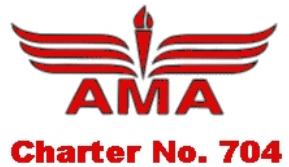




The Tailwind



MARCH

DON LEWIS, EDITOR

2016

President: Lynn Perkes Vice-President: Bill Pruner
Treasurer: Lynn Perkes Secretary: Don Lewis
Safety Officer: Carl Tackett Instructors: Lynn Perkes, Bill Pruner

Next Meeting on Thursday, March 17 - Be There!

Be sure to check out the website at www.fly-hrcc.org

MEETING MINUTES

The meeting was called to order at 7:20 by L. Perkes.



Attendees: L. Perkes, B. Pruner, C. Tackett, D. Lewis

The January minutes were published in the February Tailwind. D. Lewis moved to accept the minutes as published; C. Tackett seconded; passed unanimously.

L. Perkes presented the Treasurer's report in summary form, to be followed up by email with the printed details. D. Lewis moved to accept the Treasurer's Report; C. Tackett seconded; passed unanimously.

Old Business

- L. Perkes reviewed the work to be accomplished at the field this spring.
- L. Perkes will purchase a new lawn mower cover at Lowe's. He will also get pricing on grub worm killer to use to help contain the moles.
- D. Lewis will organize a time to roll the field in March.

New Business

- D. Lewis will put together a mowing schedule for this year. The four attendees volunteered.

D. Lewis will contact others for additional volunteers.

- MTRCCA Spring Fellowship Fly-in will be at Peeler Park on June 11.

There being no further business, D. Lewis moved to adjourn at 7:45; C. Tackett seconded; passed unanimously.

TREASURER'S REPORT

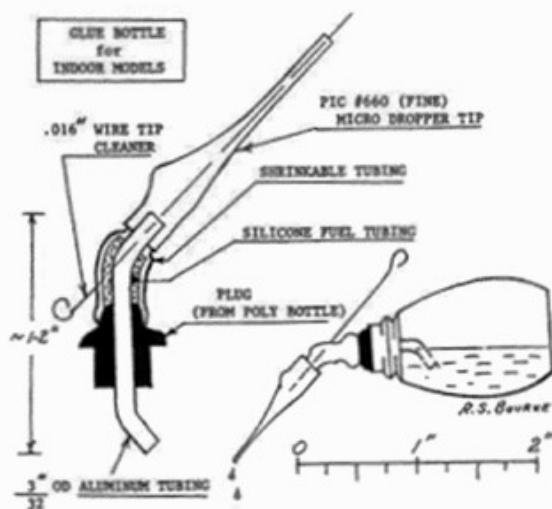


Opening balance	\$ 1,185.31
Income	100.00
Expenses	<u>(92.99)</u>
Closing balance	<u>\$ 1,192.32</u>

A MICRO DROP GLUE APPLICATOR

By Roy Bourke

One of the secrets of building light indoor models is to pay attention to the glue joints. Excess glue is heavy, and does not necessarily add strength to the joint. A good glue applicator can go a long way to ensure the accurate placement of just the right amount of glue to each joint.



The accompanying sketch shows an excellent glue bottle that can be used with acetone-thinned white glue (Weldbond) or aliphatic (Titebond), as used on indoor models. (Incidentally, I did not design this glue bottle. It is available commercially for the USA, but it is much cheaper to make one yourself.)

The best poly-bottle to use is a small food coloring bottle (e.g. McCormack's food coloring), but there are several other poly-bottles that could be used with minor modifications to the design. Begin by bending a piece of 3/32-inch aluminum tubing to the shape shown, and fit it to the plug that comes with the poly-bottle that you are using. (Make sure you make the lower bend such that you can still insert the plug into the bottle without interference from the tubing.)

Drill a small hole (.016) in the upper bend for the wire tip cleaner, then cover the bend with a short piece of silicone fuel line. Add a piece of shrinkable tubing over the silicone tubing, shrink in place, trim, then add the Pic Micro Dropper tip to the end of the aluminum tubing. Make up the wire tip cleaner, and insert it backwards through the nozzle to pierce a hole in the silicone and shrinkable tubings. Finally, reinsert the tip cleaner from the back end of the nozzle, and the glue bottle is complete.

To use the bottle, simply draw the wire tip cleaner back only far enough to clear the narrow part of the bore of the Pic nozzle, tip the bottle, and squeeze.

You will find you have excellent control of the amount of glue that appears at the tip. During storage, the tip cleaner is left fully inserted to seal off the nozzle. Since polyethylene does allow some evaporation of the acetone, you should check the thickness of the glue periodically, and add acetone as necessary.

THE NEED FOR SPEED

By Don Nix, AMA Insider Safety Column Editor

Bear with me for a couple of minutes. I've gotta' work up to the title subject, after writing a little more about the importance of preflighting.

