

PHILIP

There is no pizza for me because I'm going to talk about Oshkosh.

GREENSPUN:

So what is it? It's end of July every year at a big, a physically big, but otherwise not very busy airport in Wisconsin. And about 10,000 airplanes come in. People camp out. People hang out, usually at least 100,000 people a day.

There's a Boeing. There's a C-17 cargo plane. A lot of experimental-- it's founded by the Experimental Aircraft Association. So there's a lot of people who are passionate about home-building there. You can see all the airplanes parked.

There's 12,000 camping sites, 40,000 campers. There's 1,500 workshops and seminars that you can take to learn. Or you can just walk around and talk to people, and hang out.

So I planned this trip for me and my friend Ray. He's a helicopter pilot from Ireland. And the idea was to fly to Niagara Falls and show him Niagara Falls, and on the way back go up to Mackinac Island. They saw automobiles about 120 years ago and they said, this is a terrible technology. It'll ruin everything. They banned cars.

The only powered air-- the only powered vehicle you can legally have on Mackinac Island is an aircraft. They do have an airport. Anyway, on the back, we were going to go to Toronto as well.

So we had to get all this stuff ready for international flying. I had it all carefully planned out where we were going to have 540 pounds of stuff, which is right at the payload of the airplane with full fuel. But then Oxana, who was just here-- she's an aerobatic pilot at East Coast Aero Club-- she said she wanted to come too. So then we had to add a fuel stop. There's our merry band of three people. There's a whole bunch of camping gear in the back that you can't quite see.

Oshkosh becomes temporarily the busiest airport in the world. And you might say, well, how can that be? O'Hare has more flights. But they are only-- Oshkosh is only open about 10 hours a day because they close the airport at night. And they close it also for a few hours every afternoon for an airshow.

This is somebody's iPad, I think, a screen capture of airplanes flying in and around Oshkosh.

And these are only the ones with the newest ADS-B out transponders. So it doesn't show, probably-- this is probably only 20% of the total airplanes.

You have special arrival rules. If you're not a sissy, then you have to fly in visually, circle around until it's your turn. And then they'll tell you you can't use the whole runway. You have to land on one of these dots. They'll say, land on the green dot.

If you are a sissy, you file IFR, get your IFR reservation with this DOS grade computer system, confirm it with this DOS grade computer system that nobody else wants to deal with, and then you get the whole runway, and you just land.

All right. Here's a picture of the multifunction display. No, actually, I guess this was in FlightAware later. This shows that we diverted a bit. From Bedford, we ended up going up to Watertown, New York, so we didn't-- we could have-- legally, we're instrument rated and everything. We could have flown through these rain showers. But it's always smarter just to go around if you can.

OK. So we flew over Niagara Falls. We landed. We had that whole runway to ourself, about 10,000-foot runway. And it's actually oriented east-west. So we actually just-- essentially, we could have done the same heading basically from Hanscom Field all the way to the end of the runway and where we turned off.

You get there. And there's just-- I don't know-- 30 P-51 Mustangs right next to your tent. There are people building this One Week Wonder, an RV kit, where you get to pull rivets. Oxana is actually here. And she can tell you about her experience helping to build that airplane. There you see your B1 bomber.

I love the antiques. Here's one from the late '20s, a Lincoln-Page airplane that has been recently restored and flying. There's that replica autogyro, a beautiful Cessna 170. That's an old Piper Comanche there on the right.

There's not a whole lot of helicopter action. There's a little bit. This is what's called a Safari Helicopter Kit. That's how you know that you have real confidence in your mechanical abilities if you build and then fly your own helicopter.

Piper Cub. This is a guy who stuck a Pratt and Whitney-- I think it's a Pratt-- PT6 engine into a Polish Wilga, a short field landing airplane. He added fuel tanks. It's such a fuel hog now that

he had to add extra fuel capacity in the struts and flies all around the west, going camping with his family.

