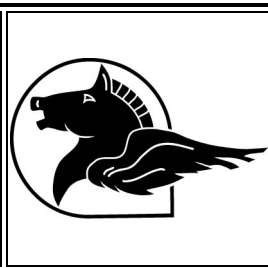


# THE KNIGHT FLYER



July - Aug - Sep  
Editor:

2003  
Jim Devlin

## 40th Anniversary Dinner

Early this spring, President Ron and the board pointed out to the club that this was our 40th year as an organization. The members concurred, we should celebrate in some special way.

Planning started for a dinner to honor the occurrence. A number of venues were discussed and it was decided to have the event at Illio Dipaolos fine restaurant in Blasdell.

Plans went forward for various activities centered around the anniversary theme.

Ron and his daughter sent out attractive announcements to everyone, and the response was tremendous.

When the event finally took place on April 25, we had a crowded banquet room.

Every table boasted a centerpiece of balloons and a small biplane assembled by Hugh Spears.

Many club functions are centered around model flying, which of course is what our club is all about.

Often the rest of the family takes a back seat while we pursue the object of our hobby.

So it was especially gratifying to see so many knights thoroughly enjoying a get together along with the rest of their family members.

The best part was the many old faces that showed up to share this event with the current members.

The fine dinners were only exceeded by the presentations marking the event.

Through out the dinner, a continuous slide show was presented by George Fox who worked with Stu Brierly to put it all together.

It featured pictures from the earliest days of the club and most of our members would find themselves at different points in time as the slides slipped through the years.

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Bill Eberhardt reviews old times

Photo-courtesy of George Fox



Photo - George Fox

We enjoyed the often humorous things that we had all but forgotten and felt sadness recalling the fine friends whom we had lost over the years.

Bill Eberhardt, a founding member, traced the history of the club from its small beginning and demonstrated some of the primitive equipment that the early members had to work with.

Unfortunately many of us could easily identify with this collage of very old and mostly unreliable radios and servos.

In addition to it being the 40th year for our club, it also turned out to be the 100th anniversary of the beginning of flight and Jim Devlin traced out the earliest origins of flying machines.

An impromptu song by Gabriel McCormack, (left), daughter of Kevin and granddaughter of founder Norm set the evening off on a happy note.

The 40th anniversary dinner was a huge success and a round of applause should be extended to Ron and his team for all of the effort they expended to make it so.

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## First Time Model Builders

The 2003 Model Building Contest sponsored by The Flying Knights for its' newer members was something less than a rousing success.

A total of 8 members submitted entry forms for the contest and most began working on their new models.

When it came time to bring the models to the meeting on January 17th, we had only THREE (3) models brought in for judging.

This minimal turnout made the job of judging the models an easy one and did not take very long, to say the least!

Results of the judging is as follows:

**1st Place Kit Model:**

PAUL KNIBLOE (\$50)

OT-40, from Four Pi, 53" span, 4 Ch.

**1st Place ARF:**

JOSH CHATWOOD (\$20)

GWS Tiger Moth Electric Backyard Flyer.

**2nd Place ARF:**

GEORGE FOX (\$10)

Sig Kadet LT- 40, as taildragger, 4 Ch.

It seems there are never enough hours in the day, never enough days in the week,

etc., etc., to get done with all the things we would like to do.

We all have our priorities and some things have to get put on the "back burner".

I trust that the "entrants" who were unable to complete their models in time for judging at the January meeting will have them completed in time to do some flying this summer!

Thanks to all who participated in this Model Building Contest and a special "thank you" to the Committee for their efforts in developing this program and for doing the judging at the end.

Submitted by Elmer Gross

**Don't forget our summer Fun-Flys.**

Sunday July 6th

\*Raindate July 13th

Sunday Aug 17th

\*Raindate Aug. 24th

Sunday Sept. 14th

\*Raindate Sept. 21st.

# Bonfires and Model Engines

In Today's world we are users of many complex devices all around us. We jump into our cars and turn the key with never a thought about what's happening under the hood.

When we use our television, we have no clue about the electron beam causing the red, green and blue phosphors to glow in just the right amount at just the right time and intensity to form one tiny speck of the finished picture.

Our computers have become just another tool. We know how to use it but we don't know how it does what it does.

In the world of RC we are steeped in high tech. From sophisticated radios to unique light weight materials we are surrounded with things we know little about.

