

Clough's "Gruff" Sport Stuff

nce in a while, something turns out right the first time.

In late winter 1946-47 I applied the last brushful of dope to a Control Line model that I called the Beginner's Goat. It was finished in Testor's shiny new red and blue butyrate dope, had a new O&R sideport .19 perched on the end of O&R's Control Line tank mount, and promised good ground handling with oversize inflatable Trexler wheels.

The name arose from the practice in the early days of Control Line of making an old Free Flight airplane the "goat" of learning to fly on wires. Conversions were often minimal. Sometimes, but not always, the dihedral would be flattened out. A bigger tank would be added and elevator control installed in an attempt to cobble up something to practice on before risking

models designed from the ground up for Control Line flying. This was not always the best idea.

Such conversions were often balloony floaters, with a tendency to come in on the lines. Attempts to cure this problem by ballasting the outside wingtip could result in weird takeoffs and landings, with the outboard wing practically dragging on the ground.

Discussing such "goats" with *Air Trails* editor Al Lewis, it was decided that beginners would do better with a specially designed trainer. The result was arguably the only airplane I ever designed that did exactly what I hoped for the first time out. At least a dozen beginners learned to fly it, and friends and family kept it busy "fun flying" for hours at a time. It was the perfect answer to those who'd heard that you built model airplanes and wanted to see one fly.

After being exhaustively test flown by most of the members of the Bristol, Connecticut Bell City Aeromodellers during 1947, the design was published in *Air Trails* in November 1948. Judging by the response, many copies were built and flown by satisfied modelers.

As the years went by, the airplane seemed to have a charmed life. It survived innumerable scrapes, dings, broken props, and a couple of flyaways without ever having a really disastrous crash. And it flew and flew and flew. I kept track of hundreds of flights before I quit logging them at 50 hours.

All this time the O&R perked along on spark ignition with a mix of white gas and 70 oil. Then, when the weight and bother of a battery ignition system with its external boosters finally got to me, I switched to Ray Arden's newfangled glow plug. The airplane didn't fly any differently, except that the weight saved made for quicker takeoffs.

In those early days of glow operation, alcohol-castor-nitrate fuels could make a sticky mess of acetate and nitrate dopes. So-called "hot-fuelproof" finish coats didn't help much. A whim of the moment, just plain dumb luck had steered me into finishing the Beginner's Goat with Testor's new fuelproof butyrate dope. It has proved to be a major factor in the extreme longevity of this model.

As for the engine, it has seemed impossible to wear it out. For a couple of decades I made a serious attempt to fly the airplane at least once a year. Pressure of business, or the model being packed away between moves, resulted in at least a half-a-dozen years when this chore was not attended to.

In late 1979 I discovered that the gasket between the cylinder and crankcase had deteriorated sufficiently to wheeze out crankcase pressure. O&R engine cylinders were assembled to the case with a "shot weld" that made it impossible to take them apart on a home workbench to replace the gasket. I wrapped epoxy-coated carpet thread into the groove where the gasket had been, let it set for a week, and it has run fine ever since.

Several interesting things have happened to this model. After one three-year hiatus it was discovered the engine would not suck fuel. Careful examination revealed the fuel line had disappeared without a trace!

Some time after the first 20 years, the wheels turned into sticky black blobs and were replaced with solid wheels—not necessarily an improvement.

Over the years there were several flyaway accidents. One time the model was released before the control handle was picked up. It took off dragging the wires across a recently mowed hayfield, flying a cycloid pattern while gradually descending to a broken-propeller landing.

When flown on extra-long lines (70+

feet) the model has momentarily drifted in on slack and drifted out again without loss of control. (Best line length is 35-50 feet.)

The Goat design has been so durable and tractable that after nearly 50 years, I decided to build an exact copy as an RC sport model. Well, not quite exact; the original's nifty wingnut (pun intended) assembly could not be used, because all fuselage volume was needed to hold servos, battery, and receiver. No room for the wing's relatively massive anchor block. I had to add a modicum of dihedral for rudder-elevator operation. The tail wheel, which stood up for half-a-century on the original, was replaced with a steerable wire skid to civilize ground handling.