All right. And that's called a Travel Air. There are a bunch of these. So these are airplanes from the '20s. People were just using them for transportation, throwing a friend in the back maybe and a tent and going and camping out at Oshkosh. So I think that's pretty cool.

There are only five of these Piaggio seaplanes, P136s, that still exist out of 63 that were built from 1948 to 1961. I saw two of them parked next to each other at Oshkosh. That's what makes it a unique experience.

Here's some kind of airplane doing a simulated bombing run. Meanwhile, a family is there in their personal DC-3 camping out.

Here's our little plane and the \$99 tent from Costco. It seemed like a great idea at the time. I think we have a slide on that.

OK. This kind of summarizes it. This is the unfortunate state of general aviation now. So we have the innovation showcase. And right in front of it, a Piper Seminole, which I think was certified in the 1970s and certainly a derivative of things going back a lot farther than that.

There were some interesting talks there, some heavy hitters. This guy Pat Anderson is a professor at Embry-Riddle. And he said actually that we haven't really seen anything in the electric aircraft world because in the early days of jets, they just took these piston airframes and stuck a jet engine in them. And they didn't perform that differently from the piston fighters. But then five years later, they had the swept wings and what we would recognize as the modern fighter jet. So it completely-- it was the jet engine did completely transform the aircraft, but not immediately.

So he said, you're seeing some of this now, where people take a little two-seat trainer and they remove the piston engine and put an electric motor with the propeller. But that's not really-- what we're really going to see are things that are much more like drones.

There is an Uber. There was a guy from Uber that was very interesting. Uber has aeronautical engineers working for them, designing aircraft, and then releasing the designs for free, hoping that people will make them. They're claiming that they're going to-- I don't know.

They've got to pay somebody off in the government to make this happen. 2023 they say

they're going to be operating in Los Angeles. Their idea is that the world is going to be so congested that people will pay up happily to hop over the congestion in relatively short hops. So Uber is putting a lot of money into this. They have some partners like Airbus, Pipistrel, the Slovenian company. We'll see what happens.

So some round-the-world pilots were there. Actually, I don't know how many you guys know this, but Matt Guthmiller, who was an MIT-- between freshman and sophomore years became the youngest person ever to fly around the world in a Beechcraft Bonanza. I mean, he was in a Beechcraft Bonanza and he was the youngest person to fly around the world.

But there's also-- at Oshkosh, we met this guy Dick Rutan who flew around the world non-stop unrefueled in a plane designed by his brother Burt Rutan.

What else is Burt Rutan famous for besides designing aircraft? Does anybody know?

AUDIENCE: [INAUDIBLE]

PHILIP What?

GREENSPUN:

AUDIENCE: Wasn't he on like a spacecraft?

PHILIP Spacecraft, that's true. But yeah, spacecraft and aircraft, but what else?

GREENSPUN:

AUDIENCE: Canard planes.

PHILIP Canard planes, those are airplanes. Climate change denial. Look it up. He's got like a 100-

GREENSPUN: page book about the scientific fraud of climate change.

But anyway, Dick Rutan. And the other interesting thing is before this nine-day flight, he was engaged to be married to Jeana Yeager and supposedly what I heard at Oshkosh was that they have not spoken since they landed in 1986. So in nine days, there can be quite a change in a relationship apparently.

We met this pilot Shaesta Waiz. I don't know if that's the correct pronunciation. She grew up in California and learned to fly relatively recently. And she also flew a Bonanza all the way around the world over 145 days. So that was interesting. She actually said it gets a little bit easier once you're out over the ocean from a weather point of view. She said except for the

Intertropical Convergence of the Equator, most weather is kind of a phenomenon of being over land.

To me, the most impressive round the world pilot, though, was actually an Italian guy that I met. He was in a Cirrus SR22. And he just flies to Oshkosh every year. He just loads up in Italy, turns the key, and goes. Every year, flies over the Atlantic, and then flies back to Italy when it's over.

