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AeroClassic

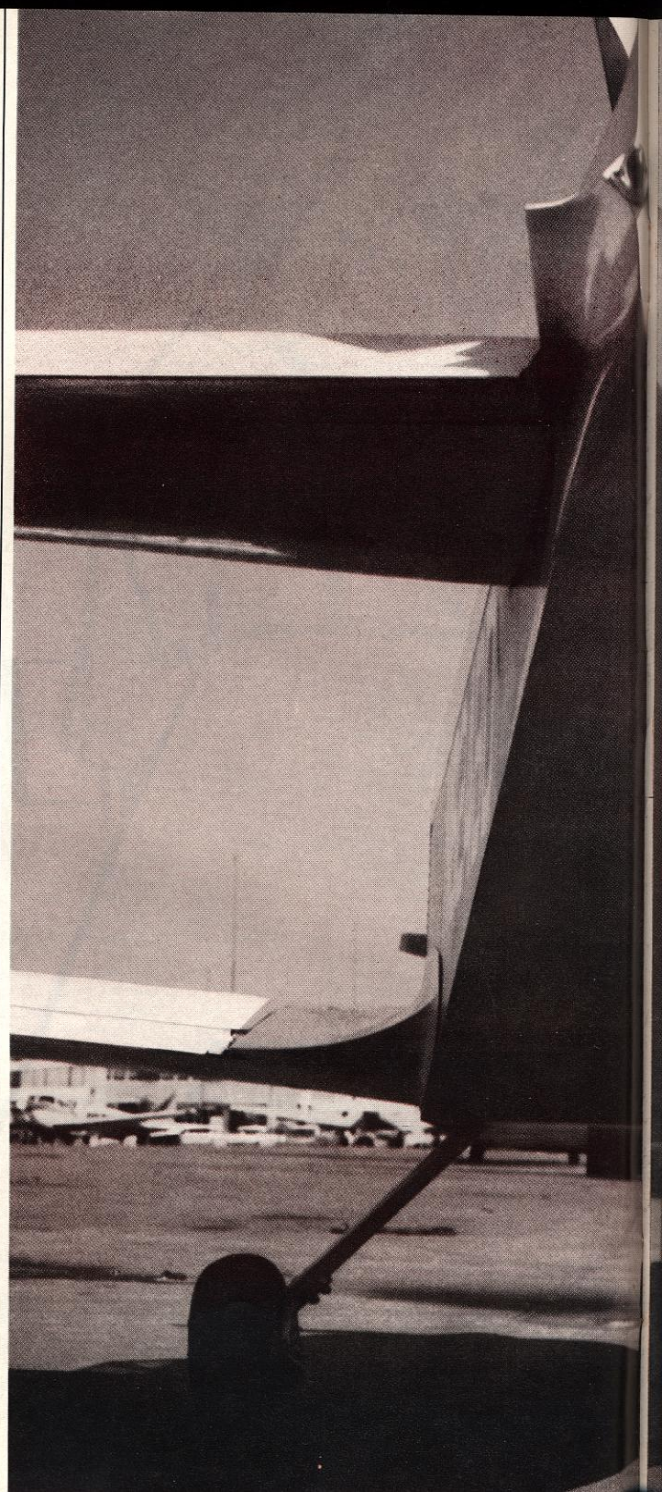
"The End" For Bede?

AAX SCAN PAGE 2

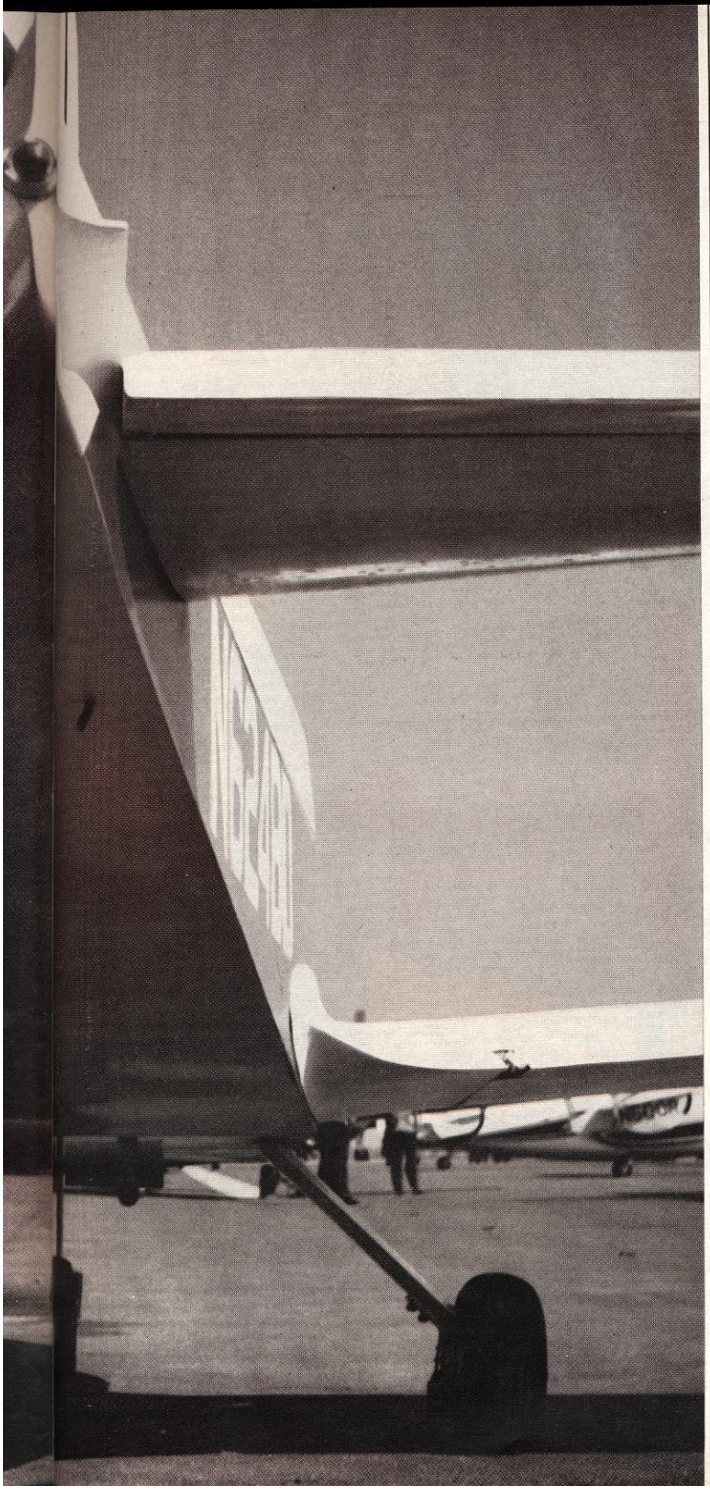
THE BD-1

The latest thrilling chapter, in which Jim Bede, airplane designer, battles the financial barons and finds everyone may win.

by Richard B. Weeghman
managing editor



Slab sided for economy, rivetless to cut drag, and bonded honeycomb sandwich metal for strength, the BD-1 is one of a kind. This is the prototype.



IF YOU HADN'T HEARD, James Bede is no longer president of Bede Aviation Corporation. Fred A. Lennon is.

But to reassure those aspiring BD-1 owners (who according to Bede have placed $5 million worth of orders), it was the friendliest brush-off in history.

As Jim Bede says, "They're practically killing me with kindness, and I say this sincerely, because I really think Mr. Lennon is trying to do this for me personally more than for his financial gain."

By "they," Bede meant the board of directors of his company.

Apparently the admiration is mutual. As George R. Herzog (also a member of the board) says, "I want you to give Jim Bede all the credit in the world. Jim is a fabulous individual. He has ideas in that plane that seem simple, but they work, and nobody ever thought of them before. And he's a crackerjack in developing items, and particularly in developing this plane, the BD-1."

The BD-1? A small two-seat airplane made of metal, fiberglass, rubber and a few old dreams.

An airplane, and some dreams. These are the heart of the issue. The aircraft, as everyone in aviation knows, is something different. In place of rivets and sheet aluminum on ribs and struts and formers, it has smooth bonded honeycomb metal. Instead of separate, different components, it has identical wings, left and right, and interchangeable vertical and horizontal stabilizers. Instead of a fixed, rigid wingspan, it has folding wings.

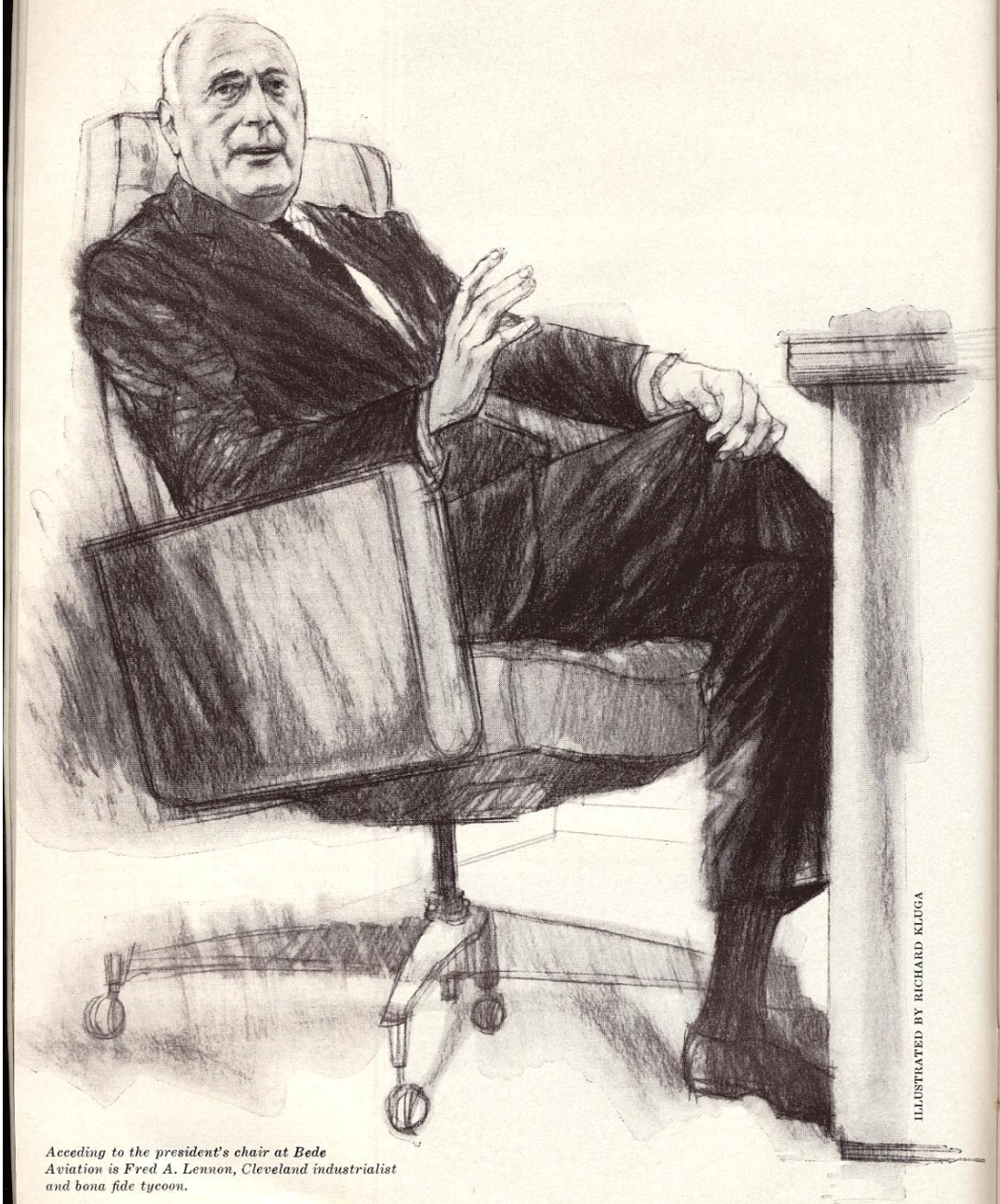
The dreams? They are price ($2,500 to $4,500), performance (up to 130 knots cruise with a 108-hp engine) and portability (a folding-wing design that permits the airplane to be towed back to the garage, abolishing hangar rent).

The ousting of Bede seemed incredible. The Bede organization had been anchored by impressive financial support, benevolent business backing and an enlightened, experienced and well-heeled board of directors. Land had been acquired and a factory built. All the signs pointed to Bede on a white charger at the head of a new aviation empire that was flowering in the fertile financial soil of Cleveland, Ohio (at Cuyahoga County Airport).

Needless to say, most pronouncements explaining what had happened sounded a little like *Pravda* on Khrushchev; i.e., discreet, cryptic and laced with double entendre.

"Jim's value to the board is in the construction of the plane and in aeronautical items," says Herzog. "When it comes to the detail of getting certification, it is not a job for an inventive

The BD-1



ILLUSTRATED BY RICHARD KLUGA

Acceding to the president's chair at Bede Aviation is Fred A. Lennon, Cleveland industrialist and bona fide tycoon.

Number two BD-1 rests quietly in the new Bede Aviation Corp. plant awaiting an uncertain future.

mind. It involves a lot of detailed steps, and this move will relieve him of all responsibility with respect to what in the last analysis is a whale of a lot of detail."

As far as Jim Bede is concerned: "I felt it advisable to resign as president because of major differences in production and marketing plans with that of the present management. Therefore, to preserve the continuity of the program, I am devoting my attention to engineering. At the same time, I plan to follow through on several other projects."

Exploring the subject further and reading between the lines, one comes away with a more succinct and direct impression of what happened.

The board of directors became seriously concerned that time, effort and capital were being dissipated on projects not directly connected with certification and production of the BD-1. Apparently the main point of contention was the amount of time being devoted to marketing and sales and promotion—before the airplane had crystalized as a finished product.

"The supply of money in developing anything is always limited," said Herzog. "And the board wanted to make sure of certification first, and then the production method. The reason for the change was to concentrate on these two, and it was felt that it would be less embarrassing to Jim to drop some people who were not necessary for certification and production from the payroll."

By this, he meant canning almost the entire Bede engineering staff of some 35 persons.

Apparently there also were a few poignant differences of opinion as to what constituted proper plant organization. This extended to working hours, attitude and decorum, as well as efficiency and managerial guidance and direction.

According to Bede, for example, his engineering and flight team had embarked on a program of accelerated flight testing that disregarded the conventional limits of an eight-to-five day with weekends off. In an attempt to take advantage of good weather, flights were scheduled both weekdays and weekends, and early in the morning.

Bede notes Lennon's reaction to this was that if a man can't do his work in eight hours, he's not doing the job.

And, indeed, Mr. Lennon appears to have definite ideas on how a manufacturing plant should be run. However, this would seem justified by the fact that he already owns in the neighborhood of 20 such plants devoted to the manufacture of a broad array of items such as valves and fittings and precision products, some for the aerospace industry. And Lennon has managed them all with sufficient success to have built up a considerable business reputation and personal fortune.

And he believes in running a taut ship. Attitude is paramount. Example: cigarette butts. They're verboten. "I don't *want* a man who throws cigarette butts on the floor," says Lennon. "The man who thinks clean will take pride in his work. He'll hold his head up and be proud of his company. This attitude will carry over into construction of the plane. This place looked chaotic and dirty when I got here.

"I'm trying to change the complete philosophy of this place. Some people have the ability to get the job done, and others don't. I'm trying to surround myself completely with top-notch men. This thing will be converted from chaos to order very quickly."

From this point on, however, Lennon speaks in terms of small increments; of moving forward little by little, a step at a time. In order to avoid false predictions, he offers no timetable for certification or production. He obviously has to consolidate, to start almost from scratch. As Jim Bede says, "At this stage to lose our entire engineering staff was pretty rough."

Nevertheless, Lennon is building and hiring and already has an experienced, highly touted production man, who has designed a factory flow pattern.

And although the factory itself, in terms of clatter and bustle and the hum of activity, resembles the rare archives room of a Tibetan monastery (there are just 20 workers in the shops, 8 in engineering), everyone agrees that the key engineering problems associated with designing and building the airplane have been solved.

In other words, the basic design of the airplane is pretty well set and the bonding apparatus is ready to be translated into final "hardened" production form.

Nevertheless, considerable detail work remains to be done, and this must be hammered out in the engineering department and in flight test.

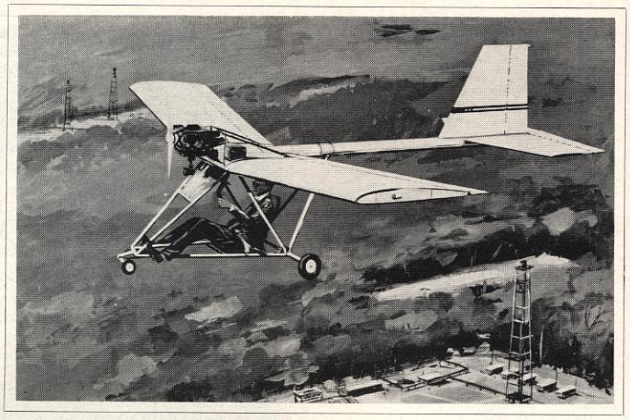
At the moment, three aircraft are being built for certification. One has most of its basic components: fuselage, empennage, wings, landing gear, Lycoming engine and even its fiberglass cowling. The others are less advanced. All are slab-sided and bare, but beautifully unblemished by rivets.

Two of the aircraft will be used in flight test; the third in static test.

Will production aircraft ever actually see the light of day?

Everybody snorts, "Yes." (continued)

The BD-1



Bede talks of marketing this homebuilt in kit form for about $600 (without engine).

"At this writing," says Herzog, "there's every intention of pushing it on through to a successful climax and doing it as expeditiously as time and the dollars allow."

"I'm positive we'll design and build and manufacture and deliver a BD-1," says Bede, "and be accomplishing all the goals we wanted to accomplish before."

And Mr. Lennon wags his finger in determined affirmation that *he* intends to bring the project to a successful production program, no matter what.

Nevertheless, Lennon says people who have contracted for the Bede BD-1 and received a guaranteed place in line are going to be asked to dissolve the contract voluntarily and accept in return funds placed in escrow by the Bede Corporation as down payment. However, their delivery priority will be preserved.

The reason for this is *not* that *nobody* wants their money and that it is doing *no one* any good sitting in Mr. Herzog's Union Commerce Bank in Cleveland in escrow, but it actually is proving to be an embarrassing liability.

This is because all of the money, untouchable though it may be, is fair prey for the Federal sales tax, payable by the Bede Corp.

But finances aside, how does Mr. Lennon qualify to head an aircraft manufacturing plant in view of the fact that he has *no* experience in aviation? Mr. Lennon, it seems, does not regard this as a particular handicap.

Jim Bede, even, harbors only slight reservations: "Mr. Fred Lennon is a real fine individual, very talented. He definitely is not an aviation man, does not know airplanes, and frankly doesn't like to fly. As he puts it, 'All I know about airplanes could be put in your eye, and it wouldn't hurt you very much.' But he is a successful businessman and has made a good record as a clean, honest businessman. So therefore I'm confident that he's going to try and make a very good go of the company and make it succeed."

"Mr. Lennon," explains Mr. Herzog, "manufactures a lot of items for large corporations and for the government—Oak Ridge and so on—and he's familiar with government requirements. He also is a top-notch production man. It was felt that Fred Lennon was a man who fit perfectly the job of obtaining certification and putting the plan in production. And he's doing the job, incidentally, at one dollar a year."

Probing through the resulting smorgasbord of motives and incentives leaves the observer tantalized but confused.

The Bede board of directors, of course, has an obvious incentive: to redeem and if possible redouble the $800,000 investment it placed in the Bede enterprise. Mr. Lennon is, of course, one of the investors. (Others outside the board invested another $100,000, and subsequently the board endorsed a bank loan of $300,000 to pay all expenses. They expect soon to consummate another $300,000 loan; and later to add another $300,000 increment. So the company is well-heeled.)

All the men on the board have personal business reputations to preserve. There also is the image and well being of the Cleveland industrial community to consider. Cleveland obviously stands to benefit from survival and growth of this new aviation industry that it, in effect, lured to its eastern outskirts.

Mr. Lennon, at $1 a year, already has made his fiscal mark. What seems primarily at stake is his status and reputation as a man who never has been associated with a losing commercial cause.

But anyone probing for a trace of old-fashioned zeal for an exciting new product—one that could have a great impact on aviation—is likely to come up empty-handed.

Zeal and emotional involvement, for whatever they're worth, seem to be the missing elements. This, of course, excludes James Bede, who now enjoys the status of consultant for his own company.

"I'm an aviation nut just like many others," he happily volunteers. "And I love airplanes from one end to the other. I probably would trade my mother-in-law and some of my kids (he has four) for them."

His motives? "I just want to do something for the betterment of aviation. Not earth-shaking, not revolutionary, but just something substantial to perpetuate the whole doggone thing. So no matter what happens, I am personally going to continue to devote my interest toward light airplanes, general aviation and such."

And in spite of his somewhat vague role with the company, he still has high hopes for the airplane. "Being the principal stockholder means that I'm going to be constantly very deeply involved with it, no matter what. As it is right now, these people are giving me a vacation from the management standpoint, and I'm able to go ahead and devote my energies to engineering."

The amazing thing, it seems, is the extent to which James Bede—at 32 already an ex-president—has been able to maintain composure and equanimity in spite of his obvious pain and sadness at the turn of events.

After all, the airplane was *his* idea, *his* brainchild, and to a large extent, it

was built on the foundation of *his* or his father's financial backing. "I put my life savings—about a third of a million dollars—in my son's work," says Jim's father, James R. Bede. Mr. Bede, Sr., made his fortune with inventions in the paint application field and still receives royalties from up to 25 patents.

And young James Bede still believes he was on the right path in his ideas on research and marketing and in developing the airplane *his* way. "We needed this marketing information to really know how to specifically design the airplane," says Bede. "Whether we should lean toward this or toward that or forget this particular item. When I disagreed to do some of the things proposed by Mr. Lennon, who didn't like my marketing approach, Mr. Lennon felt it would be advisable to build only five or ten aircraft a month for the first six months, and I didn't think this was the way. We had the orders, and it was advisable to go ahead with large-scale production."

The magnitude of the schism is obvious, but Bede still manages to look philosphically at the entire paradoxical situation, and at the board of directors he gathered about him for financial support and guidance and that, in effect, turned him out of his own house.

(However, according to Herzog, Bede "will be back in again, at some time in the future. This was just to get one step taken, that's all. It's an interlude.")

"To me it's an extremely fine board of directors," says Bede. "It's made up of a hell of a lot of damn good guys with a lot of good talent."

Commenting on the actual transfer of authority, Bede says: "Since Mr. Lennon and some of the other directors were lending financial support, I felt it would do nothing but cause a lot of trouble to start an internal fight, so I agreed to then let him become president, let him continue to run the company, let him call the shots, even though I knew they were going to be quite different from what I would do."

"Having majority control (he says he holds 53 percent of the stock), I could have taken some serious legal action, but that wouldn't have proved anything. Being more interested in trying to make this thing successful, and not having my personal ideas and desires advanced, I decided to go ahead and do the thing on a smooth basis, and in a sense be practical about the darn thing, and that's it."

Bede also nourishes considerable concern for his Volkswagen-of-the-air dream. "What I'm primarily worried about is not only our company, but really the image of the industry, because this BD-1 is another of the low-cost airplanes. There have been many others before it. And no one has actually done things precisely right. And maybe we couldn't either, but we are hoping to make a good dent in that direction.

"What I didn't want to happen—what would be extremely unfortunate for everybody concerned—would be to have the thing end up a total failure and everybody say, 'Well, damn it, it was a nice dream, but we can't have it,' and away we go."

So is this the final scuttling of the heavily laden Bede dreamboat?

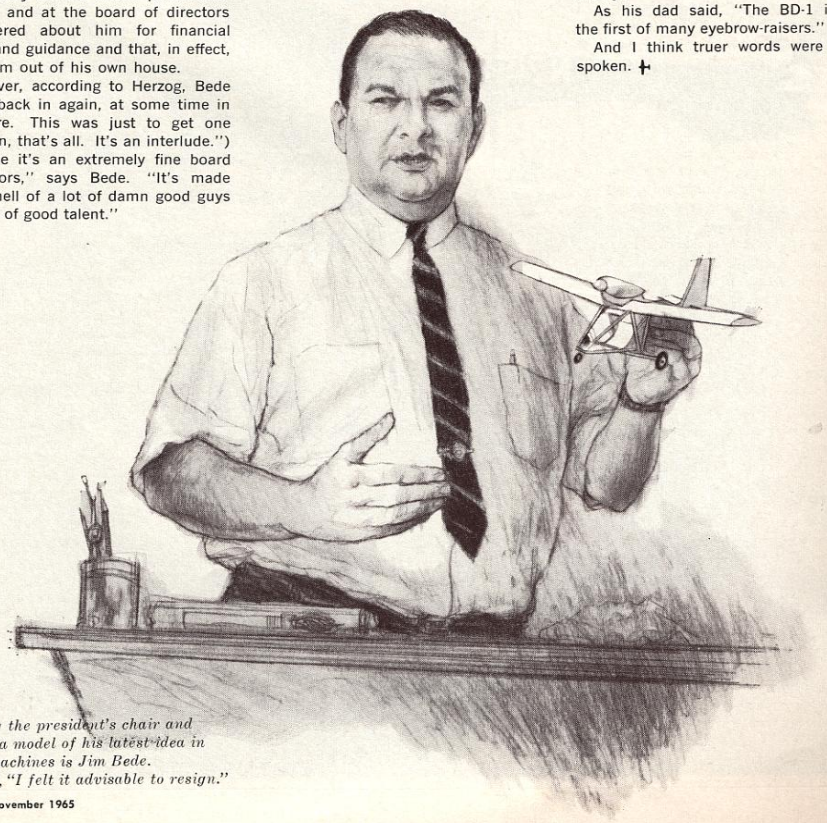
Not on your life.

Jim Bede already has opened up an office and drafting room in leased quarters across the other side of the airport in the main hangar building. And there he is, with his accustomed vigor and enthusiasm, diving head first into a myriad of far-out new projects.

His first: an everyman's homebuilt that looks like a monoplane Wright Flyer. Price: $5-600 minus engine, naturally.

As his dad said, "The BD-1 is just the first of many eyebrow-raisers."

And I think truer words were never spoken. ✝



Yielding the president's chair and holding a model of his latest idea in flying machines is Jim Bede. He says, "I felt it advisable to resign."

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November 1967/75¢

FLYING

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First Flight
in the
YANKEE
(Son of Bede)

Think Twice
About
SPECIAL VFR

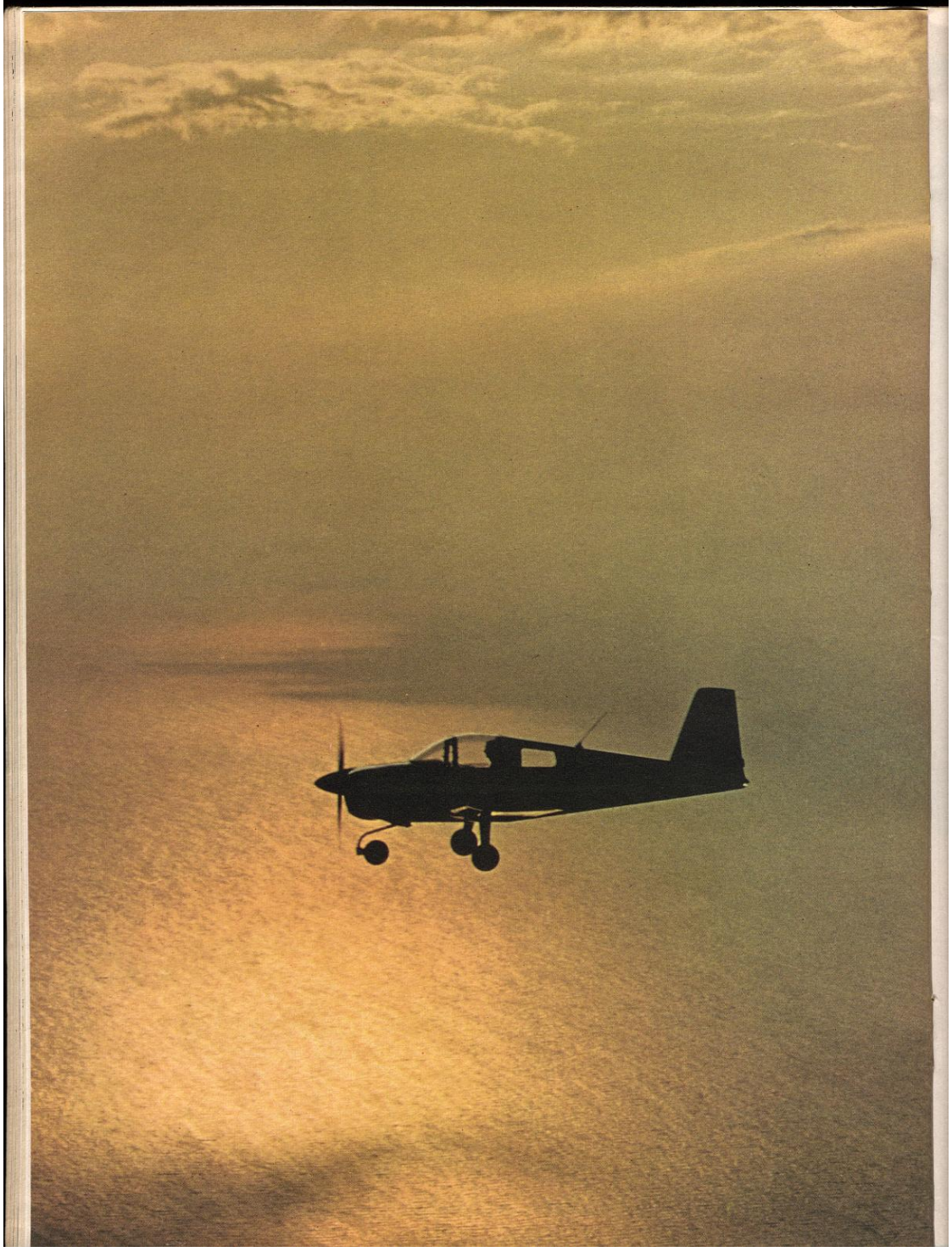
Pilot Reports:
Beech
King Air

The FH-1100

From the ashes of Bede Aviation rises, phoenixlike,
the American Aviation Corporation. And the BD-1, now certificated,
has become the Yankee. Here's the whole story.

by James Gilbert/senior editor

Meet the Yankee



IN GENERAL AVIATION CIRCLES few announcements caused as much stir, aroused as much interest, and set as many pilots' hearts apounding as did the statement from Mr. James R. Bede of Cleveland, Ohio, in the year 1963 that he had built and would shortly produce an airplane for the common man. It was to be a Volkswagen of the sky. Two-place, with folding wings, with a speed of 130 knots (150 mph) for the 108-hp version and the price was to start at a mere $2,500 for the 65-hp version. Orders rolled in from around the world. Thousands of them. Many contained deposits. It seemed the answer to a pilot's dream.

In fact Jim Bede had built an airplane, the BD-1. It was a little low-wing two-seater with a single tubular extruded spar and folding wings. It had glass fibre spring gear legs and very extensive use of bonding and honeycomb structures. It was the kind of airplane of which schoolboys dream, such as do not have to face the reality of actually bonding such structures, and then getting them past the caustic gaze of an FAA inspector.

Not daunted by such harsh realities, Jim Bede looked around for backers to build his baby and soon found a group of eager Ohio industrialists who came forward with a half million dollars to build a plant and move into production with the BD-1. Jim was hired as president of the new Bede Aviation Corporation and

The Yankee

It was drizzling this golden-olive evening over Lake Erie, but on a nice day you can slide back the canopy and fly along open-cockpit style. The unorthodox castoring nosewheel is an innovation borrowed from homebuilders.

a super new factory was quickly begun at Cuyahoga County Airport. Jim confidently promised FAA certification of the BD-1 within the year. By June, 1964 to be exact.

For the next 18 months Jim Bede's supreme enthusiasm, more intoxicating than any drug, carried the corporation along. He and his 15 engineering staff dreamed and schemed, imagined and created till you might have thought that like the mad scientists of comic strips they were planning to take over the entire world. But certificate the BD-1 they didn't. Ideas poured from them like rain from a summer shower; in such a heady atmosphere it must have been difficult to apply oneself to such a mundane task as getting approval from the dull old FAA for last year's little airplane.

Finally in August, 1965, came the inevitable day of reckoning. Jim Bede's backers called a meeting to see what 18 months had achieved. In concrete terms, it seems, very little; they had no certification prototype, and they had been almost totally unsuccessful at bonding. They had been successful only at publicizing the project. And they had spent over that 18 months more than a million dollars, and the man from the FAA (whom somebody had thoughtfully invited to the meeting to temper Jim Bede's optimistic conviction that certification still was lurking just around the corner) told them they were hardly nearer gaining that magic piece of paper than they had been 18 months before.

It cannot have been a happy meeting. By the end of it Bede was out, and most of his engineering staff with him.

But replacing Jim Bede was to prove nearly as impossible a task as taming him. For a while a Cleveland industrialist called Fred Lennon ran the company (see FLYING, November 1965). Then a man named Jim Frey was found; he had been production chief at a huge company making railroad cars, had retired before his time, had always been interested in airplanes. He came in October, 1965, and by all accounts did his best, but the whole madness of the operation defeated him in time, and by midsummer 1966 he was gone.

And so we come to Russ Meyer, today's incumbent, and one unlikely guy to be running an aircraft business, for although an ex-military pilot, he's a lawyer by trade, and a young one at that—just 35 years old. Mind you, he didn't exactly *jump* at the job when it came up.

"I was extremely busy at our law firm here," he'll tell you. "The Bede Corporation had been using a law firm in Toledo. It's a bit unwieldy trying to represent an out-of-city client, and when at the end of 1965 they wanted to refinance through debentures, they came to our firm and I got the job. My first job was the refinancing. Then they wanted me to be general counsel, then in April, 1966, secretary as well."

He must have done a good job, because soon he was asked to step in and run the company. He refused; he was happy at his law firm, and secure there. But in the end he took leave of absence from the law firm to put his client's house in order.

"There's really no rational reason why I'm here," he'll tell you, laughing the while with some secret inner glee.

You might think that picking Russ Meyer to run things was a last-ditch stand by the company's backers, and you might be right at that. But Russ Meyer has such a dogged determination to get things done, such a concern for detail, such a blinding honesty in appraisal of the problems of the hour that he might well be the man to bring it off. For a start, he got the airplane certificated, in August this year. It wasn't easy.

Says Russ of the months preceding certification, "We had people who brought hammocks out here and slept with the airplane. I can remember feeling guilty leaving the factory to go home at three in the morning. When we flew the first certification prototype in February of this year, everybody was out there lining the runway—like in the old movies. I don't think I've ever had a year quite like it."

The problems of certification, the problems that defeated Jim Bede and that he left behind, the problems that Russ Meyer all innocently inherited, are problems you would hardly believe. At first it seemed to Russ that the bonding that in the BD-1 completely replaces rivets was the principal problem. It is a tacky process that requires that the parts to be bonded be first acid-etched and rinsed (using four different tanks) before the adhesive can be applied, then held together with a pressure of at least 10 pounds per square inch and heated to 250 degrees for one hour while the bond cures. Later the bond is examined with an ultrasonic fault-detection device.

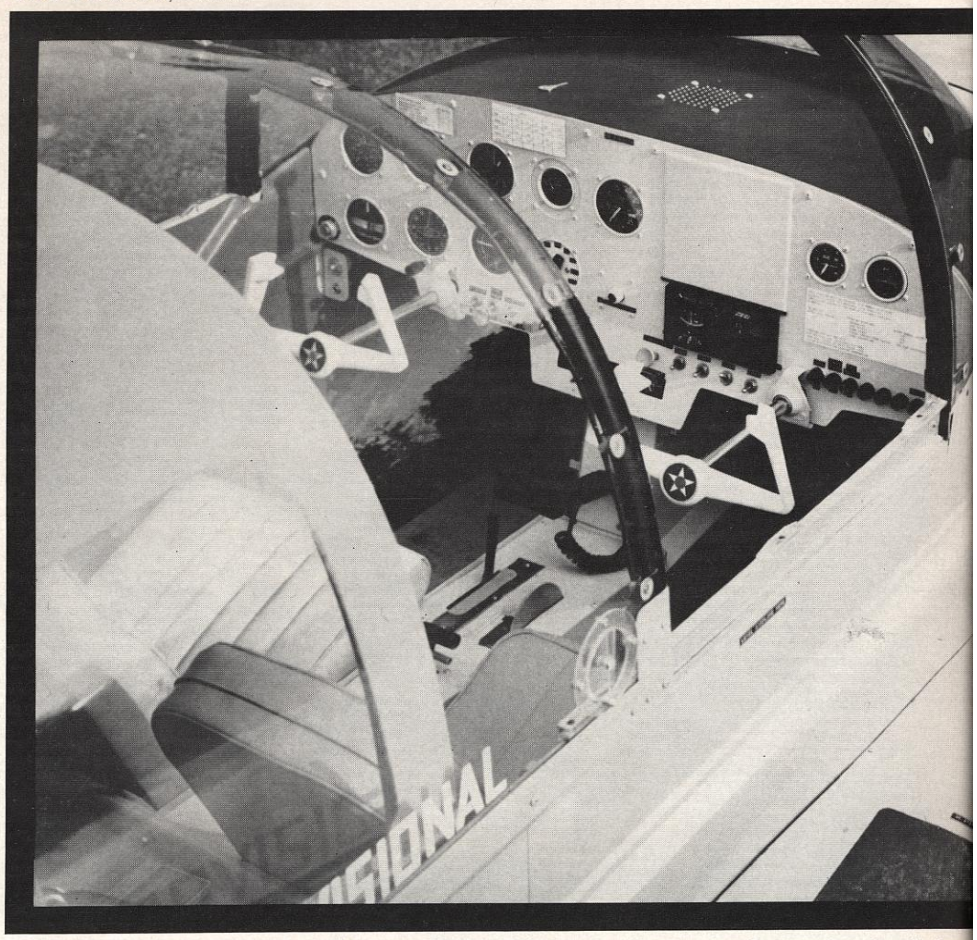
There are simpler room-temperature bonding techniques (this was how Jim Bede built his first prototype BD-1), but they require a curing time of six to seven days and lack the strength and lightness required for a production airplane.

It was after the previous regime had failed to bond six fuselages in a row that Meyer had first showed his true mettle. He requested help from the chief engineer of the Whittaker Corporation in California to help put them right, and within a month they had successfully bonded three fuselages. One can imagine how such a get-things-done ability was grabbed at by the Bede Corporation's owners.

The company is in a very real way pioneering new structural construction techniques, and you can imagine how tough on them the FAA is. Everything has to be tested and stretched and pushed and vibrated and fatigue-tested well beyond any shadow of reasonable doubt.

Even the horrors of bonding, Russ was to discover, weren't the worst of what he was facing. Soon after he took over, a qualified test pilot ran a flight evaluation on the airplane and found there was plenty wrong with *that*. It was way down on performance; it was slower than Jim Bede had claimed (he'd never even had the ASI calibrated), it wouldn't climb as fast, it had a tendency to fall over at the stall but wouldn't roll much

PHOTOGRAPHY: BUD LOADER



The Yankee's cockpit: Yokes like spindly arms flexing their biceps, a center console mounting throttle lever

at any other time, it was deficient in longitudinal stability, the control system was overly complicated and there were clearly going to be problems when it came to spin testing.

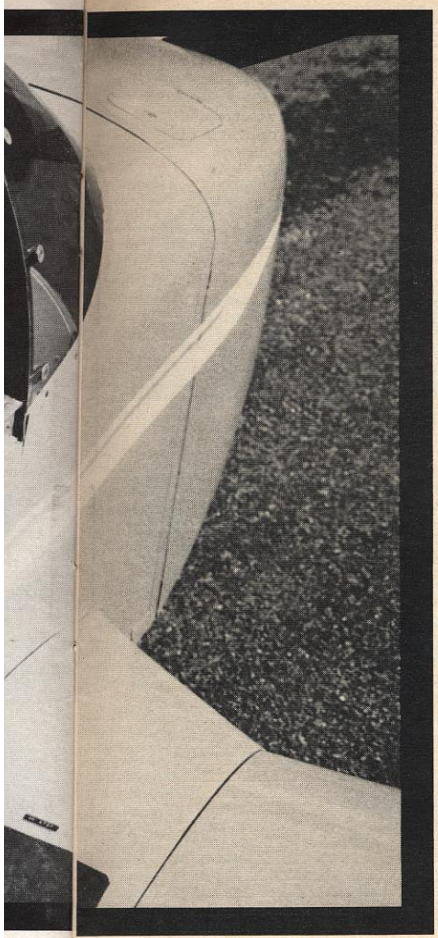
It seems that Jim Bede's exuberant optimism and unconcern with trifles had run away with him; Bede's brochure figures for his airplane included an empty weight of 812 pounds and a cruise speed of almost 130 knots (150 mph), but his prototype weighed 984 pounds and cruised at nearer 108 knots (125 mph). How 172 pounds weight was going to be engineered out in manufacture was not explained.

So they worked at it: they added a bungee in the elevator circuit, and redesigned all the control circuits and enlarged the ailerons and put horn balances on the tail control surfaces and added a trim tab. They lengthened the wing and gave it a new tip and dropped the idea that the wings should fold. They changed the shape and size of the gear. They redesigned the fuel system. And in the end they had an airplane to which the FAA would give its blessing.

And next, as if to show how things were changing around Cuyahoga County Airport, they renamed their enterprise the American Aviation Corporation, and the BD-1 became the Yankee.

The total investment today, from all parties, is slightly less than $3 million, for which the corporation has as tangible assets the factory, worth maybe $500,000, and that frail but costly piece of paper, the FAA type certificate for the new Yankee. Russ Meyer foresees a need for a further $6 million over the next three years to get the airplane into production, with a paper profit being achieved late in 1970, at the sale of around the 1,500th production airplane. His production plans seem ambitious; from a factory that stands echoingly empty and void of bustle today he sees 134 Yankees being turned out next year, 550 in 1969 with production rising to 75 a month by the end of that year and reaching a total of 1,200 in 1970.

He's already ordered about $95,000 worth of machines, has begun tooling and is working on such mundane but necessary tasks as clearing trees for car parks and installing sprinklers. He aims



lever and knurled trim wheel.

to have about 50 employees by the end of the year, and to hire new men at the rate of 15 a month thereafter.

Can Russ Meyer sell Yankees in those numbers? He thinks so, and has priced the airplane at $6,500, to be exactly $500 less than the Cessna 150, over which it has a nine-knot (11-mph) speed advantage at cruise. Manufacturing airplanes is a business where you must run hard merely to stand still, and one wonders how long Cessna (or Piper, or anybody else for that matter) will let him get away with that sort of thing unchallenged. It will be a battle.

Marketing plans include three direct factory dealers to be appointed by the end of this year, one each in New York, Texas and California, and 12 more next year. And he is choosing them with some care.

Having won the certification battle, Russ Meyer's next task was to find himself some key executives. He ain't done badly, either; Dick Kemper came from Cessna to be general manager of operations, and Meyer picked up a chief engineer, a chief of structures, a chief of quality control and a director of purchasing from the same source. Larry Kelly, his director of marketing, came from Aero Commander.

Meanwhile, across the field, barely half a mile away, Jim Bede sits in his office or in the coffee shop downstairs, still dreaming dreams. He is no longer plotting to take over the world but just to fly around it, nonstop, solo, in a powered glider whose cockpit has the finest row of warning lights you ever saw, including one labeled ANTIGRAVITY.

"I have the greatest respect for Russ Meyer," he'll tell you with becoming generosity.

And the American Aviation people have kind words to say for him. "If it hadn't been for his imagination in putting the prototype together and his salesmanship," said one, "we'd none of us be here today."

Yet happily all this love in the air doesn't prevent Bede telling you frankly where he feels the new regime is going wrong. He still maintains, stoutly, that when he left they were only six months away from certification. He still maintains that it would have been possible to manufacture the BD-1 with the 108-hp engine for $4,500. Talking to him you begin to see that he is a man whose besetting sin is overoptimism, and such a refusal to be daunted by problems that sometimes he cannot come to grips with them because he simply cannot see that they exist.

"Why does the word 'impossible' have to be so *overpowering*?" he cries in a voice approaching anguish. To him it clearly isn't. And that talent for self-publicity continues to get in his way. Of his round-the-world project, one American Aviation executive said sourly, "He's issuing press releases daily. *Hourly*."

