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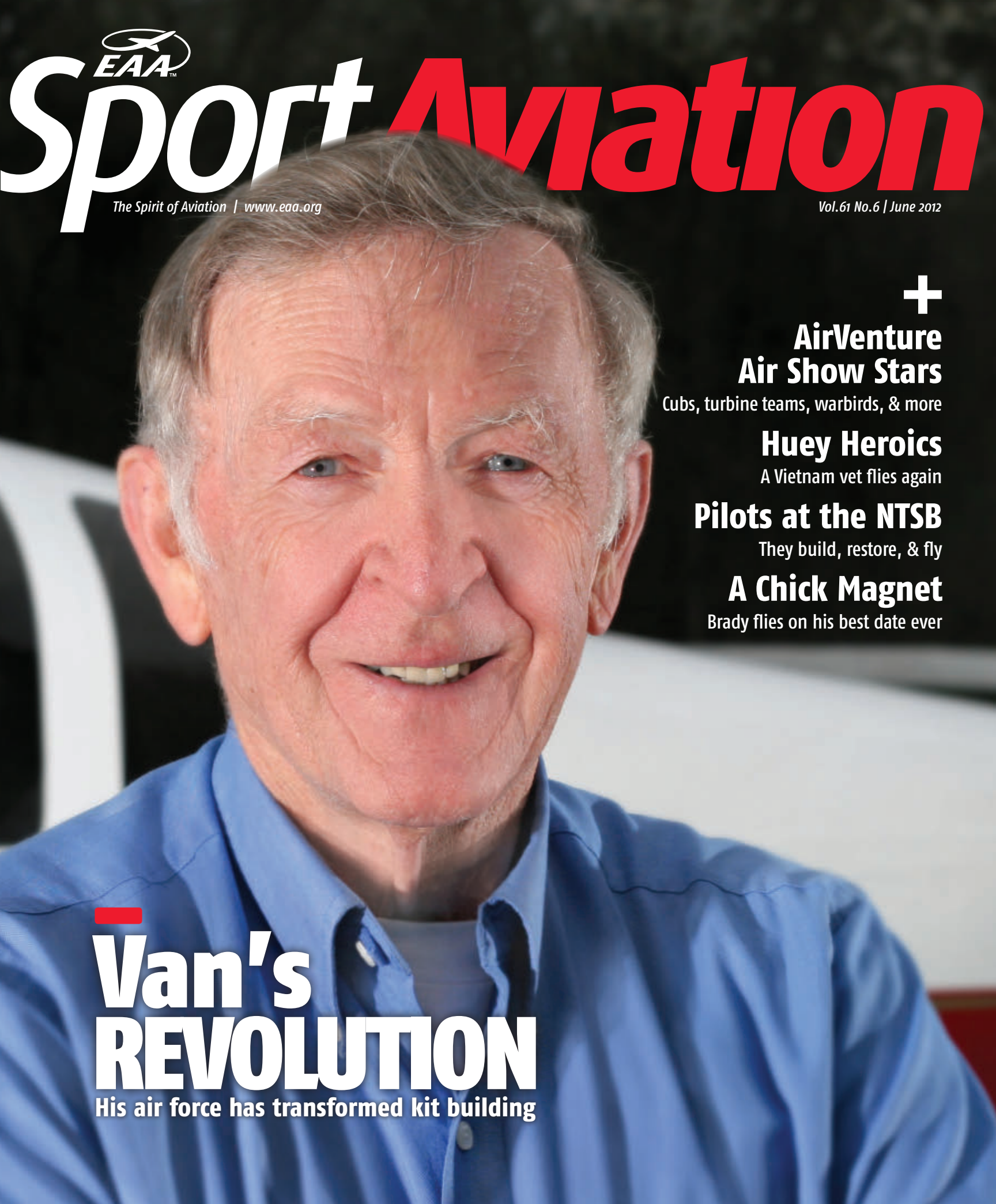

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AirVenture Air Show Stars
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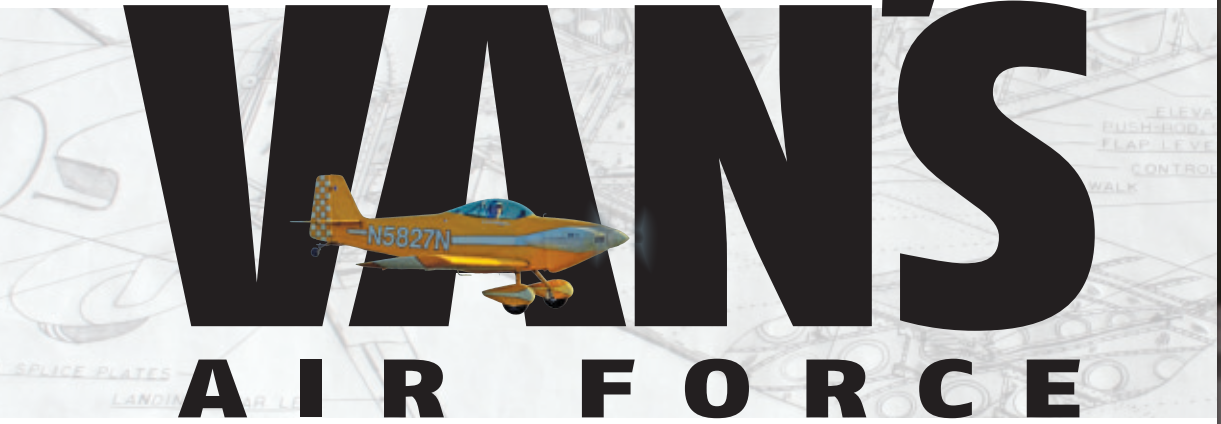
Van's REVOLUTION
His air force has transformed kit building

