

The first of a famous string of "Schneider Cubs", with its designer and builder, Alex Schneider. Plans were enlarged from a small free flight Cub produced in kit form by Capitol. Capitol's plans, incidentally, were drawn by one Walt Schroder! Above photo was taken in the spring of 1950.

FAMOUS R/C AIRCRAFT..... **NO. 5** the 'SCHNEIDER CUB'

• This series of Famous R/C Aircraft could never be complete without including the "Schneider Cub," as designed, built, developed, and flown by Alex Schneider, of Northern California.

Alex and his Cub were key figures in the early history of radio control. Most significantly, they won the R/C event at the Nationals in 1952, '54, and '55!

Note that we said "the R/C event." From its inception in 1937 as a Nationals model aircraft event, radio control was

one category. Contestants used whatever they could develop to control a model aircraft from the ground by radio signals. This "control" usually consisted of rudder . . . period, using one signal that released an escapement, powered mechanically or by twisted rubber, to turn the rudder in sequence to a pre-selected stopping point on either side of neutral.

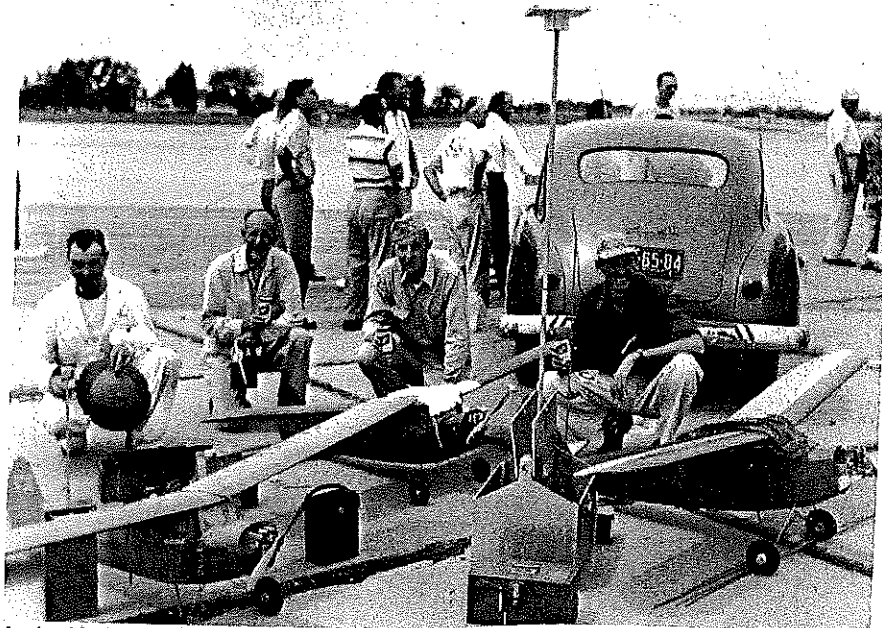
However, the appearance of Alex and his Cub at an R/C contest was similar

to Maxwell Bassett showing up at an early free flight contest with his gas-powered model when everything else was rubber-powered! Alex proved that the R/C rules, at least for some time to come, had to be revised into separate categories according to the equipment used.

It was also significant that to this day, the Schneider Cub has been the nearest to full scale of any model aircraft to win a major pattern competition! Maybe at last, the Las Vegas Tournament will bring this realism back after almost 30 years.

But we're getting away from the story. Back in the July 1955 issue of M.A.N., Bob Beckman, who now writes a Giant Scale column for *Model Aviation*, wrote an article about Alex Schneider, who had already won two Nationals, and though it was not known at the time, was about to win a third. From this article, we learn something about the Schneider Cub and its creator.

"Alex's first R/C model was a scale Stinson 150 with a three-channel receiver affording independent right and left rudder, and engine control. This ship was never very successful. The stab area had to be increased from seven percent (the scale area) to 17 percent before the plane would fly at all. Takeoffs were a problem, with many days of nothing but ground loops and bogging down in the thick grass that covered the flying field. Hand-launching was never attempted; they don't hand-launch real airplanes and besides, at that time the club levied a \$5 fine for hand-launching



At the 1954 Chicago Nats. Alex is at far left, and Bob Beckman is third from left in chief's uniform. Can anyone name the others. Sure looks like a "Schlitz" beer commercial!

