Towline

Volume VII Number 10 Published by Seattle Glider Council, Inc. October 1957

MEETING ANNOUNCEMENT

SEATTLE GLIDER COUNCIL MEETING - MONDAY, OCTOBER 7, 1957. 8:00 PM
Student Union Building, University of Washington

The guest speaker this month will be Marvin Michael, the Boeing engineer who delivered a Helio Courier to Peru, S. A. for the Missionary Aviation Fellowship. He undoubtedly will have an interesting tale to tell and will present color slides of the trip.

CHAIRMAN'S MESSAGE

"Clean out the Deadwood!!" This is the familiar cry heard throughout the countryside whenever an election is to be held, or when club membership rolls are reviewed. Such then is the cry heard hereabouts. The time is fast drawing nigh to nominate and elect next year's board of directors and chairman. It would indeed be different to have members asking to be nominated instead of being asked if they would serve on the board if elected. In the years that the Council has been active, the board has consisted of the same faces. The board membership has changed slightly but mainly because some of the fellows have other interests such as family interests, house building, etc., that take them away from the sport of soaring. Some board members have been on the board since the Seattle Glider Council was formed. This in itself is not a bad thing since guiding hands are required. However, it is a poor indication in that new growth is not evident and it is needed.

It has been suggested that the Council is weakening because there is no great problem to unite the effort as was the case several years ago during the ADIZ regulations, etc. Another thought is that the Council functions, along with its activities, are directed toward the same group of flyers and it has lost sight of the problems of newcomers. If this is true it again points to the need for new and fresh talent in the Board of Directors - or at least the need of expressions of interest, and offers of help from the general members. If the members will not speak up, the Board cannot take steps to better serve the membership. During the past year, several ambitious programs have been suggested, but due to inadequate support have quieted down to oblivion.

Newcomers say that they don't know what to do or how to carry on the Council work. It's not that difficult, and what better way to learn than by doing? Let's hear from the members!!

Robert E. Kruse, Chairman

CASCADES CONQUERED

On Tuesday, September 3, Bob Moore of Richland made the first crossing over the Cascade Mountains in a sailplane. He started from Wenatchee by aero tow and soared over the mountains by way of Stevens Pass, landing at the State Aeronautics Commission field at Skykomish, a distance of about 60 miles from the starting point.

This flight has long been in the minds of most of the local soaring pilots, but it remained for the Old Fox from the Atomic City to make the first real attempt, and to succeed on the first try.

Amos Wood had several years ago made a standing offer to give a party at his waterfront home on Mercer Island in honor of the first pilot to soar across the Cascades. Amos will invite present members of the Seattle Glider Council as well as old timers in Soaring in the area to a buffet dinner on October 5 from 6 to 11 p.m. at his home.

AWARDS TIME APPROACHING

With the annual Awards Banquet scheduled for November 9, it is time to get in the claims that the Awards Committee needs before they can decide where the awards should go.

Altogether, there are five awards to be presented, and in order to be considered for any of them, the deserving Northwest Glider pilot must have his claim in the hands of Robert E. Kruse, 10610 55th Avenue South, Seattle 88, Washington, on or before October 31. The awards are:

BOEING ALTITUDE TROPHY: Awarded for the greatest altitude gain made during the "Contest Year" from November 1, 1956 through October 31, 1957. Claims for this award must be supported by a barograph trace.

ELLENSBURG DURATION AWARD: Awarded for the longest duration flight following release from tow.

ARNOLD CARSON MEMORIAL DISTANCE AWARD: For the longest distance flight as measured from release point to point of landing. Distance returned on declared goal-and-return flights is considered, but not distance beyond landing point or return on distance flights that work back away from maximum distance to a better landing spot.

PACIFIC NORTHWEST AIRCRAFT SAFETY AWARD: This one is hard to evaluate by any obvious measureable standard such as the most time without an accident. Pilots are more apt to know whether they are disqualified for the safety award rather than qualified for it. Your conscience is your guide in claims in this case, and the claims will be carefully considered by the board.

SIMPSON TROPHY: Donated by Fred Simpson of Vancouver, B. C., and awarded for the best glider performance turned in at the Labor Day get-together at Wenatchee.

DON'T FORGET: ANNUAL AWARDS BANQUET, SATURDAY, NOVEMBER 9!!

