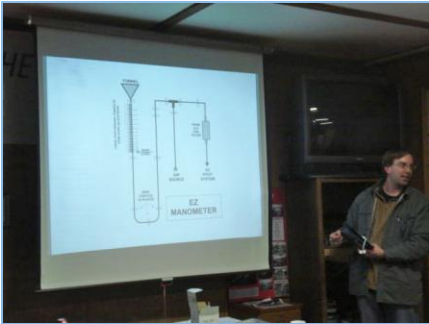


## Manometers

*By Marty Larson*



For those of you who missed the last meeting, or who want to be able to look up the article we used as a reference and build your own manometer, here's a quick review of what we learned.

To start with, what in the world is a manometer? Simply, it's a device to measure a very small pressure. How small? Well, 1 inch of water is equal to about 0.03 psi (that's not a typo). So, **be careful** with this!! It's very easy to apply way too much pressure.

And, why would anyone be interested in pressures that small? Well, altimeters measure static pressure and display the results in altitude, and air speed indicators measure dynamic pressure and display the results in knots (or, miles per hour). By using the manometer to apply and measure pressures, we can troubleshoot problems in our instruments and our pitot/static systems. Again, the pressures involved here are very, very small, so be very careful before applying a pressure to your sensitive instruments.

You can find instructions on how to build and use the manometer in the August 2006 issue of Sport Aviation magazine. What, you've lost it? Did you know that you can download copies of every issue ever published? Log on to [oshkosh365.org](http://oshkosh365.org), and look in the 'EAA Members Only' section for the archives. Make sure you only do this when you are focused on the task at hand; you might get distracted while you're looking around. For example, a search for 'Kraemer' brought up 57 references...



Now, to get the pdf file you'll need to print, go to our chapter's website, and click on 'Newsletters' on the main (left) menu. The 'newsletters' section is actually the only place on the website that we can put documents, so, expect more documents to be stored there in the future. Towards the upper right portion of the main section, there is a drop-down box with 'Categories...' selected. You can click that, and filter out everything except 'Maintenance Tips.' There you'll find a pdf file with the scales used with the manometer and a diagram of the system.

When you print this, make absolutely sure that it gets printed at 100% size, not scaled down (or up) to fit your printer margins. Measure it! The bold scale on the left is for 'inches of water' pressure. The hash marks for each inch should be exactly 1/2" apart.

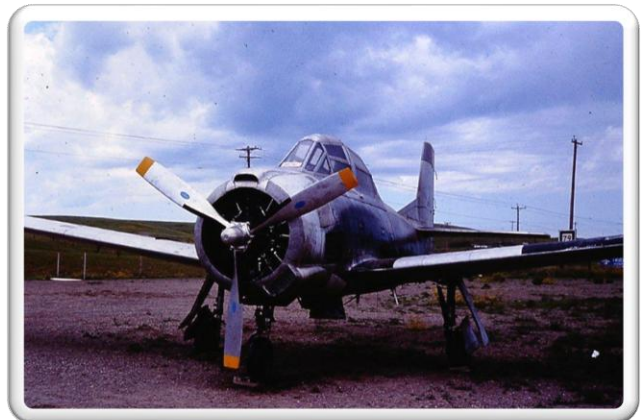
If you've made it this far, you're home free. The construction and usage are both very simple. Just make sure you spend a few minutes practicing before you put a real instrument on it (I know, you've already heard that). Have fun!



