





PHOTOGRAPHY BOB ABERLE

Three R/C channels "assist" Bob Aberle's modern re-make of John Tatone's *Frisco Kid*. Bob pays tribute to John's 1950s freeflight design and also brings back some fond memories of a bygone modelling era.

An R/C Tribute: Frisco Kid

By Bob Aberle

Thanks for the memories, John Tatone.
Bob adds 3-channel R/C to a legendary
freeflight design. One for fun.

I have been both a fan and friend of John Tatone since back in the fifties. As a sixteen year old fledgling modeler I had the pleasure of attending the 1954 International FAI Free Flight Championships, which was held at the Suffolk AFB in Westhampton, Long Island (NY). Fellow L.I. Gas Monkeys club members, Bob Geyer and Don Martin, were good enough to transport me to this event on two separate days.

Very early on my first visit to the AFB I met up with John Tatone, who I had read about extensively in the model press. John had a very clean and yet simple free flight design, which he had perfected over a period of years. The design was called, the *Frisco Kid*, understandably because of John's home town (San Francisco). John was one of the few people at that meet who took the time to answer a load of questions from an eager beaver kid. Over the years I never forgot that.

It was unfortunate but at the end of that 1954 international event, John Tatone had only placed eleventh. The reason for this was a balky engine timer that caused him two overruns. As fate would have it, John returned from this competition determined that a situation like this would never happen again. Soon after he developed and began producing his famous "Tick-Off" timer. That single incident on Long Island launched John

into a business which eventually evolved into J-Tec Inc. of which he is now owner and president. As an interesting side note to that 1954 free flight competition, first place was won by no other than *Model Aviation* publisher, Carl Wheeley, flying his popular, *Senator* design.

I was so impressed by the *Frisco Kid* design that I built my first from sketches supplied by John Tatone right after that 1954 contest. From that point until I went into the service in 1959, I flew *Frisco Kids* in four different sizes. The first was the original .15 size; then there was a 1/2A with a McCoy .049 diesel that I placed with at the 1955 New York Mirror meet; a .19-.23 version which I flew in class A/B and finally a large 900 square inch version powered by a K&B .32 for class C free flight. I flew the latter two *Kids* at the 1957 AMA Nats at Willow Grove, PA.

By popular demand John Tatone finally published the .15 powered version of the *Frisco Kid* in the April 1955 issue of *FLYING MODELS*. John told me recently that he also had built the *Kid* in several sizes. The simple planform made it very easy to "literally" scale. All of my variations were scaled up or down strictly by arithmetic, without any alterations from the basic design. That's how easy it was and why so many of us repro-

duced this design in various sizes.

If you happen to have a copy of that April 1955 *FLYING MODELS* article you will notice that the original *Frisco Kid* plans were drawn by no other than "Mr. Plans" himself, John Pond. Knowing that fact made it very easy to get started on this modern day project. First I sent to John Pond's Plan Service (PO Box 90310, San Jose, CA 95109-3310) for a current plans catalog (which costs \$1.50). In the "Models Built after December 1942" section you will find three versions of the *Frisco Kid* offered (the original .15/FAI, a 40-inch 1/2A and a 72-inch A/B size). That was my starting point for this project.

1989 Frisco Kid

My goal was to build the original .15 powered (F.A.I) version of the *Frisco Kid* as close to the original format and construction as possible. The only thing different planned in this case was to add a three channel R/C system to provide me with an "assist". Before I go any further, let me just say that this entire project was done strictly for my own personal fun and as a tribute to my friend, John Tatone. I have no intention of entering this model in any R/C assist free-flight competition, nor do I want to enter into any of the current debates or controversy over such an event.

This .15 powered version of the *Kid* has a 56-inch wing span along with a constant chord of 8 inches, which provides a wing area of roughly 450 square inches. The original F.A.I. free flight rules called for either a 15 or 20 ounce weight minimum (I'm not sure which is correct after all these years). With the addition of a small three channel R/C system and a Super Tiger .15 engine (with a muffler) I knew I would far exceed these original weights. Just how far I could actually exceed it and still obtain reasonable performance was the big unanswered question at the start of this project.

Construction differences

Very basically the wing was constructed the same as the original, with one exception. The original single lower balsa wood spar

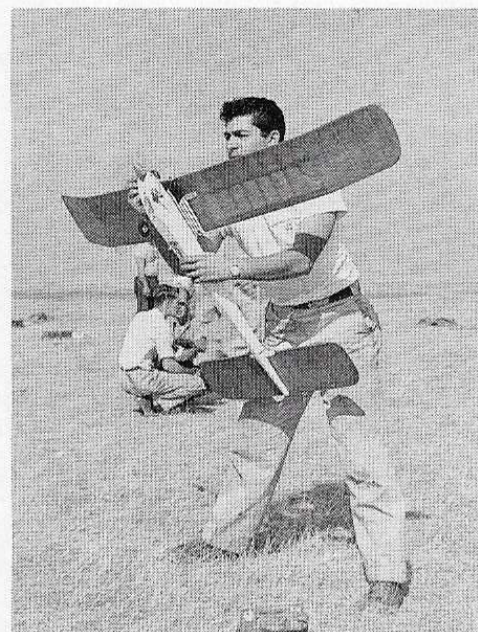
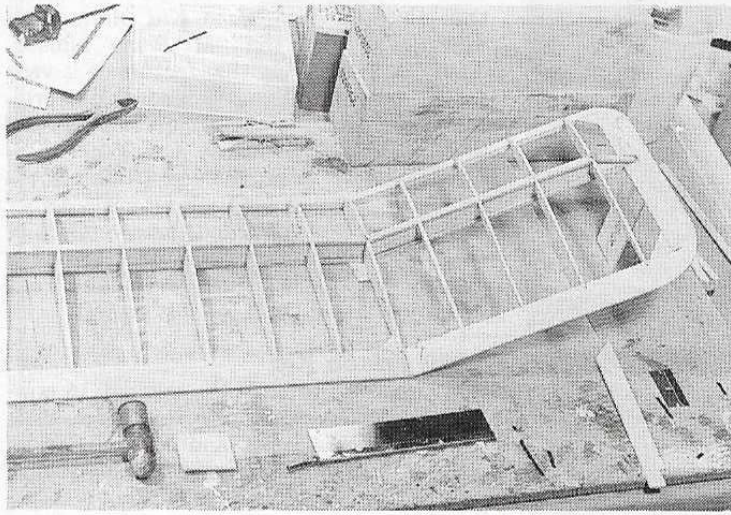