CASCADE SOARING SOCIETY NEWS

The new Schweizer 2-22 was taken to Wenatchee for the Labor Day Weekend meet, and several members got checked out in it. Joe Robertson made the best flight, carrying a passenger to cloud base at 10,000 feet when the lift became good late on Monday afternoon.

The Flat-top Laister-Kauffman purchased from Dan Terry has been returned to Seattle after a complete going-over in Peter Van Gruen's shop, and after a few pickup items are attended to, will be taken to Wenatchee, where it will be based.

Training operations continue in the meantime at Arlington with the 2-22. The club has been operating on a "Scheduled Instructor" basis for the last few months, with a schedule made up in advance indicating the instructor that will be on the field on a particular day.

The next regular membership meeting will be held at Peter M. Bowers' house, 13826 Des Moines Way, Seattle 88, Thursday, October 3 at 8:00 p.m. The club program will be outlined to potential new members, entertainment will be provided, and refreshments will be served.

Joe Carter, Secretary and a member of the Board of Directors, has won a Boeing Scholarship to Stanford University, and has left for Palo Alto for a year. His position on the board has been taken by Al Gregg, who has been serving as instructor in the club since obtaining his commercial glider rating last Spring.

THE MIRACLE OF THE AGES

The greatest technical achievement in Northwest Soaring has just taken place, exceeding in magnitude the completion of the Olympia and even eclipsing that greatest of improvements, the removal of the blue lettering from the orange L-K of Motorless Flight Associates.... Bowers has built a new glider trailer!

Only the fact that the superstructure is of wood identifies it as a Bowers effort.. the basic framework is of steel, the safety chains are welded on, the tail and brake lights work, and the whole thing is painted!

All of this came as a great surprise to those who have seen the unpowered items of the Bowers Air Force pulling into Wenatchee on either the Wolf Trailer, which was a wreck before he got it and hasn't been improved since, or the Bowlus trailer, which wasn't much better. This, plus the recent installation of shoulder harness in the 1-26 and a complete touch-up on all the patches with fresh pigment dope of the right shade makes one wonder what has gotten into Bowers lately.

Actually, this trailer is something that had been in the planning stage for a long time. Pete bought the running gear and basic framework for it early in 1956, but only got around to completing the job late in July of 1957. Intended primarily for transportation of the 1-26, the trailer is designed so that any glider can be fitted to it in a minimum of time. The wooden-box wing cradles are removable if large loads are to be carried, and can be relocated to fit other glider wings.

While the trailer was not laid out to permit the ship to be assembled right on it and then rolled off a-la Bob Fisher, the assembled ship can be rolled onto the trailer tail first if it is desired to move it around the field on the trailer. This was done when moving from the hangar to the exhibit area at the recent Portland Air Show. ....From now on, ANYTHING can happen!

Dear TOWLINE,

I have just received a card from Bob Kruse in which he asked me to send you a little account of my flight of September 3 for possible use in TOWLINE. As you know, we stayed over at Wenatchee for the rest of the week after Labor Day in the hope of doing some real high altitude flying (hopefully Diamond altitude). As it turned out, the real high altitude conditions did not materialize; however, we were fortunate in getting to make two flights which were interesting from a meteorological standpoint. Perhaps the readers of TOWLINE would also find these of interest. These were as follow:

Tuesday, Sept. 3, 1957 SOARING ACROSS THE CASCADES (Almost)

No evidence of the hoped-for wave conditions; however the thermal soaring looked as if it would be better than any day over the week-end. The sky was a clear blue and free of any trace of the high cirrus overcast which covered the sky on Monday. Cu had begun to form over Birch Mt. and behind the ridge by 10 a.m., and it looked like a good day for more of the same type of soaring that was indulged in late Monday afternoon. Take-off was at 12:22 with release at 3600 in a thermal near the pocket. The thermal picked for release soon played out, and fifteen or twenty minutes were spent climbing to about 8000 feet. Cloud base appeared to be lower than on Monday, but was not as easy to reach. Several more clouds were explored to the North, still without reaching cloud base. At this point, the decision was made to cross the river and explore the lift under the clouds around Birch mountain. Arrived at about 6000 feet but soon climbed to cloud base at 9000 feet.