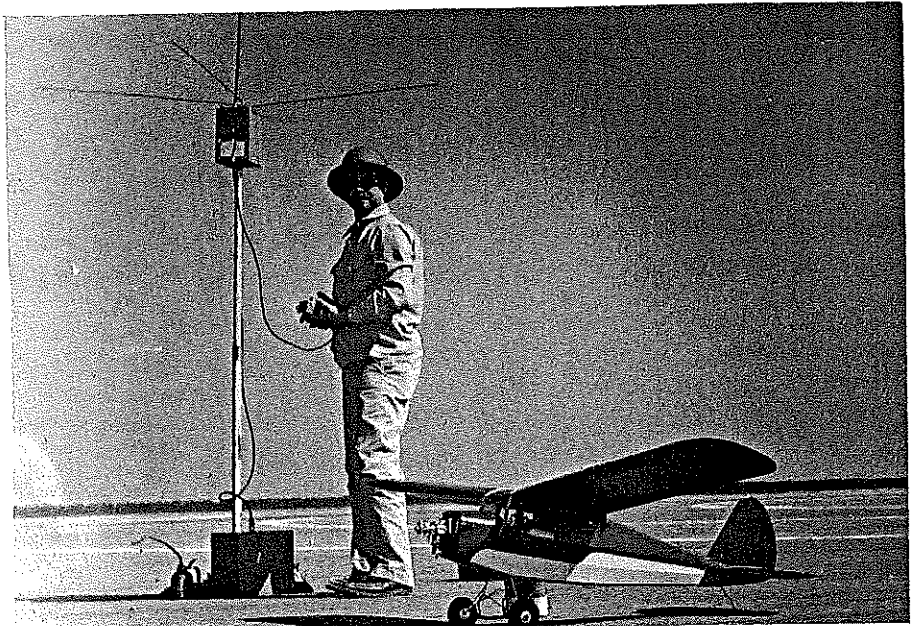
an R/C model.

"The first Cub was built in the spring of 1950. It was built from the plans to a Capitol free flight kit of the Piper Cub. The model was very close to true scale, the only change being the usual increase in tail surface area. It had a 7-1/2 ft. span, 15 in. chord and Clark Y airfoil. The original flying weight was 4-1/2 lbs., but the control equipment brought the total weight up to about 7 lbs. The landing gear was lengthened in an attempt to improve ground runs in high grass, but that was the only change made. At first this ship didn't seem any more successful than the Stinson. The ground looping tendencies were so pronounced, even on a grass-free runway, that it was very difficult to get the plane in the air. Once the plane was in the air it was very floaty and rather hard to get down again.

"The ground looping problem was tackled first. The solution turned out to be repositioning of the landing gear closer to the CG. The gear was moved back, in small steps, as far as was possible without rebuilding the plane. Each change improved the ground performance and the process was continued in the construction of later models. On the latest model the wheel axles are about 1 in. ahead of the CG. This gives straight ground runs on both takeoff and landing with no nose-over tendencies on reasonably smooth fields.

"Once the takeoff problem was licked, the flying characteristics of the plane received some attention. To reduce the floating tendency, the wing was reduced to 12.5 in. chord and 7 ft. 4 in. span. The stabilizer was decreased at the same time. In all of his planes Alex has stuck pretty close to the 40, 20, 10 formula; tail moment, 40 percent of the wing span; stabilizer area, 20 percent of the wing area; and fin area, 10 percent of the wing area. The changes made greatly improved the performance of the plane. The weight was up to 7-1/2 lbs., giving a wing loading of a little less than 1 lb. per sq. ft. By our present standards the loading was a little on the light side, but the plane was the best and most consistent flier in the area.

"Alex flew this first Cub almost every



Ready for takeoff at the 1952 Nats. Some of today's transmitters aren't much larger than the control box in Alex's hands. Lot more realistic aircraft than modern pattern birds.

Sunday for about a year. He never did much in the way of stunt maneuvers with it. Instead, he spent the time learning to handle the plane and the controls. It was a very steady, realistic flier and he got to the point where he could put it right where he wanted it every time. . .