I first participated in competition modeling more than 50 years ago, in U/C Stunt, Rat Racing, and Combat, then added Free Flight a little later. I only competed for a few years, and wasn't particularly good at any of the four events. During that time, the only safety incident in which I was involved was at a Free Flight contest in Dallas, circa 1960.

After a couple of official flights, I failed to check out the trim settings after the last landing and hand launched a big Class C model. Apparently the Up trim in the elevator had gotten slightly out of kilter. Instead of screaming straight upward, it screamed straight forward at shoulder height directly toward the score keepers' open-sided tent about 50 yards away.

Horrified, I screamed a warning and the several occupants took cover. Fortunately, the left wing hit a tent pole, spun around from whence it came and splattered into the ground. That was the closest I ever came to hurting anyone with a model airplane. The lesson was clear: always, check the model before every flight.

Fast forward to 1991 when a couple of friends dragged me kicking and screaming into Sportsman class Quickie Pylon Racing. I enjoyed moderate success for about 10 years, mostly because that class had relatively few entrants.

During a several-month RV tour of the western states, we found ourselves near Phoenix in January of this year at the same time one of the earliest Pylon Races in the US always takes place. We

decided to go see some old friends and watch a little Racing. I hadn't been to a Pylon Race, even as a spectator, in several years. I was amazed at the changes made to enhance safety since the last time I saw one.

For the benefit of those who aren't familiar with the fastest event in modeling, these airplanes are in a big hurry to get to the finish line. The Quickie Sportsman class is now running 120+ mph, the Advanced approximately 170 and Q-40s are nudging the 200 mph mark. From a racehorse start, they fly in heats of four models for 10 laps around three pylons, making up a 1/4-mile circuit—2.5 miles total. Most of them fly at heights of 30-75 feet.

Until a few years ago, every heat required 19—count 'em—19 people on the course: four pilots, four callers, four lap counters/timers, four judges at Pylon 1, one judge at Pylon 2, one at Pylon 3, and one race starter/flagman. The lap counters/timers and pylon judges were all protected by heavy steel wire cages. The pilots, callers, and starter were exposed.

A few years ago, a Pylon judge had his head leaning against the cage at Pylon 1, so he could look straight up to catch any pylon "cuts." One pilot, flying too low and too tightly, hit the cage and the spinner poked through an opening directly into the back of the judge's head, killing him. Not long after, in a Texas race, a very experienced Pylon flier hit one of the cages with such velocity it went through the cage wall, shredding itself in the process. Fortunately, it didn't hit anyone.

Understandably, the Racing group became concerned (as did the AMA), and decided something had to change. Rather than wait until they were forced to do so, they took action to correct the situation.

Some 10 years earlier, 1991 World Pylon Champion Dub Jett had conceived the embryo of an idea that would require only the pilots, callers, and the starter to be on the course. The 10 others would be several hundred feet away. A group of racers, mostly from Texas (including Mike Helsel, who has been racing since the earth cooled), got to work on the project.

Veteran Pylon Racer Jerry Small of Dallas devised the first off-course electronic timing system.

With the help of many others from all over the country, Pylon Racing evolved to its present status: No one is on the course but the pilots, callers, and the starter. The current models are going faster than ever, and, to the best of my knowledge, there have been no serious incidents since.

For those who are inclined to take safety a little too lightly—or ignore it altogether—I urge you to adjust your thinking and your method of flying. As full-scale pilots learned over the decades, if we don't police ourselves, some entity will do it for us, usually much stricter than we like.

In conclusion, I'll have to shift subjects to mention some comments from last month's Insider.

Former Executive Council member Ed McCollough pointed out an error in my statement that AMA regulations require that all models have the owner's name and address in, or on the model. Well, not exactly.

Prompted by Ed and aided by District VIII Vice President Jim Rice and Ilona Maine at the AMA, I found that Item 6 of the Safety Code reads, "I will not fly my model aircraft unless it is identified with my name and address or AMA number inside or affixed to the outside of the model aircraft." Note the operative word is or. (This does not apply to model aircraft flown indoors.)

My personal opinion is that the regulations should require all three. In the event of a fly-away, the AMA number would mean nothing to a non-modeler who might recover it.

John Goegl wrote, "I have found the key to safe flying starts with the training protocol. I have noticed that one human trait trumps all others: habit. As a flight instructor, I try to encourage good habits by beginning each session with a thorough preflight. Through repetition, these 'good' habits are picked up by the student ... and the instructor."

From Ben Lanterman: "Your comments on safety were great and on target. Like you, I normally check the control throws and direction before each

flight. But with some of the small foamies I have flown for some time, I tend to get complacent. It backfired when I changed transmitters to a newer one. I checked to be sure all the control reversal switches were set the same for each airplane I switched over to the new transmitter, but I missed one."

The rest of his note tells of the results, reversed ailerons and a foamie turned into packing peanuts. Fortunately, nothing was injured but the model and Ben's ego.