These from Rob Burton:



*Found this old photo from 1969 of what I believe to be Arnold Kolb's fire bombers at the Spearfish airport*



*Another old one, the T-28 that was operated by the School of Mines hail suppression program back in 1971, Institute of Atmospheric Sciences. Seen here parked just off Hwy 79 south of Rapid City after a forced landing due to engine failure. Note the oil along the fuselage and the Hwy 79 sign just above the left wing. Also note the added structure on the canopy, needed to protect the cockpit when penetrating thunderstorms.*

**The first German serviceman killed in WW II was killed by the Japanese ( China , 1937). The first American serviceman killed was killed by the Russians ( Finland 1940); highest ranking American killed was Lt. Gen Lesley McNair, killed by the US Army Air Corps. So much for allies.**



# The Prez Sez...

*by Darrel Sauder*

Well, not so good flying weather lately. Not even still mornings or evenings. I have turned my Tannis heater on and off four times without cranking the engine even once. I've been to Sturgis twice only to turn tail back to my house because of Marya (Ma-rie-ya) (or however you spell it) ...the name of the wind in the 1960's western movie titled "Paint Your Wagon". However, we can still dream of flying, talk of flying, work on flying related projects, and get our annuals completed. How about reading up on some regulations and accident reports. (This is, of course, a last resort when you have nothing else to do, are really bored, or need something to make you sleep.)

In addition to the above, how about the novel idea of preparing a story to tell at our upcoming meeting? Obviously, if all of us prepare, we will not have time to hear everyone's story. That is why we will continue to do the same thing at future meetings until all who desire will have told their story.

Speaking of stories; Bruce Bowen told a very interesting story of his misadventure in his Cessna 140. Marty Larson followed and turned a potentially boring subject, i.e., how to build and use a manometer, into an entertaining and informative presentation on the ins and outs, logic and mechanics of using a board, plastic tubing, and chart to test static aircraft instruments. Thanks to both of you guys for sharing with us.

Sharon and I are planning a little escape for a few weeks to Arizona. She insisted I break the trike down, place it in its' cargo trailer and take it along to look at Monument Valley, The Meteor Crater, Superstition Mountains, and the area around Phoenix and Tucson. I fought it for a while but finally caved in to her wishes. It remains to be seen if 43 years of marriage will withstand this one.

Spring is coming and along with it some good flying days. Meanwhile, stay warm and....

Don't forget to floss.



*Bruce talked about what he has learned from his experience.  
See page 8 for his story.*





1960s Convention at Oshkosh

**Next Meeting:**  
Tuesday, March 12  
at **Chapter 39 Clubhouse**

**6:30 Social**  
Treats will be provided by Al & Molly

**7:00 Meeting**  
**Program:** Storytelling: Members/guests will share the good, bad, or ugly of their flying experiences.



## Chapter 39

### Officers

President	Darrel Sauder
Vice President	Dan Benkert
Secretary	Gary Schroeder
Treasurer	Milo Schindler

### Volunteers

Newsletter & Web Manager	Molly Benkert
Young Eagles	Rick Belsaas
	Jerry Petersen
Safety Officer	Jerry Densmore

**Tech Advisor** Randy Daughenbaugh

## Upcoming Events

**Starting Oct. 5** **Weekly Friday Gathering of HSR Wind Socks** Hot Springs Airport on Fridays from 9:30-11:30. Coffee, treats & conversation.

**EAA Webinars** Register at  
<http://www.eaa.org/webinars/>

**March 6** **Five Secrets of Cost-Effective Maintenance** 7 pm

**March 20** **SD Air & Space Museum Speaker Series**  
SDASM, Box Elder Speaker: Norma Kraemer – Women's Aviation Week (Nellie Zabel Wilhite)  
6 pm

**March 20** **Rotax 912 Engine Maintenance and Inspection Tips** 6pm



### March Birthday:

18—Al N.

