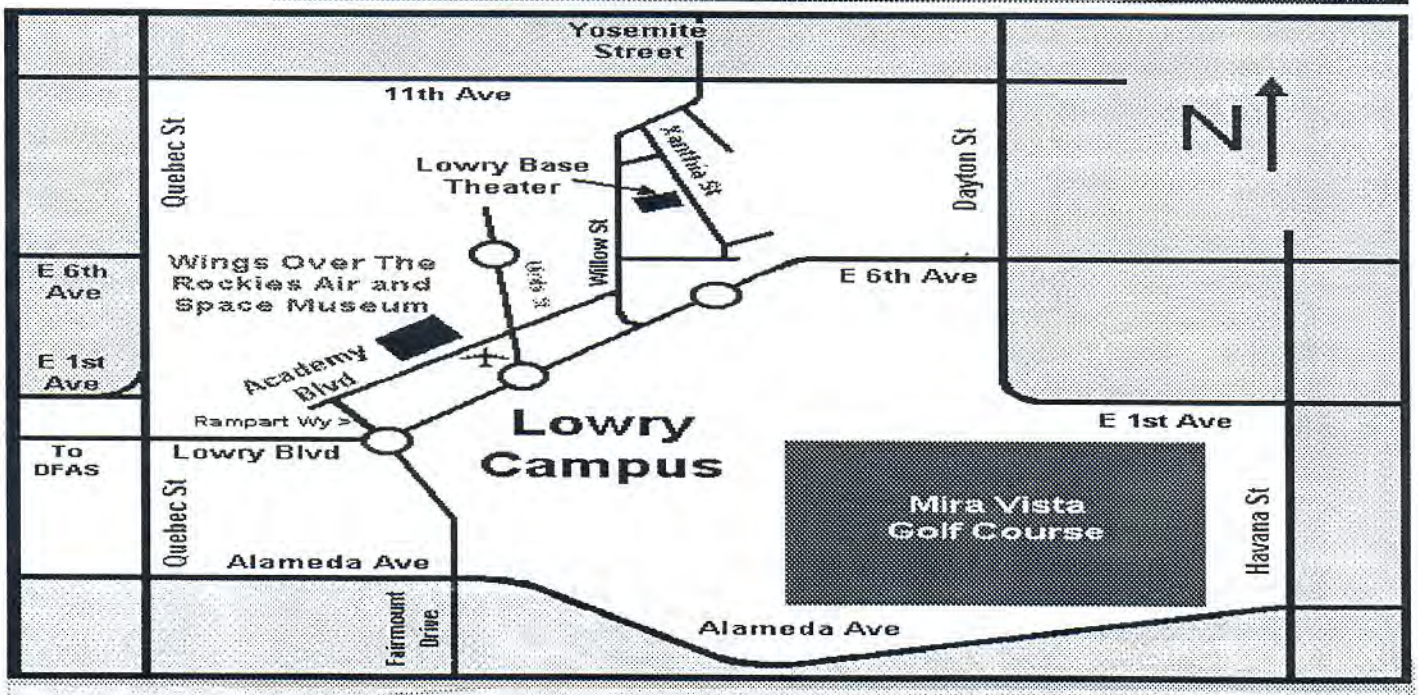
EAA MILE HIGH CHAPTER 43
Founded 1957

MILE HIGH FLYER

February 2001 VOLUME 25 ISSUE 2

This picture was shot at Oshkosh '96 as Dave Biesemeier was waiting in line for engine start to depart. Where else but Osh Kosh could a unique opportunity to get a shot of Dave's plane with the Gee Bee and an F-16 in the background occur.



FEBRUARY MEETING:**Saturday, February 10th, 4:00 PM**

This month's meeting will be at **The Wings Over the Rockies Air Museum, at** the Old **Lowry Air Base. A group dinner after the meeting is possible, bring your restaurant suggestions.**

January Meeting Minutes
January 14, 2001

The meeting was called to order at 6:10 PM by President Roger Standard at the Runway Grill in the new Denver Air Center Building at BJC.

DECEMBER MEETING MINUTES: M-S-P'd (Moved , Seconded and Passed by vote) as published.

TREASURER'S REPORT: Bob Wilson reported that we had $3268.15 in the chapter account.

GENE'S CORNER: Gene Horseman shared some of his aviation humor with us.