To Bede the problems that gave his successors such sleepless nights are mere trifles, hardly worth bothering with. Of his BD-1's slow rate of climb and sluggish cruise he says, "Just a couple of little things needed doing." Of the difference between prices, his $4,500 and their $6,500, he says, "There isn't anyone over there who knows how to estimate cost figures." Of the spin recovery problems he says, "Just a small inch-and-a-half plate in the right spot on that fuselage, and you can recover whenever you want." Of the abandonment of the folding wing idea as impractical he says, "It's just a $20 item to make them fold."

How can you argue with such a man when he refuses to see that there's anything to argue about? And of the performance figures he claimed for the BD-1, he says with passion, "I can show you articles on the original airplane by completely independent writers who went up in the airplane and saw the cruise speeds." (We can show you such an article in an old copy of FLYING, but the writer did note that "the indicator on this airplane was so far off as to be completely misleading.")

Meanwhile, back at the American Aviation ranch, Russ Meyer, the battle to certificate the Yankee won, is well on top of the next skirmish, to find the key executives he needs. He can look forward to the headaches of improving his prototype, the anxieties of keeping his stockholders behind him, the Herculean task of equipping his factory to turn out Yankees at ever increasing rates and ever decreasing cost. He'll be busy some little while yet.

THE YANKEE, when you come to look at it, is a chunky, boxy little airplane, a sturdy, cheeky-looking machine, simple and slab-sided. Compact. Beautiful? Let's say *functional*. Come closer, and that sailplane-smooth wing draws your eye, and you glance over the rest of it. *No rivets*. Not a single dragging rivet to be seen.

Hop up over the wing and settle in your seat. Hmm. It's roomier than the 150. There's a solid structure separating the two seats much like the transmission tunnel of a Ford Thunderbird, mounting a huge throttle that looks for all the world like a gear shift. Also the flap lever, which looks like no flap lever you ever saw before.

Grasp that throttle, and you feel it deserves an afterburning J79 behind it, instead of a little old 108-hp Lycoming. This throttle incorporates its own friction lock, so that it stays where you leave it until you unlock it by starting to move the throttle lever. It is a great throttle lever. On the production airplane it may be replaced by one of those stupid plunger things. Pity.

Start up. It's 80 degrees or better outside, so we leave the canopy half open and taxi away breezy as two motorcyclists. (I am flying with Dick Kemper, general manager of operations.) The nosewheel is in no way connected to your feet, and swivels free; you taxi therefore on the brakes, with all the maneuverability in the world. In any crosswind you must carry a *soupçon* of brake on the downwind side so as not to weathervane, as though you were a sailboat. It's fun!

Now both Dick and Russ Meyer have told me there are a number of things they propose to put right before production, and one of them is the noise. In the air it's mostly engine noise, but adding to the clattering hooves of 108 horses

The Yankee /continued

as you taxi along is a tendency of all those areas of unsupported skin to "oil-can," so that it's a bit like driving along in a mechanical wobbleboard, if you are familiar with that unique Australian musical instrument.

Ah, the takeoff. This, for accuracy and neatness, requires some light juggling with the feet, because of the nonsteerable nosewheel. You start with full right rudder and some pretty firm right brake. After you've gone about 70 yards, you start reducing the right brake, until quite suddenly the rudder comes to life and you must look lively on that. By about 61 knots (70 mph), the airplane is ready to fly, so come back on the yoke, but not too hard or you'll leap into the air in all of a dither, with the stall warner yelling in protest. It takes three or four trips around the field before you get it off exactly, but you feel a rich emotional satisfaction when you can do it.

Best rate of climb is well along at 74 knots (85 mph). The book says 900 fpm, but we indicate nearer 650 fpm, and a timed minute of climb tends to confirm this. But the 900 fpm is at sea level on a standard day, so today the heat is powerfully affecting things.

The Yankee has two miniyokes like sculptured arms flexing their biceps, and there's a deal of lost motion in the aileron circuit, but this cannot hide how nice the controls are. They are light, powerful, delicious. A stick will be an option on later Yankees.

The climb to 8,000 feet to check the best cruise speeds is a long one, and as we get there the rate of climb is down to 250 fpm. We level off, leave full throttle, and slowly accelerate to 105 knots (121 mph) IAS, with the RPM stabilizing a hair over the 2,600 redline. The noise is awesome, and conversation is only possible at the level of a shout. Some later shuffling with the slide rule back on the ground, and correcting for the two mph that the ASI is reported to be slow, gives us a TAS of 122 knots (141 mph) for about 79 percent power.

This accords most favorably with the brochure cruise speed of 115 knots (133 mph) at 75 percent. Some other settings: 2,500 rpm gives 97 knots (112 mph) IAS or 113 knots (130 mph) true; and 2,200 rpm (which is about 50 percent and the approved long-range cruise setting) gives 77 knots (89 mph) IAS or 90 knots (104 mph) true. Now 133 mph at 75 percent is creditable enough, and is some 11 mph faster than the Cessna 150.

Longitudinal stability is good, and the airplane will fly by itself in calm air, but roll in a little bank and let go and she quickly winds up in a real tight spiral. Most light airplanes have no better than neutral spiral stability, and there are others besides the Yankee that are unstable in this way—the Bonanza for one. Spiral stability is a function of dihedral and fin area, and the FAA is very exercized as to whether airplanes should be required to have it, or at least an artificial form of it such as a wing-leveler like Mooney's PC. There is even a notice of proposed rulemaking out on the subject. Spiral instability is of little import except to noninstrument pilots who find themselves suddenly in cloud. Then it is deadly.

We throttle back to investigate the stall. Whenever the RPM passes through 1,500 there is a burst of oilcanning, and the whole airplane sings like George Harrison's sitar. The stalls are preceded by a slight buffet and a powerful horn. There is only a slight tendency to drop a wing, and excellent aileron control at all times. The stall speed, 55 knots (64 mph), is fast for such a small airplane. (The 150, for example, stalls at fully 13 knots or 15 mph less with full flap.) I note that the Yankee stalls a mile or two below the bottom of the arc on the ASI, which tends to confirm that it is indicating a mile or two slow.

We descend to 2,000 feet, noting and approving of the very high never-exceed speed, 170 knots (195 mph). For those who cannot be bothered to climb up to 8,000 feet to get the best cruise, we record at 2,000 feet and 2,400 rpm (which is about 73 percent), 105 knots (121 mph) IAS or 110 knots (127 mph) true.

We make some touch-and-goes, noting the excellent visibility from that bubble canopy all around the pattern. We find that the flaps are notably ineffective (they also are on the list of things to be improved before production), and that an accurately straight landing requires the same kind of nifty footwork the takeoff did.

With those nice controls and the high redline speed, the Yankee cries out to be certificated in the aerobatic category. It seems the decision was made to go for the normal category when flight testing revealed that some redesign would be necessary for it to meet the extra aerobatic category spin requirement of recovery inside one and a half turns after a six-turn spin. Aerobatic certification is on the program for the future.

But for the present there is the Yankee, a sporty, swift and satisfying airplane with a lot of what the competition doesn't have. The price is right and the prospects are good that after years of promises the little two-place airplane that was the BD-1 will be produced and delivered into the hands of the waiting market. It will not have many of the features that an unrealistic Jim Bede vowed would be there but in retrospect it is improbable they ever would be, at least at the price quoted.

It will have all the modern features that a most realistic Russ Meyer feels can be safely and economically engineered into an airplane. And if there are many differences between the two airplanes there are many differences between the two men. While Bede dreams and scoffs at reality, Meyer has moved to the threshold of success in short order.

And how big will that success be? Only you can tell. If you are one of those who placed your order in the old days you will receive preferential delivery treatment if you want a Yankee. And if you're just a pilot with a yen to have a snappy little two-place runabout that can give you lots of pleasure for not too much cash, get in line. ✚

American Aviation Yankee

Manufacturer's Specifications	Basic Price: $6,495
Engine	Lycoming O-235-C2A, 108 hp
Propeller	McCauley fixed-pitch metal
Wing span	24.4 ft.
Length	19.2 ft.
Height	7.2 ft.
Wing area	99 sq. ft.
Wing loading	14.5 lb./sq. ft.
Passenger & crew	2
Empty weight	885 lbs.
Useful load	545 lbs.
Gross weight	1,430 lbs.
Power loading	13.25 lbs./hp.
Fuel capacity	24 gals.
Oil capacity	6 qts.
Baggage capacity	40 lbs.
Performance	
Takeoff distance	790 ft.
Takeoff distance over 50 ft.	1,440 ft.
Rate of climb	900 fpm
Service ceiling	12,220 ft.
Maximum speed	122 kts. (141 mph)
Cruise (75% power)	115 kts. (133 mph)
Cruise (65% power)	109 kts. (123 mph)
Range (at 75%)	378 nm (435 sm)
Optimum range	445 nm (512 sm)
Stall speed	56 kts. (64 mph)
Landing distance	442 ft.
Landing distance over 50 ft.	1,185 ft.
Flight characteristics	
Control response (cruise)	Excellent
Control response (slow flight)	Excellent
Hands-off stability	Good
Stall recovery	Good
Runway handling	Fair
Pilots utility	
Visibility	Superb
Seat adjustment & comfort	Good
Accessibility of switches, etc.	Good
Panel layout	Fair
Cabin comfort	
Entry-exit ease	Fair
Seat room	Good
Ventilation (in flight)	Good
Ventilation (during taxi)	Superb
Noise level	Poor
Maintenance access	
Engine	Very good
Electronics	Good
Instruments	Good

FLYING

World's most widely read aviation magazine

June 1970/75¢

Special! First photos:

a four-place from Yankee,

and a new two

Our competitors helped us prove what we say about the American Yankee

We Say

that our American Yankee will outperform, will cost less to maintain and operate, and is more sheer fun to fly than any other two-place airplane in its class.

And we base this on our competitors' own figures.
For example. The Yankee's top speed is 144 mph, and she cruises at 134 mph. The 140 Cherokee which cruises at 133 mph comes closest to the Yankee, but it needs 42 more horses to do it. And an extra $3,100. Note, too, that the Yankee climbs 15% faster than the other two-place aircraft.

Compare the published figures

	Piper Cherokee 140	Cessna 150	Beech Musketeer Sport	American Yankee
Top Speed:	142 mph	122 mph	140 mph	144 mph
Cruise Speed:	133 mph	117 mph	131 mph	134 mph
Rate of Climb:	660 fpm	670 fpm	700 fpm	810 fpm
Range:	725 miles	475 miles	865 miles	426 miles
Useful Load:	937 lbs.	625 lbs.	900 lbs.	550 lbs.
Operating cost (per hour):	$6.27	$4.62	$6.04	$4.14
†Operating cost (per mile):	$.069	$.069	$.073	$.048
Price:	$10,400	$8,350	$15,450*	$7,295

NOTE: All comparisons reflect manufacturers' published data. Simple interpolations have been made for accurate comparisons based on 400 annual hours flown at an average fuel cost of 42-cents per gallon.
Performance data is with wheel fairings, when available.
†Computed at cruise speed, monthly hangar rent of $40, and manufacturer's published estimate of annual insurance costs.
*List price includes full panel with some avionics.

Sporting the lowest base price of all four 2-place aircraft, plus the lowest operating costs, the amazing Yankee appeals to commercial operators for rental and flight training, alike. Everyone—club members, students, and private owners—finds that the Yankee delivers unbeatable performance.

But facts and figures only tell a part of the Yankee story. Her quick and positive response to your touch, along with the sheer fun of flying her, is something you'll just have to discover for yourself. So go ahead. Discover. Start by mailing the fast-action coupon to us today. We'll rush full details, plus the name of a nearby Yankee dealer, right back to you.

American Aviation Corporation

318 Bishop Rd., Cleveland, Ohio

I don't want to be obligated, but I'd sure like more information on the amazing Yankee.

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CIRCLE NO. 34 ON READER SERVICE PAGE

IS THIS YANKEE'S

YEAR?

In which we reveal that the boxy, glued-together look of the two-place trainer now has a factory-built polish—and Yankee engineers have doodled out a dandy new four-placer—to be named the Patriot.
Text and photos by Stephan Wilkinson

RUSS MEYERS MAKES dirty movies. Russ Meyers also makes Yankees. Not the *same* Russ Meyers, dig, but the squeaky-clean, well-clipped foulard-and-buttondown ex-Yalie lawyer who runs the American Aviation Company takes a secret delight in the fact that he shares his name with the cinematic visionary who cranked out the first nudies back in the days when *Playboy* was considered wicked. "I should go to New York," Meyers says. "They tell me my name is up in lights all over Broadway."

He should stay in Cleveland. In four years, he and his persuasive, imaginative young associates have put together an airplane company that has established a solid, steadily growing niche in the market for its product—a two-place training and pleasure plane of qualities quite unique in the U.S. and perhaps in the world, excepting such relatively unavailable aircraft as the Beagle Pup.

First there was the hastily assembled production prototype, the bright red bug that buzzed from air show to potential dealer to industry convention; then a few dozen of the appealing little beasts found their way into the hands of adventurous owners (an airline pilot, a middle-aged lady and a college student who'd just learned to fly, among others); in a year, almost 200 Yankees, as saucy as Sugarbush gondolas with wings, had snarled out into the lightplane-sales jungle, where they even began to lock control horns with the dreaded 150 and the mighty Cherokee, rulers of the flight-training roost.

As you read this, just two years after that ill-trimmed, noisy and slow-climbing prototype turned up at the Reading Air Show, some 350 Yankees have been sold—tight, comfortable little ships with their teething problems solved and their old homebuilt aura gone forever under a gloss of factory professionalism. The once-rough fiberglass nose caps and root fillets are smoother than ever before, the nose strut is now just about unbreakable and the nosewheel-shimmy problems are gone, the temperamental dual-cylinder braking system has been tamed, the canopy opens and closes smoothly in its tracks (unless you manhandle it) and the cockpit is wind- and noise-sealed about as tightly as a Plexiglas popover can be.

Rolling off the line now is the new, improved 1970 Yankee; nothing major, mind you—just some artfully placed extra soundproofing, a quieter engine installation and modified exhaust system, a fancier interior and an even cleaner job of assembly and finishing all around.

What more could anybody want—especially a little fella that made good? A lot—especially a little fella that was once a chuckle, the subject of knowing winks when his funny-looking glued-together airplane, the one you couldn't get off the ground without a pry-bar, was mentioned; especially a company that got karate-chopped by the aviation press, by suppliers, by banks and insurance companies, by an early fatal accident that was incorrectly rumored to have been caused by control failure, by the competition and by hangar-fliers everywhere.

What that company wants, quite simply, is a bigger slice of the lightplane pie—a stronger dealership base and a larger step-up market. Russ Meyers never forgets the fact that a large percentage of Cessna 172 buyers learned to fly in 150s and that relatively low-time pilots all think the airplane in which they happened to learn to fly is the greatest airplane in the world. With the little Yankee darting hither and yon, then, American has already put the AA-2, named the Patriot, a new four-place, 180-hp airplane, into the sky; has begun work on a retractable four-seater; and has on paper a design for one of the most economical and appealing light twins you've ever seen.

Russ Meyers wants to keep it all in the family, and wants all those Yankee students to step up to the AA-2, not to a Cherokee or Cardinal. He wants his dealers to be able to keep their customers—the ones they perhaps even introduced to aviation—right up through the time they sell them twins, in fact.

The AA-2 is a handsome machine, with a thinness of line, a sharp delicacy that the chubby little Yankee never had. It has a small, wedge-shaped nose over its 180-hp Lycoming, an immense windshield, a cabin high enough for a top hat, and a driver's-side door that makes even a Cardinal's look like a baggage hatch. Its design is meant to bear a family resemblance to its little brother—most evident in the constant-chord wings, unswept tail and slab-sided after-fuselage cone—yet without looking like a "stretched Yankee." Seen next to its stablemate, the AA-2 looks immense; you feel that you can walk upright under its tail as it squats on its spindly main gear like a stiff-legged tomcat.

Actually, the exterior dimensions are about the same as a Cherokee 180's, though the cabin is substantially larger, and it's meant to meet or beat every 180 performance figure and capacity, and do it at a Cessna Skyhawk price. That means 1,100 pounds of useful load (on the

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The Yankee's curlicue nose-gear strut has been fixed so that it will no longer break off; fillets at the wing roots and tail have been cleaned up; and the new, quieter interior now has the gloss and polish of professionalism.

AA-2's 1,300-pound empty weight) at a cruise of 143 mph and a range of 600 miles—for $14,700.

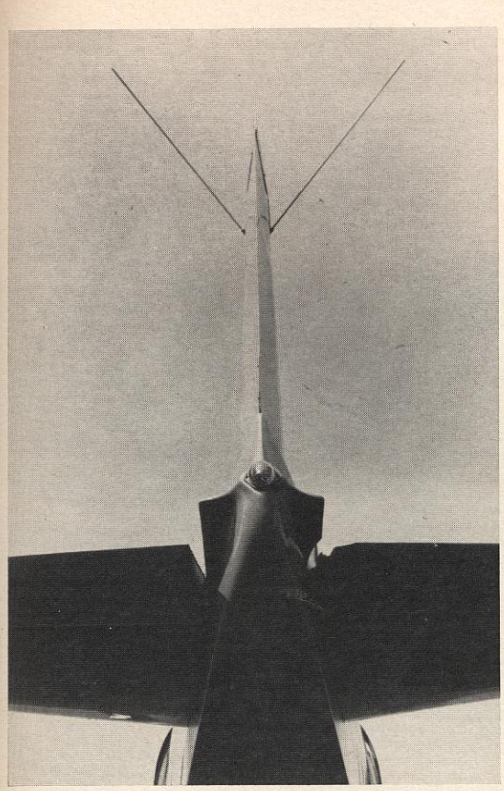
American hopes to have the four-seater on the market by 1971, followed soon by the retractable AA-3. The gear-up paperwork's all done, and the nosegear on the prototype AA-2 even has retraction pins, all ready for rework. This is one reason that the AA-2 doesn't use the unique Yankee swiveling-strut nose gear; it wouldn't retract, at least not without the help of Rube Goldberg as a consulting engineer. (Also, American quite rightly feels that anyone who pays the bread for the AA-2 won't be so amenable to dancing on the brakes for steering as is a Yankee customer.)

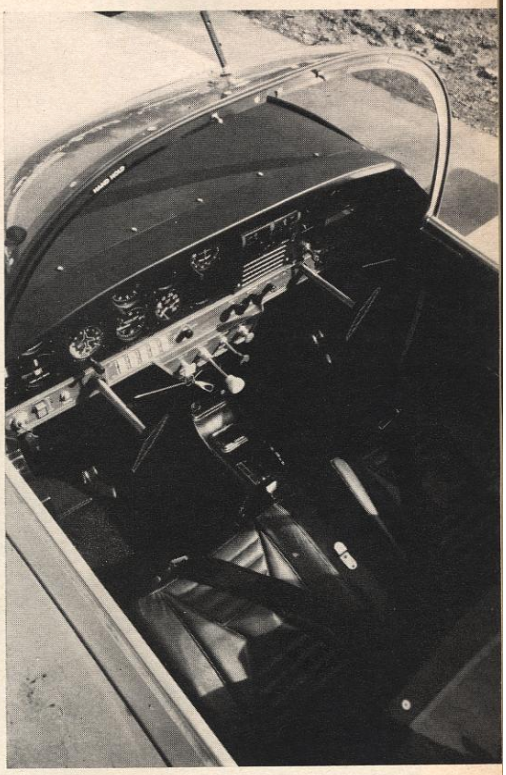
In 1972, look for the twin. You'll recognize it when you see it; it looks like a Wing Derringer with room for four, and is based on the AA-2 fuselage with a pointy nose and two flat-nacelled engines (either Lycoming 180-hp O-360s or a pair of Continental Tiara 4-180s) and sleek, airfoil-shaped tiptanks. American's intent is to build a truly economical twin—the *only* twin competitive in price with the $40,000 Bonanza and substantially cheaper than the Twin Comanche ($44,000) and Piper's budding Twin Cherokee—to attract the buyers who might opt for two engines if they could have them at the same price as a comparable single. Meyers says, "Because of the lack of development in this area, we feel there is a tremendous void at the lower end of the twin-engine market—and it's our objective to fill that void as quickly as possible." How? "Well, the lower price will be achieved by the simpler construction of aluminum honeycomb and bonding, and also by considerable commonality between the AA-2, the AA-3 and the twin."

The Twin Cherokee could have given them a run for their money, for the original design called for a pair of economical 160-hp engines. The first prototype carried 180s, however, and even they weren't enough to push that boxcar of a Cherokee Six fuselage through the air at the required rate; the current certification airplane has two Continental 200-hp engines, and Meyers doubts that with these powerplants the price will be much below $45,000 for the standard Twin Cherokee.

The AA-2 will be 90-percent bonded instead of riveted (about 95 percent of the Yankee's seams and joints are glued), and will make extensive use of the aluminum honeycomb structure with which American has become familiar in producing the Yankee. Its wings will be of a quite different, extremely light interior structure (a laminated channel spar instead of the Yankee's sewer-pipe-sized tube) and will not utilize the Yankee's laminar airfoil. American has found the laminar wing to be unfortunately sensitive to derogation of airfoil shape, and they're going to a 2415-series cross section for the AA-2. Shoulder harnesses will be *standard* equipment on the four-place—and all future American models—as will be a forward-collapsing instrument panel.

What of the little Yankee, the airplane that has made American's reputation (yet whose limitations the company hopes





to soon outgrow)? I flew two 1970 models—my first Yankee time since several flights in the original production prototype—and found it to be a light, delightful, totally professional airplane with hardly a hint of the rough qualities that had me doubting its appeal two years ago.

In fact, I'd go so far as to say that anybody who doesn't learn to fly in a Yankee is crazy. Nobody who does so is going to go through life making climbouts without feeding in enough right rudder to center the ball. Nobody who learns to fly in a Yankee is going to make all his turns with his feet flat on the floor, or is going to flop down final with the speed varying 10 or 15 mph either side of approach speed, or is ever going to stall his ship on approach or departure. In fact, it might have a salutory effect on our general aviation accident rate if some portion of everyone's training were required to be given in a Yankee (I'd say "or some similar ship," but there *is* no similar ship). The lazy would drop out when they found that it required too much effort and application to make the airplane fly the way it's supposed to fly, and the too-timid ones—the ones who get hot flashes at the thought of a stall, and who will probably never be at home in the air—will also fall by the wayside, frightened off by its distinct performance characteristics.

The little Yank didn't bother me with the length of its takeoff roll—one of the classic complaints about the airplane—but then it was a cold Cleveland day, the tanks were only half full, and factory test-pilot Bob Hummel and I are both lightweights. (Meyers answers criticism of the Yankee's somnolent takeoff by saying it gets airborne in the same length as a 172; doubtless true, but that's hardly flashy performance for a two-place sportplane.) Once in the air it moves right out; I clocked an average rate of 790 fpm with a climb prop (one of the unusual options the Yankee offers) from 1,500 feet on up to 7,500 once I'd dropped Hummel off and gone out solo.

How does the climb prop affect speed? Hardly at all; a true airspeed of 132 was clocked in the chilly air at 6,500 feet with 75 percent power and two aboard, and a brief redline run at 7,500 feet when solo gave a TAS of 137. The book figures are 134 for optimum cruise on a standard day and a top of 144 mph, though American has been finding a jump of about four mph in the cruise of some recent production models, which can only be explained by better canopy sealing and cleaner finishing.

The short-coupled little bird needs a hefty foot-full of right rudder on climbout, and is quite sensitive to precise rudder application during maneuvers—but then, the rudder itself is as effective as the airplane is sensitive. One of the nicest things about the Yankee, in fact, is the specific, predictable, essentially linear correlation between control and power inputs and what the plane does. The torque-tube ailerons are light and direct; they are, an admittedly biased Russ Meyers says, the quickest and lightest of anything he's flown since he gave his F-86 back to the Marine Corps.

Speed control can and must be precise. The supposedly "hot" Yankee actually has

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a recommended approach speed—80 mph, or 1.3 times stall speed—that is completely standard for an airplane in its size and weight class, but the Yankee will not tolerate so much sloppiness as other trainers. If you get it much slower than 80, a considerable rate of sink will set in; faster, she'll float a long way down the runway before quitting.

Why all the fuss about the Yankee's "high" landing/stall speed, while we're on the subject (66 mph to the Cherokee's 54 and the 150's 48)? Does anyone honestly feel it makes a *difference* whether your wheels touch the ground at 66 rather than 55? Or—to put it another way—are you terrified on those days when your 55-mph-stall airplane isn't landing into its usual 10-knot headwind? This is one of the areas in which the Yankee has been most maligned, for the most part by that ubiquitous race of operations-office experts who have never even seen, much less flown, the airplane they're experting. Though there are features of the Yankee that can be criticized, this is hardly one of them—any more than it is on the Bonanza, which stalls at 63 and is perhaps the easiest-landing airplane in the world.

Speaking of criticism, the Yankee does have flaps, but they're almost more trouble than they're worth; they lower the stall speed hardly at all, and are activated by a little electric toggle that, at least on the airplanes I flew, jumps all the way into "retract" when you flip it from the "extend" position back to "off." The models coming off the line now all have this annoying trait corrected. American has examined the possibility of putting more effective flaps on the Yankee, but they say it would cost an inordinate amount of redesign, and perhaps as much as five mph in speed, to do so. The present flaps do steepen one's angle of descent and give a better view over the nose during flare, and they're a perfectly adequate training device as well (like the Midwestern air-taxi line that has put a red light and gear switch on its Twin Otters because they're planning to buy some retractable commuter-liners).

Starting along about serial number 300, the little bumblebee will suddenly get noticeably quieter, due to a stiffer engine mount, softer rubber biscuits where the mount bolts to the firewall, some well-placed soundproofing and—most important—a downward-pointing exhaust stack in place of the former swept-back pipe. I flew an engineering proto-

IS THIS YANKEE'S YEAR?

type that carried these improvements, and the difference in cabin noise was readily apparent, as was the decreased instrument-panel buzz and vibration felt through the rudder pedals and seat. In fact, it was one of the few times I'd ever gotten into an "improved" airplane and immediately been aware of the touted improvement. Earlier Yankees have a harsher, tinnier noise level, and the new one achieves a kind of quiet never before possible in bubble-canopied airplanes. Unfortunately, it's quiet enough that it's possible to hear the low-frequency booming of unsupported panels in the tail cone, but then there's only so much you can do with soundproofing if the airplane's still to get off the ground.

Soundproofing may be the big news for 1970, but cumulative improvements have been finding their way into the Yankee throughout the last year. Each contributes to the refined, well-designed feeling that the airplane now imparts: New Wemac canopy ventilators are both quieter and more effective than the old homemade type; a new interior makes use of lighter but more durable Naugahyde in a design (copped from an airport-lounge chair that Chief Engineer William Seidel noticed during a boring layover) intended to eliminate the sagging and wrinkling that has afflicted some of the early seats; new canopy seals, both front and rear, cut out a lot of the Yankee's old wind-whistle and supposedly keep out the rain, though from the amount of water I saw on the floorboards of some Yankees sitting on the ramp awaiting delivery, I'd guess this is still a problem; the heater has been redesigned so that it blasts into the cockpit, not into the between-the-seats console; and instrument lighting has been placed inside and under the glare shield surrounding the panel, rather than coming from distracting little over-the-shoulder spotlights.

The options list has some interesting additions, as well: Shoulder-harness attachment points are available near the after bulkhead, and at $22 per seat, they may be the best investment you ever make; an optional child's seat in the baggage area is good for up to 90 pounds; a Brittain wing-leveler is now available to help you take advantage of the Yankee's cross-country speed; 6x16 wheels and tires can be mounted in place of the standard 5x15s, to make the plane more at home on grass fields than it has been in the past; and a neat-looking tinted-plastic glare shield can be fitted up against the top of the canopy, though it unfortunately creates an almost perfect mirror (it beats boiling your pate on a summer day, though).

It hasn't all been a simple matter of raking money in one door and kicking airplanes out the other, no matter how fancy the Yankee's getting. As a newcomer—a brash one, at that—the company fought some interesting battles. Many insurance companies refused to provide hull coverage on Yankees, for example, saying they wouldn't insure a new type until it had three years in the air. This was perhaps American's number-one problem during their first year of sales, though it's no longer a worry. Other benighted firms refuse coverage, contending falsely that "It's all specially glued together—you have to send it all the way back to the factory to fix it."

Financing on the retail level, especially for new dealers trying to establish an inventory, has also been a hang-up. A number of lenders have said, "The product's too new; it doesn't have an established resale value."

"We have three hundred airplanes in the field," moans Meyers. "When is it *not* too new? When we have four hundred? Five hundred? Five thousand?"

"Well, the market will determine that . . .," the brave money-men retort, turning elsewhere in their unflagging efforts to support free enterprise.

One thing that hasn't been such a problem has been the competition. "They've been tough, but not unfair," Russ admits. Though some dealers have used the sneaky they'll-never-stay-in-business ruse (Wanna buy a Tucker?), the industry in general has given the company the feeling that the survival of American is to the good of general aviation as a whole, as indeed it is.

Meyers has warm words for Cessna. Most of his best people have come from Wichita, and their alma mater has even provided marketing statistics to which a small firm like American wouldn't otherwise have access. Cessna's attitude has been: "We'll fight you for every sale, but we hope you make your share."

So do we, for in this day of just-fire-up-and-fly airplanes with Detroit-styled delights, the little Yankee stands out like a Spitfire at O'Hare. It's a responsive, refined, artfully designed trainer with a surprising amount of cross-country capability for one so small and low powered. And with big brother AA-2 warming up in the wings, this just may be Yankee's year. +

American Yankee

Manufacturer's specifications	Basic price: $7,295
Engine	Lycoming O-235-C2C, 108 hp
Propeller	McCauley fixed pitch
Wing span	24 ft. 5½ in.
Length	19 ft. 2¾ in.
Height	6 ft. 9½ in.
Wing area	98.11 sq. ft.
Wing loading	15.3 lb./sq. ft.
Empty weight	947 lbs.
Gross weight	1,500 lbs.
Power loading	13.9 lbs./hp
Fuel capacity (std.)	24 gals.
Baggage capacity	100 lbs.
Performance	
Takeoff distance over 50 ft.	1,615 ft.
Rate of climb	810 fpm
Service ceiling	11,250 ft.
Maximum speed	144 mph
Cruise speed (75% power)	134 mph
Economical cruise	114 mph
Range (at max cruise)	426 sm
Miles per gallon (75% power)	22.3 sm
Stall speed (clean)	69 mph
Stall speed (flaps down)	66 mph
Landing distance over 50 ft.	1,245 ft.
Flight characteristics	
Control response (cruise)	Best in class
Hands-off stability	Fair
Stall recovery	Good
Runway handling	Takes getting used to
Pilot utility	
Visibility	Excellent
Seat adjustment & comfort	Very good
Panel layout	Excellent
Cabin comfort	
Entry-exit ease	Awkward
Front seat room	Plenty
Ventilation	Excellent
Noise level	Good

210K Centurion
(continued from page 81)

Manufacturer's specifications ..... Basic price: $34,725

Pilot utility
Visibility ..... Gooder
Panel layout ..... Gooder
Instrument lighting ..... Okay

S&H LOW ALTITUDE FLIGHT PLANNING CHART 1970-71 EDITION

Fly with this chart and get great gifts without money

S&H GREEN STAMPS

The following list is arranged in numerical order by dealer numbers appearing on planning chart, opposite side.

LEGEND

FIELD ELEVATION SHOWN AFTER AIRPORT NAME.

FUEL: OCTANE 80/87 shown as 80; 100/130 shown as 100; 115/145 shown as 115.

HOURS OF SERVICE SHOWN FOLLOWING FUEL LISTING. Daylight hours shown as "DH". 24 Hours on request shown as "240R".

LONGEST RUNWAY: direction/length in hundreds of feet and surface by H = hard, T = turf/runway lighting by L = lighted runway, LO = runway lighted on request, LB = lighted runway with beacon.

WEATHER INFORMATION SOURCE: TWX = teletype; Ph = telephone; FSS = Flight Service Station.

REPAIRS: A = minor aircraft; E = minor engine, MA = major aircraft; ME = major engine; R = radio; I = instrument.

FACILITIES: APU = power cart; O = oxygen; F = food, T = cab or bus ground transportation; RC = rental cars.

1 AIRPORT: Quad City/593'
LOCATION: Moline, Ill.
LONGEST RWY: 9-27/65H/LB
TOWER FREQ.: 119.4
S & H DEALER: Elliott Flying Service
FUEL: 80, 100, Avjet A/7A-9P
WEATHER INFO: TWX
REPAIRS: MA, ME, R
FACILITIES: APU, O, F, T, RC (National)
UNICOM: 123.0; call Elliott Unicom

2 AIRPORT: Des Moines Muni./953'
LOCATION: Des Moines, Ia.
LONGEST RWY: 30-12/90H/LB
TOWER FREQ.: 118.3-122.5
S & H DEALER: Elliott Flying Service, Inc.
FUEL: 80, 100, 115, AVJet 40/24 hrs.
WEATHER INFO: FSS
REPAIRS: MA, ME, R
FACILITIES: APU, O, F, T, RC (National)
UNICOM: 123.0; call Elliott Unicom

3 AIRPORT: Ti-Co/35'
LOCATION: Titusville, Fla.
LONGEST RWY: 18-36/60H/LB
TOWER FREQ.: 118.9
S & H DEALER: Flight Enterprises, Inc.
FUEL: 80, 100, Jet A/7A-7P/240R
WEATHER INFO: FSS
REPAIRS: MA, ME
FACILITIES: APU, O, F, T, RC
UNICOM: 123.0 Call Tico VIP

4 AIRPORT: Cape Kennedy Regional/26'
LOCATION: Melbourne, Fla.
LONGEST RWY: 9-27/110H/LB
TOWER FREQ.: 118.2
S & H DEALER: Flight Enterprises, Inc.
FUEL: 80, 100, Jet A/7A-7P/240R
WEATHER INFO: FSS
REPAIRS: MA, ME
FACILITIES: APU, O, F, T, RC
UNICOM: 123.0 Call Melborne VIP

5 AIRPORT: Palm Beach Int'l./19'
LOCATION: West Palm Beach, Fla.
LONGEST RWY: 9L-27R/80H/LB
TOWER FREQ.: 119.1 (GRD 121.9)
S & H DEALER: Tilford Flying Service, Inc.
FUEL: 80, 100, Jet A-50/24 hrs.
WEATHER INFO: FSS
REPAIRS: A, E, MA, ME, R
FACILITIES: APU, O, F, T, RC (National)
UNICOM: 123.0; call Tilford

(FBO Facilities Listing Continued)

16 AIRPORT: Auburn/1523'
LOCATION: Auburn, Calif.
LONGEST RWY: 7-25/31H/LB
TOWER FREQ.:
S & H DEALER: Placer Aviation Service
FUEL: 80, 100/8A-Sunset
WEATHER INFO: Ph (Direct line Sac. FSS)
REPAIRS: MA, ME
FACILITIES: APU, T, RC
UNICOM: 122.8

17 AIRPORT: Brookley/26'
LOCATION: Mobile, Ala.
LONGEST RWY: 14-32/96H/LB
TOWER FREQ.: 119.6
S & H DEALER: Mobile Aircraft, Inc.
FUEL: 80, 100, JP2,/8A-10P
WEATHER INFO: Ph
REPAIRS: MA, ME
FACILITIES: APU, F, T, RC
UNICOM: 123.0

18 AIRPORT: Lambert Field/571'
LOCATION: St. Louis, Mo.
LONGEST RWY: 30L-12R/100H/L
TOWER FREQ.: 118.5
S & H DEALER: Young Aviation Corp.
FUEL: 80, 100, 115, A1/24 hrs.
WEATHER INFO: TWX, Ph, FSS
REPAIRS: A, E, MA, R
FACILITIES: APU, O, F, T, RC (National)
UNICOM: 123.0; call Young Unicom

19 AIRPORT: Rehoboth/28'
LOCATION: Rehoboth Beach, Del.
LONGEST RWY: 12-30/33T/LO
TOWER FREQ.: None
S & H DEALER: Aircrafters, Inc.
FUEL: 80, 100/8A-Sunset
WEATHER INFO: Ph (227-2626)
REPAIRS: MA, ME
FACILITIES: APU, F, T, RC (on Field)
UNICOM: 122.8

20 AIRPORT: Atlanta Muni/1040'
LOCATION: Atlanta, Ga.
LONGEST RWY: 27R-9L/100H/L
TOWER FREQ.: 191.1
S & H DEALER: Shamrock Air Services
FUEL: 80, 100, Av Jet A/24 hrs.
WEATHER INFO: Ph
REPAIRS: None
FACILITIES: APU, F, T, RC
UNICOM:

AAX SCAN PAGE 30

TWELVE PILOT REPORTS • RUTAN QUICKIE • ZERO FIGHTER • OSPREY 2 •
SKYLANE RG • TURBO ARROW III • MIDGET MUSTANG • HIGH FLYING CAREERS •
HOW TO BUY AN AIRPLANE • FLYING IN MEXICO • NEW BLACK BOX MAGIC •

Air Progress

1978 Yearbook

CCC 02673 $3.25

Tiger Camping In Florida

By Douglas Gabrielle

How about a trip to a quiet island hideaway?

"Hello there young lady, like to fly to Florida with me in my private plane?"

"Sure, what will it cost me?"

"Oh, we'll work something out."

I had not had a real vacation in a long time and I was champing at the bit. With a five day break in my schedule coming up, this was my chance to get away. Most of my flying is local and I was determined to make one of my "dream trips." You know what a dream trip is. That's one that you have planned so many times you can practically recite the VOR frequencies for the whole route!

My idea of a vacation is a trip to a quiet island hideaway for a few days of sun and relaxation. With this in mind, I figured the distance I would have to fly to cover the three hour a day minimum on the airplane. That provided me with a one thousand mile radius. Now all I needed to do was find an island with an airport and camping facilties in a warm climate within a thousand miles of Chicago.

I selected Cedar Key, Florida. Cedar Key is a quiet fishing village (population 750) about sixty miles west of Gainesville on the Florida Gulf Coast. Cedar Key has a 2400 foot paved runway which is lighted and has VASI at both ends, available at night only. The VASIs are a big help as it gets very dark around there at night. The island is only about a mile off the mainland, but this section of the coast is largely uninhabited so there is little help from surface lights. Cedar Key is the only airport I have ever seen with VASI but no gas! Gas is available at Cross City (30 miles) and Gainesville.

The island is quiet, the atmosphere is provincial, and the people are very

friendly and accommodating. Cedar Key has motels and camping facilities and a causeway that connects the island to the mainland. There are four first-class sea food restaurants right at the docks downtown. Pilots from Gainesville, Orlando and Tampa/St. Pete fly in regularly to sample the local culinary fare. (That means they fly up to chow down.) They have a nice beach, tie downs at the airport (no charge) and a courtesy car into town. What more could you want?

I don't know about you, but I must have planned fifty long trips like this for every one I've been able to take. This is usually due to a severe shortage of cash union greenbacks. When I do get to go, I find myself going over the flight route again and again, figuring distances and times, fuel stops and all that kind of pilot stuff.

A suggestion for anyone planning a long trip: Get yourself a VFR Planning Chart. It shows all the Victor airways and the mileage between VORs. You can't fly with it (no frequencies) but with the whole country laid out in front of you on one easy-to-handle chart, it is easy to check a variety of routes. This often saves many miles of flying. In our case the route that looked shortest turned out to be fifty miles longer than the one we took, so the chart saved us some money.

I chose one of T & G Aviation's Tigers for the trip. The 172, Traveler and Cherokee 180 all would have cost a little less, but the Tiger had several things going for it. The 172 and Traveler would have required two fuel stops on the way down. The 180, with its fifty gallon tanks, would have made the trip with one stop, but the 180 was not equipped for serious IFR. I didn't want to be in the clouds at the far end of a 1,000 mile trip and run out of nav-comms. One final factor firmly tipped the scales in the Tiger's favor. With the rear seat folded down there was enough room to stow camping gear, tennis rackets, scuba gear, one very large guitar and two bicycles! The bikes neatly solved our surface transportation problem. Weight can be as important a factor in plane camping as it is in back packing. I have a firm rule for plane camping. I never pack anything I cannot carry on my back. I use lightweight back packing equipment and keep to absolute essentials. Following this rule saves useful load and is an absolute must when filling all the seats. On this trip however, I had two empty seats, and 350 pounds of useful load for gear, even with full tanks so I could allow myself the luxury of taking the guitar and bikes.

The day of the trip dawned bright and clear (for Chicago). In fact, there was no weather at all over the entire route of flight. Takeoff from Midway came at 8:05 a.m.; climb to ninety-five hundred feet and the miles started clicking off at the rate of two and a half per minute. We were right up to gross weight, and at 9,500 feet and 67% power we trued out at 154 mph. And that was without a nosewheel fairing! Fuel consumption was substantially below book figures. When we landed at DeKalb-Peachtree airport near Atlanta, we had spent 4:15 in the air. Total fuel consumption was only thirty-six gallons. Try that in your Edsel!

As a city dweller I am always amazed at the vast amount of open, nearly uninhabited land there is in this country. I've come to expect it when flying to the west, but even when eastbound, the vast majority of the earth below is sparsely populated. This is particularly true in the Smokie Mountains, on the leg between Knoxville and Atlanta. This sophisticated urbanite, used to living on top of other people in a home that isn't really his, spent a good portion of this leg just staring at huge green valleys with no more than one house! I'm convinced that if the powers that be would just let general aviation

THE TIGER AS AN X/C HAULER

The Florida trip provided some interesting insights into the Tiger's capabilities as a cross-country machine. For openers, you can fly the Tiger as a four place plane. It has a good useful load for the power, so four and baggage really can be carried with sufficient fuel for respectable stage lengths. But what if you only need two of those seats for warm bodies? Just fold the rear seat down and the Tiger becomes a super heavy-hauling two placer with a flat cargo floor five and a half feet long! Width narrows as you approach the rear bulkhead, but the Tiger can carry just about anything and everything needed for two on a cross-country trip. We took camping gear, guitar, scuba gear and two bicycles! Anytime two people need more than 350 pounds of luggage, they'd better buy a pick-up. This capability makes the Tiger a highly versatile business machine as well. You have your choice between four businesspersons and average luggage and two businesspersons and bunches of business stuff like charts, graphs, projectors, sample cases, desk top computers, expense account forms—you name it and the Tiger will probably haul it. Bulk is no problem thanks to the big sliding canopy. Two of us (one a petite young lady) had no trouble loading the Tiger full to the brim. Even the bikes slipped in with no trouble. Just remove the front wheels and two bikes will slide right in with room for a great deal more. Tires need not be deflated at altitudes up to 10,000 feet. Though we were right up to gross, and without a nosewheel fairing we had no trouble meeting or exceeding book figures. The first leg, from Chicago to Atlanta gave an excellent opportunity to check out the Tiger's efficiency. Weather was VFR the entire route and winds aloft were light and variable. Once out from under the Chicago TCA we climbed to 9500 feet and set up 60% power. True airspeed worked out to 154 miles per hour! We had more power available, but the book indicated that we would burn ten gallons per hour at this setting. I wanted to make Atlanta non-stop with a reasonable reserve. As it turned out, I need not have worried. This four hour and fifteen minute leg used only thirty-six of my available fifty gallons! That's less than nine gallons per hour! That works out to 17.3 miles per gallon, at 154 miles per hour. My grandfather's 1952 Hudson gets about the same mileage, but he can't go as fast. Block speed for the 625 miles worked out to 147 miles per hour, not bad considering the long climb. Handling is highly responsive, but still stable enough for long cross-countrys. The old Yankee was a handful in turbulence, but the Tiger holds a heading and altitude very nicely, thank you. It will take you some time to get used to the rapid control response when you fly instruments, but it is a safe steady instrument platform. My instrument training was in a Hawk and it took about thirty minutes before I felt comfortable on instruments. But the plane is a good teacher. It is stable and safe, and the rapid control response will sharpen your scan.

There are lots of nice little touches on this airplane that show up on a long cross-country. The map light not only shines at a good angle for reading maps, it also shines on the artificial horizon. This provided us with a useful back-up when the panel lights burned out on the return trip. The canopy seal has been much improved over the Traveler. Coming back from Florida, we hit heavy rainshowers and solid IFR for about three hours. Despite the heavy rain, not one drop of water came through the canopy. You might have to wait until it stops raining to get out of the plane, but while the canopy is shut everything stays bone dry.

Gas bills for 2100 miles ran about $90. We rented this plane for $25 per hour wet (this price has since come down to $24). Our total bill was $375. This works out to less than 18¢ per mile. You can't drive your car for that! Our trip was fast, comfortable and reasonably priced; the Tiger is truly a solid cross-country performer.

grow unrestricted, many new jobs could be created in these sparsely settled areas; this would allow people to move out of our overcrowded unmanageable cities. We would have a little more elbow room, and hopefully a little more tolerance of each other.

