Central Carolina Radio Modelers Club

on the Fly

September 2015 V 1.0 Editor in chief- "Chef' Marc

So what is Labor day anyway?

Labor Day, the first Monday in September, is a creation of the **labor** movement and is dedicated to the social and economic achievements of American workers. It constitutes a yearly national tribute to the contributions workers have made to the strength, prosperity, and well-being of our country. (Wikipedia)

Do you have something to share with the club? We're looking for interesting items or people to come and speak at the Tues. meetings.
Please contact me at:
www.ebida3@yahoo.com

A Balancing Act

Here's a good way to balance airplanes. While building your plane, insert a half-inch square piece of plywood where the balance point should be. For a low wing, this should be on the bottom of the wing, and for a high wing this would be on top of the wing (Note: sometimes something will be in the way, like a canopy, and you can't use this technique). When the plane is finished, put a small hook into the plywood and suspend the plane with wire or string. This way you can check the fore-aft balance AND the lateral balance at the same time (Note: a low wing will be suspended inverted)

Kid: "What is the purpose of the prop?
Father: "To keep the pilot cool."
Kid: "I don't think so."
Father: "If you don't think so, just stop it and watch the pilot sweat!"

Douglas A-1 Skyraider

The Douglas A-1 Skyraider was an American single-seat attack aircraft that saw service between the late 1940s and early 1980s. *Wikipedia*

Top speed: 322 mph (518 km/h)

Wingspan: 50' (15 m)

Length: 39' (12 m)

Weight: 10,470 lbs (4,749 kg)

First flight: March 18, 1945

Introduced: 1950

Engine type: Wright R-3350 Duplex-Cyclone

Americas' last military attack aircraft piston engine

AD-68 FROM U.S. NAVY ATTACK SQUADRON 42.

A1-J

1950, its weapons load and 10-hour flying time far surpassed the jets that were available at the time!

Once again the miracle known as duct tape does it again!

A plane covered with duct tape:

For the complete story click here:

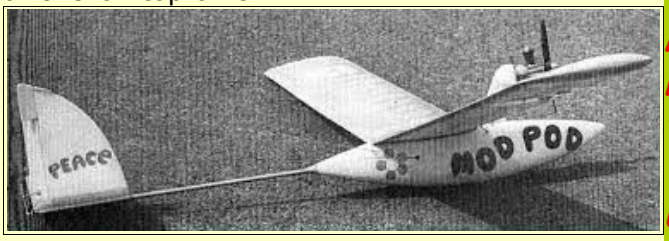
http://www.instructables.com/id/Duct-Tape-RC-Plane/

THE SPOTLIGHT

If you read the History of the club supplement I sent you have read about the founding fathers of the flying field we know today. In keeping with that vein I bring to you Brother Robert Underwood. Robert as you know, was also there from the beginning.

Robert was introduced to the sport at a very early age. Roberts' older brother was a huge influence on getting the fire burning. U- control and free flight was the sport of the day and his brother flew both. When RC first came on the scene big brother would take Robert with him to the meets. Robert said, "*The reason he brought me to the meets with him is because I would could go and chase the planes." he adds, " In that time it wasn't remote control as we know it now but more of an interrupted free flight."* Robert remembers that you had not only to build the aircraft but the transmitter too. Tubes and all. My how times have changed!

Brother Roberts' first RC plane was known as a MOD POD. It was a 72" glider with a fiberglass pod and a thin shaft running thru it . Powered by a .049 on top of it.



Robert has come a long way from those days and is a fan of scale. And since those days he has flown more planes then he can recall but his favorite is the Grumman Hellcat. In fact, he enjoys the Hellcat so much he has since owned three of them. He flew a cat at the 88' NATS. Brother Robert with a grin told me, " *I flew the heck outta that plane!"*

Way before the our field Robert used to fly behind Howard Payne's house. Brother Howard as you recall was a founding father too. Then he flew at his cousins Steve's place for ten years. It was there that the neighbors took pot shots with a shotgun at the planes.

His advice for builders today is, "*Sand, you can NEVER sand straight enough!" he also adds, " to get it balanced you have to spend the time on it and not rush though it."*
For new fliers he offers this, " *Don't put much throw and your surfaces. This leads to over controlling the plane. Most aircraft are torn up due to over controlling. Set up the surfaces to where you think that it is just enough to make it work or barely work. This way you won't go and tear up the airplane."*

When not flying brother Robert never misses an opportunity to watch, The Blues Brothers movie. He is also a big fan of blues music as well.

Once again we as today's fliers owe Brother Robert a debt of gratitude. Not only for his help in the founding father days but for the smile he brings and the jokes he tells.