Since the original unsheeted leading edge of the CL wing had been sheeted over (after a ground collision), this

feature was retained for RC. While an O&R sideport .19 was out of the question, a Cox .074 Queen Bee, with its long mount, approximated the original proportions.

Son of Goat closely resembles its parent, except for wing dihedral and a movable rudder. On test flights the model was rock-stable, but lively. Son is more of a sportster than the original (beginner) version.

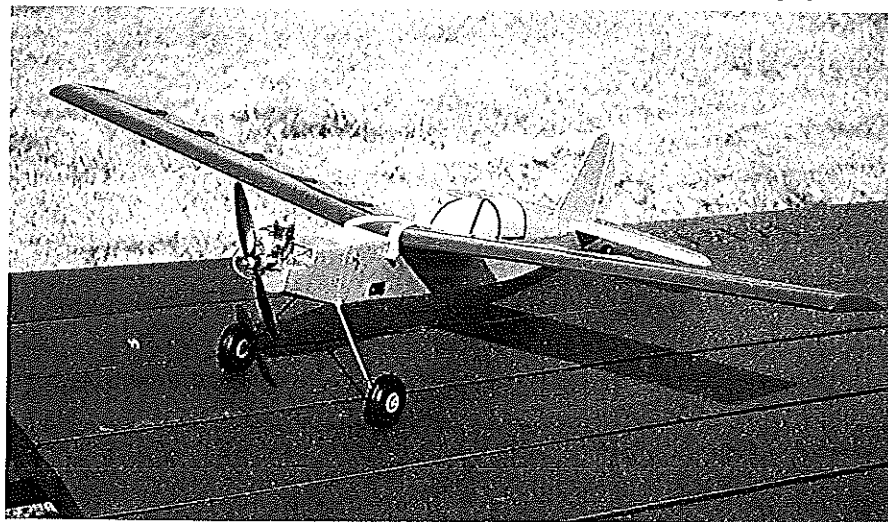
The Queen Bee made a good top-end match for the model, but after a summer's flying and the buyout of Cox by Estes, the question came up of engine availability. While my feeling is that the Queen Bee will undoubtedly be available from suppliers' stock for some time, I decided to rework the front end of Son to take other engines.

The new plywood motor bearer can be cut to fit any of the Cox Tee Dee or Medallion .049s. Anybody who wants



Author's wife Carol shows the RC Goat. Original CL model was published in November 1947 *Air Trails*. Several .049-.074 engines have been used.

Photos by the author Graphic Design by Carla Kunz



Still going strong after nearly 50 years. Some modifications to the CL Goat were needed for RC operation, but the "flavor" of the original has been retained.

throttle control should square off the front uselage and mount a Cox Black Widow, which would have plenty of power to fly the ion.

Having acquired a NorVel Russian-made J49, I loaned it to fellow club member Armand Cote to test. When he gave it good marks on all counts, I decided to install it in his model. This is indeed a great engine, but for some reason the factory installs the throttle arm pointing downward. This makes it almost impossible to install the servo pushrod past the engine mount. When I called NorVel's Pete Stevens for instructions on turning it 180°, he cautioned me to check the throttle barrel position before retightening the arm nut. This meant carefully working off the arburetor's friction-fit screen cap to see the position of the barrel.

After repositioning the arm, I made the interesting discovery that by using a pencil flashlight at just the right angle, the barrel hole position can be checked without the bother of removing the screen cap. Live and learn!

A length of tubing can be added to the NorVel's muffler to route exhaust oil away from the model.

Particularly detailed building instructions are needed. Builders who wish to duplicate the Control Line version (or build one of each) will find all the needed info on the plan sheet.

