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WEEDHOPPER™ NEWS

Weedhopper of Utah, Incorporated
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All articles by John F. Chotia unless otherwise noted.

PRODUCTION CONTINUES

It's been a long time again and I thought I was caught up. The Weedhopper News takes 1½ days per month, which is only 7% of my time, but things have been very rushed and this got put off again. I don't like being late with this or anything else, but the rest of this letter will tell what has been going on.

This 3 months past has been a productive period and though the newsletter didn't get done, a lot of other things did. Onward . . . .

ENGINE PRODUCTION

We are no longer taking orders for 'engine only'. We are returning the deposits already received. Casting supply problems have prevented the speedup of production we anticipated and it is unfair to our Weedhopper customers to make them wait any more than the absolute minimum.

We have our machine shop geared and ready for a second shift to double the current 50 to 60 engines we are producing per month, but the foundry we have been doing business with is too busy and only supplies 50-60 casting sets per month. This situation is intolerable. There are a lot of people waiting!

The only solution was to get our own equipment to cast our own metals. We had planned to do this late this year, but moved our plans ahead 9 months instead. This required a major reorganizing of our shop space.

We had planned to install the foundry in a new building behind our current location, an additional 12,500 sq. ft. The new building isn't even beyond design stage now so we had to squeeze into the current space. We couldn't wait until October for the new building.

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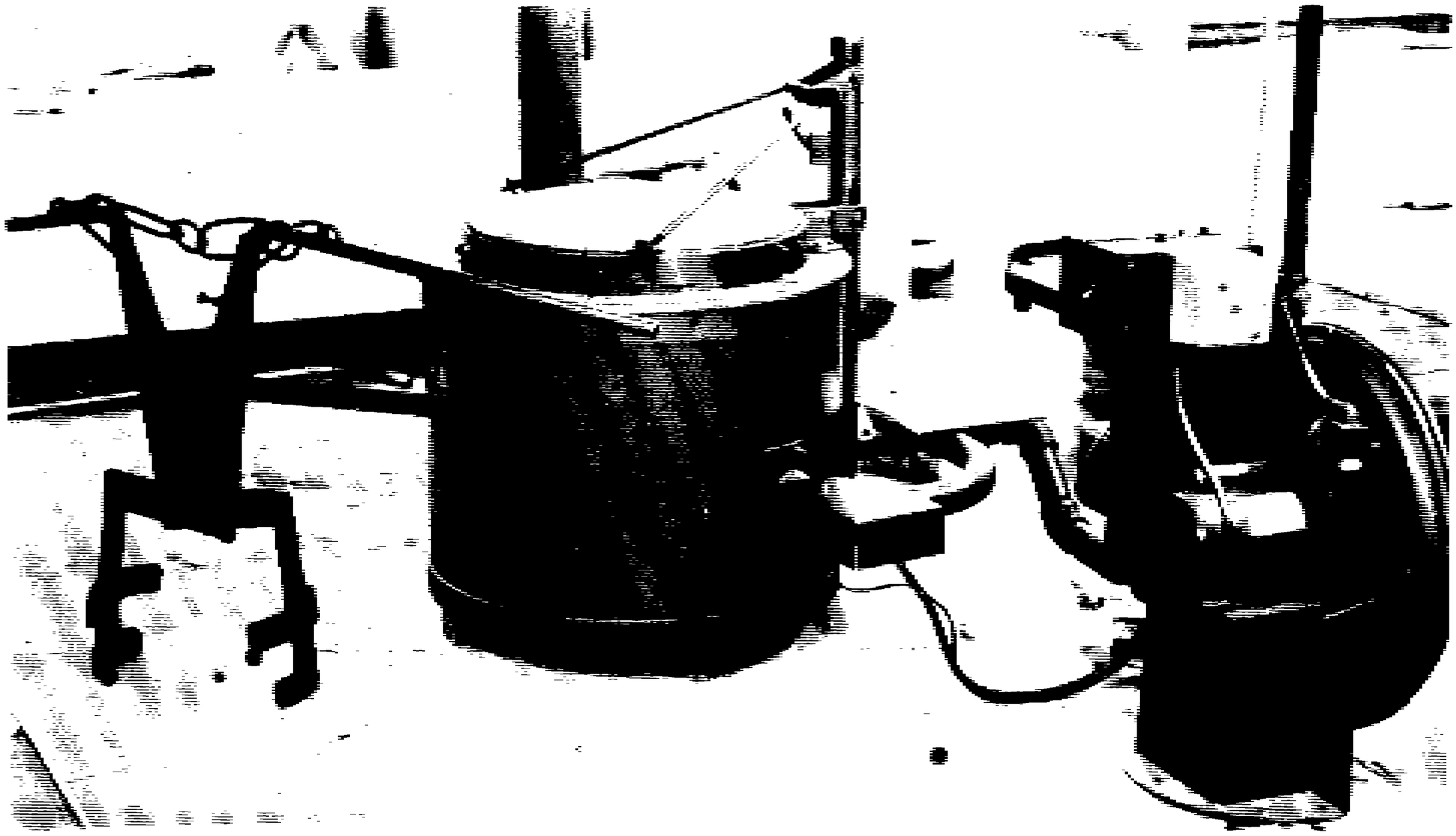


FURNACE AND TONGS FOR MELTING ALUMINUM

Our furnace is in place and operational. It will melt enough aluminum for 8 engines each hour. We had to install an extensive (and expensive) 8'X16' exhaust hood to vent smoke and heat outside through a 30 inch axial fan and vent. We were fortunate that the lead time on the furnace wasn't too bad and a friend (Weedhopper owner) owns A.A.A. Plumbing and Heating in Salt Lake City and he was able to expedite the installation for us. Thank you Clarence Pollard!

We are shifting to a different and more accurate molding system at the same time. Since we are purchasing all new casting equipment, it only makes sense to use the best and most efficient methods.

We had been using a no-bake chemically bonded sand system which works reasonably well. This system's biggest advantage is versatility with (relatively) low cost tooling. Cost of production is moderate to high and basic sand coating, mixing, and dispensing systems are quite costly.

The new system we are using is permanent steel molds and shell-type heat bonded sand cores. With this system, tooling cost is much higher, but production costs are lower. We will also be able to hold much tighter tolerances, get better finishes, cleaner castings, and stronger (lighter) castings.

