CORBEN COURIER

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The Chapter 93 monthly meeting will be held at 7:00 p.m., Thursday, July 19, in the hangar of **Jeff Plantz, Jay Martin** and **Jim Falk,** at Morey Airport, in Middleton, where we will look at Jay's RV-8, Jim's Zenith 601HDS, and Jeff's pontoons. Drive to the airport on Airport Road, park in main parking lot, walk down frontage road (Aviation Drive) to gate and be admitted by an attendant who will be there from 6:45 to 7:15. Then walk to second street, Delta Lane, turn right and go to hangar at 3317 Delta Lane.

Jay and Joan Martin and their RV-8

HARNESSING TECHNOLOGY TO HELP THE DISABLED

By Madeline Fisher for *Wisconsin Week, Feb.* *2007* Like most people, mechanical engineering professor Jay Martin never really understood the challenges of living with a severe physical disability until his teenaged son, Liam, was paralyzed in a diving accident in 1999. As Martin sat by his son's hospital bedside for 10 weeks afterward, the problems came to him in an anguishing torrent.

Desperate for solutions, he began to devise his own. "I kept noticing all of these things that could be so rapidly improved through the use of engineering and design," says Martin. When Liam developed his first pressure sore, Martin found a self-turning mattress that could prevent new ones. He dreamed up a system that would allow his son, immobilized in a halo vest, to call the nurse. He even saw how to better arrange the hospital room.

It just blossomed," he says. "I think I had an idea a day for a long time."

Martin couldn't know it then, but those private musings would become the foundation for a new research center at UW-Madison. Established in 2002, the Center for Rehabilitation Engineering and Assistive Technology (UW-CREATe) takes an engineer's approach to improving the lives of the disabled, the elderly and others struggling with physical ailments. That means meticulously researching and designing the best possible technological solutions to meet people's needs.

"We look at customer requirements and then we ask, 'How do we meet them and optimize [the design]?'" says Martin, who is UW-CREATe's director. If we don't think about optimization, we're not really doing design, and we're not really solving the problem.

Today, more than 10 faculty and staff researchers and four times as many undergraduate and graduate students carry out the center's academic goals of teaching, learning and research. But Martin also infuses UW-CREATe with something more: his will to see its technology in widespread use one day.

"We want to have an impact on the lives of people with disabilities," he says. "That's going to be our criterion for success."

At the time of Liam's accident, Martin was director of UW- Madison's Engine Research Center and had studied internal combustion for nearly 20 years. But upon returning to work after his son left the hospital, he found that disabilities, rather than engines, were constantly on his mind. He soon began pondering a switch to research on assistive technology.

He first discussed the notion with his mentor, mechanical engineering professor emeritus John Mitchell. Martin half-expected Mitchell to caution him against making a hasty decision. "But his response was, 'Wow, this is a great idea,'" Martin says. His department chair was equally enthusiastic.

Pretty soon, other mechanical engineering professors, including Frank Fronczak, Nicola Ferrier and the late Terry Richard, started expressing their interest in doing similar research.

"Before I knew it, we had a little group going," Martin says.

In the years since, their work has included robotic systems to aid the disabled, a hybrid gas-electric power source for wheelchairs and a glove-like device to restore function to inanimate hands. More recently, mechanical engineering professors Heidi Ploeg and Darryl Thelen have added projects to address problems brought on by age, injury and disease, including improved hip replacement systems and surgical methods to correct gait.

Given the myriad challenges people with disabilities face, deciding where to focus next can be tough, says Martin. "I try to pick on things that I think are the most critical to quality of life," he says. "That, and safety."

In fact, an accident suffered by a disabled colleague precipitated one of his recent projects. Joe Entwisle is a policy analyst who works with UW-CREATe on issues such as barriers to employment for people with disabilities. Like many people who can't move their limbs, Entwisle drives an electric wheelchair with his mouth using a control system known as a "sip and puff." One day, as Entwisle test-drove a new wheelchair down the sidewalk, the sip and puff became disconnected from the chair's electronics and motor, leaving him unable to steer or stop just as he needed to turn right.

"At that point I knew there was nothing I could do," he says. "I was going straight for the curb."

As the chair hit the street, Entwisle toppled out, breaking his shoulder and suffering a mild concussion as a result. When he told Martin about the incident a week later, the engineer was "pretty hot," says Entwisle. "He said, 'What do you mean there's no emergency kill-switch? You've got no way to stop the chair?'"

