

ANALYSIS OF WING SECTIONS

From time to time it is the plan of THREE A FLYER to comment on popular wing sections, giving a general outline of ~~its~~^{their} characteristics, along with some technical data. This month we choose the NACA 23012. At this writing it is probably the best known and most efficient section in general use. In most ways it is a better section than the old Clark Y, which was the leader for many years.

This section has just about everything. Being of the double convex type it has practically no center-of-pressure travel and is therefore very stable. It has good depth, especially for the rear spar, which is something older sections did not have. Best of all, it has a high lift coefficient, it being 1.6. It doesn't stall until it reaches the unusual angle of 22 degrees. The old Clark Y stalled anywhere between 12 and 16 degrees. The lift-to-drag ratio is likewise exceptionally high. At the best angle of attack which is 4 degrees, the L/D is 22, which of course means that for every pound of thrust delivered to it, it will lift 22 lbs.

There are several factors that make this an ideal section for the amateur. The double convex shape makes it easy to build, the rib chords naturally shaping up the the outline. For the same reason the covering is easy to apply, being far different from concave sections, where the cloth has a tendency to pull away from the rib all the time. As a final good word, anyone who has flown the 23012 will tell you that its landing characteristics are ideal. It does not "unload" when nearing the ground, but hangs on till the last second. Unless some of the new "Laminar Flow" sections prove practical for amateurs, the 23012 will no doubt be first choice for a long time.

L. Long
Cornelius, Or.



Geo. Bogardus
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Zone 13

Sat.

Had sort of looked for you out today, but your letter says NO, so that's that. The rib page is marvelous. I hadn't expected it would be that good and you needn't worry about your ability to cut stencils. I rather wish you hadn't added the extra comment at the bottom. It is OK, but I had put a "closing off" touch to what I had written and it doesn't quite fit. Sort of a tacked-on effect. If you havn't printed the sheets yet I really believe you would like it better if you blanked the extra off. No doubt you could poison me for that. Anyway, it is fine and we'll let it go at that. Hope the legal sheet is what you want for a starter. I hope to get out the stencils for the cover and a page or so here. Glad the outline is coming. We might be able to mail late next week or the following week, more likely. Will probably send you one more sheet to cut about Monday, and that should be enough. How come you write in bed? James, bring me my pawridge, the mawning papuh and prepauh my bawth.

THE LEGAL SITUATION

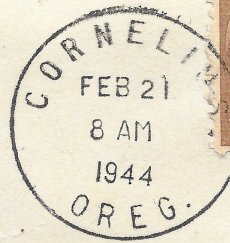
The one great worry in the minds of American flyers is the LAW. The average young man knows that he can scrape up the money, that he can find the time and the place to build a light plane if he really wants to, but he doesn't know whether he will be allowed to fly when it is finished. That has been the case for nearly twenty years.

This paper feels that this condition should not exist. We feel that a nation that has become great because of the inventiveness and resourcefulness of its people should not try to strangle the efforts of any group, so long as the group works for the common good. It is the plan and one great purpose of this little magazine to see that the amateur flyer gets justice. The Constitution guarantees each of us the right to Life, Liberty and the pursuit of Happiness. We mean to have it or know the reason why.

The legal situation all over the country is a tangled mess. Only a few of the states have any kind of law for control of flying, and no two laws are alike. That, of course, is all wrong. This magazine believes very definitely in several major objectives in this matter, and proposes to outline them and work for them to the best of its ability. We realize fully that some of our ideas will not suit everybody. No doubt compromises will have to be made, but the main thing is that present conditions can, and must, be improved, no matter how it is done.

We believe that the federal government should NOT attempt to regulate completely all the branches of aviation in a country as large as this. It is too big a job and would result in a literal army of bureaucrats. We believe that the government should have complete control of military aviation, have most of the control over commercial aviation, part control over non-commercial flying and practically no control at all over purely amateur and experimental flying. We believe that the separate states must co-operate with the federal government in the control of flying, and we believe that this co-operation is the most vital of the things that are to be done. Every state must have its own aviation law, and this law must be EXACTLY LIKE THE LAWS OF ALL THE OTHER STATES. That must come before we can even start a workable solution to all the problems involved. Next month we are going to continue this outline, giving definite plans and objectives, and in the meantime we shall be more than glad to hear from you as to your own ideas on the subject.