## TREASURER'S REPORT

*by Milo Schindler*

### Income:

Dues x 4.....\$80.00

### Expenses:

Jenny's Floral (Ellen's Funeral).....112.31

Balance on hand.....\$1696.26

# Secretary's Minutes

*by Gary Schroeder*

- Meeting was held at the clubhouse
- Darrel called the meeting to order at 7:00
- Minutes read and approved
- Treasures report given, balance \$1636.26
- Introduced Craig Goodrich and Patrick Ealy and his wife (with their Zodiac project)

## Old Business

- Great newsletter Molly
- Need more Me and My Airplane articles

## New Business

- “This happened to me “ we will try this next month
- EAFB Museum - Women of Aviation - March 4<sup>th</sup> – 10<sup>th</sup> . The 7th Norma will do a presentation “Women in Aviation in South Dakota”
- Rapid City Regional Airport open house - Darrel drafted a letter to clarify that we are willing to support this offered limited help
- Milo suggested the chapter pay more rent for the clubhouse, Scott advised that it isn’t needed at this time. We plan to look at this again possibly in June
- Hayward Air Rally requested assistance when they come through in route to Oshkosh
- Peter Bowen requested help finding a hanger for his stay in Rapid
- Darrel recommended to us the magazine Pilot Getaway
- Norma requested help with the flap adjustment on the tri-wing in the terminal – Patrick and Scott volunteered to help Feb 20 at 3:00
- Sail plane was noticed at the stock show, Marty and Charlie from the BH soaring club talked about the display
- Fast Team Meeting on April 6<sup>th</sup>
- Bruce talked about how he broke his airplane, to help others avoid similar accidents
- March treats Molly and Al

## Program

\* Marty did a presentation teaching us how to make and use a manometer to be able to test our own instruments

- \* Meeting adjourned

# Safety Notes

*By Jerry Densmore*

The following safety tips from Daedalian Foundation are excerpts from a Royal Flying Corps monthly safety report. The report was signed C. St. John-Culbertson, Royal Flying Corps, Colonel, and was dated 21 December 1917.

## INTRODUCTION

Another good month. In all, a total of 35 accidents were reported, only six of which were avoidable. These represented a marked improvement over the month of November during which 84 accidents occurred, of which 23 were avoidable. This improvement, no doubt, is the result of experienced pilots with over 100 hours in the air forming the backbone of all the units.

## RESUME OF ACCIDENTS

1. Avoidable accidents this last month.

- a. The pilot of a Shorthorn, with over 7 hours of experience, seriously damaged the undercarriage on landing. He had failed to land at as fast a speed as possible as recommended in the Aviation Pocket Handbook.
- b. A B.E. 2 stalled and crashed during an artillery exercise. The pilot had been struck on the head by the semaphore of his observer who was signaling to the gunners.
- c. Another pilot in a B.E. 2 failed to get airborne. By an error of judgment, he was attempting to fly at mid-day instead of at the recommended best lift periods, which are just after dawn and just before sunset.
- d. A Longhorn pilot lost control and crashed in a bog near Chipping-Sedbury. An error of skill on the part of the pilot in not being able to control a machine with a wide speed band of 10 MPH between top speed and stalling speed.
- e. While low flying in a Shorthorn the pilot crashed into the top deck of a horse drawn bus near Stonehenge.
- f. A B.E. 2 pilot was seen to be attempting a banked turn at a constant height before he crashed. A grave error by an experienced pilot.

## COST OF ACCIDENTS:

Accidents during the last three months of 1917 cost 317 pounds, 10 shillings sixpence, money down the drain and sufficient to buy new gaiters and spurs for each and every pilot and observer in the Service.

## ACCIDENT BRIEFS

No. 1 Brief No. 912 Squadron 3 December 1917 Aircraft type B.E. 2C, No. XY 678, Total solo - - 4.20 Pilot Lt. J. Smyth-Worthington, Solo in type -- 1.10 The pilot of this flying machine attempted to maintain his altitude in a turn at 2,500 feet. This resulted in the aeroplane entering an unprecedented maneuver, entailing a considerable loss of height. Even with full power applied and the control column fully back, the pilot was unable to regain control. However, upon climbing from the cockpit onto the lower mainplane, the pilot managed to correct the machines altitude, and by skillful manipulation of the flying wires successfully side-slipped into a nearby meadow.

Remarks: Although, through inexperience, this pilot allowed his aeroplane to enter an unusual attitude, his resourcefulness in eventually landing without damage has earned him a unit citation. R.F.C. Lundsford-Magnus is investigating the strange behavior of this aircraft.

