditions.

See ya at the field. Bring well cured sandwiches.

P.S.: Recommended movie: "***Winged Migration.***" Great flying scenes, many filmed from R/C airplanes.

###

D'Alembert's Paradox

---by Klotz the Kat

Is frontal area a valid measure of airplane drag?"

It is not. Thin airplanes and fat ones have about the same drag, everything else being equal. Drag is more closely related to total surface area and shape than frontal area.

But the fat body has to move more air out of the way and move it farther. Doesn't that require more energy? Not necessarily.

Air speeds up as the body pushes it aside and the pressure it exerts on the front of the body drops. Then, once the thickest portion of the body has passed, the air converges behind it. Velocity decreases and pressure rises, increasing pressure on the rear of the body and pushing it forward as you might squeeze a watermelon seed out from between your fingers.

If air weren't viscous, the work done in moving air aside would be recovered as it converges behind, and there would be no drag at all. This oddity of physics was discovered by the French mathematician, Jean d'Alembert (1717-1783). It is known as D'Alembert's Paradox.

Reality is more complex. Air develops a boundary layer, which contains turbulent air that is dragged along with the body, thickens toward the tail, forming a wake. The wound that was opened in the air as the body arrived does not heal completely after it has passed. The scar left behind is drag.

(Summarized from an article by Peter Garrison in *FLYING*, May 2002.)

See ya at the field. Bring fat sandwiches.

###

Fuel Foaming

---by Klotz the Kat



Fuel causes some of the most mysterious engine problems. Water in the fuel can make an engine overheat or not idle well. Foaming makes an engine suddenly quit in a non-repeatable fashion. Dirt can make an engine quit at the damnedest times. Unreliable operation results if the plug does not match the fuel. Etc., etc. Here are a few principles to be aware of.

Hi nitro fuel needs a cool plug, and low nitro fuel needs a hot plug. Four-cycle plugs are hot plugs. Some engines, e.g., Supertigre, require low-nitro and low oil fuel to run well. For these, use a hot plug. Some 2-cycle engines run best on a 4-cycle plug.

Particle contamination can plug a needle valve, causing an engine to run lean or quit. Fuel filters block only very large particles. To test your fuel, pour some from your fuel tank into a wine glass, hold the glass up and observe it in bright sunlight. (If you do this at the field, you might have some explaining to do.) Small particles will sparkle. If you detect dirt in the fuel, you will have to clean the carburetor too—particles can linger a while in the carb body before they go into the spray bar. For stubborn cases, take your dirty carb to a jeweler for ultrasonic/high pressure cleaning.

New fuel tanks tend to contain plastic shavings left over from milling the opening. Blow them out with compressed air or flush them well with alcohol before assembly.

Fuel foaming causes the engine to suddenly run very lean. It tends to appear on the third maneuver of a flight. Before then, there is not enough air in the tank for foam to form. Always shock-mount the tank with foam rubber. Test for foaming with the

tank only half full. The bigger the engine, the more susceptible it is to foaming because the vibration is greater.

Avoid 4-cycle fuel that contains castor oil in a 4-cycle engine. It will eventually gum up the valve lifters. Castor oil provides some protection from lean runs but it is not worth the problems it causes, even in 2-cycle engines. It's a leftover from the past when R/C airplanes had poorly milled engines and no throttles. It is no longer needed in modern engines. Use synthetic oil and always tune the engine to less than peak RPM on the rich side. You can't be too rich (or too good looking).

Some fuels are prone to foaming. Try The World Famous Klotz The Kat Shake Test in the hobby shop: Hold a jug of brand X fuel in one hand and a jug of brand Y in the other. Shake both vigorously, and then stop. Both will foam and dissipate. Buy the fuel that dissipates foam quickest.

Higher nitro increases power but not by very much. Higher nitro makes the needle valve less sensitive. For tightly cowled engines with poor airflow, try using higher nitro fuel at a very rich setting. This will yield the same power as lower nitro fuel, but the richer setting will increase cooling.

Some engines are fussy about fuel and some aren't. For example, an OS 108 will run on old fuel, but a Saito 150 won't. In general, it doesn't pay to keep old fuel. Buy a fresh jug only when you need it and don't keep fuel over winter.

We need a litmus test for fuel that will tell us the %oil, %nitro and %water. Any ideas?

See ya at the field. Bring fuel for a hungry cat.

###

Internet and GPS

---by Klotz the Kat

In a previous column I predicted that our present method of radio control will be replaced with a two-way Internet protocol. No more frequency boards. No more shoot-downs. No more having to say you're sorry. Like email, just log on and fly. The technology is here. Bluetooth is but one example. It will happen. Can't stop it.

It will allow downloading of parameters such as airspeed, engine temp, etc. for realtime warnings such as "Two minutes fuel." Or for later playback and analysis on your computer. Most of this is software, so it will be cheap.

Now consider the addition of Global Position System (GPS). A modern GPS receiver consists of three chips—a computer, a spread-spectrum receiver and a microwave strip antenna. Someday these will be combined into one chip. No doubt a lab prototype already exists. Again this is small and cheap enough to be added to our receivers.

Then the receiver will know the airplane's position and altitude in real time. Its computer can then compute the airplane's climb rate, ground speed and velocity in all three axes. These can be telemetered down to the transmitter (aka "workstation" in computerspeak) to be further downloaded to your home computer where you can plot 3-D displays of your maneuvers or maybe engine temp versus airspeed.

Don't stop reading. It gets even more interesting.

Knowing position, velocity and climb rate, it is possible for the onboard computer to predict the position of the airplane for the next few seconds. If this too is telemetered, other airplanes in the area will receive it too.

By comparing their own predicted flight path with the predicted flight paths of nearby airplanes, the intersection of two predicted flight paths reveals the potential for a mid-air collision. Air traffic controllers call this a "conflict." It can be easily prevented by evasive action.

To prevent a mid-air, all we need are some common right-of-way rules such as "if the other plane is descending from the left, pull up and turn right" until the conflict disappears. But first,

the transmitter would sound an alarm. If the pilot does nothing to prevent the conflict, the transmitter (workstation) would do it for him—and maybe reprimand him for not taking action.

This same idea could be used to recover from a spiral dive or prevent flying over the pits. Even autoland.

Once we have Internet protocol and GPS hardware, everything else is just software. And software costs nothing to reproduce.

See ya at the field. In the future, bring sandwiches.

###

An International Coalition

---by Klotz the Kat

I know a modeler who has formed his own international coalition.

He is building a scale model of a **Russian** airplane designed by a **Jew** that was produced in the **Ukraine**. It uses a **Japanese** engine that runs on gasoline from **Saudi Arabia**. It sports a propeller from **The Czech Republic** and a muffler from **Ontario**. The plans were drawn by a CAD program from **India** and plotted on a printer from **Malaysia**. The wood comes from **Honduras, Costa Rica** and **Finland** that was cut with a scroll saw from **Korea** and finished with **Norwegian** sandpaper. The pushrods are of **South African** titanium manufactured in **China**, but the wheels come from **Chicago**. The pilot figure is made in **Quebec** and the instrument panel comes from **Florida**. It will be controlled by a radio from **Taiwan** powered by batteries from **Singapore**. The trim paint comes from **England**.

This modeler is building the airplane per FAI rules published in **Paris**. He hopes to qualify for the **American F4C** team in **Indiana**. If successful, he will ship the airplane on a **German** airline to **Poland** to compete in the **World Championships**.

See ya at the field. Bring ethnic food.

###

The Only Truth

---by Klotz the Kat

I know a modeler who folded a paper airplane while traveling on a Northwest Airlines flight. Then he launched the plane down the aisle. Now he claims to have built a model airplane that flew 600 mph at 35,000 feet.

We can also say that the airplane flew only 10 mph at an altitude of 5 feet.

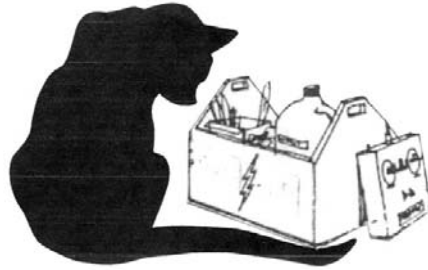
Please note that both claims are completely and equally true!

Please remember this example when someone presents an idea that they insist is the one and only truth.

###

Is Big Better?

By Klotz the Kat



Is big easier to transport? Is big cheaper to build? Is big easier to assemble at the field? Does big have lower operating costs? Does big mean less maintenance? Is big more reliable? Is big safer? Is big quieter? Do big 3-D airplanes hover better? Do the biggest airplanes win Top Gun?

Consider the Spitfire. Its small tail and short, close-together landing gear—"little duck feet," as Mike Kuller calls them—is not conducive to good stability and ground handling at any size. But when scaled up to giant-scale size, the larger wheels present less drag in the grass, more air flows over the tail because it moves faster and the control surfaces receive more prop wash. When it starts its characteristic ground loop, a big Spit moves slower, giving the pilot time to correct with the rudder. In this case, big means better handling all the way up to full size and maybe beyond.

The J-3 Cub doesn't have the Spit's problems. Big tail, big wheels, light wing loading and big control surfaces make the plane fly in a scale-like manner even in small form. Try this experiment: observe 1/3-scale Cubs and 1/4-scale Cubs which are plentiful. Observe how they fly. Do you see any difference in performance? Given equally built and flown airplanes, you won't.

The principle is clear: performance improves as size increases, but only to a certain point. Beyond that point, gains in performance are insignificant. Other problems appear. Big becomes less better.

The optimum size of a model can be very small. Consider the Howard Pete. It has always been popular among free-flighters. The span of its stab is almost half its wingspan. Its enormous tail, low aspect ratio and long fuselage are ideal for rubber power. Its optimum size is smaller than the IMAA minimum.

The giant scale movement started about the time that Dave Platt argued that the optimum minimum size of a WWII fighter was 1/5th scale. Time has shown his calculations to be correct. One need only watch Jeff Foley fly his 1/5th scale ME 109 (winner of NATS, three Top Guns, etc.) to be convinced of this. So realistic, one cannot distinguish his model from a full-size ME 109 in flight. Bigger could not be better.

Some airplanes actually lose flyability if too big. Models of classics such as the Buzzard's Bombshell, Aeromaster, Taurus and Goldberg Falcon have been scaled up but they never became popular. Why? The tail volume, dihedral and other factors were just right for the original size. That's why they were so successful. When scaled up or down, their design parameters are no longer optimum, so they fly no better than the originals.