TOTALLY USELESS FACTS

- The "pound" key on your keyboard (#) is called an octotroph.
- The only domestic animal not mentioned in the Bible is the cat.
- The "dot" over the letter "i" is called a tittle.
- Table tennis balls have been known to travel off the paddle at speeds up to 160 km/hr.
- Pepsi originally contained pepsin, thus the name.
- The original story from "Tales of 1001 Arabian Nights" begins, "Aladdin was a little Chinese boy."
- Nutmeg is extremely poisonous if injected intravenously.
- Honey is the only natural food that is made without destroying any kind of life. What about milk you say? A cow has to eat grass to produce milk and grass is living.
- The most common name in the world is Mohammed.
- Michael Jordan makes more money from NIKE annually than all of the Nike factory workers in Malaysia combined.
- The volume of the earth's moon is the same as the volume of the Pacific Ocean.
- Cephalacaudal recapitulation is the reason our extremities develop faster than the rest of us.
- Spiral staircases in medieval castles are running clockwise. This is because all knights used to be right-handed. When the intruding army would climb the stairs they would not be able to use their right hand which was holding the sword because of the difficulties of climbing the stairs.

Left-handed knights would have had no troubles, except left-handed people could never become knights because it was assumed that they were descendants of the devil.

- Ham radio operators got the term "ham" coined from the expression "ham fisted operators," a term used to describe early radio users who sent Morse code (i.e., pounded their fist).
- The slogan on New Hampshire license plates is "Live Free or Die." These license plates are manufactured by prisoners in the state prison in Concord.
- Chinese Crested dogs can get acne.
- Hydrogen gas is the least dense substance in the world, at 0.08988g/cc. Hydrogen solid is the densest substance in the world, at 70.6g/cc.
- Each year there is one ton of cement poured for each man woman and child in the world.
- The house fly hums in the middle octave key of F.
- The only capital letter in the Roman alphabet with exactly one end point is P.
- The giant red star Betelgeuse has a diameter larger than that of the Earth's orbit around the sun.
- The longest place name still in use is: Taumatawhakatangihangaoauauotamateaturipuk akapikimaungahoronukupokai- whenua kitatahu--a New Zealand hill.
- Los Angeles's full name is: "El Pueblo de Nuestra Senora la Reina de los Angeles de Poriuncula" and can be abbreviated to 3.63% of its size, "LA."
- Only 1 in 2,000,000,000 will live to be 116 or older.
- An ostrich's eye is bigger than its brain.
- Tigers have striped skin, not just striped fur.
- According to Einstein's Special Theory of Relativity, it is possible to go slower than light and faster than light, but it is impossible to go the speed of light.
- Also, there is a particle called tackyon which is supposed to go faster than light. This means if you fire a tackyon beam, it travels before you fire it.
- When you tie a noose, the rope is wrapped twelve times around because it's the same length as a persons head.

- Hummingbirds are the only animal that can fly backwards.
- A cat's jaw cannot move sideways.

CELEBRATING FLIGHT

Piper PA-28 Cherokee

From the Virtual Aircraft Museum

The Piper PA-28 Cherokee is a family of light aircraft designed for flight training, air taxi and personal use, built by Piper Aircraft.



All members of the PA-28 family are all-metal, unpressurized, four-seat, single-engine piston-powered airplanes with low-mounted wings and tricycle landing gear. All PA-28 aircraft have a single door on the co-pilot side, which is entered by stepping on the wing.

The first PA-28 received its type certificate from the FAA in 1960 and the series remains in production in 2009. Current models are the Arrow and Warrior III. The Archer was discontinued in 2009, but with investment from new Piper owners Imprimis, will be revived in 2010.

Competition for the PA-28 series include the Cessna 172, the Grumman American AA-5 series and the Beechcraft Musketeer.



Piper has created variations within the Cherokee family by installing engines ranging from 140 to 300 hp (105-220 kW), providing turbo charging, offering fixed or retractable landing gear, fixed-pitch or constant speed propellers, and stretching the fuselage to accommodate 6 people. The larger, six-seat variant of the PA-28 is generally the PA-32; earlier versions were known as the "Cherokee Six,"

and a PA-32 version is still in production today under the model name Saratoga.^[1]

Development

At the time of the Cherokee's introduction, Piper's primary single-engine, all-metal aircraft was the Piper PA-24 Comanche, a larger, faster aircraft with retractable landing gear and a constant-speed propeller. Karl Bergey, Fred Weick and John Thorp designed the Cherokee as a less expensive alternative to the Comanche, with lower manufacturing and parts costs to compete with the Cessna 172, although some later Cherokees also featured retractable gear and constant-speed propellers.

The Cherokee and Comanche lines continued in parallel production serving different market segments for over a decade, until Comanche production was ended in 1972, to be replaced by the Piper PA-32R family.

PA-28 Cherokee

The original Cherokees were the Cherokee 150 and Cherokee 160 (PA-28-150 and PA-28-160), which started production in 1961 (unless otherwise mentioned, the model number always refers to horsepower).