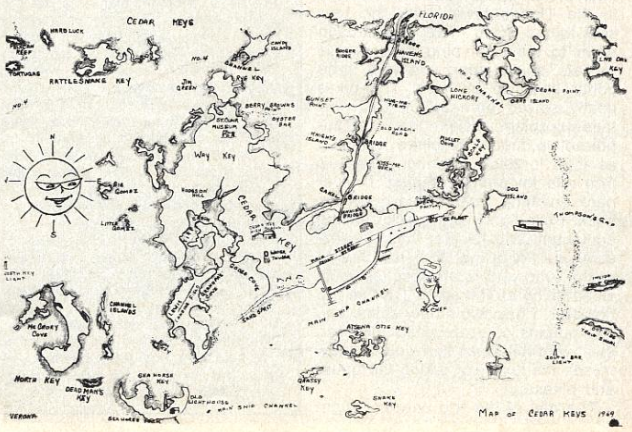
After arranging to have the Tiger topped off, we trundled off to the restaurant and were pleasantly surprised. The food is good, the prices reasonable and the service friendly, though unhurried in the Southern tradition. A nice surprise was the open air second floor seating. It gives the meal a picnic atmosphere and allows an unrestricted view of airport activity. After a leisurely meal it was off to Cedar Key, now only two and a half hours away. After some vectoring by Atlanta approach the flight was fast and routine.

I had picked Cedar Key based on very limited information, so this was something of an adventure. We really did not know what to expect. Cedar Key held, as it turned out, many pleasant surprises. You couldn't miss Cedar Key if you tried. The island is on the 179 degree radial of Cross City VOR, thirty miles out. Cedar Key is actually a group of small islands (see map) interconnected by a causeway that extends to the mainland. The airport is paved and takes up the entire length of one of these small islands. There is a water tower in town, but it is several hundred feet off to the side of the final approach to runway 23. It is wise to be aware of it, but it does not interfere with a normal approach. Both ends of the runway come right up to the water, so there are no other obstacles of significance. This is just as well, as the runway is only 2400 feet long. The taxiway doubles as a road to the homes of the island's well-to-do, so watch for auto traffic. Tie downs are provided, but no fuel. There are no landing or tie-down fees of any kind. A courtesy car will come to meet you to take you into town. The lovely lady driving the car went so far as to make some phone calls to locate suitable campgrounds for us. She then loaded all our gear into her car and drove it to the camp area for us, while we followed on our bikes. I gave her a couple of dollars toward her gas, but she never asked for a cent; genuine Southern Hospitality! We stayed at the Sunset Isle Motel and Campgrounds. For $4 per night we had a camp area in a cedar grove 100 feet from the water, with electricity, running water, barbecue, use of restroom and shower facilities and a recreation room. This was turning out to

(Continued on page 75)

Cedar Key's beaches are small but uncrowded.

Miss Sarasota runs out into the Gulf of Mexico for a full day of fishing at a reasonable rate.



scuba gear you may need. They do have a shortage of boats to get you to good diving areas, but that situation should be resolved by the time you read this. Needless to say, do not dive and then fly.

If you are a lover of all things that fly, there is an island wildlife sanctuary run by the University of Florida about three miles south of Cedar Key. The concentration of birds in this area is heavy, but they seem to stay well away from airplanes. Keep a watchful eye in any event.

All these attractions help make Cedar Key a very pleasant vacation spot, but the residents made the trip worthwhile all by themselves. In the five days I spent on the island, I do not recall meeting a single unfriendly person. Most resort areas have a local population intent on separating you from your dollar. If they are friendly at all it is usually phoney. And in some places (Nassau comes immediately to mind) they are flat-out hostile. In Cedar Key the only way to get the locals' dander up is to start telling them the changes you think they need to make to "improve" their island. They like things just as they are. Fact is, your money isn't all that important to them. They can fish just as easily as they can serve tourists. One old gentleman summed up the attitude thusly: "Sure hope y'all like our island, and have a good time; but I hope you don't like it too much, 'cause then you might want to stay. We just don't have a whole lot of room here." So head on down and enjoy—just don't tell them how to run their island and you'll have a very good time.

The return trip gave me a chance to get some actual. South Central Georgia had numerous afternoon thunderbumpers, so we detoured through Tallahasse. We spent about three hours at 8,000 feet in heavy rainshowers popping in and out of towering Cu. ATC did a nice job of keeping us away from the thunderstorms. We could have flown underneath, as the bases were at six thousand, but we had to be high to cross the Smokies anyway, and I like getting deviations around heavy weather. Center in this area was most helpful in this respect. Flying through the Atlanta TCA was a nightmare, even though I was on an IFR flight plan, encoder equipped. Without warning they vectored me over Macon, some seventy miles off in the wrong direction. When asked why, I was told that overflights of the main airport are not allowed (the VOR is on the field) and only one corridor is available through the TCA for IFR en route flights. I asked why I was not informed of this when I filed. I could not get a straight answer. This procedure is just plain dangerous. It meant an additional hour in the air, lowering my fuel reserves and forcing me to cross the mountains after dark in a single. Had I been informed of the route when I filed I would have avoided Atlanta altogether. Even though they knew they would divert me, I was cleared as filed. Why, the safest place to be in a TCA is several thousand feet over the main field. The airliners are all down low. I have often been vectored over O'Hare which is a hell of a lot busier than Atlanta. In the name of safety, the FAA has succeeded in making Atlanta significantly more dangerous for the little folk than it used to be. If you must fly through Atlanta I strongly suggest you make it a fuel stop. If you pop up suddenly VFR landing, they don't mess with you nearly as much as they do if you are IFR en route. From now on, I'm filing for the main airport. Then they can't vector me to Macon to avoid it.

Due to the delays in Atlanta we started our journey across the Smokies after dark. As we crossed the final ridge, the lights of Knoxville appeared ahead. A call to approach control brought immediate Stage III though we didn't ask for it. Sigh. Anyway, the service and facilities were excellent once we got on the ground.

We had 20k headwinds from Knoxville to Chicago Midway, making the Tiger's extra speed that much more appreciated. We still managed a groundspeed of 110 knots! A straight-in to Runway 31 right at Midway completed a most enjoyable trip.

Reflecting on the trip, I must admit two things to myself. First, I could never live on an island permanently. A week is terrific. It lets me unwind. But I'd go stir-crazy over the long haul. I enjoy camping vacations, but I doubt that it would be a suitable retirement community for a dashing sophisticated urbanite like me. The other thing I have to admit is that I can no longer pedal a bike twenty to thirty miles a day without getting very sore legs. But I sure like carrying my own wheels. I think maybe next time I'll take a couple of motorbikes. I'll have to take the Lance, of course. They wouldn't fit in anything else. Let's see, fifteen hours in the Lance at $45 per hour divided by two people . . . .

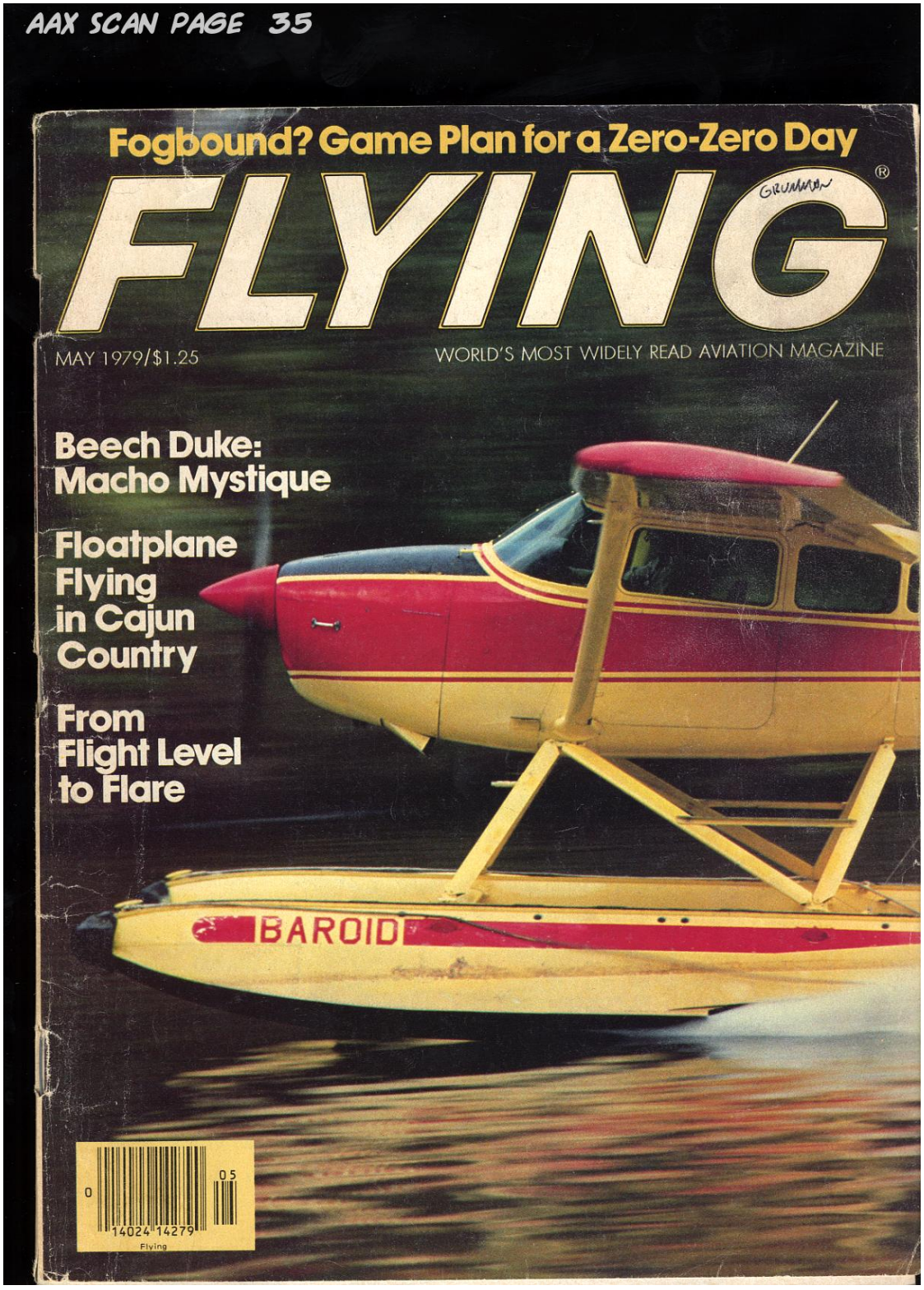
By the way, if you were wondering about the opening of the article, that actually happened. I met the young lady in the cafeteria at work. And we did work something out. She bought the gas. □

COST COMPARISON: TIGER VS. ALTERNATIVES

Having recently purchased a shiny new electronic calculator, I decided to play with it by doing a comparative cost analysis of my trip to Cedar Key. The box shows some surprising figures. I figured it would be cheaper to go fly yourself than it would be to take a great silver bird, but cheaper than a car?! It turns out that in spite of all the billions spent for superhighways the average American auto is the most expensive way to travel, and next to the bus the slowest. All this time I had a sound, practical reason to fly and I didn't even know it! Show this to your wife!

	Tiger	Airlines (Tampa)	Mid-Size Auto	Bus (Tampa)
Round Trip Time	14:45	5:00	48:00	68:00
Additional Travel Time	:50	9:00	—	4:00
Total	15:35	14:00	48:00	72:00
Basic Cost	$375.00	$380.00	$440.00	$210.70
Rental Car	—	$ 80.00	—	$ 80.00
Miscellaneous	$ 2.50	$ 15.00	—	
Total for Two People	$377.50	$475.00	$440.00	$290.70
Total for Four People	$457.50	$855.00	$440.00	$501.40

Additional travel time is ground time in Chicago plus travel time by car to Cedar Key from Tampa. Rental car is a Ford Pinto, @ $13.95 per day + gas. Gas estimated at .60 per gallon; distance driven estimated at 300 miles. Miscellaneous: Tiger: Midway landing fee. Airline: O'Hare parking for five days. Total for four people in Tiger includes rental car as no bikes could be carried. It would be possible to do without a car at Cedar Key if you like to walk. Ground time airlines may vary. This is the actual ground time I would have had had I chosen to take a great silver bird on this trip. All times and expenses in the Tiger are what I actually incurred. All auto expenses are estimated at .20 per mile. This includes insurance, gas, maintenance, depreciation, etc. I am told this figure is very conservative.



ALL-AMERICANS

by Berl Brechner

JIM BEDE, airplane designer and entrepreneur, made a lot of enemies in recent years with his ill-fated BD-5. But Bede deserves nothing but credit for his design of the BD-1, which, with help from some other designers and a couple of companies, evolved into the lightplanes that today are produced by Gulfstream American.

American Aviation was the first company to build and sell these "American"-family airplanes. (In 1969, it marketed a two-place lightplane called the Yankee—a name that has stuck, in common parlance, to its successors.) Grumman took over American,

injected some money and brought out a four-seat model in 1972. Then Grumman sold its general aviation interests to Gulfstream—but that was only last year. So, about 99 percent of used four-seat "Americans" you'll find still carry the Grumman American label.

Basically, these four-seaters come in three varieties—Traveler, Cheetah and Tiger. The Traveler, with 150 horsepower, was the first to arrive in 1972. In 1975, a major airframe clean-up was introduced, along with a 180-hp engine, and it was called the Tiger. The modified airframe was reunited with 150 hp in 1976, and the new Cheetah replaced the Traveler.

Grumman's Traveler has grown up, yet any of those four-seaters with the funny nosewheel makes a practical used-airplane buy.

All these airplanes share key features. Entrance is through a sliding canopy, which can be left open during flight. Rear seat backs are removable, and the rest of the rear seat folds flat to form a cavernous cargo area, station-wagon style. All three airplanes have fixed gear and fixed-pitch propellers. And the airframes of the little airplanes are made partially of an aluminum honeycomb material; most of the skins are bonded rather than riveted together.

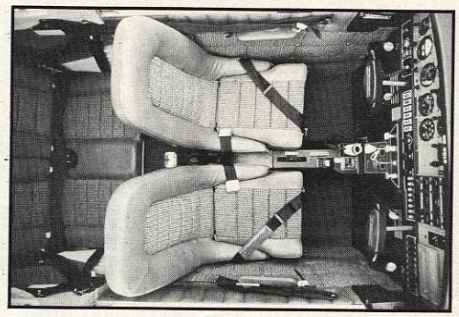
This skin bonding process has had its

troubled moments. Problems occurred when Grumman American moved its lightplane manufacturing from the Cleveland, Ohio area to Savannah, Georgia. The new plant's bonding process went through a shakedown period during which, occasionally, an airplane control surface would delaminate. But this never happened suddenly, so there was no safety problem, and the factory made good the airplanes that were affected.

On the other hand, this bonding—enhanced by streamlined design—gives the airplanes more miles per hour per horsepower than any others in their class. A 1976 Cheetah, compared to a 1976 Cessna Skyhawk (both with almost the same engine), carries a 75-percent cruise speed about nine knots faster. The 180-hp Tiger's speeds come close to matching those of several 200-hp retractables.

The modifications that turned the Traveler into the Cheetah and the Tiger originated with speed-king Roy Lopresti, who recently gave the Mooney its 200-mph status. His tricks are no secret: he makes sure the airframe is basically clean and the wing efficient; he modifies air intakes and cooling flow for maximum effectiveness with least drag; and he finds the propeller most efficient at cruise. As a result, the fixed-pitch Grummans tend to be sluggish getting up but are strong once they are there.

Step right down into the cabin for one of the most efficient canopy-back rides you can take.



ALL-AMERICANS

This characteristic is particularly noticeable when flying the Cheetah. It does fairly well with a moderate load on a cool and pleasant day, registering a climb of 600 or 700 fpm. But at maximum gross weight on a hot day, 300 fpm is the most it can muster. When you push the nose over for level flight, however, the engine starts to wind up. It may take five minutes to reach stable cruise speed; all this time, the rpm creep upward and the airplane keeps trying to climb. Once level, the nose seems abnormally far below the horizon. And since you are almost surrounded by Plexiglas (except directly overhead), visibility is excellent.

Cruise checks in a partially loaded 1976 Cheetah showed a full-throttle true airspeed of 127 knots at 2,500 feet. The engine was able to turn almost 2,600 rpm. With power pulled back to 2,300, or 55 percent, the machine cruised at 113 knots and could have done so for seven-and-a-half hours on 51 gallons.

In addition to their basic clean-up modifications, the Tiger and Cheetah also have horizontal and vertical stabilizers that differ from those on the Traveler. The changes offer more balance and more responsive control and eliminate the need for the Traveler's dorsal fin.

On the used-airplane market, these changes extract a substantial increase in price. Travelers show a predictable increase in asking price for each new model year. But the jump from the 1975 Traveler to the 1976 Cheetah marks a more dramatic price increase—a jump as high as $3,000, into the low 20s. The extra money buys three things—speed, endurance and looks.

The Cheetah—with its clean-up—cruises a few knots faster than the Traveler, but both airplanes are fast and efficient. The one dramatic difference is the Cheetah's optional fuel capacity, a total of 51 gallons; virtually all Cheetahs come with that option. Travelers carry only 37 gallons, which limits their endurance; IFR reserve requirements thus mandate some short legs. The Cheetah's 51 gallons, when measured against a fuel burn of eight gallons per hour or less, give endurance times of six to seven hours. Four- or five-hour IFR legs are then easily within grasp. The judgment of looks, of course, is subjective. To me, the Cheetah has its act together more than the Traveler does.

When carrying full fuel, the Cheetah's cabin capacity is diminished. It has a maximum allowable gross weight of 2,200 pounds. A well-equipped Cheetah, with full fuel, may barely carry three 170-pound people—and no baggage.

For help in the climb and carrying departments, the Tiger's 30 extra horsepower are the ticket. It cruises 10 to 15 knots faster than the 150-hp Cheetah. The Tiger's maximum allowable gross weight is 2,400 pounds, 200 pounds more than the Cheetah's; only 50 of these pounds are taken up by the larger powerplant and its accessories. From the firewall back, the Tiger is a solid four-seater, with an acceptable climb rate that is guaranteed year-round. Again, the buyer pays for performance. Bluebook costs for Tigers run about $4,000 more than for the same year's Cheetah.

Pilots unfamiliar with the Grumman/Gulfstream airplanes sometimes think they are unstable. Not true.

What these airplanes have is unusual responsiveness. The pilot who moves to a Cheetah from a Cessna 172 or a Piper Cherokee 140 will find dramatically different handling qualities. A light touch and slight hand movements make the machines move readily. But then, after you've driven a pickup truck, handling a car with power steering and power brakes takes getting used to, as well.

The Grummans share another unusual feature that drives the novitiate crazy: a free-castoring nosewheel. Trying to keep the airplane simple, the makers of the

ALL-AMERICANS

Middle member of the American family, the Cheetah combines the older Traveler's 150 horsepower with the more powerful Tiger's cleaner, faster airframe.

Grumman American lightplanes decided to have no steering on the front wheel. Differential braking on the mains swings the nose in the desired direction, and the free-turning nosegear follows. It works fine, but it is unfamiliar at first—and in a strong crosswind, the pilot taxis with a brake dragging, something akin to an unnatural act.

But that same steering system shines in two areas. The light Grumman is one of the easiest airplanes in the world to ground handle (except for pushing straight backward, when a tow bar is almost essential). The turning radius is shockingly small. I've taxied into a spot within a tight row of parked airplanes; if there is a high-wing aircraft on either side, then little more than a wingspan-sized opening is necessary. (Be careful to watch where the vertical tail swings, however.)

The airplanes are relatively simple to maintain. They carry common Lycoming powerplants with 2,000-hour TBOs. Airworthiness directives have been few and limited in scope. Paint quality on some of the earlier aircraft has been less than ideal; fading and chipping is often apparent. Fuel seepage isn't uncommon, for fuel is stored in wet wings—there is no bladder. The tubular wingspars extend through the tanks, and seepage at the sealing around the spar and at fuel-tank access plates on the bottom of the wing can be an occasional problem—although repairable.

Both sides of the cowling are hinged along the top and can be raised for complete access to the upper half of the engine. A mechanic told me that the engine can be annualed, and all the spark plugs changed, with only the sides lifted. The engine compartment is spacious, and the battery is easily reachable for cable jump starts on airplanes without the optional external power plug.

The airplanes' canopy seals can start to wear with age. Leaks that add wind noise in flight and water on the ground are the by-products of this. A new double-seal rubber strip is the fix, and the factory can supply the modification. It is infinitely more effective than the earlier single strip, and the new canopy seal can be installed in a couple of hours.

With its sliding canopy, its snappy control responsiveness and its impressive efficiency, the four-seat Grumman is a different kind of light single. A recent *Trade-A-Plane* showed used Travelers selling for as low as $12,500 and almost-new Tigers at over $30,000. Cheetahs fill a broad gap in the middle, with prices from $17,000 to $25,000.

Don't prejudge these machines. If a price somewhere in that range fits your budget—and if you are unfamiliar with the airplane—it's worth a turn at the controls before you narrow your sights too far. You might well be surprised. □

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New Rules Make it Easy To Fly the ADF

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Used Plane Buyer's Guide To the Hummin' Grummans

Buyer's Guide to the Grumman American Singles

Developed from the Jim Bede prototype, the GA two-seaters are lively performers.

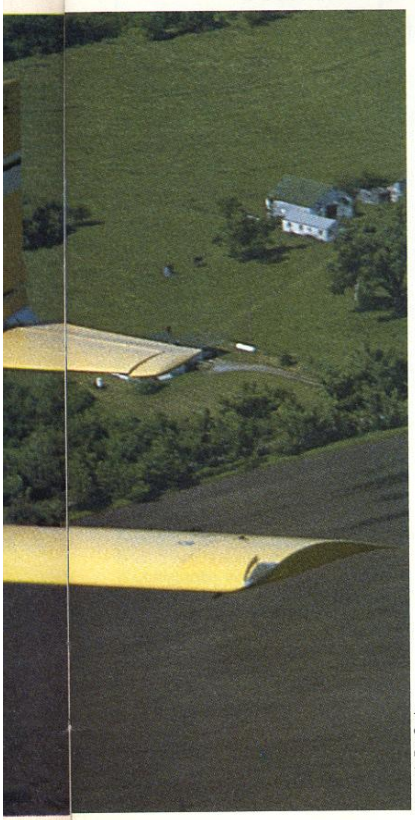
By LeRoy Cook

IN 1963, VISIONARY PROMOTER Jim Bede was busily showing the world his tiny BD-1. The sleek, two-placer, constructed of bonded, honeycomb aluminum could be mass-produced for as little as $2500, including a pre-owned 65-hp Continental engine, or a new 108-hp Lycoming for $4500, Bede claimed. It had everything: blazing speed, folding wings, aerobatic capability – you name it, you got it. As usual, Jim was a wee bit optimistic. His handbuilt prototype was convincing enough to get investors in Cleveland, Ohio, to help him build a factory in 1963, but that's about all. But even that didn't stop James R. Bede, Jr. Never one to acknowledge that something's a problem, he fixed his eyes on the mountaintop across the valley – disregarding the swamps and gullies barring the way.

His little ship was to have a top speed of 155 mph, be fully aerobatic with 9.2 G

positive and negative stress limits, and would incorporate folding wings, so one could tow it home for storage. A simple tubular wing spar doubled as a fuel tank (supplemented by a header tank in the prototype). Aluminum honeycomb made up the box structure of the fuselage, with all the skins attached by bonding. The wings, empennage and control surfaces were designed to be interchangeable, so the parts-count would be low. And with little or no riveting needed, the little airplane could be built in no time at all by unskilled labor. The era of the affordable airplane had arrived!

Alas, all such dreams eventually gave way to the harsh glare of reality. Jim Bede spent 18 months and nearly one million dollars ($300,000 was his family's investment in the venture) with little to show but more plans. When Bede Aviation Corporation's backers decided in mid-1965 that it was time to get down to serious business, Bede was fired and proper management was instituted. Deposits for Bede's unrealistically low-priced orders were returned, and the long road to certification was finally begun. The name of the company subsequently was changed to the more-generic American Aviation Corporation, and the new airplane was dubbed, appropriately enough, the "Yankee." And when the young lawyer named Russell W. Meyer Jr., took the helm in 1966, things finally got moving. Although Beech had been gluing honeycomb-sandwich Musketeers together since 1963, it took American time to learn the temperatures and pressures needed to assure a perfect bond. Bede's prototype, it turned out, had been put together with room-temperature adhesives!



Photos: LeRoy Cook

American Aviation got the Bede design certified and into production, then sold out to Grumman.

American won utility category certification for the Yankee in August of 1967, four years after Bede's rosy projections. But it wasn't until 1969 that deliveries began in earnest. Grumman Aerospace purchased the little company in 1973, eventually moving production to Savannah, Georgia, where its posh Gulfstream corporate jets were built. Naturally, this move affected production rates, and some relearning was necessary. After eight years at the helm, Russ Meyer was to do some moving himself; he joined Cessna in 1974, where he continues as board chairman and chief executive officer.

Under the Grumman American banner, development progressed on several fronts, much as in the Bede days, but at a more realistic pace. Improvements to the basic AA-1 Yankee followed in A, B and C versions. A four-placer had been under study practically from the start and a retractable and a twin also were planned. The retractable never appeared. The Patriot four-placer, however, was flown, but then was scaled-back to a proportionately enlarged version of the Yankee, introduced in 1972. And the twin project grew into the Cougar, a decent airplane that arrived in 1978—just the wrong moment, from a marketing standpoint.

Finally, in 1978, Grumman sold off its general aviation interests to Allen Paulson's American Jet Industries, now Gulfstream Aerospace. The last two-place airplanes were built in 1978, while the four-placers and light twins survived until 1979. Production has been dormant since then, while a buyer for the light aircraft line is being sought.

In 11 years of production, some 3627 airplanes were built, about an equal number of two-and four-placers. It was a brave effort to challenge the big three's dominance in the light-airplane market. But unlike Mooney, which found its special niche, Grumman American spread its efforts too thin.

More family cruiser than sport model, four-seat Tigers are attractive used plane buys.

When we undertook a study of the Grummans, as the airplanes are most commonly known, we began with the two-place AA-1 series, the Yankee and its derivatives. As used airplanes, the company's first products make economical personal transportation; they are particularly well-suited to those who desire to own something more exciting than a worn 150.

The little Grummans always have sold best to first-time owners, those who carry no prejudices or brand loyalty from earlier associations. As evidence of this early imprinting, note the response you get when you ask airport lounge-lizards what they dislike most about a Grumman. They'll usually say, "the sliding canopy and the castering nosewheel." When you ask Grumman owners what they like best about their airplane, they'll say—you guessed it—the sliding canopy and the castering nosewheel.

Genealogically speaking, the AA-1 Yankee was certified as a 1430-pound utility category airplane on August 29, 1967. But it took until July 16, 1968, to gain a 1500-pound, normal category certification. Thus, the first full year of production was 1969. Back then, the airplane sold for $9495 as a Yankee Clipper, the gussied-up deluxe version; $6495 bought the basic, unequipped Trainer, which few people ordered. By 1971 the AA-1A appeared, offering a recontoured wing section for a softer stall break; the maximum flap speed was raised from 86 to 100 knots and the maneuvering speed was lowered 4 knots. In June of 1972, the AA-1B was certified, bringing a gross weight increase from 1500-1560 pounds and a utility certification that applied at all weights, rather than being restricted to 1430 pounds. Better cockpit ventilation and canopy seals were also part of the -B model.

From 1972 through 1976, the AA-1 was sold as either a Trainer or a Tr2; the airplanes were identical except for the propeller. A climb-pitched airscrew was used for the Trainer version and a cruise-pitched one was installed on the Tr2. As a final attempt to boost sales, AA-1C came out in 1977, in two versions. One was called the T-Cat (Trainer Cat) and the other was the Lynx, a Tr2 in new garb. Both -C models featured 1600-pound gross weight and -L2C engine which could churn up 115 horsepower on 100-octane fuel.

We found a well-loved 1973 Tr2 at the Lees Summit, Missouri, airport, in the care of Dennis Frederick, its third owner, who is a senior engineer with AT&T. Still showy in its bright yellow factory paint, N7358L was in fairly good shape despite its outside tiedown storage. Hail had pockmarked the wings and control surfaces, and the plastic was weather-crazed here and there, but otherwise it was in fine

GRUMMANS

continued

shape, with only 1361 hours. The clean interior showed the airplane's pet status, including such touches as a voice-activated intercom.

I had forgotten just how small the little Grummans were. It's possible to reach the tip of the tail and to clean the windshield without a ladder. The stubby wings span less than 25 feet. Up front, a big spinner smooths airflow past the 71-inch propeller, its blades pitched to 57 inches on the Tr2, and 53 or 54 inches on the Trainer. The upper cowling is removable with four quick-release catches and two screws, while an oil-access door allows for checking the lubricant level. The single exhaust stack is matched by one landing light in the nose bowl. Ramp inlets on the sides of the forward fuselage feed air vents on the panel.

The Grumman's no-maintenance landing gear uses an elegantly curved steel spring for the 5.00 x 5 nosewheel and big 7/8-inch-thick slabs of fiberglass for the 6.00 x 6 main tires. To enhance speed, 5.00 x 5 main tires were options chosen for the AA-1B that were seldom used; the teardrop wheel fairings add a touch of class and probably a knot or two as well. Due to the nosegear's lack of restraint, the airplane is difficult to back into a parking spot without a tow bar. Like the AmEx card, don't leave home without it!

The Tr2's fuel system consists of the two wing spars' 6-inch diameter aluminum tubes, sealed to hold 12 gallons on each side, 11 of which are usable; the prototype's nose tank was dropped. Filler caps are near the wingtips. Due to dihedral, fuel below 3/4-full cannot be seen from the neck, but the simple sight-tube gauges on the cockpit sidewalls provide an unfailing indication. Sump drains are provided, but there is no gascolator drain. The 0-235-C2C uses 80-octane fuel when available.

The Tr2's glassy smooth wing and fuselage surfaces are free of rivet lines due to its bonded construction. As for controls, the flaps are electrically actuated, even though their small size would have allowed

The Tr2's instrument panel space in the 40-inch wide cockpit is adequate for most VFR and IFR requirements.

The AA-5 Traveler was a stretched, 150-hp Yankee but was refined into the Tiger and Cheetah models.

Photos: LeRoy Cook

By LeRoy Cook

FOUR YEARS AFTER production started on the two-place Yankee, the firm then known as American Aviation Corp. introduced the AA-5 Traveler, a stretched, four-place airplane which relied heavily on the Yankee's technology. Actually, a larger, more sophisticated four-place machine called "Patriot" was built and test flown, but it would not have been as competitive in both cost and performance as an enlarged two-placer, so the Patriot was shelved, and the Traveler appeared as a 1972 model.

The Traveler was powered by a 150-hp Lycoming, with 7 feet more wingspan, 3 feet more length, added dorsal and ventral fins and 700 pounds more gross weight than the two-place airplane. It retained the tubular-sprung, free-castering nosewheel and sliding canopy, with the rear seats enclosed by the fixed portion of the aft fuselage. The tubular wing spar was not used to hold fuel in the thirstier Traveler; instead, the surrounding inboard wing bays were sealed to contain 38 gallons. Bonding continued to predominate in the Traveler's construction, of course.

In 1975, a hot new four-placer joined the Traveler, the AA-5B Tiger. Much more than a 180-hp version of the Traveler, the Tiger benefitted from an aerodynamic clean-up and empennage redesign, courtesy of Roy Lopresti, which placed it in direct competition with light retractables, cruising at more than 130 knots. The extra 30 horsepower also allowed a 200-pound gross weight increase, most of which went into payload so it could be flown as a reasonable four-placer rather than as a 2+2 ship.

By 1976, the Traveler had been given the Tiger's full clean-up treatment (most of it already had appeared on the 1975 Traveler), so it was renamed the Cheetah; cruise-speed was up by 5.2 knots on the same 150-

Performance and Specifications, Grumman American Singles

SPECIFICATIONS	1973 AA-1B Tr-2	1979 AA-5B Tiger
Price, new, FAF factory, standard equipment	$13,250	$37,000
Price, used, average equipment and condition	8,000	25,000
External Dimensions		
Wingspan	24.46 ft.	31.5 ft.
Wing area	99 sq. ft.	140 sq. ft.
Overall length	19.24 ft.	22 ft.
Overall height	7.6 ft.	7.58 ft.
Wheelbase	5.33 ft.	5.33 ft.
Wheel track	8.25 ft.	8.25 ft.
Weights and Loadings:		
Gross weight	1560 lb.	2400 lb. normal, 2050 utility
Empty weight, standard	966 lb.	1398 lb.
Useful load, standard	594 lb.	1002 lb.
Empty weight, equipped as flown	1059 lb.	1482 lb.
Useful load, equipped as flown	501 lb.	918 lb.
Fuel capacity/usable	24/22 gal.	52.6/51 gal.
Power loading	14.4 lb./hp.	13.3 lb/hp
Wing loading	15.5 lb./sq. ft.	17.1 lb./sq. ft.
Baggage capacity	100 lb.	120 lb.
Seats	2	4
Power Units:	Lycoming O-235-C2C 108 hp at 2600 rpm TBO, 2000 hours	Lycoming O-360-A4K 180 hp at 2700 rpm TBO, 2000 hours
Propellers:	McCauley fixed pitch, 71-in. diameter	McCauley fixed-pitch, 75-in. diameter
Performance:		
Maximum speed, sea level	125 kt.	148 kt.
Maximum cruise speed, 8000 ft. 75% power	116 kt.	139 kt.
Normal cruise speed, 8000 ft. 65% power	104 kt.	129 kt.
Range at 75% power	403 n.m.	554 n.m.*
Range at 65% power	425 n.m.	572 n.m.*
Stall speed, flaps up	54 kt.	56 kt.
Stall speed, flaps down	52 kt.	53 kt.
Rate of climb, sea level	660 fpm	850 fpm
Service ceiling	11,500 ft.	13,800 ft.
Takeoff distance over 50-ft. obstacle	1590 ft.	1550 ft.
Takeoff ground roll	890 ft.	865 ft.
Landing distance over 50-ft. obstacle	1100	1120 ft.
Landing ground roll	410 ft.	410 ft.

*includes 45-minute reserve

Service Support: Grumman Aerospace Corp.
P.O. Box 2206
Savannah, GA 31402
(912) 964-3000

Comparison of Grumman American Singles

Model	Name	Years Built	Engine Horsepower	Gross Weight	Cruise speed, 75%	Price, used
AA-1	Yankee	1969-71	Lycoming O-235-C2C/108 hp	1500 lb.	116 kt.	$7000-$7500
AA-1A	Trainer/Tr2	1971-72	Lycoming O-235-C2C/108 hp	1500 lb.	116 kt.	$7500
AA-1B	Trainer/Tr2	1973-76	Lycoming O-235-C2C/108 hp	1560 lb.	116 kt.	$8000-$9000
AA-1C	T-Cat/Lynx	1977-78	Lycoming O-235-L2C/115 hp	1600 lb.	117 kt.	$9750-$10,750
AA-5	Traveler	1972-75	Lycoming O-320-E2G/150 hp	2200 lb.	122 kt.	$12,000-$14,000
AA-5A	Cheetah	1976-79	Lycoming O-320-E2G/150 hp	2200 lb.	127 kt.*	$14,500-$17,500
AA-5B	Tiger	1975-79	Lycoming O-360-A4K/180 hp	2400 lb.	139 kt.	$17,500-$25,000

*1975 Traveler shared Cheetah's speed increase

GRUMMANS
continued

Bede's original manual lever to be used. The flaps and ailerons are operated by torque tubes rather than cables—a holdover from Bede's plans for folding the wings. In accordance with a 1976 service letter, a single rivet has been added to the rear corner of each control surface to prevent possible delamination. An extensive wing-root fillet smooths airflow disruption around the fuselage juncture, so that part of the wingwalk is sloped outward by the fairing. There are no boarding steps on the two-place Grummans, but the agility needed to reach the wingwalk is no greater than that required to climb over the cockpit side. Small ground-adjustable trim tabs are mounted on the ailerons and rudder, while the right-hand elevator has an anti-servo trim tab. Bede's original plans called for a small ventral fin, which was dropped from airplanes constructed by American Aviation.

The wing was changed to a more flat-bottomed airfoil in 1971. This new shape was supposed to soften the stall characteristics and make the airplane more docile. Because the Yankee approached 9-13 knots faster than a Cessna 150, the airplane had gained an early reputation as a hot machine. While the new wing may not have brought major aerodynamic changes, it might have been a smart marketing move. A stall strip is midspan on each wing's leading edge.

It's possible to stand on the ground and clean off the windshield or inspect the top of the tail of the Tr2.

The wingtip's plastic housings hide the position lights to lessen drag, with glareshields inboard to prevent backscatter. N7358L had a sledrunner antenna on the vertical fin's leading edge—a reminder of the ELT that once was mounted under an inspection cover at the base of the fin. During the great lithium battery scare it was retired for an inexpensive, troublefree EBC portable unit located on the baggage compartment wall.

With the outside tour completed, owner Frederick and I mounted the wingwalks, rolled back the canopy and flipped up the seat cushions with a toe to step over the side onto the tubular carry through structure. Once we moved our feet forward into the footwells, the seat dropped back down and we were in. Taxiing with canopy open preserves the "dawn patrol" image, and a canopy half open is approved for flight below 113 knots if you can stand the din. Shoulder harnesses attached to the aft bulkhead came with the Tr2.

The area behind the seats is placarded for 100 pounds of baggage, but it must be used with discretion. Frederick's airplane weighed 1059 pounds empty, so with full fuel and oil, only 358 pounds remained for cabin payload—two 179-pound people sans baggage. It doesn't pay to overequip your Grumman two-placer with a lot of heavy options.

The cockpit is 40 inches wide, divided by a console that carries the control rods and cables. The solid floorboards also serve as

AA-5 TRAVELER
continued

hp engine. Both the Tiger and Cheetah remained in production until 1979, even after American Jet Industries purchased Grumman's general aviation airplanes, primarily to acquire the Gulfstream business-jet line. Although its efforts to sell off the light airplanes have not borne fruit, Gulfstream Aerospace still supports the Grumman singles with parts as needed.

All of the four-place Grummans share flying characteristics distinctly different from the two-place airplanes. Although the numerous detail improvements make the later AA-5s more desirable, they all float in for a landing with power off at slow approach speeds and handle with predictable docility as compared with the short-winged AA-1 series. More family cruisers than sports models, the four-placers possess attractive utility as used airplanes.

We found one of the last of the four-place Grummans produced, a Tiger built in November, 1979, doing yeoman service on the line at Tig-Aire Aviation in Booneville, Missouri. N4540N had 821 hours on the tachometer when we stopped in to visit, mostly acquired in rental and instrument training. Dave Bradley, Tig-Aire's good-natured president, just tossed us the keys and said "Go have fun."

Equipped with a 79-vintage King Silver Crown radios (dual KX 170B navcoms, KR 85 ADF, KT 76A transponder, KMA 20 audio panel), plus a Century IIB single-axis autopilot, N4540N had an empty weight of 1482 pounds; with 51 gallons of fuel and eight quarts of oil, we had room for 587 pounds of cabin payload, so our four people would have to average less than 150 pounds each. So much for the Tiger's ability to carry four souls; at 2200 pounds max gross, the Traveler and Cheetah were even more limited. However, 51 gallons actually are not needed for most flights, particularly because the Cheetah's standard tanks only held 37 gallons; most Cheetah buyers went for the big tanks, however. Filling the tanks to the bottom of the filler necks limits fuel load to 38 gallons, raising our payload capacity to 675 pounds, just about four standard persons.

The 1976 models incorporated oleo shock absorbers on the nosegear and the canopies were more effectively sealed.

As one of the final production run, N4540N embodied all that Grumman had learned in eight years of building AA-5s, both external aerodynamic cleanups and internal comfort touches. The speed modifications of the Tiger and Cheetah, like the square-cheeked cowling with a sloped frontal area and the faired maingear legs, were absent on the Traveler before 1975. In addition, the original sported a ventral fin and its tail feathers were merely a Yankee tail with constant-chord extensions added. The Tiger and Cheetah eliminated the underslung fin, and the stabilizer's planform was recontoured to eliminate the square tips.

The year of the Cheetah, 1976, was a good year for Tiger improvements as well; oleo shock absorbers were added to the nosegear's spring to soften its rebound, the canopy was sealed more effectively with double rubber strips at the windshield frame and an aft seal was added above the rear seats. The windshield, a mere 1/8-inch thick in the first Travelers, also was changed to 1/4-inch thickness in 1976.

The Tiger's bonded wing only has a few lap seams showing thanks to the bonding used throughout. The aileron balance weights disappear inside the wingtips for streamlining when controls are neutralized; holes in the underside of the ailerons serve to drain any moisture which might seep in. A set of strobes on our test airplane were faired neatly inside the clear position light housings on each wingtip. Two stall strips are on each wing, larger ones outboard plus smaller ones inboard.

The no-maintenance landing gear uses a flat slab of fiberglass for each maingear strut, faired in black rubber, while the 90° castering nosewheel is mounted on the standard Grumman tubular spring. Fuel tank drains are supplemented by drains in the upper maingear fairing, near the wing-root, the low point in each wing's system. No gascolator drain is provided.

The engine is accessible, without tools; pop-out latches allow each side of the cowling to be hinged up and propped open so a fast peek for cleanliness and security can be made. For windy days, a small oil check

the belly skins. It also mounts the trim wheel, microphone holder, flap switch and indicator, ashtray and fuel selector. The unlighted fuel gauge tubes are on the sidewalls under our outboard knees, with attention-getting red floats, which were added by an AD back in 1978. Earlier, the fuel level alone was used. N7358L's panel sported a Narco Com 10A transceiver, an AT-150A transponder and a Nav 11 VOR receiver. Outlets on the lower panel looked like standard automotive air-conditioner ducts, a vast improvement over the early Yankee's canopy vents. Overhead, a dark-tinted sunscreen was installed to combat greenhouse buildup. But it still allows scanning for bogies—a vital accessory for summertime Grumman flying.

Starting requires a shot or two of prime, as the Lycoming's carburetor does not have an accelerator pump. Rather than twisting a key, a push-button is used to engage the

Taxiing calls for operational brakes and a toe-steering technique due to the responsive, castering nosewheel.

door is located in the right side of the hinged cowl so the entire panel doesn't have to be raised. A single landing light is located under a clear lens in the nosebowl.

A baggage door on the left side of the fuselage was added in 1974, allowing simple access to the 120-pound baggage compartment. In case you have to carry more than the aft compartment will hold, or if your tent blows away at Oshkosh, you can take advantage of the four-place Grumman's station-wagon interior; just remove the rear seatback cushions, fold the seatback forward and you have an 8-foot flat floor.

Our test ship's stabilizer had abrasion boots fitted to the leading edges, a worthwhile addition. Static ports on the aft fuselage were yoked to avoid slip/skid error. The rudder carried a ground-adjustable trim tab, as did both ailerons. N454ON's remote ELT resides in a crashworthy spot inside the aft tailcone, above the stabilizer carrythrough. We found the wingwalks to be a trifle narrrow, even with the easier access offered by the boarding steps added to the Traveler in 1973.

While the canopy can be stubborn if its rollers are not kept lubricated, Dave's ship opened up with one hand and we stepped over the side into the cockpit. The rear seats are no more difficult to reach than the front ones, as long as access to the floorboards is opened up by running the front seats forward. A console between the front seats contains trim wheel, flap switch and indicator, and the fuel selector and gauges. On the right side of the panel are found the fuses and a small glove box. The compass is on the windshield frame, moved up from the panel, where it was located in the Traveler. A dome light is above the rear seats, on the fixed portion of the ceiling. The radio speaker was hidden in the panel somewhere, so there was no wiring attached to

GRUMMANS

continued

starter. Check the brakes for effectiveness as soon as the airplane is off the chocks; they are vital for taxiing and one brake will not suffice for the task. The castering nosewheel responds to the slightest tap, so use a toe-steering technique. Unless strong crosswinds are encountered, the airplane's natural tricycle stability tends to carry it in a straight line once you tell it where to go. Brakes seem to last as long on the Grumman singles as on other conventionally steered airplanes.

Taxiing is not the problem most new Grumman pilots expect . . . as long as your brakes are working.