Last year, all scale NATS classes, all Top Gun classes except team and both Scale Masters classes were won by airplanes of less than average size. In the year before, Top Gun was won by the smallest airplane in the whole event.

But there is one parameter that seems to grow with size. Big is impressive. Big draws attention.

See ya at the field. Bring big sandwiches.

###

Klotz Predicts

---by Klotz the Kat



Klotz predicts...

--Turbine engines will eventually cost less than 4-cycle engines. Why? Because they have fewer moving parts.

--Two-cylinder engines will become only slightly more expensive than single cylinder engines because they have the same number of part types.

--Retracts will be programmable. That is, you can adjust the up-angle, down angle and rake. They will also become slimmer and sturdier.

--Radios will have more channels. At least 12. It's just software.

--Transmitter displays will be head-up. Information will appear in a transparent screen attached to your eyeglasses that you can read without re-focusing. This will allow you to keep your eyes on the airplane and read the display at the same time.

--Electronic trims are here to stay--not because they are better than mechanical trims, but because they are cheaper. Software always replaces hardware.

--Radio control will become two-way. It will become a wireless Internet protocol similar to Bluetooth. This permits a ground display of airspeed, RPM, engine temp, GPS position, etc., even a record of flight path for later playback on your computer.

It is interesting to note that the term "Ethernet" derives from early internet experiments in which radios, not telephone wires, were used.

--Frequency boards will disappear. No more radio conflicts, no more interference, no more impounds. With a spread-spectrum carrier and TCP/ICP protocol, only one channel

is needed for all. You, not the airplane, will have a digital IP address. Like email, just log on and fly.

--We will have fiber-optic servo cables.

--The traditional wood kit is history. ARFs, prefabrication and plans will predominate. Plans will include a list of suppliers for the parts you don't want to build—wood parts from a kit cutter, fiberglass parts from a specialist in glass, vacuum-formed canopies from a mass-producer of vacuum formed parts, wheels and struts from someone like Robart, dry transfer decals from a graphics specialist like Pro-Mark, etc. This will result in a much greater variety of airplane types available for you to build. And the amount of building required will be adjustable to your abilities, money and time.

--Model airplane magazines will be available on-line.

This will eliminate the cost of paper and mailing, and will include videos of airplanes in flight. This prediction is a no-brainer because R/C Modeler has already begun this transition and Model Aviation is close behind. This will cause a shakeout in the model press. European magazines will be more available here at a much lower price.

--Formal competition at the local level will cease to exist.

Competition at the national level, such as Top Gun, NATS, and Scale Masters will thrive, and few will care who wins. Why? Because just being there is reward enough.

--Turbo-prop engines are almost here. They will find widespread use in military RPV helicopters because of their ability to lift payload.

--Fuel injection will replace carburetors.

--Technology will cause a trend to smaller airplanes.

--Fuel cells will revolutionize electric airplanes, replacing the traditional glow engine. Scale model ARFs with retracts and flaps will be commonplace.

--National security will require all RC pilots to be registered and licensed because of our perceived ability to build missiles.

###

Props and Jets

---by Klotz the Kat

A propeller sucks in air from the front and shoots it out behind. The acceleration of the air produces a reaction force that we call thrust. The increment in the velocity of the slipstream is surprisingly small—a few knots—because the volume of air passing thru the propeller is so large. A propeller 12 inches in diameter advancing at 50 knots chews its way through more than 66 cubic feet of air per second. At sea level, that's 5.3 lbs of air per second. To overcome the drag of a small airplane requires accelerating 5.3 pounds of air by very little.

For best efficiency, it is better for a prop to add a little speed to a lot of air than to add a lot of speed to a little. At higher speeds, propeller effectiveness declines because blades must be set at ever higher pitch angles. The courser the pitch, the less lift the propeller generates parallel to the line of flight. In the extreme, we would have pitch so severe that we have a propeller turning very slowly while the airplane advances rapidly—a feathered prop, for instance—the blade lift ceases to provide any thrust component at all.

One solution might be to spin the prop faster, so that its blades could have a flatter pitch. But blade drag increases rapidly with tip speed. We might solve this problem by reducing the prop's radius; but then there isn't enough blade area to generate a large amount of thrust. This convergence of limitations means that props have fundamental speed limits.

A turbojet engine produces thrust by an entirely different mechanism. A turbine is like a rocket—a slowly exploding bomb with a hole in one end.

The thrust of a jet engine is regulated primarily by the amount of fuel fed to it for compression, combustion and exhaust. Any unburned portion of air merely adds to the mass being ejected.

The thrust of a rocket is constant regardless of its speed. As the rocket accelerates, the speed difference between the velocity of the exhaust and the surrounding air shrinks. The same thing happens in a jet; the faster the airplane moves, the less difference there is between the velocity of the exhaust gas and the

surrounding air, and the higher the efficiency of the powerplant. That's the major advantage of a jet over a prop for fast flight. The other is that large jet engines are essentially similar to small ones; they do not suffer penalties of scale. If you need more or less thrust, just make the engine bigger or smaller. That's why models of jet airplanes behave so much like their larger brothers.

###

--Adapted from an article in *Flying*, November 2002 by Peter Garrison.

Safety First—Never Reach Over A Prop

---by Klotz the Kat

You've all seen it. Perhaps you've all done it. You grab the fuselage just behind the engine and jam the starter into the spinner. And there are variants: hold the top wing of a biplane and flip the prop by hand; grab the landing gear strut and flip the prop with a chicken stick; remove the glow battery by reaching around the prop; adjust the needle valve from the front, etc, etc. I've even seen a modeler hold his airplane by the glow plug battery while spinning the prop with a Sullivan starter.

This bad habit is older than RC. It didn't seem so dangerous when starting a puny Arden 09 engine swinging an 8-inch basswood prop. Ask some of the old timers in the club to show you their prop slash scars—they proudly wear them like saber-scarred Heidelberg officers. Unfortunately, the tradition did not die with old engines.

Newcomers to the hobby watch the old pros starting their engines by this obsolete and dangerous method and they assume it is proper.

Today, our engines are much more powerful. Propellers are much stronger, thinner and sharper. This practice can leave much more than a scar. It can sever arteries and tendons; it can cause permanent disabilities. It can even injure bystanders if the airplane lurches forward. I estimate that half of all modeling injuries are due to unsafe engine starting procedures.

Reaching around a spinning prop is completely unnecessary. Therefore...

I hereby issue a fatwah against this practice!

Let the word go forward that Klotz himself has forever forbidden reaching around a turning prop. Never, never under any circumstances. If you see a fellow modeler doing it, stop him! Drag him into the bushes and pummel him with a chicken stick if necessary. Don't let your friends get injured by reaching around a turning prop.

I especially beseech the senior members of this club to stop the reach-around-the-prop practice. You are the role models. Others learn by watching you. They think you know best and,

generally, you do. You are lucky to have avoided injury; others may not.

Fortunately there are much easier and better ways to run up an engine. Here are some:

--Ask someone to hold your airplane for you while you start the engine. Ask them to grab the leading edge of the wing with one hand and the opposite trailing edge with the other hand. Hold the plane so that it cannot move either forward or backward. For taildragger airplanes, ask the holder to lift the tail slightly. This eliminates stress on the rudder servo and tailwheel.

--Offer to hold someone else's airplane for them.

--Use a tail hold down device—a Midwest Aero-Mate or an old pair of jeans tied to the fence, for example. Test the security before starting the engine by pulling hard on the prop. The restraint must not be too stretchy. Set the throttle to a fast idle, but don't trust it. Be prepared for the engine to roar to life at full power.



--Use a Midwest Aero-Mate (or one of several other commercially available holding devices) behind the trailing edge of the wing plus a tail hold down. This allows you to hold an electric starter in both hands. There will be less wear and tear on the airframe too.

--Place something (fuel jug, field box, etc) in front of one wing, just in case the holding device fails or the tail breaks.

###

So You've Decided To Win Top Gun

---by Klotz the Kat



So you've decided to win Top Gun. Here's what you must do:

- Choose a subject that has a wow factor. Elaborate nose art, amazing cockpit detail, etc. Something that begs the question, "Wow! How did he do that?"

- Choose a subject that is complex enough to have lots of surface detail but not so complex it's unreliable.

- Avoid high-performance aerobatic aircraft such as Pitts or Extras. No wow factor. Performance expectations are high.

- Clearly and simply document every detail down to the tiniest nit.

- You must have perfect landings every time. Therefore, the most important factor is ground handling.

- Build at least two identical models. Keep one pristine for contests. Practice with the other.

- Fly no other aircraft. Each aircraft type handles a little differently. It is difficult to remember the differences.

- Use mechanical options to the maximum. Their scores are consistent and high.

- Scientifically choose flight maneuvers by entering lots of contests and observing what works well. Pick maneuvers that produce the highest average points, not max points. Wow factor does not apply to maneuvers. Simple is better than complex as long as the maneuver is not so simple that the judge will downgrade for being non-prototypical.

- Practice, practice, practice. In all wind, weather and field conditions. Concentrate on crosswinds. Learn to love the wind. Terry Nitsch won Top Gun 2000 by only 1/3rd of a point after three days of competition. That's the equivalent of one small

heading error. So practice until every maneuver is perfect every time.

--Use the same caller every flight. Learn to work as a team.

-- Don't make mistakes. Consistency is more important than perfection.

--Practice in front of a straw judge. Judges find flaws that you may not notice.

--Be prepared. Think of it as performing at Carnegie Hall. Would you wait until the week before the concert to start piano lessons?

--Know the rules. Know what judges look for. Be a judge yourself.

--Fly every round. One set of judges will score higher than the others. You have no way of knowing which.

--Have a ritual at the flight line that is so habitual that you can concentrate entirely on flying instead of fussing with your equipment.

--Be tense, not nervous. With all that preparation, you will have complete confidence in your equipment and your abilities so there is no cause to be nervous. But you need to be a little tense in order to maximize your concentration. Your attitude should be "What a great adventure! I can hardly wait to show off my stuff."

--Be a gracious loser. Winners are not whiners. Learn from it and come back stronger.

--Have a supportive wife. All the Top Gun winners do. Does your wife volunteer to be on your pit crew?