In this issue, we'll look at one mechanical marvel that is as old as it is new, the model airplane engine.

We've all used these engines from the time we built our very first planes and many books are available that tell us how to run and care for them. We'll look at them from a slightly different perspective.

And in so doing, we hope to gain an understanding of some of the principles by which they operate.

Those of us who were in the Boy Scouts (and Girl Scouts), Fig. 1, can remember the times when we were called upon to demonstrate our ability to light a fire with no more than two matches.

We were very careful to apply that precious spark to some dry tinder and fan the tiny flame until it was robust enough to burn the heavier pieces of wood.

By now you are wondering what a campfire has to do with your model engine. Actually, the physics of the bonfire and the model engine are the same.

Every fire, big or small, wood or gas, needs three (and only three) things to cause it to burn.

And every form of combustion whether it be a

bonfire, a model engine, your car engine, a jet engine or even a rocket engine is simply a flame.

These 3 things are as shown in fig. 2:

- 1. A supply of Oxygen.**
- 2. A source of fuel.**
- 3. An ignition temperature.**

If any one of the three are gone missing, there'll be no flame.

First let's consider each of these three things separately. Then we'll see how they all go together to make our bonfire or our model engine run.

## **First things first:**

The one thing that makes burning possible is oxygen. Without it there would be no combustion of any kind.

Life itself, indeed, every cell is a form of combustion.

With out this ingredient, there would be no life on earth.

Only oxygen and chlorine support combustion.

Oxygen makes up 21 % of the atmosphere. This percentage is very important. If it were only 10% higher, combustion would be so fierce that most things would spontaneously burn.

The slightest spark would set off a conflagration that would consume entire forests. An open container of gasoline would instantly burst into flame and explode.

Yet, if the ratio of oxygen were to be 10% less, very little would burn and we would have to go to great measures to find heat in the winter. Cars and trains would not run.

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As with many things on our earth, the ratio of oxygen in the atmosphere is almost perfect.

It allows us to burn things and at the same time it permits a good measure of control over the process.

**The second important ingredient:**

For any burning process to be sustained, it must have a steady supply of fuel. This could be wood, paper, gasoline or alcohol like we use in our model engines.

Fuel, of course, will not burn without the previous ingredient, oxygen.

It is always a mixture of fuel and oxygen that burns.

Even the highly explosive gas Hydrogen will not burn in the absence of oxygen. However, a 5% mixture of hydrogen in air (which contains oxygen) will blow the roof off of a building.

**Last, but not least:**

Things still won't burn. What is needed is the last item, the ignition temperature.

If the temperature is high enough anything will burn, even rocks.

Should you doubt it, check out the next volcano that goes off in the neighborhood. Forms of ignition are shown in Fig 3.

So there you have it.

You need a supply of fuel along with a supply of oxygen.

Raising this mixture to a specific temperature will cause it to ignite. It will burn until it runs out of fuel or oxygen.

**Fuel + oxygen + temperature = flame.**

This basic equation is true for every sort of engine, whether it's in our car, our model airplane, a commercial jet aircraft or a rocket on its way to the moon.

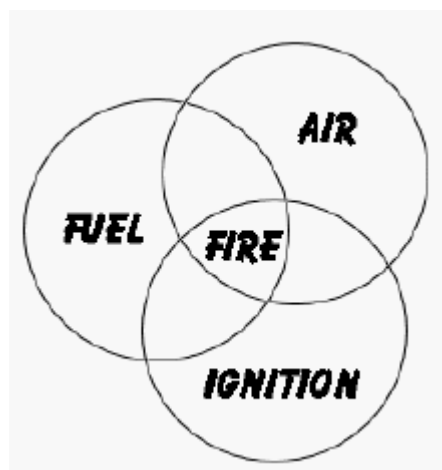
It is the reason, airplanes can only go so high. Oxygen diminishes rapidly with altitude. It is the reason a rocket to the moon, must take along its own supply of oxygen both for its pilots as well as for its engine.

**The model engine:**

First we bring fuel in from our fuel tank and mix it with some air in the carburetor.

This mixture is atomized as it leaves the carburetor spray bar and is drawn in the combustion chamber.

We now compress the mixture.



**Compression** always produces heat. It raises the temperature. (The opposite condition, **expansion** always lowers temperature).

Compression is not enough to ignite the mixture.\*

In order to get to the ignition temperature we use a glow plug that is heated to several hundred degrees, or a red glow.