At runway end the canopy is snugged shut. The engine run is at 1800 rpm for mags, carburetor heat and suction checks. Boost pump goes on for takeoff: trim is rolled into neutral, flaps are checked "up" and the fullest tank is selected because there

AA-5 TRAVELER

continued

the canopy. The canopy latches easily with a one-two, fore-and-aft movement of the overhead candle; it can be left open on the ground for ventilation and can even be cracked open inflight up to nine inches or so.

Big vent outlets on the panel are fed by NACA ramp inlets on the forward fuselage while sidewall vents supply the rear seats. The adjustable front seats move up when rolled forward, increasing visibility for short pilots. For starting, we primed a couple of short strokes and flicked on the mags, boost pump and master switch, pushing the separate starter button to initiate proceedings. Like most O-360 Lycomings, some vigorous throttle-pumping helped get the fire going.

Taxiing is not the problem most new Grumman pilots expect . . . as long as the wind is light and your brakes are working. The fully-articulated nosewheel allows one to pirouette on a mainwheel like a tailwheel pilot, though at some abuse to pavement and tire. We performed our runup at 1800 rpm and flipped on the boost pump; no flaps are used for takeoff. Best angle of climb is quoted as 70 knots, with 90 given as V_Y. The tach has a yellow caution range to be avoided between 1850 and 2250 rpm, a region usually encountered only in descent.

is no both-on position. Transponder and flashing beacon go on, a traffic check on final glance is made up through the fishbowl canopy and we're off.

Rudder effectiveness allows for ignoring the brakes soon after the roll begins, as long as the wind is down the runway. Then, just in for the protracted takeoff run. All of the little Grummans require 1000 feet or more to get airborne, particularly those with a cruise propeller that limits rpm to 2200 or so. We lifted off at 61-65 knots, about 1500 feet down the strip, and climbed out at 750 fpm using the Vy of 89 knots. Vx comes at 75 knots.

Leveled-out at 3000 feet, we set up 2500 rpm, which is about all that's possible at full throttle, to see 106 knots on 77% power. This equates to 114 knots true airspeed – not bad, traveling on 6 gph. An EGT is installed to improve efficiency. Back to 2450 rpm, where it normally cruises, NF358L lost 4 knots, truing 111 knots on 5.7 gph. When power was reduced to a still-smooth 2300 rpm (about 63%) we indicated 96 knots for a TAS of 103 knots on 5.2 gph. Any way you run it, the Tr2 delivers good miles-per-gallon performance, although the fuel tankage is a bit skimpy.

Visibility is outstanding in every direction except down and straight back. The ailerons are delightfully quick, just begging for a chance to roll. But Jim Bede's aerobatic claims were never to come true, and one reason for this is the AA-1's stall/spin characteristics. They're quirky enough that NASA used a Yankee for spin testing (with a 'chute for recovery). So, with lots of altitude and a firm intention to stomp any developing spin back into its place, we slowed to 56 knots, flaps up, where the stall horn came on, and a sudden break occurred at 53 knots. The flaps delayed the warning and stall by 2-3 knots, but once more the fast breaking stall arrived with little warning. Frederick respects the Grumman's reputation for having a mean streak when low and slow, and he keeps his approach speed a little high as a result.

The Tr2's stubby, 25-foot wingspan earned the ship a reputation for lethargic takeoffs and hot landings.

We found 78 knots to be a comfortable approach pace, with 70 over the fence and a nose-high touchdown at 61. It is important not to touch down nosewheel first, as the Grumman's spring strut will rebound to induce a self-destructing porpoise – best cured by an immediate go-around. Properly landed, 1500 feet suffices for a runway. The flap switch must be released with care to prevent it from snapping forward through the neutral position into retract.

The little Grumman's strong suit is its fast cruise speed and sporty looks and handling. Its weaknesses are its lethargic takeoff, due to the low aspect-ratio of the short wings (three or four extra feet of wingspan would help) and its uncertain future, although Gulfstream Aerospace is still supplying parts and intends to support the line until it sells it. A few more gallons of usable fuel also would be helpful, along with the payload allowance to use it.

Perhaps someone will take on the Grumman light airplanes someday soon, and will cure its shortcomings and finish the two-seater's development. As a used plane, it asks only a little respect for its quick stall, and a love for its sportplane feel.

We were taking off at a gross weight of only 2000 pounds, so we expected spritely performance.

Into position, we lined up before opening the throttle so the engine could take the castering nosewheel where we wanted to go. In a 20-knot headwind, the rudder was effective immediately and we were off in 600 feet, climbing out at 950 fpm with the cruise-pitched prop limiting us to 2300 rpm. Climb visibility is good, even at Vy, and as we leveled off at 7500 feet we found the cruise attitude opened things up even more. Climb was still 800 fpm as we reached 7500 feet MSL. Maybe I was prepared for the worst, but I thought the noise level wasn't too bad.

We couldn't get the engine to wind up to 2700 rpm for 75% power at altitude, as specified in the cruise tables, but we probably wouldn't ask that from our engine anyway. The best we could achieve was 2600 rpm, about 69% power, where we saw 122 knots IAS, for a true air speed of 136 knots. At 2550 rpm, 64% power, we lost only two mph, truing 133 knots on a book fuel burn of 9.6 gph. At a leisurely 2400 rpm, 55% power, we indicated 110 knots, for true of 122 knots on 8.6 gph.

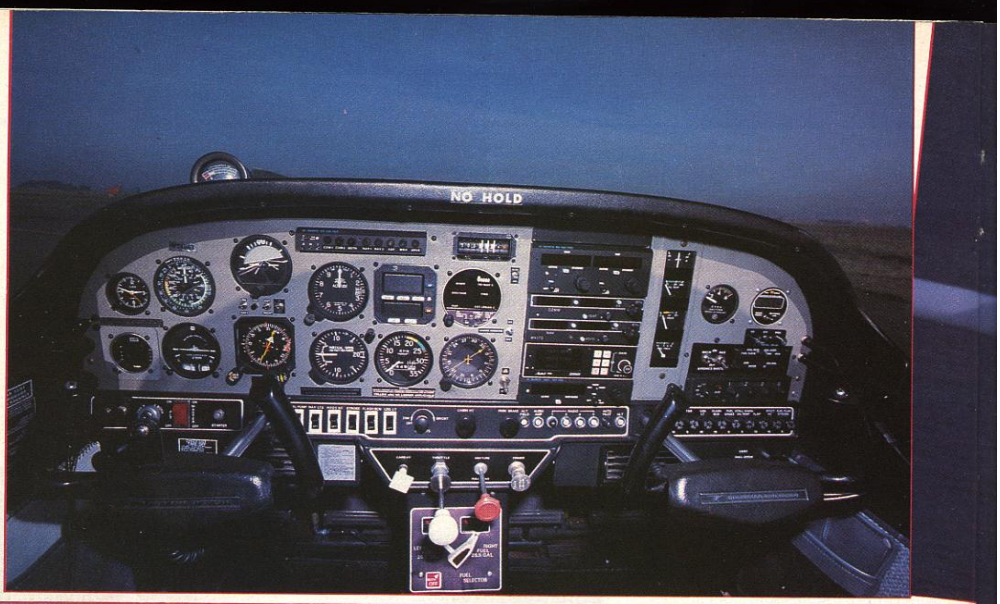
During maneuvers, we found the ailerons to be pleasantly responsive, but the elevators heavy, so much so that we relied on the trim tab for most pitch changes at cruise speed. Still, steep turns and lazy eights were a pleasure. The Tiger is licensed in the utility category at gross weights below 2050 pounds, but spins are not approved. Slow flight at 60 knots was on the verge of a stall warning horn and a full stall occurred at 54 knots. With flaps down, the horn and stall came four knots slower; we couldn't induce a bad response in either configuration, flying at our forward CG condition.

An aerodynamic clean-up and a Roy Lopresti redesigned empennage give Tigers near-retractable performance.

Blasting along in turbulence at 4000 feet back to the field, we finally got the power up to 76% at 2600 rpm, indicating 127 knots for a true of 134 knots. The engine seemed happiest in the 2400-2500 rpm range, however. On approach, we found 70 knots power-off worked well; 65 was a bit too slow unless power was retained to cushion the flare. Our rollout in the stiff breeze was only about 700 feet.

A more sedate, solid airplane than their two-place sisterships, the four-place Grummans deserved a better fate than they got. Perhaps the polished, established Skyhawks and Cherokees had broader market appeal, and maybe the various ownerships scared off buyers, or it could be hard times were the chief cause of the Grumman line's demise – we can't say. As shortcomings, I suppose some would cite the short payload and lack of widespread dealer organization. For strengths, you have only to look at the miles-per-gallon figures. The AA-5 series is only available as used aircraft, at least for now, but if you need fast, uncomplicated transportation, they are worth looking into.

AAX SCAN PAGE 51



Tiger Tale

The family of Grumman cats was disinherited, but many are now finding happy homes with pilots who can appreciate their special features and favorable price. Here's case in point.

By Keith Connes

As an aviation writer, I get to borrow all kinds of planes. But there is one problem: I always have to give them back.

It was early in 1984 that I began to think seriously about buying a plane of my own. You might think that a person who has been privileged to fly nearly every piston-engine plane that's been produced since World War II wouldn't have a problem selecting his own aircraft. Wrong. I wasn't at all certain of what I wanted.

TIGER TALE

Grumman American AA-5B Tiger

SPECIFICATIONS

Engine make/model:
Lycoming 0-360-A 4K
Horsepower @ rpm @ altitude:
180 @ 2700 @SL
Horsepower for takeoff: 180
TBO hours: 2000
Fuel type: 100/100LL
Propeller type: McCauley fixed pitch
Landing gear type: Tricycle fixed
Gross weight (lbs): 2400
Max landing weight (lbs): 2400
Empty weight (std) (lbs): 1294
Equipped weight (as tested) (lbs): 1470
Useful load (std) (lbs): 1106
Useful load (equipped) (lbs): 930
Equipped payload (full std fuel) (lbs): 624
Fuel capacity (std) (gals): 52.6
Usable fuel (std) (gals): 51
Oil capacity (qts): 8
Wingspan (ft): 31.5
Overall length (ft) : 22
Height (ft): 8
Wing area (sq ft): 140
Wing loading (lbs/sq ft): 17.1
Power loading (lbs/hp): 13.3
Wheel size: mains 6.00 x 6, nose 5.00 x 5
Seating capacity: 4
Cabin doors: canopy
Cabin length(in): 85
Cabin width (in): 40
Cabin height (in): 45
Baggage capacity (lbs): 120

PERFORMANCE

Max level speed (kts): 147
Turbulent air penetration speed (kts): 113
Cruise speed (kts):

	Altitude	Best Power
75% power:	8,000	139
65% power:	10,000	131
55% power:	12,000	122

Max range (reserve) (nm):

75% power:	8,500	552
65% power:	11,500	578
55% power:	12,000	592

Fuel consumption (gph):
75% power: 10.8
65% power: 9.7
55% power: 8.5
Estimated endurance (65% power) (hrs): 4.5
Stall speed (flaps up) (kts): 56
Stall speed (flaps down) (kts): 53
Best rate of climb (fpm): 850
Service ceiling (ft): 13,800
Takeoff ground roll (ft): 865
Takeoff over 50-ft (ft): 1550
Landing ground roll (ft): 410
Landing over 50-ft (ft): 1120

In many of my articles on aircraft and equipment, I have stressed the wisdom of basing one's choice largely on the kind of flying one intends to do, and can afford to do. I expected to fly mostly short trips, with an occasional long one, and wanted IFR capability. My budget dictated that the plane be fairly inexpensive to buy and maintain. That pointed inexorably to a well-cared-for, used single.

At first I considered a Cherokee 140. I anticipated that most of the time only my partner Anne and I would be aboard, and the little Cherokee is one of the most versatile planes in its modest price class. But after considering the likelihood of at least a few cross-country flights, I upped the ante to something faster and began looking at some of the older Arrows. There were some tempting buys out there, but I kept on looking.

I'd once found great pleasure in flying an F33A, so I decided to flirt with some venerable Bonanzas—the newer ones being well beyond my budget. But as I leafed through the logbooks and talked to the owners, all I could see were dollar signs for maintenance.

Then I thought about the Grumman Americans. I didn't have much time in them, but they had always been fun to fly, the visibility they offered was outstanding (sightseeing is a big part of flying for me, and so is safety) and I liked the canopy. The major question in my mind was the availability of parts and knowledgeable service for a product line that had been out of production for five years.

I contacted a man named Ken Blackman of the American Yankee Association, a club devoted to all the models in the G/A line. After some conversation, Blackman—who makes his living by modifying Grummans—invited me to speak at their annual convention in Delavan, Wis. I agreed and, during my visit, got to fly all manner of Grummans, including Blackman's 150-hp Yankee.

Early into my one-day visit at Delavan, I began to think about one of the sprightly two-place Grummans. Why not a Cheetah, I thought? But every Cheetah owner I talked to expressed a desire for the extra oomph and useful load of a Tiger. I asked Blackman to give me a holler if he came across a clean Tiger.

A few days later, Blackman called to tell me about my plane. It was a 1976 Tiger, eight years old, with only 290 hours total time. Two men had bought it new from Blackman when he was a Grumman American dealer, and neither owner ever got beyond the student pilot stage. The plane had been hangared all that time and was exceptionally clean. I bought it over the phone—something I had never done before.

I've owned N74863 for nearly 15 months now and have put 150 hours on it, and the plane has lived up to my expectations in every way.

In my view, the Tiger is very different in appearance from its heftier-looking counterparts produced in Wichita, Vero

Aircraft Comparison Chart

Aircraft make/model:	Grumman American Tiger	Piper Archer	Cessna Cutlass	Beech Sundowner
Gross weight (lbs):	2400	2550	2550	2450
Standard useful load (lbs):	1106	1145	1072	950
Cruise 75% (kts):	139	129	124	123
Stall (kts):	53	49	48	51
Max range 75% (nm):	552	600	620*	533
Fuel 65% (gph):	9.7	9	8.8	8.8
Best climb rate (fpm):	850	735	680	792
Service ceiling (ft):	13,800	13,650	17,000	12,600
Takeoff 50 ft (ft):	1550	1625	1690	1955
Landing 50 ft (ft):	1120	1390	1335	1484
Power loading (lbs/hp):	13.3	14.2	14.2	13.6
Wing loading (lbs/sq.ft.):	17.1	15.0	14.7	16.8
Engine horsepower:	180	180	180	180
Propeller type:	Fixed	Fixed	Fixed	Fixed
Landing gear type:	Fixed	Fixed	Fixed	Fixed
Usable fuel (gals):	51	48	50/62	57.2
Seating capacity:	4	4	4	4

**With optional fuel tanks*

The rear seat cushions can be removed and the seat back folded down to provide a large area for hauling bulky items or even sleeping in the plane

Beach and even Kerrville. The plane has a boxy-yet-sleek look you'd expect to find in a good experimental or foreign design, where simplicity of construction and performance efficiency head the list of priorities.

Construction of the plane is quite different from that of its competitors. The Tiger's fuselage is made up primarily of aluminum honeycomb sandwiched in sheet aluminum. This drastically reduces the number of drag-producing rivets. Furthermore, the wings are bonded and totally rivet-free.

The wings are supported by a tubular spar, which doubles as the fuel tank in the two-place Grumman Americans. The Tiger has two conventional fuel tanks with a total capacity of 52.6 gallons, of which 51 are usable. There are also two sump tanks—one in each wing root fairing—resulting in four rather inconvenient drain locations for fuel contamination inspection.

The upper portion of the cowling unlatches at two points on each side for easy inspection of the engine. However, the latching mechanism is a little tricky, and more than once I have found it improperly secured after maintenance.

The main landing gear struts are made of laminated fiberglass. The nosewheel is not connected to the rudder pedals, but instead casters freely 90 degrees to either side of center. This saves parts and weight (the entire plane has a relatively low parts count and is lighter than others in its class) and makes for unusual ground maneuverability. In fact, you can turn the plane 180 degrees in the same spot, simply by walking the wingtip around. Backing up is another story; that takes *practice*. Also, a little extra technique is needed when taxiing, taking off and landing in a crosswind.

The control surfaces are conventional and are operated by a combination of torque tubes and cables. The flaps are electrically actuated.

As I mentioned before, I like the sliding canopy. Entry is easier than crouching through the customary low-wing door, and the canopy can be left open for plenty of ventilation while taxiing. It can also be opened partway in flight, at speeds up to 113 knots.

The canopy arrangement has some disadvantages, however: Opening it for entry or egress in the rain results in a wet interior. Also, the canopy lock tends to leak. And the rails must be kept clean and lubricated, or the canopy will stick.

The Tiger has a nice arrangement for carrying bulky cargo. The rear seat cushions can be removed and the seat back folded down to provide a flat deck. I'm told you can camp out in it, but I haven't tried that. I do sometimes carry two "bumble bikes" (motorized folding bicycles), but find that they are loaded more easily with the rear seats upright. There is a rather small outside baggage door.

The airplane has a couple of recurring ADs (Airworthiness Directives). One requires that the ailerons be removed and inspected every 100 hours. Another necessitates the removal and inspection of the McCauley propeller every 200 hours, although a factory service bulletin recommends this procedure every *100* hours. Also, there is a cautionary yellow arc on the tach between 1850 and 2250 rpms, and prolonged operation within that range is to be avoided.

The propeller situation can be taken care of via an STC (Supplemental Type Certificate) that involves installation of a Sensenich prop and a new spinner. This wipes out both the inspection AD and the yellow arc.

Another mod that alters parts of the engine baffling to reposition the oil cooler and thus improves engine cooling. In addition to these mods, I installed a full-flow oil filter kit from Wag-Aero, which has resulted in an extension of oil changes from 25 to 50 hours.

Since taking possession of the plane, I have stuffed the panel—which was very sparse—with all manner of avionics and instrumentation. (See accompanying box for details.)

The Aircraft Comparison Chart pits the Tiger against the other 180-hp planes with fixed-gear and fixed-pitch props. Interestingly, of the four models shown, only the Piper Archer is still being produced. (A new competitor, the Aerospatiale Tobago, is in process of U.S. certification. See the January issue of *PLANE & PILOT*.)

The Tiger handily outperforms all of its competition in all major parameters, with the exception of the Cutlass' higher service ceiling. In fact, the Tiger will keep pace with the normally-aspirated Arrow, a plane that has the advantages of retractable gear, a constant-speed prop and 20 more horses.

I usually fly my plane about 300 pounds under gross. At its best rate-of-climb speed of 90 knots, I'll get about 1200 fpm at sea level. I use a cruise climb speed of 105 knots, resulting in an average r/c of 800 fpm. Unless I'm in a hurry, I cruise at about 68-percent power and get a true airspeed of approximately 133 knots, burning a little under 10 gph block-to-block.

(Cont'd on page 61)

The Face Of The Tiger

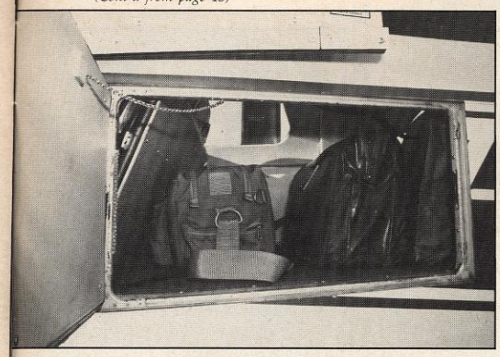
When I purchased N74863, it was equipped with a King KX 170 navcom and KT76A transponder and a Century I autopilot. I have since added the following:

- Narco Mark 12D navcom
- Narco 841 ADF
- II Morrow 614P Loran
- Terra Tri Nav C electronic CDI
- Sigma-Tek HSI
- S-tec 2-axis autopilot with altitude pre-select
- Sigtronics SPA 400 intercom and headsets
- Insight Graphic Engine Monitor
- Electronics International carburetor and outside air temp gauge
- Huntington Lift Reserve indicator

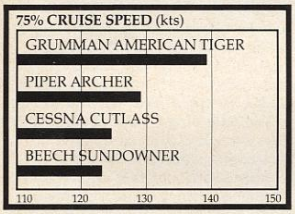
They are all working beautifully, and I plan to report on these very useful accessories in the future. Note: Sharp-eyed readers will observe two other pieces of equipment in the photo of my panel. One is a TKM MX-170 navcom, on loan for evaluation and temporarily replacing the KX 170 (see the January *PLANE & PILOT*). The other is a Shadin Miniflo fuel computer; its transducer is not installed, pending an STC for the Tiger.

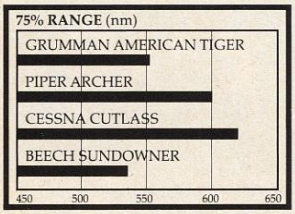
TIGER TALE

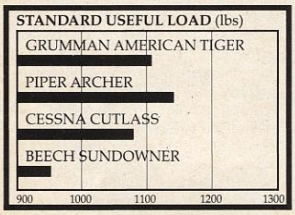
(Cont'd from page 43)

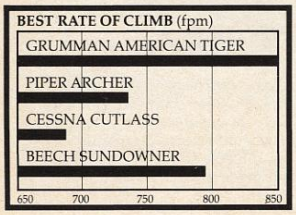


As with most four-place singles, the baggage door is small. However, baggage can be loaded from inside the cabin.









Since most of my flying is local, with occasional trips of 500 to 1000 miles, this performance suits me fine. I would have to pay a lot more to get another 20- to 30-knot cruise, and it just wouldn't be worth it. I would like to have more range, especially for extra margins in IFR weather, but the occasional added fuel stop is no big deal.

I love the way the Tiger handles. Airborne, the control feel is light and the plane is extremely responsive. It handles well in the slow flight regimes, but does not want to come down. Deploying flaps causes a pronounced pitch-up, but it takes a while for the plane to get the message that it's time to land. Approaches are made at 65 to 70 knots. Straight-ahead stalls are very gentle with the flaps down; with the flaps up, there is a sharper break, but nothing scary. Spins are prohibited, as are other aerobatic maneuvers.

My home base airport is known as "the crosswind capitol of the West," and it's no novelty to see the sock standing straight out at a neat right angle to the active, but the Tiger is quite controllable despite its castering nosewheel.

The visibility is superb. Some of this, alas, is at the expense of panel space; the panel is certainly adequate for IFR equipment, but has presented some problems for this gadget-crazed author.

The cabin is snug, and two large people sitting side-by-side might feel cramped, but Anne and I are of moderate size and feel quite comfortable. The seating is not luxurious, but I am not fatigued even after long trips.

The noise level in the Tiger is about average for a plane of this type; I measured it at 90 db/A. However, "average" is still too high for comfort and preservation of hearing, so we use headsets and an intercom.

The plane was manufactured from 1975 to 1979. In 1977, a so-called "Quiet

Nine Lives Of The Cat

The Tiger traces its lineage to Jim Bede, a man who thrilled some and disappointed many with his interesting designs and partly-fulfilled schemes.

His first plane was the two-place BD-1. It was innovative for its time, using a considerable amount of bonding instead of the riveted skin that was the standard of the industry. The concept was good, but Bede's ability to produce wasn't, and he was ousted by his stockholders. The new management changed the company name from Bede Aircraft to American Aviation, and in 1969 produced the AA-1 Yankee.

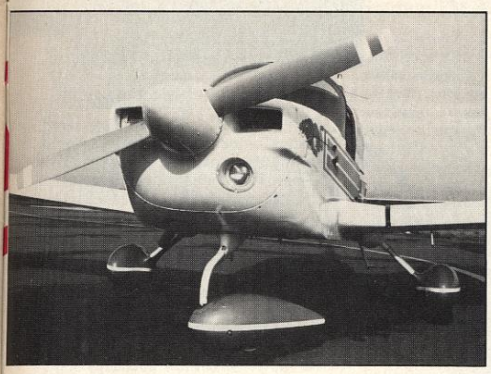
The little plane, with its laminar flow wing, turned out to be too hot in training situations, so the wing was modified and the Yankee was renamed Trainer. Later versions were dubbed the Tr2, Lynx and T-Cat. Each had the Lycoming 0-235, with horsepower ranging from 108 to 115.

The four-place 150-hp Traveler made its debut in 1972. American Aviation was then bought by Grumman, and its name was changed to Grumman American. The man hired as chief engineer was Roy Lopresti, who later became chief engineer and president of Mooney and is now chief engineer at Beech.

Lopresti developed the design of the Tiger, which was basically a cleaned-up Traveler with a 180-hp engine.

His changes were also incorporated into the Traveler, which then became the Cheetah. Thus, the Cheetah and the Tiger have similar airframes. However, in addition to having 30 more horses than the Cheetah, the Tiger has a beefed-up belly section, resulting in a 200-pound higher gross weight, of which 157 pounds is translated into additional useful load.

A final bit of history: Grumman American was "thrown in" as part of the purchase of the Gulfstream line by a company that became known as Gulfstream Aerospace. The purchaser, Allen Paulsen, had no interest in small aircraft, and the plug was pulled on the piston-engine planes in 1979.



The original McCauley prop has an AD that requires its removal and inspection every 200 hours. However, there is an STC for a Sensenich prop that does away with the AD.

Please'' package—consisting of extra soundproofing and thicker Plexiglas—was installed at the factory, and corrosion-proofing became standard. Also, the tubular nosegear strut got a shock absorber. The '78 model was given a redesigned interior with more comfortable seating, plus a separate hydraulic parking brake system and an improved over-voltage protection circuit. For '79, the simple twist-type fuel caps were replaced by those of ''flip-top'' design—not a real improvement, since the latter are less rainproof.

For my money (literally, this time), the Tiger is an excellent choice for someone who wants a used airplane whose performance is close to some of the retractables, but whose purchase and operating costs reflect its fixed-gear, fixed-pitch-prop design. There is the matter of spare parts for an airframe that is no longer being manufactured but—knock aluminum—I have not been faced with that problem to date. I have heard that parts from Gulfstream Aerospace (recently bought by Chrysler) can be outrageous, but other vendors are competing on some items, and there are always the aviation wreckers.

According to the *Directory of Aircraft Prices*, retail prices run from $18,250 for a '75 Tiger to $24,000 for a '79 model. A recent issue of *Trade-A-Plane* listed 15 Tigers at asking prices that ranged from $15,900 to $24,950, with the majority of them below $20,000.

If you are interested in a Tiger or other Grumman American model, you should consider joining the American Yankee Association. Membership is $20 a year plus a $5 initiation fee. The address: P.O. Box 3052, Everett, Wash. 98203. Ken Blackman (who is editor of the AYA newsletter) is a goldmine of information. He can be contacted at Air Mods N.W., P.O. Box 8, Snohomish, Wash. 98290, (206) 691-7634. Air Mods offers a number of modifications for the Grumman Americans, as does Ameromod: Building C-64, Paine Field, Everett, Wash. 98204, (206) 353-3559.

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HOW TO BUY, SELL, MAINTAIN AND OPERATE PRIVATE AIRPLANES

My Favorite Airplane

An Owner's Look at the Grumman American Tiger

By Keith Connes

Aviation writers are lucky folks. In the course of doing pilot reports, year in and year out, we get to fly all manner of aircraft, from Champs to Citations. And the price is right. But despite the unending opportunities to fly other people's airplanes for free, some of us are also full dues-paying members of the society of aircraft owners.

Sure, it's fun to borrow somebody's pride and joy and play with it for awhile, but darn, you always have to give it back.

Over the course of the 33 years that I've been flying, I have taken title to five airplanes. I received my primary training (I almost said "learned to fly," but you never stop learning) in a taildragger, and my first three planes were a Cessna 140, a 170 and a 180. Then I went retractable and low wing with a Mooney Super 21.

After a hiatus of some years, I acquired my present airplane, a 1976 Grumman American Tiger, and I like it best of all.

The Tiger's forbears (if I may mix animals) can be traced to the creativity of Jim Bede, a designer/entrepreneur who has almost produced a goodly number of interesting planes.

Although best known as a designer of homebuilts, Bede initially burst upon the aviation scene with a prototype (he's great at prototypes) of a production model originally known as the BD-1. This was a two-place airplane that was put together mostly by bonding instead of rivets. But one aspect of the project was quite riveting: The airplane was supposed to sell for $2500. This was cheap even in the 1960s. In fact, it was not only cheap, it was totally unrealistic.

No doubt about it, Jim had a promising future. He was always promising something in the future. After awhile, his disgruntled stockholders ejected Jim, and the name of the company, located in Cleveland, was changed from Bede Aviation to American Aviation, and the company's lawyer, Russell Meyer, was selected to run it. In 1969, the AA1 Yankee made its debut. Some of Bede's concepts were abandoned—including foldable wings—and the price tag of $9740 acknowledged the realities of production, distribution and marketing.

The Yankee had some basic design characteristics that were to be retained in future models. The metal-to-metal bonding concept was retained, but the methodology was different. Bede had intended to use a cold-bonding process that would have made kitbuilt versions possible, but the new management opted for pressurized jigs and autoclaves. Much of the fuselage was honeycombed for strength. The tubular main spar was used to hold the fuel, 12 gallons per side. (The later four-place models were given conventional wing tanks.)

Among the unique features were a sliding canopy and free-castoring nosewheel. I'll discuss their advantages and drawbacks in a bit.

HOT TRAINER

The Yankee had a full laminar flow wing, which caused some control problems when it was used as an *ab initio* trainer. The two-placer was modified several times and called, variously in its career, the AA1A and B Trainer and TR-2, and AA1C Lynx and T-Cat. Horsepower ranged from 108 to 115.

American Aviation experimented with a four-place model called the Patriot, which was built with a side door and a 180-hp engine. The project was eventually scrapped and the prototype was donated to a school for A&P mechanics. Then in 1972, another four-seater, called the AA5 Traveler, went into production. It was basically a stretched version of the two-place models and was powered by a 150-hp Lycoming O-320-E2G.

The following year, Grumman Corp. acquired American Aviation, which became Grumman American. The new owner brought in as chief engineer a man who had worked for Grumman Aerospace on the lunar module project at Cape Kennedy, but whose chief interest was in small planes.

His name was LeRoy LoPresti, and he was put to work on a project with the unpromising name of Fat Albert. This was a Traveler that had been mated with a 235-hp engine and cobbled up to make room for an eventual installation of retractable gear. LoPresti was unimpressed with Fat Albert's appearance and performance, and he decided to start afresh with a cleanup of the Traveler.

Here, in Roy LoPresti's own words, is what he did:

"The fellow who ran the shop for me, Dick Jarvis, was a race car fan, and I used to drive and design race cars, so we hit it off real well. Dick and I really put most of the new Tiger together ourselves. We spent one evening with a pair of tinsnips and we cut the turtledeck bigger for larger windows in the back. We decided that the horizontal tail on the Traveler, which was made up of a bunch of scabbed-on pieces from the Trainer tail, just didn't look right. It worked fine, but it looked funny. So we built a brand-new, high-aspect-ratio horizontal tail.

"We also changed the dorsal fin," LoPresti continued. "We went from a sheet-metal wraparound piece to a formed plastic piece that made for a much better line. The top of the dorsal is parallel to a water line. Later, when I joined Mooney, we changed the dorsal fin that was on the Executive, just like the Tiger.

"We put together a cowling that had some internal ramps that let the air out a little more smoothly. We put fairings on the landing gear legs. All of these things made a difference, and the result was a 175-mph airplane in its experimental version.

"It is a very nice, straightforward, simply structured airplane that flies very efficiently," he concluded. "And that's what good airplanes are all about."

MORE LOPRESTI CLEANUPS

In addition to the changes LoPresti mentioned, the Tiger was given a 180-hp Lycoming O-360-A4K engine. A beefier belly permitted a 200-pound increase in gross weight, of which 157 pounds translated into useful load. The Tiger cruises 17 knots faster than most versions of the Traveler—139 versus 122.

LoPresti did not remain at Grumman American to see the Tiger into production. He left to become chief engineer at Mooney Aircraft Corporation, which had

The Tiger, one of the more popular orphans around, evolved from Jim Bede's BD-1 design. It's the end of the line—unless recent attempts to acquire the production rights from Gulfstream Aerospace are successful.

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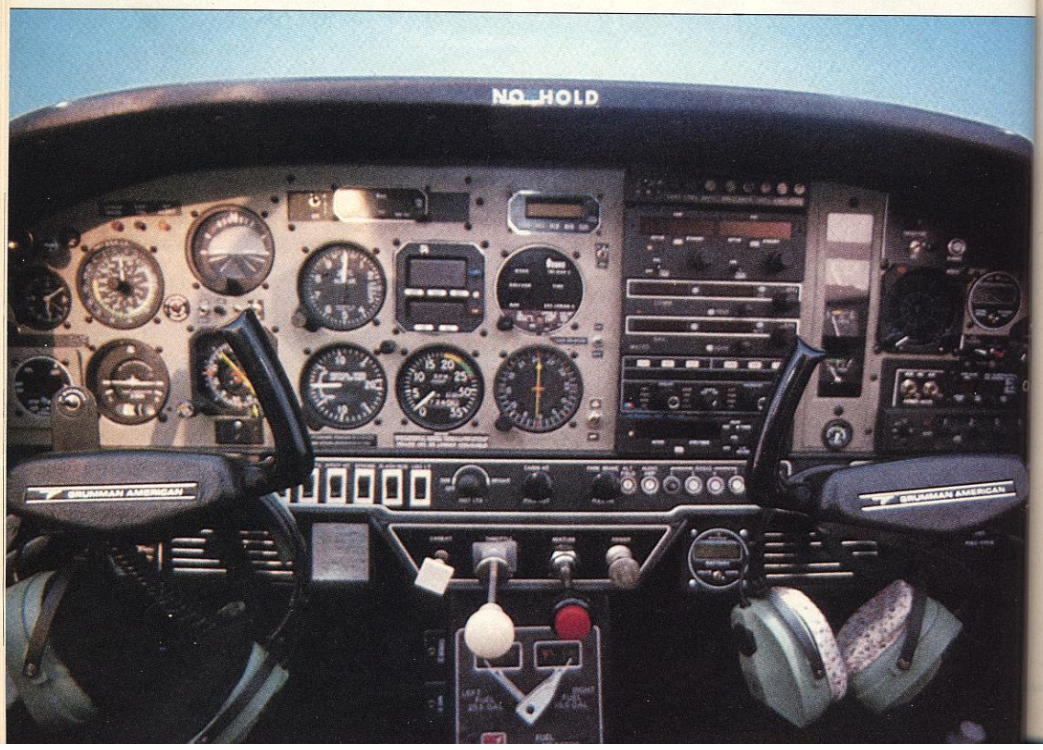
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been purchased by Republic Steel. He later moved from Mooney to Beech Aircraft Corporation, and has most recently cut a deal with Piper Aircraft Corporation to set up an advanced engineering design group called LoPresti Piper Aircraft Engineering Company at Vero Beach. Roy plans to revive and clean up the single-engine Comanche Turbo 260C and the Swift.

Actually, most of the LoPresti cleanups were also applied to the Traveler in 1975, the year the new Tiger came out. The following year saw the introduction of the Traveler's successor, the Cheetah, which was given the Tiger tail. The significant differences between the Cheetah and the Tiger are 2200-pound versus 2400-pound gross (the Tiger has a stronger center spar) and 150 versus 180 hp. The Cheetah has a book cruise of 127 knots—12 knots slower than that of the Tiger.

In 1977, the Tiger was built with thicker plexiglass and additional soundproofing. The tubular nosegear strut was redesigned to accommodate a shock absorber, and corrosion proofing became standard. Improvements for the '78 model included more comfortable seating, a separate hydraulic parking brake system and a more reliable overvoltage protection circuit. In 1979, the twist-type fuel caps were replaced by flip-tops, which are said to be less rainproof.

By that time, the production line had been moved to Grumman's corporate aircraft production facilities in Savannah, which caused a certain amount of havoc, but the worst was yet to come. Grumman sold those facilities to Allen Paulson's entity, now called Gulfstream Aerospace. Paulson was very interested in Gulfstreams and not at all interested in small piston-powered aircraft. The last of the Grumman Americans—which then included the twin-engine Cougar—were produced in 1979.

Efforts were made to sell the Grumman American line and there were nibbles but no solid takers. However, there has been continued interest even now, during this time of depressed general aviation production. At this writing, a number of domestic and foreign groups are negotiating to buy the line from Gulfstream Aerospace, which is now owned by Chrysler.

With a 180-hp Lycoming O-360-A4K engine, the Tiger zips along at 135 knots, burning less than 10 gph. It's 17 knots faster than the Traveler. There's room on the panel for almost anything you can cram in.

Tiger Mods

Aero Mods has one-time STCs to install a Lycoming IO-360 200-hp engine with constant-speed propeller in the Tiger, and to install the Lycoming IO-540 engine, 235 to 260 hp. (At presstime, the multiple STC was expected in May.) According to company president Maynard Crosby, the 200-hp installation will cruise at 144 knots. Cost of the conversion is in the $16,000 range.

The Sabre Tooth Tiger, as he calls his 260-hp version, is said to cruise at 156 knots. I flew it briefly and saw 150 knots at 7000 feet, along with very impressive climb performance. Cost is in the $20,000 range.

The larger engine conversions carry a weight penalty.

The company also offers the Sensenich prop STC (at presstime, the price was $1885, not installed, but an increase was expected) as well as oil-cooler and air-induction modifications for the Tiger. It also does engine conversions on the two-place Grummans.

Air Mods NW has the Sensenich prop STC available for $1940 (shipping and installation are not included in the price).

Ken Blackman, a co-owner of the company, says that Air Mods has done a one-time STC for the Cheetah for a constant-speed Lycoming O-360-F1A6 engine, and plans to eventually STC the Tiger (he stresses it's not available now). Because of the cowling configuration of the Tiger/Cheetah airframe, a horizontal carburetor is required, and the O-360-F1A6, he says, is the only off-the-shelf engine that has it. (It's used on the Cessna Cutlass RG.)

Blackman is working on approvals for more Tiger mods: a split nosebowl and lower cowling for easier maintenance (at present, to get at the alternator, you have to remove the prop!); wingtip landing lights to complement the existing nosebowl light; a larger oil cooler mounted on the firewall; Piper reclining seats as front-seat replacements.

Ken Blackman found my Tiger for me and is a good source of information. He says that it's pretty hard to improve the Tiger; Roy LoPresti did his homework well. —*Keith Connes*

FOR MORE INFORMATION, *contact: Maynard Crosby, Aero Mods, P.O. Box 2361, Everett, WA 98203, telephone 206/353-3559; Ken Blackman, Air Mods NW, P.O. Box 8, Snohomish, WA 98290; telephone 206/691-7634.*

The prospective purchaser of any out-of-production airplane needs to address the issue of parts availability. Parts for the Tiger (and the other Grumman Americans) are available from various suppliers at prices that, with some horrific exceptions, are reasonable. The largest nonfactory supplier of new and used parts is Fletcher Aviation, 7786 Braniff St., Houston, TX 77061; telephone 713/641-2023. Dave Fletcher is also a good source of maintenance tips on these aircraft.

THE AD QUESTION

Another item of interest is airworthiness directives, especially those of the recurrent persuasion. The Tiger has two recurrent ADs, one of which can be sidestepped. The McCauley propeller must be removed and inspected for cracks every 200 hours. What's more, harmonics from this prop have resulted in a yellow arc on the tach cautioning against prolonged operation between 1850 and 2200 rpm. The solution to this annoyance comes in the form of an STC for a Sensenich prop, installation of which eliminates both the inspection AD and the yellow arc.

There is no getting around the other AD, which involves removal and inspection of the ailerons every 100 hours for bearing wear. It's a fairly simple operation.

Let's get back to the more positive aspects. Tiger owners can rightfully expect their airplanes to outpace all other comparable fixed-gear, four-place, 180-hp production aircraft. According to book figures, at 75% power, the Tiger cruises 10 knots faster than the Piper Archer, 12 knots faster than the Aerospatiale Tobago, 15 knots faster than the Cessna Cutlass, 16 knots faster than the Beech Sundowner and 9 to 16 knots faster than the Cessna Cardinal. Although no match for most retractables, the Tiger will keep

Tigers, Yankees, Travelers, Trainers—even Cougars—abound at annual meetings of the American Yankee Association.

The Yankee Group

If you're interested in buying any of the Grumman Americans, or have just bought one, you should join the American Yankee Association. The club has more than 1500 members who own all Grumman American makes and models. Secretary-Treasurer Stewart Wilson said that, since there are more four-place models around, naturally, the association has more owners of AA5s than of the two-place AA1s. There were 113 twin-engine Cougars built, and owners are welcome; 11 currently belong.

The AYA puts out a very informative bimonthly newsletter, which generally runs between 16 and 24 pages (no advertising is included). Some of the members—particularly those who are commercially involved in maintenance and mods—know all there is to know about these airplanes. Stew Wilson bought a 1975 Tiger when it was new and has flown it for 2200 hours. President Bill Marvel owns a 1976 Tiger and the two have just bought an AA1.

The club conducts regional fly-ins in all parts of the country, runs special tours for members only and has an annual national convention. The convention traditionally has been held near Oshkosh, Wisconsin, but since the membership is growing steadily, the decision was made to hold it in different parts of the country to give more

Bright colors and open-cockpit canopies gave the early Yankees from American Aviation a sporty feeling. They were light on the controls and easy to fly, but they were hotter than the usual primary trainer. This AA1A was produced in 1971.

members a chance to attend.

This year, Northampton, Massachusetts, on the Connecticut River, will be the site, August 2-4. Wilson describes Northampton as a quaint New England town, with an old-fashioned hotel that will serve as lodging for the group. Several hundred airplanes of Yankee extraction are expected to gather at the airport. Roy LoPresti and Jim Bede are two of the important figures in the airplane's history who have spoken at previous conventions.

The association is not merely a vehicle for type camaraderie; when Bill Marvel became president last year, he wanted the association to take a direct, active role in improving the safety record, in increasing parts availability and in trying to get the line into production again. Concerned about the aircraft's poor safety reputation, the group has instituted a volunteer pilot familiarization program to help new owners transition into the type. The aircraft are less forgiving of careless flying than other makes, but the association is doing a first-rate job of educating new and prospective owners. "We are not trying to check people out, or approve them," said Marvel, "but familiarize them with the aircraft's unique characteristics."

"It's not like flying a Cessna 150," Wilson said. "Pilots in the association have an excellent safety record, and we are trying to tie our familiarization program into our insurance program." Hull and liability insurance are available on a group basis through an AYA associate, but the coverage is not ideal for everybody. (I buy mine elsewhere.)

Marvel contacted Gulfstream to let the company know of the group's interest in the reintroduction or the sale of the line. Gulfstream is not interested in resuming production but did confirm that there are two potential purchasers. Marvel has met with the U. S. group, but said that he cannot divulge its identity.

Membership dues are $20 a year, plus a one-time initiation fee of $5. There is a discount for multiple-year memberships. —*Keith Connes*

FOR MORE INFORMATION, *contact: Stewart Wilson, The American Yankee Association, PO. Box 11757, Fresno, CA 93774; telephone 209/435-3277.*

TIGER/continued

pace with the 180-hp Piper Comanche and will overtake the 180-hp Piper Arrow and the 200-hp Beech Sierra. (For a comparison of other performance areas, see the accompanying sidebar.)

My Tiger trues out at an average of 135 knots, cruising at approximately 70% power and burning about 9.5 gph block-to-block. My performance is helped on the one hand by the fact that I usually fly several hundred pounds below gross, but conversely, it is hindered because my well-equipped plane bristles with an inordinate number of antennas.

With a capacity for 51 gallons of usable fuel, the Tiger has adequate range. I like to land with an hour's worth of fuel in the bank, so I'll average about 550 n.m. between pit stops.

One of the ways the Tiger achieves its performance is by showing a relatively narrow frontal profile, and this means the cabin is going to be on the snug side. Its width, in the passenger compartment, is 40 inches. Interestingly, the Archer looks a lot heftier, but its cabin is not much wider, at 41.2 inches. The Tobago, with the most comfortable cabin in its class, boasts a width of 50 inches; its performance is abetted by a controllable-pitch propeller, versus the fixed-pitch props of the competition.

My companion Anne and I are medium-size people (5 feet 5 inches and 5 feet 7 inches, respectively) and we find the cabin environment quite comfortable. It is helped by a rather short instrument panel and lots of plexiglass, which keeps the cabin from becoming claustrophobic and, even more important, provides superb visibility. Tallish folks have occupied the back seats and I haven't heard any complaints from aft, but then, that's one reason why I wear a headset.

A large cargo area can be created by removing the rear-seat back cushions and folding the rest of the seat assembly down to form a flat floor. The entire operation takes maybe two minutes. However, the trapezoidal baggage door is somewhat skimpy: 24 inches wide, 14 inches high at the forward end and 12 inches high at the aft end. Bulky baggage must be loaded from within, over the seat backs.

