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# Skywords

The Newsletter of the Burlington Radio Control Modelers Club

www.brcm.org

February 1999

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## EDITORIAL ABOUT BUDDY BOXES

*From my background as an Electronics Injunear / Computer Guru (!) I thought some comment about buddy boxes might help students when we start flying in the spring.*

A Buddy Box just has to be the way to learn how to fly. My teacher, Neil Allatt, saved me from disaster numerous times and the

box is also useful when flying a new model for the first time with an experienced pilot having ultimate control. Having said that, there are one or two things the novice should recognize – particularly if you are using a “computer” transmitter.

The typical computer transmitter can reverse the servos and remember trim settings electronically. Unfortunately, the Buddy Box insertion point is *after* these electronic changes to the transmitter’s stick inputs. Thus, your careful setup on your transmitter will be cheerfully ignored by the Buddy Box! It is therefore essential to make sure that Buddy Box settings – including trim – really do match the transmitter. This includes checking to see that the limits also match. For example, I have a Buddy Box which doesn’t quite match the transmitter’s throttle control with the result that I cannot completely close the throttle through the Buddy Box control.

Check by switching from one to the other. You should see *no* changes on the model. You have been warned!.

*OK. So that’s my contribution now, how about yours?  
Deadline for Newsletter submissions is third Monday.*

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## JANUARY ELECTIONS

The new Officers and Directors elected at the January 28, 1999 meeting are shown in the table below.

## THE PRESIDENT WRITES:

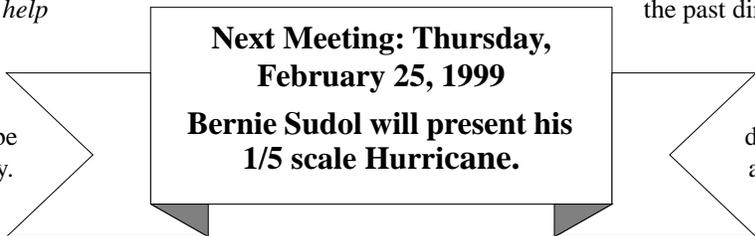
I would like to take this opportunity to thank the past directors who worked hard throughout last year to keep our club viable and enjoyable. It is not easy to hold the interest of a diverse group of individuals such as we have within our club and to present them with interesting activities and meetings. This year’s directors will, I am sure,

work equally as hard to enhance our club and I will depend upon their expertise to help me in my new role as President.

1999 promises to be a challenging and, we hope, an interesting year. There are numerous exciting events planned for this year, such as the Mall Show at Fairview Mall, two Float Flies, Tri-Club Invitational and of course wrapping up the year with the Christmas Parade.

At the first Executive meeting, everyone agreed that the primary objective of the club is to provide flying sites where we can enjoy flying and meetings where we can enjoy the social and learning opportunities afforded by a common interest. However, the Directors agreed that the monthly meetings have become biased towards the minor details of club administration with not enough time devoted to our hobby. Accordingly, in future meetings, we will keep business details down to essentials and allow more time for technical and fun stuff designed to meet the wide diversity of interests of our members.

Concern was also expressed about the real growth in the club, and we briefly talked about what we can do to promote the hobby to the general public and to recruit new, permanent members. There are no easy answers to promoting the hobby but exposure through events such as the Mall show, the Balloon Fest, and the Tri-Club meet are some of the avenues available to us. If anyone has suggestions, they certainly are welcome.



**Next Meeting: Thursday,  
February 25, 1999**  
**Bernie Sudol will present his  
1/5 scale Hurricane.**

As stated, this year is expected to be a challenge, and we hope interesting to all, and I look forward to serving you.

Bill Swindells, President

### COMING EVENTS:

Toledo, April 10 – Attempts to organize a bus trip to Toledo did not attract sufficient interest to make the project viable.

May 22 (?) Fairview Mall show. *Dave Parry* organizing this.

Float fly June 6 & 7 at Christie Park. Also in September some-time.

Canada day festivities - fun fly, July 1st at the Bronte field.

Balloon Fest in July (?)