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Mon.

~~Got~~ letter and the Outlines. They are just what was needed. Been working on cover more than three hours. Don't like the job. Get dizzy and nauseated. Always did. No chance to get another sheet down to you, going to print the cover here if I can.

Sub from Fulton this AM. He is a Lt. Didn't know that. I am a Lt. Gen, but nobody knows that, either. Sure go ahead and print the sheets, but the question is; how many? We wont have more than 25 or so to start with, but of course we will start with this issue for the next year. Perhaps 100 or 150 would be OK. Got the cover paper selected. Not just what we want, but will do. Can also get wrappers, so forget that. Couldn't get staples for the stapler I have, but think you have an outfit.

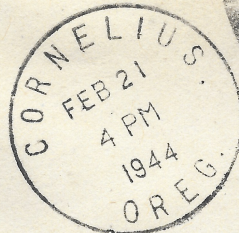
time
Don't think we will have to try any 2-color this first issue. Gives us a chance to get better as we go along. Look for you Sat, but will have another sheet or so there by then. Sure wish Geier was here to do the art work. By the way, could the girl friend help out, or has she ever tried such work? We certainly will need somebody. It might be that Price could do some for us. He stays in his room all the time and likes to tinker. Will try him.

Do we staple at top or along side of mag? Side looks much better, but doesn't work quite as well.

----S-W-i-s-h-h-h-h-----

L. Long
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3 A



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Zone 13

Wed.

Here is another page. Hope you like it. I am going around in circles. Letter from Haines and he will want 15 more props soon. Forge is here and wants more fences. Competition is getting heavy and he says more controls, or else---

Virginia was here yesterday. She seems to be going her own way and I told her that was all that could be done right now. That we might combine her mag and ours later on. She plays up the social angle (nuts, the paper tore) and I don't care for that part at all. She worked up the idea of a social club in every town before and hopes to do it again. She wants to help us, at that. Has several mimeos and a blue print machine at the school, also some sort of photo copying outfit. Did you see the press in the class ads in the Sun Oregonian? 10 x 12 with type for \$50. Looks good. See you Sat.

QUESTIONS AND ANSWERS

G. H. The Dalles, Ore. asks:-

Why do technical books show some ribs with the chord line running from center of leading edge to center of trailing edge, while others are shown with chord line paralleling the lower rib member?

ANSWER: There is no technical reason. Some of the older sections had the chord line based on the lower rib member because of simplicity. The old Clark Y is a typical example. Practically all modern sections have the chord line running from center to center.

N. B. Sacramento, Calif., asks:-

In setting the incidence of wings, on what is the incidence calculated; is it the thrust line, or is it some part of the ship?

ANSWER: This is a matter of design. Most modern planes have the thrust line parallel with the longitudinal axis of the fuselage. Where regular longerons are used it is customary to use the top longeron at the cockpit as a reference line. If this can not be done an artificial reference is placed near the cockpit station for use in leveling-up, etc. Normally this reference will parallel the line of symmetry of the fuselage.

G. B. Portland, Oreg., asks:- Why are American fighter planes so much heavier than those of other countries?

ANSWER: You will have to ask Gen. Henry Arnold about that. However, it seems that the American General Staff believes that a good big plane is better than a good little one, and that enough armor to protect the pilot is better insurance than extreme maneuverability. So far it seems to have worked out that way.

H. W. Tacoma, Wash., asks: Do flaps affect the stability of a wing?

ANSWER: They certainly do. In designing a plane which will use flaps full account must be taken of stability changes. When flaps are depressed there is almost certain to be a shift of the center of lift to the rear. Further, there is apt to be a turbulence set up that will affect the tail group seriously. Amateurs should remember that not only do flaps affect stability, but they also throw large torsion loads on the wing, especially the rear spar. Unless the amateur knows just what he is doing the best thing to do with flaps is let them alone.

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TV



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Zone 13

LESLIE L. LONG
CORNELIUS, OREGON
3-17-44

George:

Letter at hand. I looked all over for a copy of the Oregon Aviation Law, but can't find one. Either you or Kamm can no doubt get one by sending

10¢ to the State Board of Aeronautics, at Salem. I doubt if it would do him any good at that. The law has been changed and amended so many times it is hard to understand. The main points are that aviation here is under a state board of five members appointed by the Governor. A state Inspector is also appointed by him. Non-commercial flying is permitted, planes licensed, as well as pilots, by the state Inspector. License fee is or was \$10 in either case. Operating expenses for the board and inspector are raised by an aviation gasoline tax.