Up to this point there had been no thought of anything but a local flight; however, the clouds to the West looked so good that I decided to work up past Levenworth and reconnoiter the approach to Stevens Pass, since this had long seemed to me to be the most feasible route across the Cascades. Should the lift play out, I figured that I could glide at least back to the strip at Cashmere from which I could phone Kenny for a tow home. I stayed well North of the road over the mountains and hopped from one cloud to the next. Each well developed cloud produced consistent lift, although the thermals over the mountain were much more turbulent than those under the clouds East of Fancher. Rate of climb was about the same. In this way we arrived under a particularly fine cloud which was forming over some high country near Plain at the East end of Stevens pass. Still no decision had been made to cross the pass. I flew off a little way to look around. The air appeared clear to the West with thinning cu over the mountain tops. The prevailing west wind seemed to be fairly light, apparently not over 10 to 15 miles per hour. It looked like as good a day for crossing as one was likely to get. Whether to be a man or a mouse? Too bad I hadn't told anyone where I was going! Oh for a radio! The decision was made. I went back to the fat cloud, climbed to almost 11000 feet, and headed West.

Course was set for a desultory cloud over some breathtakingly beautiful high country south of the pass. Arrived at 9000 over some ridges shown on the map as 8200 feet. The lift over this barren ridge proved to be very turbulent, but little else - we were hurled skyward at one moment and then dashed toward the crags the next instant. However the view was worth it. The ridge (apparently the Chiwaukum Mtns.) cradled several glaciers or permanent snow fields, and five lakes were counted below, the highest still covered with ice. Some white specks on the rock were thought to be mountain goats, however this was not definitely confirmed. Anyway the scenery looked just like pictures of soaring in the Swiss Alps. Stewart and the Cashmere Crags looked very close to the South, Mt. Index was visible to the West, and Glacier Peak to the North, as well as innumerable unidentified peaks and valleys in all directions. The valleys looked much alike. It wouldn't do to go up the wrong one! I resolved to keep the highway clearly in view. Back on course, I crossed to the north side of the valley and followed the highway. The buildings at the top of the pass slid past below, and the parking lot looked plenty big to land a sailplane. So, for that

SOARING ACROSS THE CASCADES (continued) matter, did the highway east of the summit.

I had hoped to stay above the mountains and to catch one or two more thermals which would allow me to get out to the flat country around the town of Sultan. But on passing the summit, the air became smooth and the valley filled with haze. The only thermals were apparently being pushed up by the barren mountain tops above timber line, and these were out of reach for me. I gradually sank down below the mountain tops into the valley and its stable air. Arrived over Skykomish at about 3:45 and was very glad to spot the emergency field there. I still hoped to get back up before pressing on. Carefully worked a couple of very weak thermals, but to no avail. Although the altitude in hand was sufficient for another eight or ten miles down the road, what could be seen through the haze didn't look encouraging from the standpoint of landing places. I scratched around some more. A mountain buttress sticking out into the valley wind produced nothing but sink. The smoke from a brush fire on a hillside was streaming out horizontally and also produced nothing. I finally popped the spoilers and landed on the Skykomish Emergency strip at 4:10.

Several cars were waiting. One man had the keys to the gate and unlocked so we could subsequently bring the trailer in. A Mr. Cass, who operates the Cass Auto Cabins and Chevron station several miles down the road, took me to his place to telephone, then returned with his tools to help dismantle the ship, then back to his house for coffee while waiting for Elisabeth and the trailer. A high school boy helped with the dismantling and then stayed to guard the ship while we were away.

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I see that I have written far more than I had intended, so will say only a very few words about the wave flight Dr. Malcolm Bulmer and I were privileged to make on Saturday, Sept. 7. It was noteworthy, to us at least, for the fact that the waves were located above a deck of cumulus clouds! The wind was from the north at Fancher, parallel to the ridge at ridge elevation, and from the West higher up. The sky was covered with rather wind blown cumulus. Conditions were very rough low down, and the thermals tended to be blown apart by the wind. The air mass was quite cool. Release was about 1 p.m. After struggling around for over an hour north of the Lookout, we succeeded in climbing to cloud base (about 8000) and Mal, who was flying at the time, inadvertantly took us into the cloud. We gained perhaps 1000 feet in cloud and then came out the West side into strong wave lift! Using this, we soon climbed above the cumulus and were able to look down on them - surely a strange place for a glider to be. The cover appeared fairly complete as viewed laterally, and the ground could be seen only here and there between the clouds. After climbing to 13000, we penetrated NW toward Lake Wenatchee, which could be seen through a hole. At least three strong waves were encountered in a distance of about 20 miles, and the barograph shows each of these to have two peaks, suggesting six. Thus the "wave length" was either 7 or 3½ miles. 15000 feet was reached three times, and we were above 13000 for about two hours. The temperature was -7½° C at 15000, and a series of temperature readings taken on the way down gave a very stable lapse rate of 1.5°C per 1000 feet from 15000 down to 10000, hardly any temperature change between 10000 and 7000 (roughly the thickness of the clouds - measurements in clear air however) and a good solid 3.0° per thousand below cloud base to ground. There was no indication of wave lift below the clouds, nor were there any lenticulars above.