Tri Club meeting hosted by BRCM August 7th at Bronte. The organizer for this event is our new President: *Bill Swindells* who will doubtless be looking for volunteers.

Corn roast 4th weekend in August

### EVENING MEETING PLANS

*Tentative plans are afoot to entertain, amuse and inform you about some of the good stuff:*

**February:** *Bernie Sudol* will show his scratch built, 1/5 scale Hurricane. It has a wing span of 92", has a 2.5 cu. in. gas engine and is complete with air retracts and flaps. He will talk about the lessons learned during the building phase. The model is ready for painting. & more: *Wayne Bransfield* will show his vacuum forming stuff and demonstrate how it's done.

**March:** *Carl Gross* will show his Lysander model and talk about making moulds & plugs.

**April:** Swap meeting and video presentation(s).

**May:** Show and tell in which you bring your model(s) in pristine condition before you've had a chance to crash it (them.)

### OTHER PLANS

If there is any interest, we have members who are willing to host additional meetings at the Bayview club house (shed!) Possible subjects are:

- Building with foam.

- Electric flying
- Indoor flying
- Any other technical subject.

If you have a subject of particular interest, call Norm Harris or email the editor.

### OTHER BUSINESS

It has been agreed (I think!) that the newsletter will not include all the gory details of meeting minutes and administrative stuff. Minutes will be available at the meetings and all information will be available to any member who wishes to see it.

The Bronte Grass is growing but the field remains closed until further notice.

Financial statements will be published in the March or April edition of the newsletter.

### ABOUT SOME OF OUR MEMBERS

*William Montgomery* joined our club last August and he has expressed his appreciation for the moral support offered by some club members. He is honing his skills with a computer simulator and is about to build his first kit; a Tiger II (40.)

*Dave Parry* has set up our Web page so that anyone in the whole wide world can see our newsletter if they wish. The club's Web page is really impressive; it is a fine piece of work.

*Neill Allatt* was guest of honour at a retirement party which presented him with a Great Planes Extra 300 Kit. That'll keep him busy for a day or two!

*Ernie Fryer* writes that he is flying with one of the local clubs in Port St. Lucie just south of Vero Beach on Florida's Atlantic coast. Otherwise, he is finding the Florida climate "a little boring" with which we will all doubtless sympathize.

### OOOPS!

*Here's another selection from the news group:*

Some years ago I had glassed and was in the process of painting a Sig Kougat. I had hung the fuse outside and sprayed the final (I thought) color coat on it. After spraying the paint I then picked up the fuse by its hanger and started walking toward the workshop to hang it up to dry. I stumbled and the fuse tumbled across the freshly mowed lawn....argh! Looked like a chia pet!

Never mowed the grass again! Jerry.

## EURO ENGLISH:

*I thought we could "modernize" our newsletter to use the latest spelling of English words. How about the following?*

The European Union commissioners have announced that agreement has been reached to adopt English as the preferred language for European communications, rather than German, which was the other possibility. As part of negotiations, Her Majesty's Government conceded that English spelling had some room for improvement and has accepted a five-year phased plan for what will be known as EuroEnglish (Euro for short).

In the first year, "s" will be used instead of the soft "c". Certainly, sivil servants will reseive this news with joy. Also, the hard "c" will be replased with "k". Not only will this klear up konfusion, but typewriters can have one less letter.

There will be growing publik enthusiasm in the sekond year, when the troublesome "ph" will be replased by "f". This will make words like "fotograf" 20 per sent shorter.

In the third year, publik akseptanse of the new spelling can be expekted to reach the stage for more komplikated changes. Governments will enkourage the removal of double letters, which have always been a deterrent to akurate speling. Also, al wil agre that the horrible mes of silent "e"s in the languag is disgrasful, and they would go.

By the forth year, peopl wil be reseptiv to steps such as replasing "th by "z" and "w" by "v". During ze fifz year ze unesesary "o" can be drop from vords kontaining "ou" and similar changes vud of kors be aplid to ozer kombinations of leters.