Soon afterward, Martin sent a pair of students to meet with Entwisle and figure out what could be done. Their solution integrates seamlessly with the sip and puff, yet gives wheelchair-users a way to stop, if the device fails, by simply activating a switch with the tongue or biting down on a sensor.

Their solution won an award last year from the Rehabilitation Engineering Society of North America, and Entwisle agrees it's "pretty slick." What impresses him most is how inexpensively the students put it together. "UW-CREATe finds technological solutions to problems that won't break the bank," he says.

The center will give Entwisle a prototype model of the kill-switch for his own use. But to get the technology into the hands of more people, UW-CREATe must forge partnerships with industry, says Martin.

It recently undertook one such collaboration with Bruno Independent Living Aids of Oconomowoc, Wis., a company of 300 employees whose products include stair-lifts for the home and devices for lifting wheelchairs in and out of vehicles.

Last fall, two teams of undergraduate students worked with Bruno's research-and-development engineers to design and evaluate new concepts for products outside the company's existing offerings. With their unfettered creativity and fresh eyes, students are perfect for this activity, says Dick Keller, Bruno's director of business development. "They really have no preconceived notions of what a product should be," he says. "I think that's very important at the conceptual state."

Although the relationship is just beginning and will undoubtedly evolve, Bruno has been pleased so far with the results, Keller says. "The students are finding some surprising solutions for the disabled people who our company serves. Whether their ideas result in a product remains to be seen, but they're certainly moving in some rewarding directions."

Over time, Martin has come to appreciate his own new direction. "The switch to this field was the best thing I could have done, because of what I've learned from the people I now work with and for," he says. "I'm a different person than I was five years ago."

One sign of the change is his renewed enthusiasm for design. "In some ways I love design so much, I don't care what I design," he says. "But I really want to come to work to design assistive technology. So, that's a huge benefit for me."

Even Martin's hobbies reflect his new-found passion. The small plane he recently finished constructing from a kit - and now flies all over the country — not only bears many of his design modifications, but a stencil of a wheelchair accessibility symbol, as well. He soon hopes to build a lift that can bring a wheelchair onboard. Liam wants to fly, too.

BOOK REVIEW

"Calculated Risk" The Extraordinary Life of Jimmy Doolittle, by granddaughter Jonna Doolittle Hoppes, 2005, Santa Monica Press, 321 pages, plus 24 pages of photographs, a good index, and bibliography for those who would like to read more.

This is the story of an outstanding pilot, as well as an outstanding person, that begins in Nome, Alaska, in 1900 when he was three years old, and ends with his death in 1993 at age 96. It has a lot of exciting flying, but it is also a love story. He was married to Josephine (Joe) for exactly 71 years, and he was a dedicated husband and father. In her own way, Joe was as outstanding as he.

His military career began with U.S. Army Air Force pilot training during WW I, being commissioned as a Second Lieutenant. Ronald Reagan added the fourth star to his General's rank in 1985. As the need for officers lessened between wars, Jimmy also flew for such companies as Granville Bros., Sperry, Shell, and TRW. To Jimmy, the Tokyo raid was just another assignment

During his career, Jimmy received 14 medals, such as the Congressional Medal of Honor. He was the first to cross the U.S. in less than 24 hours, the first to fly blind, the first to do an outside loop. He won the Schneider Trophy Race in 1925, the Bendix Trophy Race in 1931, the Thompson Trophy Race in 1932. Besides his medals, he earned 20 other awards.

I would rate the book as a must read. The book I read was loaned to me by Bud Rogers, and I thank him.

Fred Leidel

CAN YOU TURN THAT THING DOWN?

From a publication of American Society of Engineering Education,

Anyone who has lived or worked near an airport, especially below the flight paths, can tell you that earsplitting takeoffs and landings are one of the worst forms of noise pollution. Now comes a possible solution: the SAX-40, a conceptual design for a passenger jet that would reduce aircraft noise by a factor of 3,000. Folks on the ground would hardly hear a thing. The SAX-40 is the result of the three-year-old Silent Aircraft Initiative, a joint project funded by the United Kingdom government and involving Cambridge University, the Massachusetts Institute of Technology and about 30 aviation companies, including Boeing and Rolls-Royce. The SAX-40 certainly looks radical. The fuselage and bat-like wings blend together, creating a delta-shaped body that has no tail. That enables the entire aircraft to provide lift. The engineers used a variety of design concepts to turn down the decibels. The wings have no flaps. The engines are embedded in a body itself, to help muffle them. They also have variable-sized jet nozzles so the plane could use less propulsion for takeoffs and landings, but still have plenty of power for more efficient cruising speeds. While the main rationale for the SAX-40 was cutting noise, the plane would also be more fuel efficient, using 25 percent less fuel than today's air carriers. Colin Smith, director of engineering and technology at Rolls-Royce, says the initiative suggested "some highly innovative ideas." Clearly, he says, low-noise solutions will require the integration of "engine and aircraft design and operation." Engineers caution it will take until 2030 to bring the SAX-40 or some of its design elements to commercial fruition. So, if you live near an airport, don't throw away your earplugs anytime soon.