###

Tai Chi Flying

---by Klotz the Kat



I call it Tai Chi flying.

The objective is slow, smooth and precise flight. Very large maneuvers done with grace. Meant to relax, not excite. More meditative than physical.

Begin by standing at the pilot station in the yoga mountain position. Climb to a medium altitude and adjust throttle and elevator trim to a slow cruise. Fly as slowly as control and stability will allow. For most planes, this is less than ¼ throttle and one or two clicks of up. Start with a 90-degree turn. Bank the wings as little as possible. Try not to exceed 5 degrees bank. Ease in corrections as gently as possible so they won't be noticed. Move the sticks very slowly— take at least 2 seconds to even start the turn and another 3 seconds to level out. Use very slow and small applications of elevator to maintain constant altitude. Don't fight the wind; anticipate it and let it position the plane for you.

Next, try flying very large concentric circles. Reduce the bank angle ever so slowly as you come into the wind and increase it equally slowly as you turn down wind. Use the rudder for small adjustments of heading. Try to exactly retrace the same circle each time around. Get the rhythm of it—roll with the wind and let it turn the plane. Do it 10 or 20 times. Concentrate on smoothness first, position and heading next. Remember where you made a mistake the last time around and readjust your anticipation of the movement of the plane. Develop a plan and refine it each time around.

Unsmooth flyers apply control surface movements when needed. But Tai Chi flyers apply very small adjustments well in advance of the desired flight path. That's the heart of the technique: small movements early instead of large movements later. You achieve harmony with the plane and the wind by letting them do most of the work. It's all so Zen.

Now try a large figure eight. Not the tangent circle AMA style, but a stretched out racetrack with crossover. The center requires reversing the bank angle. Concentrate on rolling from one bank angle to the opposite bank angle as slowly as possible with an absolutely constant rate of change of bank angle.

Fly straight and level as far up wind as you can, procedure turn (90 degrees out and 270 degrees back) and retrace your path down wind. The most important part is to complete the final turn on the correct heading, anticipating the drift of the wind. Fly down wind in a straight line as far as you can. If the previous turn were done correctly, the entire downwind leg will be flown without any stick movement at all.

Repeat this flight path many times. Learn from mistakes and avoid them the next time around. This requires concentration. It can be mesmerizing—don't forget about fuel.

You will find this type of flight to be soothing but intense. Neither you nor your flight pack will be drained because the servos are moved so little.

The ideal condition for Tai Chi flight is calm air, either early morning or late evening. Tai Chi is an oriental martial art, so a Mitsubishi Zero would be a good choice. Play soft music while flying. Envision lotus blossoms floating on a mountain stream. Feel your chi reach out thru the antenna to the servos. Chant "ommm" in unison with the engine. Become one with your airplane.

See ya at the field. Bring tofu sandwiches and herb tea.

###

Ref: *Dancing with Cats* by Burton Silver and Heather Busch.

Mustang Magic

---by Klotz the Kat

I was sitting on the grass beside the taxiway at the Anoka County Airport. Four dots on the horizon were slowly growing larger. Nearby a little boy was playing, looking for bugs in the grass. The four dots leveled out about fifty feet above the runway. The little boy continued romping in the grass. Slowly the dots grew wings, then became recognizable as Mustangs. They were silent, racing their own sound. I could barely restrain myself from yelling to the boy, "Look up." But nobody listens to cats anyway.

At last the four aircraft roared by, nearly overhead, their Merlin engines blasting us at full throttle, their flashing propellers slicing the air. The little boy glanced away briefly and returned to his attention to the grass. The Mustangs pulled up sharply, one at a time into nearly vertical Chandelles. The Doppler effect slurred their sound into a descending glissando. They were so close I could see the ailerons start the roll followed by rudder twisting the nose around. It was thrilling.

Why did the little boy miss the whole show? Why didn't he share my excitement?

All that history, all that technology, all that power, all that grace and all that beauty were lost on him. It was just a passing noise because he had no understanding of what was happening.

The reason, I believe, was that his dad, who was near by, hadn't explained to him what it was all about. Here was a golden opportunity for dad to instill wonder and awe in his little boy and he blew it. Without understanding, there is no appreciation. With difficulty I restrained myself from scratching him!

It's been said that a PhD is one who learns more and more about less and less until he knows everything about nothing. But childhood should be just the opposite. A child needs to learn a little about a lot of things. No better place than aviation.

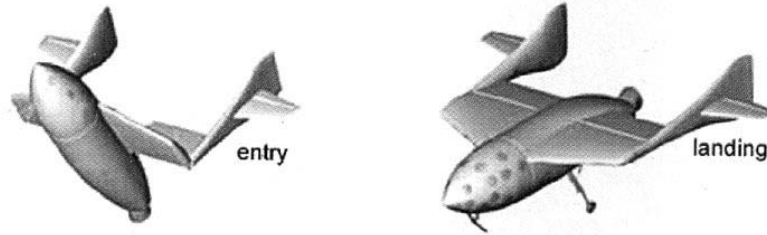
Aviation is a comprehensive mixture of all the arts and sciences wrapped into one. Where else can you find art, craftsmanship, communication, software, physics, chemistry, weather, history, camaraderie, and adventure all bundled together on a glorious summer day? Turn a kid on to flying and you will have turned a kid on to the excitement of learning.

If there is a little boy or girl in your life, don't miss the chance to kick their tires and light their fires. Take them to an air show or an RC flying field and explain everything.
And bring sandwiches.

###

Burt Rutan's Dethermalizer

---by Klotz the Kat



A major problem of space flight is the destructive power of the heat of re-entry. NASA's solution, ablative tiles, has been troublesome. But Burt Rutan has used an old modelers' trick to solve this problem.

The Rutan SpaceShipOne is a rocket-glider that can climb to 300,000 feet and re-enter the atmosphere without heat shields. Carried aloft by a mother ship to 53,000 feet, it blasts into space with a 1-minute rocket burn at 4 Gs. Above the atmosphere, small gas thrusters position the aircraft.

The cockpit is airtight, it maintains the same air pressure at takeoff with only a boost of oxygen.

Before re-entry, the entire tail is inclined at an angle of 65 degrees from the fuselage centerline, and the bottom of the wing is tilted at right angles to the direction of flight. As the plane enters the atmosphere, the bottom of the airplane is presented to the air friction. Heat is distributed over the entire surface of the airplane, limiting the surface temperature briefly to over 1000 degrees F-- not enough heat or time to conduct much of this heat thru the ship's thick composite skins. Deceleration climbs to 4 Gs.

Between 70,000 ft to 80,000 ft. and 120 knots, the tail is lowered into normal flying position. The plane is glided back to home airport. The spring-loaded landing gear is extended (it cannot be raised in flight).

Does the tilted tail and flat parachute-like descent sound familiar to you old-time modelers? It is known as a dethermalizer to modelers. It is common to free-flight model airplanes perfected by modelers in the 30s and 40s. To my knowledge, it is the first application of a dethermalizer to a full-scale aircraft.

As a youngster, Burt Rutan was an accomplished free-flight modeler, a contest winner and AMA NATS competitor. That's when he learned all about dethermalizers.

Ref: R/C Modeler, Oct 2003, *Technicalities in **Flying***, August 2003 and <http://www.x-plane.com>, page 12.

See ya at the field. Bring innovative sandwiches.

###

Vibration

---by Klotz the Kat

The major cause of vibration in a model engine is not prop balance. It is the acceleration of the piston and prop. Imagine the cylinder to be a rifle barrel and the piston is a bullet being fired from it. There is a linear (straight line) recoil that jolts the airframe in the axis of the cylinder. For a vertically mounted engine, the vibration will be in the pitch axis; for a side-mounted engine, the vibration will be in the yaw axis. For most airplanes, the mass of the wing causes inertia to be greater in yaw; so side-mounted engines tend to produce less vibration.

Now imagine an opposed two-cylinder engine. Think of it as two rifles welded together and pointing in opposite directions. When fired simultaneously, the recoils cancel.

Another source of vibration is the acceleration of the prop during the power stroke. The reaction to this is a rotary (circular) force in the roll axis opposite to the rotation of the prop. This force can be much less in twin cylinder engines if the cylinders fire alternately. One big kick is replaced by two smaller kicks. The magnitude of the vibration is reduced by a factor of two.

A popular compromise is to place the cylinders at a V angle and fire them alternately. Both vibration modes are halved while linear-mode force is scattered at two angles.

But the best solution is the multi-cylinder radial engine. When there are N cylinders, rotary vibration is reduced by a factor of N and it is scattered at N angles while canceling the linear vibration. The more cylinders, the less vibration.

Now consider the muffler. Which is quieter, a small muffler for each cylinder or a single big muffler shared by all cylinders?

Think of a muffler as a low-pass filter. The bigger the muffler, the lower the cut-off frequency and the more the blocked frequencies will be attenuated. The alternate-firing twin will have twice the input frequency so a single muffler will have twice the attenuation. Volume is at least twice too. Total attenuation is at least four times the equivalent single cylinder engine. Nevertheless, many twins come with two mufflers. That's because

the manufacturer can sell the same muffler type as the single cylinder engine, so it's cheaper.

The cost of manufacturing any machine is primarily a function of parts count, especially the number of part types. A multi-cylinder engine has almost the same number of part types as a single cylinder engine. Automation and economy of scale tend to reduce the incremental cost of identical parts. That's why the difference in price between single-cylinder engines and twins is decreasing. This trend has been especially noticeable lately. The advantages of multis (low vibration, compact size, low noise, redundancy) will soon overwhelm the price increment. So look for more twin and multi-cylinder engines at the field, especially in large and scale airplanes.

See ya at the field. Bring hot sandwiches.

###

How To Crash

--by Klotz the Kat

Some novel ways to crash (all are true):

A model was coming in for a dead- stick landing. While only a couple of feet off the ground, a horse wandered into the flight path. The model flew between the horse's legs, destroying the wings completely and doing considerable damage to the fuselage. The horse was uninjured.

A modeler was flying off a frozen Minnesota lake. He carried two models onto the lake, one under each arm. He slipped on the ice and fell on both airplanes.

A kite was being flown in Worth Park. The wind died and the kite dropped low over a railroad track just as a train came by and smacked the kite.

Two flyers agree that the sky is so big and their models so small that the probability of collision is so low that they do not need to try to avoid each other. A few hours later the models have a mid-air collision.

