



EAA Chapter 231

Richmond, VA

www.231.eaachapter.org

Chapter Newsletter Feb 2014



Officers:

President:

- Brutus Russell
- Vice President:
• Tom Tyndall
- Treasurer:
• Doug Hanson
- Secretary:
• Dee Whittington

Directors:

- Ron VanSickle
- Cliff Martin

Membership Chair:

- Barry Toole
- Newsletter Editor:
• Dave Wilson

dhwpilot@gmail.com

In This Issue

This issue includes an article on flying a tail wheeled aircraft provided by Tom Tyndall. Our January meeting minutes are also included with a little club history supplied by Brutus.

The editor welcomes feedback and articles and information for use in future newsletters.

Topics For Feb Meeting

February's meeting will host a dinner at the Grapevine Restaurant on February 4th. The festivities begin at 6:15 with dinner commencing at 7:00. The cost is \$25 per person. We hope to have a fine turnout. Dee will be sending out a sign up form with a request that people pre-pay for the dinner with a check mailed to Doug Hanson.

The restaurant address is:
11055 Three Chopt Road, Richmond, 23233.

Visitors-New Members

Keith Brittle and Charles Crossman

Next Meeting

Where: Grapevine Restaurant
Date: Feb 4, 2014
Time: 18:15
See above



How To Fly An Airplane With The Nose Wheel In The Back

For those of you that have flown " taildraggers ", I hope this brings back some memories. For those of you that have not had the opportunity, maybe you'll think about what you've missed and try it. It can be a real learning experience.

Tom Tyndall

TAILWHEEL PHYSICS By TONY MARKL (reprinted from Aeronca Aviator, issue 10-4, April 2005)

Physics is what makes the tailwheel aircraft require a better trained and more proficient pilot. The fact that the center of gravity is behind the main gear rather than in front of it as in tricycle gear aircraft causes several physical effects or dynamics to increase the airplane's desire to yaw.

With two wheels on the ground the airplane rotates about the main gear. In-flight it rotates about the CG which is behind the main gear. This means that the moment arm of the elevator is reduced the moment the gear lift off and thereby the elevator has less authority for the same elevator deflection. This is not critical if the airplane is accelerating.

Since small tailwheel airplanes are intended to be landed in a full stall attitude there will be sufficient elevator power to hold the nose up for this purpose. This means that stalls close to the ground are possible and sufficient rudder authority must exist to counter any wing drop at the stall. Larger aircraft with high wing loadings will not be designed to land full stall.

The distance between the main gear, the length of the fuselage, and the size of the vertical fin and rudder all have an effect on the magnitude of any yaw. The fact that tailwheel CGs are further aft of the gear than nosewheel CGs are forward of it adds to the magnitude also.

Single engine propeller tailwheels have four physics effects that will cause a swerve and all of them act to swerve the aircraft to the left if the engine rotates clockwise. Three act as soon as power is applied and the fourth (gyroscopic precession) acts when the tail is raised.

Torque is the most popularly known one (at least by my students) but frequently is misunderstood. The torque effect comes from Newton's Law that every action has an equal and opposite reaction. If the propeller turns clockwise then the airplane would like to turn (roll) counterclockwise. In high power aircraft the effect is very noticeable and "torque rolls " can be done in-flight merely by rapid advancement of the throttle. One of the pilots in my squadron of Skyraiders in Vietnam was killed by this effect. On the ground the torque increases the weight on the left main and causes " bicycling " in that direction. Remember when you were a kid and made turns with " no hands " by leaning on your bike.

Slipstream effect means that the air corkscrewing back from the prop hits the vertical fin and rudder on the left side causing a left swerve. This is commonly compensated for by offsetting the vertical fin a few degrees to the left.

Asymmetric Prop blade loading means that on takeoff roll the down-going blade (right) has a greater angle of attack than the up-going one and the difference in thrust swerves the aircraft to the left.

Gyroscopic precession is the force that acts when you try to disturb a spinning object (propeller in this case) and causes a swerve at 90 degrees to the plane of rotation. As a kid maybe you had a spinning top and touched it and it went sideways. This force only acts during the time you are raising the tail and is most noticeable in higher power aircraft with long props. A Stearman will show you this effect if you are too fast on the rate at which you lift the tail.

Adverse yaw effect can be seen on aircraft where the ailerons travel an equal amount up and down. The up aileron is in lower pressure air (Bernoulli's effect) and the down aileron is in relatively higher pressure air. This means that the up aileron creates less lift and less drag than the down aileron. The difference means that in a left turn when the right aileron is down, the right wing will have more drag and cause a swerve to the right which reduces your rate of turn to the left and actually can stop it entirely if you roll into the turn quickly. Modern aircraft do not demonstrate this effect as the designers made the up travel of the ailerons greater than the down travel. Frise ailerons and other devices also can eliminate " adverse yaw " .



How To Fly An Airplane With The Nose Wheel In The Back, con't

Bicycling effect means that the airplane will turn in the direction of the more heavily loaded wheel. Aircraft such as the B-47 and B-52 would do this easily. If you put in aileron you could make the airplane turn in that direction. The good news was that if you really had a crosswind when you did this then the fact that these were swept wing aircraft would counter the bicycling effect. The windward wing in a crosswind would have a more chord-wise airflow and produce more lift than the downwind wing which was blanketed by the fuselage and also had a more span-wise airflow producing less lift and drag.

Throttle changes during takeoff or landing rotation (flare) will change the power or authority of the elevators and rudder and should be avoided for this reason.