YOUNG EAGLES: Kelly Koop organized a Young Eagles rally for Cub Scout pack 73 from Louisville on Saturday, December 9th at Tri-County Airport. In appreciation of the effort, Cub Scout pack 73 presented an Eagle Feather to the members of Chapter 43.
In the Indian community, the award of the eagle feather is the highest honor. Our pilots and members gave the scouts the flying experience freely and without expectation or compensation, which is the message the scout leaders want to teach the scouts. To give of yourself and your time to others. Cub Scout Pack 73 also presented chapter 43 with a certificate of appreciation. Cliff Begnaud was presented with a hawk feather in appreciation of one of his young eagles flying experience.

Kelly has a request to fly 6-8 handicapped Young Eagles. They would like at least a four place aircraft for the Young Eagles and their assistants. If you would like to help with this request, contact Kelly at 303-914-9687.

There is a fly-in scheduled for February 27 in Pueblo. Pam Klingerman has ask chapter 43 to assist with Young Eagle rides. If you would like to help out, contact Kelly Koop.

AWARDS: Chapter awards were presented to Bill Mitchell, Dave Biesemeyer, Bob Wilson, George Hayes, Marv Wahl, Ron Denight, Glen Grove, Bob Lee, and Kelly Koop for the contributions they have made to the chapter in past year. Special thanks to Harrell Davenport and Don Coleman for providing the refreshments at the chapter meetings.

PROGRAM: Mike Gugelar shared an interesting part of his life with us as an Alaskan Bush Pilot. Mike presented a slide show that displayed the flying conditions (or lack of), the airplanes, and the vital role that these pilots provide to the Alaskan people.

WORDS FROM THE DATA BASE MANAGER TO UNPAID MEMBERS

I have set the March meeting, (March 10, 2001) as the cutoff to be listed in the 2001 Chapter Roster. Please check your mailing label on this newsletter. If it says anything but "01" after your name, you are not a 2001 paid-up member. This means that you will be dropped from the books effective March 11 when I finish the roster for printing. The roster should be available for members pickup at the April 14 meeting.
Gene Horsman, Data Base Manager

!!! Please inform Gene Horsman if you prefer to receive the newsletter at WWW.EAA43.ORG Even if you have previously done this. We seem to have misplaced the Email list.!!

The map to the Wings Over the Rockies museum is on the front page. The Lowry campus can be entered from any of the following four major intersections: Lowry Blvd at Quebec St, Sixth Ave. at Dayton St., Yosemite St. at East 11th Ave., or East Alameda at Fairmont Dr. The phone number at the museum is: 303-360-5360.