This temperature exceeds the ignition temperature of the mixture and it explodes, sending the piston on its way.

The glow plug is a special material that retains heat for a small period of time.

The amount of time allows the piston to complete its cycle, drawing in another charge of fuel and oxygen.

**When things go wrong:**

Whenever we have an engine that isn't running or won't start, whether it is on our car or our model, the problem will always be a part of this equation.

When the bonfire won't light or the engine won't run, it does little good to crank and crank.

When this happens, it's time to stop cranking, step back and ask yourself, "which part of the equation don't I have?"

**The ignition:**

First, check the spark that provides the ignition temperature. It's the part that is most likely to be missing.

On a car, worn ignition wires are a common cause of a failure to start in cold rainy conditions.

The high voltage arcs to the engine shoring out the spark. Spraying silicon oil on them dries out the moisture. The engine runs.

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\*A Diesel will run by compression alone

On our model engine, the glow plug coil may have broken and wont hold heat for the next cycle, or conduct current for a start. Replace it and the engine runs.

**The fuel supply:**

The next question would be, is the fuel supply intact?

The tanks full, but it may not be getting to the engine. Is the fuel line is ruptured or disconnected?

Having satisfied our selves that the first two parts of the equation are present, the next question would be, "is the engine getting the oxygen it needs?"

**The oxygen:**

Numerous things can happen to the proper flow of oxygen to the engine.

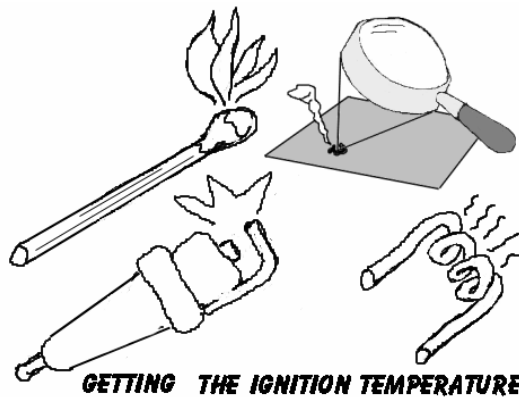
The proper mixture of fuel and air is quite critical.

It is the mixture that burns. Neither air nor fuel alone will burn. The proper ratio is determined by the setting of a needle valve.

The output is a volatile spray that contains the right amount of air and fuel. The tiny droplets of the spray easily ignite as soon as the temperature is reached.

If the the fuel is greater than the optimum ratio, the engine runs rich and ignition is delayed. If the air is greater, then the engine runs lean and ignition is advanced.

Finding the proper setting for this adjustment is part of the challenge of



the engine setup.

With the correct ratio of fuel to air, the engine purrs smoothly along.

Once again, if the engine had been running nicely, then then something drastic has happened.

Should the tiny opening of the needle valve become clogged the engine will not run at all.

You can crank till hot places melt snowballs, but it will not start until the opening is cleared. Dirt or plant seeds can enter the carburetor and plug the tiny spray bar opening.

The key is to realize that an engine is nothing more than another form of a bonfire and the same rules apply.

So the next time that you are faced with a balky engine whether it's your car or your model, don't crank.

Just step back and ask yourself which of these three conditions are not being met.

**Summers on the wane,  
- but there is still time for some of these great events.**

<p align="center"><b>Flying Dutchmen Scale Rally</b></p> <p align="center"><b>Kitchner, Ont, Canada Sat/Sun, Sept 6-7</b></p> <p align="center"><b>Flying 9am-5pm Fri. nite corn roast Sat nite, dinner &amp; nite flying display</b></p>	<p align="center"><b>Air Combat! Tuf Flights Annual Combat Contest</b></p> <p align="center"><b>Cicero, NY Sat. July 26 (1 day) Open B combat, 5 planned rounds</b></p> <p align="center"><b>prizes, trophies, no fees Register 9am, Fly 10am Midstate Modelers Field (north of Syracuse)</b></p>
<p align="center"><b>26th Annul Stars Rally</b></p> <p align="center"><b>Olean Airport Olean, NY</b></p> <p align="center"><b>Sat/Sun, July 12-13 Wine &amp; Cheese Party Parkflyer nite flying</b></p>	<p align="center"><b>RCCR Great Electric Meet</b></p> <p align="center"><b>Sat/Sun August 16-17 9am-5pm</b></p> <p align="center"><b>Bolling Field, Brockport, NY</b></p>