After zis fifz year, ve vil hav a reli sensibl riten styl. Zer vil be no mor trobls or difikultis and evrivum vil find it ezi tu understand ech ozer. Ze drem vil finali kum tru.

*Zo, vada u zink? It certainly plaz hel mit ze spel cheker!*

## ABOUT DIHEDRAL

*Here's some more writings from my favourite oracle: Harry Curzon. Harry occasionally writes in the rec.models.rc.air news group. In this instance, I'll show you the complete exchange: By the way, I've tried to get Harry's permission to present his stuff but he seems to have gone into hibernation.*

*Lawrence Cragg wrote:*

I've learned a lot since I started to explore this news group - wash out, ground loops, Bernoulli is irrelevant, etc. Now, how about someone write about the purpose of dihedral? Come to that, why not anhedral apart from little problems with ground clearance?

*To which Harry replied:*

Okay doke, here we go!

Dihedral creates drag induced yaw stability, and a secondary effect of yaw which is roll complementary to the yaw. Anhedral creates drag induced yaw instability and a secondary effect of yaw which is to roll away from the yaw. So, dihedral increases directional stability and improves the yaw/roll coupling, anhedral reduces directional stability and reduces yaw/roll coupling, if taken too far it will produce instabilities beyond control.

To see what is happening, take a sheet of paper and crease it so that it resembles a wing with a fair bit of dihedral. Look at it edge on as if you were looking at the wing from directly ahead, looking towards the rear of the plane. Both sides look equal to you. Now yaw the wing, as if you had used rudder. Notice that side nearest to you is presenting its underside, and the side away from you is presenting its topside. You can see that the side nearest to you, which is the outer wing in this "turn" has increased its angle of attack, whereas the wing on the inside has decreased its AoA. Thus the plane will roll into the yaw. Clearly there will be an opposing yaw force created by the increase in drag on the outer wing, but the rudder should be the stronger of the two and hold the yaw you wanted. Now flip your paper wing inverted so that it has anhedral, and you will see the effect reversed. This time the outer wing wants to go down, not up, the inner wing has the increase in drag, so the yaw will tend to increase beyond that commanded, and the roll will be out of the turn.

Now suppose that the yaw was caused by a gust, not by rudder. With dihedral you will get a slight roll, but the adverse yaw created by the changed AoA is no longer being overcome by rudder and the wing will try to pull everything straight again. Not so with anhedral where the effect of a yawing gust will tend to be magnified by the wing.

What about roll stability, when the wing is rolled by a gust rather than yawed by a gust? Firstly, the wing will be flying at some AoA. If you take it to an extreme, such as a kite, or take your paper wing and hold it with an AoA of 90 degrees, you can see that if dihedral is rolled, the downgoing or forward going side goes more flat on to the airflow and presents more surface area, whereas the other side does the opposite. Different drag caused on each side will then tend to bring it back to a central position - that's why kites like to have dihedral, it keeps them stable. Try it now with anhedral and once again you will see that the effect of a roll gust is magnified, not opposed, and anhedral will tend to run away in roll once it is disturbed from the central position. Secondly, when a wing with dihedral is rolled, the downgoing wing is moved towards the horizontal, and the upgoing wing moves away from horizontal towards vertical. If the plane is slipping into the turn due to the inclined lift vector, then the more horizontal wing will have a higher AoA than the more vertical wing and a roll will be produced. If dihedral is used, the roll will be towards upright flight, if anhedral is used the roll will be further in the direction already rolled.

## DID YOU KNOW?

*A little honest engineering history that I thought you might enjoy. (This was in a Machinery and Rotating Equipment magazine.)*

The U.S. Standard railroad gauge (distance between rails) is 4 ft., 8.5 inches. That's an exceedingly odd number. Why was that gauge used?

Because that's the way they built them in England, and the U.S. railroads were built by English expatriates.

Why did the English people build them like that? Because the first rail lines were built by the same people who built the pre-railroad tramways, and that's the gauge they used.

Why did "they" use that gauge then? Because the people who built the tramways used the same jigs and tools that they used for building wagons, which used that wheel spacing.