IT'S A BREEZE

I like the sliding canopy. It allows easy entry and egress from both sides of the airplane and lots of ventilation when taxiing on a hot day. Besides, it's fun. The Tiger can be flown with the canopy partway open, at speeds of up to 113 knots. The major downside of a canopy is that in the rain you get a lot wetter climbing in and out of an open-roof plane. Also, the rails need regular cleaning and lubrication.

The nosewheel castors freely, 90° left and right. This makes for considerable agility when maneuvering in and out of tight parking spaces. The airplane will want to weathercock when taxiing in a crosswind—just like a taildragger—so opposite brake must be judiciously applied on occasion. That's not nearly as tricky as backing the aircraft into a parking slot without a towbar.

The Tiger is a delight to fly. Control forces are pleasantly light and the air-

GRUMMAN AMERICAN AA5B TIGER

Price	
Average used	$25,000-$30,000
Specifications	
Wingspan	31.5 ft.
Wing area	140 sq. ft.
Length	22 ft.
Height	8 ft.
Cabin length	85 in.
Cabin width	40 in.
Cabin height	45 in.
Landing gear	tricycle, fixed
Tire size, mains	6.00 x 6
Tire size, nose	5.00 x 5
Seats	4
Fuel capacity	52.6 gals.
Oil capacity	8 qts.
Engine	
Lycoming O-360-A4K, four-cylinder, normally aspirated, rated at 180 hp at 2700 rpm at sea level. Recommended TBO 2000 hours.	
Propeller	
McCauley two-blade, fixed pitch.	
Weights and Loadings	
Gross weight	2400 lb.
Empty weight, standard	1294 lb.
Empty weight, as flown	1467.48 lb.
Useful load, standard	1106 lb.
Useful load, as flown	432.52 lb.
Wing loading	17.1 lb./sq. ft.
Power loading	13.3 lb./sq. ft.
Baggage capacity	120 lb.
Performance	
Maximum cruise speed	147 kt.
Maneuvering speed	113 kt.
Cruise speed, 75% at 8000 ft.	139 kt.
Maximum range, with reserve 75% at 8000 ft.	552 n.m.
Fuel consumption, 75%	10.8 gph
Service ceiling	13,800 ft.
Stall speed, clean	56 kt.
Stall speed, flaps	53 kt.
Best rate of climb	850 fpm
Takeoff ground roll	865 ft.
Takeoff over 50-ft. obstacle	1550 ft.
Landing ground roll	410 ft.
Landing over 50-ft. obstacle	1120 ft.


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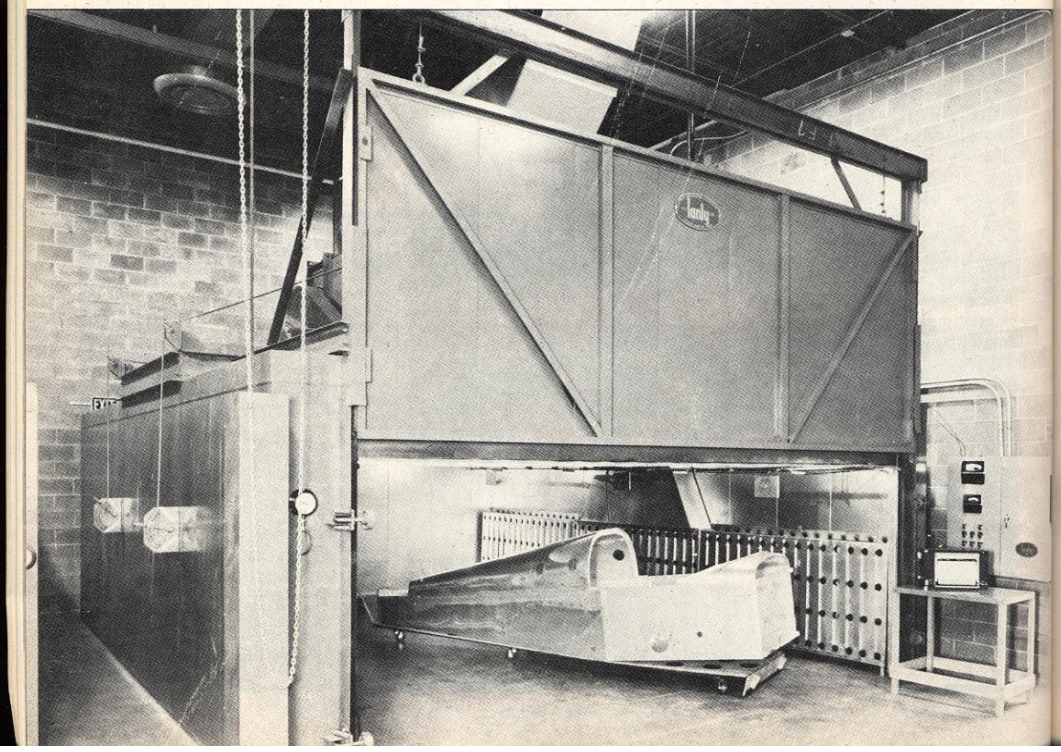


TIGER / continued

plane is very responsive in the pitch and roll axes. The control surfaces are moved by a combination of torque tubes and cables. The electrically operated flaps are a bit undersized and not as effective as those in many other aircraft. An approach to landing must be made with conscientious attention to detail. Come in over the fence a mite too hot, and you'll float like a bar of Ivory soap.

I've heard some people complain that the Tiger is not as stable as some aircraft and must be "flown all the time." That is probably somewhat true of any airplane with responsive handling characteristics. I think that most pilots who like hands-on flying will enjoy commanding the Tiger. Those who prefer to be flown by their airplane will find other models more suitable.

To sum up my personal feelings about the Tiger—and it pretty much echoes those of other owners I've talked to—the airplane neatly combines superior performance in its class with sporty handling characteristics and very good visibility. The plane's carbureted Lycoming O-360 engine is among the more reliable powerplants, and the fixed-pitch prop (especially the Sensenich) and down-and-welded gear should keep maintenance costs within reason. Actual ownership costs depend, as always, on the treatment the plane has had in the past, the treatment you give it from now on, and the smiles or sneers of Lady Luck. My annuals, for example, have been running about $1200 a year. (As a side note, my Tiger won the Fixed Gear Production Category trophy in last year's CAFE 400 fuel efficiency race, thanks to a combination of the plane's inherent efficiency and pilot Rich Powell's skills.)

Bonding was an unusual term in general aviation when the Yankee was designed. Bede planned on cold bonding, but production turned on the heat: American Aviation's ovens bonded fuselages, stabilizers, wings and almost all structural joints of the aircraft, at 275°F. Above: an early AA1.

The four-place Traveler expanded the line in 1972, a stretched version of the two-seater, with 150 hp. It grew into a faster version, the Tiger, after the company was acquired by Grumman Corp.

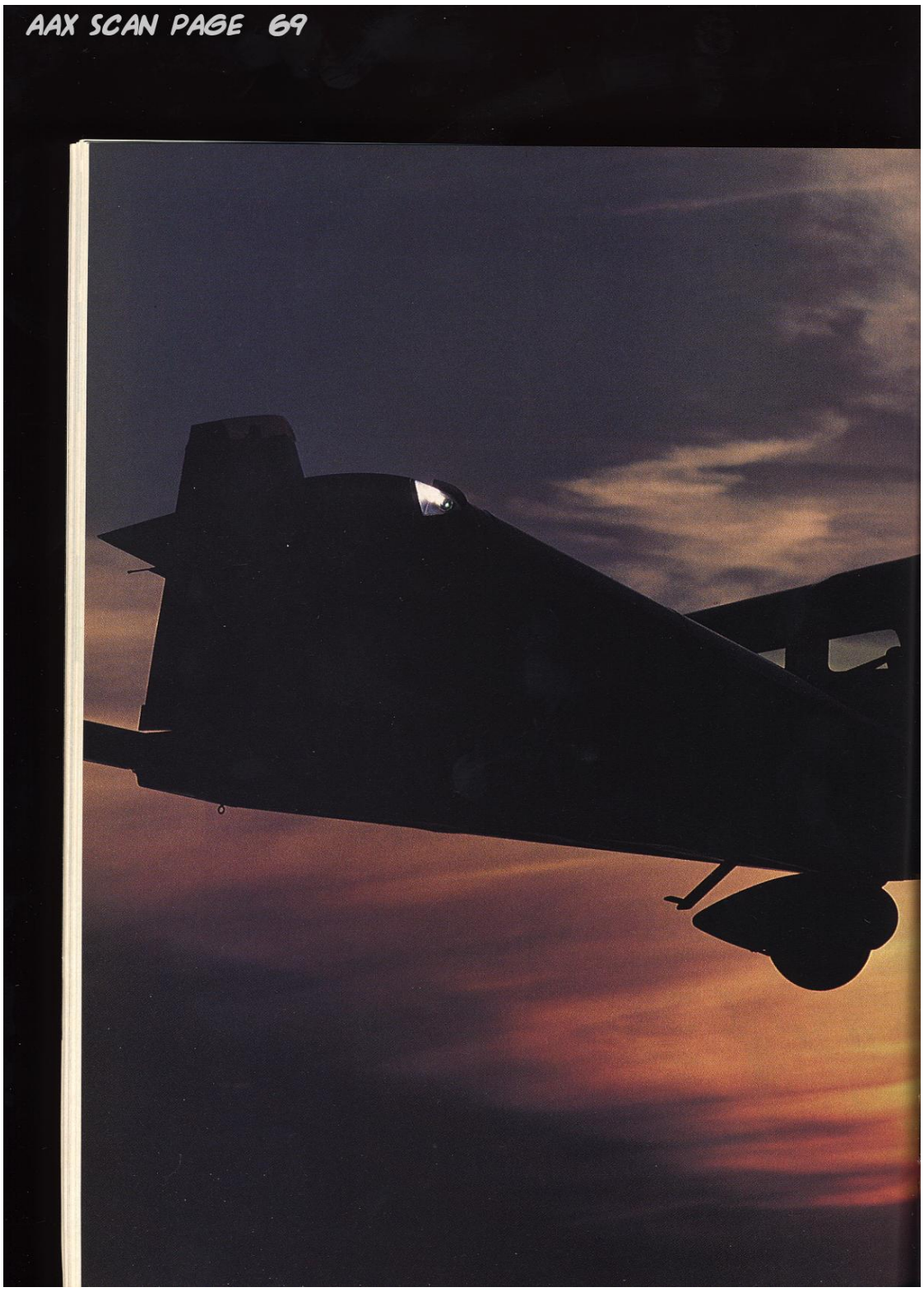
The market for used Tigers seems to be pretty strong. When I was shopping for mine four years ago, asking prices were in the $20,000 to $25,000 range. A recent listing of aircraft for sale showed 12 Tigers, with most advertised prices in the $25,000 to $30,000 range.

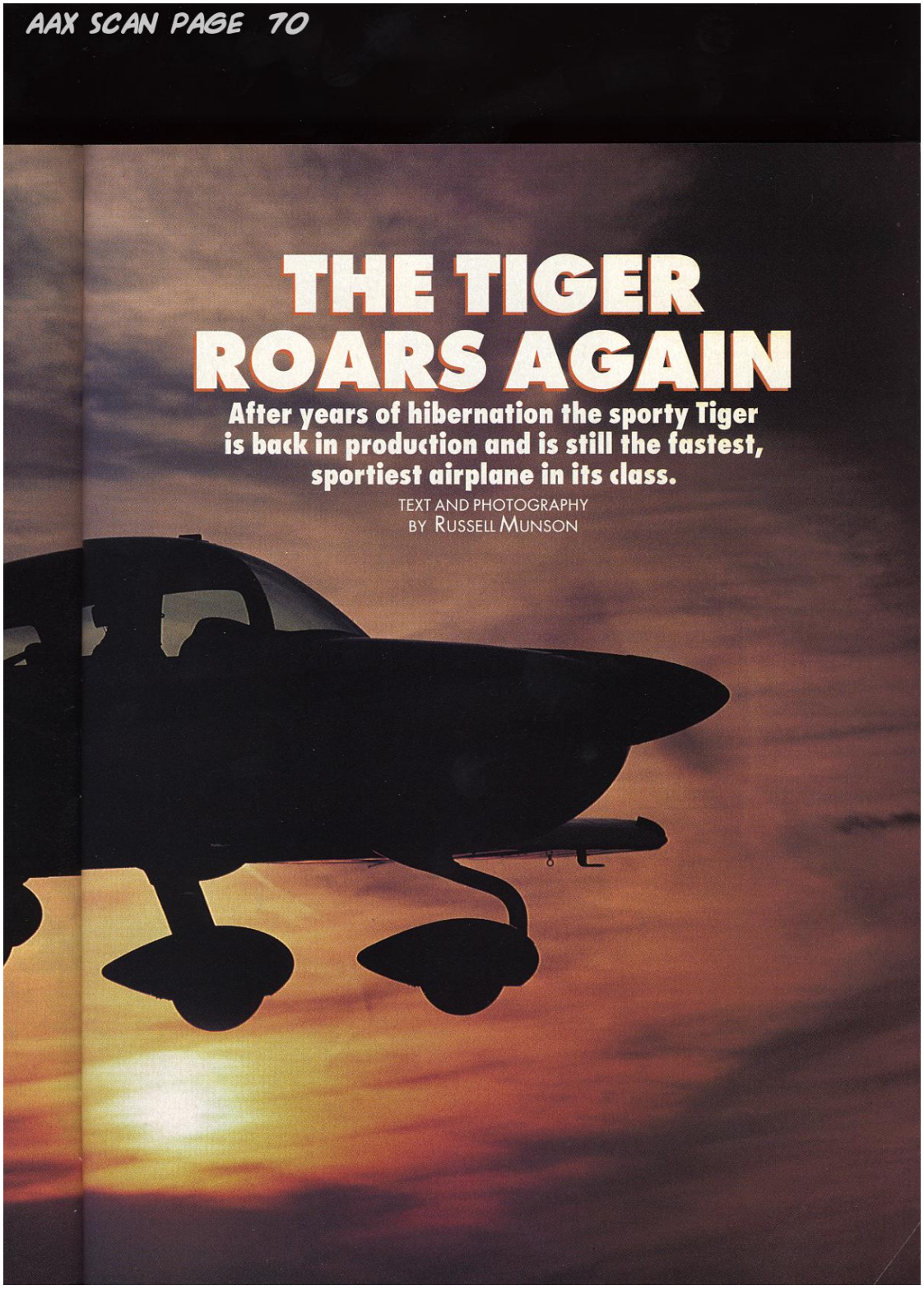
If you're shopping, try a Tiger. □

AIRCRAFT COMPARISON CHART

	Grumman Tiger	Piper Archer II	Aerospatiale Tobago	Cessna Cutlass	Beech Sundowner
Cruise 75% (knots)	139	129	127	124	123
Stall (knots)	53	49	52	48	51
Max range 75% (n.m.)	552	600	653	620*	533
Best climb rate (fpm)	850	735	790	680	792
Service ceiling (ft.)	13,800	13,650	13,000	17,000	12,600
Takeoff over 50-ft. (ft.)	1550	1625	1657	1690	1955
Landing over 50-ft. (ft.)	1120	1390	1394	1335	1484
Gross weight (lb.)	2400	2550	2535	2550	2450
Useful load (lb.)	1106	1145	1073	1072	950
Power loading (lb./hp)	13.3	14.2	14.1	14.2	13.6
Wing loading (lb./sq. ft.)	17.1	15.0	19.8	14.7	16.8
Engine hp	180	180	180	180	180
Propeller type	fixed	fixed	constant speed	fixed	fixed
Landing gear type	fixed	fixed	fixed	fixed	fixed
Usable fuel (gal)	51	48	54	50/62	57.2
Seating capacity	4	4	4-5	4	4

*With optional fuel tanks





THE TIGER ROARS AGAIN

After years of hibernation the sporty Tiger is back in production and is still the fastest, sportiest airplane in its class.

TEXT AND PHOTOGRAPHY
BY RUSSELL MUNSON

RESURRECTIONS HAVE occurred like hiccups throughout general aviation history. Let's bring back the Ercoupe, some will shout, or the Navion, Swift or Champ—well-intentioned dreams that were often supported more by hope than cash or demand, and as such slipped from grasp in the light of day.

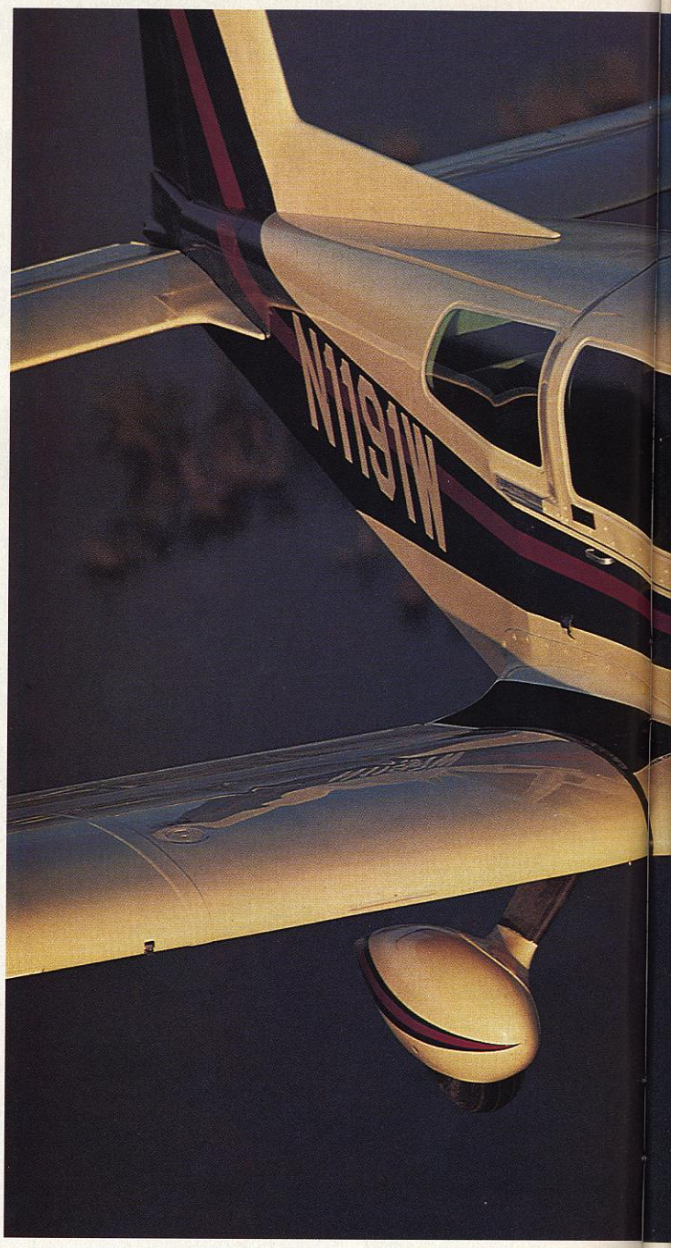
Jim Cox, president of American General Aircraft Corporation, of Greenville, Mississippi, is betting that history will not repeat itself in the case of the American General AA-5B Tiger. There are three important factors in his favor: an apparent market need for a single-engine, four-place, fixed-gear airplane; financial backing sufficient to already be building and selling Tigers; and an excellent choice of aircraft for resurrection. Outside of the Cessna 172 or 182, there is probably no better candidate for a successful revival.

The Tiger always was, and happily is again, a delightful machine that lifts the spirit at first sight. On the ramp it has a cheerful, eager stance set apart from the crowd by a sliding canopy and elegantly shaped vertical stabilizer. With an efficient airframe, staunch 180-hp Lycoming engine, bonded honeycomb construction and pleasing control response, the Tiger has a blend of performance, economy, looks and personality that is hard to resist.

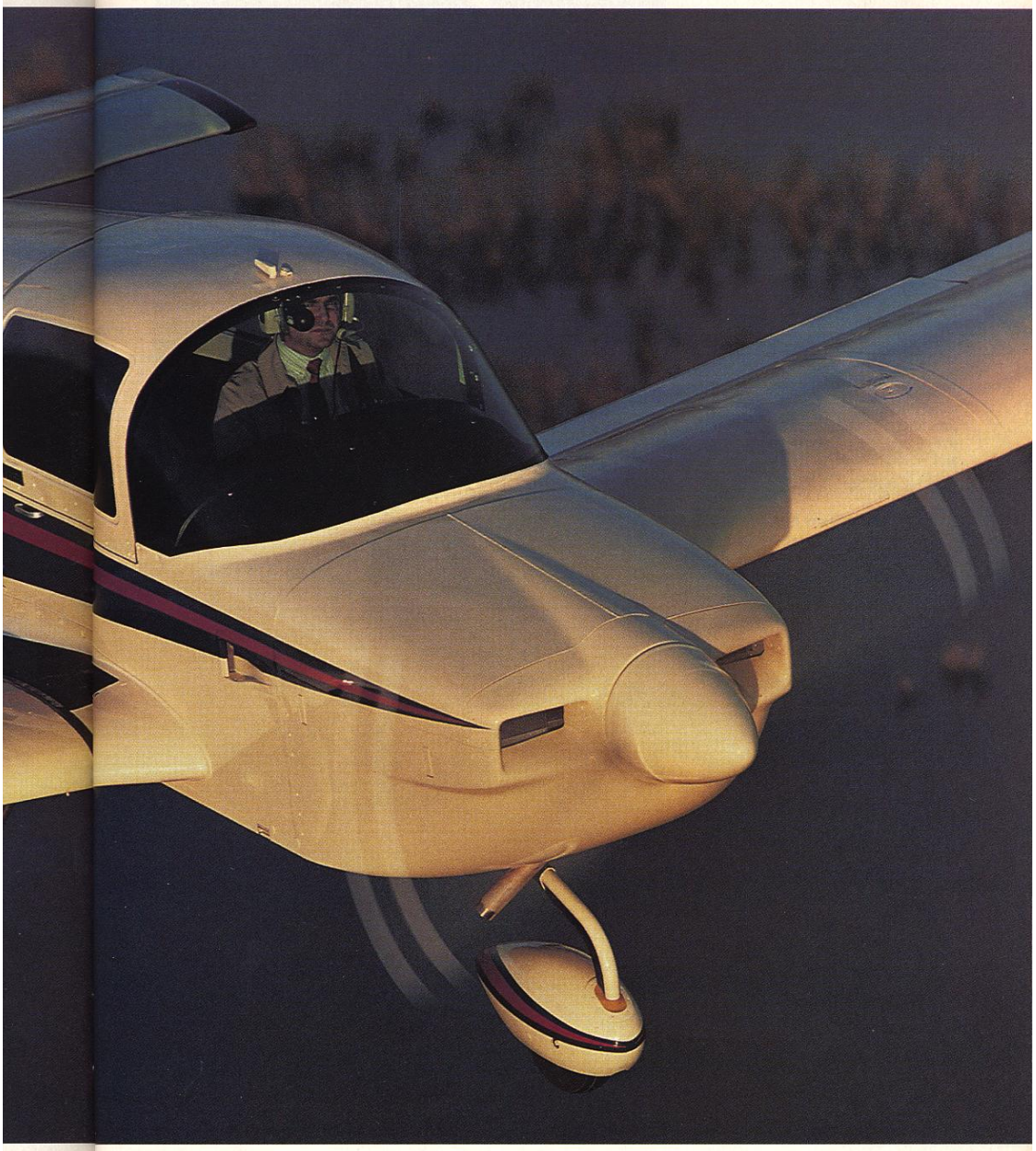
The AA-5B's heritage traces back to the imagination of one of general aviation's all-time dreamers, James R. Bede, a man that many flying enthusiasts loved to love or loved to hate, depending on which Bede dream they bought. Passions aside, few would deny that he is an innovative designer. Bede sold the rights to his 1962 BD-1 design, a two-place, side-by-side sport/trainer, to the American Aviation Corporation in Cleveland, which was formed in 1964 for the purpose of certifying and manufacturing the airplane as the AA-1 Yankee. Its president was a lawyer and avid pilot named Russell W. Meyer, Jr. He later found a better job in Wichita as chairman of Cessna.

Certified in 1967, the frisky Yankee made the Cessna 150 and Piper Cherokee 140 trainers seem matronly in comparison. The ship was hot. It cruised faster, stalled faster and, with power off, sank remarkably faster than the competition. But it was great fun to fly, and provided good training, especially for pilots moving on to higher-performance machines.

A four-place development of the Yankee, the 150-hp Lycoming-powered AA-5 Traveler, was certified in



AAX SCAN PAGE 72

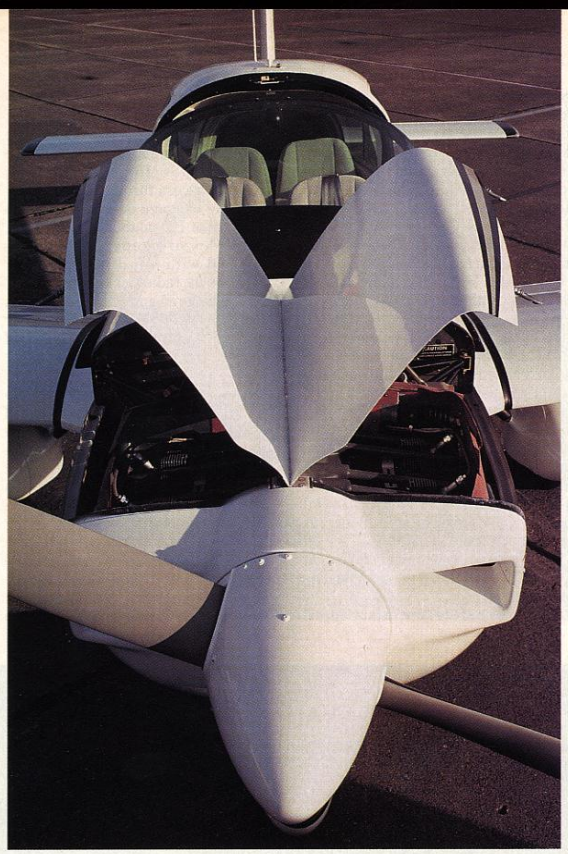


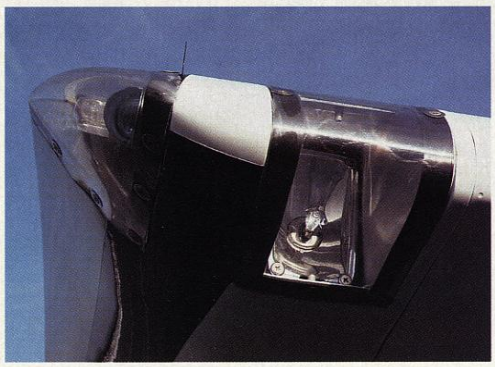
November 1971 by the Grumman American division of Grumman Aircraft Corporation, which had in the meantime acquired American Aviation. The Traveler was an immediate hit, with a significant speed advantage over the competition, and features that included fold-down rear seats to greatly enlarge the baggage area when needed. Hanging a 180-hp Lycoming up front, plus considerable aerodynamic tweaking by engineer Roy LoPresti, produced the Tiger in 1975. In 1976 the Traveler inherited the cleaned-up airframe and was renamed the Cheetah. More than 1,300 Tigers had been sold to a loyal following when its next owner, Gulfstream American, discontinued light-aircraft production in 1979.

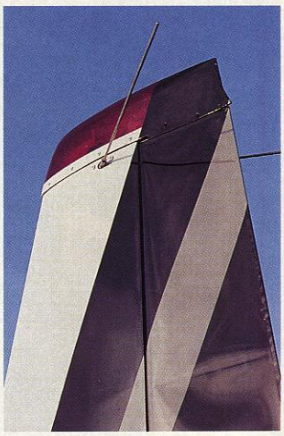
Throughout this evolutionary process, the resultant Tiger retained the best of grandpa Yankee's features instilled by Jim Bede: simplicity, tubular spar, aluminum honeycomb construction, metal-to-metal bonding, distinctive sliding canopy, responsive controls and superlative performance. Deserving to live, the Tiger instead languished out of production for more than a decade, missing the 1980s entirely.

Then along came Jim Cox, a Georgia man with a passion for aviation since boyhood that has spanned turns as a flight instructor and crop-duster and many years at Cessna. An earlier Cox resurrection effort with the Helio Courier proved unprofitable, but he is convinced that the Tiger will be a winner. He began talks with Gulfstream in 1987. By the summer of 1989 Cox had lined up financing, leased a huge Boeing-built manufacturing facility at the Greenville, Mississippi, airport, and purchased rights to the former Grumman American aircraft including the Cougar light twin. All tooling, parts and documentation were loaded into semitrailers at Gulfstream's Savannah, Georgia, plant and shipped to Greenville. Thirty-eight trailer loads, nine months and 20 days later, on April 20, 1990, to be exact, the first American General AA-5B Tiger rolled out of the cavernous hangar. Old Man River, still rollin' along nearby, didn't seem to notice, but there were mighty cheers at the airport that day. None were louder than those of the many American Yankee Association members present, whose ranks include supporters of all the Grumman American models.

American General Tigers have several improvements over former versions although performance remains the same. The anticollision beacon atop the rudder now resides beneath a slick fairing, blending with the line of the vertical stabilizer. For greater service and easier repair, wheel fairings are now made of fiberglass rather than Royalite. In fact, all Royalite parts throughout the airplane have been eliminated. A landing light in each wingtip replaces the one formerly found in the cowling. The cowling doors still open on either side, giving generous access to the engine, but the new ones are made of composite material for better durability. The best news up front for mechanics is that the entire cowling is now in two removable sections, eliminating the need to first take off the propeller before removing the old cowling. And the McCauley propeller has been replaced by a Sense-







Was there ever a perkier, friendlier-looking airplane on the ramp (far left) than a Tiger? The American General Tiger's cowling doors (left) still provide generous access to the engine, and are now made of composite material for greater strength. Landing lights (lower left) and the anticollison beacon (below) are housed in new fairings on the wingtips and vertical stabilizer.

nich that does not have the 1,850-to-2,250-rpm caution zone, nor the airworthiness directive, of the former.

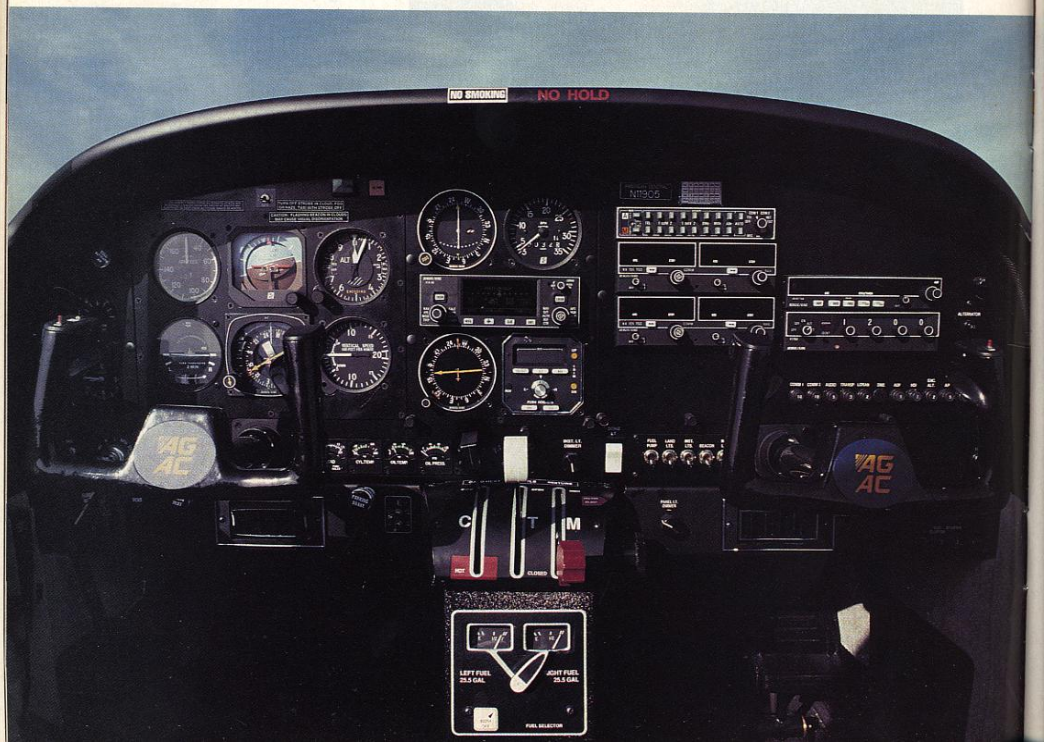
A 28-volt electrical system is new, and fuel and oil pressure are transmitted to the instrument panel gauges by transducers rather than wet lines. Even priming the carbureted Lycoming is performed without fuel lines coming to a conventional panel-mounted hand plunger. When the electric auxiliary fuel pump is turned on, priming is done by pushing a small red button on the panel. This trips a solenoid near the fuel pump, routing fuel directly to the cylinders for as long as the button is depressed. Clever. Two radio speakers on either side of the cockpit replace the old one mounted under the forward glareshield.

The new instrument panel is all metal, cleanly and logically laid out, with nice touches such as combination toggle switch/circuit breakers, electric outside air temperature gauge and an electrical load meter. Rather than retaining the old Tiger's push-pull knobs, American General has relocated the throttle, mixture and carburetor heat controls to a central power quadrant like a big airplane. Below that is a large, hard-to-miss fuel-control panel with a gauge for each of the two 26.3-gallon tanks, and a long lever on the fuel-control valve that points like a bird dog to the gauge of the tank selected. A total of 51 gallons are usable. The "off" position is so far from the tank detentes that even an armadillo could not select it by mistake. Following below the fuel panel and continuing between the front seats is a console holding the electric flap switch, flap-position indicator, trim wheel and trim-position indicator.

Cox chose to eliminate the cigarette lighter and ashtrays in the new Tigers, both to save $250 to $300 in manufacturing costs, and from a belief that the cabin of a small airplane is not the place for lighted objects. He has also not yielded to suggestions of including an oil access port in the right hinged cowling door, again to save money as well as encourage pilots to take a look at the engine compartment before each flight. His reasoning on both issues makes sense.

The interior of the American General demonstrator was attractively upholstered in blue-gray fabric, and the rear seats still fold down to provide a large cargo area. Luggage space with the rear seats up is still quite sufficient, with good access through the cabin or an outside baggage door. It will hold a maximum of 120 pounds of bags, fruit, vegetables or candy. Nicely IFR-equipped with a full Bendix/King Silver Crown radio package including the KLN 88 loran and KCS 55 HSI, plus an S-Tec System 50 autopilot and other goodies, the airplane had a price tag of $119,000.

But enough of these dry details. My immediate and overwhelming urge upon seeing N11905 sparkling on the ramp was to fly it right then and there. Pilot and passengers can climb aboard either wing from a fuselage step below each inboard trailing edge. Once on the wing, sliding the canopy all the way back exposes practically the entire cabin. Rear-seat passengers step onto the rear floor, then sit, while front-seat occupants may flip



Instrument panels on American General Tigers (far left) have been redesigned and faced with painted aluminum rather than the tacky Royalite formerly used. Have more bags than people? No problem. Just fold down the rear seat backs to provide a cavernous cargo area (above). With the seat backs up (left) there is still sufficient baggage space behind them. Excellent visibility gives the cabin an airy feel.

up the seat cushion with the toe of a foot to protect the upholstery, step on the seat frame and then the floor. If the front seats have been left in the rear position, it is easier just to step over the cabin sill onto the floor and sit down. Even if you are wearing a dress, which I wasn't, you can enter the Tiger without fear of later seeing yourself on *World's Funniest Home Videos*.

Loyd Montague, American General's director of research and development, and himself a former cropduster, did a preflight inspection with me, jumped in the right seat and closed the canopy. My first impression after settling in was of how great the visibility was, and how that aided the roomy feel of the cabin. Three seconds on the primer button was encouragement enough for the 180-hp Lycoming to catch quickly, and we were soon taxiing out of the American General compound. Steering the free-castoring nosewheel is by differential braking, which I tended to overdo for the first hundred feet or so, but soon I was tracking the taxiway centerline with just a toe tap now and then.

There is no need to spend much time at the run-up pad in a fixed-gear, fixed-pitch prop airplane. If the controls wiggle, the trim is set, the mags check, the fuel selector is on a tank with gas, and the carb heat works, your chances of getting airborne and staying there awhile are reasonably good. Turning on the fuel boost pump for takeoff and landing is the only thing extra the Tiger requires over a simple high-wing ship.

Greenville Tower cleared us off, and the little Tiger accelerated nicely down the runway, needing only slight right rudder to track true. Rotation takes a little more tug than a Cessna 172's, say, but not unpleasantly so, and we were soon showing a strong 1,000-fpm climb at 90 knots indicated, the best-rate-of-climb airspeed at sea level at the maximum gross weight of 2,400 pounds.

Montague figured our takeoff weight at 2,144 pounds. Equipped as it was, N11905 weighed 1,484 pounds empty, 84 pounds more than the basic Tiger. This Tiger could carry four 170-pound people, no bags and 39 gallons of fuel, or full fuel and 610 pounds of people and bags. For example, a family with a 170-pound father, 120-pound mother and two children of 110 and 90 pounds could load our Tiger with full fuel and a full 120 pounds of baggage, cruise about four hours at a conservative 130 knots, and land with one hour of fuel reserve. Those are impressive numbers for such an uncomplicated, low-maintenance flying machine.

Buzzing around over the Mississippi, I understood why friends of mine who had owned Tigers and Travelers spoke of them with such enthusiasm. The controls are so light and responsive, and the visibility so good, that you are reminded on each flight of what the fun of flying is all about: freedom. But this little hummer moves right along, too. Montague and I leveled off at 1,500 feet msl and made timed, two-way runs over a stretch of road that he said was exactly one mile long. We repeated the whole process twice. Barometric pressure and temperature were close to standard. Outside air temperature showed 10° C., indicated airspeed was 130 knots, and the engine was cranking 2,450 rpm, which under those conditions should produce

about 68-percent power for a true airspeed of 126 knots at max gross weight, burning 10 gph of fuel according to the performance charts. I chose 2,450 rpm instead of 75-percent-power rpm for more relaxed noise and vibration levels, and for what might be a typical owner's compromise between speed and economy.

The new Tiger, by the way, is said to be quieter than the old one, but I had no basis for comparison. My impression was that it was about average for a 180-hp airplane. Anyway, assuming the airspeed indicator was accurate, calibrated true airspeed worked out to 134 knots—considerably faster than the book says. Even if you add a rule-of-thumb figure of one knot per 100 pounds under gross weight, rounding out to three knots in this case, the book airspeed would be 129 knots, still five knots slower than we seemed to be getting. But that's not all. Our timed runs averaged out to an impressive 137.5 knots. Now, there is plenty of room for error here to explain the discrepancies: the new prop, the tachometer could be a little off, the outside air temperature gauge could be inaccurate, the airspeed indicator might be imprecise, or all of the above. Nevertheless, based on what I saw, the airplane seems to be faster than the performance charts would indicate. At a more efficient altitude of 8,000 feet, by the way, 68-percent power would produce a book speed of 132 knots, and 75-percent 139 knots, at 2,600 and 2,700 rpm, respectively.

As aggressive as the Tiger is in speed, it's a pussycat in stalls. I tried a departure stall: full throttle, climbing left turn, nose way up. At 65 knots indicated, the stall warner horn came on, and at 53 knots the Tiger nibbled gently, the nose settled, and the wings slowly rolled level before I released back pressure. With power off, the horn again came on at 65 knots, and the very benign stall at 55.

At that point, Montague said, "Watch this," which always puts me on guard, and took the controls. With power still off, he stalled the airplane again, but held the wheel full back, and used aileron as necessary to keep the wings level. The nose just stayed in the general vicinity of the horizon, bobbing meekly up and down, and the airplane settled like a leaf. Not much excitement here. Spins are prohibited, but getting into one accidentally would require an absence of nerve endings in the pilot's seat.

Landing a Tiger is perhaps the most fun of all. I flew a short final at 80 knots carrying just a tad of power and full 45 degrees of flap, which lowers the stalling speed by about three knots. Under these conditions the relationship between the Tiger's sink rate and throttle response makes glidepath control very pleasurable and precise. But from the flare on down is best. The pitch response remains powerful, precise and light throughout. As I eased the wheel back during the deepening flare, I could feel the ship settle softly into the ground cushion, followed by a squeak of the hind rollers touching down. The nosewheel is effortlessly held off for a moment, then lowered slowly and controllably. Touching down nosewheel-first is unforgivable in any airplane and more so in this one. Tigers get mad if you bang down their springy nose gear, and retaliate by bouncing it back up at you in a continuing back-and-forth that can be damaging to both the Tiger and the klutzy pilot's pride.

AMERICAN GENERAL AA-5B TIGER

The airplane flown for this report was serial number 10014. It was equipped as standard with IFR instrumentation and wheel fairings. Options include two Bendix/King KX 155 navcoms, KMA 24 audio panel, KT 76A transponder, KR 87 ADF with KI 227 indicator, KEA 130A encoding altimeter, KCS 55 HSI, KLN 88 loran; S-Tec System 50 autopilot; and avionics cooling fan. Options added 84 pounds, bringing the empty weight up to 1,484 pounds, leaving a useful load of 916 pounds. The airplane's price as flown was $119,000. Performance figures are taken from the pilot's operating handbook and reflect maximum takeoff weight and standard day conditions at sea level.

Standard price	$84,250
Engine	Lyc O-360-A4K, 180 hp
TBO	2,000 hrs
Prop	Sensenich, fixed-pitch, two-blade, 76-in dia
Seats	4
Length	22 ft
Height	8 ft
Wingspan	31.5 ft
Wing area	140 sq ft
Wing aspect ratio	7.1
Max ramp weight	2,408 lbs
Max takeoff weight	2,400 lbs
Standard empty weight	1,400 lbs
Max useful load	1,000 lbs
Max landing weight	2,400 lbs
Wing loading	17.1 lbs/sq ft
Power loading	13.3 lb/hp
Max usable fuel	51 gals/306 lbs
Best-rate-of-climb airspeed	90 kts
Max rate of climb	850 fpm
Climb gradient	567 ft/nm
Rate of climb at 8,000 ft	415 fpm
Service ceiling	13,800 ft
Max speed at sea level	148 kts
Cruise at 75% power at 8,000 ft	139 kts
Fuel flow at 75% power	10.7 gph
Endurance at 75% power	4.6 hrs
Stalling speed, clean	56 kts
Stalling speed, flaps down	53 kts
Turbulent-air penetration speed	113 kts

After telling Jim Cox how much I enjoyed his airplane, we talked about his plans for it. At the time of my visit to Greenville, American General had built 25 Tigers and had about 60 orders, some 15 of those from the Florida Institute of Technology, and about the same number from Vincennes University in Indiana. Cox's goals are quite clear. By next month he hopes to have completed 105 airplanes and to stabilize production at one airplane per day. "The first thing," he says, "is to make the Tiger line profitable. That's our main concern. My talks with the Russians about building the Cougar over there is a separately funded project that will take no resources away from the Tiger. We want to build a strong Tiger marketing organization. I have 30 dealers signed so far, and I'd like to have 100 in a year and expand into international marketing. We want to sell more units than any other manufacturer, broaden our product line, and eventually be the biggest manufacturer in general aviation. Now that's thinking big down the line, but what's wrong with that?" Not a thing. And a lot of enthusiasts hope American General can pull it off.

"You've got to have a vision," says Cox, "but you've got to be realistic in your vision. We've got to get the Tiger profitable before doing anything else."

The test is whether enough people are willing to spend $100,000 or more for an airplane like this despite its winning qualities. Light-airplane manufacturers are still searching for that elusive magical mix of utility, pleasure and price that can make the product viable in a business sense. Just when they seem on the right track a recession hits, or fuel prices go up, or liability costs skyrocket, or bigger chunks of the sky are restricted in use. Or maybe more people who have $100,000 today would rather spend it on a Porsche because it's easier than learning to fly. Everyone has a theory for the cause of each slump and no one knows for sure. A Ouija board is probably as good a source of counsel as a board of directors. One thing is for sure: building little airplanes is not for the timid.

"Why," I asked Jim Cox, "do you want to do this?"

"Because it's in my blood," he said.

That's the same reason you and I fly airplanes. □

TRAVELER PILOT PINES FOR TIGER

THERE ARE FEW GROUPS more enthusiastic about the phoenixlike rise of the American General Tiger than owners of its previous incarnations. This could be attributed in part to a need for a source of spare parts but more likely to the zealousness of the following that this sporty airplane has acquired over the years.