Brother Underwood I know I speak for the club as well as my self when I say, "*Thank you, sir, thank you!"*

PLEASE MAKE SURE YOU CLOSE ALL DOORS. THAT INCLUDES REFRIGERATOR AND MICROWAVE DOORS TOO. THE OPEN DOORS COST MONEY AND THAT MONEY EFFECTS THE KITCHEN FUND. THAT FUND HELPS PAY FOR FIELD ITEMS LIKE THE NEW WIDE CHAIRS WE NOW HAVE AT THE FIELD.

WHILE WE'RE ON THAT SUBJECT, THE REFRESHMENTS ARE ON THE HONOR SYSTEM. THEY AREN'T FREE. PLEASE PAY FOR WHAT YOU TAKE. TAKING WITHOUT PAYING IS NO DIFFERENT THEN STEALING NOT ONLY FROM YOUR BROTHERS BUT FROM

Meeting @ 7:00 p.m. at the field unless otherwise notified.

BBQ @ 6:00 p.m.

SO HOW DOES IT FLY?

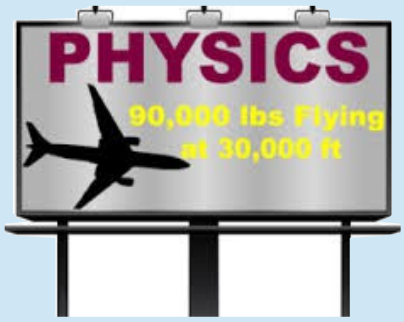
Newton's Three Laws of Motion

Sir Isaac Newton (1642-1727) was by far one of the greatest scientists in the history of mankind. Although he was long gone before the invention of the airplane, that doesn't mean that he didn't play a key role in inventing the airplane!

There are three simple laws that he discovered that govern the motion of every object in the universe.

First Law:
An object at rest will stay at rest and an object in motion will stay in motion with the same speed and in the same direction unless acted upon by an unbalanced force.

Second Law:
An object will accelerate when the forces acting upon it are not balanced. The greater the mass of the object being accelerating, the more force it will take to accelerate the object.



Third Law:
For every action there is an equal and opposite reaction.

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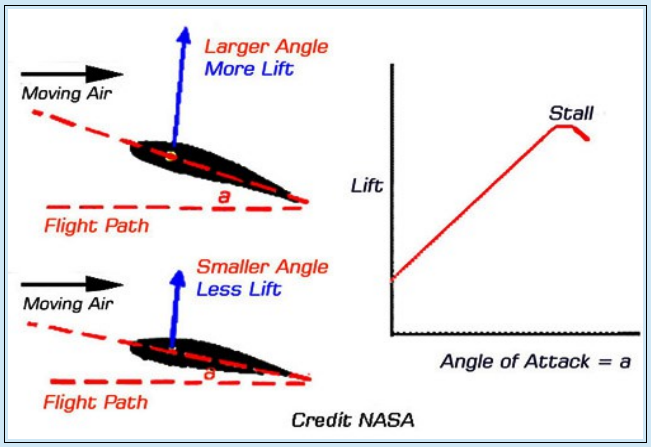
The Airfoil

A Dutch scientist by the name of **Daniel Bernoulli** (1700 - 1782) discovered that as the speed of a fluid increases, its pressure also decreases. This same principle applies for airflow over an airplane wing. This is known as the **Bernoulli's Principal**.



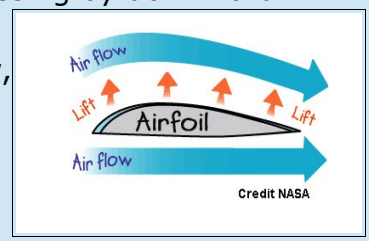
The air going under the wing travels a shorter distance before it gets to the trailing edge. The air going over the wing travels a longer distance before it makes it to the trailing edge.

Both the air going over the wing and the air going under the wing go from the leading edge to the trailing edge in the exact same amount of time.

The only way this is possible is if the air going over the wing is going faster than the air going under the wing.

When this happens, the air pressure on top of the wing becomes less than the air pressure on the bottom of the wing. Since force = pressure x area we have more force pushing up on the wing than we have force pushing down on the wing. As a result, we have **lift**!

When the front of the wing is raised up, it deflects the air passing by downward. According to Newton's third law, the air must in turn be pushing the wing up. **This is lift!**



Take a look at the graph above. As the angle of attack increases, so does lift.

But when the angle of attack gets too large, the airplane will **stall**. A stall means that the airplane is no longer flying, *it's falling*!

Angle of attack

The second factor that determines lift is the **angle of attack**. This is the angle that the wing is tilted upward relative to the flight path of the airplane.

Force of Weight

Weight is a force that pulls the airplane straight down. The weight is actually distributed throughout the entire airplane. However, the weight can be thought of as a single force acting on the center of gravity.