In 1962, Piper added the Cherokee 180 (PA-28-180) powered by a 180 horsepower (134 kW) Lycoming O-360 engine. The extra power made it practical to fly with all four seats filled (depending on passenger weight and fuel loading), and the model remains popular on the used-airplane market. In 1968, the cockpit was modified to replace the "push-pull" style engine controls with levers. In addition, a third window was added to each side, giving the fuselage the more modern look seen in current production.

Piper continued to expand the line rapidly. In 1963, the company introduced the even more powerful Cherokee 235 (PA-28-235), which competed favorably with the Cessna 182 for load-carrying capability. The Cherokee 235 featured a Lycoming O-540 engine de-rated to 235 horsepower (175 kW) and a longer wing which would eventually be used

for the Cherokee Six. It included tip tanks of 17 gallon capacity each, bringing the total fuel capacity of the Cherokee 235 to 84 gallons. The aircraft had its fuselage stretched in 1973 giving much more leg room in the rear. The stabilator area was increased as well. In 1973 the marketing name was changed from "235" to the Charger. In 1974 it was changed again to Pathfinder. Production of the Pathfinder continued until 1977. There was no 1978 model year. In 1979 the aircraft was given the Piper tapered wing and was again renamed the Dakota.

In 1964, the company filled in the bottom end of the line with the Cherokee 140 (PA-28-140), which was



designed for training and initially shipped with only two seats. One source of confusion is the fact that the PA-28-140 engine was slightly modified shortly after its introduction to produce 150 horsepower (112 kW), but kept the -140 name.

In 1967, Piper introduced the PA-28R-180 Cherokee Arrow. This aircraft featured a constant-speed propeller, retractable landing gear and was powered by a 180 horsepower (134 kW) Lycoming IO-360-B1E engine. A 200-hp (149 kW) version powered by a Lycoming IO-360-C1C was offered as an option beginning in 1969 and designated the PA-28R-200; the 180-hp model was dropped after 1971. At the time the Arrow was introduced, Piper removed the Cherokee 150 and Cherokee 160 from production.

The Arrow II came out in 1972, featuring a five-inch fuselage stretch to increase legroom for the rear-seat passengers. In 1977, Piper introduced the Arrow III (PA-28R-201), which featured a semi-tapered wing and longer stabilator, a design feature that had previously been introduced successfully on the PA-28-181 and provided better low-speed handling. It also featured larger fuel tanks, increasing capacity from 50 to 77 gallons.

The first turbocharged model, the PA-28R-201T was also offered in 1977, powered by a six-cylinder

Continental TSIO-360-F engine equipped with a Rajay turbocharger. A three-bladed propeller was optional.

In 1979, the Arrow was re-styled again as the PA-28RT-201 Arrow IV, featuring a "T" tail that resembled the other aircraft in the Piper line at the time.

In 1971, Piper released a Cherokee 140 variant called the *Cherokee Cruiser 2+2*. Although the plane kept the 140 designation, it was, in fact, a 150 horsepower (110 kW) plane (112 kW), and shipped mainly as a four-seat version. In 1973, the Cherokee 180 was named the *Cherokee Challenger*, and had its fuselage lengthened slightly and its wings widened, and the Cherokee 235 was named the *Charger* with similar airframe modifications. In 1974, Piper changed the marketing names of some of the Cherokee models again, renaming the *Cruiser 2+2* (140) simply the *Cruiser*, the *Challenger* the *Archer* (model PA-28-181) and the *Charger* (235) to *Pathfinder*.

Piper reintroduced the Cherokee 150 in 1974, renaming it the *Cherokee Warrior* (PA-28-151) and giving it the Archer's stretched body and a new, semi-tapered wing.

In 1977, Piper stopped producing the Cruiser (140) and Pathfinder (235), but introduced a new 235 horsepower (175 kW) plane, the *Dakota* (PA-28-236), based on the Cherokee 235, *Charger*, *Pathfinder* models but with the new semi-tapered wing.

The PA-28-201T Turbo Dakota followed the introduction of the PA-28-236 Dakota in 1979. The airframe was essentially the same as a fixed gear Arrow III and was powered by a turbo-charged Continental TSIO-360-FB engine producing 200 hp (149 kW). The aircraft did not sell well and production ended in 1980.

In 1978, Piper upgraded the Warrior to 160 horsepower (119 kW) PA-28-161, changing its name to *Cherokee Warrior II*. This aircraft had slightly improved aerodynamic wheel fairings. Later models of the Warrior II, manufactured after July 1982, incorporate a gross weight increase to

2,440 pounds, giving a useful load over 900 pounds. This same aircraft, now available with a glass cockpit, is available as the Warrior III, and is marketed as a training aircraft.

New Piper Aircraft

The original Piper Aircraft company declared bankruptcy in 1991. In 1995, The New Piper Aircraft company was created. It was renamed Piper Aircraft once again in 2006. The company currently produces two PA-28 Cherokee variants: the 160 horsepower (119 kW) Warrior III (PA-28-161) and the 200 horsepower (149 kW) retractable Arrow (PA-28R-201). All are now available with Avidyne Entegra glass cockpits.