DICK VANGRUNSVEN'S "TOTAL PERFORMANCE" KIT PLANES DOMINATE THE HOMEBUILT FIELD

VAN'S AIR FORCE

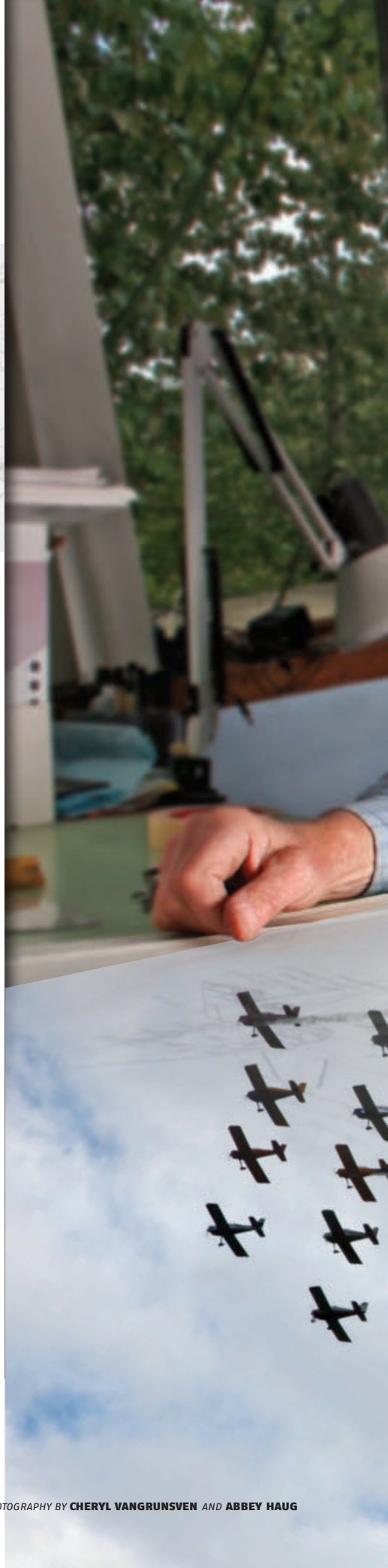


BY LANE WALLACE

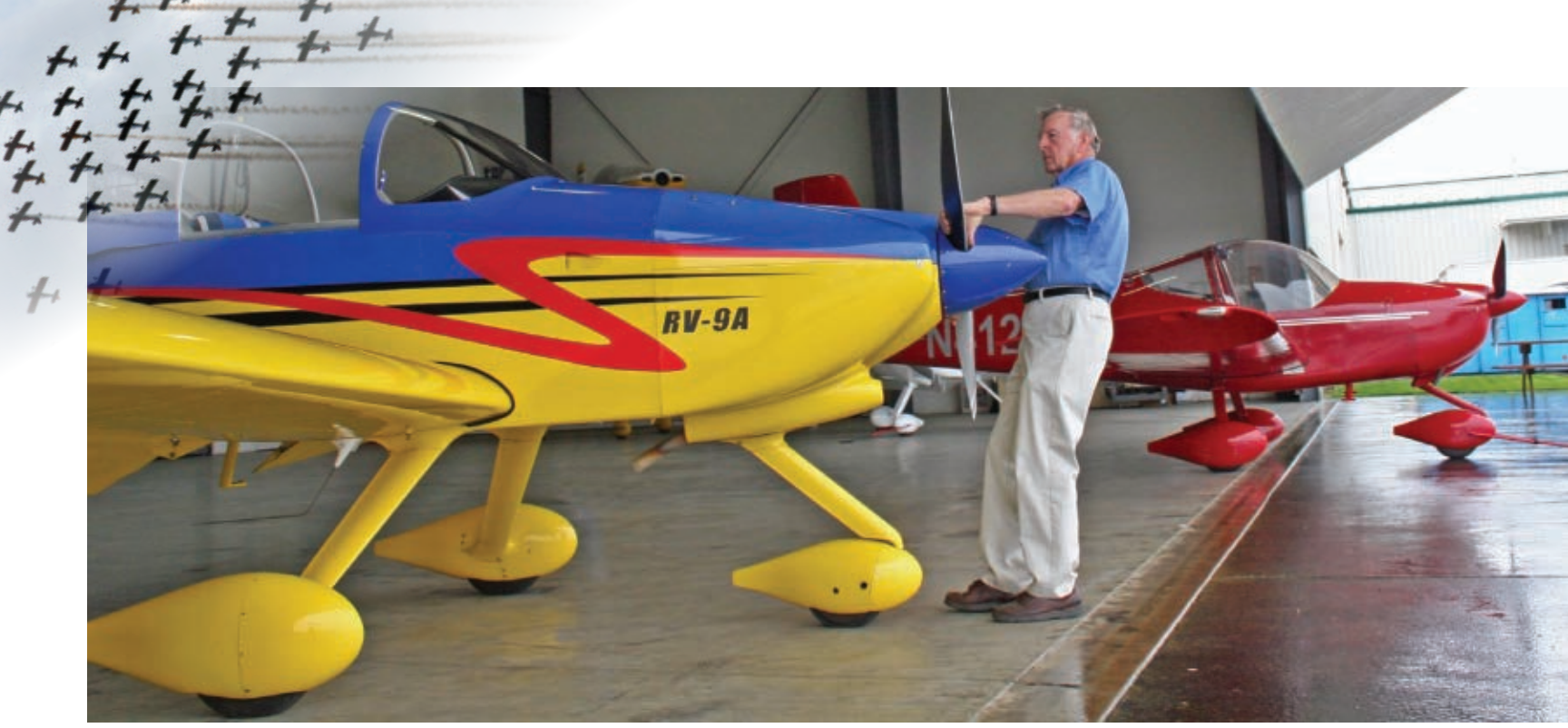
DICK VANGRUNSVEN, or "Van" as he's known to most in the aviation industry, is not a flashy guy. He wears practical, rubber-soled shoes, and his "office" at the headquarters of Van's Aircraft, in Aurora, Oregon, is just a small cubicle in the engineering department, no different than other offices except for a bit more clutter on the shelves. His first brochure—for a set of aluminum, cantilevered wings, new landing gear, and new engine/cowling that would turn a Stits Playboy into an RV-1—is a six-page, typed document on plain paper, with a few black-and-white photos, that simply explains, in clear, engineering terms, why he thinks the modification is an improvement over the original design.