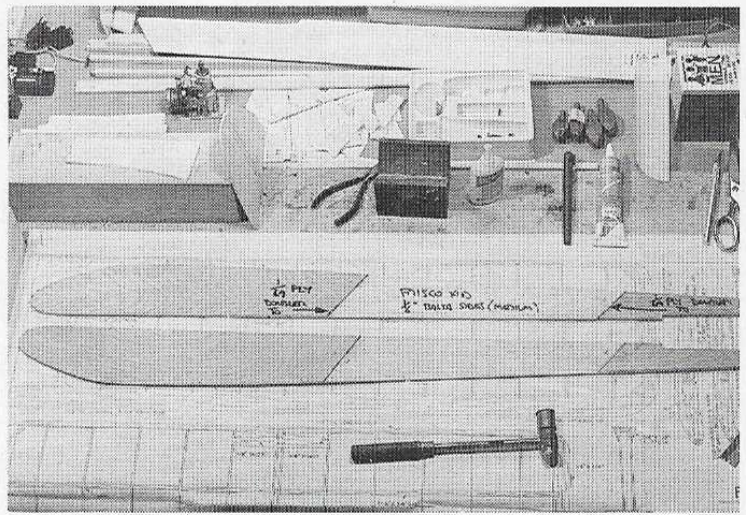
PHOTO: COURTESY JOHN TATONE

Sometime back in the 50s John Tatone adjusts the engine on his original 1954 F.A.I. *Frisco Kid*. The plane got its name from John's hometown of San Francisco, and eventually was scaled to four sizes.

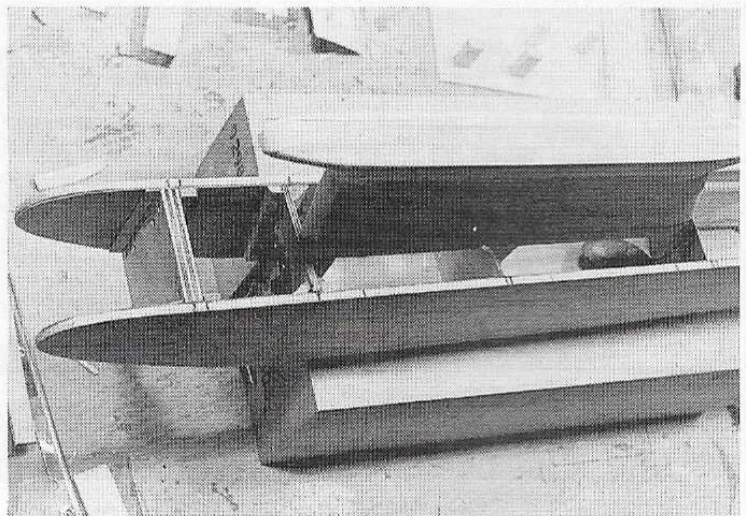
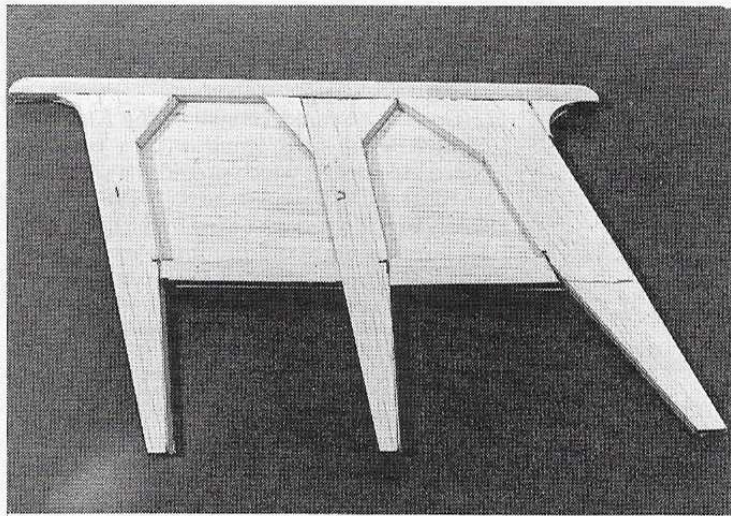
An R/C Tribute: Frisco Kid



Construction of the modern *Frisco Kid* follows the original closely. One difference, in the wing (**above left**) is the use of a top and a bottom spar with vertical grain balsa webbing for more strength. Because the R/C *Kid* is heavier, $\frac{1}{16}$ ply fuselage doublers are used for added strength (**above right**). Bob also



changed from $\frac{1}{8}$ balsa sides to $\frac{3}{32}$ balsa. A hardwood top caps the wing pylon (**below left**) which is made from $\frac{3}{8}$ inch balsa core pieces, then sheeted with $\frac{1}{16}$ inch balsa. The completed wing pylon is then aligned on the fuselage (**below right**) and the "feet" glued to three formers.