Sincerely,
Bob Moore

FOR SALE: Gruneau Baby II - plans, Wing Spars (assembled), Wing Ribs (assembled), Bulkheads ready to assemble, 14 sheets 1/16 mahogany plywood, 2 sheets 3/32 mahogany plywood, Steel fittings, Empennage parts (assembled). Best offer over $300.00. Call or write Prater Hogue, 4772 119th S.E., Bellevue, Wash. Gi0054

In Bangor, Maine, it is 60° F.; in Oklahoma City, Oklahoma, it is 66° F.; there is 3" of snow in Rawlins, Wyoming; and the people in Helena, Montana, were awe-struck and car-stuck when 14" of snow fell on their city in one weather-history making day. In Texas it's hot and cold; in California it's warm and smoggy; and in Seattle we've had a sampling of the wet, a show of the fog, and a display of the sun. --All, simply Mother Nature's way of telling her children that golden October is just around the next few turns of the Earth, and a cold Winter is riding the caboose of the next train. From the postcards Ole Man Winter's already been sending to Helena, et al, he must be packing his trunk with the kind of winter weather which will make even glider guiders reasonably content with hangar-flying in the workshop and workshop maintenance in the dining room.

It seems - and was! - only three weeks ago that a hot, sunny, dry August found the youngest 4 of this family in Kansas and Oklahoma, happily visiting Grandmamas and Granddaddies. Our glider man had to stay in Seattle this time (THAT was a switch!) to keep the refrigerator busy and the african violets watered. We four who journeyed had only 3 1/2 weeks of August for our trip, so we decided to extend it as long as possible and therefore we would return Labor Day in order to get sprouts 1. and 2. into school. Then we second thought: Labor Day weekend is customarily the last full-fledged flying get together of the year in these parts and no glider guider should be made to miss that last-of-season Wenatchee weekend just to meet a train. So we arranged to let Daddy have his Day and we would arrive back in the Northwest the day after the holiday. We like to go to Wenatchee, too, but we DO see gliders there more often than we see the folks back home -- hence our decision.

Three and a half weeks without anyone talking gliders IS entirely possible, but for some reason, (where this family is concerned) it is highly improbable. Before I met the character who is now a "head of household" --ours, I had rarely heard the term "glider" and had seen only two of these wind-winders. Now, they either follow me, go with me, precede me, or lay in wait for me. So often have they accosted me unexpectedly that noting the passage of three full weeks with NOT seeing or hearing about the things has become, for me, the unexpected. Therefore, when a full page ad for a suburban shopping center in Wichita, Kansas, announced that everyone was welcome to view "FREE -- a display of modern sailplanes on the Oliver level parking lot", I was hardly surprised. Indeed, the surprise came when, on Friday, my Dad and I drove into that shopping center's parking lot on the "Glendale level" (The buildings are between the two parking levels and hide one from the other.) to accomplish a quick errand and we were asked by a saleslady how we enjoyed the glider display in the parking lot --- and I was utterly astonished at realizing that after reading about it the night before, I had completely forgotten it! (That's almost heresy in this glider wives' league.) Of course, my Dad and I immediately remedied the oversight by walking through the stores and up the stairs to the upper level where we were greeted by the sight of a Cessna 170, the Ross R-6, a Bowlus Baby Albatross, and a (?). The (?) was a trim blue and white two-place that resembled a 1-26. Visitors were allowed within the large roped-off area where the ships were tied down (to tiedown hooks chiseled into the cement of the parking lot) so, naturally, Pop and I stepped over the ropes and went alooking. Three C.A.P. cadets were guarding the ships and one youth was standing near the (?). So I asked him what it was. He looked up brightly and announced, "It's a glider!" "No", said I, after a count of 5, "What kind of glider is it?" He gave us a quizzical smile and answered, "A sailplane!" "Look!" said I, pointing out the ships from north to south, "That one's an airplane, but it's also a Cessna 170. The next one's a glider -- a Ross R-6 glider. That one's a glider known as a Bowlus Albatross. But I want to know what this one is. What is it called?" He looked bewildered.