"I reasoned," the sales pitch goes, after a detailed description of the evolution of the modification, "that you might want an airplane like the one that I have found so rewarding. So...I have prepared what I consider to be an accurate and complete set of construction drawings for the wings. The structure...is the evolutionary result of experience gained in building four sets of wings."

The honesty and the earnest engineer's language in the "brochure" may help account for the fact that very few plans for the RV-1 actually sold. But over time, that engineering precision, desire for performance improvements, and honest, straightforward approach that characterizes Van—and the company he built—has paid off a thousand times over. Or, to be more accurate, 18,000 times over. Because 40 years after Van appeared at EAA Oshkosh 1972 with his prototype RV-3 (his first scratchbuilt design), Van's Aircraft has become the most successful kit plane manufacturer in history.



PHOTOGRAPHY BY **CHERYL VANGRUNSVEN** AND **ABBEY HAUG**



Van pulls out the company RV-9A in preparation for flight. His latest design, the RV-12, is in the background.

There are now eight separate aircraft in the RV family (four of which come in either a tri-gear or tailwheel configuration). All told, more than 18,000 customers have bought and started RV plans or kits, and more than 7,500 of those planes are completed and flying. Approximately 500 new RVs take to the skies every year (or an average of 1.5 per *day*), which is more than half the annual total of new homebuilt aircraft added to the fleet. It's also more piston aircraft a year than any general aviation *production* company is currently managing.

What has made RV aircraft so incredibly popular, and Van's Aircraft so incredibly successful?

Van pauses for a moment when I ask him that question. "Well," he says, "I would like to think, if it came down to one single thing, it's because of the way they fly. Not the performance, but the way the airplane feels, and the way it makes you feel when you fly it. There are a number of other factors, of course—price, build-ability, the performance numbers—but if [they weren't] so completely enjoyable to fly, [they] wouldn't have been so successful."

If the RVs are "completely enjoyable to fly," it's because that was the dream their designer had when he first set out to build—or rather, modify—his first airplane.

Dick VanGrunsven grew up as one of eight children in a Dutch settlement south of Portland, Oregon. His father was primarily a farmer, although he always had a second job doing something. And growing up on a farm, Van and his brothers learned a lot about working with, and fixing, mechanical equipment. Van's father had learned to fly in the 1930s, "before the money ran out," as Van puts it, and Van and his two closest brothers (he's the second oldest) were always interested in flying. When Van was a teenager, his father finally agreed to purchase a $750 Piper Cub.

"I think he figured that the airplane would be a good thing to keep us off the streets," Van says with a smile.

Before long, the Cub got upgraded to a Taylorcraft, which the boys flew during their college years. And even before Dick graduated from the University of Portland with an engineering degree, he started tinkering with homebuilt airplane improvements. He wanted wheel fairings for the Taylorcraft but didn't want to pay for production ones, so he made his own set out of fiberglass and got an STC for them. Then, when he was stationed at Kincheloe Air Force Base in northern Michigan after college, he went looking for something "sportier." He bought a Stits Playboy, but says, "It didn't really live up to my expectations." So he bought a dismantled airframe of another Playboy and began thinking about how he could improve it.

The result was the RV-1: a Stits Playboy with a new wing that was metal instead of fabric-covered and cantilevered (eliminating the wing struts), which gave it better performance and handling characteristics. The wing was also equipped with flaps to improve the plane's short-field performance. Van was flying out of his parents' 670-foot grass strip at the farm (his first office and workshop was in the loft of the barn), so short-field performance was important to him. Prior to

adding the new wings, Van had initially rebuilt the Playboy by installing a 125-hp Lycoming engine, a bubble canopy, and fiberglass wingtips. Eventually, Van further modified the RV-1 with a new, more streamlined fiberglass cowling, new wheelpants, and horizontal tail surfaces. But he still wasn't satisfied. So he began building another plane, from scratch.

"Primarily, I just wanted a better airplane," he says, although it did occur to him that plans for the new plane, which he dubbed the RV-3, might be marketable. The RV-3 was modeled on the RV-1, but built out of aluminum and optimized not only for performance but also, as Van says, "for handling characteristics."

