

KNOWING WHAT NOT TO DO IS IMPORTANT, TOO

A list of don't do's

BY BUDD DAVISSON

WHEN EDUCATING A POPULATION, it's really easy to spend so much time talking about the proper way to do things that we forget that it's equally as important to know what *not* to do. There is a whole litany of things we shouldn't be doing while building an airplane, and they compartmentalize themselves into material-specific groups: rag and tube glitches, metal mistakes, mistakes specific to wood, and those that are specific to composites. Each has a top-10 list attached to it of things not to do. However, at the very top of the list of lists is one that outlines those mistakes that wannabe builders make before they've even drilled their first hole.

The following paragraphs address what I see as common mistakes made while we're still in the "dream" stage of building. Nothing concrete has been done. We'll address the material-specific "don't do's" later. I'm certain every reader can come up with a list of his or her own things to avoid, but the following is a good starting point.

NOT ENOUGH PLANNING IS DONE SO WE UNDERESTIMATE EVERYTHING

When the building bug bites, a form of fever infects us all: We can hardly wait to get into the shop and start making sparks. Or sawdust. Or aluminum shavings. All of which indicate progress toward our dream. We all know building fever as a subliminal form of excitement that makes us grin at the thought of it. However, that feeling is a warning that we need to slow down and give this whole building thing some serious thought.

The areas that require planning are both obvious and basic, but they still demand we put pencil to paper (or finger to keyboard) and develop some real guidelines.

TIME REQUIRED

It seems as if there is never enough of anything when it comes to building an airplane, be it time, space, or money, but time is the least pliable of the bunch. We can't make more of it than we have. So, before we start talking about expense and space, we need to get real about the time required and how much we have available.

A big question is, "How many hours of build time a day is realistic for those of us who are still working and may have families?" How about we conjure up a realistic airplane-building week for those who aren't retired and live in the real world and put it against 2,000 hours, which is a realistic average to get a homebuilt into the air. How about an average of 1.5 hours a weeknight and five hours on weekends (Little League games, picnics, etc. take the rest), for a total of 12.5 building hours a week, 50 weeks a year? Round that off to 13 hours a week and we get a total build time required of almost exactly three years, which is a very typical total time. However, that doesn't reflect the additional hours spent scratching our heads or beating on a keyboard figuring out how to do things, talking with other builders, and ordering building goodies.

EXPENSE

The dirty little secret of building anything, house to hot rod to boat to airplane, is that nothing ever comes in at the projected budget price. That's just the nature of the beast. However, it's possible to construct a neat little project cost sheet in Excel that

lets you change prices at will and have a corrected total roll out at the bottom with each change. Look under This Month's Extras at www.EAA.org/sportaviation and download the file. You'll love it! All of the blue numbers are space holders that you can change, and the totals will roll out in black at the bottom. This will let you organize your thoughts, but don't think for a second this is going to be accurate. It will, however, be much closer than guessing as you go.

SPACE

It is seldom that there is too much space, but when thinking about the space, don't focus entirely on the space the airplane will occupy. Remember all the footprints required for everything having to do with it, which includes each tool, storage for materials, storage for finished parts, hardware bins, etc. For most of us, space is limited, and it's a challenge to our creativity to make it all work, but don't wait until actually building to give serious thought to what's going to go where and when.

DON'T OVER- OR UNDERESTIMATE THE SKILL REQUIRED

The skill required to build an airplane is easily the most solvable part of the building-an-airplane equation. However, certain skills have a mystique attached that is unearned so they are avoided. Welding is at the top of that list; however, anyone can learn it with the proper training. Ditto driving rivets or working with wood. Even paint can be learned, but that's the one skill in which experience is obvious in the final product. So, don't underestimate painting and don't overestimate the rest.

DON'T FORGET WE'RE NOT THE ONLY ONE IN THE FAMILY

When many of us get fired up on a new project we tend to forget that we're part of a family



Aircraft Spruce & Specialty founder Flo Irwin and her son, Jim, who is now president of the company. Flo started Aircraft Spruce on June 1, 1965.