A glider flyer inadvertently flew his ship into the territory of a red-tailed hawk during the mating season. The hawk ripped the covering off the right wing.

A modeler covered an airplane with Monokote, but he forgot to remove the backing from one large piece. The entire covering of one wing came off in flight.

An aileron servo failed during a roll. The pilot flew rolling circles until the engine ran out of fuel. Spiral dive into the ground.

A pilot flew a low inverted pass over a paved runway. The fin gently touched the runway, preventing the plane from climbing. His model continued flight, scraping its fin on the ground. The plane could not climb despite full down elevator. Eventually the prop struck the ground, stopping the engine. The plane came to rest at the edge of the field. Damage was a partially ground-off fin and a scratched canopy.

A pilot broke a left wing during a contest in Milwaukee. Another modeler said that he had a duplicate wing that he would sell, but it was in Chicago. The pilot drove overnight to Chicago,

got the wing and returned to Milwaukee just in time for the last round of the competition, only to discover that he had purchased another right wing.

A modeler was driving home with his airplane in the trunk. While stopped at a red light, another car rear-ended the modeler's car, destroying the model and the car. Insurance paid for a new car and a new airplane.

An airplane had an on-board motorized engine starter. The modeler stored the airplane in his bedroom after a flying session. But he accidentally left the receiver ON. While the modeler slept, the servos crept toward their extremes including the micro switch that engaged the starter and glow driver. The engine started at full throttle. The airplane flew across the room and smashed into the opposite wall.

Two modelers were flying identical airplanes. During a moment of straight and level flight, one of the pilots accidentally started watching the wrong airplane. His own airplane crashed. When told that an airplane went in, he shouted, "I don't have control either!"

###

When Good Modelers Go To Heaven

---by Klotz the Kat

When good modelers go to heaven
A runway awaits them there
Where the grass is short, the wind is light,
The joy of flying is in the air.

It's where Spitfires play with Focke Wulfs
And never fire a shot
Where GeeBees always win the race
And sailplanes hit the spot.

But in the other place, the air is hot,
Nothing works as it should.
The servos glitch and propellers pitch,
There's only rock-hard balsa wood.

There's a ground loop on every landing
And you never get things right.
It's one damned thing after another
On each and every flight.

###

Engineering Rules

--by Klotz the Kat

You can't push a rope.
There are lies, damned lies and statistics.
The transistor has many valuable uses, the least of which is that of a fuse.
Better to do it right than do it over.
Tell me what you want to prove and I'll find the statistics to support it.
Age and cunning beat youth and vigor every time.
One data point does not define a line.
A year from now, nobody will remember whether we met the schedule. They will only remember how well the machine worked.
Marketing won't accept a simple solution no matter how well it works.
KISS. ("Keep It Simple, Stupid")—Lockheed Skunk Works.
"Simplicate and add lightness"—Douglas Aircraft
3 dB never hurt anybody.
Garbage in, garbage out.
If it's easy, someone else would have done it by now.
If you know it can be done, why bother?
If someone says it's impossible, that only means they don't know how to do it.
90% of solving a problem is identifying the problem.
Standards are fine as long as you have plenty of them to choose from.
A control system without feedback is out of control.
To the optimist, the glass is half full.
 To the pessimist, the glass is half empty.
 To the engineer, the glass is twice as big as it needs to be.
Mechanical engineers build weapons. Civil engineers build targets.
"An invention is 10% inspiration and 90% perspiration"—Thomas Edison.
Thinking is the hardest labor of all.

Bad planning on your part does not justify an emergency on my part.

“It is easier to get forgiveness than permission”—Adm. Grace Hopper, inventor of COBOL.

Opportunities always look bigger going away than coming towards you.

“If at first it doesn’t seem preposterous, it hasn’t a chance”—Albert Einstein.

“It takes one year to invent something and ten years to convince people they need it”—Thomas Edison.

To make it look big, use the mean. To make it look small, use the median.

“Extreme claims require extreme evidence”—Isaac Newton.

“If a problem has no solution, it may not be a problem, but a fact - not to be solved, but to be coped with”—Shimon Peres

It’s hard to make something foolproof because fools are so ingenious.

The trouble with engineers is that at the most inopportune times, they tend to blurt out truth.

If you can’t impress them with expertise, baffle them with bullshit.

“Politics is for the moment,
but an equation is for eternity”—Albert Einstein.

###

Arado 96B



March 1945: Berlin is in flames. The Red Army is advancing door to door from the east. Russian fighters control the airspace above. Adolf Hitler's bunker will be captured in a few hours. He is offered one last chance to escape.

The plan was to rescue Der Führer from his bunker, take off from the bomb-cratered street and fly west at rooftop level through the streets of Berlin well below the fighter cover that patrolled above. A nimble and aerobatic two-place aircraft piloted by the best of Germany's remaining pilots was needed.

The famous test pilot, Hanna Reitsch was flown into Berlin in the jump seat of a Focke Wulf 190. An Arado 96B that had been hidden in the National Zoo was wheeled down Unter Den Linden to Hitler's bunker. There, Hanna Reitsch and Ritter von Greim whom Hitler had appointed to replace Hermann Göring as the new Oberbefehlshaber der Luftwaffe tried to persuade Der Führer to escape in the Arado. Exhausted and crazed, Hitler declined.

Hanna Reitsch and Ritter von Greim flew the Arado through Russian fighters to sanctuary in the west. Much of what we know of Hitler's final days is the result of that flight.

Arado was the only German aircraft manufacturer to refuse to cooperate with the Nazis. Consequently, it was the only company to be nationalized by the Reich.

The AR 96 was a technically advanced aircraft when it first flew in 1938. For comparison, the most advanced British

fighter in production at the time was an open cockpit biplane. By far the most important advanced trainer in the Luftwaffe, the Arado 96B was adopted in 1940 as the standard training aircraft. Distinguishing features were the narrow nose and typical tall Arado fin and rudder. The main production variant featured the Argus 465 hp inverted V12 engine and a single MG17 gun in the cowl. A later version added underwing bomb racks.

The AR 96B had a wingspan of 36 ft, a fully loaded weight of 3747 lbs., and a max speed of 205 mph.

Much of the early production was carried out in the Arado plant in Warnemünde, but the overwhelming need for the German aircraft industry to produce combat aircraft meant that production of trainer aircraft was slow. In mid 1941, the Avia company in Prague took over production of the Arado 96B. Approximately 12,000 Arado 96Bs were built. The Czechs continued production until 1949.

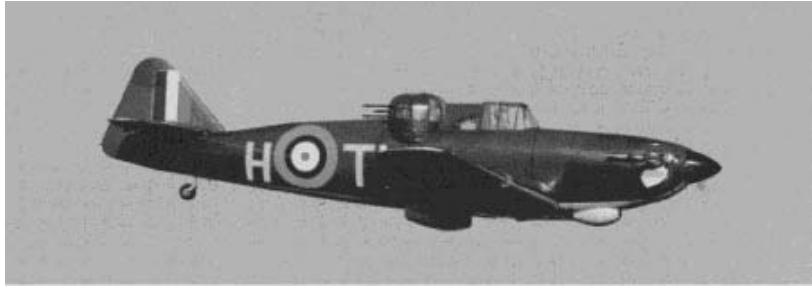
The second escape of the Arado resulted in this article. Joe Krybus developed the excellent 5-view drawings of the full-sized aircraft from factory drawings when he was aircraft curator of the Czech National Technical Museum in Prague. During the cold war, he escaped to the west. The drawings escaped with him.

Unfortunately, no known examples of the Arado 96 have survived. It is a pity that this important artifact of history has been lost. So it is left to us R/C scale modelers to recreate its image in the air.

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Jeff Foley photo, *R/C Report*, October 2001.
Text reprinted from *R/C Modeler*, May 2002.

Boulton Paul Defiant



In early 1940, German panzers surprised western military strategists by penetrating the impossible Ardennes Forest, flanking the French who expected an attack through Belgium. German armor blitzkrieged across France to surround the British army at Dunkirk. Nineteen divisions of British and French troops appeared to be doomed to destruction or capture by the Wehrmacht. Churchill feared “the greatest military disaster of our long history.”

Then Hitler made the first of his many tactical military blunders—he listened to Hermann Göring. Marshal Göring, commander of the Luftwaffe, convinced Hitler to halt the advance of ground troops and let the Luftwaffe finish off the British and French armies. “I will level every stone in Dunkirk,” he boasted. “And take Calais too, if necessary.”

Spitfires and Hurricanes covered the Dunkirk area, but, badly outnumbered, they were fought to a standstill. In desperation, Fighter Command sent twelve unproven Boulton Paul Defiants to defend the beaches of Dunkirk. On that historic day of May 29, 1940, German pilots, mistaking the Defiants for Hurricanes, attacked from the Hurricane’s most vulnerable angle, diving from above and from the rear—into the quadruple 30 caliber guns of the Defiant’s turrets.

Without any losses of their own, the Defiants downed 30 German aircraft in the first encounter. By the time Berlin reacted to the surprise, days were lost. It was enough time to rally every available boat in England to the most dramatic rescue the world had ever seen. More than 850 vessels of all types, many manned

by civilian volunteers, converged on the port. 338,226 soldiers were saved to fight another day. It was the Luftwaffe's first defeat.

BBC correspondent Charles Gardner wrote at the time, "The Defiant was the weapon which Britain produced from up her sleeve when at a time the world thought the sleeve to be empty."

Later that year, fighting alongside Spitfires and Hurricanes in the Battle of Britain, Defiants were not as successful. By then, German fighter pilots had learned to recognize Defiants and attack from their vulnerable underside. Despite its respectable 357 mph speed, Defiants were too slow and heavy for daytime dogfights.

The Luftwaffe was eventually thwarted, forcing it to resort to nighttime raids. But Spitfires could not operate at night and Hurricanes could not find their targets. Once again, Defiants came to the rescue. Painted dull black and led by interception radar and Mandrel jamming systems, the Defiants were to have another historical high point. During the Winter Blitz, Defiants destroyed more enemy aircraft than all other fighters combined. Germany's plans of "Nach England gehen" were destroyed forever.

If you wish to supplement the Spitfires and Hurricanes at your club's flying field, perhaps you should consider pulling a Defiant from up your sleeve. So, while you wait out the winter blitz, drop a Glen Miller record on the Gramophone, pour a pint of bitters and raise a toast to the King. Then gather all documentation and materials and get ready to begin construction. Before long, you too will be flying for England.