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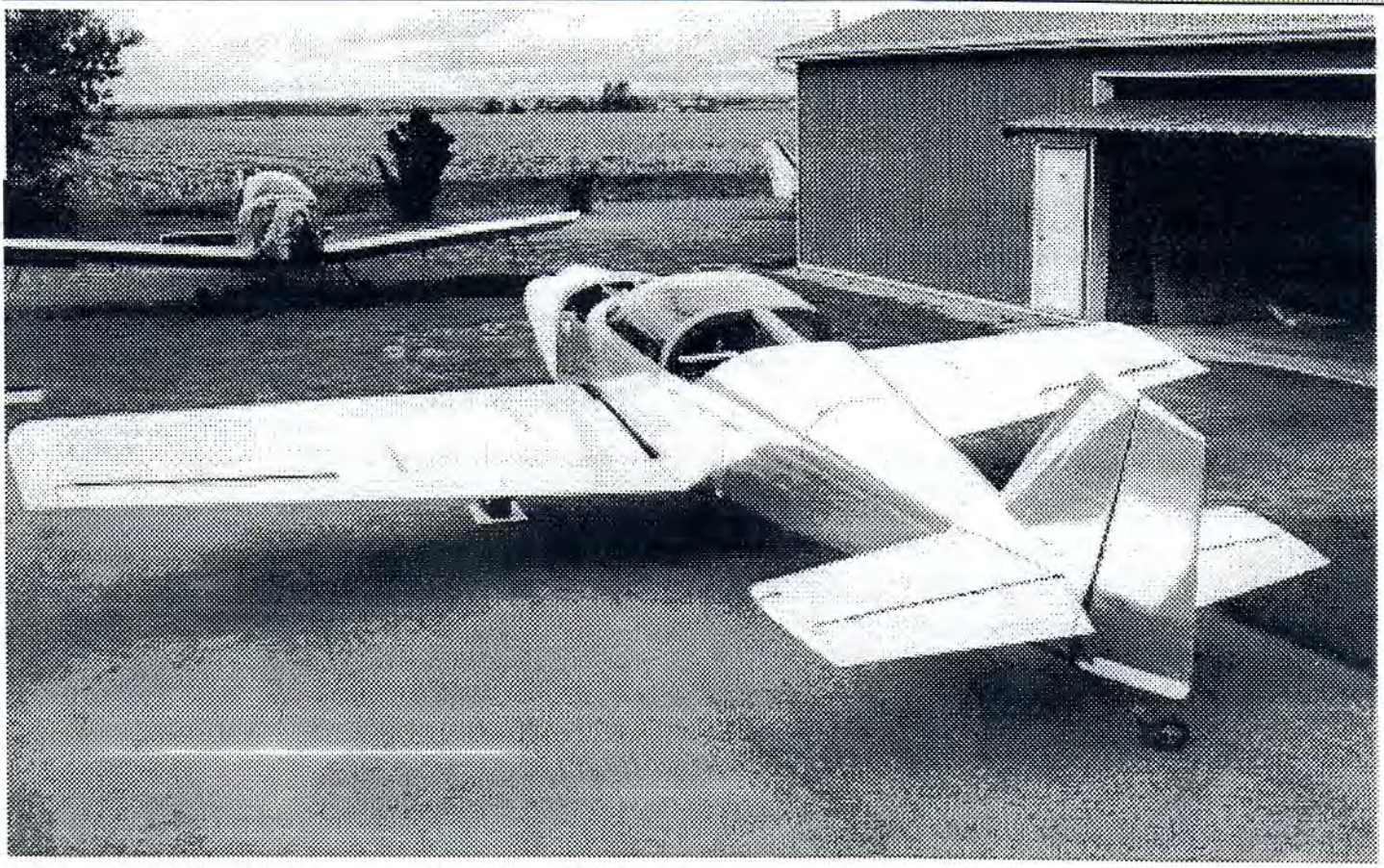
Recently our treasurer, Bob Wilson, had an occasion to meet up with Cole Kugel, the man who started the Longmont Airport. Cole is 98 years old and is still legally flying and it is believed that he is the second oldest, still licensed pilot, in the U.S. Isn't that something for all us to shoot for?
Gene



I thought some of you might like to see this... It's an RV-6 with a one-off designed wing that tapers...

http://www.ontariorvators.org/members_pages/fried.htm

Some info on the design (from the designer, posted to one of the RV-forums):

To use the fuselage design without modification, the wing chord at the fuselage side is unchanged (58 in. @ Y=22.5 in.). Inboard of this point the spars mate to the fuselage in the usual way.

Although the structure has been restressed and resized as required, it goes together like the standard wing. Things generally scale down moving out toward the tip.

The airfoil section, incidence, dihedral and twist are unchanged. The mainspar remains at 30% chord and is unswept.

Aspect ratio was increased from 4.76 to 6.0 Fixing the span at 25 ft. set the average chord to 50 in. at Y=75 in.. With the chord known at the fuselage side and mid span, a linear taper gave a tip chord of 38.6 in. at Y=150 in.. Wing area of the new planform is 104.2 ft.^2 compared with 111.2 ft.^2 for the rectangular wing. Each flap is 1 ft. longer and the fuel tanks one rib bay longer. Fuel capacity is 40 USG in total.

Building it was like doing the wing from scratch only more so. At last count I have 41 form blocks. The biggest obstacles were bending large radii and finding a long brake for the spar web.

Between the increased planform efficiency, extra flap span and reduced wing area, I figure that the stall speed will not increase noticeably.

A reduction in profile drag is expected due to the change in wing area. I'm not looking to be the fastest 6 around. For a given speed I should see something on my fuel flowmeter. The other way around, it may be a few knots.

Despite the wing area change there will be a induced drag reduction due to the higher aspect ratio. The climb rate should improve by a few hundred feet per minute. The rate of speed loss should be reduced when maneuvering at low speed on approach.

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Reynolds Number Contributed by Jim Loyd

Take a walk on the beach. Your feet sink deliciously into the warm sand. Now scale yourself down to the size of a flea on the same beach, and try to get on with your walk. Help! You're tripping and stumbling among knee-high boulders, and you hardly make any headway at all.