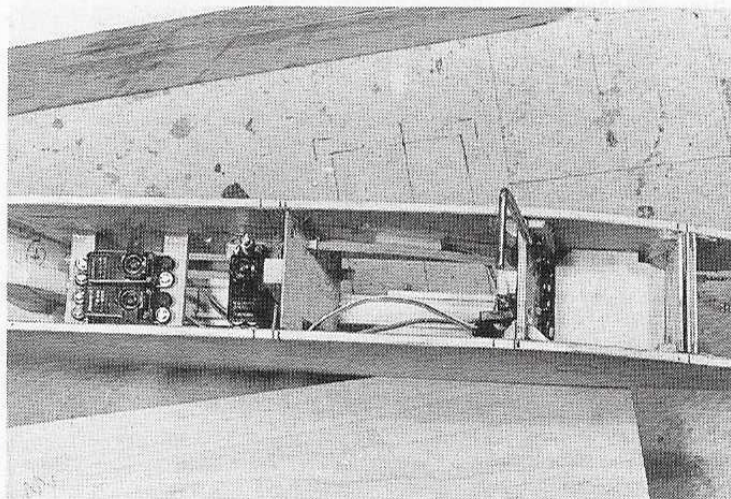


was replaced by two spruce spars (top and bottom) with vertical grain balsa placed between every rib. I just felt that the R/C version might be subjected to some more abrupt (violent) maneuvers than the pure free flight version. To preclude a wing folding or even fluttering in flight, I felt it more prudent to go to the two spruce spars. I did not, however, go to a sheeted leading edge, nor did

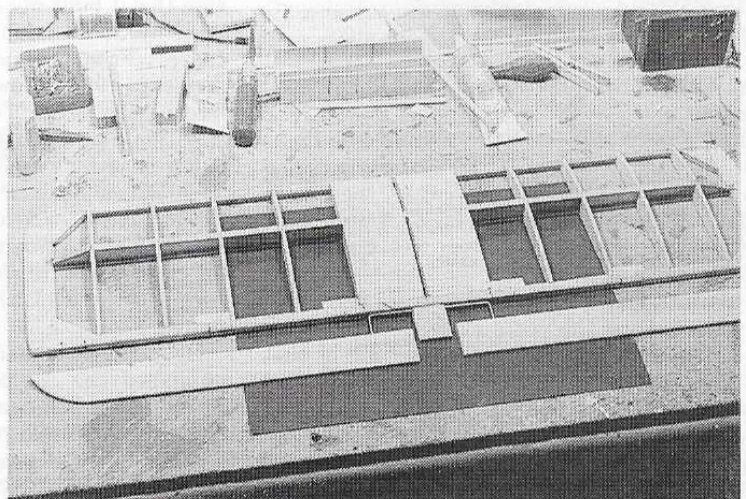
that prove necessary.

The stab construction was essentially unchanged, except for the addition of elevators. I found that $\frac{5}{16} \times 1\frac{1}{4}$ inch trailing edge stock fit this airfoil most conveniently. Then all I did was to butt this T.E. stock up against $\frac{5}{16}$ square balsa which became the fixed stab trailing edge. Again I decided to replace the single balsa spar with two spruce spars. Al-

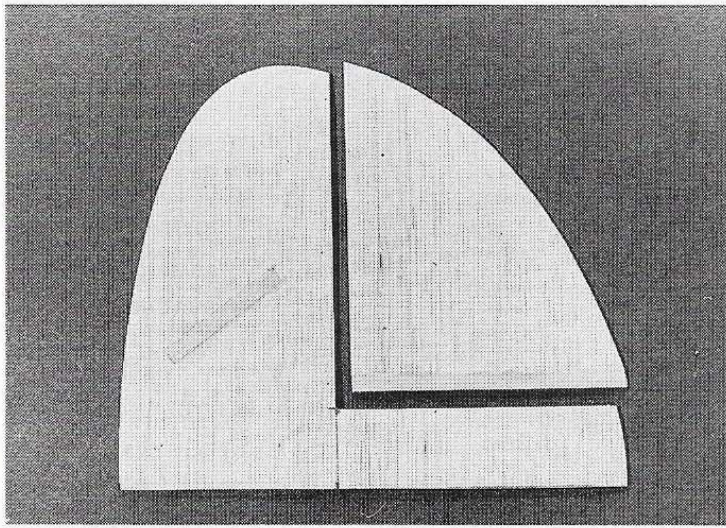
though I also placed vertical grain balsa between these spars, I didn't call that out on my final plans. The little extra strength obtained wasn't worth the weight penalty. You will also find that I did increase the stab chord by about $\frac{1}{4}$ inch to gain just a little extra area. This will cause a little overhang at the end of the fuselage, but don't worry. With the center of gravity at 75% back from the



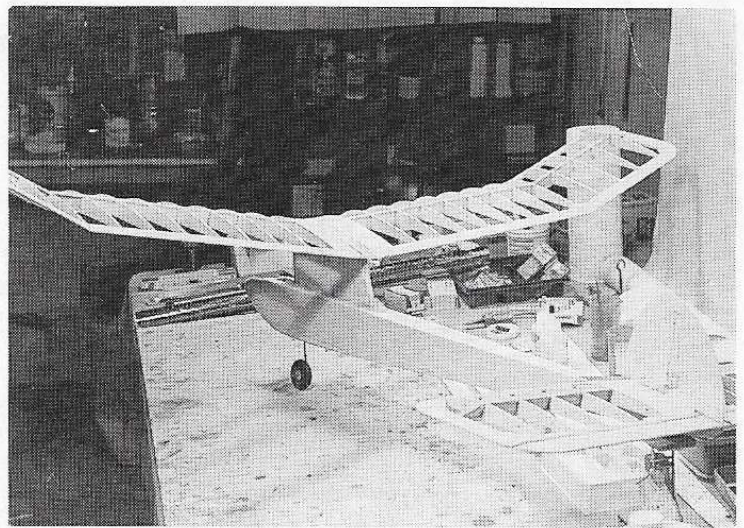
This bottom view of the fuselage under construction (**above left**) shows the servos installed but not the battery and receiver. Make sure there are access holes in the formers for the pushrods and electrical cables. The horizontal stab



(**above right**) is almost unchanged from the original except for the addition of the elevator and a tiny bit wider chord. The elevators are joined with a piece $\frac{1}{16}$ wire running inside a length of brass tubing.