"I don't know." "Well, do you know who put it together or what company made it . . . or even who owns it?" He shook his head, "No, All I know is it's a glider. Pop and I poked around (with "Hands Off", of course) a little bit more, then we stepped back over the rope on our way to finish our interrupted errand ---leaving behind us a thoroughly befuddled C.A.P. cadet badly in need of some information on "what?" and slightly curious for some information on "who?". (He no doubt figured we'd been primed by some friends of his to confuse him. ...We hadn't. But we did.)

Then, the following morning - our last morning in Wichita - we finished our breakfast and loafed in the living room for a brief while with the morning paper. Between that time and lunch, four separate adults asked us if we'd seen "that picture on the front page". We had..... What else ? but a 4-column picture of a World War I Spad fighter, owned by pilot Swede Ralston, being loaded onto an air cargo plane at Portland, Oregon, so that it could be flown to Seattle, Washington, where it was to be repaired by a Boeing Airplane engineer name of m-m-m-m oh yes, Peter Bowers. It was the only picture on the front page that Saturday morning and it was immediately under the masthead. I couldn't have missed it if I tried -- and after receiving a phone call about it (from adult #5), I tried.

Actually, hearing about gliders and glider people at home or away from home seems perfectly right and proper. It is when we don't hear about or from them that it seems wrong. We liked having someone remind us of that glider display; we'd have been awfully disappointed had we not seen it and then suddenly remembered it 2 days and 800 miles later. And the fact that several people inquired about us seeing the name of a Seattle Pete Bowers, demonstrated they were interested - - - and were eager besides for an excuse to call or come and say "Good Bye".

It was after our return that we heard glider news which greatly saddened us. Bob Kruse, in last month's TOWLINE, put our feelings into words much more eloquently than we ever could. I can only say that Stanley Graham stays in the thoughts of his friends as an extremely nice guy who always put his family ahead of everything. Gliders and his job were only his second loves. (At Wenatchee, a year ago last July, it was Stan who forewent a good flying day which could have earned him the 3rd leg of his silver "C", to drive back to Seattle and help his wife - who had stayed home to care for 2 children with measles and by mid-week was caring for 3 children with measles.)

We will miss Stan, but we won't forget him.

Our sincere and deepest sympathy to his family, of whom he was so justifiably proud and with whom he was so happily content.

May the Lord bless and keep us all, and, God willing, someday we and our missed ones will meet again.

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ANNUAL STATISTICS REQUESTED

The staff of TOWLINE needs statistical data for the big "Annual" edition in the form of total number of flights and flight time for each glider pilot and glider in the Northwest. This information should be sent to Bob Kruse. Any photos considered sufficiently interesting for inclusion in the annual edition will be welcome. This information should be turned in as soon as possible.

Further Discussion of Airfoil Characteristics

What does the desigher look for when selectiong an air foil to be used in the wing of a sailplane? Naturally he needs a section with a low drag coefficient at the speeds where the finished ship will cruise. Also, he desires to select a section with a high maximum lift coefficient so that he can obtain a low landing speed and good circling characteristics. Gentle stall characteristics are desirable to promote safety.. He needs the thickest possible section so that he will have the maximum available spar depthe for a light weight wing. No single airfoil is posessed of all these good qualities, so the designer must select from the many possible aerfoils his estimate of the one which has the best combination. He must pore over the NACA reports of wind tunnel tests until he finds the characteristics he wants.

Simply selecting the section is not enough, for then there is another phenomenon which affects airfoil characteristics - the scale effect, or Reynolds Number effect - which causes both lift and drag coefficients to change with both the chord length and the speed of the airfoil through the air. The Reynolds Number is defined for Standard, Sea Level air by the following equation:

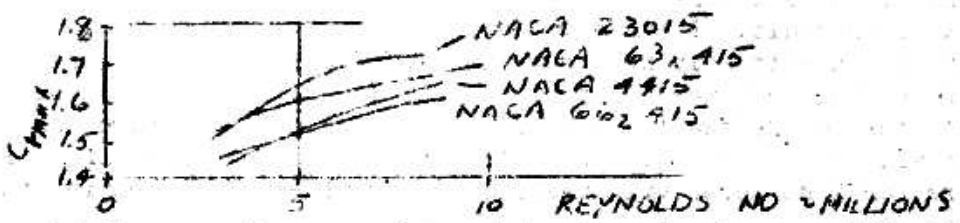
$$R = 4550Vl$$

where: V is velocity in miles per hour
l is chord length in feet

Suppose then that we have a sailplane wing which has a chord of three feet and is traveling at 40 mph.

$$R = (4550)\ (40)\ (3) = 520{,}000$$

This number doesn't mean much by itself, but let's look at the plot below which shows the variation of maximum lift coefficient with Reynolds Number. The characteristics of several airfoil families are shown.