No. 2 Brief No. 847 Squadron 19 December 1917 Aircraft type Spotter Balloon J17983, Total solo 107.00 Pilot Capt. \* \* \* , Solo in type 32.10 Captain \*\*\* of the Hussars, a balloon observer, unfortunately allowed the spike of his full-dress helmet to impinge against the envelope of his balloon. There was a violent explosion and the balloon carried out a series of fantastic and uncontrollable maneuvers, while rapidly emptying itself of gas. The pilot was thrown clear and escaped injury as he was lucky enough to land on his head.

Remarks: This pilot was flying in full-dress uniform because he was the Officer of the Day. In consequence it has been recommended that pilots will not fly during periods of duty as Officer of the Day. Captain \* \* \* has requested an exchange posting to the Patroville Alps, a well known mule unit of the Basques.

No. 3 Brief Summary of No. 43 Brief dated October 1917 Major W. deKitkag-Watney's Nieuport Scout was extensively damaged when it failed to become airborne. The original Court of Inquiry found that the primary cause of the accident was carelessness and poor airmanship on the part of a very experienced pilot. The Commandant General, however, not being wholly convinced that Major de Kitkag-Watney could be guilty of so culpable a mistake ordered that the Court should be re-convened. After extensive inquiries and lengthy discussions with the Meteorological Officer and Astronomer Royal, the Court came to the conclusion that the pilot unfortunately was authorized to fly his aircraft on a day when there was absolutely no lift in the air and could not be held responsible for the accident. The Court wishes to take this opportunity to extend its congratulations to Major de Kitkag-Watney on his reprieve and also on his engagement to the Commandant General's daughter, which was announced shortly before the accident.

### **FLYING SAFETY TIPS**

Horizontal turns. To take a turn the pilot should always remember to sit upright, otherwise he will increase the banking of the aeroplane. He should NEVER lean over. Crash precautions every pilot should understand the serious consequences of trying to turn with the engine off. It is much safer to crash into a house when going forward than to sideslip or stall a machine with engine troubles. Passengers should always use safety belts, as the pilot may start stunting without warning. Never release the belt while in the air, or when nosed down to land. Engine noises Upon the detection of a knock, grind, rattle or squeak, the engine should be at once stopped. Knocking or grinding accompanied by a squeak indicates binding and a lack of lubricant.

### **WATCH THAT FIRST STEP**

The First Marine Air Wing had this write up in their Safety publication Wing Tips It was conceded by all that the pilot had accomplished a brilliant piece of work in landing his disabled machine without damage under the circumstances. It is not with intent to reflect less credit upon his airmanship, but it must be noted that he is a well experienced aviator with over 40 total hours in the air, embracing a wide variety of machines, and this was his seventh forced landing due to complete failure of the engine. It was doubly unfortunate that upon alighting from his machine he missed the catwalk on the lower airfoil and plunged both legs through the fabric, straddling a rib, from which he received a grievous personal injury. Some thought should be devoted to a means of identifying wing-traversing catwalks to assist aviators in disembarking from their various machines.

**The youngest US serviceman in WWII was 12 year old: Calvin Graham, USN. He was wounded and given a Dishonorable Discharge for lying about his age. His benefits were later restored by act of Congress. (see the movie" Too Young The Hero)**

# Reflections of a Pilot

*By Bruce Bowen*

My name is Bruce Bowen. I am just south of 70 years old. I have a current Student Pilot Certificate and a Third Class Medical. I have over 150 hrs of flight time, about 50 of which are solo. Unfortunately, about half of it was never entered in my log book but that's another story for another time. I am giving you these details because I feel they are important to the story I am going to tell you.

In 2003, my wife and I lost our youngest child to a drunk driver. Losing a child can consume you mentally and physically if you let it. A little over a year later, I suffered a heart attack and required coronary bypass surgery. During the short recovery time, I came to grips with the fact that I am rapidly "running out of somedays." It was always "someday I am going to learn to fly."