###

Reprinted from *R/C Modeler*, July 1995.

Focke Wulf TA 152H



It is believed to be the fastest and highest flying propeller-driven airplane to see combat in WWII. The TA 152H was built to counter a threat that never materialized—a belief that the Allies had developed very high altitude bombers. Because it was so fast, faster than most jets of the era, its major combat role was reconnaissance and flying cover for ME 262 jet fighters.

But the most amazing of all were the difficult conditions under which it was designed and built. In early 1945, the infrastructure of Germany was collapsing. There was no fuel for trucks. Roads and railroads were destroyed by bombing. Aircraft parts were transported by bicycle. Draftsmen ran out of paper and aircraft workers drank water from fire reserves. Test pilots were called to combat, so the Chief Engineer of Focke Wulf and designer of the FW 190 series, Kurt Tank had to test-fly the TA 152H himself. In one famous flight, he was attacked by Mustangs which he easily outran.

Of the 60 that were built, 12 saw action before the war ended. Only one aircraft remains. It is in the Smithsonian's Silver Hill facility awaiting restoration.

From my experience, the ideal speed for a scale model airplane seems to be about 50 mph at cruise, increasing to a top speed in level flight of about 80 mph, slowing down to less than 30 mph for landing. Flight slower than that becomes vulnerable to turbulence and, if faster, the sky isn't big enough for interesting maneuvers. Size should be above the IMAA minimum for visibility. Ground handling must be good on both grass and hard surfaces and it must be attractive.

The search for such an airplane led me to the Focke Wulf TA 152H. At 1/6th scale, the TA 152H would have the following speeds in order to fly realistically:

Full Size:

Landing speed: less than 90 mph

Cruise speed: 311 mph

Max speed: 472 mph

1/6th Scale Model:

Landing speed: less than 15 mph

Cruise speed: 51 mph

Max speed: 80 mph

Few scale model airplanes can fly comfortably at scale speed in all speed regimes, but the TA 152H at 1/6th scale can. With its light wing loading and five feet of flaps, even the very slow landing speed can be flown if there is a small headwind. From a blazing top speed to a glider-like landing, it remains within scale speed during the entire flight. Even its huge loops and tall verticals are in scale proportions. No longer must the pilot fly on the verge of a stall to maintain realistic speed. This airplane is stable and controllable at all airspeeds and a thrill to fly.

It is interesting to calculate scale altitude too. One-sixth of 50,000 feet is 1.6 miles. One would need a telescope to fly a model that high, if that were possible.

Despite its long wingspan of eight feet, the model is not a monster. It is long and lean, not big. Compared to a FW 190D at

the same scale, the FW 190D would have a wingspan of only 69 inches. One would not want to scale up the TA 152H because scale speed would be too fast!

So, if you don't mind being hopelessly outnumbered by Mustangs and P-47s at your club field, you should consider building a Focke Wulf TA 152H. Ignore the crumbling infrastructure of your workshop, scrounge building materials at the local hobby shop and bring them home on a bicycle. Shove a copy of Wagner's *Ride of the Valkyries* into your stereo. Then stubbornly dig in for a good build. Before long, you will be flying faster and higher than all the other warbirds at your field.

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Reprinted from *R/C Modeler*, November 1997.

Tachikawa Ki-55 “Ida”



The prototype Ida was completed in March 1938 and flew its maiden flight at Tachikawa airfield near Tokyo on April 20, 1938. It was designed to Japanese Army specifications that called for a two-place monoplane to support Army ground forces. Primary requirements were extreme maneuverability at low altitudes and short-field performance from small rough strips immediately behind enemy lines. Provisions were made for photographic and radio equipment in addition to bomb racks for light anti-personnel bombs. It was armed with a single forward-firing rifle caliber machine gun in the cowl and a second rear-firing flexible gun for the observer.

To obtain the necessary low-speed handling characteristics, designer Ryokichi Endo chose a light airframe combined with a large wing area to achieve a low wing loading. A large tail provided stability, and large control surfaces provided sensitivity. Downward visibility was enhanced by sweepback of the wing with the bonus of added stability.

Wingspan was 38 feet, 8 inches. Max speed was 217 mph at 7000 feet, and cruise speed was 146 mph.

Designated the Ki-36, Idas were assigned directly to Army ground units. During the Second Sino-Japanese conflict they were popular with ground commanders because of their ability to demoralize hard-pressed Chinese ground troops.

When the Pacific War began, the Ki-36s were no match for Allied fighters. From 1943 onwards, they were assigned to units deep in the interior of China, far from Allied aircraft. For this reason, the airplane is little known in the West.

It was the policy at the time to adapt operational aircraft designs to become trainers, rather than designing entirely new aircraft as was the practice in the West. The good ground handling characteristics of the Ki-36 rendered it well suited for an advanced training role. All unnecessary equipment, including the wheel pants was removed. Balloon tires were substituted for the high-pressure tires. The result was the Ki-55 which was manufactured in large numbers by both Tachikawa and Kawasaki. Pilots received their training in civilian flying schools under military contracts as well as regular Army flying schools. Nearly all Army pilots received their wings after soloing the Ki-55.

Production continued until January 1944 when desperate shortages of material and skilled workers (who were indiscriminately drafted) shifted production to high-performance aircraft for home defense. By then, a total of 2,723 Idas had been built. During the last year of the war, the remaining Ida's were expended in kamikaze sorties in which they carried a single externally mounted 250 kg or 500 kg bomb.

The simplicity and docile handling of the Ida are what we seek in a scale model aircraft. Designed around the OS 108 engine, the model is an excellent choice for operation from small grass flying fields. It is just big enough to meet the IMAA criterion for giant scale. Its traditional wood construction is familiar to modelers with some scale model building experience. It is well suited to casual sport flying as well as serious scale competition.

###

Reprinted from *R/C Modeler*, February 1994



MITSUBISHI Ki-15 ‘BABS’

For a brief period in 1937, the Mitsubishi type 97 Ki-15, later named “Babs” by the Allies, was the fastest production airplane in the world. It was a high-speed reconnaissance aircraft capable of flying faster and higher than any fighter it would encounter at the time. About the same size as a P-47 Thunderbolt but only one-third as heavy, its range was four times that of a Spitfire and its ceiling was 6000 feet higher. Fully aerobatic, it could out maneuver all fighters of the era--if they could catch it.

The second prototype Ki-15 was purchased by the Asahi Shimbun, a large Tokyo newspaper, as a fast courier. It was a time of intense nationalism, and the airplane was to be an instrument of national publicity. The plane was prophetically named Kamikaze (the name had a different meaning then). It flew a record-breaking flight from Tokyo to London in time for the coronation of King George VI. Its top speed of 300 mph and trouble-free performance impressed the western world with the abilities of Japanese aviation. Although meant as a tribute, the flight must have been an embarrassment to the King because the fastest British aircraft in production at the time was an open-cockpit biplane.

Several other Ki-15s were built as fast mail planes and licensed as civilian communication aircraft. When the second Sino-Japanese war broke out in 1937, nearly 500 aircraft were delivered to the Imperial Army equipped with radios and aerial cameras. Faced with an enemy flying much slower aircraft

including the Curtis Hawk, Gloster Gladiator and Polikarpov biplanes, the Ki-15s easily penetrated

deep into China from their bases in Manchuria and kept the Japanese army well informed of Chinese ground movement.

The Ki-15's long-range reconnaissance ability attracted the attention of the Imperial Navy who ordered twenty aircraft to support naval operations from land bases. One of these Navy airplanes spotted the British battleships HMS Prince of Wales and HMS Repulse at sea on December 10, 1941. Land-based bombers sunk these two ships a few hours later.

Eventually the Ki-15s faced ever faster Allied fighters. Lacking armor protection for crew and fuel tank, they endured increasing losses. By 1942, the remaining Ki-15s were withdrawn from frontline service and converted to trainers or used as communication aircraft. During the closing months of the war the last were expended in kamikaze sorties.

You have reason to believe that the neighbors have acquired the combined armies of Chiang Kai-Shek and Mao Tsetung in order to mount an offensive against your R/C club's flying field (maybe you guys should have had a stricter muffler rule). Your commanding officers desperately need complete information in order to defend your flying site. Therefore it is your duty to change into a kimono, slowly sip a final cup of tea, pad your way down to your shop and, before entering, remove your sandals and begin construction of a Mitsubishi Babs.

###

Reprinted from *R/C Modeler*, September 1991

Howard “Pete”



“It was fast and it could haul a lot of whiskey,” Benny Howard said of one of his early airplane designs. Creating airplanes for bootleggers gave Benny “Go Grease” Howard experience designing fast airplanes, and it bankrolled his real ambition—air racing.

Pete was built in 9 months from junkyard parts and a borrowed Wright Gypsy four-cylinder engine. Benny Howard, then a pilot for United Airlines, completed Pete in time for the 1930 National Air Races.

Pete won everything in its class. On a lark, Howard entered Pete in the Unlimited Class—the Thompson trophy Race. The diminutive Pete with its 82-horsepower engine was up against racers powered by engines of as much as 700 horsepower. Pete was not given a chance.

Speed Holman won the race with his big Laird Solution. Jimmy Haizlip came in second with a Mystery Ship. The little Pete breezed into third place by outmaneuvering the other racers, skimming close to the pylons and pulling around them in high-G turns. A reporter called Pete “a ballerina among heavyweights.”

Pete became famous and won many races. The purses funded Benny Howard’s next designs—the famous Ike, Mike and Mister Mulligan. But Pete earned more money flying aerobatics in air shows. At the time, Pete was an air show favorite.

In the 1930s, Pete was a favorite for modeling too. Its stability, long fuselage, and long landing gear were ideal for the

rubber-powered free-flight models of the time. Many feel that Pete is the prettiest of the Golden Age racers.

Pete's design was unusual for a racer. Its large control surfaces were better suited for aerobatics than racing. Most of the racers of the era had tiny tails, but Pete's tail is huge—the span of the stab is almost half of the wingspan. This gives Pete a rare combination of stability and control. I know of no other airplane of any type that has such a large tail volume to wing area ratio. It makes one wonder whether Pete was actually designed for racing at all.