**AIRCRAFT SPRUCE & SPECIALTY
CELEBRATES ITS GOLDEN ANNIVERSARY**

BY JIM BUSH

WHEN I MET JIM IRWIN, president of Aircraft Spruce & Specialty, recently at his factory in Corona, California, to hear firsthand about the history of his company, which is celebrating 50 years of business in June, I observed something peculiar in his office. Amongst all the Irwin family and celebrity photos, the baseballs and golf clubs arranged neatly along the windowsill that serves as Jim's wall of fame, there was one item that looked out of place.

unit, and we don't build airplanes in a self-involved vacuum. While we may be on fire with enthusiasm, everyone else in the house may be barely tolerating it. Maybe not even that. This is especially a problem when we ignore the family in our decisions and our building schedule.

AIRPLANE PURPOSE

When the project is a Pitts Special or anything similar, it's hard to pretend that "I'm building it for the family." A single-place airplane is a toy, and they know it. So, it's super important that we recognize that and go out of our way to more than make it up to the family. If you're building a multi-place airplane, reach out to the other family members and make them feel as if they have a stake in the project, too. These kinds of thoughts should also help drive the decision as to which design should be built.

BUILDING TIME

We don't build airplanes in our free time because there is no such thing as "free" time. It's not free. It comes from somewhere, and if it comes from the family, problems could be hatching while we're building our wings. A sure way to screw up life is to miss a Little League game, a birthday, or an anniversary to work on the airplane. Early mornings, before anyone is up, or late evenings, when everyone is sleeping, make building the airplane invisible to the family. Besides, sleep is highly overrated.

DON'T LET WANTS OVERPOWER NEEDS AND COMMON SENSE

First, it is perfectly okay to build an airplane that is a total mismatch to our flying skills or projected use, as long as we know it's a mismatch: Building for the sheer thrill of building is a totally rational reason to build. Besides, like building skills, we can learn to fly anything. However, if we're planning on using it, it doesn't make any sense to build a Bearhawk, for instance, if we refuse to get a tailwheel endorsement. Or build a Glasair III, if we want to frequent short grass strips. A certain amount of common sense has to control the process.

DON'T SHORT THE RESEARCH ON THE DESIGN

Many unfinished projects are the result of the factors already discussed combined with not researching the specifics of the design adequately. Between Google and the builders' groups, there are thousands of comments, both good and bad, floating around on the web for every design.

DON'T START BUILDING BEFORE VISITING OTHER BUILDERS

It isn't always possible to visit someone who is building the same airplane you've decided to create, but it's worth taking a day or two to travel and visit someone who has either already done the project or, better yet, is still working on it. There is absolutely no substitute for sitting on a stool in someone's workshop with the parts we're going to have to create surrounding us. It makes no difference how hard you've studied the drawings or how many of the same airplane you've walked around—until you see it midway through its gestation, you don't really understand it. Take a camera or cellphone and shoot more pictures of more components

Like a shadow, tucked in close to a photo of Jim's wife and business partner, Nanci, was an old, weathered glass peanut butter jar containing some of Jim's most cherished items.

"My father Bob had a BT-13 Vultee Vibrator that he had owned since the 1950s and he used to take me out to local airport in Pomona, California, when I was a kid," Jim said. "He would do maintenance on the airplane, polish it and everything else it took to keep it flying. He would take me along and once we got to the field he would hand me an old glass jar, just like the one sitting behind my desk. There were all kinds of levers and switches just begging a 6-year-old to pull and play with on the BT-13, and my dad knew better, so he sent me out on a hardware treasure hunt," Jim said.

"He said, 'Go collect all the hardware you can find on the field' because it was very important to gather as much as you could so we could use it on the airplane," Jim said. "I scoured the ramp going about my business for a couple of hours filling the jar full of discarded hardware. For my efforts I earned a cheeseburger and thought that I had filled a huge gap in keeping the airplane flying. Of course I

learned years later that my dad never used any of these parts, but I will always cherish them and the time spent with him at the airport because this was my introduction into aviation and our business that supports it."