The same principle applies to airplanes moving in air. Air is really a granular substance, like sand, made of separate molecules a certain average distance apart, and with a certain "stickiness," or mutual friction. You can scale down the airplane, but you can't scale down the air. So the same airplane behaves differently at different scales, or, to put it anthropomorphically, air "feels" different to airplanes of different sizes.

The relationship between the size of an object and the feel of a fluid medium surrounding it is summed up – and has been for a century now – in a wonderfully powerful mathematical shorthand called the Reynolds number.

The discovery of Reynolds number, or RN as it is usually abbreviated, arose not from aerodynamics but from plumbing. The size of pipe needed to carry a certain flow, and the amount of pumping power required to overcome the resistance of a pipe over a given distance, are fundamental problems of hydraulic engineering. Effort at experimental measurement had yielded baffling discontinuities and apparent contradictions. Fluid flow was a Jekyll-and-Hyde kind of phenomenon, swapping identities and behaviors for reasons that seemed to defy comprehension.

Osborne Reynolds (1842-1912) was a classic absent-minded professor. Irish born, a lifelong professor in engineering at the University of Manchester in England, he was known for sometimes drifting off in the middle of a lecture and working out the mathematics of his newest insight on the blackboard while bewildered students twiddled their thumbs. Reynolds was, however, an original scientific thinker with the practical instincts of an inventor. He did significant work in several areas, but his most lasting contribution was to the field of fluid mechanics.

The experimental apparatus that led to the discovery of Reynolds number can still be seen today in a gallery documenting his work at the University of Manchester. It consists of a horizontal glass pipe with a trumpet-like flared inlet. The pipe is immersed in a tank of water and vents to the outside. Reynolds would open a valve to allow water to flow out through the glass pipe; at the same time, he allowed a small nozzle to inject a fine stream of dye into the pipe's inlet. Reynolds could control the speed of flow in the glass pipe and watch the behavior of the filament of dye running through it.

He observed the same phenomenon that one used to observe back when indoor smoking was permitted. Just as smoke would, in still air, rise several inches from a cigarette in a smooth stream and then abruptly burst into disorderly eddies, the dye stream would remain perfectly straight and coherent at first, then explode in turbulence and lose its identity in the larger stream.

Today we call the two types of flow Reynolds observed laminar and turbulent. In laminar flow (see "Go With the Flow," June/July 1995) the path of each small packet of fluid – a "packet" is an arbitrarily small volume, but much larger than a single molecule – is parallel to those of it neighbors. The flow resembles well-combed straight hair. In turbulent flow, on the other hand, small whirls and eddies develop in the overall show, so that as they all travel downstream, each packet of fluid moves in a different direction from its neighbors.

Reynolds discovered that whether flow in the pipe remained laminar or became turbulent depended on a simple arithmetical relationship of four factors: the diameter of the pipe, the speed of the flow, and the density and viscosity of the fluid.

Laminar flow has only half as much resistance as turbulent, so engineers try to maintain laminar flow over as much of an airplane's surface as possible in order to reduce drag. But the significance of Reynolds number goes well beyond simple drag reduction. Reynolds number is a "similarity parameter" that allows designers to account for scaling effects and for different regimes of operation.

Here is Reynold's equation:

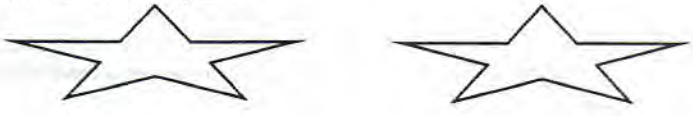
$$RN = VDr/m$$

Despite the Greek symbols rho ® and mu (m), this is a very simple expression with very clear implications. V is speed, D is a dimension – in the case of wings, it is chord, the distance from the leading edge to the trailing edge – r is the density of the fluid, and m its viscosity. Once you pick your fluid it gets even simpler, since r/m is a constant. Its value is about 6,400 in air at sea level, so to get the Reynolds number for ordinary airfoils flying at low altitude all you have to do is multiply the length of their chord in feet by their speed in feet per second, then multiply that result by 6,400.