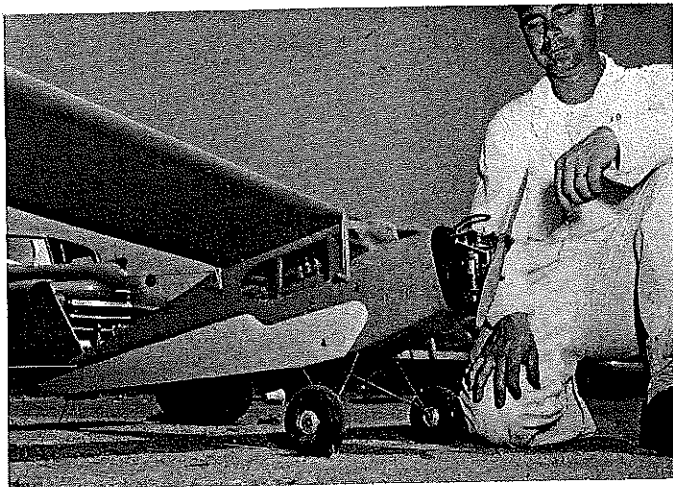
"The second Cub, built in the fall of 1951, was the first to have a five-channel control system giving independent right, left, up, down and engine control. The construction was altered to bring the landing gear back, following the trend established with the first Cub. To reduce frontal area, the wing was lowered by reducing the cabin height. Wing and stab on this ship were in line and about 1-1/2 in. above the thrustline. The takeoff characteristics of the plane were good, but in the air it was a disappointment. The ship would drop the inside wing sharply in a turn, and once into a turn, opposite rudder had to be used to get it out. Even with the added elevator control it was a poor stunter. Loops were big, with a tendency to fall off to the side and turns had to be slow and wide to

prevent spiral dives.

"In the spring of 1952 the third, and what turned out to be the last, Cub design was built. The wing was raised again to a point about halfway between the extremes of the first two Cubs. At the same time the stab was lowered a little and this combination cured the spiraling tendency. Nose and tail moment arms were shortened a little to tighten up the maneuvers and the landing gear was moved back to its final position. The wing was patterned after Walt Good's Rudderbug wing with washed-out tips and an NACA 6412 airfoil. Total dihedral angle in the wing was 12°. Total weight was 9 lbs.; wing loading, 19 oz. per sq. ft.

"This plane was completed a few months before the 1952 Nats and right from the first it showed real promise, the result of Alex's 2-1/2 years of work and experience. Takeoffs are easy and quick, the tail lifts in about 10 ft. and a touch of 'up' puts the plane right in the air. Size and weight have permitted this plane to fly normally and safely in winds that have brought many contests to a dead stop.

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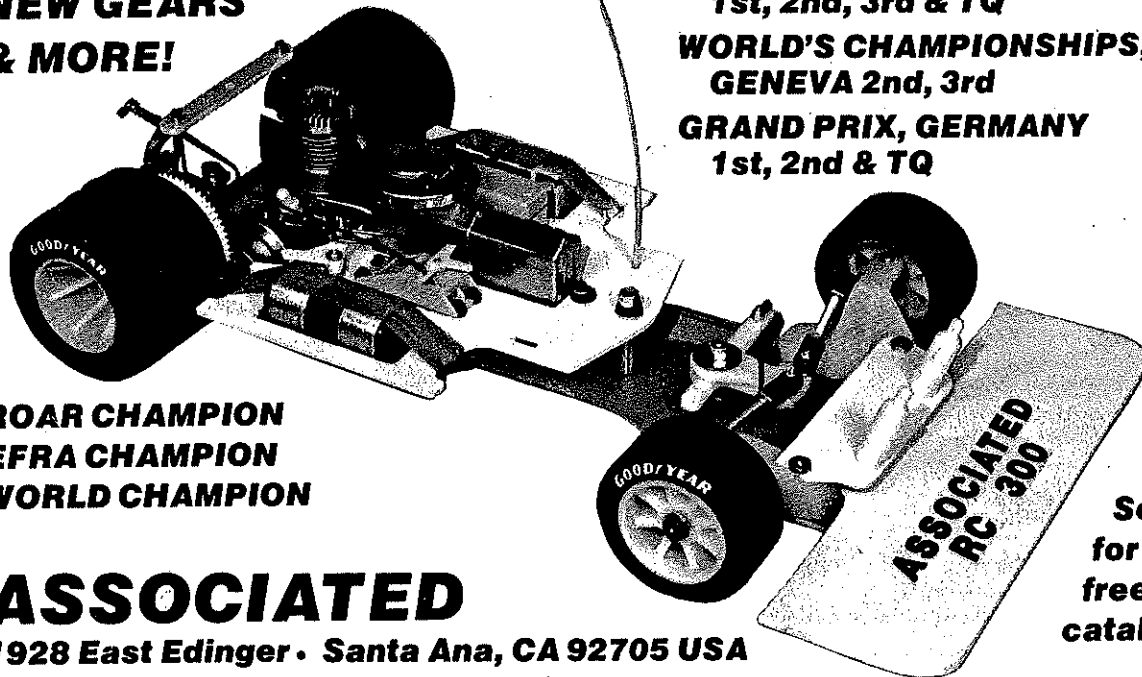