FLIGHT ENGINEER REPAIR REPORTS

Problem: Something loose in cockpit Solution: Something tightened in cockpit

Problem: Dead bugs on windshield Solution: Live bugs on back-order

SECRETARY'S REPORT

Chapter 93 Membership Meeting, June 21,2007

The Young Eagle Rally was held on June 9th and about 40 participants were given their first ride in an airplane. Thank you to all the pilots and ground crew who made this event for these young people.

Gary Chenier gave a report on the activities that were performed on the EAA work weekend. Gary informed the Chapter members about the donations for the Ford Tri-Motor event A sign-up sheet was passed around at the meeting for members to sign up to help with the event. The next event will be on the 26th of August 2007 (Brat & Bean Feed); please keep the date open if possible.

Our speaker for this meeting was **Eric Paradise** and the members kept him busy answering questions about engines and aircraft. It was a very interesting and informative session. Thank you, Eric, for accepting the offer to speak at our meeting.

Earl Martin

CLASSIFIED ADS IN FLYING MAGAZINE, 1947

AERONCA Champion, new April 12, 1946. Always hangared, never cracked. Excellent condition as it has been operated by an A&E mechanic. New 100 hr. check. First $1950 takes it. H. E. Stevenson, Globe, Ariz.

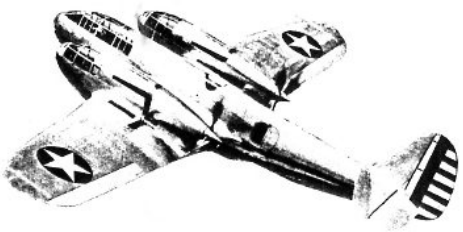
AERONCA Super Chief, 1941. Continental 65. 215 hours on engine. 800 hours on plane. Privately owned and hangared. Mechanical starter. Excellent condition. $1950. J. E. Weiler, 204 W. 32nd St., Austin, Texas.

AERONCA Super Chief, 65C, NC23599, Continental twin ignition 65-hp engine, total hours 850, only 20 hours since relicensing, always hangared, a sweet flying ship for only $1500. Walter H. Nelson, 433 Chapin St., Cadillac, Mich.

AIRCRAFT IDENTIFICATION

This multiplace fighter aircraft was built for air-to-air combat. It carried a crew of five, six guns and a light bomb load. Never operational, it was one of the "cuda" series. Who built it and what was it called?

Last month's airplane was the Boeing AT-15, used for tactical training by entire crews. Equipped with wing racks, it could be used as a small bomber.



PRESIDENT'S REPORT

High heat and humidity didn't deter some very dedicated volunteers from having a successful Ford Tri-Motor tour stop last weekend. We sold more than 200 rides, but won't know our profit for awhile. Everyone involved got a ride and some of us even got some stick time. Thanks to everyone for their hard work.

Our next chapter event will be our Brat & Bean Fly-in and Young Eagle event on August 26. **Scott Nolioske** will again have the sign-up sheet at this month's meeting. I am told that the tent we purchased is almost ready to go. **Dan Payne** and others have been working on making poles.

AirVenture is already here! I hope all of you can spend some time there. I won't be at the meeting because I will be in Oshkosh working. I work in the Jeppesen tent, on the east side of Building A. If you get a chance, stop by and say hello. In my absence, Don Ripp will be running the meeting - that is if he has made it back from his Alaska motorcycle trip.

Fly safely! *Gary Chenier*

Advertisements

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EAA Chapter 93 publishes *Corben Courier* once a month for and about its members who are interested in all phases of aviation. Articles to be submitted must reach the editor by the first Saturday of the month. Meeting night is the third Thursday of the month unless otherwise stated. Members may advertise items free of charge. Business card size ads are $5 per month or $50 per year.
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