FIFTY YEARS IN THE MAKING

Aircraft-grade spruce lumber was the first product offered by Aircraft Spruce when it opened for business on June 1, 1965. During the past 50 years the company has sold thousands of feet of spruce that has been used to build hundreds of homebuilt aircraft and restore countless vintage and classic airplanes including Howard Hughes' Spruce Goose, which was restored in the early 1980s. Aircraft Spruce & Specialty Company has supported more than 50 different aircraft designs and provides complete kits for scratchbuilt airplanes. The company carries a comprehensive selection of hardware and over the years has

shipped millions of bolts, nuts, screws and rivets to aircraft builders. Starting with one product and a single pamphlet in 1965, Aircraft Spruce has expanded its product lines to more than 800 different products presented in a now a 1,000-page catalog as well as an easy to use website. What started as a one-person operation has blossomed into a company employing 200 people in regional warehouses in California, Georgia, and Canada.

To say that Aircraft Spruce is just another airplane parts store is like saying the Pacific Ocean is damp.

"Although I am not a homebuilder myself, I am very passionate about aviation and feel very blessed to be able to help these craftsmen and women create beautiful pieces of machinery," Jim said. "Many of these airplanes are flying

When Jim was young, his father would send him on a hardware hunt at the local airport while he worked on his BT-13. "This was my introduction into aviation," Jim said.



and assemblies than you can possibly use. When you're building and can't figure exactly how something fits together, those photos will save you.

DON'T IGNORE LOCAL EAA CHAPTERS

An individual's enthusiasm waxes and wanes, but a group's does not. Like a musician that blossoms when with other musicians, the same is true of airplane builders. Enthusiasm is contagious. Plus, there is no better way to get knowledgeable help than through a chapter. It makes no sense to be building an airplane alone when there are birds of our feather gathering within a logical distance from us.

DON'T THINK COMPUTERS AND DIGITAL CAMERA/SMARTPHONES AREN'T BUILDING TOOLS

Today, the computer holds our hands while building and solving problems. You want to know how widget A fits into slot B? Toss the question out on the Web and a dozen chat groups or websites will pop up pointing you at builders' groups and experts. Ask any of them your question, and assuming it's not already

answered in their threads, the answers will start flowing in, complete with photos. Want to learn to weld, rivet, cut, form, etc.? It's all out there on the Web. Finding yourself running low on steel/aluminum/drill bits/anything? A few minutes on the web with a supplier and it's headed your way.

DON'T IMMEDIATELY RENT A REMOTE WORK SPACE: IT DOESN'T ALWAYS WORK

Unless absolutely forced into it, try hard to avoid having a workshop a distance from the house. Any distance. Our dream workshop has the kitchen and bathroom on one side with our bedroom on the other. Proximity/convenience is absolutely everything when it comes to completing projects. Granted, the time will come when it has to go to the airport to be assembled, but by that time, a builder is so heavily invested in the project emotionally that commuting to it is no longer an obstacle. However, when enthusiasm starts to lag, something as simple as having to walk 50 feet through cold or rain will cause the builder to find something else to do, so the project slowly drifts to a halt.

DON'T AVOID ATTENDING WORKSHOPS AT OSH OR TRAVELING WORKSHOPS

Hands-on instruction with someone looking over your shoulder is so important to a builder that it's difficult to imagine the effect without having been through it. Just a few hours seeing something done is all it takes to dispel the mystique and fear attached to any process: Whatever it costs to attend AirVenture and go through the forums will be made back in the savings that will accrue to the whole project. Failing that, travel to the appropriate workshops (metal, composites, fabric, etc.) when they are conducted in your part of the country. Again, it is money that is unbelievably well spent.

There are a lot more things to be avoided, but you get the drift. *EAA*

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Jim and Nanci Irwin

pieces of artwork. The quality and imagination that people put into their homebuilt never ceases to amaze me, and I have the greatest amount of respect for these builders. I still shake my head and laugh when I think back to how this company came to be. My mother Flo's determination to provide the materials and parts homebuilders need to build airplanes started the journey to where our company is 50 years later."