Another curious feature is the exceptionally long landing gear. This, no doubt, is the reason the plane is rarely modeled in R/C. Modelers fear that the long landing gear will cause the airplane to nose-over. Such is not the case. Pete's unusually large horizontal stabilizer, forward wheel position and long tail moment more than compensate for this. They hold the tail down in the roughest field and the longest grass.

The long landing gear is not for prop clearance. It is far too long for that. The purpose is to support the wings in very high-G pylon turns and aerobatics. It also helps stop the plane when landing. When the tailskid is on the ground, the angle of attack is above the stall angle. At a landing speed of 60 mph with no brakes, the trick was to dig the tailskid into the dirt after touchdown. The combined drag of the tailskid and the fully stalled wings were enough to stop the airplane in the grass fields of the day. Even so, landing at 60 mph, no brakes, no forward visibility and a rigid landing gear must have been difficult and scary.

The combination of thin airfoil, no washout and rigid landing gear would be a handful for an R/C modeler too. At least visibility is better. But there is more we can do—flaps.

The addition of nonscale flaps tame the landing and makes landing more scale too. Flaps add lift and drag, allowing steeper approaches without buildup of airspeed. Flaps slow the landing speed of the model Pete to about 30 mph. But more importantly, flaps increase the effective angle-of-incidence of the inner wing, adding a form of washout that reduces the danger of wingtips stalling during the landing approach and flare. Pete's exceptionally large tail keeps Pete stable at these low airspeeds.

With a slow, stable and controlled landing, the rigid landing gear accepts the ground reasonably well, especially on

grass strips. There is a tendency to bounce on hard-surface runways—they were unknown and unneeded in the early 1930s. Bounce can be minimized by immediately raising the flaps at touchdown. This kills lift. Replacing the tailskid with a steerable tail wheel is a must for steering on hard-surface runways.

The last reason not to model Pete in the past was the difficulty of enclosing a muffler in the narrow cowl; but many of today's engines feature rear-facing exhaust ports so that the muffler can be tucked behind the engine. Pete's cowl has no nonscale cutouts, not even for the needle valve.

One-third scale seems to be about right for Pete. Larger would require speed to be too fast, making the sky too small for a model airplane. Smaller would require flying faster than scale speed and would cause ground-handling problems.

Pete should be flown *allegro ma non troppo*—fast but not too fast. The full-sized Pete had a landing speed of over 60 mph, a cruise speed of 150 mph and a top speed in level flight of 180 mph—twice as fast as a Volkswagen with the same amount of power. The one-third scale model Pete can reach a sustained top speed of over 70 mph and cruise at 50 mph. With a 10 mph headwind, Pete can land at the scale speed of only 20 mph.

Today your Pete is performing in a local sport scale contest. You have memorized a sequence of maneuvers and practiced them in a variety of wind conditions. You and Pete are ready to put on a show.

Come to a complete stop at the end of the runway and note the wind direction. Announce to the judges, "Take-off starting now." Advance the throttle slowly while steering with the rudder. Lift off after full throttle is reached and more than enough airspeed has been reached. Continue a shallow and straight climb-out, steering with rudder, using the ailerons only to hold the wings level. Race planes had high-pitch props that caused them to accelerate slowly, so climb slowly at first. Level off at altitude, reduce power and start a rectangular pattern. Adjust the elevator trim for level flight at one-third throttle.

Approach the field from far downwind, dropping down to 15 feet of altitude. Make course corrections and reduce speed to one-third throttle. When heading and speed are established, say

“Fly-past starting now” and just watch Pete cruise by. You earn 10 points without even moving the sticks. It’s all in the set-up.

The AMA figure eight is easy to do but difficult to do well. It is a measure of your ability to compensate for wind drift. Climb to a higher altitude and approach the field from downwind again at half throttle this time, setting up for the mandatory figure eight. At a distance of one circle radius from the judges, announce the maneuver and begin a 90-degree circular turn away from the flight line. Don’t be fooled by the drop in engine pitch. This is the Doppler effect. Don’t let it trick you into throttling up or else Pete will balloon in the next turn.

Aim for a crossover point exactly in front of you. When you can sight down the fuselage, slowly roll the wings in the opposite direction to begin an upwind 360-degree circle. Adjust bank angle very gradually to obtain a smooth rate of turn, adjusting for the wind while re-adjusting the throttle to maintain constant ground speed and altitude. Returning to the original crossover point, roll the wings in the opposite direction to complete the remaining 270 degrees of the other circle of the figure eight and return to the original entry point. Level the wings and say “Complete” as Pete passes in front of the judges. Pete does not need a kick in the rudder for these turns as some longer winged airplanes do. Aileron control is enough.

Approach the field from upwind for a Chandelle. Roar into a prolonged shallow dive at full throttle. Come in low and fast. Pull up immediately in front of the judges and bank at the same time, executing a 180-degree climbing turn into the wind. Augment with rudder at the top and level off. This is a great wind maneuver—the windier the better. Pete’s short wingspan and big tail make it relatively insensitive to being upset by turbulence.

Another good wind maneuver is the split-S. To be spectacular, start at a high altitude at slow cruise, going downwind. Roll inverted, reduce power and let Pete’s nose drop into an inverted dive. Continue to let Pete drop, building up airspeed. Pull out low in front of the judges. The engine doesn’t make much sound. One can hear the windmilling of the prop and the whistling of the wing wires as Pete whizzes by.

Prepare for landing by flying a rectangular approach. Throttle back and transition into a gliding descent. Lowering the flaps will bring Pete’s nose up. Compensate for this with one-

third down elevator trim or just push and hold the stick. Or use automatic flap-elevator mixing from your computer radio if you prefer.

Always lower flaps at altitude. This allows room to recover if a flap malfunction occurs.

Now Pete is in a steep descent, but speed is slow because the flaps increase both lift and drag. This makes the field an easy target to hit and it penetrates the turbulence better. Pete remains stable at low airspeed because of her large tail.

Steepen the glide further if needed with down elevator. Speed will not increase much due to the drag of the flaps. To stretch the glide, add throttle, not elevator. Always keep the nose down when flying with fully deployed flaps. If you must go around, raise the flaps first.

Flare just before touchdown. As the wheels touch, pull the flaps up quickly to kill lift. This kills bounce too. The full-sized Pete didn't have flaps so we hope that the judges didn't notice. Steer with rudder to a complete stop.

Taxi to the winner's circle.

###

Reprinted from *R/C Modeler*, May and June 2000.

Ilyushin Stormovick



When the commander of the 237th Assault Regiment was killed in action flying a Stormovick, his seven-year-old daughter, Lenchka, wrote a letter to General Stalin. She included a few rubles she had saved and she asked the General to use the money to replace her father's lost airplane. Stalin answered her letter. He thanked her for her contribution and he said her request would be granted. Shortly thereafter, a new Stormovick was delivered to her father's regiment. The fuselage was inscribed in bright red lettering, "From Lenchka, for Papa."

Stormovicks were typically assigned to tank and artillery units, not air force units. The Stormovick (*flying tank*, in Russian) was large, rugged, crude and cheap to produce. It was designed to fly thru ground fire at an altitude of 30 feet to 50 feet and attack armored targets, delivering a barrage of rockets and cannon fire, often horizontally. The forward half of the fuselage was a bathtub of armored panels up to 12 mm thick that protected the engine and crew. Even the radiator was protected for it was **inside** the fuselage, receiving air from an air scoop in front of the windscreen and exhausting it below. An auxiliary radiator below the wing was retracted into an armored box during combat. It was the only truly armored aircraft ever built in quantity.

Armament consisted of a large variety of weapons: two Shkas 7.62 mm machine guns, two Shvak 37 mm cannon, RS82 rockets, as many as 200 anti-tank bombs and even a grenade

launcher. Empty weight of the aircraft was nearly 5 tons. Its wingspan was 48 feet and its maximum speed was 252 mph.

This airplane was possibly the Soviet Union's most important aircraft during the World War Two era. Joseph Stalin said of it, "Our army needs the IL-2 as much as it needs bread, as much as it needs the air it breathes." It was a long-lived design, serving from the mid-thirties and into the Korean War. The Stormovick was as important to Russia as the Spitfire was to Great Britain and the Mustang was to America, yet the Stormovick is not well known in the west. Perhaps we modelers can do something about that.

As a scale model, the Stormovick has excellent moments. It has a high-lift airfoil, a long slender fuselage, a huge tail, and short, wide-apart landing gear with big wheels. The full-size Stormovick was designed for rough-field operations and low-speed stability—just the qualities we seek in a scale subject. It's odd that it is rarely seen in model form. The only other R/C design that I know of is Bob Underwood's version which has been flying in national events since the early 1980s.

If you decide to build a Stormovick, you should gather all the scale documentation before cutting the first piece of wood. Then wait for a cold Siberian night, put on your boots and babushka, and march down to your shop. Shove a tape of Shostikovitch's *Leningrad Symphony* into your stereo and toast a *salut* to Mother Russia.

Let's begin.

###

Reprinted from *R/C Modeler*, May 1989

Lavochkin La-7



WWII Soviet Union's Most Advanced Fighter in Quarter Scale

Germany launched Operation Barbarossa in June 1941 when it attacked Russia without provocation. Days went by before Stalin sobered up and rescinded the non-aggression pact. By then, most of Soviet industry was destroyed or captured, including 80% of its aluminum production.

Rebuilding Russian industry far to the east meant employing peasants, retirees, middle age *babushkas* and teenage girls, trained by a few old hands. Yet, production adapted under difficult circumstances. Although lacking aluminum and steel in quantity, wood and woodworking skills were abundant. "I can build airplanes until the last tree in Siberia falls," said Semyon Lavochkin, Russia's brilliant aircraft designer.

Given these circumstances, developing a fighter that was 40 mph faster than the FW 190A8, simple to maintain in the field without an elaborate supply chain, and building it in quantities in remote areas by quickly trained technicians was a historically unique achievement. Consider, for example, the La-7 cowl—two simple curved sheets held in place with piano hinges and two steel straps. It can be opened in seconds without tools. Compare that to the multiple compound curved panels of the Spitfire, Bf 109 or Mustang.

All of the wartime Lavochkin airframes were birch plywood laminated with resin or Bakelite. Duraluminum was used sparingly. As Lend-Lease improved the supply of aluminum and tooling, metal alloys slowly replaced wooden parts, such as the wing spars. But most of the surfaces remained wooden, seamless and semi-glossy, prompting pilots to call them “grand pianos.”