Having spent the last nine years of my flying life in a 1973 Grumman American AA-5 Traveler, I was totally unprepared for the evolution of my simple little sportster into the sleek powerhouse that the Tiger has become. Traveler owners tend to be happy enough with their agile little craft to be able to point out its flaws without embarrassment. (This is what you might call the basic "Don't laugh, it's paid for" philosophy.) The spindly little nosewheel strut, the awkward fasteners for the engine cowling, the ineffectual flap design and the sometimes leaky gasket on the canopy edge are minor inconveniences to loyal owners, but all these problems have been resolved in the Tiger, and American General has had a big hand in the improvements.

Even walking around in preflight, the changes are noticeable. A slick new engine cowling redesign moved the landing light to two positions on the wings, and a carbon-fiber door replaced the old one. It takes a lot of abuse when slamming the latches closed after checking the engine and oil, and won't dent as before. An additional benefit of the redesign allows room to work on the front section of the engine without having to remove the prop. Plans are in the works at American General to create a conversion kit of the new cowling and air-induction system design that could be purchased through dealers and used to modify the earlier Grumman American models.

Aside from a few tweaks to the tail section, the exterior design integrity remains from the LoPresti versions of the late 1970s, but inside the cockpit reveals a completely different animal.

American General has rearranged the cockpit panel to make the instrument scan more efficient. It didn't take long to adjust to the new arrangement because it's simple and logical, although I did find myself searching for the auxiliary fuel pump switch and the now-electric primer, and the temperature gauges never seemed to be where I was looking. The position of the new electronic OAT is a significant improvement. In the older models, it sticks up clumsily through the broad windscreen, and last year I had one break a baseball-size hole through the plastic due to the rubbing of an ill-fitting canvas cover.

The addition of four-point seat belt harnesses and plush new seats enhances the sense that the whole airplane has been upgraded in safety as well as luxury.

RUSSELL MUNSON

As I taxied off in N621FT, a basic model destined for the students at Florida Institute of Technology, I found the differential braking the same as always, but a professional-looking power quadrant has replaced the Traveler's push-pull controls. The only curious placement is the carburetor heat lever, which is overly large and vies for attention with the throttle and mixture.

The Tiger has a definite feel of added power and performance that comes to life as the nose comes off the runway. The power difference is exhilarating, but a new yoke design adds a lot to the perception of the Tiger being a much larger airplane. The Traveler has often been accused of a light, almost delicate feel, with very sensitive control response. The new yoke design added by American General is thick and substantial and adds significantly to the feel of sturdy power. Even the control column has been beefed up.

Stalls and manuevers feel familiar, but not when you add flaps. The flaps on a Traveler are only barely effective compared with the improvements made on subsequent Cheetahs and Tigers. American General kept the Tiger's electric flaps but wisely moved the control switch off the trim console and onto the front panel, where it doesn't get wet when you open the canopy in the rain. Also, a new stall-warning horn gives off an almost pleasant beeping rather than the usual whine.

Fuel capacity is a good 14 gallons more than that of the Traveler, with a comparable increase in useful load. The cargo area, with the seats folded down, appears to be about the same size, but the addition of a baggage door for loading smaller parcels is a change that the Traveler missed out on.

Overall, the tweaking done by American General has been all for the good. They have obviously been listening carefully to the complaints of owners and the American Yankee Association, all of whom have every right to be excited by the remarkable return of this splendid airplane.

Unfortunately for my little airplane, all this unfair comparison illuminates the fact that airplane design has indeed made some progress since 1973. And it also illuminates that dark corner of my brain which is thinking that just maybe there's hangar space at my favorite little gravel strip for a cat born in 1991.

NANCY BINK

AAX SCAN PAGE 80

Traveler

TRAVELER CHEETAH TIGER

All AA5s

The four-place AA5, which was initially designed and certified by American Aviation, and was built by Grumman American, Gulfstream American, and most recently by American General, has an interesting history. The airplane started with Jim Bede, in the 1960s. Bede had the idea to build a super-low-cost two-place single. It would be the BD-1, powered by a remanufactured 65-horse Continental and selling for $2,500. The price caused a lot of excitement, and in early 1964 Bede announced that he had appointed 18 dealers and had orders for 843 BD-1s. The airplane was first shown in 1964 at the Reading Airshow where it attracted great crowds. Anyone who has flown a 108-hp AA1, with an airframe directly derived from the BD-1, will wonder aloud how the airplane ever flew on 65 horsepower, but that one did indeed fly to Reading.

Bede didn't build any production BD-1s, but a Cleveland company, American Aviation, acquired the design, redesignated it the AA1 and was producing the airplanes, named Yankees, by late 1968. American's home was in a modern plant on Cuyahoga County Airport, near Cleveland, that was built specifically for the purpose of manufacturing a line of general aviation airplanes.

By mid-1969 the production rate was up to eight airplanes a week. Russ Meyer, long-time chairman of Cessna, got his start in aircraft manufacturing and selling at American Aviation, which later was bought by Grumman, which later became Gulfstream when Grumman sold out. Meyer was president of the company as the Yankee was coming on line.

The logical follow-on to a two-place is a four-place and the company's first effort was the Patriot, dubbed the AA2. Pictured on the cover of the June 1970 issue of *Flying*, it was a much larger airplane than a Yankee and was powered by a 180-horsepower Lycoming. While there was a slight family resemblance, it wasn't great. The AA2 was an all-new airplane with a huge cabin. Plans called for the AA2 to be followed by a retractable AA3 and then by a twin, presumably the AA4. None of that was to be. Instead, the four-place offering became the AA5, which was essentially an enlarged AA1. The AA5 was named the Traveler; *Flying* had exclusive first photos of the airplane in the December 1971 issue. The Traveler met with a degree of success, and sales averaged about 200 airplanes per year from 1972 to 1975. This was in a time when Cessna was delivering from about 1,000 to 1,500 Skyhawks a year. In retrospect, that makes the Traveler look quite good because the dealer organization was minuscule compared with Cessna's.

Certainly the Traveler is as different from a Skyhawk as a fixed-gear four-seat single can get. Both

AAX SCAN PAGE 82

Traveler


Tiger

CHECKLIST

- wide range of prices
- canopy entrance
- nice to fly
- efficient
- perky

have 150-hp Lycoming engines but the similarity ends there. The Traveler is smaller physically, is low-wing, has a canopy for cabin access, and the metal is bonded as opposed to riveted. Most reporters who visited the American Aviation factory marveled at how quiet it was—nothing but the sound of glue drying, or curing in the ovens.

The Traveler has a simple spring landing gear—not even a nose oleo—and the nosewheel is not steerable. The performance of the airplane is about the same as a Skyhawk's, though most pilots feel the Traveler is not as good in and out of short fields.

Enter Roy LoPresti, who was to make his first mark on production light airplane design in Cleveland. LoPresti went to work tweaking the Traveler; his finished product was the 1975 and later Tiger, with 180 horsepower. The same aerodynamic improvements were also made to the 150-hp airplane, and it was dubbed the Cheetah. These airplanes enabled Grumman American and later Gulfstream American to maintain a production rate of about 500 four-place airplanes a year for several years. When production ended in 1979, a total of 834 Travelers, 900 Cheetahs and 1,323 Tigers had been built under the American, Grumman and Gulfstream names. The Tiger was resurrected in 1990 by American General, which built 133 Tigers before ceasing production a couple of years later.

When introduced, the Tiger attracted a lot of attention because it offered the performance of, for example, a 180-horsepower Mooney Ranger retractable with the same engine, though the Tiger has a fixed-pitch prop and fixed landing gear. *Flying* once conducted a low-altitude full-throttle race between a new Tiger and a new Mooney Ranger; the Tiger edged the Ranger ever so slightly. (However, LoPresti went on to Mooney and saw to it that this advantage didn't last, by developing the 201.)

The Tiger does offer a nice balance of performance, economy and even a level of comfort. If you are looking for something to bash about in the boonies, a Skyhawk is no doubt better, but for a simple traveling airplane, a Tiger is a good choice, followed by the slower Cheetah and the even slower Traveler.

The metal bonding construction of the airplane has withstood the test of time well, though there was an airworthiness directive on ailerons about 15 years ago that was related to a problem with bonding in that area. This apparently did not recur.

A pilot flying a Cheetah might get a bit better performance than from a Skyhawk, while a Tiger pilot can probably flightplan 135 knots at optimum altitude if willing to let the rpm rev up to 2,650. Fuel flow at that power setting would be about 10 gallons per hour, which makes the Tiger a four-hour airplane with reserves. The airplanes have wonderful visibility and if they seem diminutive outside, most pilots find them to be not too small inside. The instrument panel has plenty of room for everything you need for IFR flying. The interiors have always been Spartan at best. The canopy works fine for entry and exit but when it is raining cats and dogs there's no way to get in and out without getting yourself, and the cabin, wet; maybe that's why they never bothered to give it a fancy interior.

The flying qualities of the AA5 series are good, but most pilots new to the type grumble about the lack of a steerable nosewheel. The swiveling nosewheel works fine once you get used to it, but brake maintenance is important and probably more expensive

than on a like airplane with a steerable nosewheel. With differential brakes for steering it's possible to turn an AA5 on the ground on the proverbial dime.

One problem pilots have had with the flying qualities in this series is over-controlling in the landing flare. The elevator is powerful and sensitive and more than one pilot has porpoised his way down the runway in a pilot-induced oscillation (PIO). If a pilot is into driving airplanes onto the ground as opposed to landing them, a porpoise might result—and prop strikes are not unheard of on AA5s during botched landings.

Prices today vary—by a lot. In a recent issue of *Trade-A-Plane*, there was a 1992 Tiger with excellent equipment and 32 hours total time for $139,000, and another 1992 for $74,900 with no time or equipment specified. A total of 25 Tigers, Cheetahs and Travelers were listed for sale in the issue. The market for the airplanes is said to be fair, with aircraft selling in four to five months, according to *Vref*, an aircraft value reference.

Tigers built from 1975 to 1979 have book values from $37,000 to $44,000, with asking prices in *Trade-A-Plane* somewhat higher. Some Tigers are quite well equipped, which would explain a higher price. The 150-hp Cheetahs tend to sell for about 10 grand less than Tigers of like age, which is greater than the price differential when the airplanes were new. If you want to get down into the $25,000 or less range, Travelers are available.

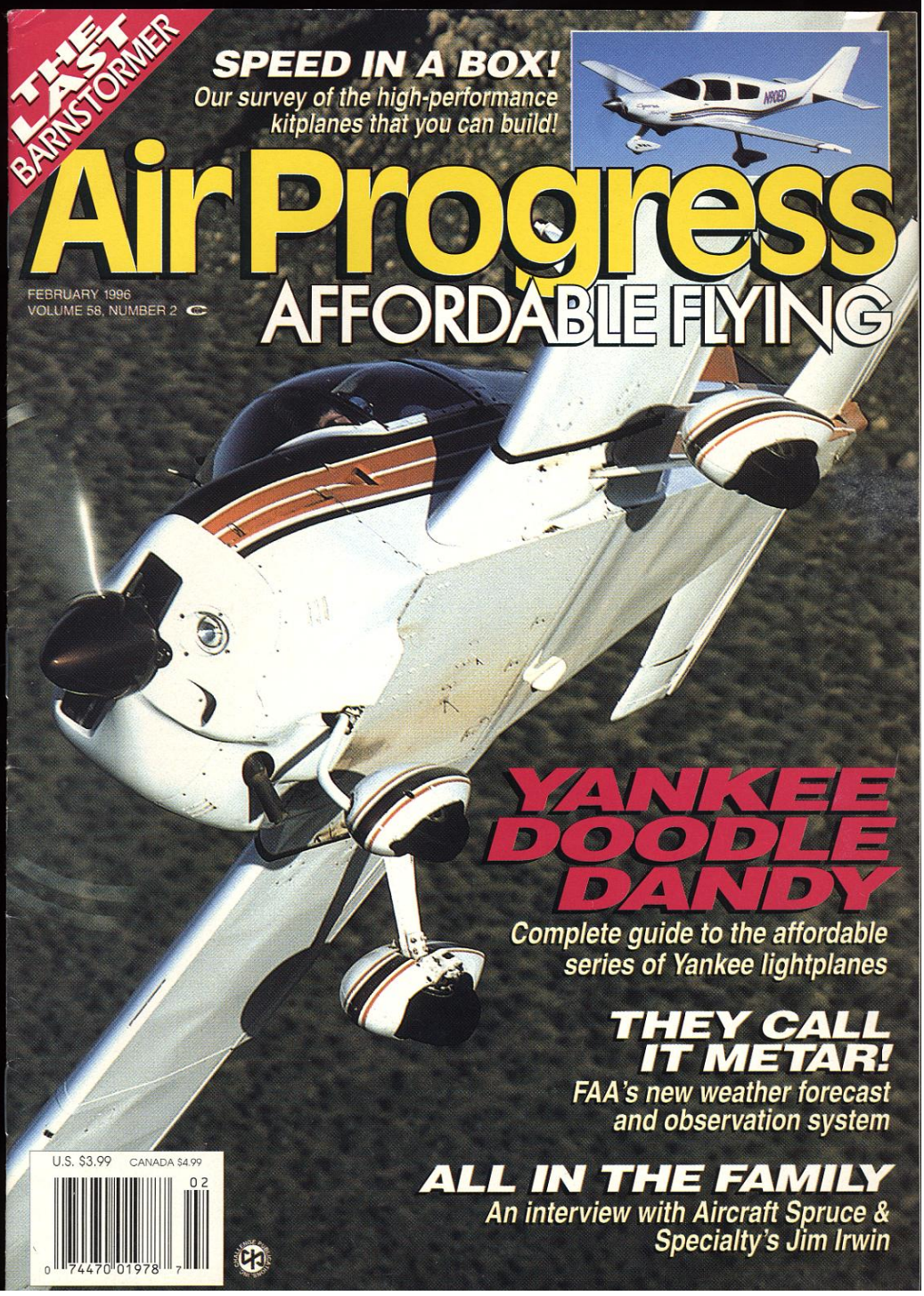
One neat thing about buying a model built by Grumman American is that you can legitimately call it a Grumman on the radio, and a lot of pilots do. That's probably good for a momentary ego boost, but the controller can look at the groundspeed readout on his radar and quickly tell which kind of Grumman is inching across his screen.

To keep terminology straight, an AA5 is a Traveler, an AA5A is a Cheetah, an AA5B is a Tiger and an AG5B is a Tiger built in the 1990s by American General. They are all fun to fly and all give meaning to the term "personal airplane." That means you can attach it to your checkbook on a more or less reasonable basis.—R.L.C.

Grumman American AA5B Tiger

The specifications in this box are from a February 1975 report in Flying *on the Grumman American singles. Performance figures are from the manufacturer's literature and are based on standard conditions at sea level.*

Basic 1975 price	$24,137
Basic 1975 IFR price	$31,479
Used price today, average	$37,000
Engine	Lycoming O-360-A4K, 180 hp
Prop	Fixed pitch, 73-in dia
TBO	2,000 hrs
Length	22 ft
Height	8 ft
Wingspan	31.5 ft
Wing area	140 sq ft
Maximum takeoff weight	2,400 lbs
Empty weight, IFR-equipped	1,385 lbs
Useful load	1,015 lbs
Wing loading	17.1 lbs/sq ft
Power loading	13.3 lbs/hp
Maximum usable fuel	51 gals/306 lbs
Service ceiling	14,600 ft
Rate of climb	850 fpm
Maximum cruise speed	139 kts
Endurance at maximum cruise, no reserve	4.8 hrs
Stalling speed, clean	56.5 kts
Stalling speed, flaps down	53 kts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YANKEE DOODLE

Although Dana Karlin, an A&P mechanic who runs a package mailing service, taught his son Jason, an aerospace engineering student at the University of California, Irvine, to fly in the Lynx, neither recommend it as a trainer because it is too demanding for most student pilots.

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No matter who built it or what name it goes by, the AA-1 and AA-5 series Yankees offer fighter-like performance at an affordable price

DANDY

The AA-1 series of fixed-gear two-seaters was built from 1969 to 1978 by American Aviation and its successor companies, Grumman American and Gulfstream American. Originally called the Yankee, the planes were marketed under a confusing number of names, including Trainer, TR-2, T-Cat and Lynx. In 1976, the AA-5 series, the four-place follow-on to the AA-1, was introduced. It, too, was marketed under a number of different names: Traveler, Cheetah and Tiger.

Although we've described all of these models and the differences between them elsewhere in this report, we've taken the liberty of following the popular practice of referring to all of these aircraft with the generic term "Yankee." Where it's important, however, we've been specific enough to avoid confusion.

IN THE BEGINNING

The AA-1 Yankee started life in 1963 as the BD-1, controversial designer Jim Bede's take on a simple and affordable light airplane for "every man." As he would do many times during his career, Bede ran into financial problems before he could get the BD-1 certificated.

Though Bede was forced out of the project in 1966, a lot of people believed in his design. Russ Meyer, who would eventually go on to become president of Cessna Aircraft, formed a company named American Aviation to complete certification and begin producing the Bede design.

The new airplane debuted in 1969 as the AA-1 Yankee Clipper. Though Bede's idea of folding wings and aerobatic capability were dropped, the AA-1 had some rather nasty stall characteristics. It had crisp control response, a high roll rate and fighter-like handling, but the airfoil produced an abrupt, sharp stall with a danger-

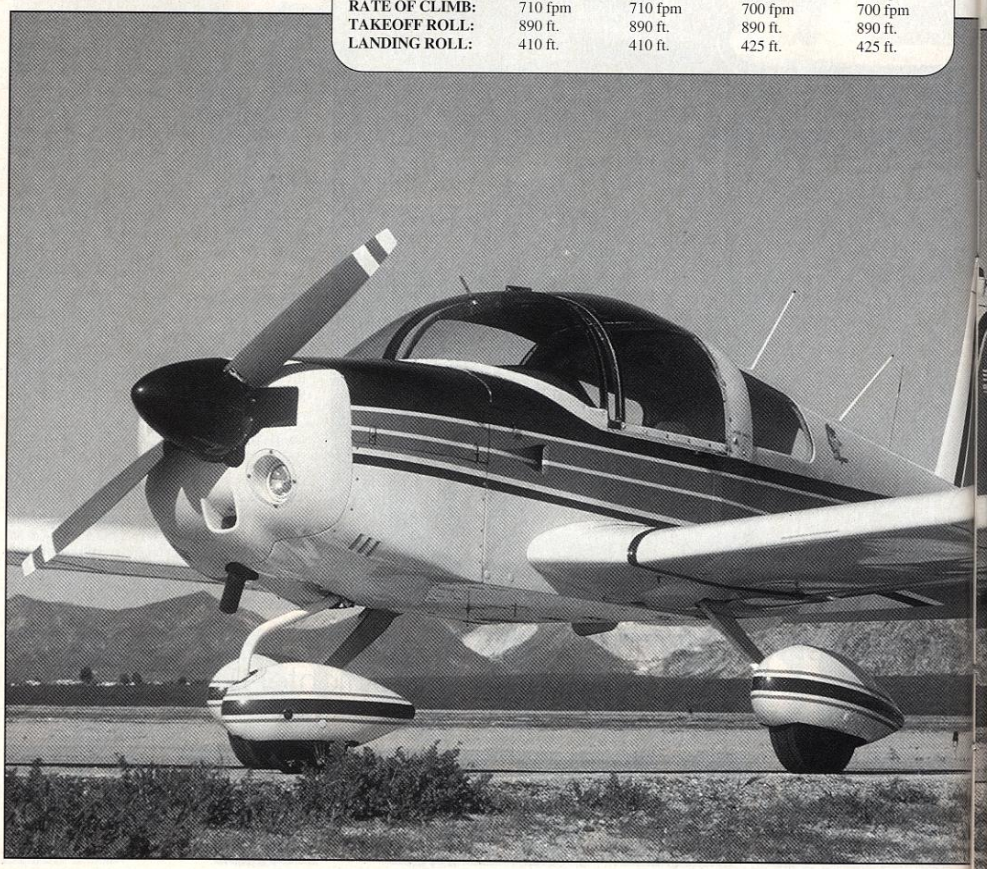
ous wing drop. And because it also built up induced drag quickly at low speed, it was an easy plane to get into trouble with.

Redesign of the wing tamed the savage beast enough to make it more appealing to the average pilot, and this improved version of the Yankee — the AA-1A Trainer — debuted in 1971. Both the Clipper and Trainer were built that year, but production of the skittish Clipper was halted in 1972 after a total of 459 examples were built.

The next year, the AA-1B version of the Trainer was introduced. The only real difference between it and its predecessor was an increase of the maximum gross weight from 1500 to 1560 pounds. In addition to the basic-model Trainer, which was equipped with a climb prop, American Aviation also introduced a slicked-up version of the AA-1B it called the TR-2. It

EVOLUTION OF THE TWO-SEAT YANKEES

MODEL:	AA-1 Clipper	AA-1B TR-2	AA-1C T-Cat	AA-1C Lynx
YEAR BUILT:	1969-71	1972-76	1977-78	1977-78
ENGINE:	Lycoming O-235-C2C 108 hp	Lycoming O-235-C2C 108 hp	Lycoming O-235-L2C 115 hp	Lycoming O-235-L2C 115 hp
LENGTH:	19.25 ft.	19.25 ft.	19.25 ft.	19.25 ft.
HEIGHT:	6.75 ft.	6.75 ft.	7.5 ft.	7.5 ft.
WINGSPAN:	24.5 ft.	24.5 ft.	24.5 ft.	24.5 ft.
GROSS WEIGHT:	1500 lb.	1500 lb.	1600 lb.	1600 lb.
EMPTY WEIGHT:	1000 lb.	1000 lb.	1066 lb.	1066 lb.
USEFUL LOAD:	500 lb.	500 lb.	534 lb.	534 lb.
FUEL CAPACITY:	22 gal.	22 gal.	22 gal.	22 gal.
MAX. SPEED:	138 mph	138 mph	145 mph	145 mph
CRUISE SPEED:	124 mph	124 mph	135 mph	135 mph
STALL SPEED:	60 mph	60 mph	60 mph	60 mph
RATE OF CLIMB:	710 fpm	710 fpm	700 fpm	700 fpm
TAKEOFF ROLL:	890 ft.	890 ft.	890 ft.	890 ft.
LANDING ROLL:	410 ft.	410 ft.	425 ft.	425 ft.



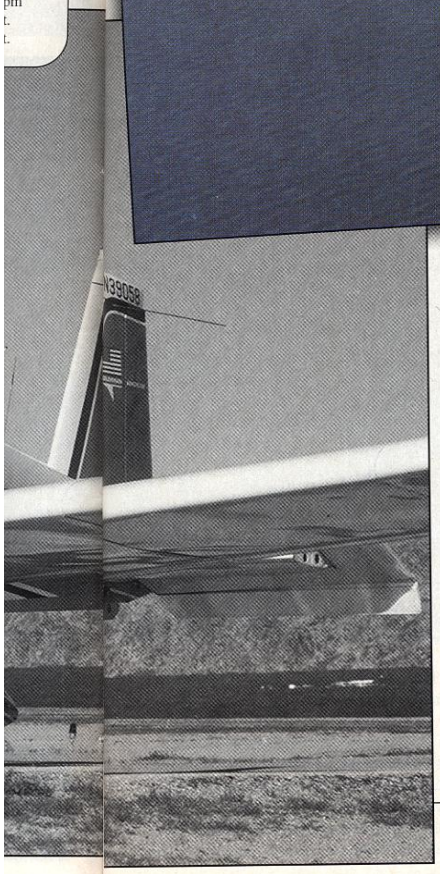
CAGED TIGER

Gulfstream American introduced the 180-hp AA-5B Tiger in 1975 and built it for four years, halting production in 1979. After a 12-year layoff, production was restarted in 1991 by the newly formed American General Aircraft Corp. (AGAC).

The base price of the AG-5B Tiger that year was $94,250, with fully equipped models going for about $103,000. The next year, the base price was up to $119,912, with fully equipped models selling for $141, 650. In 1993, the base price continued its inevitable climb — to $129,800, with fully equipped models topping out at nearly $150,000.

Crippled by spiraling costs and dwindling sales, AGAC found itself unable to pay its bills. In April 1994, it filed for Chapter 11 bankruptcy protection. Production of the Tiger at its Greenville, Mississippi, plant was shut down. AGAC owed the city of Greenville some $200,000 in back rent on its plant, located at the Greenville Municipal Airport. It owed the county a similar amount in payments on an industrial-development bond; and it had missed payments on an $800,000 loan from a local bank. Although AGAC had secured a $2.7 million renewal of its credit line with a major bank, CEO Robert Crowley opted to file for bankruptcy protection to ensure orderly negotiations with creditors.

And so it remains, with the Tiger production line sitting inactive almost two years later.



came with a cruise prop, which gave it a slightly faster cruise than the Trainer.

Production of the 108-hp Trainer and TR-2 continued with very few changes from 1973 to 1976. In 1977, the 115-hp AA-1C was introduced. Called the T-Cat, it featured a max gross weight increased to 1600 pounds, and a larger horizontal stabilizer to improve longitudinal stability and spin recovery.

Like the Trainer and TR-2 before it, the T-Cat was marketed as a trainer and came with a climb prop; its counterpart, the Lynx, was sold as a personal sportplane with a cruise propeller.

From the very first "hot-wing" Clipper, the Yankee was dogged by an extremely poor safety record, caused perhaps by marketing it to pilots not quite ready for such a hot airplane. For that reason, and because of production start-up problems when the manufacturing plant was moved from Cleveland, Ohio, to Savannah, Georgia, production of the Yankee (the two-place T-Cat and Lynx, and the four-place Traveler, Cheetah and Tiger)

The 1978 edition of the Grumman American AA-1C Lynx is generally considered the best buy of all the two-place "Yankees" on the used-aircraft market., mostly because it was built at the end of the type's production run and because it was powered by the 115-hp Lycoming O-235.

AAX SCAN PAGE 89

WE WANT YOU!

Like the rest of the aircraft we've featured in our "Affordable Flying" section, the Grumman American series of two- and four-seaters has a very active and dedicated type club.

As its name implies, the American Yankee Association is an organization for pilots and owners of all the Yankees — regardless of manufacturer, and including the two-seat AA-1 Clipper, AA-1A/B and Trainer/TR-2, AA-1C T-Cat and Lynx, and the four-seat AA-5A Traveler and Cheetah, and AA-5B Tiger.

Membership in the AYA, which boasts some 2000 members, is $37.50 for the first year and $30 annually thereafter, with multiple-year discounts available. One of the main

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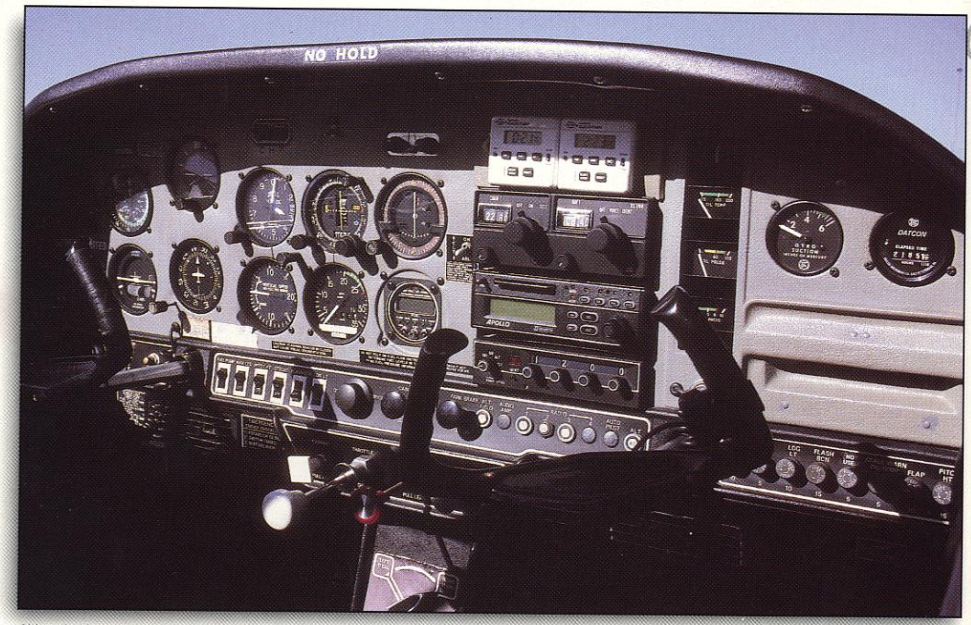
benefits of AYA membership is the bimonthly newsletter *The American Star*, which provides valuable operating and maintenance information.

For more information, contact Stew Wilson at the American Yankee Association, P.O. Box 1531, Cameron Park, CA 95682; telephone (916) 676-4292.

There are also two Yankee newsletters, both published by the king of aircraft type newsletters, Dave Neumeister. For information on the Grumman American AA-1 and AA-5 newsletters, contact Neumeister at 5630 S. Washington Rd., Lansing, MI 48911; telephone (800) 594-4634, (517) 882-8433.

One of the most appealing qualities of all the Yankee series is the sliding bubble canopy, which can be partially opened in flight. Its crisp, fighter-like handling was another reason Grumman American was able to market it as a personal fighterplane.



Although this 1978 AA-1C Lynx owned by Dana and Jason Karlin of Camarillo, California, is not an ideal IFR aircraft, the father-and-son team have added enough IFR instrumentation to fly in the smoggy, foggy Los Angeles basin.

nough IFR

was halted in 1978-79.

The four-place version of the Yankee was created from a 150-hp, stretched version of the AA-1 Yankee. Designated the AA-5 Traveler, it debuted in 1972 and remained in production until 1976.

In 1975, Grumman American chief engineer Roy Lopresti (later of Mooney, Beech, Piper and SwiftFury fame) put a 180-hp Lycoming O-360-A4K engine in a Traveler, enlarged the elevator and cleaned it up aerodynamically to create the AA-5B Tiger. The next year, Grumman American put the Traveler's smaller, 150-hp engine into a basic Tiger airframe and called it the Cheetah.

Both aircraft remained in production for four years, with 800 Cheetahs and 1300 Tigers being built. Production was shut down in 1979 by Grumman American CEO Allen Paulson, who killed the company's piston aircraft lines to concentrate on the more-profitable Gulfstream II bizjet.

For 12 years, the Yankee sat in limbo until American General Aircraft Corp. (AGAC) put the 180-hp AG-5B Tiger back in production in 1991. By then, the era of the Tiger seems to have passed, and after only three years, AGAC filed for bankruptcy in April 1994.

EVOLUTION OF THE FOUR-SEAT YANKEES

MODEL:	AA-5A Cheetah	AA-5B Tiger
YEAR BUILT:	1976-79	1975-79
ENGINE:	Lycoming O-320-E2G 150 hp	Lycoming O-360-A4K 180 hp
LENGTH:	22 ft.	22 ft.
HEIGHT:	8 ft.	8 ft.
WINGSPAN:	32.5 ft.	31.5 ft.
GROSS WEIGHT:	2200 lb.	2400 lb.
EMPTY WEIGHT:	1200 lb.	1285 lb.
USEFUL LOAD:	1000 lb.	1115 lb.
FUEL CAPACITY:	38 gal.	51 gal.
MAX. SPEED:	150 mph	170 mph
CRUISE SPEED:	140 mph	160 mph
STALL SPEED:	58 mph	61 mph
RATE OF CLIMB:	660 fpm	850 fpm
TAKEOFF ROLL:	880 ft.	865 ft.
LANDING ROLL:	380 ft.	410 ft.

SOMETHING FOR EVERYONE

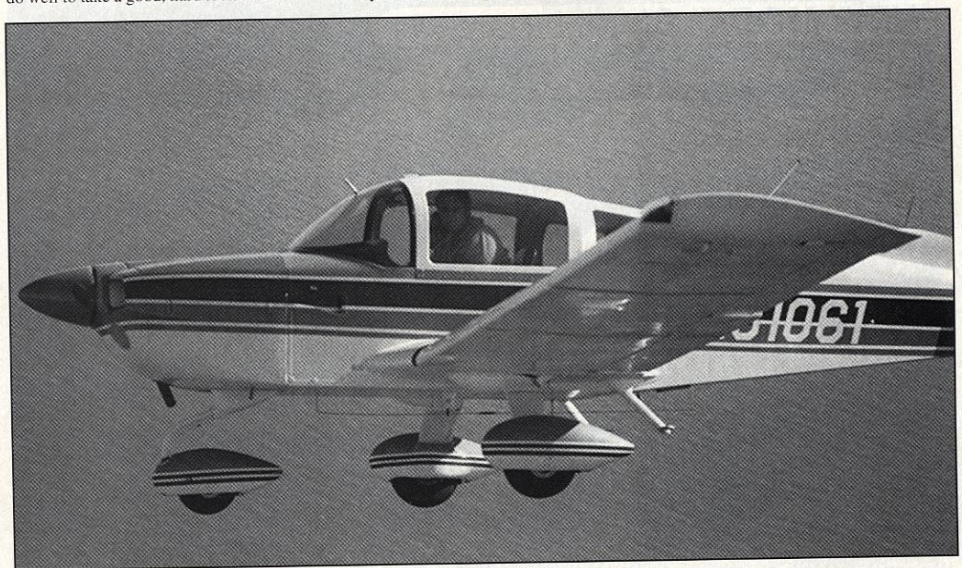
If you're an aircraft owner to-be, you'd do well to take a good, hard look at one of the Grumman American Yankee series — there is a model available to suit every budget and flying need.

If you're after a sporty-looking two-seater for under $15,000, the 108-hp TR-2 Trainer (officially designated the AA-1A/B) is the one to consider. But don't expect it to be as docile-handling a trainer as its contemporaries, the Cessna 150 and Cherokee 140. With its low wing, sliding bubble canopy and side-by-side seats, it was marketed by Grumman American as a hot little "personal fighterplane."

It was a case of truth in advertising, as its performance and handling proved to be as hot as its looks. Faster and more responsive than the C-150, it also landed faster, took off longer and stalled more violently. Even with a new airfoil, the AA-1B still proved to be too demanding as an initial trainer; as a result, it didn't find its way to all that many flight school and FBO ramps.

The role that it performed well, however, was that of high-performance upgrade trainer because, in many ways, it flew like a high-performance aircraft. It has a cruise speed in the 120-knot range, snappy controls and high-wing loading, all of which give it a solid, big-airplane feel reminiscent of complex, high-performance types such as the Bonanza and Mooney.

If you're looking for a "Yankee" that's a little bigger and faster, and in the under $25,000 price range, the AA-5A Cheetah, especially those built early during the first half of its four-year production run, is the plane for you.



If you want to carry four at a cruise speed of nearly 140 knots, the 180-hp AA-5B Tigers built by Gulfstream American from 1975 to 1979 are a bargain in the under $50,000 price range.

The 150-hp, four-seat Cheetah far outperforms its Cessna and Piper contemporaries, thanks in part to its smooth, bonded-skin airframe. Although it cruises a good

"Production of the 108-hp Trainer and TR-2 continued with very few changes from 1973 to 1976"

15-20 knots faster than the C-172, its near-gross, summertime takeoff and climbout performance is less than stellar, a weakness that makes it less popular at higher elevations out West than it is at lower elevations back East.

On the other hand, relatively few Cheetahs were built, and because they weren't gobbled up as flight school trainers, they tend to have been treated well by their loyal owners. As a result, most of the Cheetahs on the market are in above-average condition and sport plenty of attractive mods, upgrades and extras.

If you want to move up to the next rung of the price and performance ladder, the 180-hp AA-5B Tigers built by Gulfstream American from 1975 to 1979 are a bargain in the under $50,000 price range. (The average price of Tigers built by American General Aircraft Corp. from 1991 to 1993, however, was more than twice that of the last models built by Gulfstream.)

In 1972 Grumman American introduced the AA-1B Trainer, which was powered by a 108-hp Lycoming O-235-C2C engine. The only real difference between it and its predecessor (the A-model Trainer) was an increase of the maximum gross weight from 1500 to 1560 pounds.

QUALITIES AND QUIRKS

The first surprise the Yankee has for new pilots is its lack of nosewheel steering. Because of its free-castoring nosewheel, the plane is steered on the ground by rudder input and differential braking, a skill yet to be developed by most Cessna 150 student pilots.

While the Yankees are loved for their performance at high airspeeds, it is infamous for its lackluster performance at the low-speed end of the envelope.

Climb performance is only average (660-760 fpm), partly because of the shallow climb angles required to avoid the deadly low-speed, induced-drag stall. High density altitude, temperature and loads also adversely affect takeoff performance. A good rule of thumb: Ensure you have plenty of runway and flat terrain ahead of you if the density altitude gets above 6000 feet.

While pitch-and-roll response are very quick, Yankees are not approved for aerobatic maneuvers — something you have to bear in mind as the plane's lightning-quick roll rate seduces the fighter pilot in you.

Another of the Yankee's shortcomings are its slow, ineffective flaps. On earlier models, there is very little (only 1 mph, in some cases!) difference between the flaps-up and flaps-down stall speeds. Because Jim Bede originally designed the plane to be towed behind a car, the two-seaters are extremely tiny, with only a 22-gallon fuel capacity. This rather limits its range and useful load.

Gulfstream American halted production of the AA-5B Tiger in 1979 in order to concentrate on bizjets. The design sat in limbo for 12 years, until American General Aircraft Corp. put the AG-5B Tiger back in production in 1991...until it filed for bankruptcy in April 1994.

LAST OF THE BREED: 1993 GENERAL AMERICAN AG-5B TIGER

SPECIFICATIONS	
Length	22 ft.
Height	8 ft.
Wingspan	31.5 ft.
Wing area	140 sq. ft.
Landing gear	tricycle, fixed
Wheel base	5.33 ft.
Wheel track	8.25 ft.
Seats	4
Base price	$129,800

WEIGHT AND LOADING	
Max. gross weight	2400 lb.
Empty weight	1311 lb.
Useful load	1089 lb.
Wing loading	17.1 lb./sq ft.
Power loading	13.3 lb./hp
Fuel	51 gal.
Engine	Lycoming O-360-A4K, four-cylinder, 180-hp @ 2700 rpm.

PROPELLER
Sensenich, two-blade, fixed-pitch, 76-inch-diameter.

PERFORMANCE	
Maximum speed	148 kt.
Cruise (75% power)	130 kt.
Stall speed (flaps up)	56 kt.
Stall speed (flaps down)	53 kt.
Rate of climb	850 fpm
Service ceiling	13,800 ft.
Range (w/reserve)	554 n.m.
Takeoff run	865 ft.
Landing roll	410 ft.

SAFETY FIRST

The AA-1 Yankee has a fatal accident rate nearly five times that of the world's most popular training aircraft, the Cessna

A profile view of the Lynx shows its rather boxy lines; it was cheap and easy to build, but aerodynamically inefficient. On the other hand, the bonded airframe, honeycomb-sandwich cabin and aluminum-tube wing spars make it incredibly strong.

The Karlins' 1978 AA-1C Lynx is powered by a 115-hp Lycoming O-235-L2C. It has a top speed of 140 mph, cruises at 134 mph and stalls at 60 mph.

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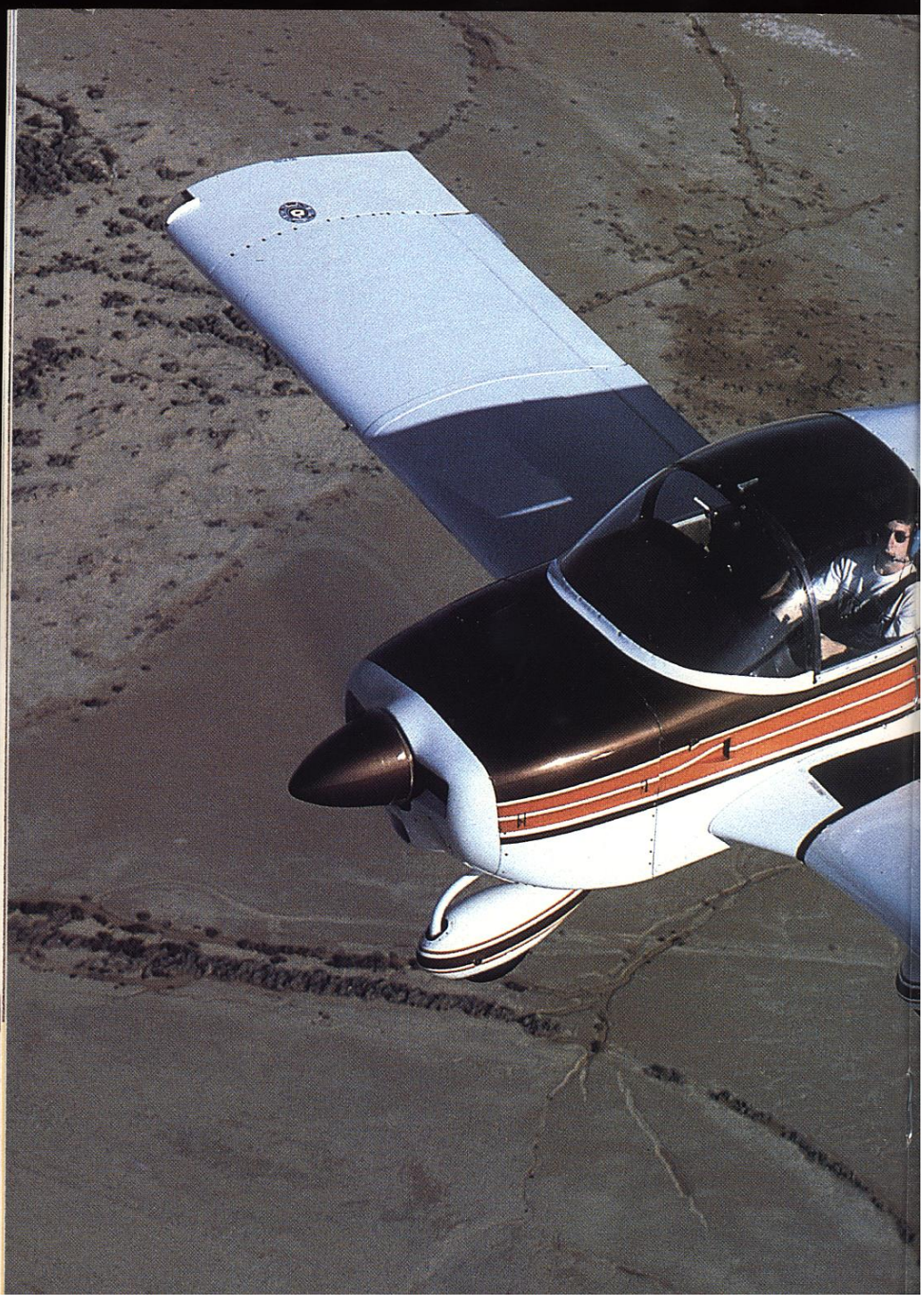

AAX SCAN PAGE 97

Although the AA-1 series Yankees are not stressed for aerobatics, they have a temptingly high roll rate and quick control response. Here, Jason Karlin throws N39058 into a hard right break away from the camera ship.

The AA-1 series is renowned for its 100+ knot cruise speeds. It is equally infamous for its lackluster climb performance, especially when operating with full fuel and passengers from locations with high temperatures and high-density altitude.

150/152 and Piper Tomahawk. According to NTSB records, it has an unusually high rate of stall, spin and engine-failure accidents, as well as ground loops and hard and short landings.

Most of these accidents can be attributed to the aforementioned handling and performance quirks, aggravated by low-time pilots with too few hours in type. Any experienced Yankee pilot will tell you the plane is unstable, sinks like a brick, loves to flat spin — and they love 'em!

The flip side of the coin is that the Yankee's bonded (rather than riveted) airframe, aluminum-honeycomb-sandwich cabin structure, aluminum-tube wing spars and fiberglass leaf-spring gear legs make it incredibly strong and crashworthy.

KEEPING IT FLYING

For all its quirks in the air, the Yankee is considered a simple and reliable aircraft by owners and mechanics. The biggest potential problem is delamination of the bonded skin on the trailing edges of the ailerons, flaps and tail surfaces on pre-1976 models. An Airworthiness Directive requiring installation of anti-peel rivets at those points has pretty much eliminated that problem, however.

Because the Lycoming engines on Yankees are so tightly cowled, they tend to run hot, causing an unusually high rate of cylinder problems. An oil-cooler retrofit kit seems to be an adequate fix.

Something to bear in mind when shopping for a Yankee is the type's high accident rate. Few airplanes still flying have not had some kind of accident or incident that required repairs, so check the logbooks and verify via a thorough airframe inspection that proper repairs have been made.

Something else to bear in mind is the fact that production of the AG-5B Tiger was halted suddenly and unexpectedly in 1994, turning 1991-1993 Tigers into aerial orphans. The same thing happened back in 1978-79, too. Both times, Tiger owners were left with no factory support and a limited number of places to buy the expensive, hard-to-find parts they needed to keep their airplanes flying. Don't expect the situation to improve or the price of parts to come down anytime soon.