We will let the print argument ride for the present. There are several little things that need ironing out, but they can wait.

You might tell Kamm that if I can help in any way on any particular point I will be glad to try.

L

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LESLIE L. LONG
CORNELIUS, OREGON

3-13-44

George:

You are not going to like this letter, and I don't like to write it. I have delayed writing it for a week, just so that I could write it after giving it plenty of thought, and I still feel that the situation as it stands is intolerable.

I simply can not comprehend your attitude about the prints. When refusing to have any advertising done, you said that you had done so and so many hours of work and had driven so and so miles to get materials, and that you had to have so much money before you could consider such a thing, or words to that effect.

You never could get anywhere in this game if you expect to get paid for being a missionary. I don't question your right to do as you see fit with the prints. I told you that you could, and you can. But if you couldn't donate a few hours of work to a cause you claim to believe in you couldn't hope to get anywhere.

My idea in asking you to donate the print business to the Club was partly to give you the feeling of having done something for the cause, and partly because if anything is to be done, money will have to be raised to do it with. The amount raised by subscriptions and possible addx would never be enough to do the things that must be done.

LESLIE L. LONG
CORNELIUS, OREGON

I can't help but wonder if you have any idea of the number of hours I put in during 12 years of work for the good of amateur flying, or the amount of money I spent and never got back. I wonder if you know how much George and Watson and Peerenboom and the others did, for nothing whatever. Or that Irvin Geier worked night and day for several weeks to make all those stencils, when he hadn't even enough to eat, and wouldn't take one cent for it.

I can't help but wonder what you would think if I were to suggest that, considering the work I had done and the money I had spent, that I take out the first \$10,000 that came in, before anything else was done.

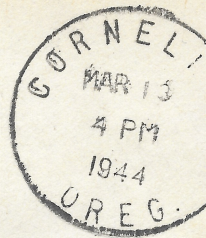
No doubt all this sounds harsh, but it has to be said. It will take many an hour of hard work and many a dollar spent, all without return, before any bill is introduced in Congress, or anything else of value accomplished. It seems to me that it would be futile to go on with conditions as they are. It would simply lead to more misunderstandings and get nowhere at all.

I am sorry, George, that this has come up and I hope that if and when you write you will state your own ideas as frankly as I have.

Yours truly,

Leslie Long

L. Long
Cornelius, Or.



George Bogardus
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Zone 13

LONG RADIO WORKS

Telephone 1606J

CORNELIUS, OREGON

3-29-44

George:

Your note came in this morning. I had expected that if you wrote at all it would be a much longer letter. There is no use in avoiding the issue that we have come to a showdown. It would be futile to go on under the present relations. If there isn't any fun or satisfaction in doing anything, then it is better to stop doing it. In a previous letter I gave you to understand that I couldn't understand what you were trying to do, and I still can't. I don't want to do you any injustice. If you had made any attempt to explain what you had in mind, or done anything to show any sign of co-operation, it would have been much simpler. I have always told you what I had in mind. No doubt I told you things I shouldn't have, but I feel that without trust there can be no business or other co-operation that would amount to anything. For instance, I first got the impression a year or so ago that we were going to build an airplane together. Then I discovered that you were interested only in building one yourself. That was OK, but why didn't you say so? It would have been the right thing to do.

When I brought up the idea of an organization and a magazine to go with it last year, you favored the idea and I again got the notion that you figured that WE would do this work. But again I find that you have something else in mind. Instead of working with and for the club and magazine, you seem to be getting together a mailing list and starting up a mail order business. For instance, I showed you all my correspondence, gave you all the earlier addresses I had and consulted you on everything I did, while you gave me no names, and said nothing of your plans. I do not care what you do. It is your own business, but nobody can be two things at once. As to the prints, I admit that I made a mistake in the first place. At the time you brought them up last year, I was not very well and really paid no attention to what you were getting at. I simply was not interested at that time. When things worked out so that the prints were needed to make a success of the club and club paper, I was astonished that you were unwilling to donate the little work you did. What you did was not one-thousandth of what I did on them. I offered to give my name, reputation, all the work I did for many years and all the money I spent, on a partnership basis, but you seemed more interested in getting back your "expenses and hard work". Perhaps I am unjust, but it is hard to understand. You make more money than my wife and I and George put together.