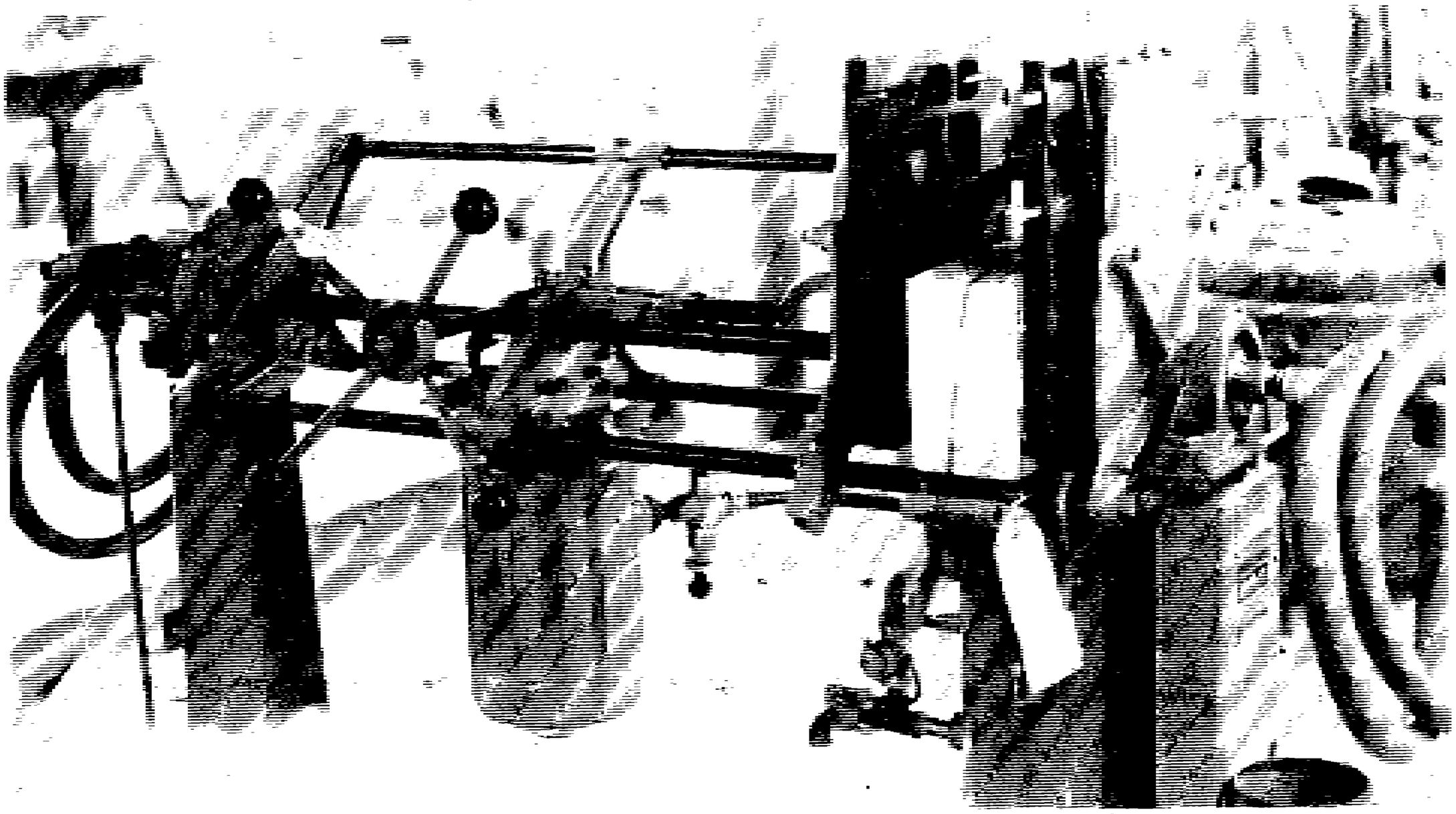
Our shell core molding machine arrived last week and installation was just completed (thanks again Clarence). This is the machine which will heat bond the cores which form the inside of the cases, cylinders, etc.

We are working full speed ahead on the actual tooling right now. We have the best pattern maker in Utah (Ron Rummel) and our own Klaus Jeske and myself working together at the best possible speed. I personally made all the original hardwood patterns for the Chotia-460, but this time it must be done as quickly as possible so it's a team effort.

Meanwhile our other original patterns are still in use and production continues, but at less than full speed due to casting shortages. This situation will be remedied soon.

It is important to note that our current monthly production level is twice our average monthly sales rate for 1979. Sales are increasing in 1980 and we must be ready to meet that demand, we will be ready!

This new casting system will cut (CONT'D.)



SHELL-CORE MOLDING MACHINE

machining time too, so more engines can be made in the shop too.

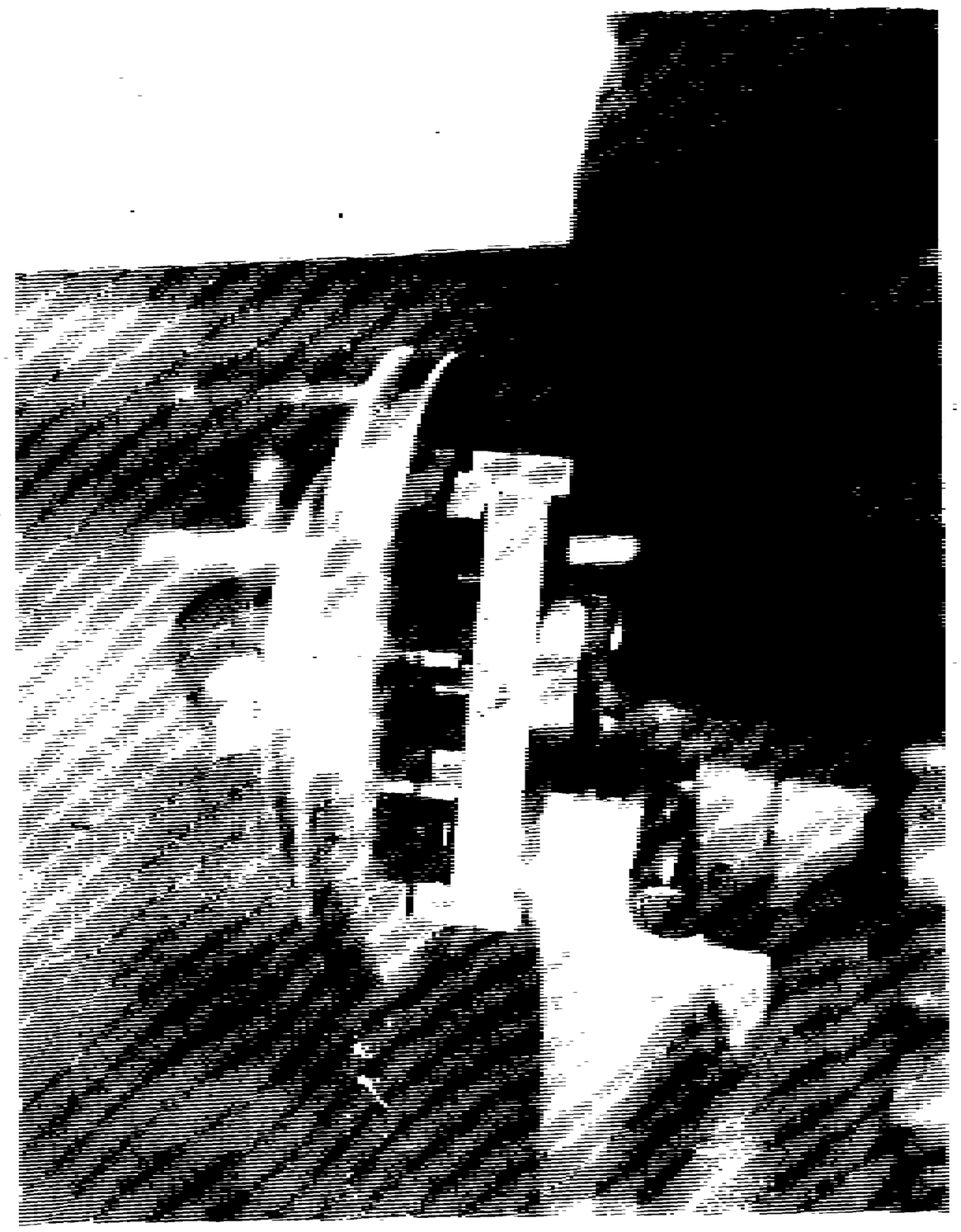
ENGINE DEVELOPMENTS

Recoil Starter. With all the push and reorganization for the foundry, I didn't get this done well enough to show at Lakeland as planned.

We did get one prototype built and tried it. The idea is to use a relatively small pulley which runs on its own bearing or the shaft behind the timing mechanism. Of course, with such a small pulley the mechanical advantage is poor and it is very hard to pull. To solve this we rigged a 2:1 block and tackle system to cut the force in half. This worked quite well.

The pulley drives the shaft through a one-way clutch and a thru-pin in the shaft. This worked fine also.

The problem was when the engine kicked back, it sheared the drive pin. The solution is a stronger pin and a shock cushion on the stop for the cable. This has yet to be done since I want to permanent-mold the pulley and redesign the one-way clutch for greater strength and smoother function.



SIDE VIEW OF RECOIL STARTER
SHOWING ONE-WAY CLUTCH

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BACK VIEW OF RECOIL STARTER

ALL CHOTIA-460 ENGINES NOW
COME WITH DUAL SPARK PLUGS

The starter did work twice before the engine popped back and broke the pin. The pull force wasn't bad even by cam. We plan to use a foot stirrup on the plane. One pull turns the engine over 1½ times which is plenty since the C-460 starts so easily.