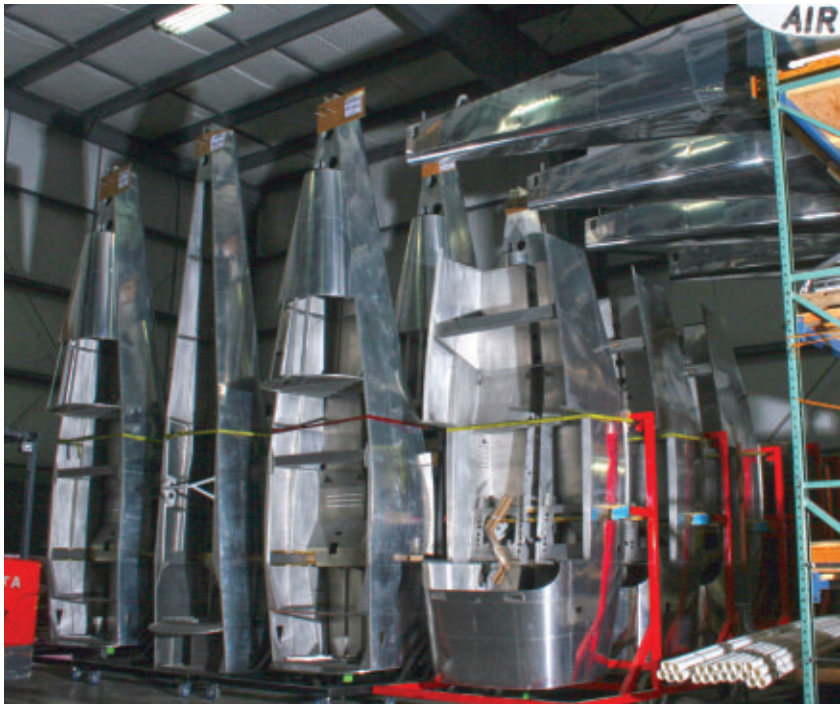
"I built it out of necessity and greed," he says with a laugh. "I wanted just about everything you could hope for in one package [for a sport airplane]. Speed, performance, beautifully harmonized controls, aerobatic ability, relatively short-field operation. The best compromise you could hope for in a personal airplane."

Not the performance, but the way the airplane feels, and the way it makes you feel when you fly it.

Van finished the RV-3 in late 1971 and, in the summer of 1972, brought it to the EAA convention in Oshkosh. It could cruise at 185 mph with only a 125-hp engine and was fully aerobatic, but it also landed at 50 mph and was pretty docile for a plane with that kind of speed. It wasn't the fastest plane out there, or the absolute easiest to fly, but it was the first in Van's line of aircraft designed for what he calls "total performance," or the best overall performance across a number of areas. Most airplanes (with notable exceptions like race planes or the U-2 spy plane) are compromises of some sort between performance and utility. Van's goal was to design a plane that was the very best compromise possible.

The RV-3 received what Van calls "a moderate amount of interest," and he began selling a commercial set of plans for the airplane in January 1973. When he built the RV-3, Van says, the homebuilt market was considerably different than it is today. The plans and rudimentary kits that were available tended to attract "gear-heads," since they required more mechanical know-how to build, and there wasn't the homebuilder community assistance that builders today enjoy. In addition, the market was geared more toward "sport" planes than cross-country traveling machines. So a single-seat sport plane like the RV-3 made sense. Van sold 500 plans and kits for the RV-3, of which a little more than half were completed and flown.

But almost as soon as he began selling RV-3 kits, customers started asking for a two-seat version of the plane. Van was reluctant to add another seat, because he knew it would impact the airplane's performance and handling characteristics—even if the impact was small. Eventually, however, he bowed to customer



TOP: Van and the the original RV-3 at one of its first appearances at EAA Oshkosh.
ABOVE: A variety of RV fuselages ready for shipment with kits.

PHOTOGRAPHY BY **CHERYL VANGRUNSVEN**

Van and some of the 65 employees that are now part of the Van's Aircraft team.

demand. Van brought the prototype two-seat, tandem RV-4 to the EAA convention in Oshkosh in 1980 and began selling plans and kits for the airplane soon afterward.

The RV-4 might not have been quite as "pure" a sport plane as the RV-3, but Van now freely admits that "the RV-4 is what really got us started." Up until that point, Van had done his design work and built his prototypes and kit components either in the barn of his parents' farm or in a small workshop next to the house he bought after he got married. He'd actually established Van's Aircraft back in 1969, manufacturing fiberglass components for other homebuilt designs,and he built many of those components himself, by hand. Even when he started selling RV-3 plans and kits, Van did most of the work himself, including boxing up components for shipping.

But when the RV-4 hit the market, Van soon found himself needing a staff of three to four people to keep up with the demand.

"The two-seat made a difference," he acknowledges. "It didn't take that much more experience or effort to build, but you got twice the airplane with only a small percentage effect on performance."

Of course, Van says with a laugh, "People are never happy." Almost as soon as the RV-4 made its debut, he recounts, "People started saying, 'I want...' or 'My wife says she wants...' a side-by-side aircraft. I had reservations about a side-by-side aircraft, but people persisted. So I said, 'If people want it, let's see if we can build a side-by-side version with wings and tail very similar to the RV-4."

Van finished the side-by-side RV-6 design in 1986. And once again, the company's sales skyrocketed. More than 6,000 RV-6 and RV-6A plans and kits have sold to date (the RV-6A is the tricycle-gear version). And if you add sales for the RV-7 and RV-7A (the updated version of the RV-6 design introduced in 2001), that number *doubles*. By far and away, the side-by-side, two-seat RV models are the most popular designs Van's Aircraft has ever produced.

One of the reasons Van was hesitant to offer a side-by-side model is that he wanted his airplanes to perform well as sport aerobatic planes.