Spruce stiffeners have been added (above left) to the vertical tail (diagonal piece) and the bottom of the rudder to give some extra strength where needed.



Bob's Frisco Kid sits on the workbench (above right), framed out and sanded, ready for paint and transparent MonoKote covering for the wings.

leading edge I wanted all the stab I could get. This works out to a stab area of close to 40% of the wing.

Fuselage moment arms were maintained exactly as on the original. I suspect the extra weight of the control rods, hinges and control horns on the aft end were easily offset by the heavier engine and the R/C battery pack up forward. Still in all that is a very short nose when you get right down to it. As such you ought to keep the tail as light as possible. I added $\frac{1}{64}$ plywood doublers on the inside of the balsa sides (both front and rear). I think this is important because of the heavier weight of this version. The only real design difference was in the width of the fuselage. I was forced to make the fuselage a little wider to accommodate the R/C system and the control linkages.

The pylon structure might prove new to some modelers, especially if they had not flown free flights in the past. As complicated as this pylon looks, it can still be fashioned quickly with the help of the CyA instant cements. Make sure the top piece of the pylon is hardwood, because it will take the full load of the wing rubber bands when under tension.

When I wrote to John and told him of my plan to build a Frisco Kid he responded by sending me the original aluminum wing support bracket from his 1954 F.A.I. competition model. This mount is actually very easy to make up and does an acceptable job of holding the wing in place. Make sure you use a hard grade aluminum material like "ST". Even with four large rubber bands holding the wing in place, it will tend to rock slightly on the aluminum bracket. But that wing rocking has never seemed to affect the flight performance.

Engine/fuel tank

I used my 15-year old Super Tiger front rotor .15 engine for this model because it was very reliable when I flew quarter midgets with it years ago. It had been sitting for the last ten years completely immersed in a jar of kerosene (a Clarence Lee suggestion that really works!). As you can see on the plans, this engine is radial mounted to a plywood firewall. Quite frankly the fuselage was too small to ever consider wood beam mounts.

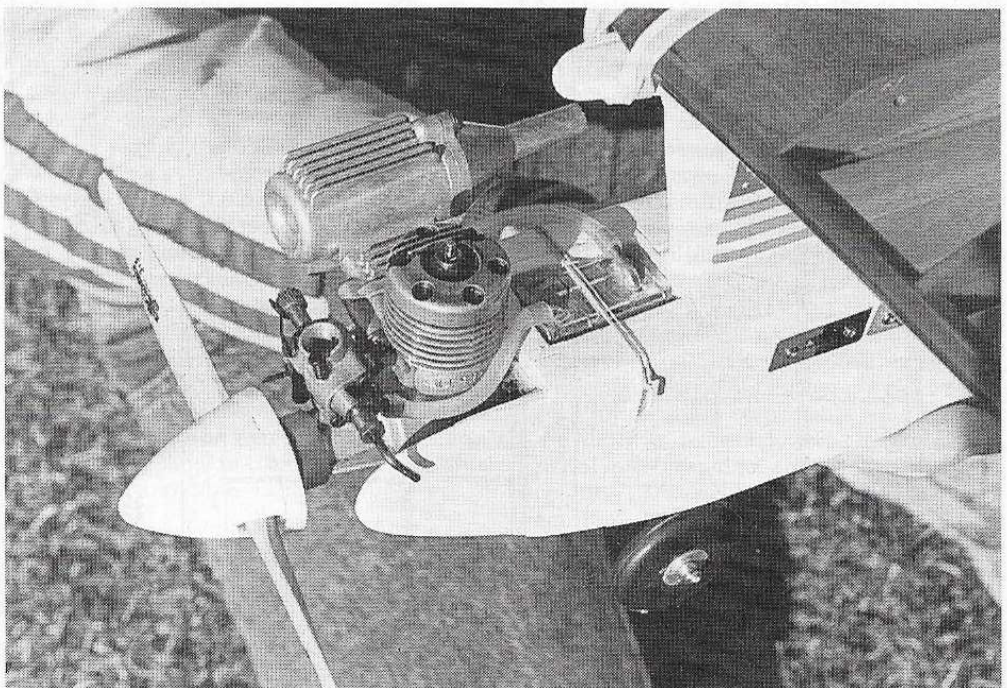
To radial mount the ST .15 I asked John Tatone for help. John had used his own radial mounting plate on the K&B .15 in the original Frisco Kid. The photos show the $\frac{1}{8}$ inch thick aluminum plate he fashioned for me. Basically the plate is held to the engine by using the four rear crankcase cover bolts. By the way, don't forget to drill a clearance hole through the firewall and the radial mounting plate for the passage of the throttle control cable.

The combination of Super Tiger engine and muffler weighed a total of 8 ounces. You had best weigh your choice of engine and muffler at the start of this project. If the combination weighs less than 8 ounces I would suggest that you lengthen the nose somewhat to prevent a tail heavy situation later on. I couldn't find a fuel tank to exactly fit my needs so I settled for a Perfect brand No. 19 metal wedge shaped tank which is primarily intended for control line flying. As a result I was forced to do some modification work on the tank fittings to adapt it for use on the

Frisco Kid.