Cost would appear to be in the $50 + range. An extension shaft and modified timing mechanism will be necessary on early engines so that cost will be slightly higher. Later engines (current production) have an extended shaft already and the starter will fit right on.

Development will continue as soon as our foundry is operational which should be 2-3 months from now. I don't anticipate much problem, but first things first. A starter is no good without an engine.

Dual Spark Plugs. During testing of the Soaring Wings last fall, we had a very rare occurrence, a spark plug fouled! What happened was water in the fuel caused some deposits to break loose in the cylinder and one piece bridged the gap on the spark plug.

After looking carefully at the cylinder casting, we decided there was room for one more plug. So we did it. Current production engines are going out with dual plugs and coils at no extra cost.

We didn't gain any significant power, perhaps 2 or 3%, but the engine starts easier when hot and idles a little better. Plus if one plug fouls (quite rare) the engine still runs!

This isn't a totally dual system, but it could be, the cam and points would need to be modified; I suppose it is possible, but we have not seen the need. As it is, we have dual plugs and coils driven from one set of points.

Now you can play "real" airplanes and check right and left "mag."! RPM drop is only about 25 RPM when one plug/coil is turned off, though, so you'll have to look close.

DOPED FABRIC WINGS

This is another project I hoped to have at Lakeland, but didn't have time to complete it. Some progress has been made and I hope to have it at Chino since it is almost done now.

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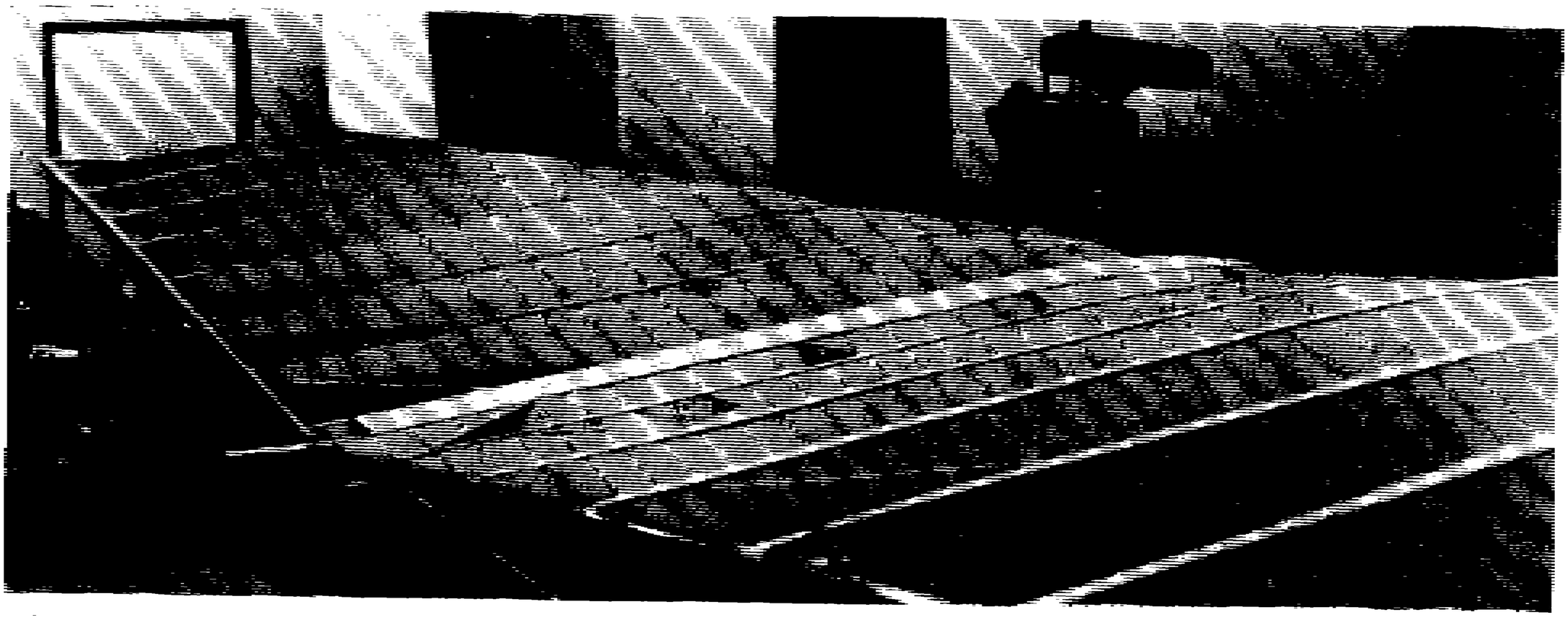
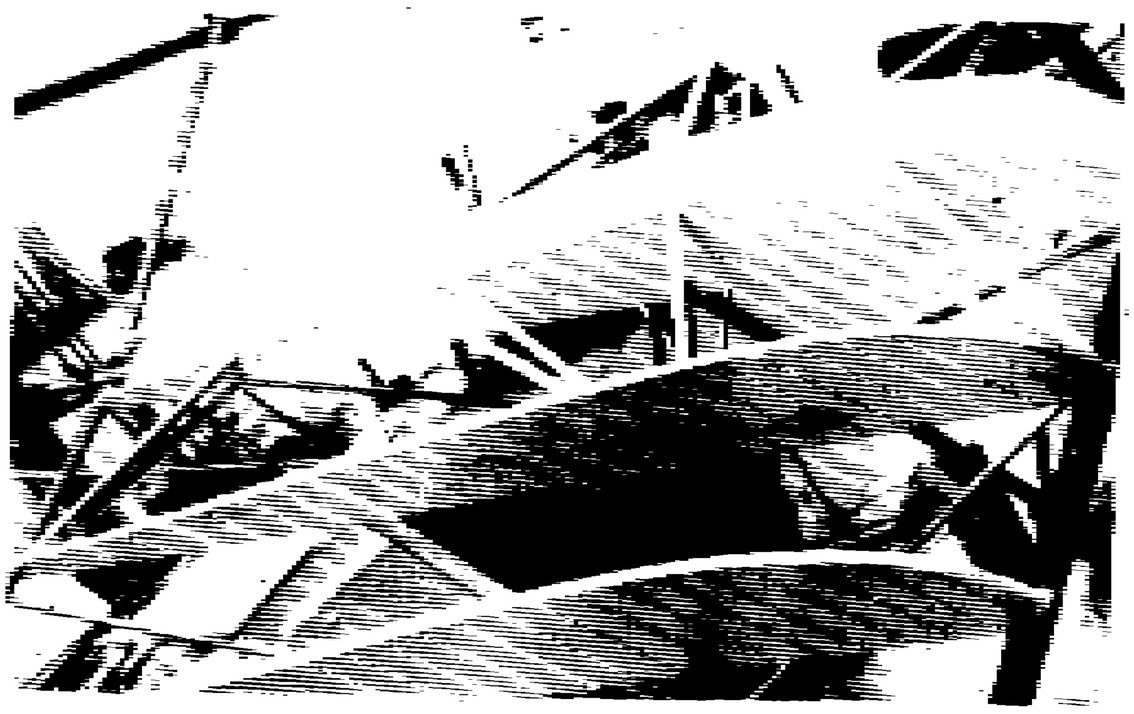


WINGS READY FOR COVER



ROOT RIB BRACING. CENTER PANEL IS GLASS OVER FOAM AND SAWED IN HALF FOR DISASSEMBLY.

WING TIP BOW IS BLENDED WITH FOAM BLOCKS

The elevator and rudder were covered with iron on model plane covering and I used 1" styrofoam ribs. Masking tape was put on the bare aluminum so the covering would stick. An extra "spar" was added to the elevator to allow movement with rigidized covering. Both elevator and rudder took only about two days at a cost of under $60. The results are quite impressive with an excellent gloss and no wrinkles. I covered the sub-fin red, rudder is white, and the elevator black in front and white on the moveable surface. I intend to stay with the "Red Baron" scheme.