FLO THE ENTREPRENEUR

In 1955, Flo Irwin was about 35 years old and had never attended college but had a huge entrepreneurial spirit.

"Because my dad, Bob, was a pilot my mother had noticed there was no airplane parts store at the Fullerton airport that could assist in keeping all the airplanes on the field flying," Jim said. "My parents decided to rent a small space right across the street from the airport and opened a retail store where they sold spark plugs, tires, and other aviation odds and ends. Flo ran that from 1955 to 1965, and it was called Fullerton Air Parts."

With the Irwin children reaching that tender age where Mom needed to be home more, Flo decided to sell the business and spend more time with the family. But she soon learned that the spark she had as a business woman continued to burn bright.

"Six months later she saw an ad where a fellow was selling plans for several homebuilt airplanes, and he identified the spruce lumber needed to construct each type," Jim said. "She now knew what the homebuilder needed."

The entrepreneur in Flo kicked into overdrive as she found a source in the Northwest part of the country that she could buy spruce lumber from. She bought a truckload of it and then hired an older gentleman with wood-cutting experience to cut the wood to lengths specified by the customers. Flo called her new company Aircraft Spruce, and on June 1, 1965, she set about supporting the homebuilding community in their town by supplying the wood they needed for their projects.

In those days all the orders were by phone or mail, and for the next two years, Flo ran the business from the Irwin home.

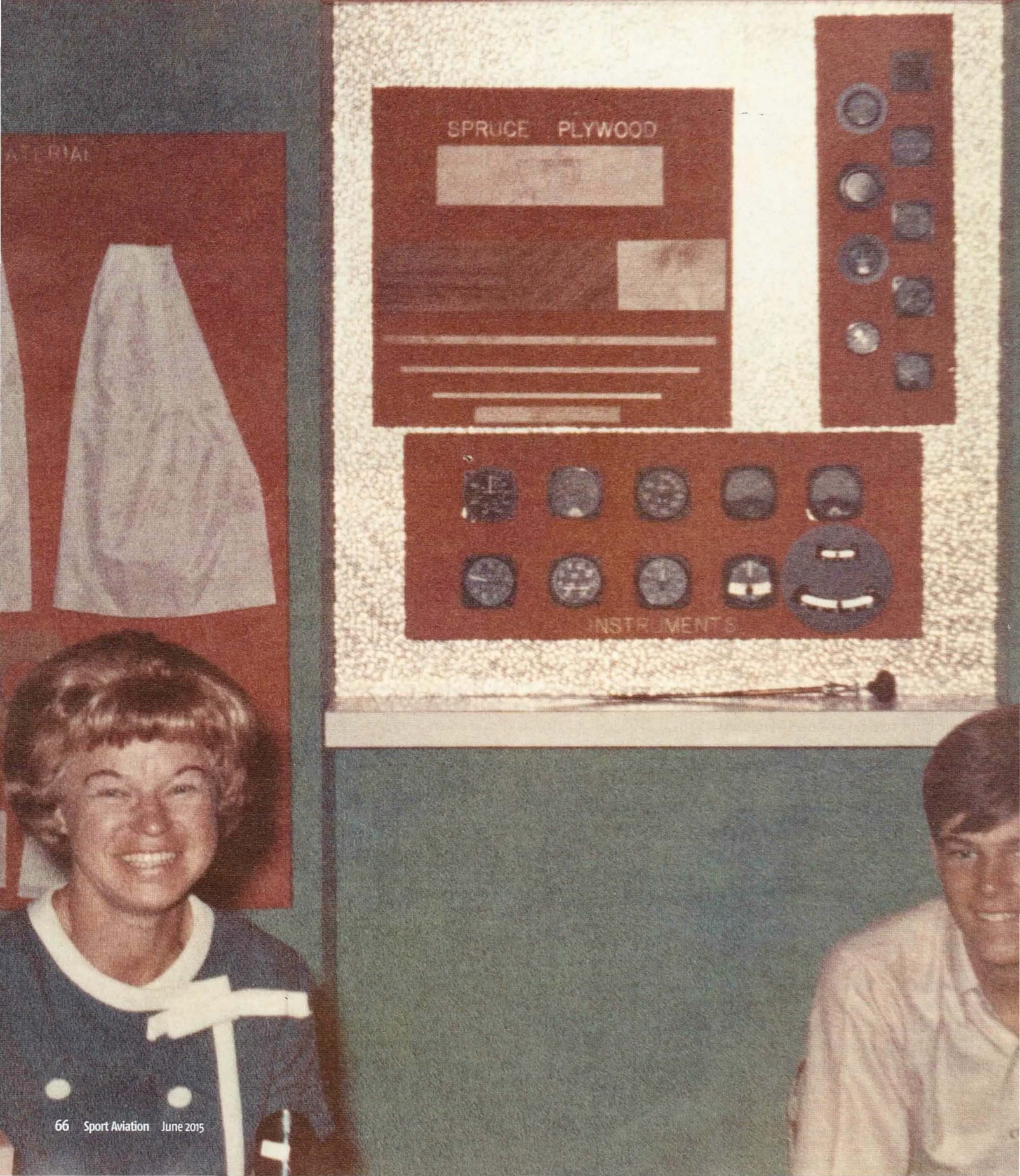
"Her first target was the homebuilder, and the only thing offered at the time was spruce lumber," Jim said. During the late 1960s word started to get out among the homebuilding community that, "Hey, that lady named Flo out in California has good spruce for sale." But homebuilders were also looking for other materials like aluminum sheets and 4130 tubing. So Flo began looking for sources for the new items Aircraft Spruce's customers were requesting, and the catalog, and customer base, grew even more.