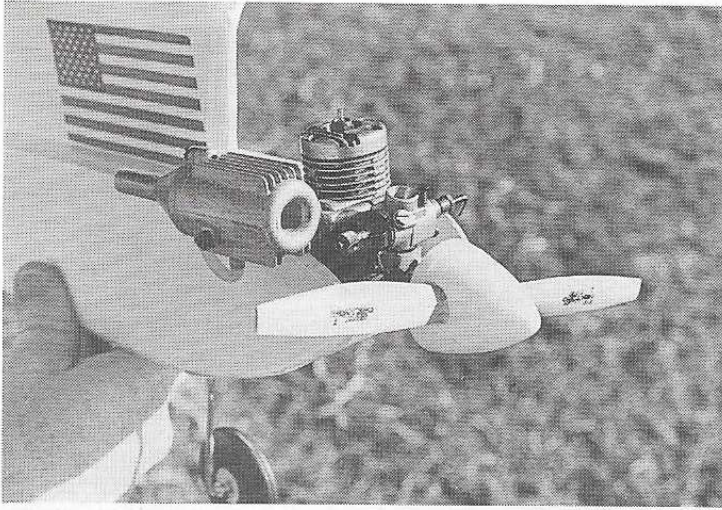
The original fill and vent tubes were removed and the holes closed up with silver solder. A new pick-up tube was added which goes to the bottom rear of the tank. The exiting end of this tube faces forward towards the engine. A single fill/vent tube exits the side of the tank. If you notice in the photos, I actually built a small recessed box in the top of the forward fuselage, directly in front of the pylon. The fuel tank fits in this balsa wood box and is held in place with a small rubber band. Muffler pressure was employed with the tubing running to the single tank vent tube.

The $\frac{1}{2}$ ounce fuel capacity only gives about a 20-25 second engine run (on 15% nitro fuel). Although I did use a third servo and connect up to the ST .15 throttle, I seem to run out of gas, before ever touching the transmitter throttle control stick. You might want to consider that fact and possibly omit the third servo entirely. It would save both weight and

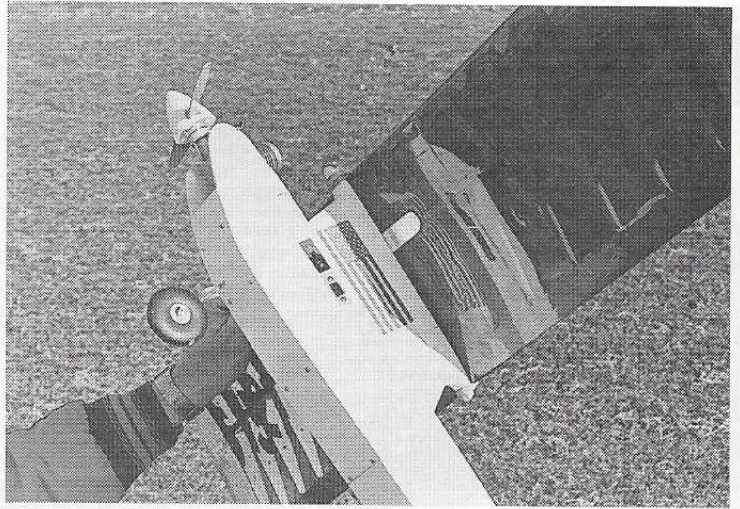


The SuperTigre .15 drinks fuel from a No. 19 $\frac{1}{2}$ ounce Perfect tank. The metal fuel tank was modified for use with Bob's setup and literally sits in a form-fitting balsa wood box. Rubber bands hold it in place.

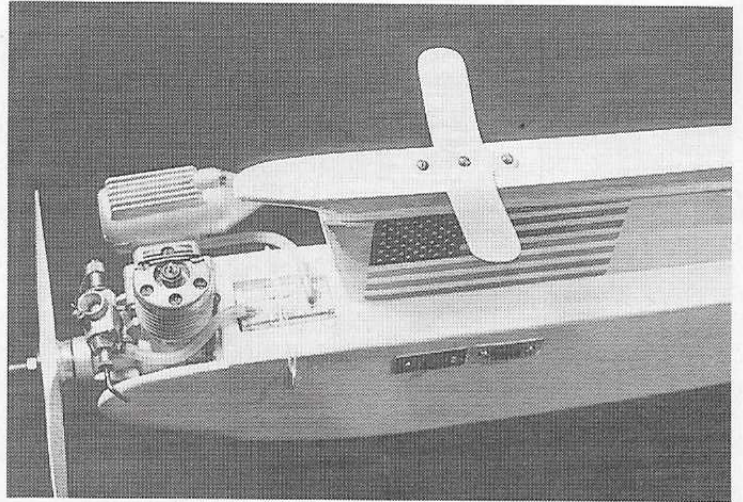
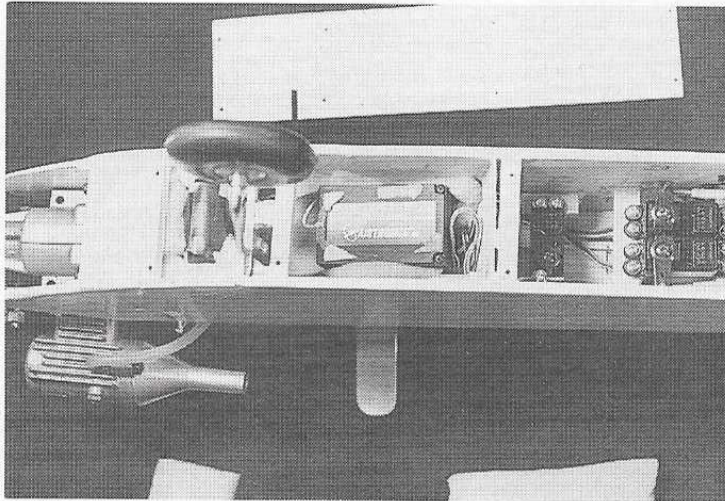
An R/C Tribute: Frisco Kid



Total weight for the engine and muffler is eight ounces (above left) which works out well for the short nose moment of the *Frisco Kid*. On the left side of the fuselage are the radio switch and charging jack (above right). Eight small sheet metal screws hold the lower hatch cover in place, and when it's removed (below left) you have access to the radio equipment. The small 275 mAh bat-



tery goes in the front compartment to help with balancing the model. On top of the pylon (below right) is the aluminum wing mount used to keep the wing from rocking. This particular mount came from John Tatone's original *Frisco Kid* that was flown at the 1954 F.A.I. International Competition in Long Island where Bob met John.



the added control hook up complexity.