On the wing I used 1" extruded styrofoam insulation board cut to shape and fitted to match the angles of the leading edges. Spruce cap strips 1/8"X1" were used (douglas fir would be O.K.). I used G.E. Silicone glue to bond the wood to the foam after sanding the foam smooth. I used masking tape to hold the wood in place while the glue set (about 4 hours). A 1" fiber-glass strip is glued to the wood cap strips and around both the leading edges and trailing edges. This way the rib is securely locked in place.

The wing tip bows are 1"x.058" tubing. I cut approximately 6' off the leading edge tip and bent the 1" tube to make a smooth blend and then riveted it in place. Styrofoam blocks were used to blend the two different size tubes neatly.

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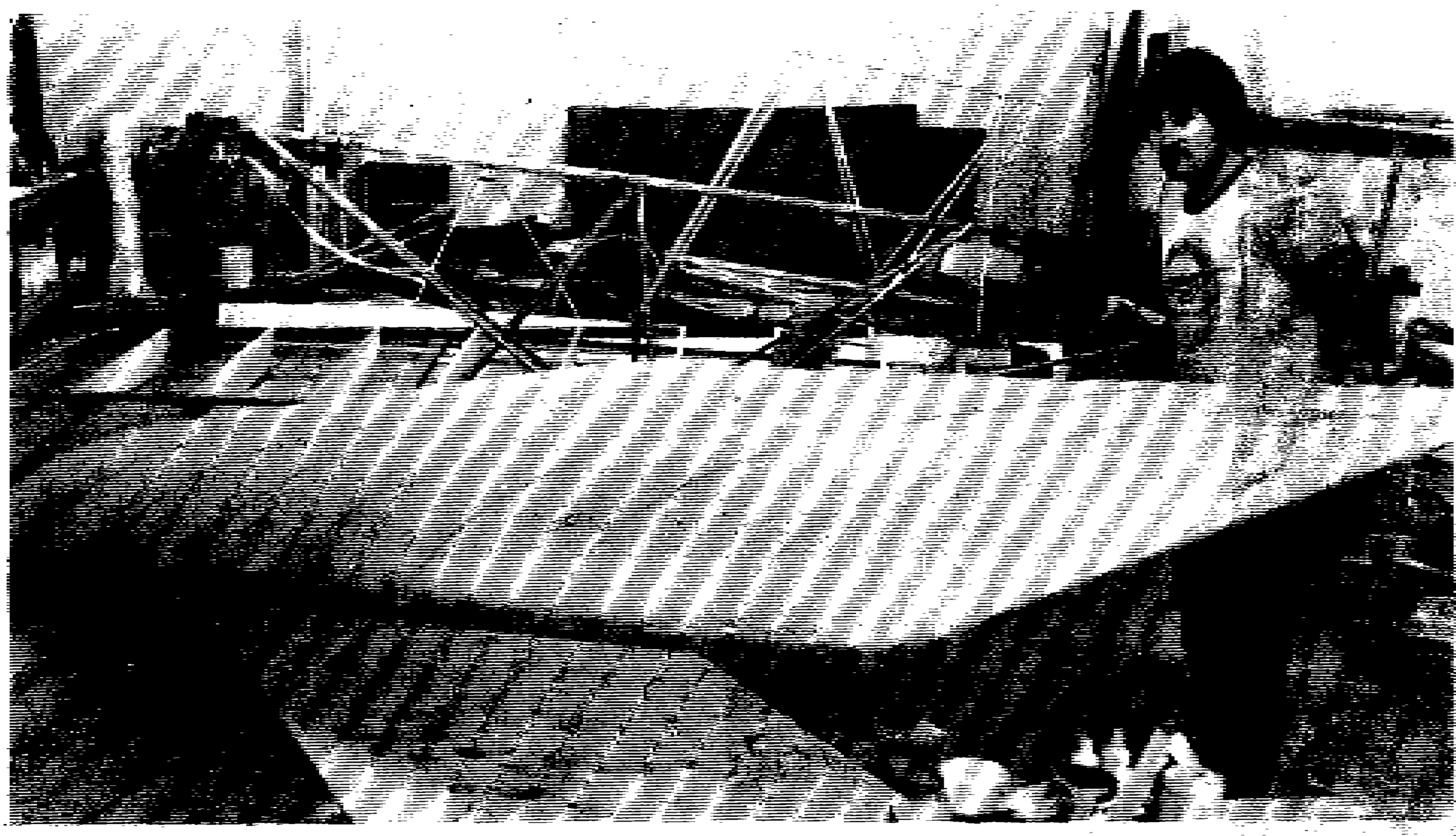

FIRST COVERED WING PANEL, ONE COAT OF CLEAR DOPE AT THAT TIME.
NOTE OTHER WING IN BACK GROUND.

For covering the wing I chose dacron dress lining material of approximately 1½ oz. per yard weight. This was glued in place and shrunk tight with an iron. One wing has been covered and given one coat of dope with excellent results. It was easier than many models I have built in the past. The other wing is ready for covering now and just a couple of days work will have this ready for flight testing, as soon as I get a couple of free days.

I plan to use 3 coats of clear(brushed) and then 2 coats of sprayed color.

The doped fabric has ribs every 22" and the airfoil is much smoother and more accurate. I expect to see a 10-15% performance boost with the lift over drag ratio (28 ft. wing) approaching 9-1. If locks mean anything, it will glide a zillion-to-one and go ninety miles per hour! It is pretty!!

The only big drawbacks are the time, about 60 hrs. total covering and extra construction, and the lack of portability with two 8 ft. by 14 ft. wings. A big covered trailer is necessary for any extensive traveling. In fact, we built a special 8'X18'X6½' high trailer just to carry this one the long distances we travel each year.

SPOILERONS

We have near 20 hours testing on the long 34' wing and they work well. When we tested them on the 28' wing (when the weather finally cooperated) we had a big surprise! They were almost totally ineffective!

I guess the short wing is just too stable. We will be working on them some more, but right now they will boost the roll and turn action of the rudder, but as a separate control for cross-control slips, etc., they are almost useless.

As soon as weather and time permits, we are going to try some on which the spoileron leading edge comes down and touches the wing leading edge when deployed. Perhaps this will result in a more complete stall/drag/roll action. We shall see.

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Meanwhile, anyone who has ordered spoilerons for the short wing will have to wait and be patient until we get them working $75.00 worth. I guess the long wing puts them out furtner where they have more leverage because they work reasonably well on the soaring wings.

Even on the soaring wings, however, we recommend only interlinked spoileron control along with the rudder since slip-skid capability is limited by the great inherent stability of the wing design.

If anyone has paid for spoilerors on the short wing and doesn't want to wait until I get them working $75 worth, let us know and we will return the money.

LAKELAND

Susan and I planned and paid three months ago to go a week early and see Disneyworld, but the pressure is on and we endec up canceling tne vacation and Sue had to stay at the plant to supervise the expansion and training of some new people. Well, we haven't had a vacation in 13 years, maybe next year. Sue wasn't too happy about it though, but I do appreciate her devotion and help.

Reklai Salazar and David Peterson drove the trailer down, but had some mechanical problems and a late start (trailer completion was late). As a result they didn't arrive until Wed. I flew down on the airlines and arrived Wed. night

There were eight Weedhoppers there and only one was tne factory's. Unfortunately, tne winds were high and the field was rough and tight so only 4 of the 8 flew while there.

Conditions were as bad this year as they were good last year. There was a lot of gusty wind. There needs to be some minimums set for flying ultralights in reasonable safety at these fly-ins. I would suggest a minimum of 1000 ft. X 100 ft. in two directions to allow for winds or if not, at least 1000 ft. X 200 ft. one direction. The reason for so much room is that while most ultralights can take off and land in less than 200 ft., there needs to be room to abort if adequate climb is not achieved. We must recognize that many of these little engines are much more difficult to tune and more sensitive to the weather than the Chotia-460. For this reason, the pilots need the chance to break ground and evaluate the climb, (or lack of it) and then get back down in safety, if necessary.