"A lot of aerobatics is what you see [out the canopy]," he explains, "and in a side-by-side model, you're not sitting on the centerline." However, he also recognizes that there's been an evolution in thinking about homebuilt airplanes in the past 30 years, from sport planes into more cross-country planes. So people now want more sociable seating and more baggage capacity. And the RV-6/RV-7 designs, he says, "are a good

PHOTOGRAPHY BY **CHERYL VANGRUNSVEN AND ROBERT A. TERRY**

compromise. They're touring airplanes, but they still have reasonable aerobatic ability."

In truth, part of Van's continuing success is his realistic acceptance of just how much the homebuilt market really has changed over the past 40 years, and his ability to modify his designs to meet the changing desires of his customers without compromising the key features that made his designs popular in the first place.

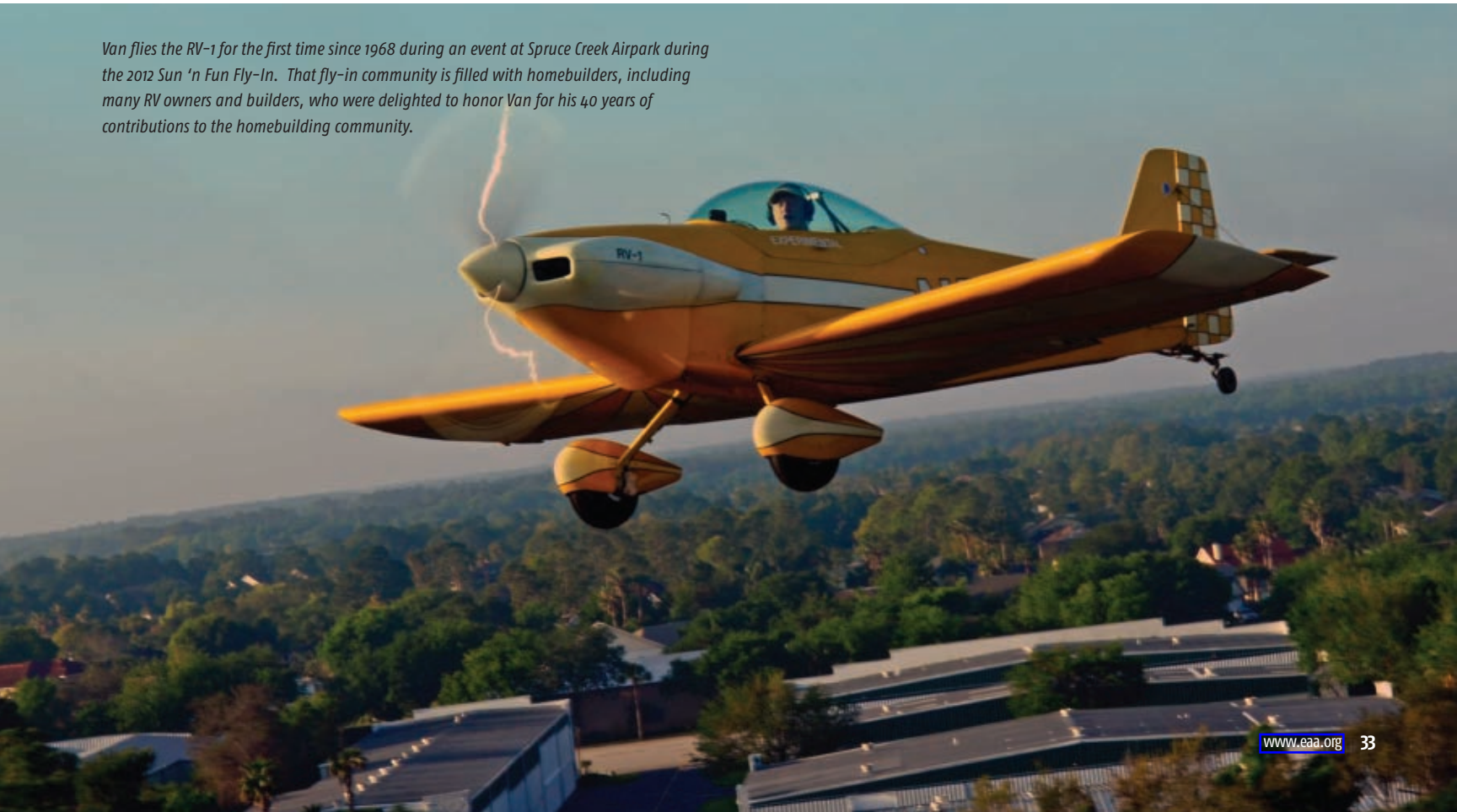
In 1996, the success of his side-by-side designs made Van take a second look at his earlier RV-4 kit. He concluded that "the requirements had evolved away from what we were providing in the RV-4," but he still believed there was a latent demand for a tandem aircraft, if he could offer "some of the amenities" of the side-by-side models, such as more baggage space and a little more power. The result was the RV-8 (and RV-8A tricycle version). Two years later, in part because the homebuilt market was evolving away from sport aerobatic planes to traveling planes, he also came out with his first non-aerobatic design: the RV-9.

The RV-9 (and tri-gear RV-9A) was designed for the lower-time, less-current pilot who might otherwise buy something like a Kitfox. The RV-9 was a side-by-side design with a smaller engine and longer wings with more effective flaps—which gave it a lower landing speed and more docile handling characteristics. As it turns out, the RV-9 performs so efficiently that even with a Lycoming O-235, 118-hp engine, it can still cruise as fast as 160 mph. But as opposed to the higher-powered RV-6 and RV-7, whose sales are split pretty evenly between tailwheel and tri-gear versions, 95 percent of the RV-9 customers buy the tricycle-gear RV-9A kit.