I grew up around airplanes as my father-in-law was a World War II pilot and operated an agriculture spray business for almost 40 years. He claims to have owned 23 different airplanes in his lifetime, including Bonanzas, a Swift, a Twin Bonanza, Cubs, AgCats, and Pawnees to name a few. I was sometimes the "flagger" before GPS and wing mounted flagging systems. He had an old Chevy pickup and on the left front hubcap he mounted a steel tube with a ball bearing in it. I would park on the road at the end of the field and he would line up on me for the first pass. I would then drive up counting the clicks on the hubcap and he would line up on me again.

A question I often asked is: How can you accumulate so many hours and not get your Private Pilot's License? When I decided to learn to fly, I wanted to get my own airplane. I decided to buy a Cessna 140 and started searching on Trade-a-Plane and Barnstormers. In 2006, after several months of searching, I found a nice 140 in the Dayton, Ohio area. I did the customary diligence and made the purchase. I found a local young man who was all too willing to go get the plane for me and within a few days it was sitting at a local airport. I started instruction almost immediately but just couldn't get the hang of safely landing a tail wheel airplane. My instructor told me that when I could do 3 perfect landings in a row, I could solo. (I am still waiting for the 3 perfect landings to happen). I tried to fly as often as possible but so many things seemed to get in the way. The recession was beginning and my business was slow, so I had to spend more time there than planned and weather in the Hills is always a factor.

In 2009, the instructor I was using decided to quit instructing and I was really working hard in business, so I didn't fly again until the spring of 2011. I found a new instructor and after 6 hours of instruction I soloed. I really started to enjoy flying and did so several times a week but as time went by, things started getting in the way again and in the spring of 2012, I decided to get busy and finish up. I called the instructor and he was no where to be found. So, I located another instructor (my third) and started lessons again. In July, I drove over to Belgrade and passed the written test. I asked the young lady who administered the test if I was the oldest person she had ever tested? She very tactfully replied "close." By August I had completed my dual cross country, and was ready to do my solo cross country flight.

On Friday afternoon, August 24<sup>th</sup> 2012, my instructor came up to my hanger at KSPF and we did all the prep work for the solo flight to Wall, over to Phillip and back to Spearfish. He made the endorsement entry in the back of my log book and I was all set. I got up early the next morning and with much anticipation, raised the hanger door, rolled out N140XX and did the most thorough pre-flight ever. I think I dipped the tanks twice! The run-up was normal as was the takeoff. It was a great flight over to Wall flying into the sun. I landed at Wall, walked over to Wall Drug and had a nice breakfast. I took off from Wall and made a short flight to Phillip. I taxied up the pumps, got out for a stretch and filled the right tank from the self serve pump. I took off for KSPF and the flight was uneventful.



When I was approaching KSPF, I made the proper radio calls and crossed 31/13 just to the left of midfield and turned downwind for a landing on 13. When I applied carburetor heat the engine immediately started running rough and went down to about 1000 rpm. I immediately started a slow right turn for the runway, at the same time trying to think of all the emergency procedures I had been taught. Nothing seemed to help until I was over the runway and the engine seemed to catch and the rpm went up to about 1800. By this time, I felt that I was too far down the runway for a safe landing and I pushed the throttle in and radioed for a go around. The engine seemed to be picking up rpm and I wasn't losing altitude so I turned cross wind across the interstate and the engine immediately started running very rough and the rpm went to idle. I had a nice flat field in front of me so I cracked open the door and felt I had a very good chance to save myself and the airplane. When I was about 50 feet I looked ahead and saw the remnants of a barbed wire fence. I was getting very slow but felt that I could clear the fence. Unfortunately, I was about 4 inches too low and the tires caught the only wire on the fence. The plane immediately nosed over with the landing gear hitting the ground first, then the nose and finally it went over on its back and slid about 50 feet.