R/C system

Obviously a model of this type requires a small and lightweight radio system. Last year I bought a second airborne flight pack from Airtronics, to match up with my Module 7 transmitter. This flight pack consists of the Airtronics No. 92245 four channel FM micro receiver along with their tiny Microlite servos (No. 94501). As a point of reference I reviewed these Airtronics components in the June 1988 *FLYING MODELS* (pages 29-31). For a battery pack I chose to make up my own from four Sanyo 275 mAh cells that were obtained from ACE R/C Inc. The total weight of this airborne flight pack, with three servos and a full size Airtronics switch harness, was only 5.5 ounces (not bad at all!). I'm able to get well over an hour of flight time on this 275 mAh battery pack. If that doesn't suit you I suspect it wouldn't take too much effort to substitute a larger capacity 450 mAh pack.

The servos were mounted on $\frac{1}{4} \times \frac{3}{8}$ hardwood bearers. The forward servo handling the throttle, followed by the rudder and elevator servos, side by side. Sullivan Gold N'Rod (red flexible) were used to connect the servos to the rudder and elevator. Clearance holes must be provided in former F-4 for the passage of these two rods. In addition, I ran

an outer Gold N'Rod tube along the top, inside of the fuselage out to the tail cone. Inside this tube I ran the receiver antenna, which helps to streamline the model. The Airtronics micro receiver has worked perfectly with this internal antenna arrangement.

Don't forget to make clearance holes in formers F-2 and F-3 for the passage of the servo cables and the battery cable. I decided to employ a lower (removable) hatch cover to provide access to the complete radio system. This cover was fashioned from $\frac{1}{16}$ plywood with the predominant grain running crosswise (to the centerline). This allows the cover to bend easily to the shape of the lower forward fuselage. A set of eight No. 2 sheet metal screws hold this cover in place. Hardwood blocks along the inside of the R/C compartment provide the anchor points for all the screws. With an external battery charging jack you shouldn't have to remove this hatch cover too often.

Finishing

The original *Frisco Kid* was covered with Japanese tissue (red on the wing and stab and a painted white fuselage). On both sides of the pylon John hand painted an American flag which was very appropriate for the international competition.

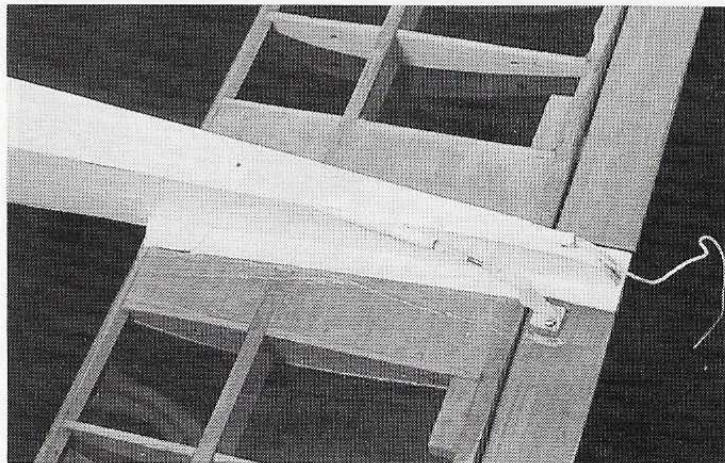
I tried to duplicate his color scheme, but with more modern materials. My wing and

tail were covered with transparent red Super MonoKote. As I found with my *Kerswap* Old Timer, the undercambered wing is very easy to cover. Just run the iron along the bottom of each rib and the lower spar. Once you do that the covering will never pull loose. The fuselage was given a couple of coats of Red Baron spray can primer followed by two coats of Hobbyoxy White. I was fortunate to find some large size American flag decals and they were affixed to the pylon. A final coat of Hobbyoxy clear protected these decals. The resulting model looks very much like John Tatone's original, as I had remembered it.

Final model weight ended up at 32 ounces. That works out to a wing loading of 10.3 ounces/square foot. When you get right down to it, that is still a respectable wing loading for a glider, let alone a powered model. My 76 *Special* quarter midget trainer (*FLYING MODELS* July 1976) weighed 48 ounces and was very fast. So it was no wonder that this "powered glider" went like a shot at 32 ounces.

The balance point worked out exactly as the original free flight version, namely 75% back from the leading edge of the wing. Despite the large stab area I must admit that I was somewhat apprehensive about flying with a C.G. so far aft. But, as I found out later on, it worked just fine.