Spitfire .60 on ignition powered Schneider's Cubs. Note 3-tube receiver in cabin. Tubes rubber-banded to prevent vibration failures.



Alex and Dean Kenney at '55 Nats. Alex was first, Dean 3rd, and Bill Deans was 2nd. This was first year separating single from multi.

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bounces is simply going too fast. We do not recommend setting up the plane with a short nose gear so that it assumes a negative lift profile upon touching the ground. I really don't know who thought out that set-up in the first place. It's quite squirrely on takeoffs especially, usually resulting in a jump-off instead of smooth rotation.

5) Does the plane steer badly on landing? If so, try the landing gear set-up recommended in the first article (April). It allows the plane to land on the mains, then continue to coast on the mains with the nose wheel held off until the plane is almost stopped. It's much easier to steer this way because the rudder is gentle at low speeds. If possible, use a spring-centered nose gear and keep turning capabilities to a minimum. There are no taxi demonstrations required anymore.

Next month we will start on the additional maneuvers required for the advanced pattern.

I hope these reviews are helpful to those of you who live in areas remote from active pattern flying. The real way to learn quickly is to have lots of active competition. Where possible, get a flying buddy to review and critique your maneuvers. Here is a situation where two heads are definitely better than one. Try to teach a maneuver you have learned to someone else and you will be surprised how it will help you analyze your own flying. In many cases you will improve after you have taught someone

else. And that's a fact.

Schneider Continued from page 27

Maneuvers are tight and precise and very realistic. The plane is so stable that Alex had alternately to pulse down and right or left rudder to hold it in the three-turn spiral dive called for by the rules. Ground control on both takeoff and landing are excellent. Common practice is to start the engine and leave the plane sitting by itself on low engine while Alex checks the controls; then, a punch at the engine button on the control box puts the engine on high speed and the plane is off. Landings are often made on low engine and the plane is taxied back to the transmitter.

"Two weeks before the 1952 Nats, Alex had the wing on his ship pull off in a high speed spiral dive. The fuselage was completely demolished and the post mortem showed that the 1/4 in. dowels used for the wing rubber bands had broken. With some hard, fast work, a new fuselage with 3/8 in. dowels was completed in time for the Nats. Spiral dives and power dives are done on low engine now, instead of high.

"After the 1952 Nats, Alex worked on lightening the control equipment and no changes were made in the design of the plane. The plane flown at the 1954 Nats was essentially the same as the 1952 model, but a little lighter. The overall weight of the present model is 8 lbs.;

wing loading, 18 oz. per sq. ft. The 6412 airfoil used has been thinned out a little to increase airspeed. The flying characteristics are similar to the 1952 model, but maneuvers are quicker and cleaner.

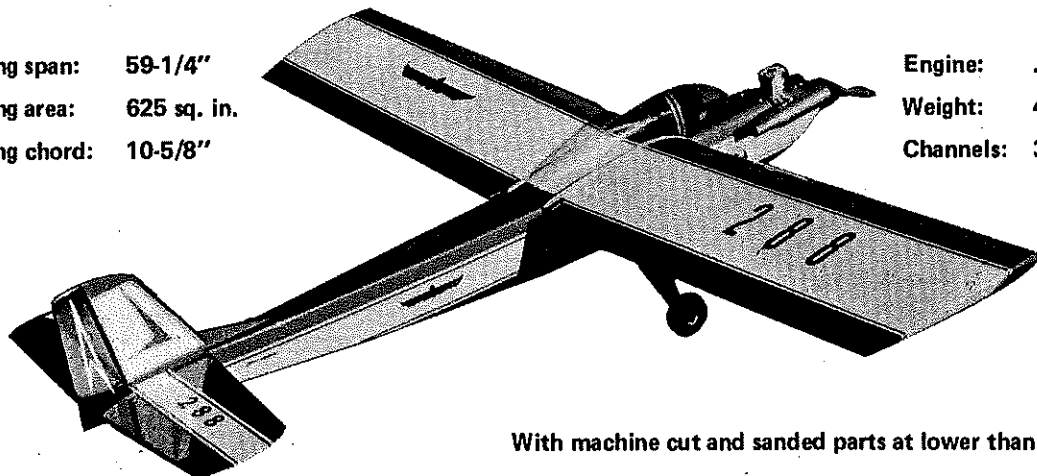
"A scaled down, 6 ft. span version of the Cub was built in 1953. This ship outperforms the larger version, but fuel feed problems prevented its use at the 1954 Nats. Originally powered by an Orwick .29, it is now being equipped with a Fox .35 with two-speed ignition. Experiments, primarily with the wing design, will be conducted with this plane in an effort to improve flight characteristics during inverted flight and outside loops without sacrificing normal flight performance. This 6 ft. version is what Alex will probably fly at the 1955 Nationals. (He did, and he won again. wcn.)"