When the dust literally settled, I thought wow, I'm still alive. I unhooked my shoulder harness/seatbelt and crawled out. I walked back about 30 yards and was immediately struck by the damage to my beautiful old airplane. I didn't seem to be hurting anywhere so I felt very fortunate about that.

When something like this happens, I think there should be no looking back but rather analyze what happened, and try to become a better pilot and hope what you learn will help you in the future. I can't tell you how much could-a, should-a, I would-a advice I have received. Some of it has been of value but it wasn't there when I was going down.

Here are some points for consideration.

1. Learning to fly in your mid 60s is not easy—certainly not as easy as if you were college age or younger. One of the most difficult parts was the study I did for the written. I took Bob McNew's ground school at Spearfish and I couldn't have passed without doing that. As part of his course, the students receive the online Gleim study guide. That was very helpful as well. I will always remember how my heart was pounding when I pushed the "Grade" button on the computer when I was finished with the test in Belgrade. That said, if you want to learn to fly regardless age, go for it!
2. Do everything possible to maintain your airplane to the safest possible standards. Many of us are flying airplanes that are old! Mine left the Cessna factory in 1946. It is easy to get complacent when it comes to maintenance. My airplane was annualized the day before the crash. In my opinion, you should always keep your log books in your possession and examine maintenance entries and ask questions. In my case the people doing the maintenance always kept the log books and I don't remember looking at them more than once or twice in all the time I owned the airplane. The first instructor always kept my pilot log book as well—bad idea.
3. When there is an airplane crash, LOTS of people show up. Some are genuinely concerned about your safety and are helpful. Some however, come purely to see the blood and gore! It seems everyone is on their cell phones. In my case calls were made to the local police, the county sheriff, 911, FAA, TSA, NTSB, Homeland Security, two different tow truck companies, and many others. One of the first to show up was the person that did the annual. He quickly took me off to the side and told me: "Tell them you lost the log books." That was really comforting!! I fully expected the FAA and/or the NTSB to come immediately but you have to remember it was the weekend. The FAA came to my hanger the next week but I have had no contact from any other officials.

4. What caused the engine failure? On a Cessna 140 with an original type exhaust system there is a heat muff around each side of the exhaust that provides cabin heat and carburetor heat. The muffs are two pieces and are clamped around the exhaust pipes at the top and bottom. On my airplane there was a wrap of fiberglass cloth between the muff and the pipe where it was clamped to the pipe to help seal. For reasons unknown, the clamps got loose and the fiberglass was sucked into the carburetor when I applied heat. The carburetor was full of it when the FAA removed it from the airplane.
5. Two FAA inspectors came to my hanger a few days after the crash. They examined the log books (which I had gotten back), my pilot log book and the airplane. They were courteous and professional. They informed me that I did not have a current Student Pilot Certificate and I would be cited for that. When I took my physical earlier in the year the cardiologist didn't provide all the necessary information to the examiner so he gave me a deferral. About 3 weeks later, I got a letter from Oklahoma City with a 3<sup>rd</sup> class medial certificate. I assumed it was also a Student Pilot Certificate because that is what I always received from the Dr. when I took my physical. That was easily resolved for me but my instructor had overlooked it as well and was contacted by the FAA. They took the carburetor with them and returned it to me after more careful inspection.

I am proud of the fact that I have maintained my 3<sup>rd</sup> class medical and intend to do so as long as I can. It is difficult for me because I have to take the physical every year and do a full cardiac



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### For Sale:

Rivet gun, bucking bars, various sized heads, CherryMax tool. Well used, but still able to build airplanes for years to come. You supply the air compressor. \$50

Contact Norma Kraemer: 342-2339

At the time of Pearl Harbor , the top US Navy command was called CINCUS(pronounced 'sink us'); the shoulder patch of the US Army's 45th Infantry division was the Swastika, and Hitler's private train was named 'Amerika.' All three were soon changed for PR purposes.