As the business began to expand Flo had to find a bigger woodshed, and then another, and by 1973 the business had grown by leaps and bounds, which now included a very large collection of new aviation products. This meant adding even more pages to the catalog, and the Irwins decided to take a leap of faith and found a 27,000-square-foot

AIRCRAFT SPRUCE AND SPECIALTY CO.

FULLERTON, CALIF.

Flo and Jim Irwin at the 1970 EAA fly-in.



building in Fullerton to set up shop. In their mind the place was huge, and they thought they were all set, believing that there would never come a day when that building would be too small.

"Twenty-four years later we were bursting at the seams," Jim said. "Actually we probably stayed five years too long as we ran out of space. It was decided to head to Corona, and that's where we have been ever since."

Jim said he has fond memories of his mother. "She was very bright, very direct, very engaging, and just had this way about her," he said. "People like Paul Poberezny were charmed by her from the beginning. The thing that gave her a chance with success was that she was a woman operating in a man's world."

Jim said she also gained respect in the industry by offering "a great product at a fair price" and being knowledgeable about aviation. "People also learned right away that she wasn't going to be a pushover, and she wanted the right price for the right quantity and she wanted it quickly so she in turn could service her customers quickly," Jim said.

"Some may have called her difficult at times, but she was always fair, and I had the good fortune to work with her, not only growing up with her in the business, but after graduating college in 1978, having full-time interaction with her where I could really grasp what Aircraft Spruce was doing from a business standpoint. That period of mentoring and the knowledge I learned because of that I still carry with me today and hold it in high esteem."

A TURNING POINT FOR AIRCRAFT SPRUCE

One of the greatest historical points at Aircraft Spruce occurred in 1975 when a young, forward-thinking man named Burt Rutan walked into the office in Fullerton, California.

"I remember it vividly," Jim said. "I was there working in the warehouse as I was going to college, and Burt began explaining to my parents about this new way of constructing airplanes

using a composite material; said it was just like building a surfboard. My parents both looked at Burt, then each other, and said, 'Yeah right.' Burt then told them about a new canard design he had developed called the VariEze which he said was going to be very successful."

Jim said Burt went on to inform the Irwins that they would need to stock their warehouse with foam and purchase thousands of yards of fiberglass and barrels full of epoxy (among a host of other things) to meet the demand for this new type of airplane. "I remember watching all of this and knew my parents were not pushovers," he said. "But Burt was a very convincing guy, and for the sake of Aircraft Spruce I am glad he was because they agreed we would become a distributor for his materials, and that was a huge turning point for our company."