Since you multiply by speed, density, and size but divide by viscosity, it follows that as the speed, density, or size increases, the Reynolds number increases, whereas as the viscosity increases, Reynolds number decreases. The fact that flows at similar Reynolds numbers behave similarly implies that, for example a slow flow in a think fluid behaves just like rapid flow in a thick (more viscous) one. Or a small object in a thin fluid is similar to a large object in a thick fluid. One of the convenient consequences of these relationships is that the Reynolds number of the keel of a sailboat, operating at low speed but in a relatively dense medium, is similar to that of an airplane wing traveling many times faster in air; so all the research done to create airfoils for airplanes applies equally well to sailboats.

The almost magical power of the Reynolds number leads us to the strangest conclusion of all: Air feels to a gnat, the way oil, or even honey, feels to us. So flying, when you're very tiny, isn't flying at all anymore. It's swimming.

The laws of flight are consequently different for very tiny fliers. The things that aerodynamicists normally strive to optimize – airfoils, wingspan, surface smoothness – cease to mean anything at very small scale. The wings of small living fliers may even cease to be continuous surfaces, and may be replaced by collections of hairs more like palm fronds than wings. The smoothly curving flows that generate lift on the large scale are replaced by swirling eddies; tiny insects paddle rather than soar. Up to now there has been little investigation of practical aerodynamics at very low Reynolds numbers, so it is not yet clear how an extremely tiny flying machine ought to be designed. But one thing is already obvious: A tiny air vehicle, whatever it is, will not be a shrunken copy of a conventional airplane.



Roger Standard submitted the following website: www.kitplanesforum.com

Steve's Corner: FEBRUARY MEETING

PLEASE NOTE THE TIME AND LOCATION CHANGE!!!

This months meeting will be held at the Wings Over The Rockies Air & Space Museum. It will start at 4:00 pm with a guided tour of the museum and information on what the future holds for the museum. A business meeting will follow and hopefully we can hanger fly at a local restaurant afterwards. Roger said he knows of a couple of good places to go that are close by.
The museum is providing the tour and admission free of charge, but we decided at the December meeting that we would pass a hat for a donation to the facility. If you enjoy the museum and the aviation education benefits that it brings to the Denver community, please consider a membership in the organization.

If You Have To Ask You Can't Afford It!

FLASH !!! The Breitling Emergency watch has just been approved by the FAA. Designed for pilots and aircrews, the Breitling Emergency is an instrument watch with a built-in micro-transmitter broadcasting on the 121.5 MHz aircraft emergency frequency. Following a crash or forced landing, for example, the Emergency will broadcast a signal on which rescuers can home in. The watch thus serves as a complement to the aircraft's own distress-signaling equipment.

The Emergency's transmitter is activated by unscrewing a protective cap and pulling the antenna out fully. It will then broadcast for 48 hours. Over flat terrain or calm seas, the transmitter's signal on the 121.5 MHz aircraft emergency frequency has a range of about 100 miles assuming the search aircraft is flying at about 20,000 feet. It's range is about 20 miles for a search aircraft flying at 3,000 feet. It is a very light weight watch (84.6 grams) because it's case and band are made of titanium. It's movement is quartz electronic with analog and 12/24 hr LCD digital display. It also has a chronograph function plus a countdown timer, second time zone for Zulu time and an alarm.

Breitling is a famous name in Swiss watches and has been making fine time keeping instruments since 1884. The Breitling Emergency has undergone extensive testing by some of the world's finest airforce teams like the Biue Angels and the Thunderbirds. It is also the standard issue watch for Swiss fighter pilots qualified to fly the Saab Gripen.

This watch can ONLY be purchased by a licensed pilot and he or she will have to show their pilot license at the time of purchase. The watch's distress signal once activated can only be turned off by cutting the antenna necessitating the watch be sent back to Breitling for repair. This will be done free of charge for a real aircraft type emergency or they will charge $1800 for a false alarm. Needless to say don't unscrew the antenna unless it's for real as you could also be charged for search and rescue costs caused by the false alarm.

Heard At The Colorado Pilots Association Board Meeting:

The following information came from a couple of conversation topics at the January CPA Board Meeting.

Grandby will have DUATs very soon at the terminal building. No printer will be available but a computer with a direct tie phone system will be up and running within the foreseeable future. Unfortunately this is not a free service, but if you have a DUATs account you will be able to access it. A new AWOS system is also being installed at Grandby and should be operational very soon. In addition to these two new facilities, the airport is looking forward to a new runway in 2001 or 2002. Longer and wider than the present strip.