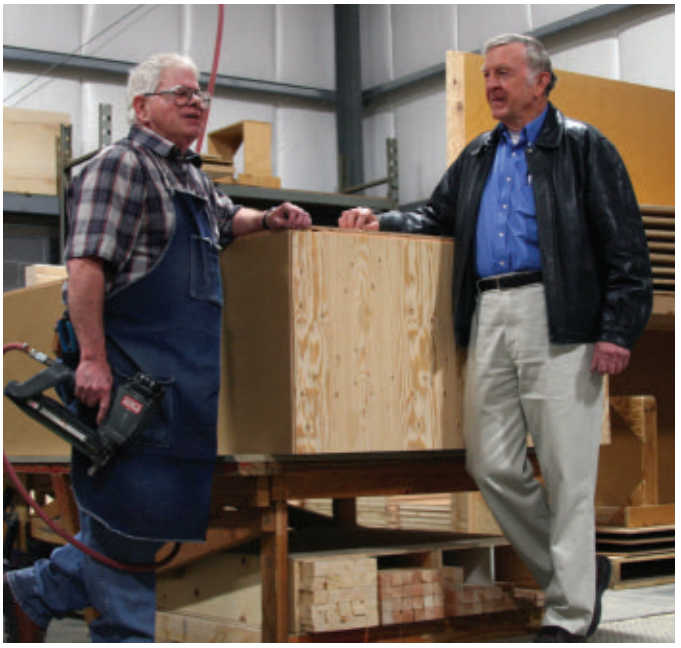
They're touring airplanes, but they still have reasonable aerobatic ability.

And still, the market continued to evolve. For the first 30 years of his business, Van had stayed away from a four-seat design, because he didn't want to compete with production models that seemed to be serving that segment of the market fairly well, especially because so many reasonably priced used production aircraft were available. But by the early 2000s, those used aircraft were getting more tired. And the new four-seat production models were well beyond the financial reach of most middle-class, working pilots, who have always been the customers Van has most wanted to serve. It's easy to design a great-performing aircraft if cost is no object. But Van's goal has always been to give those pilots who couldn't afford the latest and greatest a way to have an airplane that made them feel the way they'd hoped flying would feel when they first dreamed about it.

"One thing I've learned along the way is that there's a bit of Walter Mitty to [pilots' dreams of flying]. You envision what it's going to be like to fly something like a World War II fighter. But you have no idea how heavy those controls really are, or that they're not well-harmonized controls," Van explains. "[The RV] is a good Walter Mitty airplane, because it flies like you think a fighter flies but doesn't."



Van flies the RV-1 for the first time since 1968 during an event at Spruce Creek Airpark during the 2012 Sun 'n Fun Fly-In. That fly-in community is filled with homebuilders, including many RV owners and builders, who were delighted to honor Van for his 40 years of contributions to the homebuilding community.



TOP LEFT: Engineer Mike Schwartz uses a CAD program for designing. TOP RIGHT: Van and Jim Daggett share a laugh in Jim's private kingdom, the crating shop. Jim estimates he's built about 28,000 shipping crates in the 17 years he's worked at Van's. ABOVE: It's all about sheets of aluminum at the Van's factory.

And by 2003—thanks in part, no doubt, to the success of Cirrus and the Lancair Columbia—pilots were dreaming of sporty, new, four-seat, cross-country airplanes that still handled like their Walter Mitty dream machines. So Van came out with his second non-aerobatic airplane: the four-seat RV-10. The RV-10 is, obviously, significantly larger than its predecessors and required a completely new design. But, Van says with a grin, while the RV-10 may be a "clean-sheet" design, it has clear "fingerprints on it from the previous models." Which is to say, it still has the same beautifully harmonized controls and performance strengths of its smaller, two-seat siblings.

Of course, the trend toward performance traveling machines wasn't the only evolution in the aviation market in the 2000s. While he was developing the RV-10, Van was also watching the burgeoning light-sport aircraft (LSA) movement. And in 2006, he brought the prototype of the RV-12 to AirVenture—a Rotax 912-powered, two-seat LSA-qualified kit plane with impressive visibility and the unique feature of easily removable wings for off-airport storage.

What's next? Van wouldn't say, but when I visited the company factory recently, there was another design hidden away in the prototype shop. So clearly, the evolution of Van's Aircraft designs—and the widely varied air force he has spawned in the process—is continuing.

Clearly, a lot has changed over the past 40 years. In 2001, the company moved its manufacturing facilities to its current location in Aurora, Oregon, and the kits have become easier to build over the years. In addition to the "quick-build" kit option that's always allowed builders to have sections shipped already partially assembled, the newer kits now consist of "pre-punched, matched-hole" components, which reduces the assembly time for the primary main structure by as much as half, while ensuring greater consistency in the final product, as well. There's a lot more automation in the factory these days, although it's somehow heartening to see a World War II-era pneumatic riveting machine and Farnham Roll machine still in use amidst the more modern equipment. Some jobs, evidently, are still best done the old way.