The La-7 was rugged and simple to build and maintain. Big, wide apart wheels provided good ground handling on rough Russian and German fields. Its big tail and large control surfaces provided stability and maneuverability, designed to cut thru turbulence at low level. Enormous flaps allowed steep descents into small grass airstrips. And a big engine for performance. These are the qualities we seek in a model airplane too.

The color scheme of the model presented here is Lt. Col. Sergei Dolgushin’s La-7 as it appeared at the end of the war. The red nose is typical of the elite Russian Guards. Dolgushin was a high-scoring ace and a principal leader in the Battle of Berlin. Capturing Berlin ended The Great Patriotic War and started the Cold War. Because this airplane was central to both of these eras, it is an important artifact of history.

Only two La-7s exist, preserved in museums in Prague and Moscow, no longer flyable. So it is up to us scale modelers to preserve their images in the air.

###

Reprinted from *R/C Modeler*, May 2004

Thomas Morse Scout S4C



During World War I, American pilots were trained in lumbering Jennies and Standards, then expected to fly nimble Nieuports and Spads in combat in France. The Thomas Morse Chain Company of Ithica, New York, closed this training gap in 1917.

The Scout S4C was America's first advanced trainer. Although some have called it the AT-6 of World War I, it actually was produced too late to have any significant effect upon the war. Orders for 1,050 of these biplanes were cancelled at war's end after 497 had been delivered. Nearly all were sold to the public, and the S4C was widely used throughout the Twenties as a private airplane and in flying schools. Many of the apparent Sopwiths in movies such as "Wings" and "Hell's Angels" were actually Tommies, just as AT-6s were used to simulate Japanese Zeroes after a later war.

With its gentle trainer qualities and aerobatic agility, Tommy was a delight to fly. Yet it has the look of a Camel engaging The Red Knight. Those are the qualities we look for in a vintage R/C scale model.

If you would like to return to the romantic years of the Jazz Age, pull up the sheepskin collar of your leather jacket, wipe the oil off your goggles, and come on down to your workshop. Break open a mason jar of bootleg hooch, put a scratchy old Bix record on the Victrola, stack the balsa, and get ready to start

cutting. This will be one of the most enjoyable airplanes you've ever built. It's the cat's pajamas!

###

Reprinted from *Model Aviation*, June 1991.

How To Build A Model Airplane

Research:

Kits and components are not of equal quality. There's junk out there. Observe what works best for your fellow modelers. Chances are what works well for them will work well for you.

Do something every day:

Small efforts add up. You can't possibly be so busy that you can't find time to cut a wing rib or take a few licks with a sanding block. Do something, no matter how little, every day. You will be surprised how much gets done over the course of a few weeks.

Daydream:

Most of us spend more time thinking about a model-building task than actually doing it. Don't waste precious shop time merely thinking. When you are waiting in line at the grocery store or trying to fall asleep or driving home from work, plan your next shop work. Do this instead of worrying about your kids or your job—it's good for you.

Don't even think about your next project:

Time spent thinking about your next project while your present project is uncompleted is wasted effort. And it dampens enthusiasm about the work at hand. Stay focused. Concentrate on your current project instead.

Use the Right Tools:

Struggling with the wrong tools is frustrating and unpleasant. You will have more fun and do a better job if you invest in the right tools. They are a small percentage of your hobby expenses. It doesn't pay to be stingy.

Scratch build:

Buy or borrow plans. Buy wood and other materials in bulk and on sale. Select grain and density that's best for each part-

-kit manufacturers generally don't have time to do that. Don't fear to improve the design. Your cost will be less and the quality of the result will be better.

Ask:

Your fellow modelers are eager to share their knowledge, but they aren't a pushy lot—you have to ask. A good tactic is to start every question with a complement. Say "That's really neat. How did you do that?" If you go to the NATS or some other event where the experts hang out, you'll get more info out of these guys if you are one of them. So enter these events with the attitude that you are there for the experience.

One new thing at a time:

Try something new with each project—retracts, foam cutting, airbrushing—whatever you have never done before. But don't take on too many new things at once or else the complexity will balloon to more than you can handle.

Share what you've learned:

Explaining to someone else gives you better understanding. Sometimes this reveals a better way.

Have the courage to redo it:

Do not accept workmanship that is less than your best. If you discover something wrong, don't say it's good enough. Rip it out and do it right.

Crash it or trash it:

Build it to last, but fly it as if it were expendable. Well-built airplanes seem to last longer. Too much caution in flying inhibits learning. A well-built airplane will perform more predictably, allowing it to survive your learning to fly it. Eventually the plane will either be crashed or discarded with the trash. Prefer the former.

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See Better, Fly better

Something all aces had in common was exceptional eyesight. Manfred von Richtofen, Chuck Yeager and Erich Hartman attributed success to seeing the enemy before the enemy saw them. The best R/C flyers, such as Top Gun winner Dave Schulman, have excellent eyesight too.

Have you ever been bothered by watering eyes while flying? You see clearly until about five minutes into a flight, and then tears make your monoplane look like a biplane. Here's what's happening.

Normally, your eyes are protected by three fluids: water, a lubricant and an anti-drying agent. When concentrating intently on your airplane, blinking rate drops 75% or more. In the warm summer wind, this dries your eyes. If they get too dry, they go into an emergency mode that squirts only water into your eyes—no lubricant and no anti-drying agent. The excess water distorts vision and ruins your slow roll.

What to do about it?

You will find “lubricant eye drops” at the drug store. *Refresh Tears* is a popular brand. Use it before flying. It also relieves common eyestrain in dry winter air when reading or working in your shop—same cause: staring reduces blinking.

I nearly gave up on a student pilot who didn't seem to be able to learn to fly. Week after week, he would turn the wrong way at altitude. Other flyers said he was hopeless. Then one day he got new glasses. His flying immediately improved. A month later he beat me in a glider contest!

He confided later that he hadn't realized how poor his far-field vision had become. It deteriorated so slowly that he was not aware of the change.

Sometimes, eyeglass prescriptions do not completely correct far-field vision. The criterion is the ability to read road signs. But perfect correction at even greater distances is needed for R/C flying. Tell your eye doctor about your hobby and ask for 100% far-field correction.

Prescription sunglasses tend to be clearer than clip-ons due to less internal reflection. Polaroid glasses tend to greatly reduce the glare on wings, improving your ability to see the

attitude of the plane. Yellow sunglasses are excellent for flying against an overcast sky or late evenings because they maximize contrast under these conditions.

Clear vision is important when the plane is close because it lengthens perception of depth. The farther your perception of depth extends, the better it will be to perceive distance and direction of flight when landing. Perception of depth to several hundred feet is needed. The clearer your vision in *both* eyes, the better your landings will be.

Bob Hansing put a lot of research into this because he was blind in one eye. He discovered that an R/C pilot must be able to see both glide angle and direction of flight equally well in order to line up on final approach. His experiments found that standing in a position that gave him a 45-degree view of the final approach flight path was optimum. It was good enough for him to win some major contests.

See you at the field.

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Reprinted from TCRC *Flare-Out*, March 1999.

The Toledo Expo, Is It Rigged?

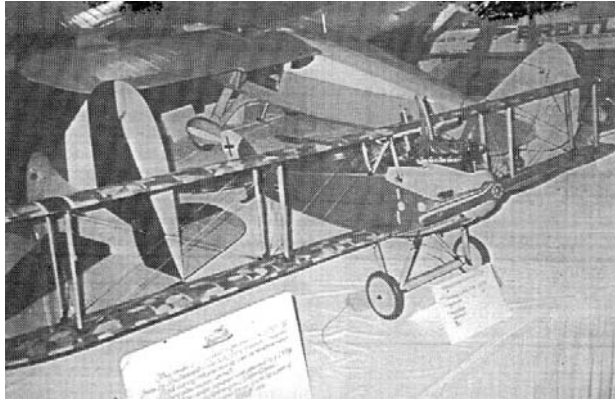
Last April I was asked to be one of the three judges for the Designer Scale class at the Toledo R/C Expo. Here is the procedure we judges were asked to follow.

First, we examined all of the contestants' documentation. With only a brief glance at the airplanes, we selected five entries having the best documentation. The remaining aircraft were eliminated from further consideration. "If it's not well documented, it can't be considered," we were told. This eliminated some magnificent aircraft including Dan Parson's incredible Bonanza which earned my vote for Best of Show.

Next, we scored each aircraft on ten categories. They were prop and spinner, cockpit interior, cockpit exterior, fuselage, wing(s), landing gear struts, wheels, tail group, color and markings, and finish. The final score was the sum of the scores in these ten categories. Prizes were awarded to the top three a/c. We spent nearly three hours scoring.

By this algorithm, Frank Mizer's LVG WW1 biplane vastly exceeded all the other entries. His documentation was of an a/c in the Shuttleworth Collection, so it included lots of close-up photos. Every detail was documented. For example, there was some tiny lettering on the tires that was easy to overlook. Frank's documentation proved the location, size, color and font of this lettering. Every detail of the cockpit down to the attachment of the rudder pedals and the number of laminations in the prop was proven by the documentation book. We three judges worked on this a/c for half an hour to find even an insignificant flaw. We couldn't.

Most passersby overlooked this diminutive airplane. It was the smallest entry, uncolorful and not very pretty. Only a judge with access to the documentation would appreciate this remarkable creation. I'm sure that some of the spectators wondered why this airplane won. After the awards ceremony, I congratulated Frank Mizer on his win. There were tears in his eyes. That almost brought tears to mine.



Frank Mizer's LVG

I have heard speculation that Toledo is an old boys' club, implying that it is rigged for certain favorites. Such is not the case. It is honest, rigorous and unbiased. There was a team of three judges for each category. All of the judges were experienced and well qualified. For example, one of my partners was Leroy Weber, the first chairman of the FAI scale subcommittee and the inventor of the unified scale rules. But I do have some misgivings about the judging procedure such as scoring the landing gear twice as much as the fuselage.

We were also asked to nominate the Best of Show. The criterion was initial impression. Naturally, we selected the biggest, prettiest and most brightly colored. Frank's little biplane didn't have a chance.

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Reprinted from TCRC *Flare-Out*, June 2000.

What Are We Doing When We're Not Having Fun?