Physics on landing – touchdown of the mains will cause a nose down pitching moment, no big deal unless you are a brake user. A landing not fully rotated to stall attitude (I call this a 2 .5 point landing) will cause a tail down pitching moment and increase the angle of attack of the wing and get it flying again. Remember that on touchdown the airplane now rotates about the main wheels rather than the CG and this makes tail surfaces less effective.

All of the above reasons reduce the control of your tailwheel airplane on the ground. If you experience lack of directional control on the ground while landing, throttle in, make it fly, and go around. If the crosswind is giving you problems, find another runway or airport with better wind alignment.

January 2014 Meeting Minutes

Guests: Keith Brittle and Charles Crossman

Outgoing President, Ron VanSickle, acknowledged the new officers: Brutus Russell, President; Tom Tyndall, Vice-President; Dee Whittington, Secretary; Doug Hanson; Treasurer and Directors, Cliff Martin and Ron VanSickle.

Brutus read a short history of founding EAA 231 in 1969.

To open meeting the pledge of allegiance to the US flag added by Brutus.

Treasurer's Report: 34 paid members in 2013. \$20 dues for 2014 now due. Give to Doug Hanson or mail check to 6 Westham Pkwy, Richmond, VA 23229. Doug suggested the Chapter might consider sending someone to The Chapter Leaders Academy at Oshkosh as we sent Doug in 2013. Or a young person to one of the four Air Academies. See <http://www.young eagles.org/programs/airacademy/classoverview.asp>

Annual Dinner – Feb 4, Tuesday night. \$25 at *The Grapevine*. Social time: 6:15pm, dinner, 7:00pm. Expect an email to sign up for the February dinner meeting. Please bring guests, open to all.

Tom Tyndall's announcements:

Virginia Aviation Council, Saturday, Jan. 18, 10am at VA Aviation Museum. All welcome.

VAHS party and auction with heavy hors d'oeuvres Sat., April 12, 5:30pm, \$35. Wide range of items for bid. Call (804) 222-8690 or e-mail at vahsonline@gmail.com to get yours today!

SportAir Workshops - February 8-9 at Chesapeake Airport, all slots open as of 1/12/2014

AOPA cancelled annual convention. For 2014 will attend 10 fly-ins around US. Closest is at AOPA headquarters, Fredrick, MD on October 4

Build-a-Plane and GAMA – Sent two groups to Glasair Aviation for Two Weeks To Taxi

In Virginia: Liberty and Averett Universities have "flying" aviation programs



January 2014 Meeting Minutes, con't

Cliff Martin reported as authorized by Virginia Aviation Council he bought a scissor lift to be used as a "tower" for the Festival of Flight. It has a 7' x 14' platform with a max lift of 25' for Jennie Stack to direct ground operations. Cliff's has it at his farm near Lexington. He suggests assembling a crew to help clean, repair and repaint when weather warms. Should be a fun trip and chapter activity.

Keith Biddle generously invited members to drive or fly into his airport, 2600' grass and well drained. It is 70° from east end of Benjamin Harrison bridge across Route 5 from the fish hatchery. He has applied to add it to the Washington Sectional. We could use this for a chapter fly-in or meeting. Call him at (804) 873-6147 for more information.

EAA January Video highlights started with Jack Pelton, Chairman of the Board, reporting:

- FAA apology for no progress on no-medical request
- After death of Paul Poberezny EAA will continue his vision
- Working with FAA to provide ATC services during AirVenture after having to pay in 2013
- Part 23 rewrite continuing
- Replacement for 100LL making progress
- Jack to continue as Chairman of the Board board for two years, and then possibly three years
- Thunderbirds to perform at Oshkosh 2014
- 2014 AirVenture Theme - 100th anniversary of WWI aviation
- Segment on Frank Knapp's building and flying of a stripped down J-3. Valdez, Alaska
- Segment on development of Jon Monet's *Sub Sonex JSX1* single-place jet kit

Chapter growth discussion:

- Barry Toole has volunteered to be Membership Chairman. Started a chapter in Rhode Island.
- Dee will try an email service for mail list management and email announcements
- Dave Wilson is starting a monthly newsletter, February, 2014
- Chapter should do more project visitations
- Brutus urged members to bring a guest to the next EAA 231 meeting, that's the fastest way to grow
- Get our meeting announcements to a wider audience says Barry. Sandwich board on road at RIC?
- Send a members to other EAA Chapter meetings to see how they operate

Expect email to sign up for the February dinner meeting. Please bring guests; dinner open to all.

Tom Tyndall offered the use of his off-airport hangar at New Kent. Suggested we might do another garage sale or whatever activity we choose.

March meeting presentation: First segment of "Introduction to Glass Cockpits" by Dave Wilson.

This report by Dee Whittington, Secretary



Brutus provided a little information about club history.



Chapter 231 History

In the mid 1960's a group of pilots who were also interested in home built aircraft began to meet informally at what was then called "Byrd Field" near Richmond, Virginia. After several years of meeting informally it was decided that the group should become a chapter of the growing EAA national organization.

Accordingly, the necessary "Articles of Incorporation" were drawn and registered with the Commonwealth of Virginia. On September 6, 1969 the group officially became the 231'st chapter of the Experimental Aircraft Association.

The initial Board of Directors consisted of:

Vincent J. Serio, Jr.	Richmond
Charles H. Hibbits	Richmond
Luther W. Matthews	Ashland
Carlyle W. Dean	Chester