The employees, too, are a mixture of new hands and old-timers. Van's Aircraft now employs about 65 people full-time, and there has never been a lot of

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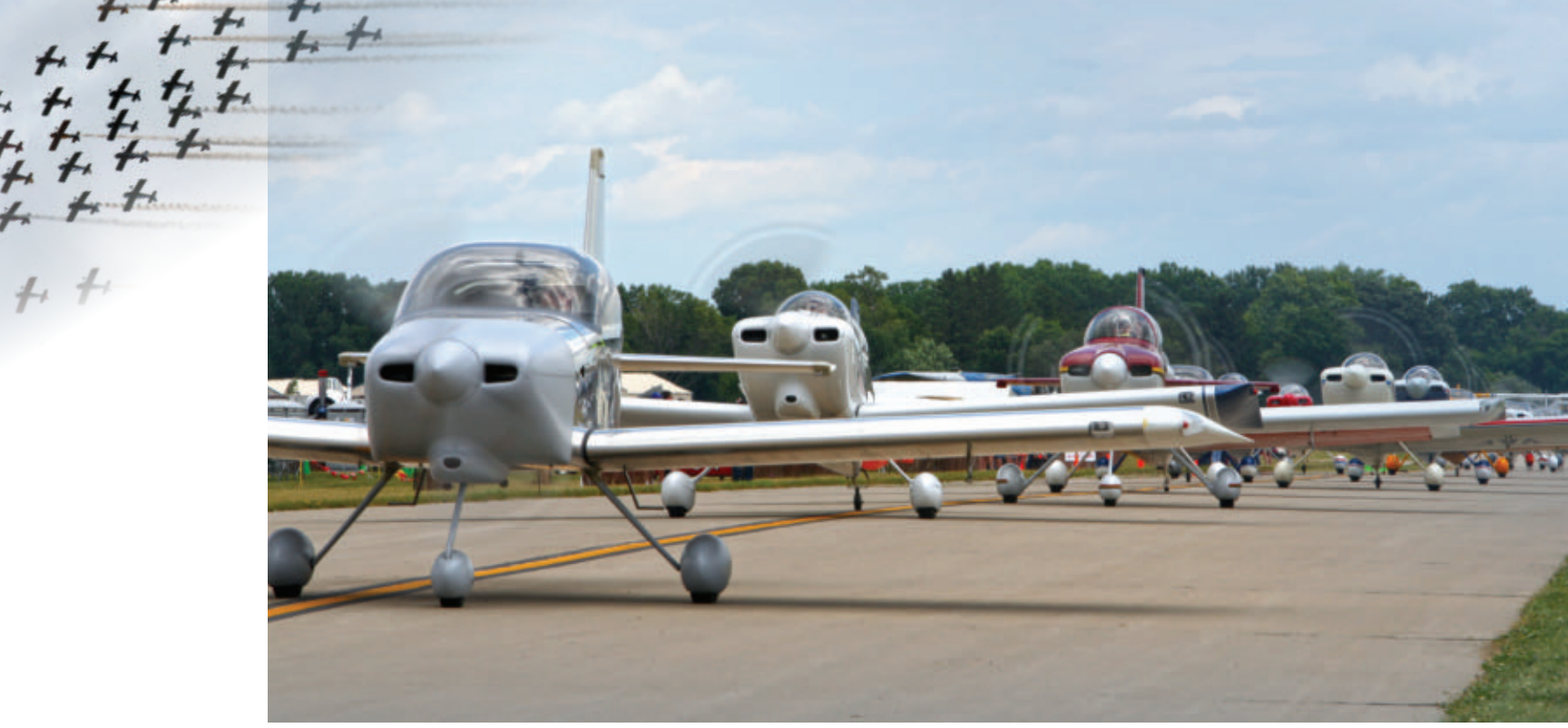


A long line of RVs taxiing during a mass arrival at AirVenture Oshkosh.

turnover at the company. A handful of employees date back almost to the time Van hired his first help. And a number of them came to work at Van's after building an RV themselves. It's also telling that none of those employees hold the job title of "salesperson." Ever since the days of that first RV-1 brochure, Van's philosophy has been that if he builds a good enough airplane, he won't have to hype it. That's not to say the company doesn't do any marketing. But nobody is focused solely on the sales aspect of the business.

Given that, how has Van's Aircraft managed to dominate the market—and the fields at AirVenture—so completely? Tom Green, who served as Van's general manager and then president before retiring two years ago, attributes the company's success to three things. First and foremost, he says, is Van's knowledge of flying.

"Van can feel an airplane well enough that he can sense what's right or wrong about how it performs or handles and convey that to the engineers," he says. That's a big part of how RV aircraft have ended up with such well-harmonized controls and good handling characteristics. Tom also points to Van's insistence on keeping the company out of debt and paying for everything as they went, which helped the company remain solvent and, therefore, a reliable supplier to builders—even in lean economic times. The third factor on Tom's list is the fact that RVs are designed for middle-class pilots—which is a lot bigger number than people who can afford higher-priced machines.

To that list, however, I would add Van's tangible passion—not only for designing the best airplane he can, but also for being an honest and credible businessperson. The wording from that first, typed sales pamphlet, "I reasoned that you might want an airplane like the one that I have found so rewarding," is as accurate a reflection of Van's approach to selling kit planes today as it was when he wrote it more than 40 years ago. Van built the plane of his dreams and figured that a lot of pilots would have dreams not so very different from his own. It turns out he was right.

It is not easy to start a business or bring a new aircraft into the world. To continue doing that, and continue being successful at it, for more than four decades is an astounding personal feat. When Van began marketing the RV-3, Richard Nixon was still president. The war in Vietnam was still in process. The very first digital watch was just hitting the market. And we were still using Apollo spacecraft to travel to the moon.