I'm confused by the meaning of "fun" as in "Fun Scale," "Fun Fly," and the oxymoronic "Competition Fun Fly." My dictionary says that "fun" means "providing enjoyment or amusement." Did the coiners of this word, as applied to modeling, mean to imply that other types of flying lack enjoyment or amusement? Do they suggest that other types of flyers are deranged neurotics who cannot control their compulsive behavior and suffer while doing slow-rolls against a summer sky? No, it's generally accepted that the term "fun" means that the activity is performed *only* for fun and nothing else. Is so, why do these events offer prizes? And what ulterior motives exist in the other events?

And what does "sport" mean as in "Sport Scale" and "Sportsman Class"? Merriam's defines sport as an activity that is performed for recreation--it's a synonym for "fun." Confusing?

If some of us fly for a reason other than sport, fun or recreation, what could this dark side be? Do we suggest that Novice Pattern is flown for prestige, that sailplanes are flown for big bucks, and scale brings fame and fortune? Could it be that teenage groupies forsake rock stars in favor of pylon racers? Do helicopter pilots form PACs? Is there insider trading going on in Peanut Scale? Not likely.

Is it implied that some modelers enter competition only for the prizes? Oh sure--like someone will practice for years just to win a roll of Monokote.

Let's consult the dictionary once again. Reading further, I find another definition that defines sport as "an individual exhibiting a sudden deviation from type beyond the normal limits of individual variation, especially as a result of a mutation." It also describes a sportsman as "a good loser."

Aha! The picture becomes clearer--we are deviates, mutants and losers!

Not really. The hint of snobbery is only an unfortunate accident. What is really clear is that the appellations "Sport" and "Fun" are poor word choices because they obscure what the activities really are. What to do about it? For starters, I offer the following substitutes.

Let's rename Fun Scale for what it really is—a pattern event. Dave Platt admits that the 5-point bonus was included as a ploy to prevent it from being controlled by the AMA pattern contest committee. Let's call it "Scale Pattern." Who cares which committee claims it!

The essence of Fun Fly is that the tasks are varied and not announced in advance. So let's call it "Free Style" or "Decathlon" or "Unlimited." Although I like "Open Fly" best, I'm sure you can think of something better.

Since there is only one scale event, let's simply call it "Scale." Let's eliminate the redundant "Sportsman Class Sport Scale" and borrow the straight-forward term "Novice" from the glider guiders as a replacement for the patronizing "Sportsman." Then we have Scale—Novice and Expert. Isn't that clearer?

Now, about Designer Scale....

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Ten Signs You're Becoming A Scale Modeler

10. You spend a week thinking about how to make a part that's only half an inch long.
9. You scrounge modeling supplies at weird places like photo stores, auto parts, fabric stores, surplus stores and art stores.
8. French and German words are creeping into your vocabulary.
7. You purchase servos by the dozen.
6. You have a box full of model railroad and model rocket stuff.
5. None of your retract servos are used for retracts.
4. You buy women's hairset pinking tape, ten rolls at a time.
3. You criticize your full-size pilot friends on the way they fly.
2. You collect broken vacuum cleaners.
1. You choose a window seat so you can study the dirt on the wing.

###

Such a Deal!

You've renewed your R/C club membership. Congratulations. You got a bargain. And the reason it's such a bargain is because most of the services and facilities afforded to you are provided by the labor of club members, not dues. Take the newsletter, for example. Your dues paid for the paper, the printing and the postage but not the composition. That was done for free. Or consider the club tractor as another example. Your dues paid for the fuel to run it, but someone donated their time to drive it and maintain it. Or consider club meetings and contests. Your dues weren't used. They are someone's labor of love. Your dues only paid for the overhead of making all of these other free services available.

Imagine what would happen if these services were not free of charge. Imagine for a moment that the club were some sort of for-profit industry in which all labor was paid for at fair market rates. Suppose we hired a contest director, contracted for field maintenance, paid the board of directors, and subsidized meeting night programs. How much would dues be then?

Now let's consider this from a completely different angle. Suppose that you received from the club only that which you paid for. What would you get then?

The newsletter would consist of a couple of blank pages, but no one to mail them. There would be no meetings, no contests, no fun flies, no banquets. And you would receive no help building your plane or learning to fly it. You would, however, be the proud part owner of a dilapidated tractor and a field full of weeds. But not for long because there would be no one to file the paperwork to keep them.

So you see, there are services rendered, but none of your money is used to pay for them. Instead, you may pay for these services in whatever manner you choose and whenever you want.

Such a deal!

Here are some of sort of things that you can do...

If you've discovered a new tool, bring it to a meeting and tell us about it. If you've got a tough building problem, ask. We'll all learn from the ideas it will provoke. If you love to fly, help others to learn. If you love to build, bring your creation to a

meeting. And if you just want to help out, lend your labor to the spring clean-up, paint the benches or help mow the grass.

We'll be grateful for the bargain.

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Reprinted from TCRC *Flare-Out*, March 1981.

SCALE FLYERS OF MINNESOTA



Minnesota is a hotbed of scale modeling—perhaps due to the long winters and short but excellent flying seasons.

About 12 years ago, our local Pilot Laureate, Bill Cowette and several other R/C scale modelers observed that the state's rather large number of scale modelers were thinly distributed among the several R/C clubs in the area. Scale expertise was not being widely shared. And so the idea of a special interest organization devoted exclusively to scale R/C modeling was formed. Time has shown that this spread knowledge of scale modeling techniques to the local clubs much better than each club could, struggling on its own.

Here are the principles under which the Scale Flyers of Minnesota operate:

- Exist for the benefit of scale modelers in all the local R/C clubs.
- Flying events are rotated among local R/C clubs. The Scale Flyers of Minnesota needs no field of it own.
- Informal monthly meetings in the winter only.
- No business discussions at meetings. All business is managed by a board of directors.
- No elections. Instead, volunteers are gratefully accepted.
- Sponsor the regional Scale masters Qualifier plus one or two other scale flying events.
- Devoted to all sizes and types of R/C scale aircraft.
- Incorporated as a non-profit corporation in order to have a bank account and some liability protection.

--Board of directors includes representatives of each of the major local R/C clubs.

Subjects are not limited to precision scale, giant scale or any particular type of aircraft. Gliders, helicopters, ducted fans, 12th scale combat, even a pterodactyl are seen at Scale Flyers events but large models tend to predominate.

Without a flying field of its own, there is no need for the SFM to be AMA chartered. But all SFM flying events are AMA sanctioned. All of the group's members are AMA members but that is not a requirement.

On one occasion, a newly formed R/C club invited the SFM to hold an event at its field. The SFM organized a scale fly-in of over 60 scale aircraft and, in the process, showed the new club how to manage such an activity—advertising, safety, parking, food, etc. It was the club's first open flying event.



Visitors to meetings park under the wings of the Minnesota Air Guard Museum aircraft and walk thru displays and restoration projects. Meetings are held in the loft of a working hanger, surrounded by plastic models on the ceiling and a huge aviation library. A window overlooks an SR-71 being restored and the runways of MSP airport beyond. In this total immersion in aviation, the winter meetings tend to be unlike other R/C club meetings. There is no business discussion, no Robert's Rules of Order. There is very little discussion of R/C basics. No Monokote demos, no foam wing cutting. Important as they are, R/C basics

are not unique to scale models, so they are left to the local clubs. Meetings are entirely how-to programs and show-and-tell of scale works in progress. These discussions tend to be greater in depth than is possible at other R/C club meetings.



The membership consists primarily of experienced modelers, although the group attracts beginners who intend to advance into scale. Attendance at each meeting averages about 50% of the membership—very high for an R/C club. Sometimes the number of attendees exceeds the membership due a large number of visitors.

This is hard-core scale modeling at its most intense. Meetings last up to three hours. Adjournment to a local restaurant continues into the a.m.

Could your area benefit from an all-scale R/C special interest group? If your town has five or six major R/C clubs with a total of at least 20 active scale modelers, perhaps you should consider forming one.

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Reprinted from *R/C Modeler*, May 1999.

About the Author...



David P. Andersen is a retired computer design engineer. He was born in 1940 in Minneapolis where he lives with his wife Rosemary. AMA license number 16331 was obtained in 1952 when he was flying free flight and U-control. He entered his first meet at that time, flying a Jasco Floater. A library book provided a circuit diagram from which he built his first radio (it didn't work very well). His League of Silent Flight number is 182, the first in Minnesota. A mode one radio is preferred, a habit remaining from learning to fly on an Orbit superregen reed radio.

He has held the President and Vice President positions in the Twin City Radio Controllers and he is secretary and newsletter editor of the Scale Flyers of Minnesota which he co-founded. He also co-founded the Blue Eagles air show team.

His R/C model airplane designs have appeared in *Model Aviation* and *R/C Modeler* magazines. An active flyer, he participates in Scale Masters, NATS, Toledo Expo and other

national competitions plus air shows, fly-ins and every local event he can attend.

Contest Director, Scale Masters Certified Judge, Top Gun Flight judge, and AMA Experimental Aircraft Inspector are some of his formal credentials.

Writing for national magazines started with the publication of his first construction article. Since then, he has written countless how-to's, event reports, short stories, poems, editorials and construction articles. His designs have appeared on many magazine covers.

But all this is a mere byproduct of his love of building and flying and hanging out with his friends.



Author rushes to the airport to catch a flight.

What the reviewers say....

"I have just finished reading the August 1981 issue of R/C Modeler, and I wanted to drop you a note and tell you how much I enjoyed the article "Fly Me" by David P. Andersen. I am relatively new to R/C modeling, having been flying models for less than two years. However, I, too, like many other modelers have never been able to find the right words to express the sheer joy of axial rolls through rays of sunlight against a crystal blue sky. Mr. Andersen has saved us all the trouble by finding the right words.

I gave the article to my wife, and she enjoyed it as much as I did. No article that I know of has so well captured the spirit of R/C modeling. It is as Shakespeare might have said, '...the stuff dreams are made of...' Thank you and thanks to D.P. Andersen for this fine article."

-Thomas N. Wheeler, West Virginia

"Interesting and entertaining! Great book for the coffee table, workshop or the john."

-Frank Tiano, Frank Tiano Enterprises

"A wonderful collection of anecdotes, hints and stories—some serious, many outright whimsical, but all of them great reading."

-Dave Platt, Dave Platt Models Inc