EDITORIAL

Somebody Ought To



Can anyone tell me where to find this infamous “somebody” everyone refers to? It seems to me that if we could find this person and get them off their rump, not only would the club have more interesting meetings and grow, but all of the world’s problems would be solved as well! Based on what people tell me, everyone except “somebody” knows what needs to be done. I wish we could find this “Somebody” and get them to take care of these things.

That was a little facetious – alright, a lot facetious, but this phrase seems to be something that I am hearing with more frequency. I don’t know if it is the new attitude of entitlement that seems to be rampant in our country or what, but it seems that a lot of people have good ideas but feel that someone else should be responsible for making them happen. It really is a recent phenomenon that has even affected our club.

I can remember as recently as 5 years ago that motions were made at meetings very differently than they are now. In the past, the person who made the motion very often voluntarily took the lead in implementing it if it passed. The motions then sounded like, “I would be glad to (fill in the blank) if the club approves.” Now, the originator of the idea seldom takes the lead, and frequently does

not even take part in helping with the implementation. Motions now sound like, “I’ll make a motion that Somebody ought to (fill in the blank).” It is even getting to the point that some are even complaining about the shrinking number of “doers” taking time to plan and talk about what needs to be done. Now this complaining may be somewhat valid because we have nothing else to discuss – which has been pointed out several times. As a matter of fact, that’s what prompted this editorial. I have been involved in and have overheard several discussions about how boring the club meetings are – that all we talk about at meetings are problems and raising money that we never use to benefit the club members. That’s when I heard it, “*Somebody ought to* come up with a way to make meetings more interesting.” All of those in the discussion agreed, but obviously none of them was this “Somebody” they were referring to because none of them brought anything up at the next meeting. Guess what – I realized that I was agreeing, too!

Well I think that I finally found this mysterious “Somebody.” He is everywhere – I bet he’s in your home, too. He’s really easy to find, if you are paying attention. You can always locate “Somebody” by simply looking in a mirror! That’s right; we are all this “Somebody” who ought to.

I would like to invite everyone to bring ideas to the March meeting for making the club meetings interesting and entertaining – things that will make handling the business issues of the club seem insignificant and minor. Maybe you know someone who would make a great guest speaker well enough to get them to come talk to us. Maybe we could have a meeting that was primarily show and tell in conjunction with a youth group at a church or school or one of the Scout troops (Boy or Girl Scouts) – instead of trying to get prospective members to come to us, maybe we can go to them. With the longer days, a flying session prior to the meeting might be a good idea (we’ve done that before with some success). I know that the Music City Aviators (the Madison club that flies at Peeler Park) gives away a gift certificate to one of the hobby shops at every meeting (and you must be present to win). Think out of the box. In addition to making the meetings more enjoyable, we’ll make

each other's company more enjoyable by focusing on fun stuff instead of problems.

Wouldn't it be great if we could advertise in the Tailwind what interesting and entertaining "thing" we are going to have at the up-coming meeting instead of hoping that "Somebody" brings something with them? It wouldn't take a great deal of planning, just a little volunteerism and commitment. Volunteer to be the "Somebody" and help everyone get more enjoyment out of the hobby, including you. If you see something that ought to be done, do it. Be a "Somebody."

That's my opinion - it oughta' be yours! ☺

LETTERS TO THE EDITOR

Need to get something off your chest? Want to solve all of the club/s problems? Write a letter! I welcome anyone (member or not) to submit an opinion in writing so long as it is civil in its expression (I reserve the right to make that determination). You can email your letters to the editor to me at Don_Lewis@comcast.net, or just give them to me at a club meeting.

NOVICE NUANCES

Foam Tape on the Wing Saddles

Exhaust residue that enters through the wing saddle can damage unprotected wood in the plane's interior and will eventually ruin it.



You can protect this area by applying foam tape around the wing saddle. It will form a fuelproof seal and is soft, so it won't hinder wing alignment.

WHY DIDN'T I THINK OF THAT?

Quick Reinforcement

By Bill Womble

I needed to repair a few cracks in the balsa skins of my airplane's wing near the root rib. I removed the flap servo, and realigned the pieces of balsa. I then reinforced the area by laying a piece of fiberglass drywall tape, adhesive side to the balsa, over the

cracked area and drizzled CA onto the balsa and tape. This made a quick, effective repair.

Easy Air Scoop

Anonymous

If you need an air scoop, use a portion of a plastic spoon. Glue it to the wing or fuselage, fair it in, and paint it to match the structure. Looks great!