Okay! Why did the wagons use that odd wheel spacing? Well, if they tried to use any other spacing the wheels would break on some of the old, long distance roads, because that's the spacing of the old wheel ruts.

So who built these old rutted roads? The first long-distance roads in Europe were built by Imperial Rome for the benefit of their legions. The roads have been used ever since.

And the ruts? The initial ruts, which everyone else had to match for fear of destroying their wagons, were first made by Roman war chariots. Since the chariots were all made for or by Imperial Rome they were all alike in the matter of wheel spacing.

Thus, we have the answer to our original questions. The U.S. Standard railroad gauge of 4 feet, 8.5 inches derives from the original specification for an Imperial Roman army war chariot.

Specs and bureaucracies live forever. So, the next time you are handed a specification and wonder what horse's ass came up with it, you may be exactly right. Because the Imperial Roman chariots were made to be just wide enough to accommodate the back-ends of two war horses.

## FACTS ABOUT FUEL

*This is the second of five articles submitted by Ernie Fryer*

### Which Oil is Better - Synthetic or Castor?

*(The following is the second in a series of articles exploring all facets of model engine fuel. The writer is Don Nix, President of GBG Industries, Inc., manufacturers of POWERMASTER model fuel. Readers are invited to contact Don directly via e-mail - FLYERDON@aol.com.)*

Before we get started on the subject heading, I'd like to offer a couple more thoughts on last month's subject, "**What's the Oil Content?**" - thoughts that have been remembered since writing the original column:

Many modelers who have been involved in the hobby for a long time, including those who've been away for years and recently returned, are very stubbornly remembering when model fuel just about *had* to contain something in the order of 25% oil - usually all-castor - and have a hard time dealing with the idea that virtually no one runs that much any more in modern engines.

The operative word here, of course, is "modern." The metallurgy in today's engines barely resembles that of a generation ago. The end result, as far as model engines are concerned, is that the engines today simply don't require as much lubricant - not *nearly* as much. I will be quick to add that those running antique engines in Old Timer events should certainly continue to use the old-time formulas - no doubt about it.

In addition to vastly improved metallurgy, we must remember than manufacturing techniques barely resemble those from years ago, in many ways. Modern CNC machinery has made it possible to routinely and cheaply make 1 or 1 million parts all exactly alike.

Those of you who have come along in later years may be shocked to know that up until the advent of this new technology, every piston was hand fitted to every liner. There was no such thing as simply machining 1,000 pistons and 1,000 sleeves, picking one from each batch and having them fit.

The belief in those days that some engines of the same size and make were markedly hotter than others was no doubt true. We've read that in those days, a .29 for example, might vary from as low as an actual .26 to a .32 - some 23% more displacement! More closely controlled tolerances have resulted in the ability to use much different fuels than a generation ago.

The second thought on the subject of total oil content came from reading the operating instructions included with a new imported 4-stroke engine - the DAMO FS 218 twin. It recommends a fuel containing 94% methanol, 5% nitro and ***1% Castor Oil!*** Clearly, this reinforces my point that "there ain't no such thing as a fixed percentage of oil content." Now....on to this month's subject:

Before we depart the subject of oil in model fuel, let's talk about a point that's argued vehemently all over the land - ***Which kind of oil is better - synthetic or castor?***

Each side has its very strong proponents, and each side is right....to a point. "Old-timers" tend to still favor an all-castor fuel, or at least one containing a liberal amount of castor oil. Modelers who have come to the hobby in the last 15 or 20 years have a strong affection to synthetic oils, or at least want their

fuel to have mostly synthetics. Let's take a look at both types statistically: (*sic. Ed.*)

<b>SYNTHETIC OIL</b>	
<b>Strong Points</b>	<b>Weak Points</b>
Good Lubricity (It's "slick")	Most tend to cause corrosion if adequate inhibitors aren't added.
Little to no carbon or varnish buildup inside	Burns off surfaces at about 100 degrees lower temperatures than castor oil
Leave less oily mess on models	Many types and qualities, making it hard to choose the best one
Available in a variety of viscosities	Expensive - good ones cost almost twice as much as castor oil, increasing the cost of the fuel.
Totally soluble in nitromethane	When used as the sole lubricant, a greater quantity is required, which increases the cost of the fuel.