So I thought that is actually the coolest thing, when it's not even an adventure. You're not going to write about it. You're not going to build a web page. You're not going to say you're changing the world or helping to achieve something. You're not going to set a record. You're just using your airplane for transportation. You want to get to Oshkosh. You have an airplane. So why should the fact that you're on a different continent stop you from doing it?

A lot of people have stopped doing home projects, home repairs. So Oshkosh, they actually have people that teach kids how to hammer, how to drill, how to cut sheet metal. There's a lot of great workshops there for kids.

We were over by the Pioneer Airport and the Museum. Here is the museum. They have a replica Wright Flyer, a whole area devoted to the Rutan designs. I don't know how many-- I don't know how many of you know the MIT spinoff Terrafugia. I guess-- I think it was 12-- at least 12 years ago, they said they were going to build a flying car. So I took a picture of this 1949 Taylor Aerocar, which is actually a certificated flying car and unfairly associated with Terrafugia.

So this guy is kind of an inspiration, I think-- Paul Poberezny, the founder of the Experimental Aircraft Association. He flew the most expensive and highest-performance aircraft of the day. He flew the P-51 Mustang, the P-38 Lightning. And then he came home and said, well, what's cool to do after flying a 12,000-pound-plus P-51 Mustang? Why not just go to the basement, get some plywood, nail it together, and build a really crummy plywood airplane? And that's what he did. So it just shows the joy.

You don't have to have a high-performance, state of the art airplane. If you build it yourself or you're goofing around, you can have fun. And he did. And he was a better pilot than [INAUDIBLE], I'm sure, in his P-51. So that made me think maybe we shouldn't be snobby about these home-built airplanes, because if it was good enough-- Poberezny had fun with it.

All right. So here's some examples of home-builts. Up on the left there, there's some kind of canard velocity. These folks spent 15 years building this helicopter. And they had about 40 hours of flight time on it. So to me, in a good month at a flight school, a Robinson helicopter might fly 90 hours or 100 hours in just a month. So it's taken them 15 years plus to get to where a flight school would get in a month. But that's kind of not the point. It's not about efficiency apparently. That's Rotorway kit, I bet. And they modified it by sticking in a little tiny turbine engine.

This is another modification. This is an old Rutan design that became the Berkut with a big piston engine. This guy stuck a turbo jet engine in it.

Here's the company-- yeah, 42,000-- I think that doesn't include the engine, which is under 50. You can build your own little single-seat jet.

Cirrus was there. Cirrus actually has been kind of an industry-changing company. It didn't seem that way at the time, because it's very similar in performance to Mooneys and Pipers, and Cessnas. But they really have revolutionized the way that families buy airplanes now. And they've got over 7,000 of them.

The parachute is, I think, critical to getting modern people to accept this design. And also the glass cockpit does make life easier. Although, everybody else has caught up there.

Here's the Icon A5. They have the same booth every year. A huge amount of excitement. People love it. A lot of people have ordered it.

They haven't figured out how to build it. The price has gone up to the point where you can almost buy a Cessna Caravan on floats with a jet engine for the same price.

Here is a retired Air Force and Southwest Airlines pilot with his electric self-launching Pipistrel glider. Pipistrel is the company to watch. They do a lot of interesting stuff in Slovenia, especially with electrics.

This is not the kind of radar picture you want to see when you're in a \$99 tent. I will say to Costco that it did hold up remarkably well. But it was scary.

The seaplane base a few miles away from Oshkosh. They have the Oshkosh seaplane base. I think it's on Lake Winnebago. So you take a shuttle bus or you drive over there if you have a rental car. So you'll see-- they call it the quiet part of Oshkosh. It's quiet because you only hear

about three or four aircraft engines running at any one time and maybe two takeoffs or landings. They have four hangars, vendors.

If you want to take your dog in an unpressurized airplane up to 18,000 feet, you can buy this kit. I don't know what our golden retriever would say about that.