I feel obligated to at least get out the two remaining issues of the magazine, or I would simply drop it. The letters that come in are very encouraging and earnest and I mean to keep my good name by doing what is right. What happens after the three issues are done I do not know. I have part of the next one done and will find time to complete it. The Wimpy prints will not be included, as you ordered. I may run the tail group, but only as a standardized group that could be used on any light ship. Later on I hope to re-draw the prints, modernizing them and offering them for sale to help pay the cost of what has to be done, if anything is done.

LONG RADIO WORKS


Telephone 1606J

CORNELIUS, OREGON

I don't know whether I will be able to keep the magazine going indefinitely or not. I feel that it is the only chance we have of getting better laws and I hope that we get them. I have arranged with the P.G.E. Co. to keep the runway, which will cost me \$500 for new underground cables, simply because I like flying and airplanes. It may be that you want to take over the club. I have no idea what you mean to do. That brings up the point again, and it seems to me that you might at least give some inkling of what you mean to do, or hope to do, or anything else.

As for me, I am going ahead for the present. There is nothing else to do. It is most unfortunate that things have worked out this way. I am sorry about the personal angles involved, but there is no use in pussyfooting, or playing ostrich. It would be impossible for you to be going off in one direction and me the other, and that is just what is happening. I hope you will write exactly what you think. I don't care what you say. The main thing is to say it and make it plain.

Regards,



In answer to your last letter, it seems to me that since you want to commercialize the Association and make the first \$10,000, I should give you full reign. Your 2 rather caustic letters did the trick for you. You wanted the business for yourself and now you have it with out too much trouble.

Regarding my taking names from your list on those 2 occasions when we were in accord. Did you ever ask yourself why I didn't want more names the last time I was out? Reason was that I could see that we were not going to hit off, and there was no use of my wasting time & energy when it would not be appreciated. So I have told Lillian to stop work on the double card fill index and destroy what work she has done on it.

I did offer to make up 80% of the stencils, run them off on the machine, bind, wrap, address & mail all of the copies, while you did a little writing and taking care of your business. What more did

was. I'm sorry but I don't go for it. I was
asked by 5 people 2 years ago to do something
about the amateur situation while they were away.
So far ^{I've} been unable to accomplish much as the
man who could help is being difficult. The
sad part is that these boys are the ones who
flew, built, and kept the amateurs going through
the years of 1938, 39, 40, and 41 when you were
in hibernation. It is too bad to let them
down as they will want to carry on after
the war.

about the plane that you were going to build
with my help. So far I've done most on it. It
should be your turn now. It is your plane and
design so therefore you should build most of it.
all I could do is to help. I am an individual
like you, Geo. Yates or Kenie Mignit. Therefore you
cannot mould me in you mould board there it
was possible with your past help. I am quite capable

in the form of help and not slave labor. No matter
where I have worked in the past, it has always been
with the people concerned and to help them. Never for
them. In that way, I am asked to do things and
not ordered to do them, and each of us has
to recognize the others capabilities which is a
good thing. You get more done and the work is easier
that way.

Now that you have everything in your hands, you
can modernize the mungy plans, print the paper and
do it exactly the way you please, and no doubt
I'll do what I please also.

Concerning one punk press that you have never
adapted to your business. You have first
choice to it, however if you don't want it, I
know a fellow that needs it badly. You can
have your \$15.00 back the next time I come out if
you don't want the press.

Also suggest that you decide whether you one
with that spruce I brought

I fail to see the reason for comparing your income to mine. But if you must know, the profit from your business per year is at least 3 times more than I make. You must remember that I work for the Civil Service and their pay rate has not been raised above their pre-war level. My pay rate is 40% less than the lowest paid worker at the ship yards. It is only a case of liking planes better than ships. If I was out for money I would certainly take over your business or to to the yards.

Since I am going to leave some time in the future, you would have to take over the Ass'n. mag. anyway but now you will have it sooner because of your workings.

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