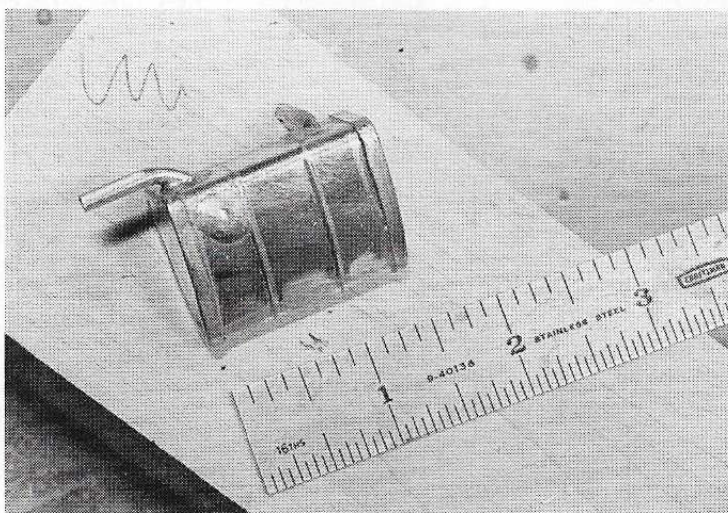
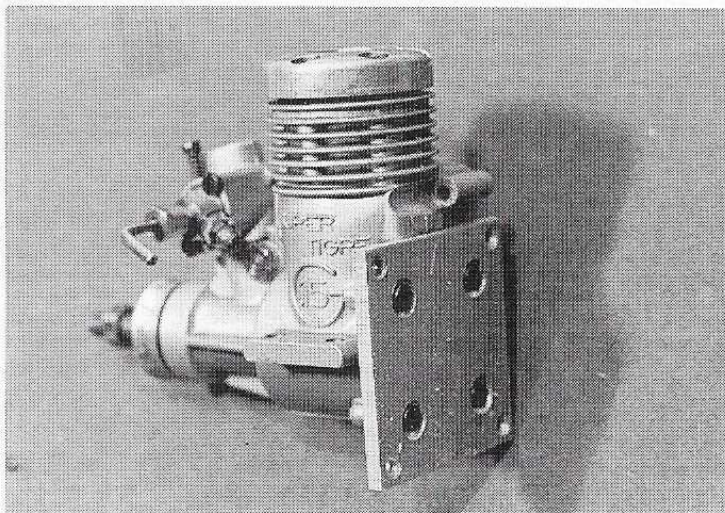
An R/C Tribute: Frisco Kid



Small 1/2A Goldberg control horns worked quite well on the elevator pushrod hook-up (above left); the receiver antenna, running inside a Gold 'N Rod, exits the fuselage at the tail post. Free flight designs and large horizontal stabs are synonymous (above right) but must be kept light to avoid tail heaviness. Some sort of radial engine mount is absolutely essential for the *Frisco Kid* since there



is no room for wooden beam mounts. The picture (below left) shows the radial mount that John Tatone fabricated for Bob to use with his *Frisco Kid*. To use this Perfect No. 19 1/2 ounce tank (below right), Bob had to remove the original pickup and fill/vent tubes, plug the openings with solder, and resolder the tubes in the new positions shown.



Bob poses with his modern *Frisco Kid* which nearly duplicates the same scheme as John Tatone's original. Final weight of Bob's *Kid* came to 32 ounces for a very light 10 ounce/square foot wing loading.

Flying

The best prop to date has been a Zinger 7-3 1/2. You might want to experiment a little with various 7-inch diameter props to select an optimum type. Very basically my 1989 R/C assist version of the *Frisco Kid* can easily attain about 400-500 feet altitude on a 20-25 second engine run. Both my flying buddy, Tom Hunt and myself, have caught a few thermals that made for 5 to 10 minute duration flights (and this was still in very cold weather). One of the most important items to concern yourself with is the rudder and elevator control throws. I used the dual rate controls on my Airtronics Module 7 transmitter to good advantage for my initial flight testing. Normal control was set for 1 1/2 inches (either side of neutral) for the rudder and 3/8 inch (either side) for the elevator.

On the first flight the *Kid* began to over control quite noticeably as the model began to climb out. It was only with a great deal of concentration that I didn't barrel roll it into the ground. Obviously the combination of the wing polyhedral (in the tips) and the too-far aft C.G. position, can produce a very sensitive rudder control situation. Fortunately I was able to cut in the dual rate switch and reduce the rudder down to 1 inch (on either side) which has proved about optimum. In the same regard I later reduced the elevator

control throw to $\frac{5}{16}$ inch (either side) I found that setting about optimum.