PIONEERS OF FLIGHT

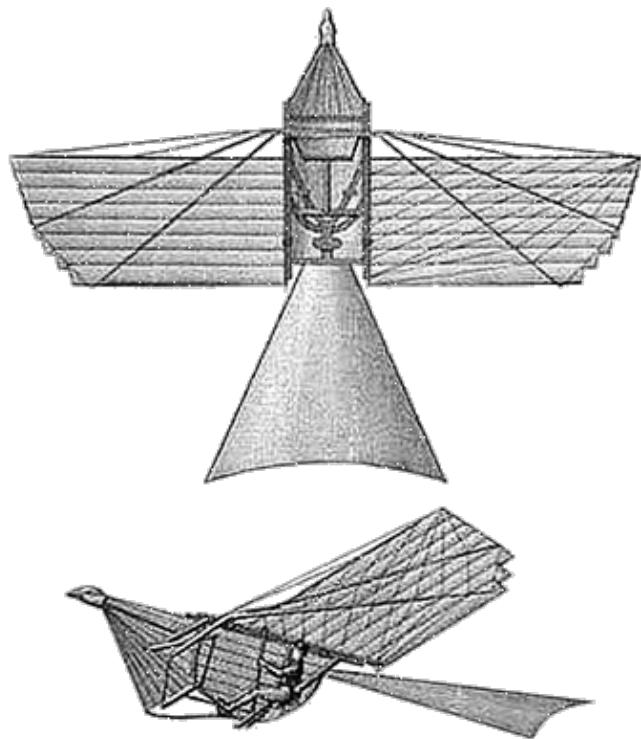
Thomas Walker (early 1800's)

From Century-of-Flight.net

Practically contemporary with Cayley was Thomas Walker, concerning whom little is known save that he was a portrait painter of Hull, where was published his pamphlet on The Art of Flying in 1810, a second and amplified edition being produced, also in Hull, in 1831. The pamphlet, which has been reproduced in extenso in the Aeronautical Classics series published by the Royal Aeronautical Society, displays a curious mixture of the true scientific spirit and colossal conceit. Walker appears to have been a man inclined to jump to conclusions, which carried him up to the edge of discovery and left him vacillating there.

The study of the two editions of his pamphlet side by side shows that their author made considerable advances in the practicability of his designs in the 21 intervening years, though the drawings which accompany the text in both editions fail to show anything really capable of flight. The great point about Walker's work as a whole is its suggestiveness; he did not hesitate to state that the 'art' of flying is as truly mechanical as that of rowing a boat, and he had some conception of the necessary mechanism, together with an absolute conviction that he knew all there was to be known. 'Encouraged by the public,' he says, 'I would not abandon my purpose of making still further exertions to advance and complete an art, the discovery of the *true principles* (the italics are Walker's own) of which, I trust, I can with certainty affirm to be my own.'

The pamphlet begins with Walker's admiration of the mechanism of flight as displayed by birds.



'It is now almost twenty years since I was first led to think, by the study of birds and their means of flying, that if an artificial machine were formed with wings in exact imitation of the mechanism of one of those beautiful living machines, and applied in the very same way upon the air, there could be no doubt of its being made to fly, for it is an axiom in philosophy that the same cause will ever produce the same effect.'

With this he confesses his inability to produce the said effect through lack of funds, though he clothes this delicately in the phrase 'professional avocations and other circumstances.' Owing to this inability he published his designs that others might take advantage of them, prefacing his own researches with a list of the very early pioneers, and giving special mention to Friar Bacon, Bishop Wilkins, and the Portuguese friar, De Guzman. But, although he seems to suggest that others should avail themselves of his theoretical knowledge, there is a curious incompleteness about the designs accompanying his work, and about the work itself,

which seems to suggest that he had more knowledge to impart than he chose to make public--or else that he came very near to complete solution of the problem of flight, and stayed on the threshold without knowing it.

After a dissertation upon the history and strength of the condor, and on the differences between the weights of birds, he says:

'The following observations upon the wonderful difference in the weight of some birds, with their apparent means of supporting it in their flight, may tend to remove some prejudices against my plan from the minds of some of my readers. The weight of the humming-bird is one drachm, that of the condor not less than four stone. Now, if we reduce four stone into drachms we shall find the condor is 14,336 times as heavy as the humming-bird. What an amazing disproportion of weight! Yet by the same mechanical use of its wings the condor can overcome the specific gravity of its body with as much ease as the little humming-bird. But this is not all. We are informed that this enormous bird possesses a power in its wings, so far exceeding what is necessary for its own conveyance through the air, that it can take up and fly away with a whole sheep in its talons, with as much ease as an eagle would carry off, in the same manner, a hare or a rabbit. This we may readily give credit to, from the known fact of our little kestrel and the sparrow-hawk frequently flying off with a partridge, which is nearly three times the weight of these rapacious little birds.'