At Lakeland, the field was rough and tight with parked airplanes and people on one side, a cyclone fence on the other, and trees and parked ultralights on the other. The takeoff area was just approximately 75-100 ft. X 500 ft. As a result, there were many planes who hit trees and one hit the fence. The heat and humidity combined to cause several small engines to sieze and hurt the climb and takeoff on everything.

Altogether there were 8 crashes that I know of and 2 damaged aircraft attributable directly or indirectly to the physical site. (No Weedhoppers).

The 'Best Craftsmanship' award was given to Rich Rudolph who did a nice clean job on his red, white and blue Weedhopper. I believe this is a first, Rich built his kit in a Holiday Inn! You see, he is a professional musician and travels a lot. He also won the "Best Trailer" award for his neat metal-covered trailer.

Rich also did a superb job of flying, very smooth. He previously flew an Easy Riser and holds a private pilot's license. Though he doesn't have a lot of time in his Weedhopper, he has adapted very quickly. Good Show!

Award for 'Best Innovation' went to Lyle Wiggins of Jacksonville, Florida. Lyle is a 'fun-lovin' country boy" who not only showed us a good one, but won a little side bet at the same time. You see, he was telling people he could bury a piece of rope down 18 inches in the ground with no anchor and just 3 simple knots and no one there could pull it out! Well, one gullible soul took him up on it and lost, totally! It wouldn't even budge. Lyle explained that the dirt packs in a "compression cone" and the harder you pull, the harder it packs. I watched him bury it and it does work.

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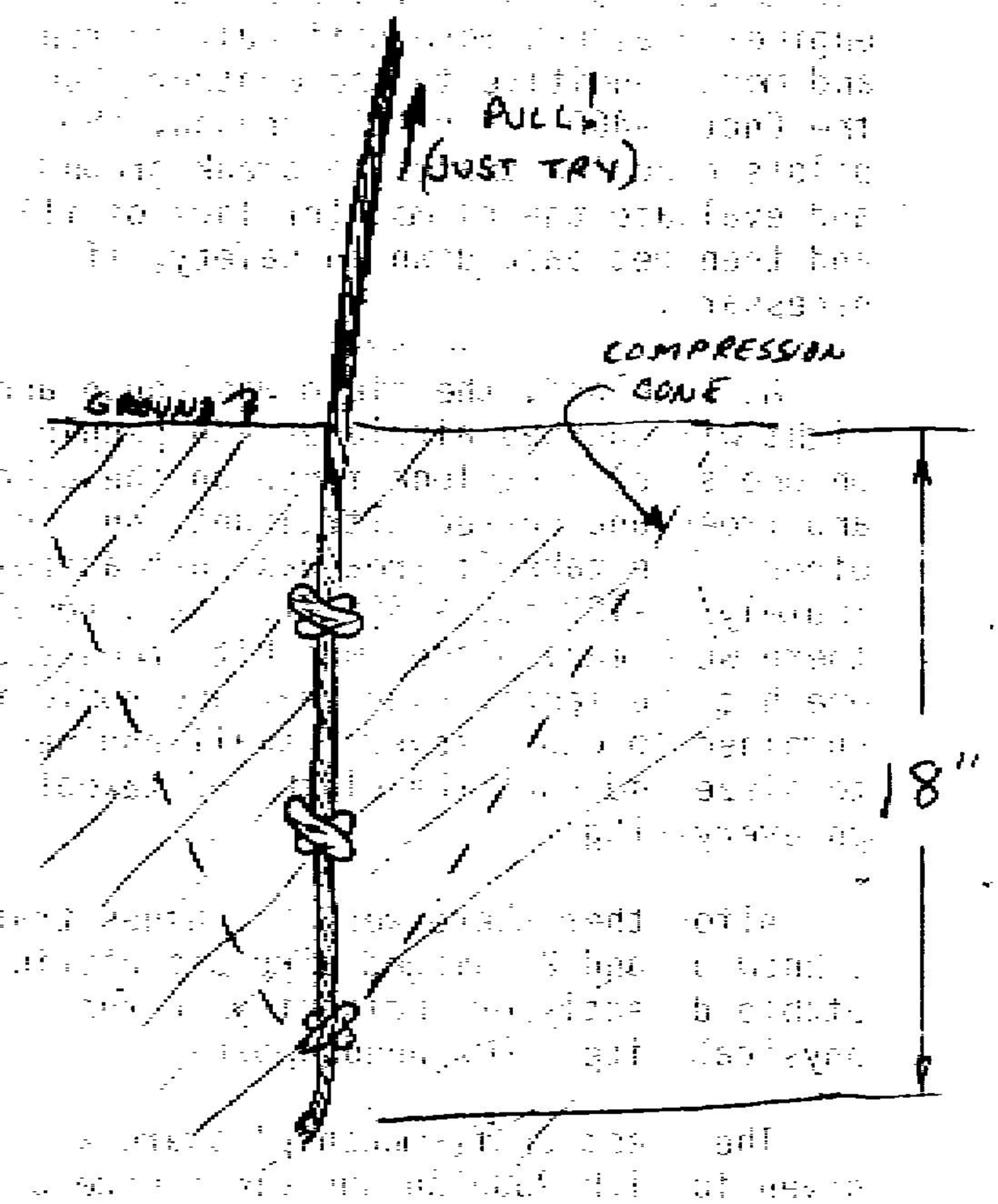

BEST INNOVATION - LYLE WIGGINS

I can't remember how many times I've wished I had a tie-down, or more tie-downs and all I had was rope but no anchors. With a short piece of tubing to bore a hole and Lyle's 'Best Innovation', I could have almost unlimited tie-downs at very low cost.

The overall turnout at Lakeland was down for this year compared to last. That is except for ultralights. I don't have a total count, but there were many types represented; the Electra-Flyer Eagle, Hummer, Humbug, Pterodactyl, Quicksilvers and Quicksilver Rip-Offs, CA-15, Easy Riser, Fledge II, Catto Gold Wing, and, of course, Weedhoppers. A considerable variety of engines were there including one outfit who was claiming their surplus snowmobile engine was "manufactured especially for them"(!) The Chotia-460 was quite impressive with its "fast idle"-flying RPM, and obvious margin of power.

We showed the new dual plug engine and the response was excellent. Even though the crowds were down this year as compared to last we had a successful trip.

I guess with the gas crunch a lot of folks just couldn't get down. Mitchell Wing and F.L.A.C. didn't make it. I guess its been a long hard winter and California is a long way from Florida. I know there are some beautifully built Weedhoppers which I hoped to see that couldn't get there either. Well, maybe at Oshkosh, the "Big One".

MORE POWER, CONSISTENT POWER!

A couple of months ago we made a break-through discovery which has added a couple of hundred RPM on the same props and produced much more consistent power from one engine to the next. All we did was re-shape the transfer ports!

This new port shape is on all engines above Serial #126. This is the engine number and not the airframe number. Older engines can be up-dated free if you pay the shipping here and back.

This extra 20% power really helps add to the feeling of security and solidness. I am always saying their is no "magic method" to acnieve power, but this small change in shape produced a dramatic increase, almost with a "wave of the hand grinder"! The extra power also creates more heat so the piston clearance had to be increased too, so it isn't something easy to do at home. If you send yours in, we will re-shape the ports, hone out the cylinder for the extra .003", put new rings in and test run it free. We want you to have the current state of the art when it is such a dramatic improvement for so little cost.

E.A.A. ULTRALIGHT DIVISION?

On Jan. 18th there was a general meeting at E.A.A. headquarters with 85 people in attendance to consider the possibility of an E.A.A. ultralight division or other ultralight national organization.

There were several significant things accomplished there. First, there finally seemed to be an almost general agreement on the name at least. We are stuck with the name "Ultralight" simply because it has been used so much by the press. It is really too late to change to "Microlight" or "Aerolight" or anything else.

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Second, there was a general high concern for safety and pilot training. Too many injuries and even fatalities are occurring (none in Weedhoppers, fortunately), the fact is obvious, flying can be dangerous if not respected.