Speaking of AWOS: Colorado Mountain AWOS locations could grow by a total of 12, including both new passes and airports in 2001. They still need $200,000 to help fund the stations but expect that the funds will be granted this spring. Seven airports have already volunteered to split the cost of an AWOS system and that could help increase the numbers already planned for.

The FAA is setting up new VFR Waypoints to help GA around the Class B Airspace. They have requested help in setting up new waypoints from the CPA. What a switch, they are actually asking for our input!! We can expect to see the new waypoints appearing on sectionals next fall or spring 2002.

Walt Barbo and representatives from the CPA are fighting a new tower that threatens aviation-training areas in the Southeast corner of the metro area. They beat this tower when it was scheduled to go in just east of Front Range.

Southeast corner of the metro area. They beat this tower when it was scheduled to go in just east of Front Range. Now they are having to work with county board members to stop another attempt at a high elevation tower in one of Centennials high-density training areas. As Denver grows this problem is only going to increase.

Colorado Airports Make The List:

Jim Coyne, president of the National Air Transportation Association, has named 100 airports that he feels are the 'Most Needed Airports' in America. Seven Colorado airports were named:

Aspen-Pitkin County	Boulder Municipal	Centennial
Eagle County Regional	Glenwood Springs	Gunnison County
Yampa Valley Regional		

He and NATA consider these airports as critical for the growth of aviation and the nation's economy. The clear-cut common denominator with most of the seven is wealth in the community. The rest of the list also appears to center around money as well. Whatever the criteria, let's hope that they continue to fight and win the battle for our local airports.

Russian Aviation:

Have you ever wanted to travel to find out more about aviation? Bruce Hulley, a local (Front Range Airport) aviation instructor Colorado Pilots Assoc Board Member and aviation consultant will be leading a tour to Russia June 21st through July 2nd. The trip includes visits to the International Space Station Control Center (Star City), Moscow State Technical University, Museums, City Tours, Saint Petersburg (Leningrad) Aviation University for Civil Aviation and more.

Bruce is not new to Russian travel; this will be his 18th trip. If you are interested contact him at 1-800-262-4345 before March 1st. www.ftgj-airport.com/hulley

2001 AVIATION EVENTS:

2001 CHAPTER 43 MEETINGS:

Feb 10th:	Monthly Meeting –Tour of the Wings Over The Rockies Air & Space Museum – Denver (Meet at the museum at 4:00pm.)
Mar 10th:	
April 14th:	
May 12th:	Annual Picnic – Tri-County Airport – Don Coleman's residence
Jun 9th:	

OTHER REGIONAL EVENTS: (Bold print indicates an EAA sponsored activity)

Apr 8-14	**Sun-n-Fun EAA Fly-In - Lakeland FL www.sun-n-fun.org**
May 12	Just Plane Fun - Centennial Airport
Jun 9-10	**Virgina State EAA Fly-In www.vaeaa.org**
Jun 22-24	**23rd Annual Rocky Mountain EAA Regional Fly-In – www.greeleynet.com**
Jul 11-14	**Northwest EAA Fly-In - Arlington WA www.nweaa.org**
Jul 24 – Jul 30	**EAA AirVenture Fly-In - Oshkosh WI (note Day Change!) www.airventure.org**
Sep 7-9	**Goldenwest EAA Fly-In - CA www.gwfly-in.org**
Sep 7-9	**Mid-Eastern EAA Fly-In - Marion OH**
Oct 5-7	**Southeast EAA Fly-In – Evergreen AL www.geocities.com/~serfi/**
Oct 6-7	**East Coast EAA Fly-In - Toughkenamon PA www.eastcoastflyin.org**
Oct 11-14	**Copperstate EAA Fly-In - Mesa AZ www.copperstate.org**
Oct 19-20	**Southwest EAA Fly-In - Abilene TX www.swrfi.com**

EAA MILE HIGH CHAPTER 43

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Submission of articles, comments, or inquiries for publication in the newsletter are encouraged.

Meetings are normally held on the second Saturday of each month at 7:00 P.M. The place is determined each month.

Mile High Flyer

EAA MILE HIGH CHAPTER 43

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FIRST CLASS

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MILE HIGH-EAA-CHAPTER 43 DENVER

THIS MONTH'S MEETING:

SATURDAY, 4:00 pm February 10, Wings Over the Rockies Air Museum at Lowry Air Base

80501-4166 #3