There's affinity groups for different slices. Here's a woman who just like-- just for female pilots to Mooneys.

Air shows every day. My favorite acts actually were-- I did like the GameBird. That was cool. But I also liked these first two were kind of regular family airplanes just being pushed to their limits. It wouldn't be legal just to go out and do that in a Baron, because you can't do acrobatics. But he'll put it into experimental category, and then just fly it right up to the G limits for which it was designed. And it's amazing to see what these ordinary family or business airplanes can do when pushed.

There were-- one thing that's interesting, about 150 Beechcraft aerobatic Bonanzas were built. They were strengthened. And it is legal to do aerobatics in your four-seat Bonanza.

Night airshow. I guess that's worth showing. It is so unusual. They had explosives and fireworks mounted on aircraft. They fly around at night, shooting fireworks off. I guess you may have to view that on your own, which isn't so bad.

A lot of warbirds. Everything from World War II is still flying pretty much at Oshkosh. That Grumman Tigercat on the right, I'd never even heard of that airplane until I saw it at Oshkosh.

That's-- I think this is EAA's own B-17, which they fly around and sell rides in and stuff.

Oh, and up on the top right is a flying 1/3 Scale B-17 that some crazy guy spent 15 years building or more.

That's EAA. Also, they have a B-29.

Up there at the top right is my friend Eric with his personal-- I guess he's in the foundation with a few other people, but essentially a personal DC-3. Oh, and he's flying that to Europe this year for the 50th Anniversary of D-day. Is it the 50th? No, it can't be.

AUDIENCE: 75th.

PHILIP

GREENSPUN:

What? 75th. Sorry. Thank you. I was a math undergrad. Good illustration of the value of a Course 18 degree. And actually, when I was an undergrad, people said, how will you ever get a job if you're a math major? The engineers all said that. Well, we said, well, we can become actuaries. We can become actuaries.

There was a group of folks who were passionate about warbirds down in the south. And they called their organization the Confederate Air Force. Well, they've had to change that now. Now they're the Commemorative Air Force. And they're big into-- they brought the Tuskegee Airmen, some of the remaining P-51 guys from World War II there.

I gave a talk with NOAA. That's Kate from NOAA trying to get volunteer pilots to fly sea turtles back from Cape Cod and other northern places to Florida.

Sunday morning, it was time to leave. For me, I saw 30% of what we'd hoped to see and 1% of what there was to see. As you can see from the right, that One Week Wonder's coming together. It actually did fly, I believe, on Sunday. So they got it built in seven or eight days.

We went to Mackinac Island, beautiful place up near the Canadian border. Everything's horse-drawn or a bicycle. A fun place to go in the airplane. We went and landed in the Toronto City Island Airport, which is right in front of the downtown. We had Chinese food, saw the aquarium, landed back in Bedford.

So we burned off 15 hours of Hobbs time. Split by three people, that wouldn't be too horrible. It was about \$3,000 at retail. Next year, I think it might be time to go JetBlue.

So the summary is that even as the regulation has made light aircraft almost as expensive to operate commercially at least or for charter as the big aircraft, but Oshkosh keeps growing every year. More people are passionate about it. So what you're seeing in the aircraft world is like the very high end and the very low end are kind of prospering.

This is Oxana's thing. She asked everybody like, what brings you to Oshkosh? And they always said, the people, I love talking to the people here. And I feel that way, too. People go year after year. There's a whole bunch of links here in the presentation.

And finally, what I like most about it is-- and the reason I'm going back, I think, is it's my safe space. Outside of this room if I tell people I like to go over to Hanscom Field and fly this little four-seat airplane with a piston engine, they're horrified. They think that that's just so dumb. You could just drive in New York in your Honda. You could get a ticket on JetBlue for no

money. Like why would you do that? It's dumb. But Oshkosh is the one place where nobody will say that.