We were unable to agree on a definition of what an ultralight is. There was still a lot of discussion and we moved on to get other things accomplished and left this unsettled.

Some discussion on the status of the F.A.A.'s "Notice of Proposed Rule Making" (NPRM) revealed that the F.A.A.'s definition will probably remain "capable of foot launch and landing". I suggested an addition to clarify that statement, rathe than a change. I would say that 'any air vehicle with less than 2½ lb. per square ft. wing loading should be considered capable of foot launch and landing." (Maximum empty weight of 200 lb. and assume pilot of 170 lb. for this purpose).

We have proved this possible on the Weedhopper and this definition would include such planes of similar size and spe I feel it is not wise or practical for th F.A.A. to require a demonstrated foot launch or landing because that just increases risk. The machines fly the same no matter how they are launched. Not having to foot launch even once gives much greater design freedom and it is easier to protect the pilot properly. This view was received much more positive this year than last, so I see the tide tu ing to some degree.

Besides all the arguing over definition, it is intuitively obvious that a Weedhopper is much more similar to the ultralights than the licensed variety of aircraft and so is the Hummer, which is currently licensed. In reality, this is rapidly growing out of the F.A.A.'s control and it isn't reasonable to think the F.A.A. could enforce any restrictive regulation. The only reasonable approach the F.A.A. can take is to come up with logical rules which are no more than absolutely necessary so that the Ultralight pilots will see the need and comply voluntarily 99%.

The biggest accomplishment was that almost everyone agreed that it would be best for the ultralight movement to seek closer association with the E.A.A. as opposed to tying in with the U.S.H.G.A. (United States Hang Gliding Association) or any new organization. Many people finally recognized that this doesn't eliminate the possibility of any other new national organization. The general feeling was that we should pursue divisional status within the E.A.A. Peter Strombom asked for volunteers to serve as a steering committee to work towards that end and about half of the 85 present put their names in the hat! Peter suggested that the E.A.A. staff would choose the committee, but a few people thought they would rather vote. In reality the E.A.A. people were the only ones who actually came close to knowing the abilities of those present, so that was the best way. After the basics are set up and some form of communication is established, then we can vote. Not many people in that room knew much about any of the other people except for names (sometimes).

The final committee was announced later and consisted of 2 builders, John Balantine of California and Ken Williams of Wisconsin; 2 publishers, Tracy Knauss of Glider Rider and Lucky Campbell of U.S.H.G.A. (Hang Gliding Magazine); and 2 manufacturers, John Moody (U.F.M. of Wisconsin) and John Chotia (Weedhopper). Peter Strombom was there to guide us along. I feel this approach was quite successful and presented as fair a representation of interests as possible from so few people.

This committee met February 28th in E.A.A. headquarters and decided on a few basics, such as: dues structure - one fee which includes E.A.A. national membership and "Sport Aviation" subscription, communication through a newsletter which will include accident reports and safety related information, the basic goals of promoting safe flying and a united voice of authority to deal with the F.A.A., etc.

We also thought it would be desireable to avoid the word "Division" if possible, that is, we would rather be an "Ultralight Association" within the Experimental Aircraft Association.

I have spoken with Peter Strombom since the meeting and he has been quite

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busy getting the proposal and by-laws, etc., drawn up and submitted to the E.A.A. Board of Directors. A mail note of the Directors is now in progress and it looks good.

I feel the E.A.A. is a strong, mature, organization which stresses the worthwhile goals of good craftsmanship and safe flying for recreation and education. I am sure this is a good move.

NATIONAL WEEDHOPPER SQUADRON COMPETITION

Competition keeps things interesting, especially if everyone has an equal chance and there is some prize money involved. This competitive event is designed so that any absolutely stock Weedhopper has just as much chance as any other. It is pure pilot skill.

The basic idea is this, you takeoff, circle, and drop a bomb over a minimum height marked by a crepe paper ribbon, then climb to 500 ft. (approx.) and proceed to do some precision maneuvers. A giant "X" would be marked on the ground with the legs 90° apart. The judges would sit at the cross point.

The required maneuvers would be: Two circles of equal size and location right and left a figure '8', a square, a square '8' and perhaps a triangle and 4-leaf clover. Judging would be the same as for aerobatics or figure skating. These maneuvers are not easy, to ground references, especially in a wind. I think this would be a true test of pilot skill which could be finished with a spot landing.

We have a location in mind southeast of Oklahoma City, Okla., but there are a lot of negotiations and arrangements to be made. Even if this site doesn't work out, we would want something in central U.S. to try to equalize driving distances for all.

This first national Weedhopper meet would propably be held in June 1981, at least that is the target. Projected prize money would total $10,000, at least. We would try for national T.V. coverage, of course.

We need suggestions for alternate sites and it isn't too early to start serious planning now. The site should provide space for camping for approximately 200-300 units and enough area to run four events at once during eliminations. I can hardly imagine several hundred Weedhoppers in one place, but it could happen!

I would hope this could become an annual event, sort of our own little "Oshkosh" where we could gather to compete, trade ideas and stories, and have a good time. This is a major project and will require the help of many people so start thinking about it. It could be Great!

If any of you people out there would like to help work on a committee to get this going, or if you have any suggestions, please give me a call.

I see a community effort with the Boy Scouts, Civil Air Patrol, Jaycees and all getting in on the action, fun and profits. It would be run as a basic fly-in or airshow. The Weedhopper pilots would be the stars and the winner would be truly a fine pilot.

GROWTH

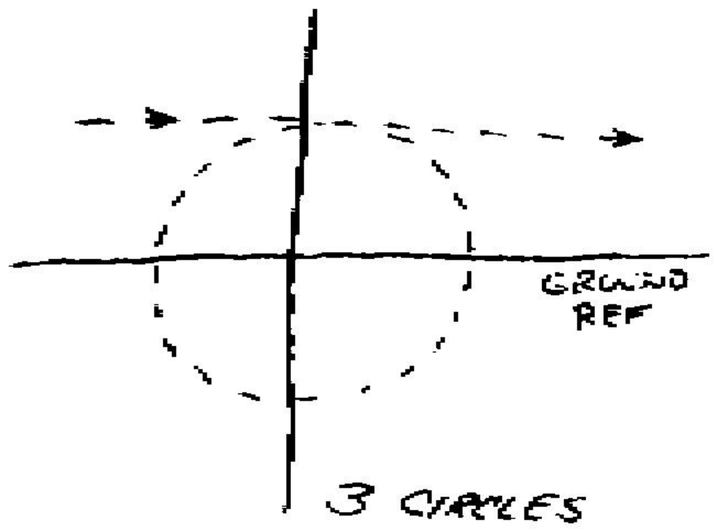
Weedhopper of Utah, Inc. is growing fast and in some cases we are outgrowing our existing supply lines. We will be needing new sources of supply for back-up purchasing to minimize our back-ordered parts.

We have the Thomas Register which is fairly useful in finding companies, except that quite a few good sized companies are not listed. We ordered phone books from many major cities, but guess what, most of the books were back-ordered 6-9 months!

So we are issuing this call. If you have any phone books, catalogues or know of good sources for any of the basic materials used in the Weedhopper, we would greatly appreciate hearing from you. If you could send us a phone book from any major city, we will give you a T-shirt free. If you know of reliable sources, drop us a post card. We would be most thankful.

We want to deliver as fast as possible, since every Weedhopper flying will sell five more in the next year. Good, reliable supply lines and backups are necessary to meet this booming market.