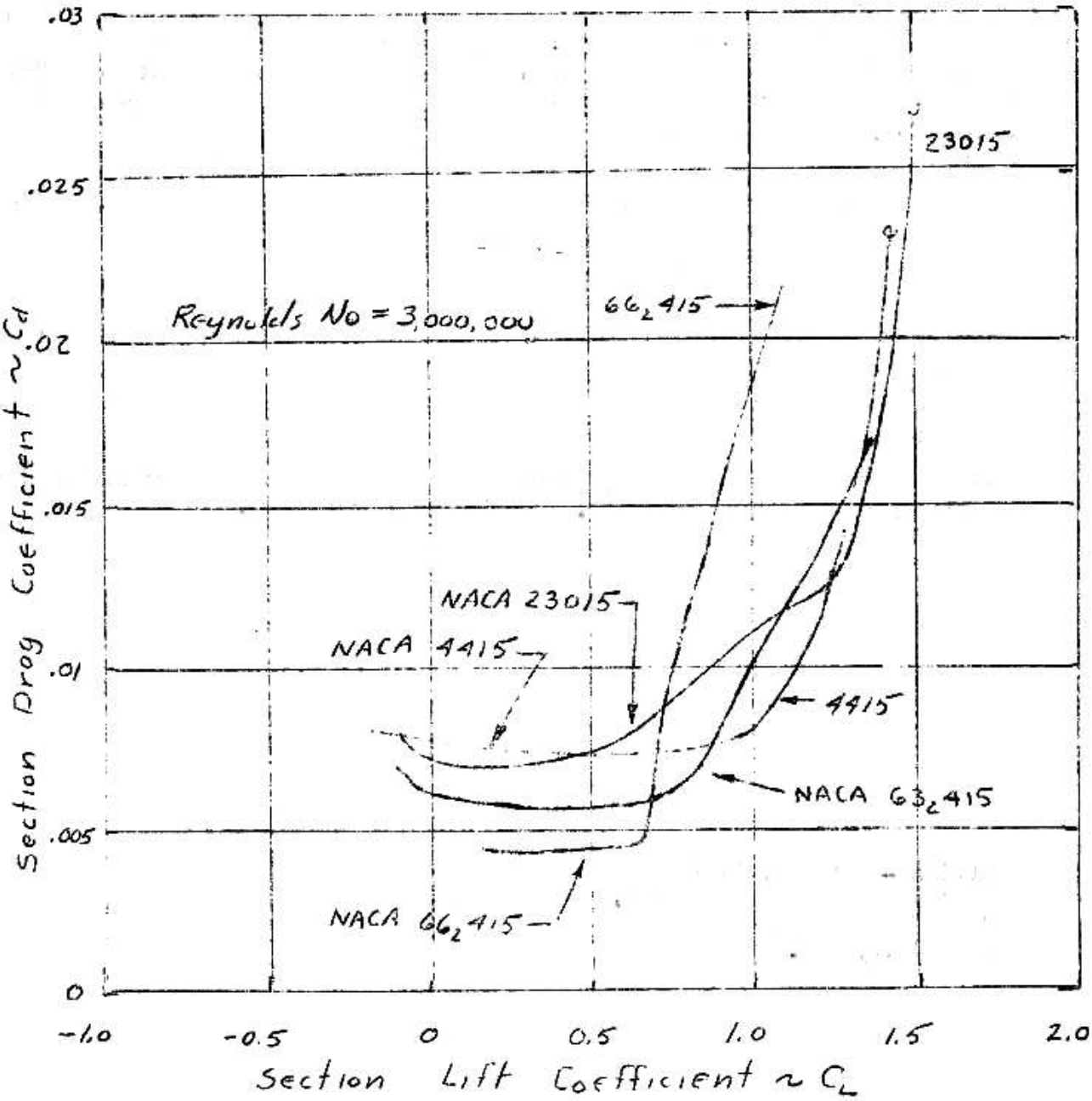


As you c an plainly see, the general trend is toward a decreased $C_{l_{ma}}$ As Reynolds Number decreases. The meaning of this graph is that either decreasing the size or decreasing the speed of the wing sample will cause a corresponding decrease in the maximum lift available. So it behooves the designer to look even more deeply into his NACA reports since for structural as well as aerodynamic reasons it is desirable for his wing to taper. The Reynolds Number at which the tip operates is then only about half of that at which the root is operating. Since the maximum lift available from the tip sections is less than the root sections we may expect a dangerous tip stall to develop unless we take extraordinary measures - but more about that later.