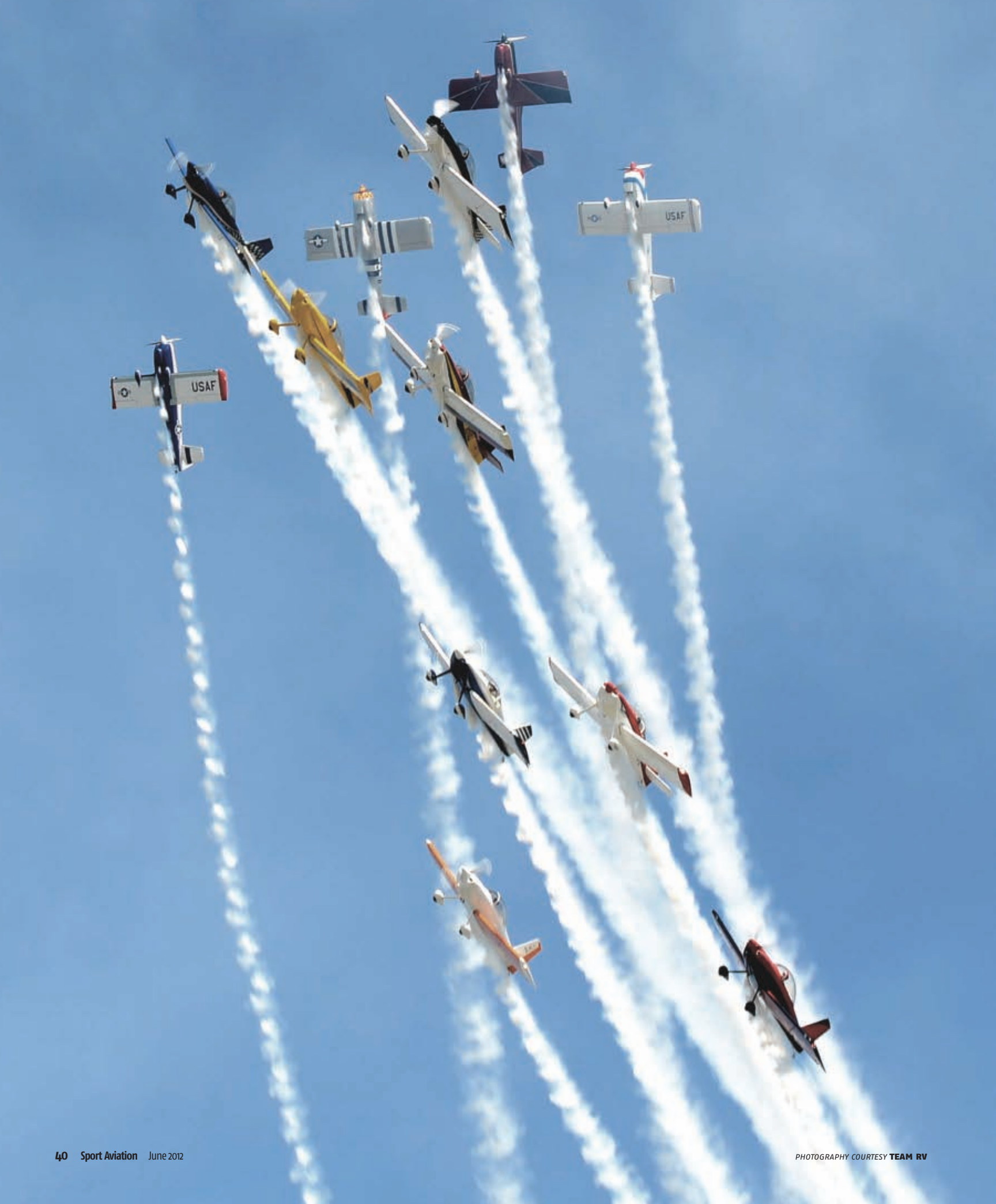
And yet, for all that's changed in the years since, one gets the impression, talking to Van, that *he* hasn't, at least not in any fundamental way. He still lives in the house he bought on a North Plains airpark back in 1981, and he flies to work any day that the Oregon weather allows. He's not as hands-on with the business as he used to be—the fiberglass work is jobbed out, the design work is now done by computers, and the company's master box-builder is now a completely blind craftsman named Jim Daggett (a worthy story in and of itself). But Van is still doing what he loves to do best—flying, designing, and building better airplanes—and the rewards, he says, have far outweighed the costs.

"There's the satisfaction of being able to create a good product," he says as he ticks off a mental list. "A good airplane, or airplanes. A lot of it, too, comes from the satisfaction the builders get. And their expression of that. To be a part of them realizing their dream and expanding their experience and skills, I definitely have heard from countless people, and their spouses, as well, about what a big factor in their life this airplane was. And I was able to be a part of creating and providing that."

That may not be a flashy answer, but it is pure Van. Just like the airplanes he designs and the company he's built. Reliable and straightforward, but with a soft spot for a pilot's dreams...and a master designer's touch for helping those dreams come true. EAA

Lane Wallace, EAA 650945, has been an aviation columnist, editor, and author for more than 20 years. More of her writing can be found at *www.LaneWallace.com* and at *www.TheAtlantic.com/Lane_Wallace.*

PHOTOGRAPHY BY **CHRIS MILLER**



PHOTOGRAPHY COURTESY **TEAM RV**

TEAM RV PRECISION FLYING HOMEBUILTS

Team RV—Twelve Van's RV aircraft, including nine RV-8s, two RV-6s, and one RV-4—will showcase its formation flying and aerobatic skills as the United States' largest air show team makes its first appearance at AirVenture. Its flights will honor the 40th anniversary of the design of the first Van's aircraft, currently the leading aircraft kit manufacturer in the world. Learn more about Team RV at *www.TeamRV.us*