<b>CASTOR OIL</b>	
Great Lubricity	Tends to cause carbon and varnish buildup in engine if cheap grade and/or too much is used.
Reduces the amount required, resulting in more power and better idle.	Messier on model than synthetics
Will tolerate internal temperatures about 100 degrees higher than any synthetic	Somewhat sensitive to extremely cold temperatures - mild separation in solution, residue on model becomes almost "buttery" in consistency.
Almost 50% cheaper than good synthetics - reduces cost of fuel.	Insoluble in nitromethane. In solutions above 40% - 50% nitro, will separate unless some sort of co-solvent is used.
Great natural rust and corrosion inhibitor	Generally available in only one viscosity

I'd like to insert here that there is a "Chicken Little...The Sky Is Falling" rumor making the rounds of the Internet these days that the manufacturers of castor oil have recently changed their methods of making the product, and the castor oil we are getting now is either wholly or partially incompatible with methanol.

I have talked at some length with the "Head Techie" of one of the largest castor oil importers in the U.S., and I want to go on record as saying that, according to the best information I can find, ***This is total B.S.*** The Head Techie actually laughed out loud when I told him what was going around. He said, "You know, there isn't much we do to the stuff. We press the oil out, filter it, grade it and package it. As far as I know, nothing has changed." It apparently started with one of the fuel manufacturers. For what reason, I have no idea, unless it's to help them promote their proprietary synthetics. (Incidentally, I have read a response on the 'net from SIG, agreeing with the fact that it's nonsense.)

So.....there you have it. "You pays your money and takes your choice." Actually, it's a little better than that, and the obvious answer is - use a combination of the two, in proportions that will come nearest to enjoying the benefits of each, while minimizing the adverse characteristics.

A few years back, the modeling community was in a "synthetic oil frenzy," and the swing was toward all-synthetic fuels. Happily - at least in this writer's opinion, we've seen a very noticeable swing back toward the center, with the majority seeming to prefer a synthetic/castor blend. We think this makes sense, and many years experience proves it.

The most frequent comment I hear from lovers of all-synthetic fuels is, "Brand XX leaves a lot less oil on my model." My response to that is, "Doesn't that bother you? If you don't see much oil on your model after flying, that tells you one of two things - or both: Either there wasn't enough oil in there in the first place, or the oil is burning off with the methanol. Neither is good. There's no way oil can burn off and properly lubricate at

the same time.” This is usually met with a puzzled look, then one of the light dawning, having just realized something they never thought of before.

Oil residue in model engines is a natural as barking is to a dog. We have to learn to live with it.

As an aside, not long back a friend sent me a copy of an article published in a European model magazine. In one part, the writer stated, “The Americans are the only ones rich enough and dumb enough to use synthetic oils.” Perhaps overstated just a bit, but it has some validity.

There a couple of types of engines that *do* require an all-castor fuel, or at least one with a considerably higher castor content than most others. One would be the Fox ringed iron piston type, and the other would be the small Cox engines, because of their rather unique ball-and-socket connecting rod-to-piston design.

Pattern flyers traditionally prefer an all-synthetic fuel, for a couple of reasons, I think. One is the fact that pattern flyers practice *a lot* - hour after hour after hour. That much use, plus the tuned pipe setup that is almost universal with them probably, tends to cause a greater problem with varnish and carbon buildup than in sport types. (At the risk of being bombarded, I also think it’s largely a state of mind. “Joe Champion uses all-synthetic, so that’s what I’m going to use.”)

The other area where we have seen all-synthetic fuels gain in popularity in recent years has been with model helicopters, probably for the same reasons. Also, the trend toward 30% nitro fuel for serious competition has led to using a lower viscosity lubricant, and, as shown in the comparison charts above, this necessarily dictates using synthetics.

**Next installment: Nitromethane - the “mystery” ingredient**

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