Like many R/C'ers back in the '50s, we heard a great deal about the fabulous "Schneider Cub," but never actually saw it. Surprisingly enough its plans have never been published until now. The same Bob Beckman who wrote the M.A.N. article also drew up the original formal plans for the Cub, and prints could be obtained. One set of prints found their way to our old Delaware R/C club, and then member Mike Hudak built a copy. For that time in history, it was a big model, though extremely light. Mike was a telephone company employee, and electronics experimenter, and built up his own reed

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radio and servos. His experimental radio went into the Cub, and for one brief, but exciting Saturday summer afternoon, the club members present at the flying field were treated to a display of slow, majestic, and realistic maneuvers that none of us had ever seen performed by a model. Unfortunately, when Mike got something working, he went for broke, and in spite of our warnings, flew repeatedly on already used dry cells picked up at work. When the cells went out, so did the Cub, its light framework exploding like an eggshell when it dove in full bore.

The plans shown are for the final version of the Cub, the one that went on to win the 1955 Nationals. We would

especially like to thank Alex for lending us the original photos used with this article, and include excerpts from the letter he sent with them, as follows:

"When I think back about the primitive radio equipment we used in those planes at that time, it makes one wonder how we had the encouragement to continue. As you probably know the first R/C planes were free flight planes, quite large and extremely light. The radio controlled the rudder only (escape-ment) and not too dependable. With the development of the resonant reed receivers we had much more to work with and could build models that not only looked like full-size planes but also flew like them. I am very glad to see the modelers today building the 1/4 scale, because they fly very realistic and maneuver like an airplane should. Of course, the radio equipment has come a long way since those early days in R/C; very reliable, and with unlimited possibilities using the servos available.

"Although I am no longer active in R/C modeling, I still keep in touch with my good friend, Jack Albrecht, in Ocean-side, California, who is an 'Old Timer' and really enjoys building and flying the older models. I have not flown much since the early '60s, when I belonged to the 'E.B.R.C.' of Oakland, California. I was a member of the 'Mustangs' in San Francisco from 1948 through the late '50s, and during those years we flew control line, free flight, and R/C. I won the R/C Nationals in '52, '54, and '55 with

my 'Cub' I developed from the Capitol kit that was available at that time. The radio gear was made by Rockwood with 8 channels (resonant reed). Hard tube receivers in those days required lots of batteries, as did the servos, which were home built, plus the engine ignition batteries, so the wing loading was quite high, but it made good flying planes with good penetration in windy weather. •

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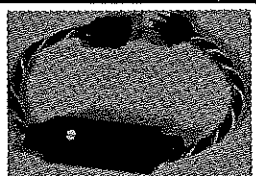
If it is a hot, sunny day, try to use a shelter. Hot sun can be a severe problem with heat build-up in the model and can hurt your radio system. Canopies and finishes are not always compatible with old Sol.

Check in with the contest management and prepare any paperwork necessary. Pay attention to any special contest or field requirements. These include a wide range of items, from scoring to flying procedures. Be certain you are completely clear on any of these items. During the pilot's briefing that is generally held, be sure you ask any necessary questions.

Walk the takeoff area and select your best takeoff path. Look for bumps, rocks, tar strips, grass clumps, etc. that might cause trouble. Check out reference points you might use to line up on during the flight. Distant signs, trees, etc. make excellent points to use. Pay close attention to wind direction and peculiarities. Is there any chance the wind

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