SUGGESTED COMPETITION MANEUVERS



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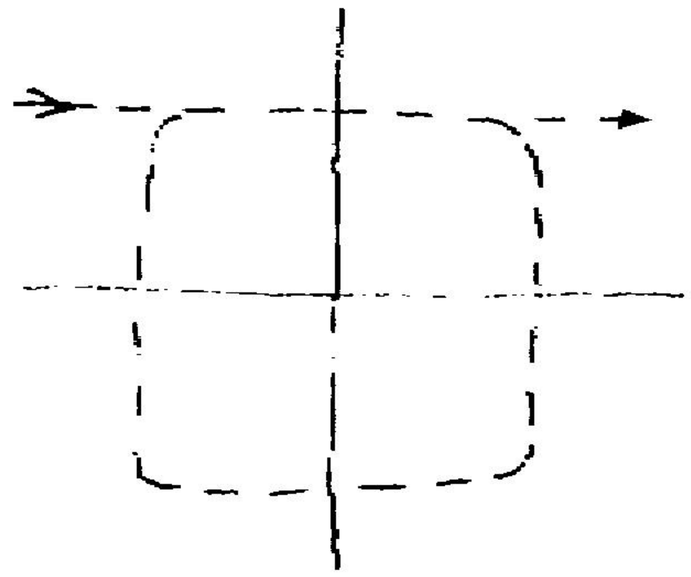

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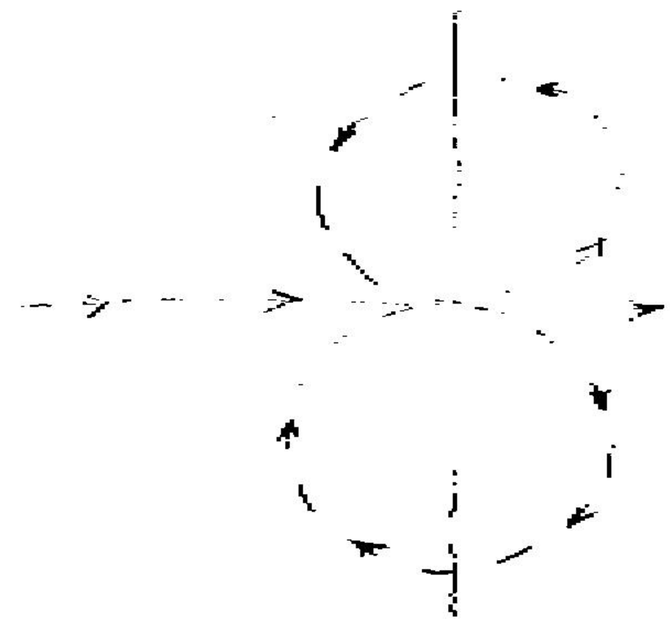

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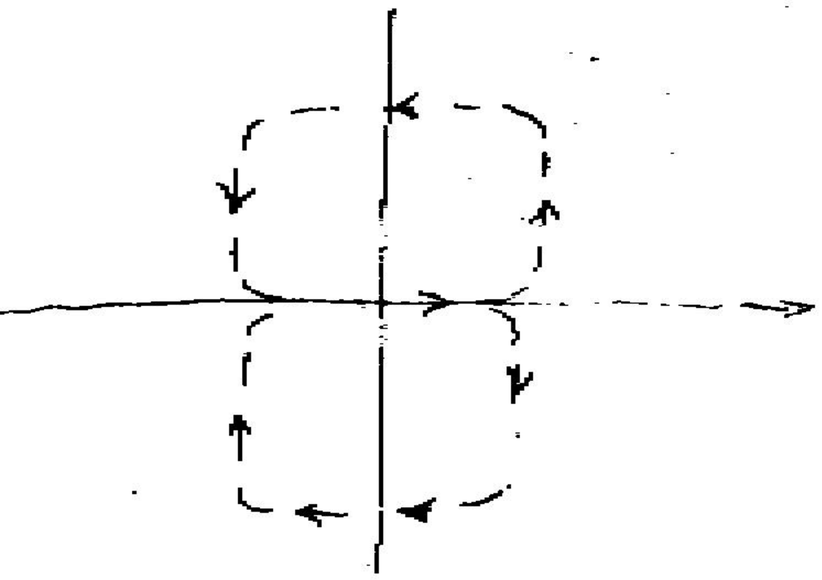

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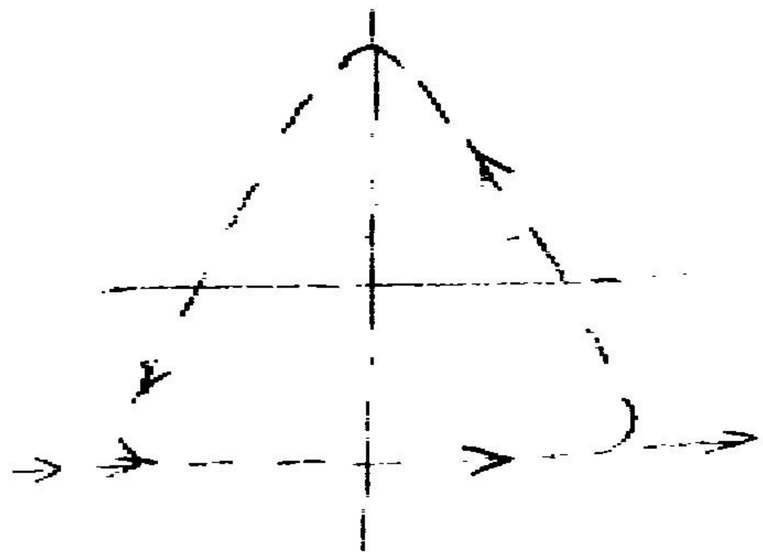