When the Rutan designs came out business really picked as Aircraft Spruce began shipping almost five of the new Rutan kits a day.

"To say Burt was right is an understatement; he has been right in our book ever since!" Jim said. There also seemed to be a huge kit explosion around that same time into the 1980s with a variety of aircraft plans coming out. Aircraft Spruce began carrying the materials to support the aircraft being built. "Typically the designers would sell the plans and inform the buyers that Aircraft Spruce was the supplier of all the needed materials," Jim said.

According to Jim there was another growing movement in the 1980s when kitbuilts began to become popular. Manufacturers like Lancair and Glasair began selling kits.

"Before that almost everything was scratch-built," Jim said. "[It] opened up homebuilding to a whole new group of people who didn't either have the same skill set or time that the scratchbuilder did."

Aircraft Spruce didn't sell the kits themselves, but did begin selling aftermarket parts like alternators and avionics for kit-builders to add.

In the 1990s the company acquired the plans for the Starduster, Tailwind, and Baby Great Lakes, which Jim said he takes as a point of pride.

"Personally I am very proud in the fact that we were able to make these plans available and not let these old, historic designs go by the wayside and fade into history," he said. "But in my mind it's our employees that really make Aircraft Spruce fly high; they are the heart and soul of this company. From the office staff to the warehouse operations—all of them dedicated to making sure the customers always get what they need."

EAA BOND

Jim recalls attending the annual EAA conventions as a teenager in the late '60s and early '70s.



Left: Manuel Garin prepares to cut plywood at Aircraft Spruce's Corona facility.



Below: Ganelli Estrada fulfills orders at Aircraft Spruce.



The third generation: Operations Manager Jeff Irwin, Purchasing Manager Mike Irwin, and Brand Development Manager Rob Irwin.

"I remember sitting in those very small booths, as they were back then, and my dad would be there and my mom would be there, and both were always busy with customers so that left me to answer questions to the growing number of potential buyers," Jim said. "Most of the time I did know the answer, but if I didn't, I would defer to my parents."

As the EAA conventions rolled along Jim started to know most of the answers, but admitted with tongue in cheek that 40-some years after his first convention he still gets stumped by buyers.

"Thankfully less often now," he said. "Now I have become the mentor

in the booth as I help other employees develop and gain experience with our customer needs."

According to Jim, Aircraft Spruce's relationship with EAA dates back to its founding when Flo developed a friendship with Paul and later Tom Poberezny, and continues through the relationship Jim has with EAA Chairman of the Board Jack J. Pelton.

"I recall seeing Tom at Rockford and later at Oshkosh, and because we were both around the same age and both children of the founders of great organizations it was natural that we both loved aviation," Jim said. "EAA and all it stands for mirrors

what we as a company believe in as well—giving back to aviation to ensure that a future generation picks up the torch and carries it forward. Our company is a huge supporter of the Young Eagles program for one main reason: so we can continue to lend a hand and grow sport aviation into the future."

From a coffee table-sized booth and few stapled pages advertising

aircraft parts to a factory bursting at the seams Aircraft Spruce has come a long way in its 50 years of providing the highest quality of parts and supplies to the aircraft home-builder and owner.

For over 50 years Aircraft Spruce has seen nothing but a steady growth from the homebuilder in an era when many cry that "flying is dead."

"We believe the opposite because we know like many others that flying is unique flying is fun, and it is like nothing else," Jim said. "We have an advantage for the future because all of our children, sons Mike, Jeff, and Rob and daughter Krissy, are heavily involved in the business and have some great ideas to keep us moving forward. It's not unlike aircraft ownerships when pilots say they are just the custodians of their airplanes—it's the same way Nanci and I feel about this company as we look forward to the day our children take over. Aviators are truly a special breed of adventurers, and we plan on being there to supply them for the next 50 years."

Happy golden anniversary, Aircraft Spruce. EAA salutes you! **EAA**

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