After a few more observations he arrives at the following conclusion:

'By attending to the progressive increase in the weight of birds, from the delicate little humming-bird up to the huge condor, we clearly discover that the addition of a few ounces, pounds, or stones, is no obstacle to the art of flying; the specific weight of birds avails nothing, for by their possessing wings large enough, and sufficient power to work them, they can accomplish the means of flying equally well upon all the various scales and dimensions which we see in nature. Such being a fact, in the name of reason and philosophy why shall not man, with a pair of artificial wings, large

enough, and with sufficient power to strike them upon the air, be able to produce the same effect?'

Walker asserted definitely and with good ground that muscular effort applied without mechanism is insufficient for human flight, but he states that if an aeronautical boat were constructed so that a man could sit in it in the same manner as when rowing, such a man would be able to bring into play his whole bodily strength for the purpose of flight, and at the same time would be able to get an additional advantage by exerting his strength upon a lever. At first he concluded there must be expansion of wings large enough to resist in a sufficient degree the specific gravity of whatever is attached to them, but in the second edition of his work he altered this to 'expansion of flat passive surfaces large enough to reduce the force of gravity so as to float the machine upon the air with the man in it.' The second requisite is strength enough to strike the wings with sufficient force to complete the buoyancy and give a projectile motion to the machine. Given these two requisites, Walker states definitely that flying must be accomplished simply by muscular exertion. 'If we are secure of these two requisites, and I am very confident we are, we may calculate upon the success of flight with as much certainty as upon our walking.'

Walker appears to have gained some confidence from the experiments of a certain M. Degen, a watchmaker of Vienna, who, according to the Monthly Magazine of September, 1809, invented a machine by means of which a person might raise himself into the air. The said machine, according to the magazine, was formed of two parachutes which might be folded up or extended at pleasure, while the person who worked them was placed in the centre. This account, however, was rather misleading, for the magazine carefully avoided mention of a balloon to which the inventor fixed his wings or parachutes. Walker, knowing nothing of the balloon, concluded that Degen actually raised himself in the air, though he is doubtful of the assertion that Degen managed to fly in various directions, especially against the wind.

Walker, after considering Degen and all his works, proceeds to detail his own directions for the

construction of a flying machine, these being as follows:

'Make a car of as light material as possible, but with sufficient strength to support a man in it; provide a pair of wings about four feet each in length; let them be horizontally expanded and fastened upon the top edge of each side of the car, with two joints each, so as to admit of a vertical motion to the wings, which motion may be effected by a man sitting and working an upright lever in the middle of the car. Extend in the front of the car a flat surface of silk, which must be stretched out and kept fixed in a passive state; there must be the same fixed behind the car; these two surfaces must be perfectly equal in length and breadth and large enough to cover a sufficient quantity of air to support the whole weight as nearly in equilibrium as possible, thus we shall have a great sustaining power in those passive surfaces and the active wings will propel the car forward.'

A description of how to launch this car is subsequently given:

'It becomes necessary,' says the theorist, 'that I should give directions how it may be launched upon the air, which may be done by various means; perhaps the following method may be found to answer as well as any: Fix a poll upright in the earth, about twenty feet in height, with two open collars to admit another poll to slide upwards through them; let there be a sliding platform made fast upon the top of the sliding poll; place the car with a man in it upon the platform, then raise the platform to the height of about thirty feet by means of the sliding poll, let the sliding poll and platform suddenly fall down, the car will then be left upon the air, and by its pressing the air a projectile force will instantly propel the car forward; the man in the car must then strike the active wings briskly upon the air, which will so increase the projectile force as to become superior to the force of gravitation, and if he inclines his weight a little backward, the projectile impulse will drive the car forward in an ascending direction. When the car is brought to a sufficient altitude to clear the tops of hills, trees, buildings, etc., the man, by sitting a little forward on his seat, will then bring the wings upon a horizontal plane, and by continuing the action of the

wings he will be impelled forward in that direction. To descend, he must desist from striking the wings, and hold them on a level with their joints; the car will then gradually come down, and when it is within five or six feet of the ground the man must instantly strike the wings downwards, and sit as far back as he can; he will by this means check the projectile force, and cause the car to alight very gently with a retrograde motion. The car, when up in the air, may be made to turn to the right or to the left by forcing out one of the fins, having one about eighteen inches long placed vertically on each side of the car for that purpose, or perhaps merely by the man inclining the weight of his body to one side.'

Having stated how the thing is to be done, Walker is careful to explain that when it is done there will be in it some practical use, notably in respect of the conveyance of mails and newspapers, or the saving of life at sea, or for exploration, etc. It might even reduce the number of horses kept by man for his use, by means of which a large amount of land might be set free for the growth of food for human consumption.

At the end of his work Walker admits the idea of steam power for driving a flying machine in place of simple human exertion, but he, like Cayley, saw a drawback to this in the weight of the necessary engine. On the whole, he concluded, navigation of the air by means of engine power would be mostly confined to the construction of navigable balloons.