The center of gravity is the point at which the airplane balances both laterally and longitudinally. When the airplane is in flight it actually rotates on all three axes about its center of gravity.

Force of Thrust

In order to get airborne, the airplane must be moving fast enough for the air moving over the wings to produce lift. The force moving the airplane forward is called thrust. Think of thrust as a force pulling the airplane towards its flight direction.

Thrust is provided by the propulsion system. This could be a single engine propeller, multiple engine propellers, a turbine(jet) engine, or even multiple turbine engines.

The bottom line

The speed and direction of an airplane will not change unless the forces acting on it are unbalanced.

When the thrust is greater than the drag, the **forces** acting on the airplane are unbalanced. When this happens, the airplane will begin to accelerate.

When the airplane accelerates to a sufficient speed, the airfoil and the angle of attack of the wing will produce more lift than the airplane weighs. When the force of **lift** is greater than the force of **weight** the airplane begins to fly!

There will be a quiz!

Hop on!

Those lines on that body are fantastic. The planes body I'm referring to!

Poster with permission from AMA site

Hobby / Recreational Flying

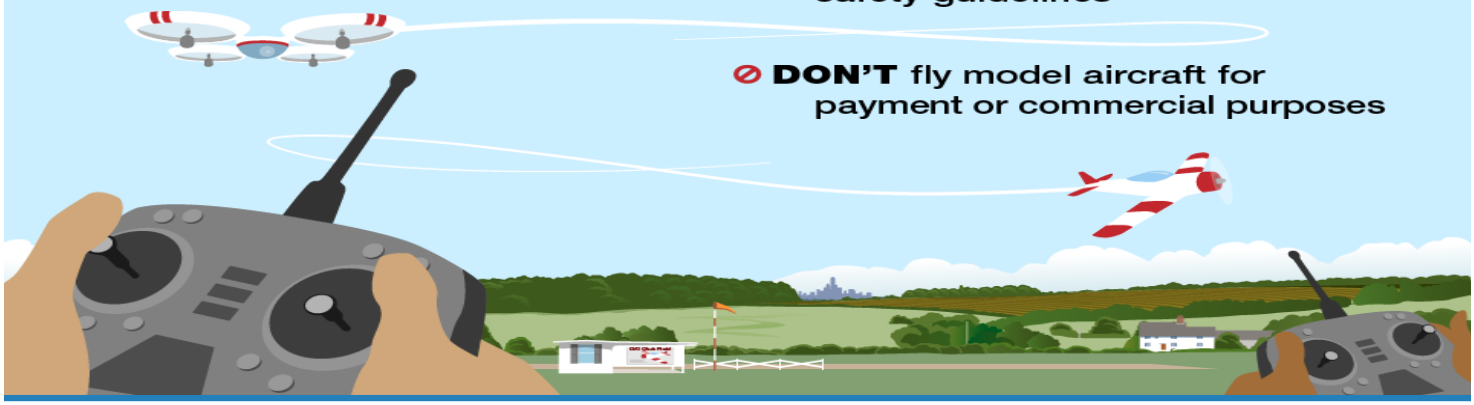
What Can I Do With My Model Aircraft?

Having fun means flying safely! Hobby or recreational flying doesn't require FAA approval but you must follow safety guidelines. Any other use requires FAA authorization.

AVOID DOING ANYTHING HAZARDOUS TO OTHER AIRPLANES OR PEOPLE AND PROPERTY ON THE GROUND.

- ✔ **DO** fly a model aircraft/UAS at the local model aircraft club
- ✔ **DO** take lessons and learn to fly safely
- ✔ **DO** contact the airport or control tower when flying within 5 miles of the airport
- ✔ **DO** fly a model aircraft for personal enjoyment

- ⊘ **DON'T** fly near manned aircraft
- ⊘ **DON'T** fly beyond line of sight of the operator
- ⊘ **DON'T** fly an aircraft weighing more than 55 lbs unless it's certified by an aeromodelling community-based organization
- ⊘ **DON'T** fly contrary to your aero-modelling community-based safety guidelines
- ⊘ **DON'T** fly model aircraft for payment or commercial purposes



MODEL AIRCRAFT OPERATIONS LIMITS

According to the FAA Modernization and Reform Act of 2012 as (1) the aircraft is flown strictly for hobby or recreational use; (2) the aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization; (3) the aircraft is limited to not more than 55 pounds unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization; (4) the aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; (5) when flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower…with prior notice of the operation; and (6) the aircraft is flown within visual line of sight of the operator.

For more information about safety training and guidelines, visit **www.modelaircraft.org**

For more information, visit
www.faa.gov/go/uas

Federal Aviation Administration

FA4022-v06-0623