Nonetheless, the Tiger has become one of the most popular and sought-after four-seaters on the used aircraft market. Part of the reason is that it was the last, most-modern and most-affordable small aircraft to remain in production. If you are looking to buy, now is the time — before the rest of the world catches Tiger fever.

WHAT DOES A YANKEE COST?

Although production of the Yankee stopped in 1993 with the AG-5B Tiger, which listed for a rather steep $129,800, earlier models of the Tiger and its predecessors are much sought-after because of their snappy handling, 100+ knot cruise speeds and especially their bargain-basement prices.

As always, the older aircraft represent the best bargains. Examples of the two-seat AA-1 series, built from 1969 to 1978, are available for under $20,000 — under $17,000, in many cases. While you'll pay a little more for an AA-5A Traveler/Cheetah or AA-5B Tiger, it's a case of getting what you pay for, because these are the bigger and faster, four-seat cross-country cruisers that everyone wants.

The prices of the later-model Tigers, especially those built in the 1990s before American General went bankrupt, tend to run a bit on the high side. As with any make or model of aircraft, prices of all models in the Yankee series can range widely, depending on instruments, avionics, interior, paint job and modifications.

A look through the pages of Trade-A-Plane, the wish book for pilots, will give you an idea of the current prices of particular year/model Yankees. Here are a few examples from a recent issue:

YANKEE PRODUCTION/PRICES

Model	Year Built	Avg. Price
AA-1 Clipper	1969-70	$12,500
AA-1A	1971	$13,500
AA-1A Trainer	1972	$14,000
AA-1A TR-2	1972	$14,500
AA-1B Trainer	1973-76	$15,000
AA-1B TR-2	1973-76	$15,500
AA-1C T-Cat	1977-78	$16,000
AA-1C Lynx	1977-78	$16,500
AA-5A Cheetah	1976-79	$25,000
AA-5B Tiger	1975-79	$50,000
AG-5B Tiger	1991-93	$129,000

1972 TRAVELER. TTA 2807, SMOH 854, last annual 8/94, Narco navcom, Narco HSI, KR86 ADF, IFR certified, Micrologic loran, new spinner bulkheads, auto STC, engine preheat, PM-2000 intercom. Asking $25,500.

1976 AA-1B TR-2. 1600-TT, September annual, fresh top, 1 navcom, auto fuel, no damage, $15,500.

1979 TIGER. 1885-TTSN, NDH, KMA20, 2 KX170Bs, GS, KR85, ADF, KT76/mode-C, KN64 DME, CIIB AP, strobes, intercom, stereo, new windshield & battery. Annual thru Jun 96. $38,900.

1991 TIGER. 230-TT, full King IFR, DME, loran, 4-place intercom, Tanis heater, custom covers, hangared, like new. $85,000.

1978 CHEETAH. 400hrs TTSN, full IFR. Like new. Asking $42,000.

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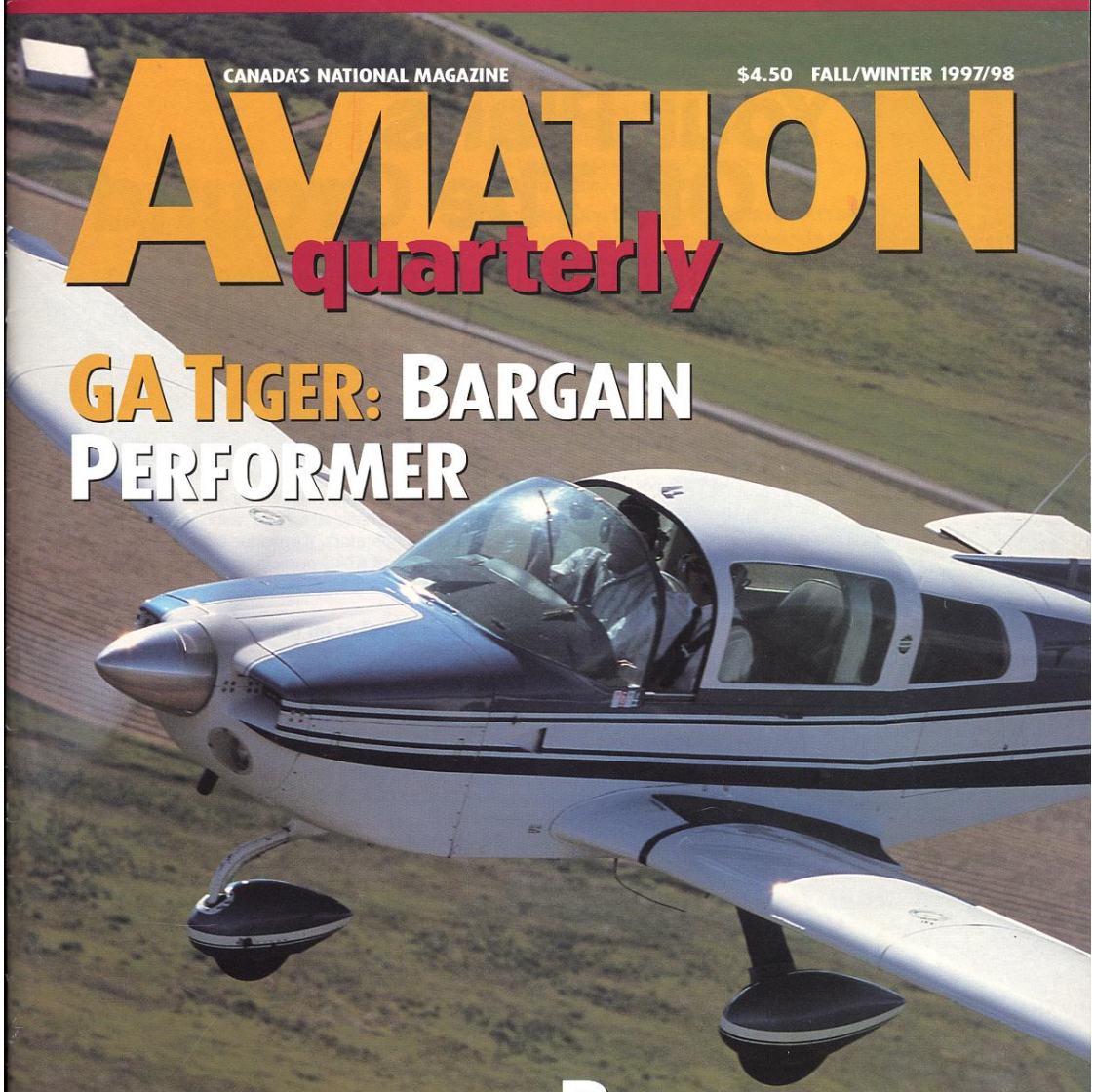

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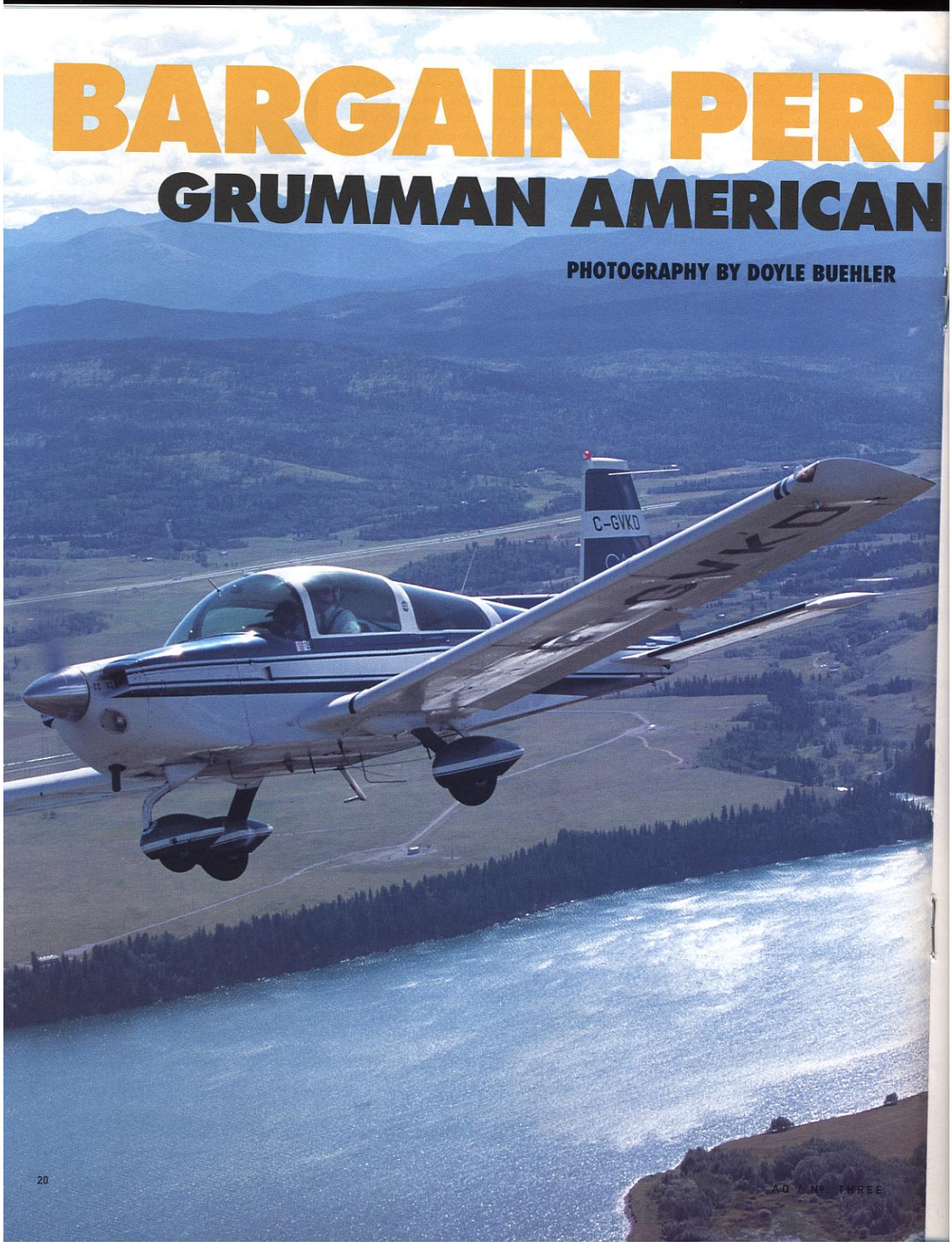


FORMER AA-5B TIGER

WRITTEN BY NEIL A. MACDOUGALL

MICHAEL DUPUIS, president and CFI of WestPoint Flight Centre, Springbank and Calgary, Alberta, has many hours in Tigers and operates the closely related 150-hp Cheetah in his flying school. "I used to flight plan for an honest 135 knots at 10 U.S. gallons per hour. There are not too many aircraft that can give such speed for the money."

Just as enthusiastic is Mervyn Tityk, a Calgary executive who is co-owner of a handsome 1979 Tiger. "It's fast and sleek." He loves the performance and the large canopy.

The canopy provides very good visibility and superior air conditioning. "Nothing is nicer than sitting in a Tiger, engine running, on a hot summer day with the canopy back," Dupuis says. Flying with the canopy partly open is permitted up to a speed of 112 knots.

I was less impressed when I once had to retrieve my charts during a drenching rain. Opening the canopy is impossible without soaking the front seats. No doubt that's why few Tigers are seen in rainy Vancouver.

The backs of the rear seats can be folded down flat to make a two-seater with a very large, flat, metal-floored baggage compartment. Dupuis once tied down a O-320 aero engine there and flew it to British Columbia. "You could sleep two on the floor, so the Tiger is excellent for aerial camping." On the other hand, the baggage compartment door is chihuahua-sized.

Enthusiasts will recognize the Tiger's similarity to the two-seat BD-1 homebuilt, designed by that ebullient promoter, Jim Bede. He sold the design to American Aviation, who produced it as the AA-1 Yankee for $9,495.

Plane makers, like car makers, need more than one model to survive. In 1972, American Aviation stretched the Yankee into a 150-hp four-seater, the somewhat dumpy Model AA-5 Traveller. After Grumman bought American Aviation, Roy LoPresti, who later became known for cleaning and speeding up the Mooney line, worked his magic on the Traveller. The result was the 180-hp AA-5B Tiger, which appeared in 1975. A year later, the nearly identical 150-hp Model AA-5A Cheetah replaced the Traveller.

Tigers outsold both Travellers and Cheetahs, although never in large enough numbers to make Cessna and Piper executives quake. Over 1,320 Tigers were built between 1975 and 1979. By then, Gulfstream had bought the line, but they quickly decided that making executive jets was more profitable.

Perhaps because the Tiger's owners were so busy trying to sell the design, few changes were made from year to year. In 1977, thicker windows and insulation reduced noise levels. Corrosion-proofing and a shock absorber on the nose gear also nibbled at the useful load. Fortunately, light planes don't gain a pound a day from modifications, as jet fighters are said to.

A poor adhesive used on some 1975-76 models caused delamination of structural members. Problems often showed first on the training edges of control surfaces. Early prop spinners were prone to cracking.

Certifying a light aircraft is so expensive that it is cheaper to revive an old type than to design a new one. Like the Ercoupe, Taylorcraft and countless other planes, the Tiger was revived in 1990 by American General Aviation. It built about 150 AG-5B Tigers before going bankrupt.

Rare on the used market, the AG-5 Tigers had numerous improvements: elimination of the 1,850- to 2,250-rpm caution range on the tachometer, landing lights on each wing tip in place of the single nose light, relocated radio speakers, improved canopy seals and soundproofing, better fresh air flow, a glass fibre dorsal fin to reduce wear and a 28-volt electrical system. The one-piece cowling was redesigned so that the spinner and prop did not have to be taken off before the cowl was removed. A supplementary type certificate (STC) is available for both this modification and the prop caution range.

Glenn Hadley of Toronto has installed an STC'd electronic ignition on his Tiger. He estimates that it reduces fuel consumption by a gallon an hour.

The Tiger's bonded (sounds better than "glued") honeycomb construction, large sliding canopy and non-steerable, castering nose wheel are distinctive. Not much bigger than many homebuilts, the Tiger retains the light responsive controls that won the Yankee many fans and challenged students.

The castering nose wheel makes the Tiger as manoeuvrable as a tricycle on the ground. It's easy to turn within the aircraft's length. Also, when the plane is pushed backward on the ground, the nose wheel moves sideways, unless a tow bar is used.

"When you park a Tiger, you absolutely have to chock it or tie it down. It will weathercock in an instant," Dupuis explains.

However, taxiing in strong crosswinds requires continual braking, with resulting brake wear. Brake condition must be monitored, because the aircraft can't be taxied without brakes.

The small flaps reduce stalling speed only 4 mph and are not very effective. At any speed over the recommended approach of 75 mph, the aircraft floats annoyingly. Forcing the nose on the ground at speed will cause crow-hopping and nose gear damage. But the unusual glass-fibre main landing gear absorbs energy and makes soft landings easy. These characteristics help give the Tiger personality. Owners revel in the light, responsive controls and say it's easy to fly.

The accident statistics tell a different story. An NTSB study covering 1972-76 accidents of all AA-5 variants, including the Traveller and Cheetah, concluded they had the worst fatal accident rate of any popular fixed-gear four- or six-seater. The overall accident rate of 14.99 per 100,000 hours was lower than the Beech 23 Sundowner and relatives (17.58), the

USED AIRCRAFT MARKET REPORT
GRUMMAN AMERICAN AA-5B TIGER

IF YOU WANT A SPEEDY LIGHT PLANE AT THE LOWEST COST, NOTHING CAN MATCH THE GRUMMAN AMERICAN TIGER. A 180-HP FOUR-SEATER WITH FIXED GEAR, IT'S ONLY A KNOT SLOWER THAN THE ORIGINAL 180-HP PIPER ARROW. WITH NO RETRACTABLE GEAR OR CONSTANT-SPEED PROPELLER TO BOOST COSTS, THE TIGER IS CHEAP TO OPERATE AND CHEAP TO BUY.

The Tiger's nosegear with its shopping cart-like castering wheel contributes to higher-than-average brake pad wear–a consequence of the steer-by-brakes system.

same as the Cessna Cardinal (all models) and much higher than either the Piper PA-28 series, which includes the Archer (10.49), or the Cessna 172 (9.07).

Of the 33 aircraft types studied, the Grumman AA-5 series had the highest rate of overshoot accidents.

Many owners scoff at such figures. They're like the besotted cat owners who make excuses for their pet's spraying on the drapes. Merv Tityk is more realistic. "The Tiger is not as forgiving as a Cessna or Piper," he says, having flown all three. "On takeoff, it likes to fly itself off the runway. You have to be careful not to pull it off, as you can a Cessna. If you bounce on landing, you're more likely to go sideways. You have to be ready with the rudder."

Propeller clearance on the Tiger is only 8½ inches, an inch less than the Mooney M.20J, a type noted for prop damage due to stones. In a Tiger, special care is needed while taxiing on rolling terrain to avoid prop damage. Some owners avoid turf airstrips. Prop strikes during landings are not uncommon, following pilot-induced oscillations.

Insurance rates reflect these experiences. Malcolm Bryce, president of PSA Insurance Brokers Ltd., Thornhill, Ontario, estimates that insuring a Tiger would cost 10% to 15% more than insuring a similarly priced Archer or Cardinal.

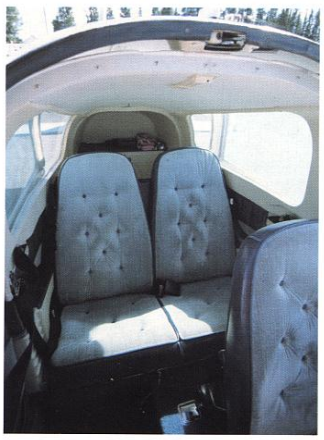
Few firms know the maintenance costs of the AA-5 series better than D & R Aviation Inc. They look after 12 Tigers and relatives from their base at Toronto City Centre Airport. "The Tiger has very low maintenance costs," says Randy Butcher, president. "Not that I enjoy that!" he jokes. "Systems are simple, and the 2,000-hour engine is reliable." (However, some owners complain of high cylinder-head temperatures due to the tight cowling.) Leaking fuel from the wet wings is sometimes a problem, and costs $450 to $500 per tank to fix.

"The biggest problem is the nose gear, but only if it is not well maintained." Wheel-barrowing or a nose-gear-first landing can squash the gear and reduce prop clearance by up to two inches. After a Cheetah in Calgary had a prop strike while taxiing, its nose gear was found to be out-of-limits.

At Calgary's WestPoint Flight Centre, the cost of maintaining their Cheetah (which has a similar airframe to the Tiger) is an astonishing $3 to $4 per hour less than their Cessna 172. However, brake wear, magneto problems, sticking brakes, balky canopies and nose wheel shimmy are reported by other operators. "The extra brake wear is compensated for by lower maintenance on the nose gear, due to its simple design," Dupuis says.

Only 45 AA-5B Tigers are listed in the Canadian Civil Aircraft Register. (One of these is C-GRRR, an appropriate registration for a cat.) During a recent three-month period, I found only three advertised in Canadian publications. "We don't see a lot of them," says Anna Pengrazzi, president, Apex Aircraft Sales Ltd., Toronto-Buttonville Airport. "They're nice and

Fold-down rear seats provide lots of practical space for bulky suitcases or even two adults in sleeping bags. A well-laid-out panel features plunger-type engine controls. The fuel selector is foolproof with the lever pointing directly at the gauge for the selected tank.



fast, and have a definite following. But they're not as popular as a Cessna or a Piper."

She has a 1976 model for sale now. It has 3,042 hours total time, 1,189 hours since overhaul, IFR panel, GPS and average paint and interior. It is offered at $54,800.

Pierre Auclair of Aviation Pierre Auclair, Laval, Quebec, estimates that only 20 Tigers are in Quebec. He said they are resold infrequently and command 10% to 20% less than the Archer and the 180-hp Cardinal.

Perhaps because of their unique flying characteristics, few Tigers have been used by flying schools. In Alberta, where high airport elevations encourage flying schools to use four-seaters for *ab initio* training, the Tiger was ruled out because it is not spinnable. Therefore, most used Tigers on the market have been privately owned and have under 3,000 hours.

Solly Capua, president of Aviation Unlimited at Toronto's Buttonville airport, said that Tigers were underpriced for many years. Today, Tigers with half-time engines go for $40,000 to $70,000. In spite of their superior speed, good visibility and low maintenance costs, they still sell for less than a Piper Archer.

Archers are also worth more than the 180-hp Beech Sundowner, which has a roomy cabin, but a smaller useful load and slower speed than a Tiger.

"Pilots like the speed and good visibility. They're a good cross-country aircraft, but not suitable for short fields. Tigers are cheap to maintain, although they land differently (with a nose-down attitude) from other aircraft. The castering nose wheel takes getting used to. Pi-

Modern bonded construction without protruding rivet heads has given the Tiger a smooth, clean finish.

Below: The Tiger is a real speedster and easily outpaces a Piper Arrow or Archer. At cruise, the AA-5B burns 20% less fuel than the Archer while operating at 60% power.

AA-5B TIGER COMPARED

Aircraft type	Grumman American	Beech	Cessna	Piper
Model	AA-5B Tiger	C23 Sundowner	177B Cardinal	PA-28-181 Archer II
Engine	180-hp O-360-A4K*	180-hp O-360-A4G*	180-hp O-360A1F6*	180-hp O-360-A4M*
Cruising speed	139 knots	115	130	125
Rate of climb	850 ft./min.	792	840	735
Service ceiling	13,800 ft.	12,600	14,600	15,000**
Take off over 50 feet	1,550 ft.	1,955	1,400	1,625
Useful load	1,040 lbs.	956	857	1,134
Fuel, stnd./optl.	51 U.S. gals.	57	50/61	48

* Lycoming; **Applies only to 1979-81 models. Others have a service ceiling of 13,650 feet.

Remarks: Grumman specialist Dave Fletcher, president of Fletcher Aviation, Inc. in Houston, Texas, said a typical 1979 Tiger has a useful load of 940 pounds. He thinks higher published figures reflect aircraft without basics like dual controls and antennas. Some sources quote the Sundowner's useful load as 1,025 pounds and the cruising speed as 124 knots.

Aircraft manufacturers' brochures are often printed before flight testing is completed. Later brochures or news releases often quote performance from preliminary tests, while the pilot's handbook will have different figures again. The figures above are from the best available sources, although readers, especially those with flight manuals, will undoubtedly be able to find different ones.

lots need a good check-out before flying one," Capua adds. If the instructor isn't familiar with the Tiger, a new owner may get an inadequate briefing.

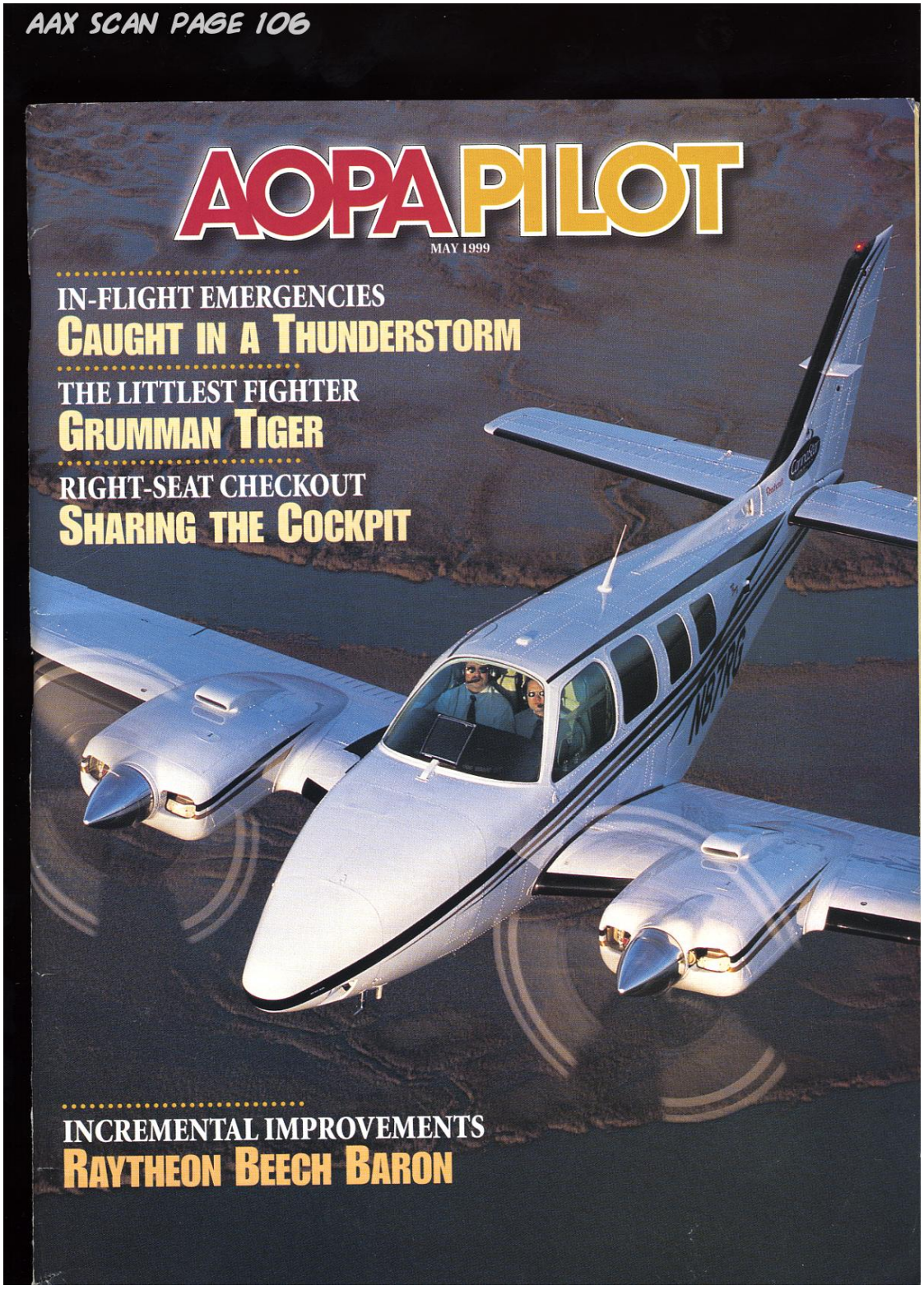
Capua is selling a 1992 IFR-equipped American General Tiger for $99,900. One of the last built, it may be the only AG-5B in Canada. A comparable Archer would sell for $130,000. North Star Aviation Inc., Toronto City Centre Airport, is advertising a 1978 Tiger with a newly majored engine for $72,000. A 1977 Archer with twice as many hours and 1,400 engine hours since major overhaul is offered at $77,000.

The delamination problems of early Tigers make a pre-purchase inspection of any Tiger especially important. Capua says this should include a careful physical inspection of the interior, exterior and engine baffles, a compression check and a review of Airworthiness Directives. Transport Canada inspectors have found "Parker pen" ADs–those recorded in logbooks but never done on the aircraft. Even an imported Convair was doctored, so physically checking any prospective purchase for each AD may be warranted. Total estimated cost: $300 to $500.

Parts for aircraft that are no longer built are sometimes very elusive. Fletcher Aviation, Inc. of Houston, Texas, specializes in supporting the Grumman family and actually produces new wings, flaps and torque tubes, among other items. Six Tiger operators said they could usually find the part they needed, even if they had to call a salvage firm. However, dorsal fins were once so rare that one was stolen from a parked aircraft.

For additional support, contact the American Yankee Association based in California. Telephone: 916 676-4292.

The Tiger is indeed an efficient aircraft with character, one that is interesting and different. Buyers who like plain vanilla may be happier with a Cessna. The Tiger is for those who prefer something special, like strawberry swirl. ✈



USED AIRCRAFT REPORT

With claws still sharp

All airplanes embody compromise. Trade simplicity for speed; send off climb performance for payload; or sacrifice fuel economy for a roomy cabin. Among the difficulties faced by aircraft designers is the careful balancing of these qualities. Worse yet is the task given to the engineer hired to improve an existing, certified design; he doesn't have the luxury of making radical changes. His design box is impossibly small. ■ So it is that Grumman Tiger owners owe Roy LoPresti a debt of gratitude for tweaking this design into one of the most successful compromises

Grumman's Tiger continues as a blue-chipper

BY MARC E. COOK

PHOTOGRAPHY BY MIKE FIZER

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around. It's a simple airplane, powered by a 180-horsepower Lycoming O-360 driving a fixed-pitch prop. It drags along fixed tricycle gear and rides on an easy-to-build constant-chord wing. Its systems are stone simple. And yet the airplane is capable of transporting four adults in an admirably comfortable cabin at nearly 140 knots true.

LoPresti's role in the Tiger transformation is well known among AA–5 boosters. The Tiger traces its roots back to the AA–1 Yankee, made by American Aviation in 1969. This two-place trainer-to-be boasted some innovative construction methods, such as glued metal skins and a tubular main wing spar that doubled as a fuel tank. With a small, clean wing, the AA–1 was stunningly fast for the power—108 hp at first from a Lycoming O-235—putting in some 117 kt true at optimum altitude. That early iteration AA–1 was a poor trainer thanks to its mediocre climb performance and the requirement for strict airspeed control.

In the early 1970s, American Aviation started work on a much bigger,

A generously sized cockpit belies the Tiger's compact form.

more complicated four-seat follow-on model, but ended up with what appears to be a scaled-up AA–1. Thus was born the AA–5 Traveler, with 150 hp on board. Although it seemed a close derivative of the AA–1, the Traveler had several system and aerodynamic improvements.

LoPresti came into the picture when Grumman bought the line in the early 1970s. Out of his efforts to improve the AA–5's performance grew a pair of significantly speedier siblings, the 150-hp AA–5A Cheetah and the AA–5B Tiger. (In fact, the Tiger debuted in 1975, a year earlier than the Cheetah.) Although they shared the wing, fuselage, and basic construction with the Traveler, the Grumman-made airplanes employed extensive aerodynamic improvements. Fairings sprouted everywhere

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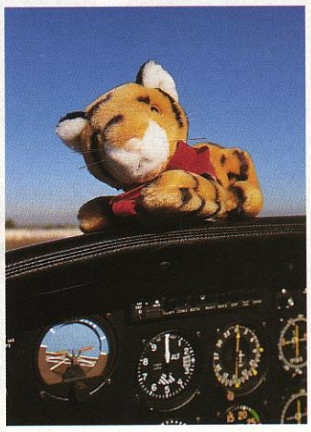
on the airframe, particularly noticeable around the wing root and at the junction of the belly and main landing gear legs. A revised cowling with significantly smaller cooling-air openings completed the picture.

Today, the Tiger is much sought-after on the used market. Its combination of speed and simplicity—along with that comes reduced maintenance costs—remains compelling for a lot of pilots. You don't need to feed a large six-cylinder engine or manage folding gear and cowl flaps to have respectable cruise performance. You don't need the maintenance headaches or insurance rates that go along with more complicated airplanes, either. The spread in cruise speeds between the



Tiger and a Bonanza amounts to about a half-hour's difference on a 500-nm flight.

The first time you climb into a Tiger you'll notice that it's just *different*. The sliding canopy offers either easy or difficult access, depending upon your agility level. Standard practice is to throw a leg over the cabin sidewall and flick back the seat cushion with the toe of your foot. Step down onto the spar carry-through with that foot and then drag the other one inside. If it's raining, you'll get wet. You'll settle into a cabin that's comparatively spacious and airy. Move the controls and you'll notice the telltales of pushrod and torque-tube actuation for the ailerons; the controls are pleasantly solid. Kick the rudder and you'll also be reminded that there's no

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direct nosewheel steering; the brakes are all you've got.

Taxiing a Tiger is not difficult with some practice, although with a strong crosswind blowing you'll want to be confident of the quality of your brake maintenance. The Tiger's rudder is more effective than that of the smaller AA–1, so differential braking during the takeoff roll is almost unnecessary. Once up and flying, the Tiger delights. It's got light and smooth control forces, reasonably well balanced among the axes. Come over from a Cessna 172 or a Piper Warrior and you'll be pleasantly surprised, particularly with the control authority in roll.

Tigers induce few nosebleeds in the climb, with 750 fpm typical at mid weights. Maintaining the proper airspeed is a must to eke the best climb performance, though; stick to 90 kt or you'll sacrifice quite a lot.

Attention to aerodynamic detail makes the Tiger so swift.

This rather fast best-rate climb speed points to the small wing; at just 140 square feet, it's smaller than a Skyhawk's by some 30 square feet. The Tiger is much less forgiving of poor pilot technique than is the aforementioned Skyhawk or Warrior.

Push the nose over at cruise altitude and be prepared to wave *so long* to simple Cessnas and Pipers. On the same horsepower, the Tiger is nearly 20 kt faster than a Piper Archer and can even hold its own against the retractable-gear Arrow. What's more, with 51 gallons of usable fuel, the Tiger has decent legs; figure on about 9.5 gph in cruise for a reasonable 4.3 hours' endurance. You'll need to push the little Lycoming to fairly high revs at altitude to get best performance, resulting in a fairly noisy cabin; all that glass contributes also to a cockpit that requires use of headsets.

Thanks to the Tiger's slightly higher wing loading—it's a couple of pounds per square inch greater than your typical Cessna or Piper—it handles turbulence well for a 2,400-pound max-gross airplane. Its sharp control reflexes also help keep it on an even keel in choppy air.

Although the Tiger and its AA–series siblings are overrepresented in landing accidents, there's really nothing difficult about getting an AA–5 on

the ground. Adherence to the proper approach speed is important—72 kt should do it—because the flaps aren't as effective as, say, a Cessna Skyhawk's, so you have less variable drag to help you salvage a high, fast approach. And given that the Tiger's nosewheel steering comes just from brakes and rudder, you'll have to practice the rudder-pedal/toe-brake dance to perfect the transition from steering with the tail to steering with the brakes.

True to its simple self, the Tiger has few critical prepurchase inspection areas. Bond-line separation on the control surfaces—except the ailerons—is an ever-diminishing issue but still demands attention. The Tiger makes extensive use of bonded aluminum, and time has shown that the trailing edges of the flaps, rudder, and elevators are the places most likely to experience a

Nancy Clinton's Tiger shows the hallmarks of the breed: sliding canopy, "mail slot" baggage door, and ancilliary controls on the center console.

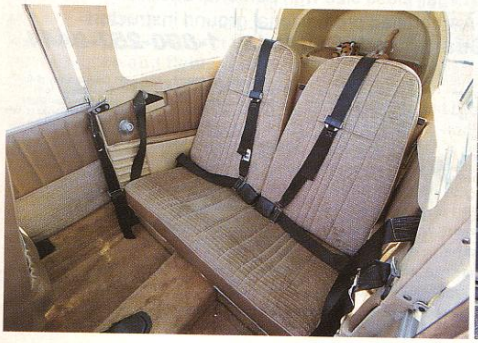
debonding of the skin from its support structure. Another item demanding attention is the nosewheel torque-tube support. There are four sockets that carry the nosewheel structure into the cabin. You can bounce the nose gently and listen for a clicking sound; that's one indication that further inspection is needed. Fixing a loose torque-tube bond is about a $2,000 proposition.

Otherwise, the Tiger's airframe is rugged enough that few specialized inspections are necessary; just look at the usual list of consumables—brakes, tires, propeller condition, etc. (There's a repetitive airworthiness directive on the McCauley prop and an annoying rpm limitation; many owners have switched over to the Sensenich prop with good results.) Engine baffling is perhaps more critical on the Tiger than on other O-360-powered airplanes. In their quest to extract maximum cruise speeds, Grumman and LoPresti cut down the cooling margins. The wet-wing tanks aren't prone to leaking, but still look for telltale stains at the strap covering the junction of the inboard and outboard wing sections.

Four comfy seats under a canopy make the Tiger a good single-family hauler.

Tiger values reflect its vaunted standing in the used market. According to *Vref* (see: www.aopa.org/members/vref), a 1975 AA-5B should sell for $47,000; prices climb predictably to the 1979's value of $53,500. Put that in perspective: A 1972 Traveler is worth just $28,000, while a 1979 Cheetah goes for just $34,500. Meanwhile, a 1991 AG-5B is worth $75,000 today; American General built just 150 of the Tigers between 1990 and 1993.

That the American General Tiger didn't survive is more a reflection of the economic times at the beginning of the 1990s than the design itself. More than two decades after the last Grumman Tiger rolled off the line, the plucky four-placer remains in solid demand, appreciating steadily



and earning accolades from new owners. Moreover, a new company is ready to build you a new one, for $214,000. TLM Aircraft, a subsidiary of Tong Lung Metal Industries, has built a plant in Martinsburg, West Virginia; it intends to revive the AA–5A Cheetah as well. Consider this move just another testament to the careful balance of performance over cost and maintenance requirements; few light aircraft have made these compromises as well as the Tiger. □

E-mail the author at marc.cook@aopa.org. For additional photography of the Tiger, see AOPA's Online Gallery (www.aopa.org/pilot/gallery).

Grumman American Tiger
Current market value: $53,500

Specifications

Powerplant	Lycoming O-360-A4K, 180 hp at 2,700 rpm
Propeller	McCauley or Sensenich, 76-in dia
Length	22 ft
Height	7 ft 10 in
Wingspan	31 ft 6 in
Wing area	140 sq ft
Wing loading	17.1 lb/sq ft
Power loading	13.3 lb/hp
Seats	4
Empty weight, typical	1,450 lb
Max gross weight	2,400 lb
Useful load	950 lb
Payload with full fuel	644 lb
Fuel capacity	53 gal (51 usable) 318 lb (306 lb usable)

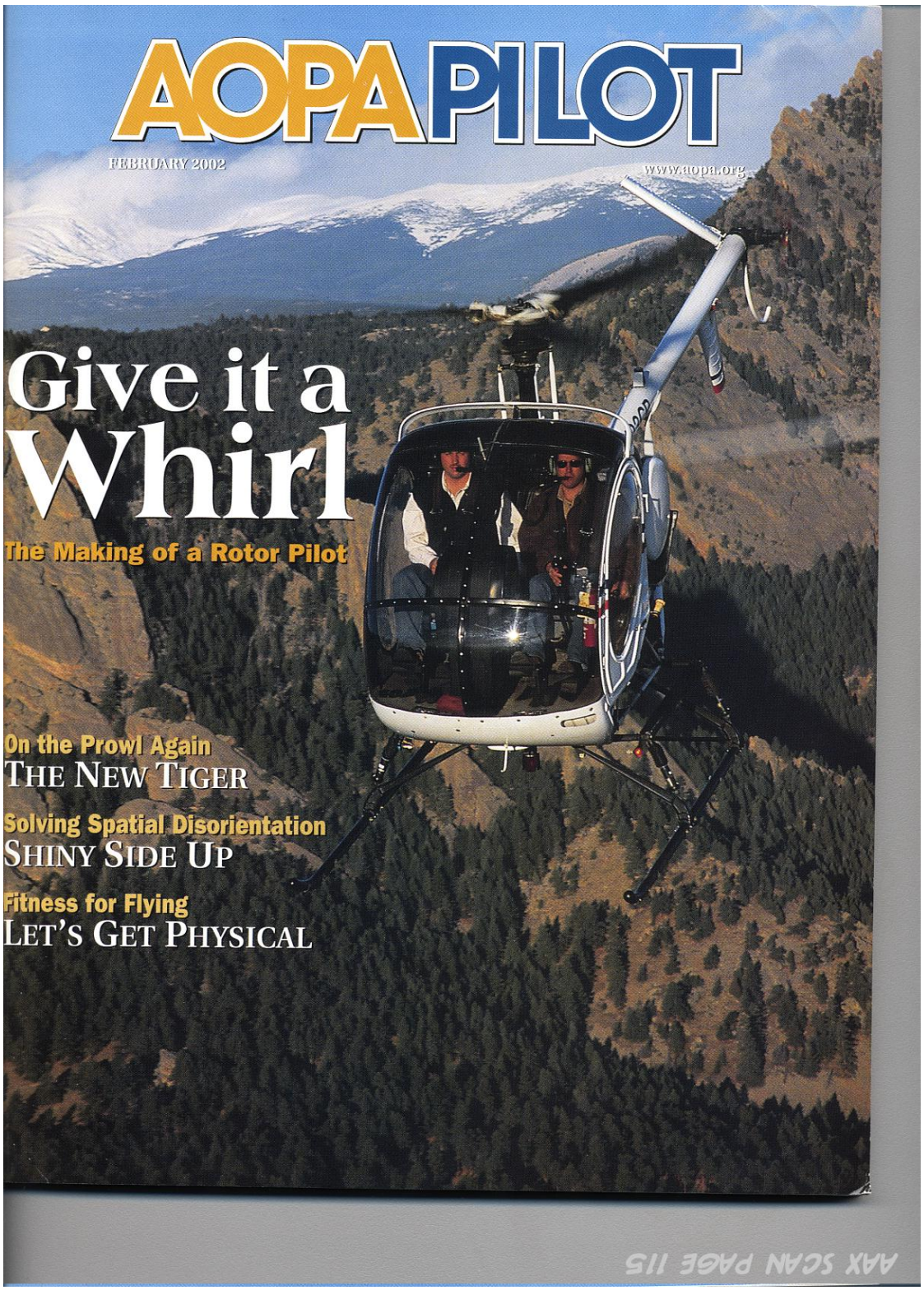
Performance

Takeoff distance, over 50-ft obstacle	1,926 ft
Max demonstrated crosswind component	16 kt
Rate of climb, sea level	850 fpm
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)	
@75% power, best economy	139 KTAS/3.9 hr
8,500 ft	(64.8 pph/10.8 gph)
Service ceiling	13,800 ft
Landing distance over 50-ft obstacle	1,499 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	70 KIAS
V_Y (best rate of climb)	90 KIAS
V_A (design maneuvering)	112 KIAS
V_{FE} (max flap extended)	103 KIAS
V_{NO} (max structural cruising)	142 KIAS
V_{NE} (never exceed)	172 KIAS
V_{S1} (stall, clean)	56 KIAS
V_{S0} (stall, landing configuration)	53 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, maximum gross weight conditions unless otherwise noted.

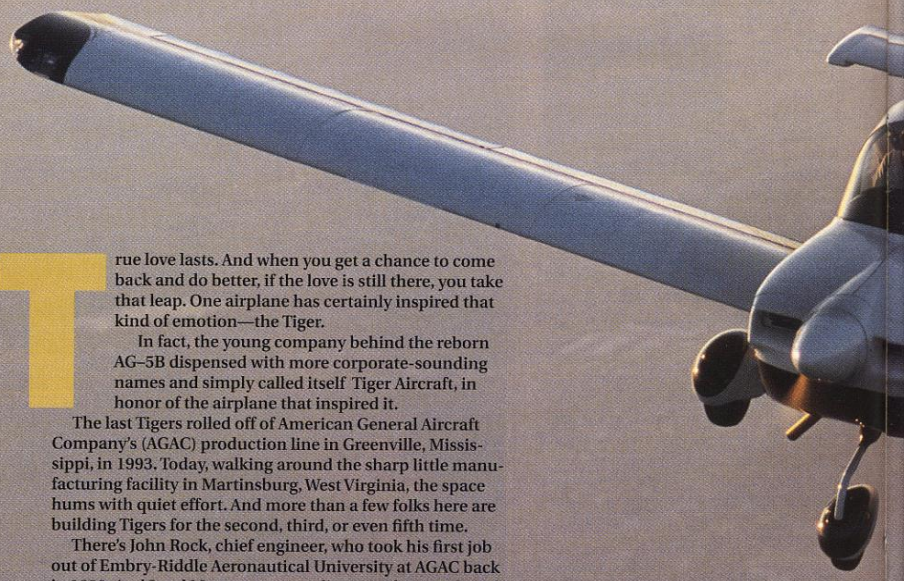


Tiger Aircraft AG–5B Tiger

Leaping back to Life

An old favorite is new again

BY JULIE K. BOATMAN



True love lasts. And when you get a chance to come back and do better, if the love is still there, you take that leap. One airplane has certainly inspired that kind of emotion—the Tiger.

In fact, the young company behind the reborn AG–5B dispensed with more corporate-sounding names and simply called itself Tiger Aircraft, in honor of the airplane that inspired it.

The last Tigers rolled off of American General Aircraft Company's (AGAC) production line in Greenville, Mississippi, in 1993. Today, walking around the sharp little manufacturing facility in Martinsburg, West Virginia, the space hums with quiet effort. And more than a few folks here are building Tigers for the second, third, or even fifth time.