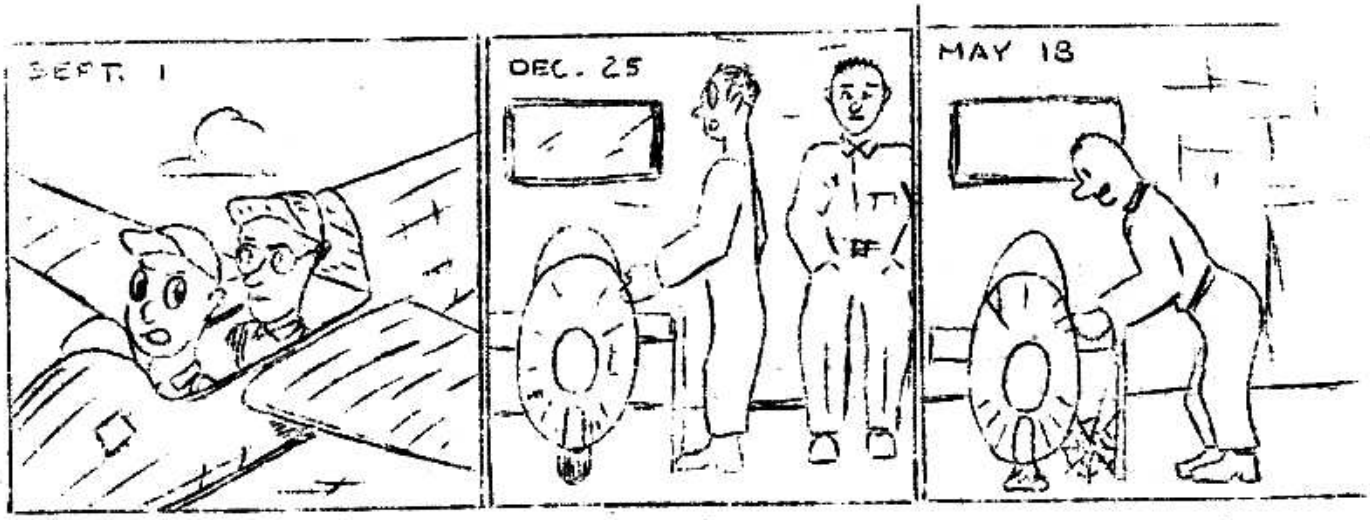
We must try to find a combination of airfoil sections that will give us the characteristics we want by varying the section from root to tip. It is unfortunate for the sailplane designer that a large share of the wind tunnel testing has been done at Reynolds Numbers well above those at which his wing will operate since the large, fast aircraft that most designers are concerned with operate at Reynolds Numbers in the neighborhood of six million. The designer must rely to a large extent on educated guesses for lack of better data.

The section drag coefficient varies too with Reynolds Number to the disadvantage of the slow speed aerodynamicist. In fact, there is some doubt whether or not it is useful to use the newer, low-drag sections in this low speed regime. We will treat this subject in more detail when we are a little deeper into our discussions on the actual design of a ship.

Enough on the Reynolds Number effect for the moment. Now let us look at some actual airfoil characteristics as they were taken from NACA Wartime Report L560. We will compare the lift-drag polars of several airfoils, all of them 15 percent thick. Our comparison includes the polars of the well known NACA 4415 sections as well as some of the newer, laminar-flow sections.



Hang onto this graph, for we will discuss it in detail next issue. For homework, you can study the characteristics plotted, and try to decide which section you would use.



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TOWLINE is edited by Bob Joppa with the occasional assistance of Dean Reynolds. Dorris Joppa acted as typist this time, and Ray Deckman and Dave Axelson ran the mimeograph.

If a red X appears near here, you're about to lose the greatest little dollars worth in the magazine business, Subscibe man, subscribe.

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