As already noted, Walker's work is not over practical, and the foregoing extract includes the most practical part of it; the rest is a series of dissertations on bird flight, in which, evidently, the portrait painter's observations were far less thorough than those of da Vinci or Borelli. Taken on the whole, Walker was a man with a hobby; he devoted to it much time and thought, but it remained a hobby, nevertheless. His observations have proved useful enough to give him a place among the early students of flight, but a great drawback to his work is the lack of practical experiment, by means of which alone real advance could be made; for, as Cayley admitted, theory and practice are very widely separated in the study of aviation, and the whole history of flight is a matter of unexpected results arising from scarcely foreseen

causes, together with experiment as patient as daring.

SOMETIMES YOU JUST HAVE TO LAUGH...

... or maybe cry! A DC airport ticket agent offers some examples of 'why' our country is in trouble!

I had a New Hampshire Congresswoman (Carol Shea-Porter) ask for an aisle seat so that her hair wouldn't get messed up by being near the window.

I got a call from a Kansas Congressman's (Moore) staffer (Howard Bauleke), who wanted to go to Capetown. I started to explain the length of the flight and the passport information, and then he interrupted me with, "I'm not trying to make you look stupid, but Capetown is in Massachusetts "

Without trying to make him look stupid, I calmly explained, "Cape Cod is in Massachusetts , Capetown is in Africa " His response -- click.

A senior Vermont Congressman (Bernie Sanders) called, furious about a Florida package we did. I asked what was wrong with the vacation in Orlando He said he was expecting an ocean-view room. I tried to explain that's not possible, since Orlando is in the middle of the state.

He replied, "Don't lie to me, I looked on the map and Florida is a very thin state!"

I got a call from a lawmaker's wife (Landra Reid) who asked, "Is it possible to see England from Canada ?"

I said, "No."

She said, "But they look so close on the map."

An aide for a cabinet member (Janet Napolitano) once called and asked if he could rent a car in Dallas . I pulled up the reservation and noticed he had only a 1-hour layover in Dallas . When I asked him why he wanted to rent a car, he said, "I heard

Dallas was a big airport, and we will need a car to drive between gates to save time."

An Illinois Congresswoman (Jan Schakowsky) called last week. She needed to know how it was possible that her flight from Detroit left at 8:30 a.m., and got to Chicago at 8:33 a.m. I explained that Michigan was an hour ahead of Illinois , but she couldn't understand the concept of time zones. Finally, I told her the plane went fast, and she bought that.

A New York lawmaker, (Jerrold Nadler) called and asked, "Do airlines put your physical description on your bag so they know whose luggage belongs to whom?" I said, 'No, why do you ask?'

He replied, "Well, when I checked in with the airline, they put a tag on my luggage that said (FAT), and I'm overweight. I think that's very rude!"

After putting him on hold for a minute, while I looked into it. (I was dying laughing). I came back and explained the city code for Fresno, Ca. Is FAT (Fresno Air Terminal), and the airline was just putting a destination tag on his luggage.

A Senator John Kerry aide (Lindsay Ross) called to inquire about a trip package to Hawaii . After going over all the cost info, she asked, "Would it be cheaper to fly to California and then take the train to Hawaii ?"

I just got off the phone with a freshman Congressman, Bobby Bright (D) from Ala who asked, "How do I know which plane to get on?"

I asked him what exactly he meant, to which he replied, "I was told my Flight number is 823, but none of these planes have numbers on them."

Senator Dianne Feinstein (D) called and said, "I need to fly to Pepsi-Cola, Florida. Do I have to get on one of those little computer Planes?"

I asked if she meant fly to Pensacola, FL on a commuter plane.

She said, "Yeah, whatever, smarty!"

Mary Landrieu (D) La. Senator called and had a question about the documents she needed in order to fly to China. After a lengthy discussion about passports, I reminded her that she needed a visa. 'Oh, no I don't. I've been to China many times and never had to have one of those."

I double checked and sure enough, her stay required a visa. When I told her this she said, "Look, I've been to China four times and every time they have accepted my American Express!"

A New Jersey Congressman (John Adler) called to make reservations, "I want to go from Chicago to Rhino, New York .."

I was at a loss for words. Finally, I said, "Are you sure that's the name of the town?"

'Yes, what flights do you have?' replied the man.

After some searching, I came back with, "I'm sorry, sir, I've looked up every airport code in the country and can't find a rhino anywhere."

"The man retorted, "Oh, don't be silly! Everyone knows where it is. Check your map!"

So I scoured a map of the state of New York and finally offered, "You don't mean Buffalo, do you?"

The reply? "Whatever! I knew it was a big animal."

YES, THEY WALK AMONG US, ARE IN POLITICS, AND THEY CONTINUE TO BREED!

THE LIGHTER SIDE OF R/C



"Well, there's a servo for the flaps, rudder, elevator, ailerons, retracts, three throttle, and one for each stewardess....."

YOU MIGHT BE AN R/C MODELER IF...

By Bill Atkins, Byron, GA

- ... You have ever taken your plane off with the ailerons backwards and still landed it safely.
- You can program a multi-plane, 9-channel computer radio but can't figure out your VCR.