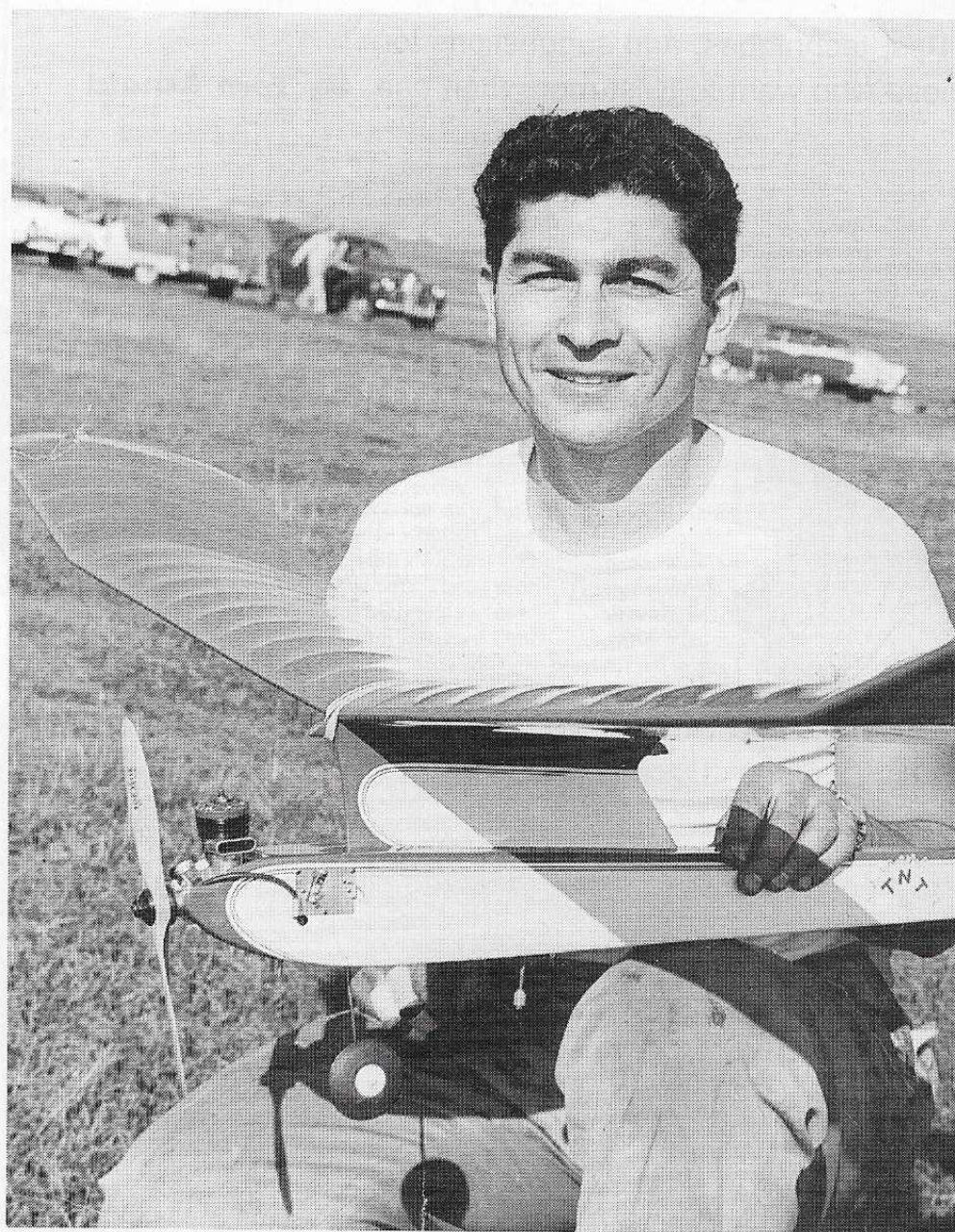
I'm now able to control the *Kid* perfectly under power and have virtually never stalled it while gliding. Quite often in a thermal I fly the model on the trim tabs alone. The landings are so slow that Tom and I have taken turns catching it before it touches the ground.

I just recently received a new Airtronics Vision R/C system for review and evaluation. I'm looking forward to using this new Vision transmitter to control both my *Kerswap* Old Timer (FLYING MODELS, November 1986) and this new *Frisco Kid*. With this transmitter I can establish all the exact control positions for the particular model and then store it in the microcomputer circuit. What I'm most anxious to try is various degrees of exponential rate control for both the power ascent and the glide (possibly a separate setting for each regime and separate for each model as well!).

My primary reason for building this particular model was to offer a special tribute to my friend, John Tatone. It was John's design expertise and patience that provided me with a tremendous amount of enjoyment as a teenager. The basic simplicity of this design enabled me to scale it easily up and down and produce enough models to be able to fly in every class from $\frac{1}{2}$ A through class C. In fact I hope some readers might be encouraged, after reading this article to try a .25 powered 600 square inch version or even a hot .40 in a 900 square inch *Kid*.

Most important, I proved to myself that a contemporary pylon free-flight design of the fifties, could be built essentially "verbatim" and flown with a modern, lightweight R/C system. With a little care in selecting your control throws, you can easily cope with all that polyhedral in the wing and the far aft C.G. position. So if you are an old free flyer and can still remember one of your favorite designs, why not try it again with R/C control. Like I said in the beginning, I did this strictly for fun, not for any competition. I wasn't building or following any rules and I don't intend to.

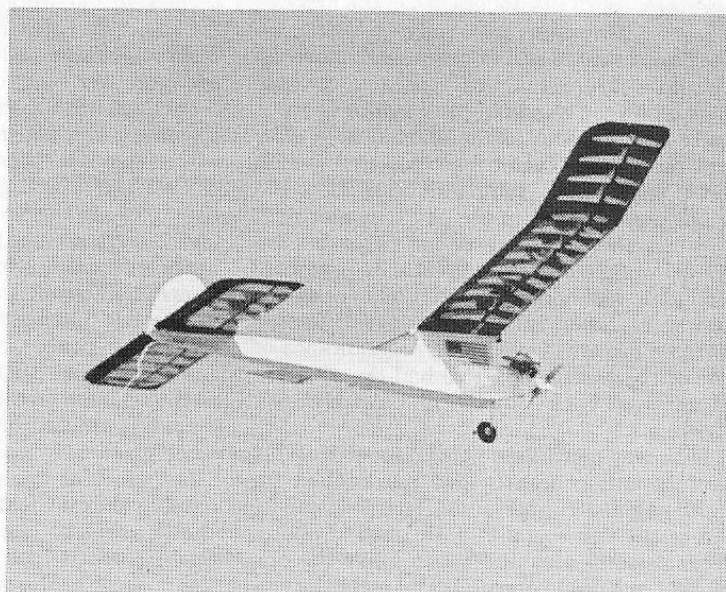
Thanks again John Tatone!



Slightly larger was the .19 powered *Frisco Kid* which John Tatone holds sometime back in the late 50s. John currently manufactures aluminum engine mounts and exhaust accessories at his J'Tec company.



Ambidexterous Tom Hunt launched and flew (above left) for this picture. The plane used an Airtronics Module transmitter and companion micro flight pack.



A slow fly-by for the camera (above right) speaks of the graceful flight of the *Frisco Kid*. Flight times average 3-4 minutes.