The simple box fuselage and sheet tail surfaces have been standard for a half-century or more. Finish is blue butyrate dope. Wings and elevator are red. Canopy is aluminum with black framing lines for the greenhouse.

The original wing was covered with silkspan, finished with clear and red butyrate dope. (Iron-on film is a better and easier finish, and is less liable to puncture.)

Duplicating the Control Line original (to try for another 50 years?) would call for a spark ignition O&R .19 and the special O&R tank mount. With the increased power of modern engines, almost any glow .10-.15 on an extended mount to balance would do the trick. →

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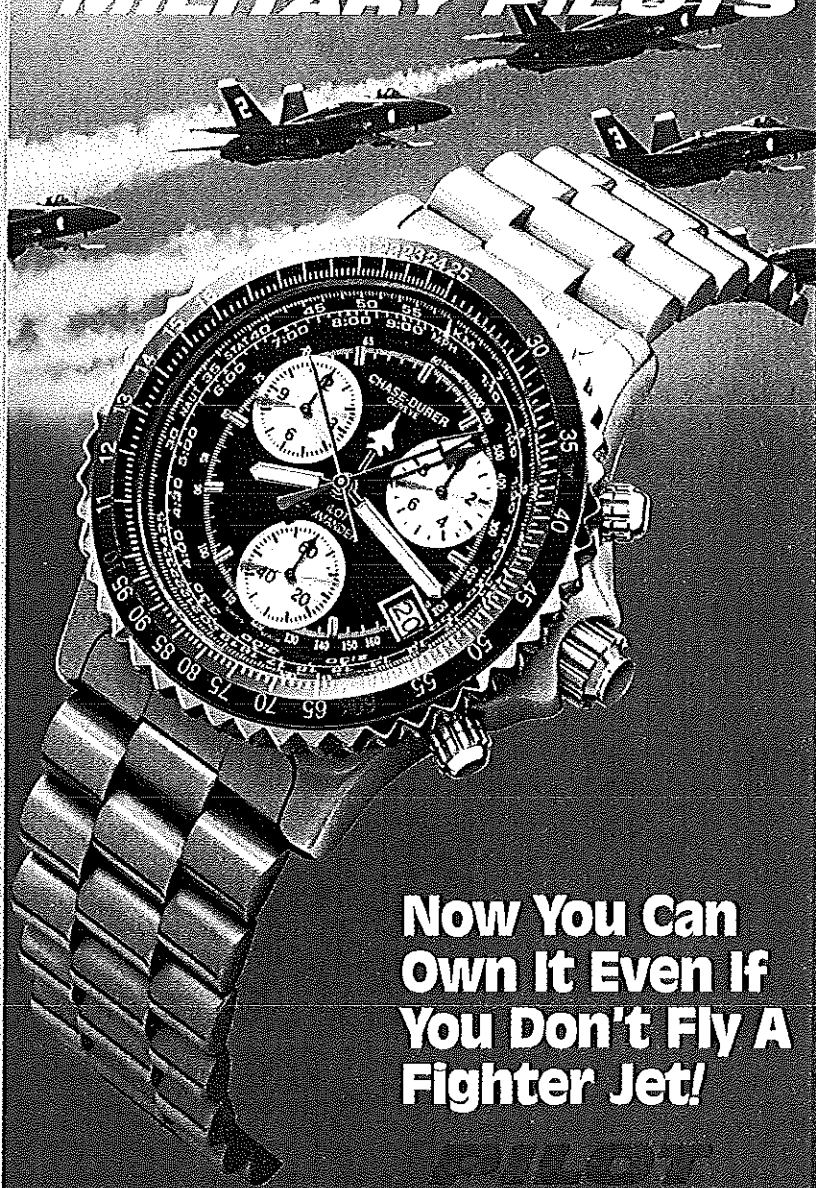
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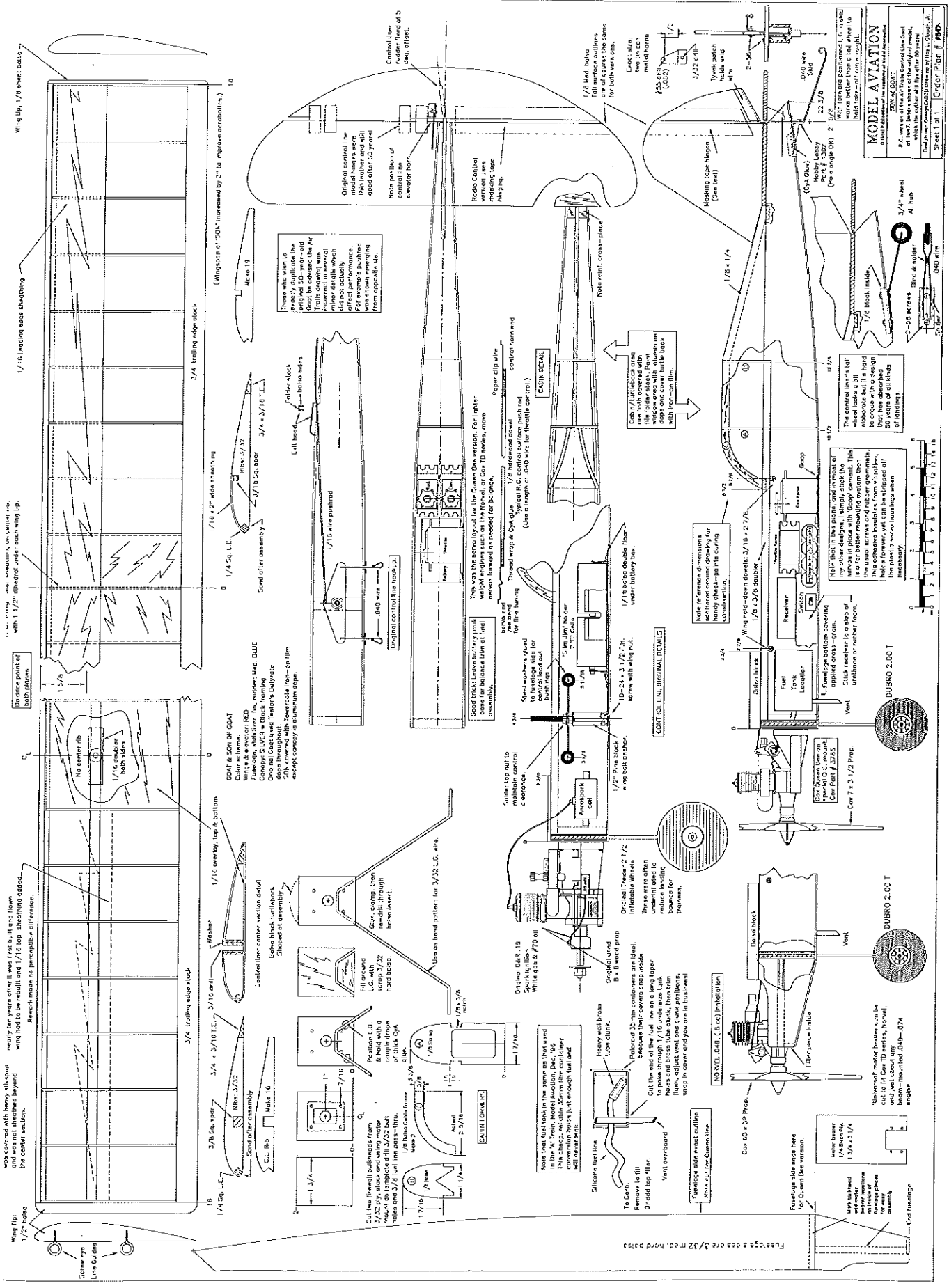
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SON OF GOAT

ROY L. CLOUGH, JR.