There's John Rock, chief engineer, who took his first job out of Embry-Riddle Aeronautical University at AGAC back in 1990. And Loyd Montague, once director of research and development for AGAC, who ran an FBO in Greenville after that company closed its doors in January 1994. Montague is now a vice president at Tiger Aircraft, overseeing engineering and operations. And then there's Harry Eckert, who holds the distinction of having worked for each of the four companies that previously produced Tigers—American Aviation, Grumman American, Gulfstream American, and American General—and who test-flew some of the first

PHOTOGRAPHY BY MICHAEL P. COLLINS

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Tigers in 1970. These engineers, technicians, and pilots came back for more because they want to see this airplane succeed.

"The best thing was the Tiger," says Montague. "I enjoyed being associated with that airplane." So when another returning Tiger fan called and asked him to come to Martinsburg, the chance to fly Tigers again brought Montague back. The loyal one who talked him into it? None other than Robert Crowley, CEO and acting president of Tiger Aircraft—and the former CEO of AGAC.

Dealers have returned to the model as well. Herb Hortman, owner of Hortman Aviation, based at the Northeast Philadelphia Airport, took delivery of the first new Tiger in December 2001. The Hortmans have sold the Tiger before: At another Tiger event at EAA AirVenture last summer, Hortman's mother recalled ferrying aircraft made by American Aviation from the plant in Ohio starting back in the late 1960s, eventually including the Tiger.

FletchAir distributed parts for used Grumman aircraft with Tiger stripes after American General left the business in 1994, and it will continue to do so under an agreement with Tiger Aircraft. However, it too is betting on the viability of the new machine: David Fletcher took delivery of new Tiger number two for his Tiger Aircraft dealership at Houston's William P. Hobby Airport.

The new players in the Tiger pack are from the Far East. Seventy percent of Tiger Aircraft is owned by Taiwanese investors, notably Tong Lung Metal (TLM), a manufacturing conglomerate that founded its aerospace division four years ago at a breakfast spent discussing the merits of resurrecting a U.S.-designed and-built aircraft. High-level contact between Sen. John D. Rockefeller (D-W.Va.) and the Taiwanese ministry of economic affairs was instrumental in the deal, which is expected to bring an estimated total of $30 million to the Martinsburg area this year.

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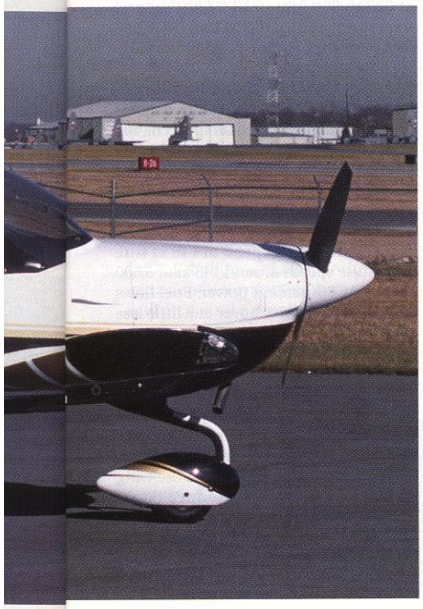


A new panel (above) incorporates Garmin avionics and an S-Tec autopilot. No rivets mar the sleek wing (above left) or control surfaces.

From AGAC to present

It's difficult to talk about the new Tiger AG–5B without stories of the model upon which it is based, as virtually the same heart beats beneath those wings.

When AGAC took over the drawings for the AA–5B, the previous incarnation of the Tiger, it decided to make a few changes. First, the aircraft's electrical system was upgraded to 24 volts. Then the throttle and mixture controls morphed into a true throttle quadrant, and the instrument panel gained new avionics to reflect the state of the art in the early 1990s. There were changes to the environmental system and to the strobe—enough changes to warrant a new model designation and type certificate.

"My job was to make those changes," recalls Montague. Then he performed the first test flight of the Tiger at AGAC, and test-flying is a role he continues at Tiger Aircraft. "I'm looking at everything—the rigging to see that the cable tensions are right and the proper travels are set. I'm also gonna check the weight and balance. If the weight and balance is correct, anything else that happens—you can get the airplane back and recover." Montague has learned to focus on the little things, like checking the wind noise to ensure that the fit and finish is correct on the airframe.

All of his accumulated skill translates directly to his job today. He knows the Tiger and can tell quickly when a new airplane off the line deviates from the norm. Montague and John Rock also learned a lot about trying to bring an aircraft to market under pressure. Preparing for the rollout of the first Tiger at AGAC, Montague recalls working two days straight,

while Rock put 110 hours on the time clock that week. "We're not doing that again," says Rock. A more measured pace suits Rock much better. "We said to ourselves, 'Let's make sure we do everything that needs to be done.'"

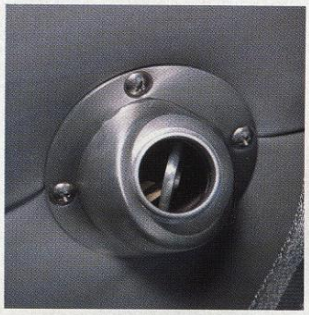
Another kind of expertise helped Tiger Aircraft in the physical setup of its assembly plant. When AGAC shut down its Greenville line, Harry Eckert was left in charge of the documents and tooling in storage. He also acted as a self-employed consultant to the state and legal entities during the shutdown, and he supplied copies of service letters and service kits to pilots of American General aircraft. He fulfills a similar role at the new company, taking care of the machine shop, tool room, and composite room. Eckert gained experience in composites during stints at Learjet, working on the Lear Fan and then the cabin and cockpit structures for the Piaggio Avanti in the 1980s.

Although now 68 and no longer flying, Eckert is clearly in his element. "It's kind of boring being retired, and I have a lot of information—and in some cases I'm the only one in the world left to trace the documentation for a part."

Moving the parts from Greenville took a lot of effort, but retaining the original tooling was important to the Tiger Aircraft plan. The Martinsburg location operates as an assembly plant, with suppliers across the country building parts for the aircraft. The wings of the Tiger are aluminum bonded to the wing ribs; this is not a riveted airplane. The bonded structures, including the wings, fuselage, and all control surfaces, are constructed by ChemFab in Hot Springs, Arkansas. And, as you may have guessed, ChemFab supplied these parts to AGAC from 1989 to 1994, according to Eckert.

Tiger Aircraft is still operating with the type certificate only—it should acquire a production certificate by this spring. In the meantime, each new Tiger off the line must be separately flown and approved by FAA MIDO (manufacturing inspection district office) representatives. There were seven aircraft on the line at the time this piece was written, with three awaiting delivery. We flew model number one, the primary test aircraft, before its departure to Hortman Aviation.

Changes to the airplane lie mostly in the panel and interior. The newly engineered panel boasts a mid-level Garmin stack, including a GMA 340 audio panel, twin GNS 430 GPS/coms, and a GTX 327 transponder. Replacing one of the 430s



The controls for the simple fuel system sit prominently in the center console.

with a 530 is one of the few options offered, as the company favors delivering a solid, IFR-equipped model with few modifications. An S-Tec System Thirty two-axis autopilot provides a reasonable backup to the vacuum system, as it replaces the turn coordinator and steers from rate-based information.

The updated interior follows the new, unwritten standard set for production four-seat airplanes, with its leather, luxury-car styling—even leather-wrapped yokes for added style and comfort.

Tiger kept other good updates made in the 1990s, such as the Sensenich prop, as well as hallmarks of the entire Cheetah/Tiger line: a simple fuel system, a canopy you can leave fully open during taxi and open partially in the air, and seats that fold down for cargo. Fuel and oil pressure information comes to the panel via transducers rather than direct lines, eliminating the hazard of a catastrophic fluid leak into the cabin.

The construction of the Tiger is straightforward and tough. A super-thick main wing spar carries through the fuselage for sturdiness. With the pilot and front-seat passenger riding on top of the spar, Eckert notes, "that's the safest place in the whole aircraft." He also mentions that "the bonded structure is four to six times stronger than a riveted structure," as each rivet would introduce some inherent weakness into the airframe.

For all its strength, there are a few Tiger quirks. On the ground, the 90-degree castering nosewheel allows for tight turns once mastered—it's not that hard—and in the air, light aileron forces ask for some adjustment in technique if you're used to piloting more truck-like training airplanes. During a venture in the wake of our photo ship while shooting the air-to-airs for this piece, we liked those control forces for their responsiveness—as well as the rather high wing loading for an aircraft of its class.

Configuration for takeoff included the first increment of flaps (15 degrees) and a rotation speed of around 60 knots. Our ground roll was less than 1,000 feet, at slightly above standard conditions (20 degrees Celsius and an airport elevation of 557 feet msl). The Tiger climbed out at 600 to 800 fpm until 9,000 feet and then slowly settled to 400 fpm by 10,500 feet, where we stopped to do our cruise speed assessments.

At that altitude, with the outside temperature hovering around zero degrees C, we saw an indicated airspeed of 109 kt, with 132 kt true. Full throttle at this altitude translates into about 65-percent power. Back down at 8,500 feet, an indicated airspeed of 114 knots gave us 132 kt true, at roughly 70-percent power. Tiger claims a top speed of 148 kt true and cruise speeds around 143 kt at 8,500 feet using 75-percent power. Fuel flows at 75-percent power hover at a little less than 11 gallons per hour. Redline on the Lycoming O-360-A4K is set at 2,700 rpm, at 180 horsepower.

An approach-to-landing stall during our testing broke straight ahead at 53 kt, and even a slightly anemic recovery procedure on our part led to less than 100 feet of altitude loss. While the wing is fairly fast, it doesn't produce bank-vault descent rates when the engine quits. Best-glide speed is 70 kt, and we saw a corresponding altitude loss of 650 to 700 fpm. Slips are approved with full

flaps in the Tiger, and we did a few for fun. They're worth practicing, because you don't want to carry a lot of extra speed on short final, as we found out during our landing tests.

A normal approach was made at 80 kt, slowing to a speed of 60 kt over the runway. Any extra speed at this point translates into a lot of float, according to Bill Crum, demo pilot and sales manager for Tiger. The landing roll was a good deal shorter than the takeoff roll, although the touchdown was a little firm. Note to future Tiger owners: Hold the nose off even after you feel like you've lost elevator authority. You still have some, and if you don't the nose comes down as if a linebacker hopped on the cowl.

Changes to panel and interior have added a little more than 100 pounds to basic empty weight, which now stands at 1,500 pounds. The max gross weight remains at 2,400 pounds, for a useful load of 900 pounds—or full tanks, three people, and 84 pounds of bags. That said, the ample cargo area may lead you to use the Tiger as a two-person-plus-serious-recreation-equipment machine instead.

A large cargo area grows in size when the rear seats are folded forward (top). The new facility (bottom) in Martinsburg is clean and bright and filled with memories in the form of tooling from the AGAC production line.

With 1990 to 1993 models going for between $70,000 and $115,000, depending on equipment and condition, the price on a new Tiger that is 10 or more years younger looks pretty competitive at $219,500—especially when you factor in that the price includes factory training through the private certificate, if you're not already a pilot, or to complete instrument training for those already certified. The warranty covers maintenance for one year, including the first annual, and the airframe for three years (extended warranties on the engine, avionics, and other components are through those manufacturers).

Tiger Aircraft is banking on the fact that loyal aficionados of the line will leap at the chance to fly a new Tiger. But will the company follow through where others have stumbled? That depends on a lot of factors. But those bringing the airplane back to market have already won, in a

i Links to additional information about the AG–5B Tiger may be found on AOPA Online (www.aopa.org/pilot/links.shtml).

sense. "Almost anyone who flies the Tiger falls in love with it," says Eckert. He knows. He's one of many who have found that love all over again. AOPA

E-mail the author at julie.boatman@aopa.org

SPECSHEET

Tiger Aircraft AG–5B Tiger
Base price: $219,500
Price as tested: $219,500

Specifications

Powerplant	Lycoming O-360-A4K, 180 hp @ 2,700 rpm
Recommended TBO	2,000 hr
Propeller	Sensenich, 2-blade, 76-in dia
Length	22 ft
Height	8 ft
Wingspan	31 ft 6 in
Wing area	140 sq ft
Wing loading	17.1 lb/sq ft
Power loading	13.3 lb/hp
Seats	4
Cabin length	50 in
Cabin width	40 in
Cabin height	46 in
Empty weight, as tested	1,500 lb
Maximum gross weight	2,400 lb
Useful load, as tested	900 lb
Payload w/full fuel, as tested	594 lb
Fuel capacity, std	52.6 gal (51 gal usable) 315.6 lb (306 lb usable)
Oil capacity	8 qt
Baggage capacity	120 lb, 17.6 cu ft

Performance

Takeoff distance, ground roll	865 ft
Takeoff distance over 50-ft obstacle	1,550 ft
Max dem crosswind component	15 kt
Rate of climb, sea level	850 fpm
Maximum level speed, sea level	148 kt
Cruise speed/endurance w/45-min rsv, std fuel @ 75% power, best economy (fuel consumption), 8,500 ft	143 kt/4 hr (10.7 gph)
Service ceiling	13,800 ft
Landing distance over 50-ft obstacle	1,120 ft
Landing distance, ground roll	410 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	80 KIAS
V_Y (best rate of climb)	90 KIAS
V_A (design maneuvering)	112 KIAS
V_{FE} (max flap extended)	103 KIAS
V_{NO} (max structural cruising)	142 KIAS
V_{NE} (never exceed)	172 KIAS
V_R (rotation)	55-60 KIAS
V_{S1} (stall, clean)	56 KIAS
V_{SO} (stall, in landing configuration)	53 KIAS

For more information, contact Tiger Aircraft LLC, 226 Pilot Way, Martinsburg, West Virginia 25402; telephone 877/306-8100 or 304/267-1000; fax 304/262-0069; or visit the Web site (www.tigeraircraft.com).

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.

ARE AIRLINE PILOTS JUST BUTTON PUSHERS?

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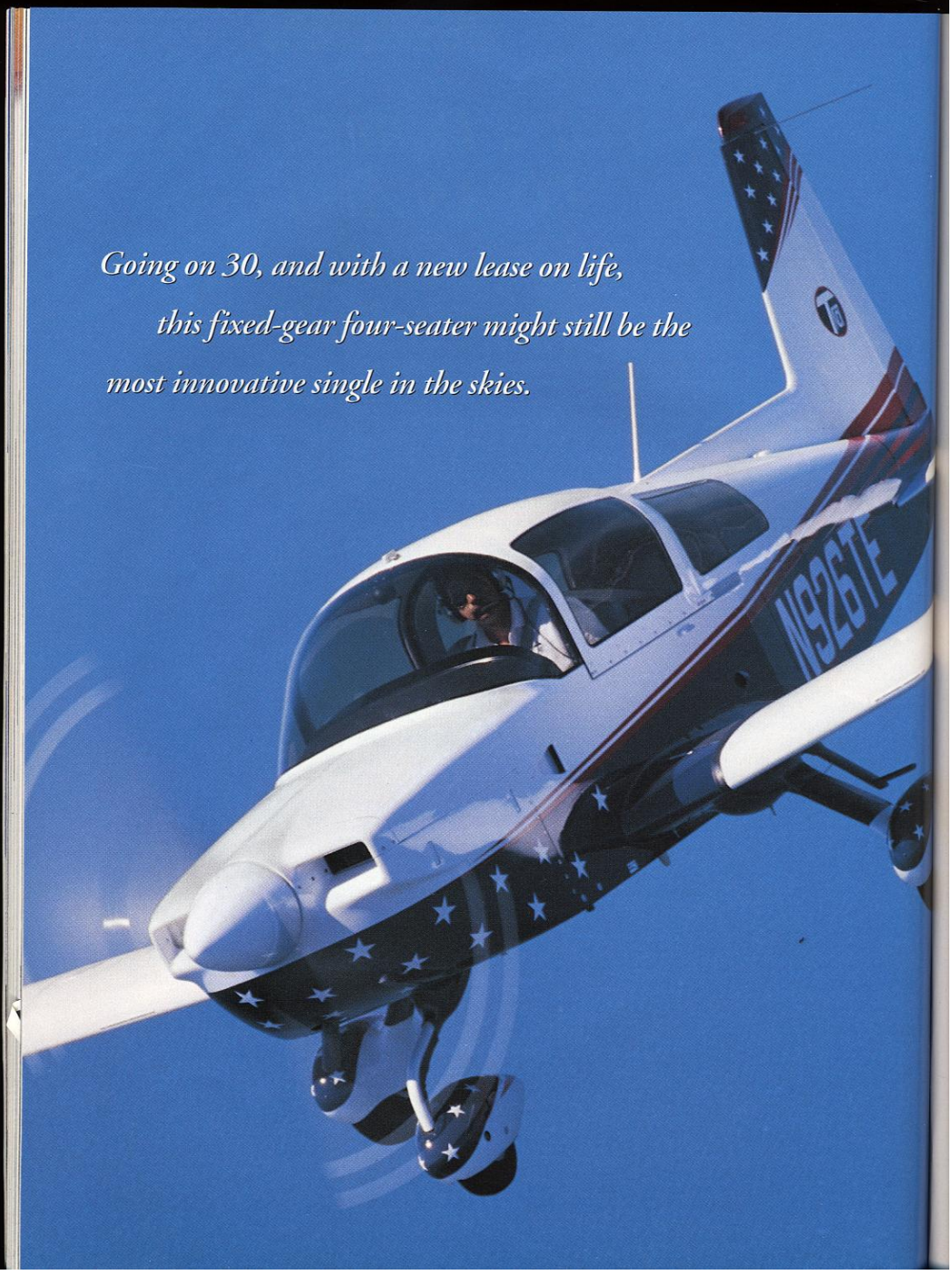

Going on 30, and with a new lease on life,
this fixed-gear four-seater might still be the
most innovative single in the skies.

Tiger Stars, Tiger Stripes

When newly formed Tiger Aircraft announced a few years back that it was going to reintroduce the four-seat AG-5B Tiger, last produced back in 1993, it seemed like a natural. Unlike a number of more forgettable and more obscure airplanes that have been returned to production (sometimes successfully, more often not) since the bust of the mid-1980s, the Tiger makes better sense today than ever.

Indeed, it can be argued that this 30-year old sheet-metal design is the most innovative single going. Cirrus and Lancair may have decided to go with advanced composites for their next-generation airplanes, but way back in the 1960s, the airplanes that begat the Tiger were made with advanced materials, a number of design innovations and weight-saving construction techniques.

And, despite its current luxury trappings, the Tiger is a direct descendent of the simple two-seat airplanes first produced by American Aviation more than 30 years ago. Like those airplanes, the Tiger features rivetless bonded-skin construction, honeycomb materials for stiffness and light weight, a dirt-simple tubular spar, a sliding bubble canopy for great visibility and a simple laminated fiberglass main landing gear and tubular nose gear with steering accomplished via directional braking. Admittedly, all of these things had been done on other airplanes before, but putting them in one package on a certified piston single was groundbreaking stuff back then; it still is.

I've been flying these airplanes for awhile now. In fact, my first family airplane was a Tiger, an early 1990s model manufactured by American General Aircraft Company (AGAC), that I rented on a regular basis. As a new instrument pilot, I made my first forays into the slightly wilder blue in a Tiger. For a couple of years I flew my small family all around the Northeast, and slightly further afield, in that airplane, N911DK, and it proved itself a remarkably comfortable, capable and economical airplane. And with the S-Tec autopilot and an HSI, it was a surprisingly good airplane in which to learn single-pilot IFR.

We learned to love the style of the thing, too. With its sliding bubble canopy, jaunty looks and sprite-like handling, the Tiger was definitely not a new take on the same old thing. It was a unique brand of cat, and its slightly diminutive scale seemed just right for us.

The Tiger, first built as the AA-5B, wasn't the first four-seater in the family; the AA-5A Traveler, which later became known as the Cheetah, was. But by the time Grumman purchased the company in the 1970s, it decided an upgrade was in order. The Tiger, with its Lycoming O-360 180-hp engine and fixed-pitch prop, was first certified in 1975, and it was a big hit, not because it was a lot more airplane than the Traveler, but because it felt like less airplane than comparably powered competitors while delivering more. More, in this case, anyway, means more performance with greater simplicity. Despite its modest power, the airplane delivers about 140 knots at cruise, comparable to a couple of contemporary retractable-gear airplanes with similar or greater power. At the same time, the Tiger carries a good useful load, 900 pounds, and a full-fuel load of around 585 pounds, good for three FAA-regulation 170-pound people and 75 pounds of bags. That's about as good as it gets with a four-seater, and it's especially good for a four-seater powered by a 180-hp engine.

A decade after production of the Tiger and Cheetah lapsed, a new company, American General Aircraft Corporation, bought the rights to the Tiger, and the tooling for it, and reintroduced a modified version of it built to an amended type certificate. That airplane featured several noteworthy improvements over the previous models: a split nose bowl for easier access to the engine without removing the prop; better panel and exterior lighting; fuel transducers instead of fuel lines in the cockpit; a 28 volt electrical system; a big-airplane style throttle quadrant and better heat and ventilation to the rear seats. The result was an airplane with all of the good qualities of the original and far fewer of the issues. Unfortunately, ACAG was forced to close up shop in 1993 after producing just more than 100 airplanes.

This time it looks as though the Tiger really is back, though the early days of production can be the most challenging for a fledgling airplane maker. As I write, the company has produced seven of the airplanes and it should have, it says, production approval from the FAA by the time you read this. The production certificate will allow the company to ramp up production; it hopes to build nearly a hundred Tigers in calendar year 2003. The company, 70 percent of which is owned by Taiwanese investors, is using many of the same vendors that supplied parts for the airplane back in the 1990s. The "factory," now located in Martinsburg, West Virginia, is really more of an assembly facility, though all the major composite components, including wheel fairings, wingtip fairings and cowlings, are built there.

The price of the new Tiger is $219,500. That's an easy price to quote, as there aren't really any options available yet. Not many are needed. While the Tiger is being built to the same type certificate as the American General model, there are significant changes to the interior and panel that make the new model a decided step up from any Tiger before it.

The comfy seats are now covered in leather, which makes the usual Tiger entry pattern—lift the seat cushion, step on the seat frame, get both feet on the floor, lower the seat—more important to follow than ever before. Attractive carpeting, real leather headliner, an aluminum instrument panel and improved lighting complete the interior upgrade.

Also, the airframe of the Tiger is now extensively corrosion proofed, a process that is sure to extend the life of what has proven to be an extremely durable airplane to start with.

There are several things that remain unchanged about the Tiger, and the engine is the most noteworthy. The Lycoming O-360-A4K, which produces 180 horsepower at 2700 rpm, may be a reli-

STORY AND PHOTOGRAPHY BY ROBERT GOYER

The panel of the Tiger is all new. With twin Garmin 430s, leather-wrapped yokes and vertically aligned engine gauges, the look of the Tiger is modern and clean.

able workhorse of a powerplant, but it lacks fuel injection, so attention to carb heat remains a must. (The company has hinted about the possibility of introducing a "Super Tiger" further down the road, that would make use of a more powerful and more advanced engine.) Also, the Tiger simply cries out for a constant-speed prop, which would allow it improved takeoff and cruise performance. One holdover from Tigers of old that's easier to swallow is steering by differential braking. While this method may take some getting used to for pilots unfamiliar with it, once you get the hang of it, you wonder why any light airplane maker would do it any differently.

A defining feature of the Tiger is its sliding bubble canopy. The company makes much of the ability to slide it back in flight—you can roll it back nearly 10 inches at speeds as fast as 112 knots—but I never slid it back once in all the time I flew the airplane. The real benefit, in my view, is the visibility the canopy affords. It's remarkable. Getting into or out of the airplane is easy; the side of the fuselage is relatively low; the real down side of the canopy is the greenhouse effect; it gets hot in there when the sun shines. While taxiing, however, the sliding canopy is a godsend. Pull it back as far as you want and feel the breeze. One other note about the canopy: when it's raining hard, you've got to be pretty quick to avoid getting yourself, and your airplane, drenched when you slide the canopy back to get out of the airplane. Lots of Tiger owners carry a big umbrella with them in the airplane, to keep both occupants and airplane as dry as possible.

I went flying in the new Tiger with the company's marketing director and test pilot, Bill Crum, who also flew the airplane for the air-to-air photographs that accompany this story. As I hinted before, you don't fly in the Tiger as much as you wear it. It's more "sports car" than "sport ute," though the roominess and utility of the airplane belie its runabout style. The canopy is mostly to blame—or praise—for this, depending on your bent, but once you get used to the vistas, you won't want to go back to more conventional views. This isn't just a plus for sightseeing, which it is, but for safety, as you can keep your eye on traffic much more easily in a Tiger than in just about any other kind of production lightplane I've flown.

On takeoff, performed without flaps, the Tiger accelerated nicely, though it doesn't have the kind of get up and go you might imagine, a result of the compromise fixed-pitch prop. The airplane's max rate of climb at gross weight under standard conditions is 850 fpm, and it requires 1,550 feet to clear a 50-foot obstacle.

At cruise, the Tiger does well. With nearly full tanks and two aboard, we calculated a true airspeed of 142 knots, a click below the advertised 143 knots. In terms of handling, the Tiger feels about as sporty as it looks, with a quick roll rate and light aileron forces.

Despite this, the Tiger is a fine IFR platform, when properly outfitted, that is, and today's Tiger comes very nicely equipped. It features twin Garmin GNS 430s and an S-Tec 30 two-axis autopilot, as well as a Garmin digital transponder and dual CDIs, both with glideslope. Once the company gets its production certificate, it plans to offer an HSI (a glaring omission in an airplane this nicely equipped) and a Garmin 530 in place of one of the 430s as options.

In fact, it's hard to imagine that an IFR transportation airplane could be much easier to fly. With mixture and rpm being the biggest systems management concerns—there's no prop control, no retractable gear and no cowl flaps—and with the autopilot holding nav track or heading and altitude, single-pilot IFR doesn't get much more manageable.

Bill and I headed out to Block Island, off the Rhode Island coast in the Long Island Sound, for a quick lunch. Coming into Block Island's cozy 2,500-foot strip allowed me to revisit the Tiger's excellent short field manners. With full flaps, you simply hold 80 knots on final, 70 over the fence and 60 as you touch down, and, if you aimed well, the airplane uses precious little runway. As a note, the Tiger is equipped with straight flaps, as simple as simple can be, but they're not as effective as larger and more elaborate varieties—they also offer precious little lift; the difference between flaps-up and flaps-down stall is just three knots. You also have to be aware of the

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maximum flap extension speed—105 knots—both before and after you extend the flaps. If you point the nose down a bit, it's easy to pick up five or 10 knots, which will allow the needle to accelerate beyond the limits of the white arc.

The Tiger is a very pleasing (read: "easy") airplane to land, as long as you pay attention to airspeed. Thanks to the canopy, you've got an excellent view of the landing environment. With the airplane's relatively high wing loading (17.1 lbs/sq ft), there's not a lot of float, and you can get it stopped in a hurry.

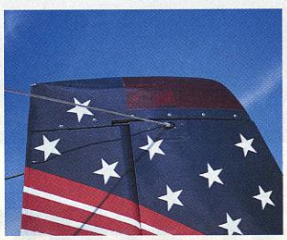
As I started saying, the Tiger is an airplane with much to offer—good speed, impressive carrying ability and wonderful visibility. To that list, this latest version adds an impressive avionics suite and a refined and comfortable interior. While it's impossible to ignore the fun style of the Tiger, at heart it's a solid and honest airplane, and it's clearly the airplane's capabilities that keep it, and Tiger fans, coming back around. □

2002 Tiger Aircraft AG-5B Tiger

The airplane flown for this report was outfitted with standard equipment. Performance figures are from the manufacturer and are for standard conditions at sea level unless otherwise noted.

Price, as tested	$219,500
Engine	Lycoming O-360-A4K, 180 hp @ 2700 rpm
TBO	2,000 hrs
Propeller	Sensenich, two-blade, fixed-pitch, 76-in dia, 63-in pitch
Seats	4
Length	22 ft
Height	8 ft
Wingspan	31.5 ft
Wing area	140 sq ft
Maximum takeoff weight	2,400 lbs
Empty weight, as tested	1,500 lbs
Useful load, as tested	900 lbs
Maximum usable fuel	51 gals/306 lbs
Payload, full fuel	594 lbs
Wing loading	17.1 lbs/sq ft
Power loading	13.3 lbs/hp
Best rate-of-climb airspeed	90 kts
Best angle-of-climb airspeed	80 kts
Maximum rate of climb	850 fpm
Never exceed speed (VNE)	172 kts
Maximum structural cruising speed	148 kts
Max cruise (@ 8,500 feet)	143 kts
Fuel flow, max cruise	10.7 gph
Endurance, max cruise, no res	4.76 hrs
Maneuvering speed	112 kts
Stalling speed, flaps up	56 kts
Stalling speed, flaps down	53 kts

This Tiger, the fifth off the line, is a special one. It was ready for paint at Tiger's Martinsburg, West Virginia, facility when the attacks of September 11th occurred. As a patriotic gesture, those West Virginia employees decided to give the airplane a one-of-a-kind paint scheme. Below, the Tiger retains the enclosed rotating beacon and improved lighting of the AG-5B, while adding a luxurious upgraded interior.



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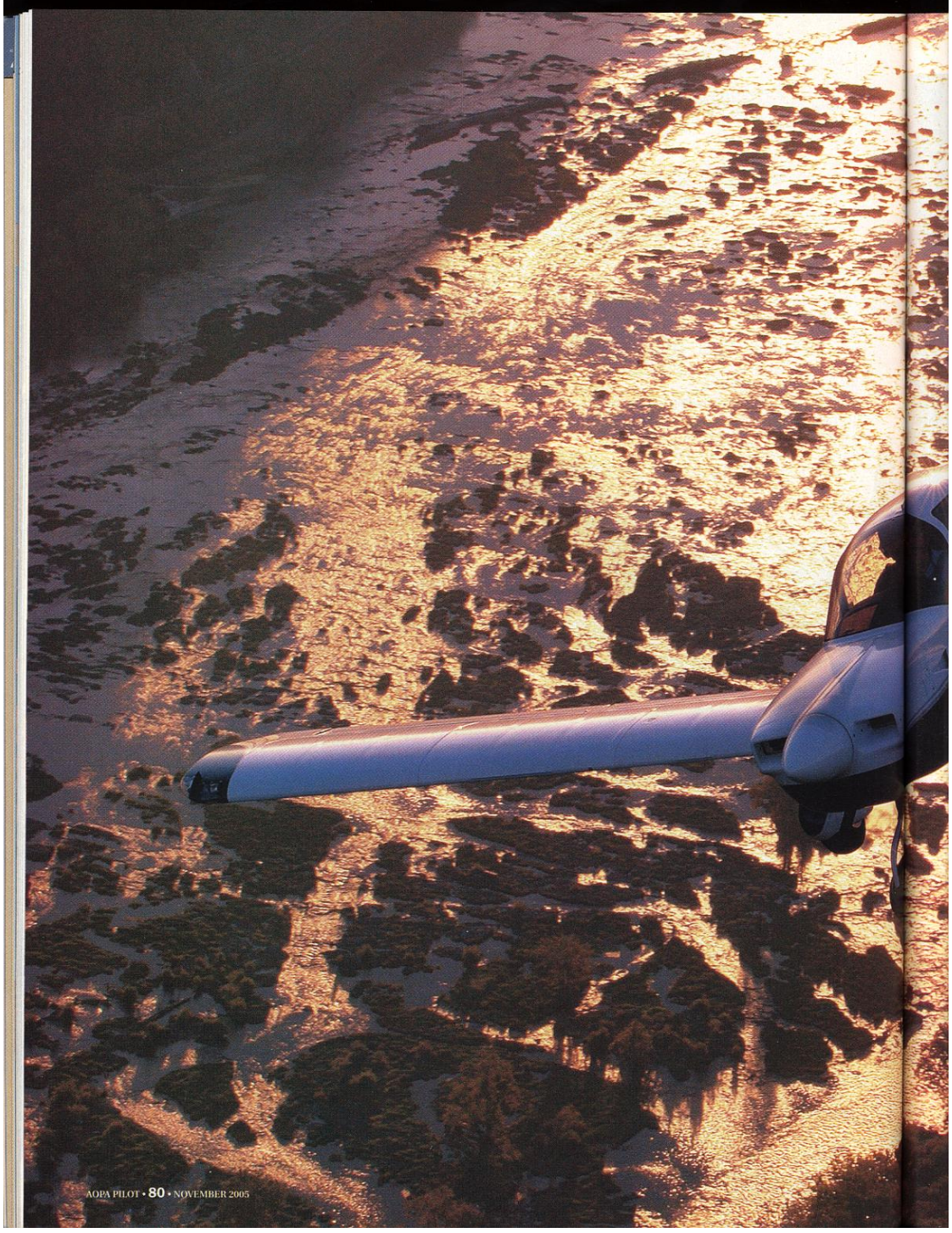


Tiger Aircraft AG–5B Tiger

Smooth as glass

The Tiger gets the G1000

BY JULIE K. BOATMAN

"Implementing the G1000 system is the largest and most extensive single change we have made since the AG–5B was introduced," says John Rock, chief engineer for Tiger Aircraft. Rock was an engineer for American General Aircraft Co. (AGAC), and he's referring to that company's debut of the AG–5B, an update to the AA–5 originally built by American Aviation, Grumman American, and Gulfstream American.

The engineering team at Tiger Aircraft hasn't *had* to make many changes to the Tiger, because the airplane is such a capable design. Few in its class of single-engine, fixed-gear four-seaters have its control harmony and balance—not to mention its good speed and climb performance to match.

When Tiger Aircraft formed to relaunch the AG–5B production line, most changes were up front in the radio stack. A full complement of Garmin GPS/nav/coms, an S-Tec autopilot, and options for a slaved horizontal situation indicator (HSI) and Mode S transponder made for a modern-enough panel as recently as 2002, when Tiger's first Tigers left the factory in Martinsburg, West Virginia. But to retain a competitive advantage in 2005, the focus came back to the panel.

PHOTOGRAPHY BY MICHAEL P. COLLINS

With its competitors going to glass, the management team at Tiger quickly determined that course for its airplane as well.

Tiger decided to work with Garmin International and install its G1000 integrated flight deck, with primary flight display (PFD), multifunction display, audio panel, and nav/coms. "It was the only fully integrated system out there," says Gene Criss, president of Tiger Aircraft, "and that's what we wanted." Once the decision was made, the joint Garmin/Tiger team worked with the FAA's aircraft certification office in New York.

Going digital

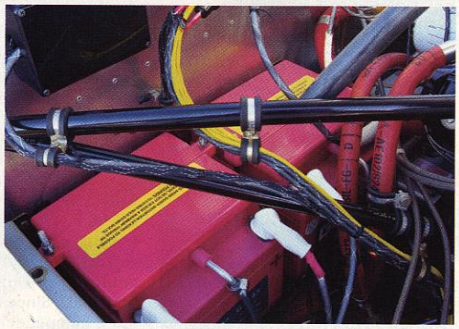
While the airplane's panel had been updated since the 1990s when the aircraft was built by AGAC (see "Budget Buys: An Ambush of Cats," August 2002 *Pilot*), the guts behind it were essentially the same. But that wouldn't fly with the transition to the G1000.

The magnetometer hides under this inspection plate.

Rock affirms that the most interesting design challenges with the system installation had to do with incorporating a digital sensing system (the heart of the G1000) into an aircraft that had previously used analog gauges. "Lots of surprises," he says. "The most significant had to do with the magnetometer." This device—located in the right wing about a third of the way inboard from the wing tip—provides 3-D magnetic information to the system through the attitude heading reference system (AHRS). "The grounds for all wing wiring had to be relocated to prevent electromagnetic interference just above the tolerance of the G1000 system," says Rock. "The lights were grounded in the wing and the grounds had to be routed back to the fuselage."

The G1000 includes the primary flight instruments (including attitude indicator, HSI, and airspeed, altitude, and vertical speed tapes) as well as all engine instruments (oil pressure and temperature, cylinder head temperature, and exhaust gas temperature) and electrical system instruments. Therefore, as part of certification, the system requires a robust "plan B"—including a source of backup power and several self-contained backup analog instruments. Tiger has done an excellent job of addressing both FAA concerns, which should rank high on a pilot's list of needs as well.

Providing for emergency backup power is a part of FAA certification of glass-cockpit systems because of the critical nature of the electrical system



To provide a backup power source, Tiger added a second full-size battery (below). The cowl can be easily opened during preflight for close inspection (below, bottom). Backup instruments are well located in between the two glass displays (left).

to flight safety—though the standby attitude indicator is vacuum powered. Because the main ship's battery is used for starting, a separate backup battery is required, according to Rock.

The goal for the engineering team was to provide power to the critical flight instruments (including the PFD and its components such as the AHRS and air data computer, one nav/com, transponder, instrument lighting, and audio panel) for at least 30 minutes. To put this one through the uprights, the team installed a second battery of the same size and power as the standard aircraft battery. During testing, the battery ran the essential systems for more than an hour—with the mic keyed at five-second intervals throughout the test.

Riding the Tiger

It's easy to like flying the Tiger, because of its honest speed for the economical 180 horsepower, excellent visibility from the cockpit, and feel-good flight agility.

I conducted speed runs during my latest flight test at various altitudes to try to match those found by veteran air racers—and the factory. We reported 132 knots true airspeed (KTAS) in the last look at the Tiger (see "Leaping Back to Life," February 2002 *Pilot*) at both 8,500 and 10,500 feet, at full throttle.

Maybe the warmer air (by a few degrees Celsius) made all the difference, or maybe N962TE is just a little speedier than that first new Tiger I flew more than three years ago, but today's Tiger posted a couple of extra knots compared to the test flight in 2001.

At 7,500 feet and 75-percent power, we averaged 137 KTAS, and saw almost the same figures at 5,500 feet, on a fuel burn of about 10.9 gph. Those are still off Tiger's advertised figures at 8,500 feet (143 KTAS), but they're in the ballpark. And perhaps there are Tigers out there running that swiftly. (My thought: You would expect to see some gains in aircraft fit and finish as the production line crew acquires more experience.)

Climb rates were healthy from sea level on up to those altitudes, starting at 800 fpm and dropping off to 500 fpm by the time we came over the top of 7,500 feet. Coming down at best glide (73 knots)—which you can maintain using nearly full nose-up trim—brought us back to Earth at roughly 800 fpm.

Stalls were benign, with no wing drop noted, just a slight shake of the tail and gentle mush into a loss of altitude. The fun began when we turned to exercising the airplane through a series of coordination maneuvers, steep turns, and slips. Throttling back to bring the airspeed down to

100 knots, I banked the wings rapidly left and right—the challenge being to apply just enough rudder at just the right time to keep the nose in place on the horizon. The Tiger responded well, showing excellent control harmony—it takes about as much aileron and rudder through the maneuver as you might expect: an easy touch on the ailerons matched by solid but even pressure on the rudder pedals. And because you're sitting right on top of the rugged tubular main spar, you might get the sensation, as I did, of flying through the air cupped in a backyard swing. It's comfortable, and comforting, while retaining that feeling of flying freedom we so crave.

Lazy 8s felt similarly good for the same reasons. This is an airplane that wants you to take it out of straight and level, no matter what your mission for the day—stretching those muscles reminds you of why you have them in the first place.

Bill Crum, vice president of sales and production test pilot for Tiger Aircraft, was flying with me, and he egged me on to slip the airplane as much as I wanted—no doubt because the Tiger slips so well and can do so with full flaps.

My landing distance (about 2,000 feet) the first time around nearly matched my takeoff distance on the warm, early September afternoon. But it's likely that with practice, pilots can easily land shorter simply by not carrying quite as much airspeed or raising the nose quite so much as I did. The Tiger is an airplane you fly onto the runway, holding the nose off only slightly, rather than in a distinct flare.

Show me the money

Letsfly.org, which functions as one of Tiger Aircraft's dealers, offers one-quarter "cooperative ownership" shares in a new G1000-equipped Tiger for an initial investment of $2,900, with a monthly management fee of $595 and per-hour costs of $55 to $65 per hour, including fuel, depending on where in the country the aircraft is based.

Eldon Corry is the general manager of Letsfly.org, which has placed 12 Tigers into the program. Corry developed the program to help "put the mom-and-pops back on the map," he says. An initial investment of $8,700 covers the down payment on the glass-cockpit Tiger for a local pilot or FBO. An additional $4,700 buys the management system created by Letsfly.org, with a money-back guarantee that the FBO will achieve positive cash flow on its investment. As the FBO sells its shares (at the $2,900 price), the monthly management fee from each owner goes to the FBO to cover the financing on the airplane, which comes to a little more than $2,000 a month on a 20-year term loan. Most aircraft in the program are covered under a commercial insurance policy, which allows for Letsfly.org program shareholders to fly other airplanes in the program around the country. Current locations include Truckee, California; St. George, Utah; and Phoenix.

Other financing options make the $274,500 total price tag a little easier to swallow (an IFR-equipped Tiger with traditional instruments runs $239,500). An agreement with AirFleet Capital Inc. has led to several programs, including one in which buyers can fully finance a G1000-equipped Tiger for roughly $2,000 a month (obviously, with ever-changing financing rates and terms, your mileage will vary).

The backseats are cozy but comfortable (above). Differential braking is used to steer the full-castering nosewheel (right).

Tiger also offers free flight lessons through your private certificate if you're not already rated. The company thinks the airplane is a good one for a new pilot, and I agree.

Changes at the top

Criss was made president of Tiger Aircraft in summer 2003 after serving as the company's chief operating officer. Former president Bob Crowley retained positions as chairman and chief executive officer until mid-2004, but is no longer with the company. Criss was formerly president and CEO of Commander Aircraft until 1998, and retained a position on the board of directors for Aviation General (parent company to Commander Aircraft) until 2002. Since then, he has worked as an independent contractor on the certification of Micco Aircraft's three single-engine models (now on the shelf after that company's plans dissolved). He has also served in executive capacities at Piper Aircraft Co. and American General Aircraft Co.

Tiger Aircraft went through negotiations to purchase the ailing Commander Aircraft Co. in 2004, but those discussions fell through and the owners of Tiger Aircraft backed out of the deal in July 2004.

An AD note

The new AG–5B retains most of its similarities in aircraft parts symmetry and construction as the early models (the airplane is built using a unique bonding method that joins the aluminum skin to the ribs with adhesive rather than rivets). But with the new production line, some wrinkles in the process have been smoothed out.

> **i** Links to additional information about Tiger Aircraft may be found on AOPA Online (www.aopa.org/pilot/links.shtml).

For example, an airworthiness directive on the aircraft's wing attach shoulder bolts doesn't apply to serial numbers higher than 10175—all Tiger models built since 2001. The Tiger's flying higher than ever, and with the new glass up front, into the heat of the pack. AOPA

E-mail the author at julie.boatman@aopa.org.

SPECSHEET

Tiger Aircraft AG–5B Tiger
Base price: $239,500
Price as tested: $276,200

Specifications

Powerplant	Lycoming O-360-A4K, 180 hp @ 2,700 rpm
Recommended TBO	2,000 hr
Propeller	Sensenich, 2 blade, 76-in dia
Length	22 ft
Height	8 ft
Wingspan	31 ft 6 in
Wing area	140 sq ft
Wing loading	17.1 lb/sq ft
Power loading	13.3 lb/hp
Seats	4
Cabin length	4 ft 2 in
Cabin width	3 ft 4 in
Cabin height	3 ft 10 in
Empty weight, as tested	1,592 lb
Max gross weight	2,400 lb
Useful load, as tested	808 lb
Payload w/full fuel, as tested	502 lb
Fuel capacity, std.	52.6 gal (51 gal usable) 315.6 lb (306 lb usable)
Oil capacity	8 qt
Baggage capacity	120 lb, 17.6 cu ft

Performance

Takeoff distance, ground roll	865 ft
Takeoff distance over 50-ft obstacle	1,550 ft
Max demonstrated crosswind component	15 kt
Rate of climb, sea level	850 fpm
Maximum level speed, sea level	148 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption) 8,500 ft @ 75% power, best economy	143 kt/4 hr (10.7 gph)
Service ceiling	13,800 ft
Landing distance over 50-ft obstacle	1,120 ft
Landing distance, ground roll	410 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	80 KIAS
V_Y (best rate of climb)	90 KIAS
V_A (design maneuvering)	112 KIAS
V_{FE} (max flap extended)	103 KIAS
V_{NO} (max structural cruising)	142 KIAS
V_{NE} (never exceed)	172 KIAS
V_R (rotation)	55 KIAS
V_{S1} (stall, clean)	56 KIAS
V_{SO} (stall, in landing configuration)	53 KIAS

For more information, contact Tiger Aircraft LLC, 226 Pilot Way, Martinsburg, West Virginia 25402; telephone 877/306-8100 or 304/267-1000; fax 304/262-0069; or visit the Web site (www.tigeraircraft.com).

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.

Open software reference: epson.py V0.97

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