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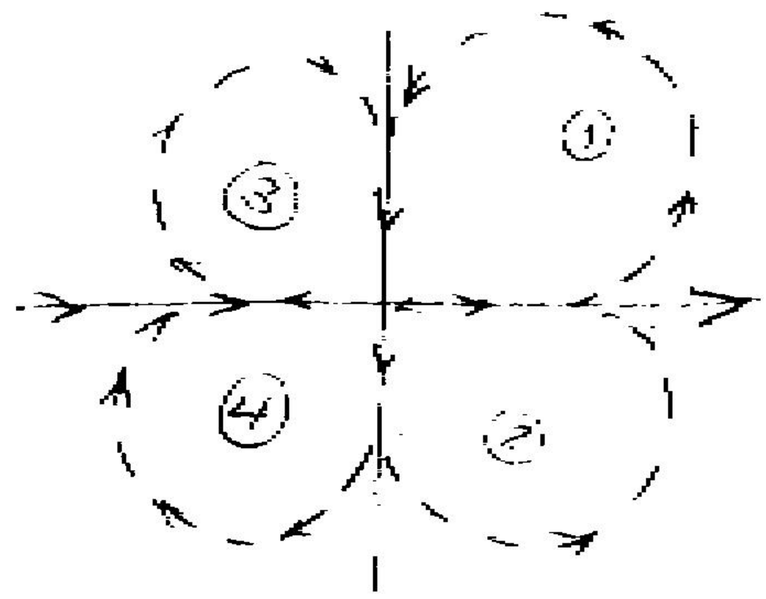
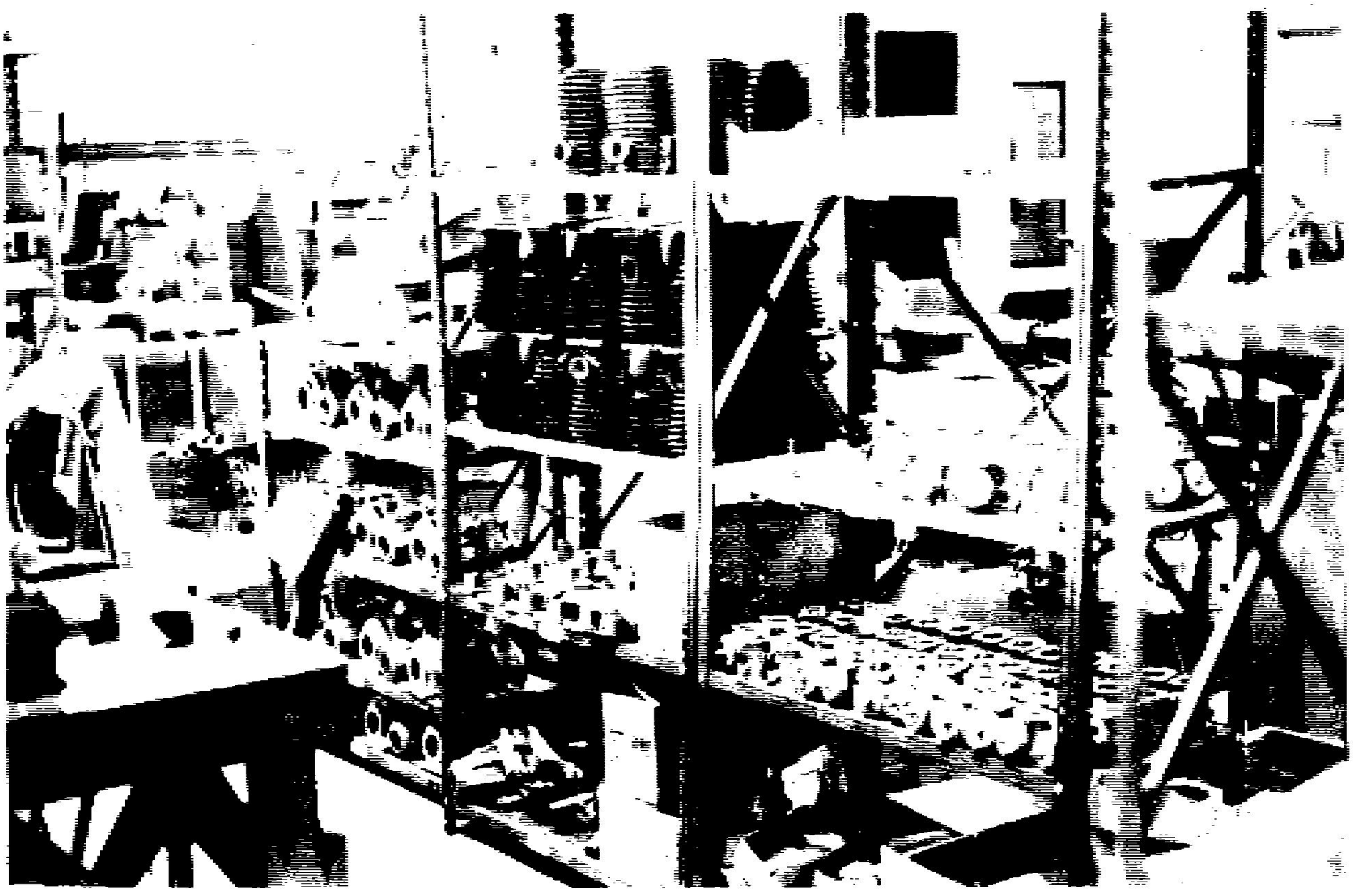
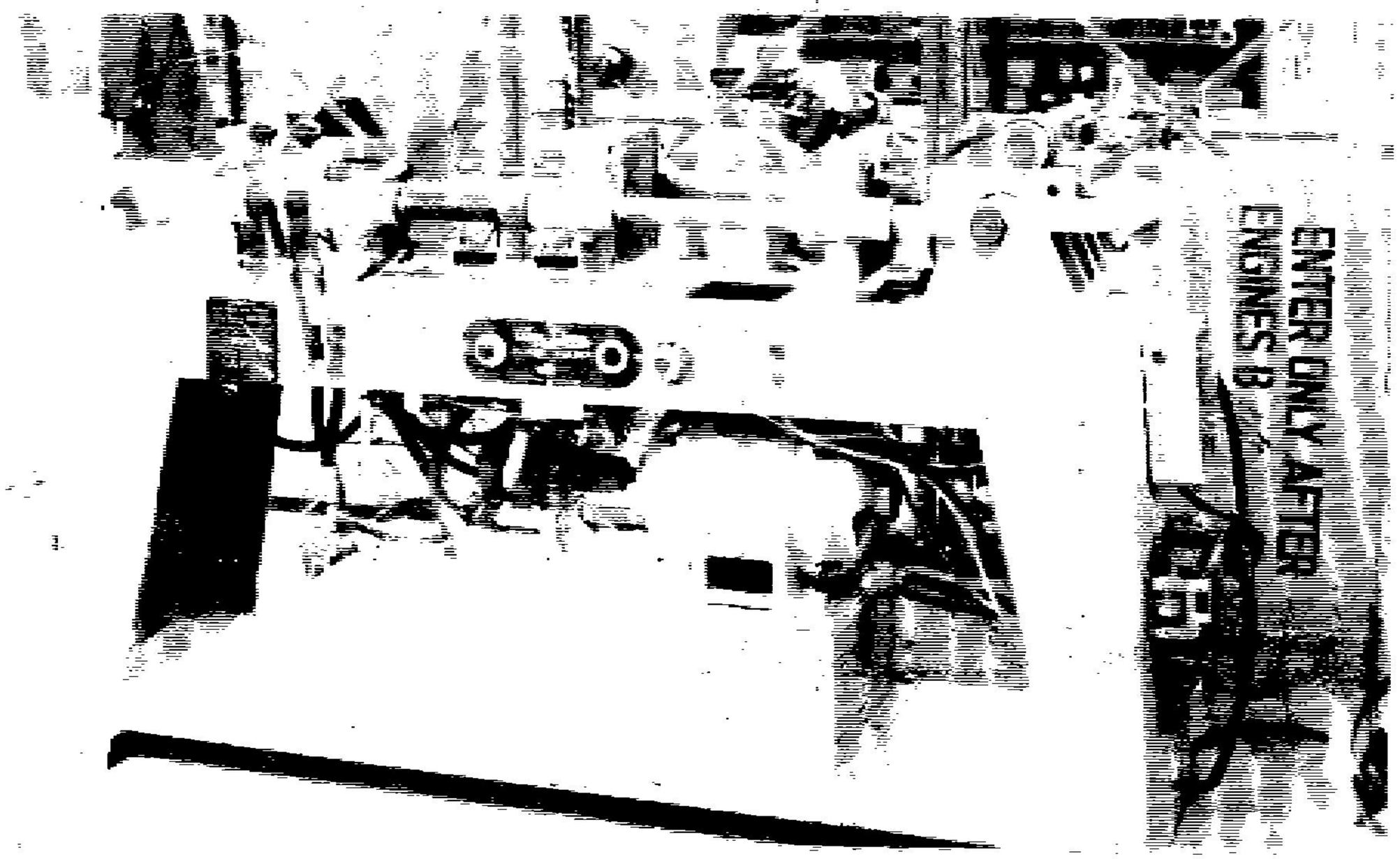


CLOVERLEAF



ENGINE ASSEMBLY AREA



INJECTION MOLDING MACHINE

WEEDHOPPER NEWS is free for one year to all Weedhopper builders. Yearly subscription price is $6.00 for 12 issues.

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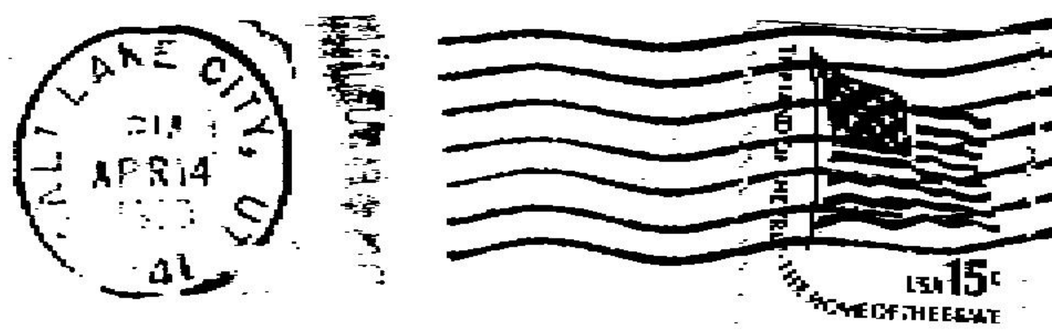
This new injection molding machine will allow us to mold our own control pulleys, wheel bushings, throttle quadrants, rib tips, etc. We are building a quick-change insert mold which will allow efficient production in relatively small quantities.

We may also get into building some of our own instruments since this method of plastic molding can be quite accurate.

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